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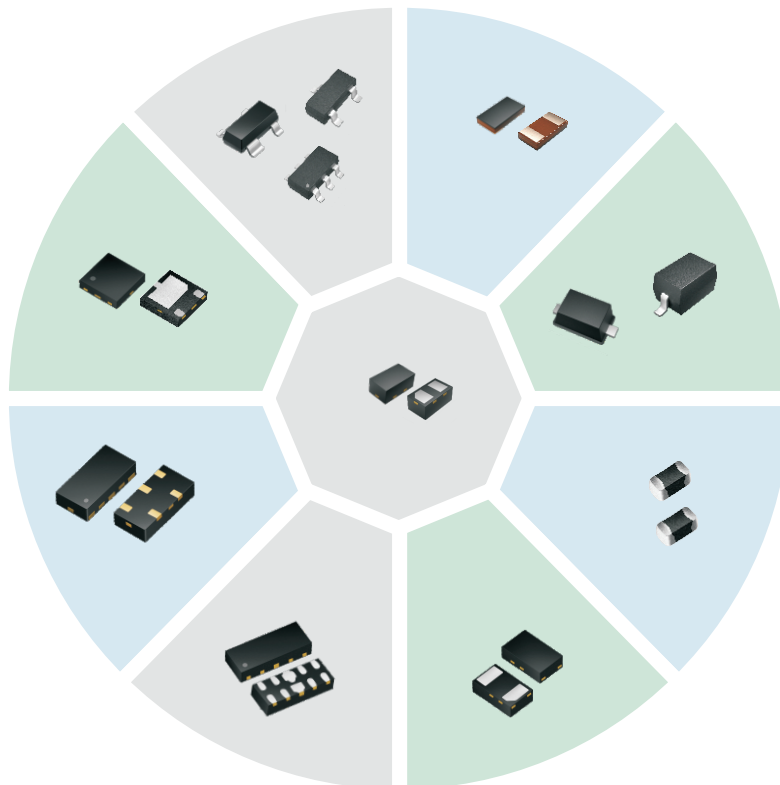


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About ESD

Protection against electrostatic discharges (ESD) is part of EMC Immunity (Electro Magnetic Compatibility) requirements. It is the ability for equipment to properly operate in its electromagnetic environment by limiting the reception of electromagnetic energy that may cause physical damage. ESD can be either conducted under the form of a transient voltage or can be radiated due to its fast rising time: powerful harmonics will generate erratic behavior by the application by coupling with other signals. Printed circuit boards must be protected against the effects of electrostatic discharge.

As the safe operating area of today's CMOS processes becomes narrower, they are increasingly sensitive to ESD. Silicon manufacturers commonly use the human-body model (HBM) characterize ESD susceptibility in a controlled environment, however it is much higher in the real world at system level. Therefore, IOs and power rails in real-world applications need external ESD protections rated as per IEC 61000-4-2 and IEC61000-4-5 specifications.





Silicon ESD - DFN0603

Category	Part Number	V _{RWM} Max(V)	V _{BR} Min(V)	I _{PP} (tp=8/20us)(A)	V _C Typ(V)	C _j Typ(pF)	ESD Rating Contact/Air (kV)
 DFN0603 (0.6*0.3mm) 							
Normal cap.	PT4C031V	3.3	4.0	5.0	13.8 (Max)	10 (Max)	8/15
	PT4C051V	5.0	5.5	6.0	11 (Max)	12	25/25
	PT4C071V	7.0	7.2	8.0	10	17	30/30
	PT4C121V	12	13	8.0	18.5	10	30/30
Ultra-low cap.	PT4C011U	1.0	1.3	4.0	6.0	0.4	8/15
	PT4C031U	3.3	4.5	3.0	15.8 (Max)	0.5	8/15
	PT4C051U	5.0	5.8	3.0	15.8 (Max)	0.5	8/15
	PT4C051UU	5.0	5.5	4.0	17 (Max)	0.15	8/15
Ultra-low cap. & Low clamp	PT4C031UUER	3.3	4.0	6.0	6.5	0.22	15/20
	PT4C181UUR	18	19	4.0	8.0 (Max)	0.4	15/15
Higher I _{PP}	PT4CR3V3NE	3.3	3.5	10	8.0	18	30/30
	PT4C051VE	5.0	6.5	8.0	10	17	30/30
Low V _{br}	PT4CR3V3NE	3.3	3.5	10	8.0	18	30/30

Silicon ESD - 0201

Category	Part Number	V _{RWM} Max(V)	V _{BR} Min(V)	I _{PP} (tp=8/20us)(A)	V _C Typ(V)	C _j Typ(pF)	ESD Rating Contact/Air (kV)
 0201 (0.6*0.3mm) 							
Normal cap.	PTS0201V05P10	5.0	5.5	6.0	12 (Max)	10	20/20
Ultra-low cap.	PTS0201V05U	5.0	6.0	3.0 (Max)	20 (Max)	0.3	20/20



Silicon ESD - DFN1006

Category	Part Number	V _{RWM} Max(V)	V _{BR} Min(V)	I _{PP} (tp=8/20us)(A)	V _C Typ(V)	C _j Typ(pF)	ESD Rating Contact/Air (kV)
  DFN1006 (1.0 * 0.6mm)							
Normal cap.	PT2C031N	3.3	4.5	5.0	15 (Max)	15 (Max)	8/15
	PT2C051N	5.0	5.5	5.0	15 (Max)	15 (Max)	8/15
	PT2C071V	7.0	7.2	5.0	19.6 (Max)	10	8/15
	PT2C121V	12	13.5	5.0	25 (Max)	30 (Max)	8/15
	PT2C241V	24	26.7	3.0	64 (Max)	15 (Max)	8/15
	PT2A241V (Uni)	24	26.2	3.0	64 (Max)	20 (Max)	8/15
	PT2C361V	36	40	5.0	70 (Max)	30	25/25
Low cap.	PT2C051L	5.0	5.8	3.0	19.8 (Max)	3.0	8/15
Ultra-low cap.	PT2C031U	3.3	5.5	3.0	15 (Max)	0.3	8/15
	PT2C051U	5.0	6.2	3.0	15 (Max)	0.3	8/15
	PT2C051UU	5.0	6.0	3.0	18	0.15	15/20
Ultra-low cap. & Low clamp	PT2C031UER	3.3	-	7.0	6.2	0.75	15/15
	PT2C051UER	5.0	-	7.0	6.2	0.75	15/15
	PT2C031UUER	3.3	-	6.0	6.5	0.2	15/20
	PT2C031UEER	3.3	7.0	7.0	5.5	0.8	22/22
	PT2C181UUR	18	19	4.0	8.0 (Max)	0.35	15/15
Higher I _{PP}	PT2C031NE	3.3	4.0	8.0	10	17	30/30
	PT2C051NE	5.0	5.5	8.0	10	17	30/30
	PT2CR3V3NE	3.3	3.8	10	8.0	17	15/25
	PT2C051NEE	5.0	6.0	16	13 (Max)	40	30/30
Higher I _{PP} & Low clamp	PT2C031NEER	3.3	6.0	18	8.5	25	30/30
	PT2C051NEER	5.0	6.0	18	8.5	25	30/30
Higher I _{PP} & Low cap.	PT2C051LE	5.0	6.0	14	17 (Max)	1.5	30/30
Low V _{br}	PT2CR3V3NE	3.3	3.8	10	8.0	17	15/25
	PT2CR3V3U	3.3	4.5	3.5	15 (Max)	0.4	20/20



Silicon ESD - SOD-923

Category	Part Number	V _{RWM} Max(V)	V _{BR} Min(V)	I _{PP} (tp=8/20us)(A)	V _C Typ(V)	C _j Typ(pF)	ESD Rating Contact/Air (kV)
 SOD-923 (1.0 * 0.6mm) 							
Normal cap.	PT2D051V	5.0	6.2	5.0	15	10	8/15

Silicon ESD - 0402

Category	Part Number	V _{RWM} Max(V)	V _{BR} Min(V)	I _{PP} (tp=8/20us)(A)	V _C Typ(V)	C _j Typ(pF)	ESD Rating Contact/Air (kV)
 0402 (1.0 * 0.6mm) 							
Normal cap.	PTS0402V05P10	5.0	5.5	8.0 (Max)	12 (Max)	10	25/25
Ultra-low cap.	PTS0402V05U	5.0	5.5	3.0	18 (Max)	0.3	20/20

Silicon ESD - SOD-523

Category	Part Number	V _{RWM} Max(V)	V _{BR} Min(V)	I _{PP} (tp=8/20us)(A)	V _C Typ(V)	C _j Typ(pF)	ESD Rating Contact/Air (kV)
 SOD-523 (1.6 * 0.8mm) 							
Normal cap.	PT5C031V	3.3	4.2	5.0	15	25 (Max)	8/15
	PT5C051V	5.0	6.0	5.0	25 (Max)	15 (Max)	8/15
	PT5C121V	12	13.2	5.0	25 (Max)	30 (Max)	8/15
	PT5A071V (Uni)	7.0	8.2	8.0	19 (Max)	80 (Max)	8/15
	PT5A121V (Uni)	12	13.3	7.0	22 (Max)	42	8/15



Silicon ESD - SOD-523

Category	Part Number	V _{RWM} Max(V)	V _{BR} Min(V)	I _{PP} (tp=8/20us)(A)	V _C Typ(V)	C _j Typ(pF)	ESD Rating Contact/Air (kV)
 SOD-523 (1.6 * 0.8mm) 							
Low cap.	PT5A051U (Uni)	5.0	5.5	5.0	15 (Max)	0.5 (Max)	8/15
	PT5C051L	5.0	6.0	3.0	20	1.5	8/15
Higher I _{PP}	PT5C031VE	3.3	3.7	40	13	100	30/30
	PT5C051VE	5.0	6.0	35	15	140	25/25
Low V _{br}	PT5C031VE	3.3	3.7	40	13	100	30/30

Silicon ESD - SOD-323

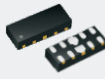
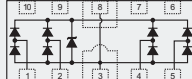
Category	Part Number	V _{RWM} Max(V)	V _{BR} Min(V)	I _{PP} (tp=8/20us)(A)	V _C Typ(V)	C _j Typ(pF)	ESD Rating Contact/Air (kV)
 SOD-323 (2.6 * 1.3mm) 							
Normal cap.	PT3C031V	3.3	4.6	12	14 (Max)	120 (Max)	8/15
	PT3C051V	5.0	5.8	10	15 (Max)	100 (Max)	8/15
	PT3C121V	12	13.3	6.0	25 (Max)	70 (Max)	8/15
	PT3C241V	24	26.1	3.0	54 (Max)	30 (Max)	8/15
	PT3C361V	36	39.6	3.0	80 (Max)	30 (Max)	8/15
Higher I _{PP}	PT3C031VE	3.3	4.0	40	13 (Max)	90	30/30
	PT3C051VE	5.0	6.0	40	12 (Max)	140	30/30
	PT3C121VE	12	13.3	15	22	35	30/30
	PT3C241VE	24	26.7	11	40 (Max)	28	30/30



Silicon ESD - SOD-323

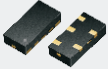
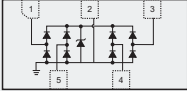
Category	Part Number	V _{RWM} Max(V)	V _{BR} Min(V)	I _{PP} (tp=8/20us)(A)	V _C Typ(V)	C _j Typ(pF)	ESD Rating Contact/Air (kV)
 SOD-323 (2.6 * 1.3mm) 							
Higher I _{PP} & Low cap.	PT3C031L	3.3	4.0	20	18 (Max)	1.0	20/20
	PT3C051L	5.0	6.0	14	20	1.5	30/30
	PT3C081L	8.0	9.0	20	20	1.0	30/30
	PT3C121L	12	13.3	11	27.8 (Max)	1.5 (Max)	30/30
	PT3C151L	15	16.7	13	30	1.0	30/30
	PT3C241L	24	26.7	5.0	56 (Max)	1.5 (Max)	8/15
	PT3C361L	36	40	5.0	60	1.0	30/30
Low V _{br}	PT3C031VE	3.3	4.0	40	13 (Max)	90	30/30

Silicon ESD - DFN2510-10L

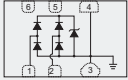
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 DFN2510-10L (2.5 * 1.0mm) 							
Ultra-low cap.	PT10A054U	5.0	6.0	3.0	15 (Max)	0.5	8/15
	PT10A054UU	5.0	6.0	3.0	10	0.36	12/15
Ultra-low cap. & Low clamp	PT10A034UR	3.3	-	4.5	5.6	0.6	10/15
	PT10A034UUR	3.3	-	6.0	5.0	0.3	8/15



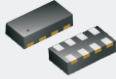
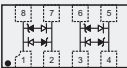
Silicon ESD - DFN2010-5L

Category	Part Number	V _{RWM} Max(V)	V _{BR} Min(V)	I _{PP} (tp=8/20us)(A)	V _C Typ(V)	C _j Typ(pF)	ESD Rating Contact/Air (kV)
 DFN2010-5L (2.0 * 1.0mm) 							
Ultra-low cap.	PT2010P5V05U	5.0	6.0	3.0	25 (Max)	0.6	8/15
	PT2010P5V05UU	5.0	6.5	3.0	20 (Max)	0.2	8/15

Silicon ESD - DFN1610-6L

Category	Part Number	V _{RWM} Max(V)	V _{BR} Min(V)	I _{PP} (tp=8/20us)(A)	V _C Typ(V)	C _j Typ(pF)	ESD Rating Contact/Air (kV)
 DFN1610-6L (1.6 * 1.0mm) 							
Low cap. & Low clamp	PT10A052LR	5.0	5.5	10	4.5	0.45	13/15

Silicon ESD - DFN2010-8L

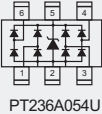
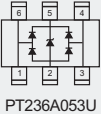
Category	Part Number	V _{RWM} Max(V)	V _{BR} Min(V)	I _{PP} (tp=8/20us)(A)	V _C Typ(V)	C _j Typ(pF)	ESD Rating Contact/Air (kV)
 DFN2010-8L (2.1 * 1.1mm) 							
Higher I _{PP} & Ultra-low cap.	PSUR2010DNV034UE	3.3	3.5	20	15	0.6	30/30



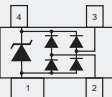
Silicon ESD - SOT-23

Category	Part Number	V _{RWM} Max(V)	V _{BR} Min(V)	I _{PP} (tp=8/20us)(A)	V _C Typ(V)	C _j Typ(pF)	ESD Rating Contact/Air (kV)
				SOT-23 (2.9 * 2.37mm)			
Normal cap.	PT23A052V (Uni)	5.0	6.0	10	15 (Max)	100 (Max)	8/15
	PT23C242V	24	26.1	3.0	54 (Max)	30 (Max)	8/15
Ultra-low cap.	PT23A052U (Uni)	5.0	5.8	3.0	20 (Max)	0.6	8/15
Higher I _{PP}	PT23C052VE	5.0	6.0	22	20 (Max)	65	30/30

Silicon ESD - SOT23-6

Category	Part Number	V _{RWM} Max(V)	V _{BR} Min(V)	I _{PP} (tp=8/20us)(A)	V _C Typ(V)	C _j Typ(pF)	ESD Rating Contact/Air (kV)
				SOT23-6 (2.9 * 2.8mm)		 	
				PT236A054U		PT236A053U	
Low cap.	PT236A053U	5.0	6.0	3.0	25 (Max)	2.0	8/15
Ultra-low cap.	PT236A054U	5.0	6.0	3.0	25 (Max)	0.4	8/15

Silicon ESD - SOT-143

Category	Part Number	V _{RWM} Max(V)	V _{BR} Min(V)	I _{PP} (tp=8/20us)(A)	V _C Typ(V)	C _j Typ(pF)	ESD Rating Contact/Air (kV)
				SOT-143 (2.9 * 2.3mm)			
Ultra-low cap.	PT143A053U	5.0	6.0	3.0	15 (Max)	0.6	8/15



ESD / EOS for Vbus , Vbat and DC lines - DFN1006

Part Number	V _{RWM} Max(V)	V _{BR} Min(V)	I _{PP} (tp=8/20us)(A)	V _C Typ(V)	ESD Rating Contact/Air (kV)	Surger Rating (tp=8/20us) (V)
 DFN1006 (1.0 * 0.6 * 0.5mm) 						
PSUR0402V031B	3.3	4.0	100	12	30/30	210
PSUR0402V4R8S (Uni)	4.8	5.0	60	9.0	30/30	130
PSUR0402V051B	5.0	6.5	40	12	30/30	90
PSUR0402V061B	6.3	7.0	60	16	30/30	130
PSUR0402V071B	7.0	7.2	40	12	30/30	90
PSUR0402V071S (Uni)	7.0	7.5	28	15	30/30	70
PSUR0402V151S (Uni)	15	16.7	38	28	30/30	100

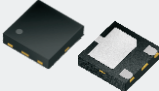
ESD / EOS for Vbus , Vbat and DC lines - DFN1610

Part Number	V _{RWM} Max(V)	V _{BR} Min(V)	I _{PP} (tp=8/20us)(A)	V _C Typ(V)	ESD Rating Contact/Air (kV)	Surger Rating (tp=8/20us) (V)
 DFN1610 (1.6 * 1.0 * 0.5mm) 						
PSUR1610DNV05	5.0	5.7	110	15	30/30	230
PSUR1610DNV07	7.0	7.5	100	15	30/30	210
PSUR1610DNV12	12	13.3	70	24	30/30	160
PSUR1610DNV12E	12	13	100	25	30/30	220
PSUR1610DNV15	15	16	55	27	30/30	140
PSUR1610DNV24EM	24	28.5	90	35 (Max)	30/30	220
PSUR1610DNV30	30	32	80	36	30/30	200

ESD / EOS for Vbus , Vbat and DC lines - SOD-323

Part Number	V _{RWM} Max(V)	V _{BR} Min(V)	I _{PP} (tp=8/20us)(A)	V _C Typ(V)	ESD Rating Contact/Air (kV)	Surger Rating (tp=8/20us) (V)
 SOD-323 (2.6 * 1.3 * 1.0mm) 						
PT3C4V5EE (Bi)	4.5	4.6	160	17	30/30	340
PT3A4V5EE	4.5	4.8	140	18 (Max)	30/30	290
PT3A051VEE	5.0	6.0	110	14	30/30	230
PT3A071VEE	7.0	7.5	110	20	30/30	240
PT3A121VEEE	12	13	70	22	30/30	160

ESD / EOS for Vbus , Vbat and DC lines - DFN2020

Part Number	V _{RWM} Max(V)	V _{BR} Min(V)	I _{PP} (tp=8/20us)(A)	V _C Typ(V)	ESD Rating Contact/Air (kV)	Surger Rating (tp=8/20us) (V)
 DFN2020 (2.0 * 2.0 * 0.55mm)   						
PSUR3D4V5B (Bi)	4.5	4.8	240	16	30/30	490
PSUR3D071N	7.5	8.0	240	23 (Max)	30/30	500
PSUR3D121N	12	13.5	180	29 (Max)	30/30	380
PSUR3D151N	15	16	160	37	30/30	360
PSUR3D181N	18	9.0	180	39	30/30	400
PSUR3D241N	24	26	100	52	30/30	250
PSUR3D241P	24	26	200	33	30/30	430



ESD / EOS for Vbus and DC lines - SOD-123

Part Number	V _{RWM} Max(V)	V _{BR} Min(V)	I _{PP} (tp=8/20us)(A)	V _C Typ(V)	ESD Rating Contact/Air (kV)	Surger Rating (tp=8/20us) (V)
 SOD -123 (2.8 * 1.8 * 1.0mm) 						
PSUR200V7.0B (Bi)	7.0	7.78	120	18.4	30/30	250
PSUR200V12B (Bi)	12	13.3	140	27.6	30/30	300
PT1A071VE	7.0	8.0	200	18 (Max)	30/30	420
PT1A121VE	12	13	200	28 (Max)	30/30	430
PT1A151VE	15	16.5	200	30 (Max)	30/30	430
PT1A241VE	24	25	200	35 (Max)	30/30	440

**Ceramic ESD - 0201**

Part Number	V _W (V)	V _T (V)	V _C Typ(V)	Cap Typ(pF)	Package	ESD Rating Contact/Air (kV)
 0201 (0.6*0.3mm) 						
PESD0201V03P03	3.3	-	-	3.0	0201	8/15
PESD0201V05P03	5.0	-	-	3.0	0201	8/15
PESD0201V09P03	9.0	-	-	3.0	0201	8/15
PESD0201V12P03	12	-	-	3.0	0201	8/15

Ceramic ESD - 0402

Part Number	V _W (V)	V _T (V)	V _C Typ(V)	Cap Typ(pF)	Package	ESD Rating Contact/Air (kV)
 0402 (1.0*0.6mm) 						
PESD0402V03P03	3.3	-	-	3.0	0402	8/15
PESD0402V05P03	5.0	-	-	3.0	0402	8/15
PESD0402V09P03	9.0	-	-	3.0	0402	8/15
PESD0402V12P03	12	-	-	3.0	0402	8/15
PESD0402V18P03	18	-	-	3.0	0402	8/15
PESD0402V24P03	24	-	-	3.0	0402	8/15

Ceramic ESD - 0603

Part Number	V _W (V)	V _T (V)	V _C Typ(V)	Cap Typ(pF)	Package	ESD Rating Contact/Air (kV)
 0603 (1.6*0.8mm) 						
PESD0603V03P03	3.3	-	-	3.0	0603	8/15
PESD0603V05P03	5.0	-	-	3.0	0603	8/15



Ceramic ESD - 0603

Part Number	V _w (V)	V _T (V)	V _C Typ(V)	Cap Typ(pF)	Package	ESD Rating Contact/Air (kV)
 0603 (1.6 * 0.8mm) 						
PESD0603V09P03	9.0	-	-	3.0	0603	8/15
PESD0603V12P03	12	-	-	3.0	0603	8/15
PESD0603V18P03	18	-	-	3.0	0603	8/15
PESD0603V24P03	24	-	-	3.0	0603	8/15



Ultra-low Cap Polymer ESD - 0201

Part Number	V _w (V)	V _T (V)	V _C Typ(V)	Cap Typ(pF)	Package	ESD Rating Contact/Air (kV)
 0201 (0.6 * 0.3mm) 						
PESD0201V03U	3.0	-	35	0.05	0201	8/15
PESD0201V05U	5.0	-	35	0.05	0201	8/15
PESD0201V09U	9.0	-	35	0.05	0201	8/15
PESD0201V12U	12	-	35	0.05	0201	8/15

Ultra-low Cap Polymer ESD - 0402

Part Number	V _w (V)	V _T (V)	V _C Typ(V)	Cap Typ(pF)	Package	ESD Rating Contact/Air (kV)
 0402 (1.0 * 0.6mm) 						
PESD0402V03U	3.3	-	35	0.05	0402	8/15
PESD0402V05U	5.0	-	35	0.05	0402	8/15
PESD0402V09U	9.0	-	35	0.05	0402	8/15
PESD0402V12U	12	-	35	0.05	0402	8/15
PESD0402V18U	18	-	35	0.05	0402	8/15
PESD0402V24U	24	-	35	0.05	0402	8/15

Ultra-low Cap Polymer ESD - 0603

Part Number	V _w (V)	V _T (V)	V _C Typ(V)	Cap Typ(pF)	Package	ESD Rating Contact/Air (kV)
 0603 (1.6 * 0.8mm) 						
PESD0603V03U	3.3	-	35	0.05	0603	8/15
PESD0603V05U	5.0	-	35	0.05	0603	8/15
PESD0603V09U	9.0	-	35	0.05	0603	8/15



Ultra-low Cap Polymer ESD - 0603

Part Number	V _W (V)	V _T (V)	V _C Typ(V)	Cap Typ(pF)	Package	ESD Rating Contact/Air (kV)
 0603 (1.6 * 0.8mm) 						
PESD0603V12U	12	-	35	0.05	0603	8/15
PESD0603V18U	18	-	35	0.05	0603	8/15
PESD0603V24U	24	-	35	0.05	0603	8/15

Ultra-low Cap Polymer ESD - DFN2510-10L

Part Number	V _W (V)	V _T (V)	V _C Typ(V)	Cap Typ(pF)	Package	ESD Rating Contact/Air (kV)
 2510 (2.5 * 1.0mm) 						
PESD054UU	5.0	-	35	0.2	DFN2510-10L	15/25

About Power TVS

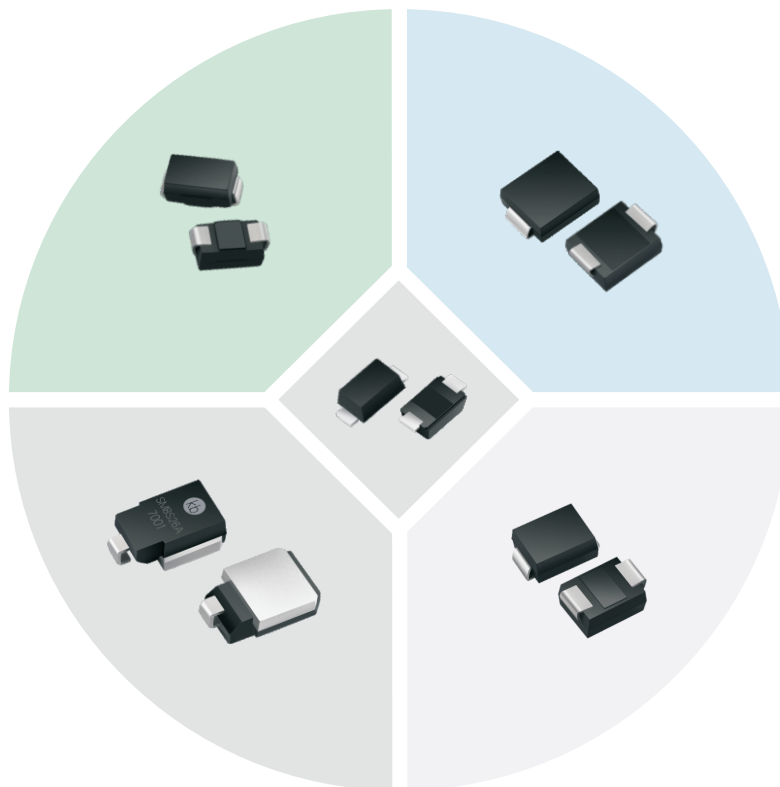
Transient Voltage Suppressor (TVS) diodes are clamping voltage suppressors that are constructed with back-to-back PN junctions. During conduction, TVS diodes create a low impedance path by varying their resistance as voltage is applied across their terminals. Once the voltage is removed, the diode will turn off and return to its high off-state impedance.

Benefits

Because TVS diodes are solid-state devices, they do not fatigue nor do their electrical parameters change as long as they are operated within their specified limits. TVS diodes effectively clamp fast-rising transients and are well suited for low-voltage applications that do not require large amounts of energy to be shunted.

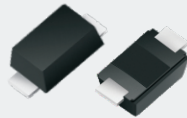
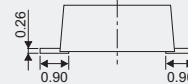
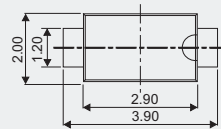
Applications

Due to their low power ratings, TVS diodes are not used as primary interface protectors, but they can be used as secondary protectors that are embedded within a circuit.

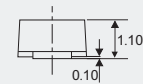


**PSUR200 Series TVS, 200W Peak Power @10x1000us Surge****Electrical Characteristics** (T_A=25°C unless otherwise noted)

Part Number		V _{BR} @ I _T		I _T	V _{RWM}	I _R @ V _{RWM}	I _{pp}	V _c @ I _{pp}
Uni	Bi	Min(V)	Max(V)	(mA)	(V)	(μA)	(A)	(V)

DO-219AB
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Dimensions in millimeters

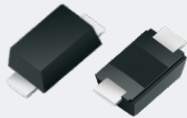
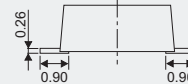
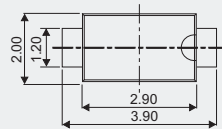


PSUR200V5.0S	PSUR200V5.0B	6.40	7.00	10	5.0	400	21.74	9.2
PSUR200V6.0S	PSUR200V6.0B	6.67	7.37	10	6.0	400	19.42	10.3
PSUR200V6.5S	PSUR200V6.5B	7.22	7.98	10	6.5	250	17.86	11.2
PSUR200V7.0S	PSUR200V7.0B	7.78	8.60	10	7.0	100	16.67	12
PSUR200V7.5S	PSUR200V7.5B	8.33	9.21	1	7.5	50	15.5	12.9
PSUR200V8.0S	PSUR200V8.0B	8.89	9.83	1	8.0	25	14.71	13.6
PSUR200V8.5S	PSUR200V8.5B	9.44	10.40	1	8.5	10	13.89	14.4
PSUR200V9.0S	PSUR200V9.0B	10.00	11.10	1	9.0	5.0	12.99	15.4
PSUR200V10S	PSUR200V10B	11.10	12.30	1	10	2.5	11.76	17
PSUR200V11S	PSUR200V11B	12.20	13.50	1	11	2.5	10.99	18.2
PSUR200V12S	PSUR200V12B	13.30	14.70	1	12	2.5	10.05	19.9
PSUR200V13S	PSUR200V13B	14.40	15.90	1	13	1.0	9.3	21.5
PSUR200V14S	PSUR200V14B	15.60	17.20	1	14	1.0	8.62	23.2
PSUR200V15S	PSUR200V15B	16.70	18.50	1	15	1.0	8.2	24.4
PSUR200V16S	PSUR200V16B	17.80	19.70	1	16	1.0	7.69	26
PSUR200V17S	PSUR200V17B	18.90	20.90	1	17	1.0	7.25	27.6
PSUR200V18S	PSUR200V18B	20.00	22.10	1	18	1.0	6.85	29.2
PSUR200V19S	PSUR200V19B	21.10	23.30	1	19	1.0	6.54	30.6
PSUR200V20S	PSUR200V20B	22.20	24.50	1	20	1.0	6.17	32.4

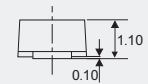
V_{RWM}: Stand-off voltage – Maximum voltage that can be applied.V_{BR}: Breakdown voltage.V_c: Clamping voltage – Peak voltage measured across the suppressor at a specified I_{pp}.I_R: Reverse leakage current.

**PSUR200 Series TVS, 200W Peak Power @10x1000us Surge****Electrical Characteristics** (T_A=25°C unless otherwise noted)

Part Number		V _{BR} @ I _T		I _T	V _{RWM}	I _R @ V _{RWM}	I _{pp}	V _c @ I _{pp}
Uni	Bi	Min(V)	Max(V)	(mA)	(V)	(μA)	(A)	(V)

DO-219AB
PLASTIC

Dimensions in millimeters

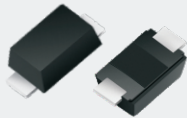
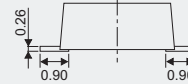
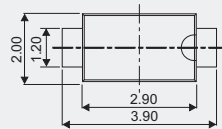


PSUR200V22S	PSUR200V22B	24.40	26.90	1	22	1.0	5.63	35.5
PSUR200V24S	PSUR200V24B	26.70	29.50	1	24	1.0	5.14	38.9
PSUR200V26S	PSUR200V26B	28.90	31.90	1	26	1.0	4.75	42.1
PSUR200V28S	PSUR200V28B	31.10	34.40	1	28	1.0	4.41	45.4
PSUR200V30S	PSUR200V30B	33.30	36.80	1	30	1.0	4.13	48.4
PSUR200V33S	PSUR200V33B	36.70	40.60	1	33	1.0	3.75	53.3
PSUR200V36S	PSUR200V36B	40.00	44.20	1	36	1.0	3.44	58.1
PSUR200V40S	PSUR200V40B	44.40	49.10	1	40	1.0	3.1	64.5
PSUR200V43S	PSUR200V43B	47.80	52.80	1	43	1.0	2.88	69.4
PSUR200V45S	PSUR200V45B	50.00	55.30	1	45	1.0	2.75	72.7
PSUR200V48S	PSUR200V48B	53.30	58.90	1	48	1.0	2.58	77.4
PSUR200V51S	PSUR200V51B	56.70	62.70	1	51	1.0	2.43	82.4
PSUR200V54S	PSUR200V54B	60.00	66.30	1	54	1.0	2.3	87.1
PSUR200V58S	PSUR200V58B	64.40	71.20	1	58	1.0	2.14	93.6
PSUR200V60S	PSUR200V60B	66.70	73.70	1	60	1.0	2.07	96.8
PSUR200V64S	PSUR200V64B	71.10	78.60	1	64	1.0	1.94	103
PSUR200V70S	PSUR200V70B	77.80	86.00	1	70	1.0	1.77	113
PSUR200V75S	PSUR200V75B	83.30	92.10	1	75	1.0	1.65	121
PSUR200V78S	PSUR200V78B	86.70	95.80	1	78	1.0	1.59	126

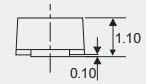
V_{RWM}: Stand-off voltage – Maximum voltage that can be applied.V_{BR}: Breakdown voltage.V_c: Clamping voltage – Peak voltage measured across the suppressor at a specified I_{pp}.I_R: Reverse leakage current.

**PSUR200 Series TVS, 200W Peak Power @10x1000us Surge****Electrical Characteristics** (T_A=25°C unless otherwise noted)

Part Number		V _{BR} @ I _T		I _T	V _{RWM}	I _R @ V _{RWM}	I _{pp}	V _c @ I _{pp}
Uni	Bi	Min(V)	Max(V)	(mA)	(V)	(μA)	(A)	(V)

DO-219AB
PLASTIC

Dimensions in millimeters

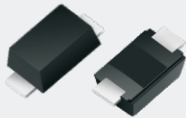
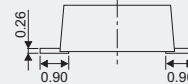
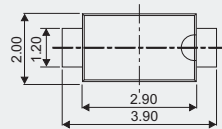


PSUR200V80S	PSUR200V80B	88.80	97.60	1	80	1.0	1.55	129
PSUR200V85S	PSUR200V85B	94.40	104.00	1	85	1.0	1.46	137
PSUR200V90S	PSUR200V90B	100.00	111.00	1	90	1.0	1.37	146
PSUR200V100S	PSUR200V100B	111.00	123.00	1	100	1.0	1.23	162
PSUR200V110S	PSUR200V110B	122.00	135.00	1	110	1.0	1.13	177
PSUR200V120S	PSUR200V120B	133.00	147.00	1	120	1.0	1.04	193
PSUR200V130S	PSUR200V130B	144.00	159.00	1	130	1.0	0.96	209
PSUR200V140S	PSUR200V140B	155.00	171.00	1	140	1.0	0.89	224
PSUR200V150S	PSUR200V150B	167.00	185.00	1	150	1.0	0.82	243
PSUR200V160S	PSUR200V160B	178.00	197.00	1	160	1.0	0.77	259
PSUR200V170S	PSUR200V170B	189.00	209.00	1	170	1.0	0.73	275
PSUR200V180S	PSUR200V180B	200.00	222.00	1	180	1.0	0.68	292
PSUR200V190S	PSUR200V190B	211.00	232.00	1	190	1.0	0.65	308
PSUR200V200S	PSUR200V200B	224.00	247.00	1	200	1.0	0.62	324
PSUR200V220S	PSUR200V220B	246.00	272.00	1	220	1.0	0.56	356
PSUR200V250S	-	279.00	309.00	1	250	1.0	0.5	405
PSUR200V300S	-	335.00	371.00	1	300	1.0	0.41	486
PSUR200V350S	-	391.00	432.00	1	350	1.0	0.36	567

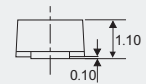
V_{RWM}: Stand-off voltage -- Maximum voltage that can be applied.V_{BR}: Breakdown voltage.V_c: Clamping voltage -- Peak voltage measured across the suppressor at a specified I_{pp}.I_R: Reverse leakage current.

**PSUR200 Series TVS, 400W Peak Power @10x1000us Surge****Electrical Characteristics** ($T_A=25^\circ\text{C}$ unless otherwise noted)

Part Number		$V_{BR} @ I_T$		I_T	V_{RWM}	$I_R @ V_{RWM}$	I_{pp}	$V_c @ I_{pp}$
Uni	Bi	Min(V)	Max(V)	(mA)	(V)	(μA)	(A)	(V)

DO-219AB
PLASTIC

Dimensions in millimeters

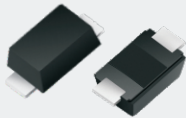
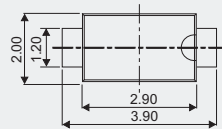


PSUR200V3.3S-401	PSUR200V3.3B-401	4.22	6.58	10	3.3	500	45.5	8.8
PSUR200V5.0S-401	PSUR200V5.0B-401	6.40	7.00	10	5.0	400	43.5	9.2
PSUR200V6.0S-401	PSUR200V6.0B-401	6.67	7.37	10	6.0	400	38.8	10.3
PSUR200V6.5S-401	PSUR200V6.5B-401	7.22	7.98	10	6.5	250	35.7	11.2
PSUR200V7.0S-401	PSUR200V7.0B-401	7.78	8.60	10	7.0	100	33.3	12
PSUR200V7.5S-401	PSUR200V7.5B-401	8.33	9.21	1	7.5	50	31	12.9
PSUR200V8.0S-401	PSUR200V8.0B-401	8.89	9.83	1	8.0	25	29.4	13.6
PSUR200V8.5S-401	PSUR200V8.5B-401	9.44	10.40	1	8.5	10	27.8	14.4
PSUR200V9.0S-401	PSUR200V9.0B-401	10.00	11.10	1	9.0	5	26	15.4
PSUR200V10S-401	PSUR200V10B-401	11.10	12.30	1	10	2.5	23.5	17
PSUR200V11S-401	PSUR200V11B-401	12.20	13.50	1	11	2.5	22	18.2
PSUR200V12S-401	PSUR200V12B-401	13.30	14.70	1	12	2.5	20.1	19.9
PSUR200V13S-401	PSUR200V13B-401	14.40	15.90	1	13	1	18.6	21.5
PSUR200V14S-401	PSUR200V14B-401	15.60	17.20	1	14	1	17.2	23.2
PSUR200V15S-401	PSUR200V15B-401	16.70	18.50	1	15	1	16.4	24.4
PSUR200V16S-401	PSUR200V16B-401	17.80	19.70	1	16	1	15.4	26
PSUR200V17S-401	PSUR200V17B-401	18.90	20.90	1	17	1	14.5	27.6
PSUR200V18S-401	PSUR200V18B-401	20.00	22.10	1	18	1	13.7	29.2
PSUR200V19S-401	PSUR200V19B-401	21.10	23.30	1	19	1	13.1	30.6

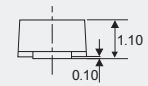
 V_{RWM} : Stand-off voltage – Maximum voltage that can be applied. V_{BR} : Breakdown voltage. V_c : Clamping voltage – Peak voltage measured across the suppressor at a specified I_{pp} . I_R : Reverse leakage current.

**PSUR200 Series TVS, 400W Peak Power @10x1000us Surge****Electrical Characteristics** (TA=25°C unless otherwise noted)

Part Number		V _{BR} @ I _T		I _T	V _{RWM}	I _R @ V _{RWM}	I _{pp}	V _c @ I _{pp}
Uni	Bi	Min(V)	Max(V)	(mA)	(V)	(μA)	(A)	(V)

DO-219AB
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Dimensions in millimeters

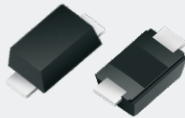
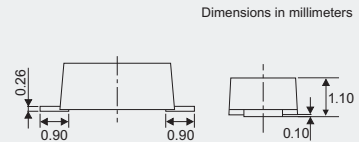
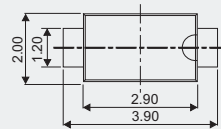


PSUR200V20S-401	PSUR200V20B-401	22.20	24.50	1	20	1	12.3	32.4
PSUR200V22S-401	PSUR200V22B-401	24.40	26.90	1	22	1	11.3	35.5
PSUR200V24S-401	PSUR200V24B-401	26.70	29.50	1	24	1	10.3	38.9
PSUR200V26S-401	PSUR200V26B-401	28.90	31.90	1	26	1	9.5	42.1
PSUR200V28S-401	PSUR200V28B-401	31.10	34.40	1	28	1	8.8	45.4
PSUR200V30S-401	PSUR200V30B-401	33.30	36.80	1	30	1	8.3	48.4
PSUR200V33S-401	PSUR200V33B-401	36.70	40.60	1	33	1	7.5	53.3
PSUR200V36S-401	PSUR200V36B-401	40.00	44.20	1	36	1	6.9	58.1
PSUR200V40S-401	PSUR200V40B-401	44.40	49.10	1	40	1	6.2	64.5
PSUR200V43S-401	PSUR200V43B-401	47.80	52.80	1	43	1	5.8	69.4
PSUR200V45S-401	PSUR200V45B-401	50.00	55.30	1	45	1	5.5	72.7
PSUR200V48S-401	PSUR200V48B-401	53.30	58.90	1	48	1	5.2	77.4
PSUR200V51S-401	PSUR200V51B-401	56.70	62.70	1	51	1	4.9	82.4
PSUR200V54S-401	PSUR200V54B-401	60.00	66.30	1	54	1	4.6	87.1
PSUR200V58S-401	PSUR200V58B-401	64.40	71.20	1	58	1	4.3	93.6
PSUR200V60S-401	PSUR200V60B-401	66.70	73.70	1	60	1	4.1	96.8
PSUR200V64S-401	PSUR200V64B-401	71.10	78.60	1	64	1	3.9	103
PSUR200V70S-401	PSUR200V70B-401	77.80	86.00	1	70	1	3.5	113
PSUR200V75S-401	PSUR200V75B-401	83.30	92.10	1	75	1	3.3	121

V_{RWM}: Stand-off voltage – Maximum voltage that can be applied.V_{BR}: Breakdown voltage.V_c: Clamping voltage – Peak voltage measured across the suppressor at a specified I_{pp}.I_R: Reverse leakage current.

**PSUR200 Series TVS, 400W Peak Power @10x1000us Surge****Electrical Characteristics** (T_A=25°C unless otherwise noted)

Part Number		V _{BR} @ I _T		I _T	V _{RWM}	I _R @ V _{RWM}	I _{pp}	V _c @ I _{pp}
Uni	Bi	Min(V)	Max(V)	(mA)	(V)	(μA)	(A)	(V)

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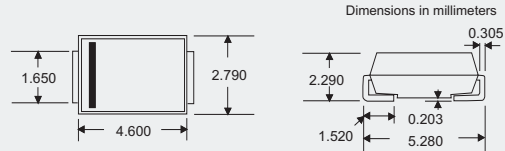
Dimensions in millimeters

PSUR200V78S-401	PSUR200V78B-401	86.70	95.80	1	78	1	3.2	126
PSUR200V80S-401	PSUR200V80B-401	88.80	97.60	1	80	1	3.1	129
PSUR200V85S-401	PSUR200V85B-401	94.40	104.00	1	85	1	2.9	137
PSUR200V90S-401	PSUR200V90B-401	100.00	111.00	1	90	1	2.7	146
PSUR200V100S-401	PSUR200V100B-401	111.00	123.00	1	100	1	2.5	162
PSUR200V110S-401	PSUR200V110B-401	122.00	135.00	1	110	1	2.3	177
PSUR200V120S-401	PSUR200V120B-401	133.00	147.00	1	120	1	2.1	193
PSUR200V130S-401	PSUR200V130B-401	144.00	159.00	1	130	1	1.9	209
PSUR200V140S-401	PSUR200V140B-401	155.00	171.00	1	140	1	1.8	224
PSUR200V150S-401	PSUR200V150B-401	167.00	185.00	1	150	1	1.6	243
PSUR200V160S-401	PSUR200V160B-401	178.00	197.00	1	160	1	1.5	259
PSUR200V170S-401	PSUR200V170B-401	189.00	209.00	1	170	1	1.5	275
PSUR200V180S-401	PSUR200V180B-401	200.00	220.00	1	180	1	1.4	292
PSUR200V190S-401	PSUR200V190B-401	211.00	232.00	1	190	1	1.3	308
PSUR200V200S-401	PSUR200V200B-401	224.00	247.00	1	200	1	1.2	324
PSUR200V220S-401	PSUR200V220B-401	246.00	272.00	1	220	1	1.1	356
PSUR200V250S-401	-	279.00	309.00	1	250	1	1.0	405
PSUR200V300S-401	-	335.00	371.00	1	300	1	0.8	486
PSUR200V350S-401	-	391.00	432.00	1	350	1	0.7	567

V_{RWM}: Stand-off voltage – Maximum voltage that can be applied.V_{BR}: Breakdown voltage.V_c: Clamping voltage – Peak voltage measured across the suppressor at a specified I_{pp}.I_R: Reverse leakage current.

**PSUR400 Series TVS, 400W Peak Power @10x1000us Surge****Electrical Characteristics** ($T_A=25^\circ\text{C}$ unless otherwise noted)

Part Number		$V_{BR} @ I_T$		I_T	V_{RWM}	$I_R @ V_{RWM}$	I_{pp}	$V_c @ I_{pp}$
Uni	Bi	Min(V)	Max(V)	(mA)	(V)	(μA)	(A)	(V)

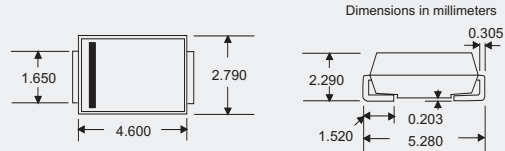
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PSUR400V3.3S	PSUR400V3.3B	4.20	6.55	1	3.3	150	47.6	8.7
PSUR400V5.0S	PSUR400V5.0B	6.40	7.00	10	5.0	120	43.5	9.2
PSUR400V6.0S	PSUR400V6.0B	6.55	7.15	10	6.0	300	42.8	9.5
PSUR400V6.5S	PSUR400V6.5B	7.22	7.98	10	6.5	80	35.7	11.2
PSUR400V7.0S	PSUR400V7.0B	7.78	8.60	10	7.0	50	33.3	12
PSUR400V7.5S	PSUR400V7.5B	8.33	9.21	1	7.5	20	31	12.9
PSUR400V8.0S	PSUR400V8.0B	8.89	9.83	1	8.0	10	29.4	13.6
PSUR400V8.5S	PSUR400V8.5B	9.44	10.40	1	8.5	5	27.8	14.4
PSUR400V9.0S	PSUR400V9.0B	10.00	11.10	1	9.0	2	26	15.4
PSUR400V10S	PSUR400V10B	11.10	12.30	1	10	1	23.5	17
PSUR400V11S	PSUR400V11B	12.20	13.50	1	11	1	22	18.2
PSUR400V12S	PSUR400V12B	13.30	14.70	1	12	1	20.1	19.9
PSUR400V13S	PSUR400V13B	14.40	15.90	1	13	1	18.6	21.5
PSUR400V14S	PSUR400V14B	15.60	17.20	1	14	1	17.3	23.2
PSUR400V15S	PSUR400V15B	16.70	18.50	1	15	1	16.4	24.4
PSUR400V16S	PSUR400V16B	17.80	19.70	1	16	1	15.4	26
PSUR400V17S	PSUR400V17B	18.90	20.90	1	17	1	14.5	27.6
PSUR400V18S	PSUR400V18B	20.00	22.10	1	18	1	13.7	29.2
PSUR400V20S	PSUR400V20B	22.20	24.50	1	20	1	12.4	32.4

 V_{RWM} : Stand-off voltage – Maximum voltage that can be applied. V_{BR} : Breakdown voltage. V_c : Clamping voltage – Peak voltage measured across the suppressor at a specified I_{pp} . I_R : Reverse leakage current.

**PSUR400 Series TVS, 400W Peak Power @10x1000us Surge****Electrical Characteristics** (T_A=25°C unless otherwise noted)

Part Number		V _{BR} @ I _T		I _T	V _{RWM}	I _R @ V _{RWM}	I _{pp}	V _c @ I _{pp}
Uni	Bi	Min(V)	Max(V)	(mA)	(V)	(μA)	(A)	(V)

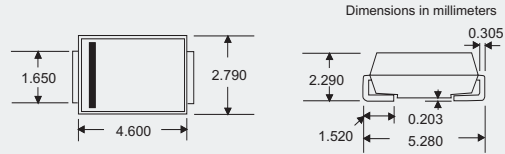
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PSUR400V22S	PSUR400V22B	24.40	26.90	1	22	1	11.3	35.5
PSUR400V24S	PSUR400V24B	26.70	29.50	1	24	1	10.3	38.9
PSUR400V26S	PSUR400V26B	28.90	31.90	1	26	1	9.5	42.1
PSUR400V28S	PSUR400V28B	31.10	34.40	1	28	1	8.8	45.4
PSUR400V30S	PSUR400V30B	33.30	36.80	1	30	1	8.3	48.4
PSUR400V33S	PSUR400V33B	36.70	40.60	1	33	1	7.5	53.3
PSUR400V36S	PSUR400V36B	40.00	44.20	1	36	1	6.9	58.1
PSUR400V40S	PSUR400V40B	44.40	49.10	1	40	1	6.2	64.5
PSUR400V43S	PSUR400V43B	47.80	52.80	1	43	1	5.8	69.4
PSUR400V45S	PSUR400V45B	50.00	55.30	1	45	1	5.5	72.7
PSUR400V48S	PSUR400V48B	53.30	58.90	1	48	1	5.2	77.4
PSUR400V51S	PSUR400V51B	56.70	62.70	1	51	1	4.9	82.4
PSUR400V54S	PSUR400V54B	60.00	66.30	1	54	1	4.6	87.1
PSUR400V58S	PSUR400V58B	64.40	71.20	1	58	1	4.3	93.6
PSUR400V60S	PSUR400V60B	66.70	73.70	1	60	1	4.1	96.8
PSUR400V64S	PSUR400V64B	71.10	78.60	1	64	1	3.9	103
PSUR400V70S	PSUR400V70B	77.80	86.00	1	70	1	3.6	113
PSUR400V75S	PSUR400V75B	83.30	92.10	1	75	1	3.3	121
PSUR400V78S	PSUR400V78B	86.70	95.80	1	78	1	3.2	126

V_{RWM}: Stand-off voltage – Maximum voltage that can be applied.V_{BR}: Breakdown voltage.V_c: Clamping voltage – Peak voltage measured across the suppressor at a specified I_{pp}.I_R: Reverse leakage current.

**PSUR400 Series TVS, 400W Peak Power @10x1000us Surge****Electrical Characteristics** ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Part Number		V_{BR} @ I_T		I_T	V_{RWM}	I_R @ V_{RWM}	I_{pp}	V_c @ I_{pp}
Uni	Bi	Min(V)	Max(V)	(mA)	(V)	(μA)	(A)	(V)

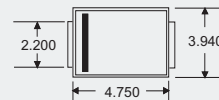
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PSUR400V85S	PSUR400V85B	94.40	104.00	1	85	1	2.9	137
PSUR400V90S	PSUR400V90B	100.00	111.00	1	90	1	2.8	146
PSUR400V100S	PSUR400V100B	111.00	123.00	1	100	1	2.5	162
PSUR400V110S	PSUR400V110B	122.00	135.00	1	110	1	2.3	177
PSUR400V120S	PSUR400V120B	133.00	147.00	1	120	1	2.1	193
PSUR400V130S	PSUR400V130B	144.00	159.00	1	130	1	1.9	209
PSUR400V150S	PSUR400V150B	167.00	185.00	1	150	1	1.7	243
PSUR400V160S	PSUR400V160B	178.00	197.00	1	160	1	1.6	259
PSUR400V170S	PSUR400V170B	189.00	209.00	1	170	1	1.5	275
PSUR400V180S	PSUR400V180B	201.00	222.00	1	180	1	1.4	292
PSUR400V200S	PSUR400V200B	224.00	247.00	1	200	1	1.3	324
PSUR400V220S	PSUR400V220B	246.00	272.00	1	220	1	1.1	356
PSUR400V250S	PSUR400V250B	279.00	309.00	1	250	1	1.0	405
PSUR400V300S	PSUR400V300B	335.00	371.00	1	300	1	0.8	486
PSUR400V350S	PSUR400V350B	391.00	432.00	1	350	1	0.7	567
PSUR400V400S	PSUR400V400B	447.00	494.00	1	400	1	0.6	648
PSUR400V440S	PSUR400V440B	492.00	543.00	1	440	1	0.6	713

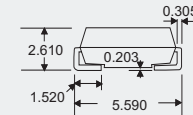
 V_{RWM} : Stand-off voltage -- Maximum voltage that can be applied. V_{BR} : Breakdown voltage. V_c : Clamping voltage -- Peak voltage measured across the suppressor at a specified I_{pp} . I_R : Reverse leakage current.

**PSUR600 Series TVS, 600W Peak Power @10x1000us Surge****Electrical Characteristics** (TA=25°C unless otherwise noted)

Part Number		V _{BR} @ I _T		I _T	V _{RWM}	I _R @ V _{RWM}	I _{pp}	V _c @ I _{pp}
Uni	Bi	Min(V)	Max(V)	(mA)	(V)	(μA)	(A)	(V)

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Dimensions in millimeters

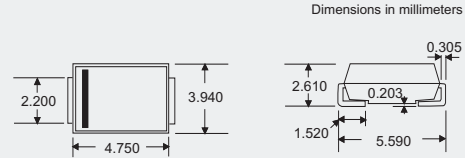


PSUR600V5.0S	PSUR600V5.0B	6.40	7.00	10	5.0	120	65.2	9.2
PSUR600V6.0S	PSUR600V6.0B	6.67	7.37	10	6.0	120	58.3	10.3
PSUR600V6.5S	PSUR600V6.5B	7.22	7.98	10	6.5	120	53.6	11.2
PSUR600V7.0S	PSUR600V7.0B	7.78	8.60	10	7.0	50	50	12
PSUR600V7.5S	PSUR600V7.5B	8.33	9.21	1	7.5	50	46.5	12.9
PSUR600V8.0S	PSUR600V8.0B	8.89	9.83	1	8.0	20	44.1	13.6
PSUR600V8.5S	PSUR600V8.5B	9.44	10.40	1	8.5	10	41.7	14.4
PSUR600V9.0S	PSUR600V9.0B	10.00	11.10	1	9.0	5	39	15.4
PSUR600V10S	PSUR600V10B	11.10	12.30	1	10	2	35.3	17
PSUR600V11S	PSUR600V11B	12.20	13.50	1	11	1	33	18.2
PSUR600V12S	PSUR600V12B	13.30	14.70	1	12	1	30.2	19.9
PSUR600V13S	PSUR600V13B	14.40	15.90	1	13	1	27.9	21.5
PSUR600V14S	PSUR600V14B	15.60	17.20	1	14	1	25.9	23.2
PSUR600V15S	PSUR600V15B	16.70	18.50	1	15	1	24.6	24.4
PSUR600V16S	PSUR600V16B	17.80	19.70	1	16	1	23.1	26
PSUR600V17S	PSUR600V17B	18.90	20.90	1	17	1	21.8	27.6
PSUR600V18S	PSUR600V18B	20.00	22.10	1	18	1	20.6	29.2
PSUR600V20S	PSUR600V20B	22.20	24.50	1	20	1	18.6	32.4
PSUR600V22S	PSUR600V22B	24.40	26.90	1	22	1	16.9	35.5

V_{RWM}: Stand-off voltage – Maximum voltage that can be applied.V_{BR}: Breakdown voltage.V_c: Clamping voltage – Peak voltage measured across the suppressor at a specified I_{pp}.I_R: Reverse leakage current.

**PSUR600 Series TVS, 600W Peak Power @10x1000us Surge****Electrical Characteristics** (T_A=25°C unless otherwise noted)

Part Number		V _{BR} @ I _T		I _T	V _{RWM}	I _R @ V _{RWM}	I _{pp}	V _c @ I _{pp}
Uni	Bi	Min(V)	Max(V)	(mA)	(V)	(μA)	(A)	(V)

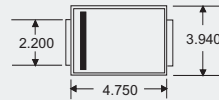
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PSUR600V24S	PSUR600V24B	26.70	29.50	1	24	1	15.4	38.9
PSUR600V26S	PSUR600V26B	28.90	31.90	1	26	1	14.3	42.1
PSUR600V28S	PSUR600V28B	31.10	34.40	1	28	1	13.2	45.4
PSUR600V30S	PSUR600V30B	33.30	36.80	1	30	1	12.4	48.4
PSUR600V33S	PSUR600V33B	36.70	40.60	1	33	1	11.3	53.3
PSUR600V36S	PSUR600V36B	40.00	44.20	1	36	1	10.4	58.1
PSUR600V40S	PSUR600V40B	44.40	49.10	1	40	1	9.3	64.5
PSUR600V43S	PSUR600V43B	47.80	52.80	1	43	1	8.7	69.4
PSUR600V45S	PSUR600V45B	50.00	55.30	1	45	1	8.3	72.7
PSUR600V48S	PSUR600V48B	53.30	58.90	1	48	1	7.8	77.4
PSUR600V51S	PSUR600V51B	56.70	62.70	1	51	1	7.3	82.4
PSUR600V54S	PSUR600V54B	60.00	66.30	1	54	1	6.9	87.1
PSUR600V58S	PSUR600V58B	64.40	71.20	1	58	1	6.4	93.6
PSUR600V60S	PSUR600V60B	66.70	73.70	1	60	1	6.2	96.8
PSUR600V64S	PSUR600V64B	71.10	78.60	1	64	1	5.8	103
PSUR600V70S	PSUR600V70B	77.80	86.00	1	70	1	5.3	113
PSUR600V75S	PSUR600V75B	83.30	92.10	1	75	1	5.0	121
PSUR600V78S	PSUR600V78B	86.70	95.80	1	78	1	4.8	126
PSUR600V85S	PSUR600V85B	94.40	104.00	1	85	1	4.4	137

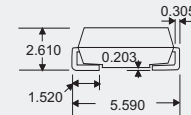
V_{RWM}: Stand-off voltage – Maximum voltage that can be applied.V_{BR}: Breakdown voltage.V_c: Clamping voltage – Peak voltage measured across the suppressor at a specified I_{pp}.I_R: Reverse leakage current.

**PSUR600 Series TVS, 600W Peak Power @10x1000us Surge****Electrical Characteristics** (TA=25°C unless otherwise noted)

Part Number		V _{BR} @ I _T		I _T	V _{RWM}	I _R @ V _{RWM}	I _{pp}	V _c @ I _{pp}
Uni	Bi	Min(V)	Max(V)	(mA)	(V)	(μA)	(A)	(V)

DO-214AA
PLASTIC

Dimensions in millimeters



PSUR600V90S	PSUR600V90B	100.00	111.00	1	90	1	4.1	146
PSUR600V100S	PSUR600V100B	111.00	123.00	1	100	1	3.7	162
PSUR600V110S	PSUR600V110B	122.00	135.00	1	110	1	3.4	177
PSUR600V120S	PSUR600V120B	133.00	147.00	1	120	1	3.1	193
PSUR600V130S	PSUR600V130B	144.00	159.00	1	130	1	2.9	209
PSUR600V150S	PSUR600V150B	167.00	185.00	1	150	1	2.5	243
PSUR600V160S	PSUR600V160B	178.00	197.00	1	160	1	2.3	259
PSUR600V170S	PSUR600V170B	189.00	209.00	1	170	1	2.2	275
PSUR600V180S	PSUR600V180B	201.00	222.00	1	180	1	2.1	292
PSUR600V190S	PSUR600V190B	211.00	234.00	1	190	1	2.0	307
PSUR600V200S	PSUR600V200B	224.00	247.00	1	200	1	1.9	324
PSUR600V210S	PSUR600V210B	233.00	258.00	1	210	1	1.8	337
PSUR600V220S	PSUR600V220B	246.00	272.00	1	220	1	1.7	356
PSUR600V250S	PSUR600V250B	279.00	309.00	1	250	1	1.5	405
PSUR600V300S	PSUR600V300B	335.00	371.00	1	300	1	1.3	486
PSUR600V350S	PSUR600V350B	391.00	432.00	1	350	1	1.1	567
PSUR600V400S	PSUR600V400B	447.00	494.00	1	400	1	0.9	648
PSUR600V440S	PSUR600V440B	492.00	543.00	1	440	1	0.8	713

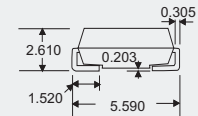
V_{RWM}: Stand-off voltage -- Maximum voltage that can be applied.V_{BR}: Breakdown voltage.V_c: Clamping voltage -- Peak voltage measured across the suppressor at a specified I_{pp}.I_R: Reverse leakage current.

**PSUR600 Series TVS, 1000W Peak Power @10x1000us Surge****Electrical Characteristics** (TA=25°C unless otherwise noted)

Part Number		V _{BR} @ I _T		I _T	V _{RWM}	I _R @ V _{RWM}	I _{pp}	V _c @ I _{pp}
Uni	Bi	Min(V)	Max(V)	(mA)	(V)	(μA)	(A)	(V)

DO-214AA
PLASTIC

Dimensions in millimeters

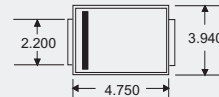


PSUR600V5.0S-102	PSUR600V5.0B-102	6.40	7.00	10	5.0	800	108.7	9.2
PSUR600V6.0S-102	PSUR600V6.0B-102	6.67	7.37	10	6.0	800	97.09	10.3
PSUR600V6.5S-102	PSUR600V6.5B-102	7.22	7.98	10	6.5	500	89.29	11.2
PSUR600V7.0S-102	PSUR600V7.0B-102	7.78	8.60	10	7.0	200	83.33	12
PSUR600V7.5S-102	PSUR600V7.5B-102	8.33	9.21	1	7.5	100	77.52	12.9
PSUR600V8.0S-102	PSUR600V8.0B-102	8.89	9.83	1	8.0	50	73.53	13.6
PSUR600V8.5S-102	PSUR600V8.5B-102	9.44	10.40	1	8.5	10	69.44	14.4
PSUR600V9.0S-102	PSUR600V9.0B-102	10.00	11.10	1	9.0	5.0	64.94	15.4
PSUR600V10S-102	PSUR600V10B-102	11.10	12.30	1	10	5.0	58.82	17
PSUR600V11S-102	PSUR600V11B-102	12.20	13.50	1	11	5.0	54.95	18.2
PSUR600V12S-102	PSUR600V12B-102	13.30	14.70	1	12	5.0	50.25	19.9
PSUR600V13S-102	PSUR600V13B-102	14.40	15.90	1	13	1.0	46.51	21.5
PSUR600V14S-102	PSUR600V14B-102	15.60	17.20	1	14	1.0	43.1	23.2
PSUR600V15S-102	PSUR600V15B-102	16.70	18.50	1	15	1.0	40.98	24.4
PSUR600V16S-102	PSUR600V16B-102	17.80	19.70	1	16	1.0	38.46	26
PSUR600V17S-102	PSUR600V17B-102	18.90	20.90	1	17	1.0	36.23	27.6
PSUR600V18S-102	PSUR600V18B-102	20.00	22.10	1	18	1.0	34.25	29.2
PSUR600V19S-102	PSUR600V19B-102	21.10	23.30	1	19	1.0	32.49	30.8
PSUR600V20S-102	PSUR600V20B-102	22.20	24.50	1	20	1.0	30.86	32.4

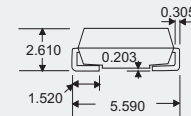
V_{RWM}: Stand-off voltage – Maximum voltage that can be applied.V_{BR}: Breakdown voltage.V_c: Clamping voltage – Peak voltage measured across the suppressor at a specified I_{pp}.I_R: Reverse leakage current.

**PSUR600 Series TVS, 1000W Peak Power @10x1000us Surge****Electrical Characteristics** (T_A=25°C unless otherwise noted)

Part Number		V _{BR} @ I _T		I _T	V _{RWM}	I _R @ V _{RWM}	I _{pp}	V _c @ I _{pp}
Uni	Bi	Min(V)	Max(V)	(mA)	(V)	(μA)	(A)	(V)

DO-214AA
PLASTIC

Dimensions in millimeters

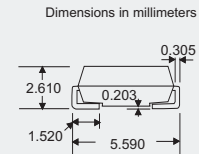
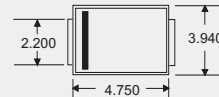


PSUR600V22S-102	PSUR600V22B-102	24.40	26.90	1	22	1.0	28.17	35.5
PSUR600V24S-102	PSUR600V24B-102	26.70	29.50	1	24	1.0	25.71	38.9
PSUR600V26S-102	PSUR600V26B-102	28.90	31.90	1	26	1.0	23.75	42.1
PSUR600V28S-102	PSUR600V28B-102	31.10	34.40	1	28	1.0	22.03	45.4
PSUR600V30S-102	PSUR600V30B-102	33.30	36.80	1	30	1.0	20.66	48.4
PSUR600V33S-102	PSUR600V33B-102	36.70	40.60	1	33	1.0	18.76	53.3
PSUR600V36S-102	PSUR600V36B-102	40.00	44.20	1	36	1.0	17.21	58.1
PSUR600V40S-102	PSUR600V40B-102	44.40	49.10	1	40	1.0	15.5	64.5
PSUR600V43S-102	PSUR600V43B-102	47.80	52.80	1	43	1.0	14.41	69.4
PSUR600V45S-102	PSUR600V45B-102	50.00	55.30	1	45	1.0	13.76	72.7
PSUR600V48S-102	PSUR600V48B-102	53.30	58.90	1	48	1.0	12.92	77.4
PSUR600V51S-102	PSUR600V51B-102	56.70	62.70	1	51	1.0	12.14	82.4
PSUR600V54S-102	PSUR600V54B-102	60.00	66.30	1	54	1.0	11.48	87.1
PSUR600V58S-102	PSUR600V58B-102	64.40	71.20	1	58	1.0	10.68	93.6
PSUR600V60S-102	PSUR600V60B-102	66.70	73.70	1	60	1.0	10.33	96.8
PSUR600V64S-102	PSUR600V64B-102	71.10	78.60	1	64	1.0	9.71	103
PSUR600V70S-102	PSUR600V70B-102	77.80	86.00	1	70	1.0	8.85	113
PSUR600V75S-102	PSUR600V75B-102	83.30	92.10	1	75	1.0	8.26	121
PSUR600V78S-102	PSUR600V78B-102	86.70	95.80	1	78	1.0	7.94	126

V_{RWM}: Stand-off voltage -- Maximum voltage that can be applied.V_{BR}: Breakdown voltage.V_c: Clamping voltage -- Peak voltage measured across the suppressor at a specified I_{pp}.I_R: Reverse leakage current.

**PSUR600 Series TVS, 1000W Peak Power @10x1000us Surge****Electrical Characteristics** ($T_A=25^\circ\text{C}$ unless otherwise noted)

Part Number		V_{BR} @ I_T		I_T	V_{RWM}	I_R @ V_{RWM}	I_{pp}	V_C @ I_{pp}
Uni	Bi	Min(V)	Max(V)	(mA)	(V)	(μA)	(A)	(V)

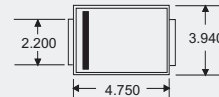
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PSUR600V80S-102	PSUR600V80B-102	88.80	97.60	1	80	1.0	7.72	129.6
PSUR600V85S-102	PSUR600V85B-102	94.40	104.0	1	85	1.0	7.3	137
PSUR600V90S-102	PSUR600V90B-102	100.0	111.0	1	90	1.0	6.85	146
PSUR600V100S-102	PSUR600V100B-102	111.0	123.0	1	100	1.0	6.17	162
PSUR600V110S-102	PSUR600V110B-102	122.0	135.0	1	110	1.0	5.65	177
PSUR600V120S-102	PSUR600V120B-102	133.0	147.0	1	120	1.0	5.18	193
PSUR600V130S-102	PSUR600V130B-102	144.0	159.0	1	130	1.0	4.8	209
PSUR600V150S-102	PSUR600V150B-102	167.0	185.0	1	150	1.0	4.2	243
PSUR600V160S-102	PSUR600V160B-102	178.0	197.0	1	160	1.0	3.9	259
PSUR600V170S-102	PSUR600V170B-102	189.0	209.0	1	170	1.0	3.7	275
PSUR600V180S-102	PSUR600V180B-102	201.0	222.0	1	180	1.0	3.5	292
PSUR600V190S-102	PSUR600V190B-102	211.0	234.0	1	190	1.0	3.3	307
PSUR600V200S-102	PSUR600V200B-102	224.0	247.0	1	200	1.0	3.1	324

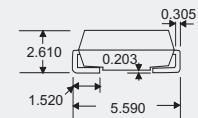
 V_{RWM} : Stand-off voltage -- Maximum voltage that can be applied. V_{BR} : Breakdown voltage. V_C : Clamping voltage -- Peak voltage measured across the suppressor at a specified I_{pp} . I_R : Reverse leakage current.

**PSUR600 Series TVS, 1500W Peak Power @10x1000us Surge****Electrical Characteristics** (TA=25°C unless otherwise noted)

Part Number		V _{BR} @ I _T		I _T	V _{RWM}	I _R @ V _{RWM}	I _{pp}	V _c @ I _{pp}
Uni	Bi	Min(V)	Max(V)	(mA)	(V)	(μA)	(A)	(V)

DO-214AA
PLASTIC

Dimensions in millimeters

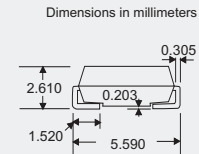
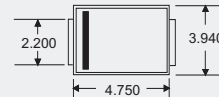


PSUR600V5.0S-152	PSUR600V5.0B-152	6.4	7.25	10	5.0	800	163	9.2
PSUR600V6.0S-152	PSUR600V6.0B-152	6.67	7.67	10	6.0	800	145.6	10.3
PSUR600V6.5S-152	PSUR600V6.5B-152	7.22	8.30	10	6.5	500	133.9	11.2
PSUR600V7.0S-152	PSUR600V7.0B-152	7.78	8.95	10	7.0	200	125	12
PSUR600V7.5S-152	PSUR600V7.5B-152	8.33	9.58	1	7.5	100	116.3	12.9
PSUR600V8.0S-152	PSUR600V8.0B-152	8.89	10.23	1	8.0	50	110.3	13.6
PSUR600V8.5S-152	PSUR600V8.5B-152	9.44	10.82	1	8.5	20	104.2	14.4
PSUR600V9.0S-152	PSUR600V9.0B-152	10.00	11.50	1	9.0	10	97.4	15.4
PSUR600V10S-152	PSUR600V10B-152	11.10	12.30	1	10	10	88.2	17
PSUR600V11S-152	PSUR600V11B-152	12.20	14.00	1	11	1	82.4	18.2
PSUR600V12S-152	PSUR600V12B-152	13.30	14.70	1	12	1	75.4	19.9
PSUR600V13S-152	PSUR600V13B-152	14.40	16.50	1	13	1	69.8	21.5
PSUR600V14S-152	PSUR600V14B-152	15.60	17.20	1	14	1	64.7	23.2
PSUR600V15S-152	PSUR600V15B-152	16.70	19.20	1	15	1	61.5	24.4
PSUR600V16S-152	PSUR600V16B-152	17.80	19.70	1	16	1	57.7	26
PSUR600V17S-152	PSUR600V17B-152	18.90	21.70	1	17	1	54.3	27.6
PSUR600V18S-152	PSUR600V18B-152	20.00	23.30	1	18	1	51.4	29.2
PSUR600V20S-152	PSUR600V20B-152	22.20	25.50	1	20	1	46.3	32.4
PSUR600V22S-152	PSUR600V22B-152	24.40	28.00	1	22	1	42.3	35.5

V_{RWM}: Stand-off voltage – Maximum voltage that can be applied.V_{BR}: Breakdown voltage.V_c: Clamping voltage – Peak voltage measured across the suppressor at a specified I_{pp}.I_R: Reverse leakage current.

**PSUR600 Series TVS, 1500W Peak Power @10x1000us Surge****Electrical Characteristics** ($T_A=25^\circ\text{C}$ unless otherwise noted)

Part Number		V_{BR} @ I_T		I_T	V_{RWM}	I_R @ V_{RWM}	I_{pp}	V_C @ I_{pp}
Uni	Bi	Min(V)	Max(V)	(mA)	(V)	(μA)	(A)	(V)

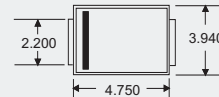
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PSUR600V24S-152	PSUR600V24B-152	26.70	30.70	1	24	1	38.6	38.9
PSUR600V26S-152	PSUR600V26B-152	28.90	33.20	1	26	1	35.6	42.1
PSUR600V28S-152	PSUR600V28B-152	31.10	35.80	1	28	1	33	45.4
PSUR600V30S-152	PSUR600V30B-152	33.30	38.30	1	30	1	31	48.4
PSUR600V33S-152	PSUR600V33B-152	36.70	42.20	1	33	1	28.1	53.3
PSUR600V36S-152	PSUR600V36B-152	40.00	46.00	1	36	1	25.8	58.1
PSUR600V40S-152	PSUR600V40B-152	44.40	51.10	1	40	1	23.3	64.5
PSUR600V43S-152	PSUR600V43B-152	47.80	52.80	1	43	1	21.6	69.4
PSUR600V45S-152	PSUR600V45B-152	50.00	57.50	1	45	1	20.6	72.7
PSUR600V48S-152	PSUR600V48B-152	53.30	58.90	1	48	1	19.4	77.4
PSUR600V51S-152	PSUR600V51B-152	56.70	65.20	1	51	1	18.2	82.4
PSUR600V54S-152	PSUR600V54B-152	60.00	69.00	1	54	1	17.2	87.1
PSUR600V58S-152	PSUR600V58B-152	64.40	71.20	1	58	1	16	93.6
PSUR600V60S-152	PSUR600V60B-152	66.70	73.70	1	60	1	15.5	96.8
PSUR600V64S-152	PSUR600V64B-152	71.10	81.80	1	64	1	14.6	103
PSUR600V70S-152	PSUR600V70B-152	77.80	95.10	1	70	1	13.3	113
PSUR600V75S-152	PSUR600V75B-152	83.30	92.10	1	75	1	12.4	121
PSUR600V78S-152	PSUR600V78B-152	86.70	99.70	1	78	1	11.9	126
PSUR600V85S-152	PSUR600V85B-152	94.40	108.20	1	85	1	10.9	137

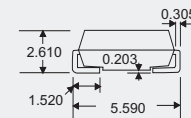
 V_{RWM} : Stand-off voltage – Maximum voltage that can be applied. V_{BR} : Breakdown voltage. V_C : Clamping voltage – Peak voltage measured across the suppressor at a specified I_{pp} . I_R : Reverse leakage current.

**PSUR600 Series TVS, 1500W Peak Power @10x1000us Surge****Electrical Characteristics** (TA=25°C unless otherwise noted)

Part Number		V _{BR} @ I _T		I _T	V _{RWM}	I _R @ V _{RWM}	I _{pp}	V _c @ I _{pp}
Uni	Bi	Min(V)	Max(V)	(mA)	(V)	(μA)	(A)	(V)

DO-214AA
PLASTIC

Dimensions in millimeters

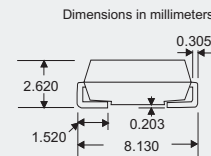


PSUR600V90S-152	PSUR600V90B-152	100.00	111.00	1	90	1	10.3	146
PSUR600V100S-152	PSUR600V100B-152	111.00	123.00	1	100	1	9.3	162
PSUR600V110S-152	PSUR600V110B-152	122.00	135.00	1	110	1	8.5	177
PSUR600V120S-152	PSUR600V120B-152	133.00	147.00	1	120	1	7.8	193
PSUR600V130S-152	PSUR600V130B-152	144.00	159.00	1	130	1	7.2	209
PSUR600V150S-152	PSUR600V150B-152	167.00	185.00	1	150	1	6.2	243
PSUR600V160S-152	PSUR600V160B-152	178.00	197.00	1	160	1	5.8	259
PSUR600V170S-152	PSUR600V170B-152	189.00	209.00	1	170	1	5.5	275
PSUR600V180S-152	PSUR600V180B-152	201.00	222.00	1	180	1	5.1	292
PSUR600V190S-152	PSUR600V190B-152	211.00	233.00	1	190	1	4.9	308
PSUR600V200S-152	PSUR600V200B-152	224.00	247.00	1	200	1	4.6	324
PSUR600V210S-152	PSUR600V210B-152	237.00	263.00	1	210	1	4.2	356
PSUR600V220S-152	PSUR600V220B-152	246.00	272.00	1	220	1	4.2	356
PSUR600V250S-152	PSUR600V250B-152	279.00	309.00	1	250	1	3.7	405
PSUR600V300S-152	PSUR600V300B-152	335.00	371.00	1	300	1	3.1	486
PSUR600V350S-152	PSUR600V350B-152	391.00	432.00	1	350	1	2.6	567
PSUR600V400S-152	PSUR600V400B-152	447.00	494.00	1	400	1	2.3	648
PSUR600V440S-152	PSUR600V440B-152	492.00	543.00	1	440	1	2.1	713

V_{RWM}: Stand-off voltage -- Maximum voltage that can be applied.V_{BR}: Breakdown voltage.V_c: Clamping voltage -- Peak voltage measured across the suppressor at a specified I_{pp}.I_R: Reverse leakage current.

**PSUR1R5 Series TVS, 1500W Peak Power @10x1000us Surge****Electrical Characteristics** (TA=25°C unless otherwise noted)

Part Number		V _{BR} @ I _T		I _T	V _{RWM}	I _R @ V _{RWM}	I _{pp}	V _c @ I _{pp}
Uni	Bi	Min(V)	Max(V)	(mA)	(V)	(μA)	(A)	(V)

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PLASTIC

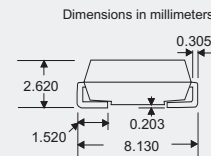
Dimensions in millimeters

PSUR1R5V5.0S	PSUR1R5V5.0B	6.40	7.00	10	5.0	300	163	9.2
PSUR1R5V6.0S	PSUR1R5V6.0B	6.67	7.37	10	6.0	250	145.6	10.3
PSUR1R5V6.5S	PSUR1R5V6.5B	7.22	7.98	10	6.5	150	134	11.2
PSUR1R5V7.0S	PSUR1R5V7.0B	7.78	8.60	10	7.0	100	125	12
PSUR1R5V7.5S	PSUR1R5V7.5B	8.33	9.21	1	7.5	50	116.3	12.9
PSUR1R5V8.0S	PSUR1R5V8.0B	8.89	9.83	1	8.0	30	110.3	13.6
PSUR1R5V8.5S	PSUR1R5V8.5B	9.44	10.40	1	8.5	20	104.2	14.4
PSUR1R5V9.0S	PSUR1R5V9.0B	10.00	11.10	1	9.0	10	97.4	15.4
PSUR1R5V10S	PSUR1R5V10B	11.10	12.30	1	10	5	88.2	17
PSUR1R5V11S	PSUR1R5V11B	12.20	13.50	1	11	2	82.4	18.2
PSUR1R5V12S	PSUR1R5V12B	13.30	14.70	1	12	1	75.4	19.9
PSUR1R5V13S	PSUR1R5V13B	14.40	15.90	1	13	1	69.8	21.5
PSUR1R5V14S	PSUR1R5V14B	15.60	17.20	1	14	1	64.7	23.2
PSUR1R5V15S	PSUR1R5V15B	16.70	18.50	1	15	1	61.5	24.4
PSUR1R5V16S	PSUR1R5V16B	17.80	19.70	1	16	1	57.7	26
PSUR1R5V17S	PSUR1R5V17B	18.90	20.90	1	17	1	54.4	27.6
PSUR1R5V18S	PSUR1R5V18B	20.00	22.10	1	18	1	51.4	29.2
PSUR1R5V20S	PSUR1R5V20B	22.20	24.50	1	20	1	46.3	32.4
PSUR1R5V22S	PSUR1R5V22B	24.40	26.90	1	22	1	42.3	35.5

V_{RWM}: Stand-off voltage – Maximum voltage that can be applied.V_{BR}: Breakdown voltage.V_c: Clamping voltage – Peak voltage measured across the suppressor at a specified I_{pp}.I_R: Reverse leakage current.

**PSUR1R5 Series TVS, 1500W Peak Power @10x1000us Surge****Electrical Characteristics** (TA=25°C unless otherwise noted)

Part Number		V _{BR} @ I _T		I _T	V _{RWM}	I _R @ V _{RWM}	I _{pp}	V _c @ I _{pp}
Uni	Bi	Min(V)	Max(V)	(mA)	(V)	(μA)	(A)	(V)

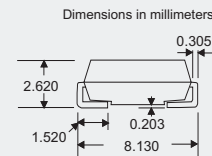
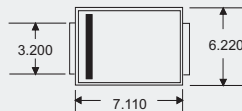
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PLASTIC

PSUR1R5V24S	PSUR1R5V24B	26.70	29.50	1	24	1	38.6	38.9
PSUR1R5V26S	PSUR1R5V26B	28.90	31.90	1	26	1	35.6	42.1
PSUR1R5V28S	PSUR1R5V28B	31.10	34.40	1	28	1	33.1	45.4
PSUR1R5V30S	PSUR1R5V30B	33.30	36.80	1	30	1	31	48.4
PSUR1R5V33S	PSUR1R5V33B	36.70	40.60	1	33	1	28.2	53.3
PSUR1R5V36S	PSUR1R5V36B	40.00	44.20	1	36	1	25.8	58.1
PSUR1R5V40S	PSUR1R5V40B	44.40	49.10	1	40	1	23.3	64.5
PSUR1R5V43S	PSUR1R5V43B	47.80	52.80	1	43	1	21.6	69.4
PSUR1R5V45S	PSUR1R5V45B	50.00	55.30	1	45	1	20.6	72.7
PSUR1R5V48S	PSUR1R5V48B	53.30	58.90	1	48	1	19.4	77.4
PSUR1R5V51S	PSUR1R5V51B	56.70	62.70	1	51	1	18.2	82.4
PSUR1R5V54S	PSUR1R5V54B	60.00	66.30	1	54	1	17.2	87.1
PSUR1R5V58S	PSUR1R5V58B	64.40	71.20	1	58	1	16.1	93.6
PSUR1R5V60S	PSUR1R5V60B	66.70	73.70	1	60	1	15.5	96.8
PSUR1R5V64S	PSUR1R5V64B	71.10	78.60	1	64	1	14.6	103
PSUR1R5V70S	PSUR1R5V70B	77.80	86.00	1	70	1	13.3	113
PSUR1R5V75S	PSUR1R5V75B	83.30	92.10	1	75	1	12.4	121
PSUR1R5V78S	PSUR1R5V78B	86.70	95.80	1	78	1	11.9	126
PSUR1R5V85S	PSUR1R5V85B	94.40	104.00	1	85	1	11	137

V_{RWM}: Stand-off voltage – Maximum voltage that can be applied.V_{BR}: Breakdown voltage.V_c: Clamping voltage – Peak voltage measured across the suppressor at a specified I_{pp}.I_R: Reverse leakage current.

**PSUR1R5 Series TVS, 1500W Peak Power @10x1000us Surge****Electrical Characteristics** ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Part Number		$V_{BR} @ I_T$		I_T	V_{RWM}	$I_R @ V_{RWM}$	I_{pp}	$V_C @ I_{pp}$
Uni	Bi	Min(V)	Max(V)	(mA)	(V)	(μA)	(A)	(V)

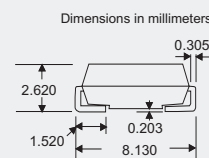
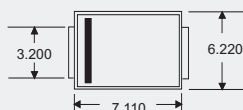
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PSUR1R5V90S	PSUR1R5V90B	100.00	111.00	1	90	1	10.3	146
PSUR1R5V100S	PSUR1R5V100B	111.00	123.00	1	100	1	9.3	162
PSUR1R5V110S	PSUR1R5V110B	122.00	135.00	1	110	1	8.5	177
PSUR1R5V120S	PSUR1R5V120B	133.00	147.00	1	120	1	7.8	193
PSUR1R5V130S	PSUR1R5V130B	144.00	159.00	1	130	1	7.2	209
PSUR1R5V150S	PSUR1R5V150B	167.00	185.0	1	150	1	6.2	243
PSUR1R5V160S	PSUR1R5V160B	178.00	197.00	1	160	1	5.8	259
PSUR1R5V170S	PSUR1R5V170B	189.00	209.00	1	170	1	5.5	275
PSUR1R5V180S	PSUR1R5V180B	201.00	222.00	1	180	1	5.2	292
PSUR1R5V190S	PSUR1R5V190B	211.00	234.00	1	190	1	4.9	307
PSUR1R5V200S	PSUR1R5V200B	224.00	247.00	1	200	1	4.7	324
PSUR1R5V210S	PSUR1R5V210B	233.00	258.00	1	210	1	4.5	337
PSUR1R5V220S	PSUR1R5V220B	246.00	272.00	1	220	1	4.2	356
PSUR1R5V250S	PSUR1R5V250B	279.00	309.00	1	250	1	3.7	405
PSUR1R5V300S	PSUR1R5V300B	335.00	371.00	1	300	1	3.1	486
PSUR1R5V350S	PSUR1R5V350B	391.00	432.00	1	350	1	2.7	567
PSUR1R5V400S	PSUR1R5V400B	447.00	494.00	1	400	1	2.3	648
PSUR1R5V440S	PSUR1R5V440B	492.00	543.00	1	440	1	2.1	713

 V_{RWM} : Stand-off voltage -- Maximum voltage that can be applied. V_{BR} : Breakdown voltage. V_C : Clamping voltage -- Peak voltage measured across the suppressor at a specified I_{PP} . I_R : Reverse leakage current.

**PSUR3R0 Series TVS, 3000W Peak Power @10x1000us Surge****Electrical Characteristics** (TA=25°C unless otherwise noted)

Part Number		V _{BR} @ I _T		I _T	V _{RWM}	I _R @ V _{RWM}	I _{pp}	V _c @ I _{pp}
Uni	Bi	Min(V)	Max(V)	(mA)	(V)	(μA)	(A)	(V)

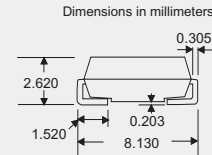
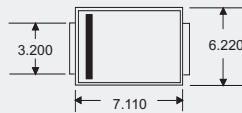
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PSUR3R0V5.0S	PSUR3R0V5.0B	6.40	7.00	10	5.0	800	326.1	9.2
PSUR3R0V6.0S	PSUR3R0V6.0B	6.67	7.37	10	6.0	800	291.3	10.3
PSUR3R0V6.5S	PSUR3R0V6.5B	7.22	7.98	10	6.5	500	267.9	11.2
PSUR3R0V7.0S	PSUR3R0V7.0B	7.78	8.60	10	7.0	200	250	12
PSUR3R0V7.5S	PSUR3R0V7.5B	8.33	9.21	1	7.5	100	232.6	12.9
PSUR3R0V8.0S	PSUR3R0V8.0B	8.89	9.83	1	8.0	50	220.6	13.6
PSUR3R0V8.5S	PSUR3R0V8.5B	9.44	10.40	1	8.5	20	208.3	14.4
PSUR3R0V9.0S	PSUR3R0V9.0B	10.00	11.10	1	9.0	10	194.8	15.4
PSUR3R0V10S	PSUR3R0V10B	11.10	12.30	1	10	5	176.5	17
PSUR3R0V11S	PSUR3R0V11B	12.20	13.50	1	11	1	164.8	18.2
PSUR3R0V12S	PSUR3R0V12B	13.30	14.70	1	12	1	150.8	19.9
PSUR3R0V13S	PSUR3R0V13B	14.40	15.90	1	13	1	139.5	21.5
PSUR3R0V14S	PSUR3R0V14B	15.60	17.20	1	14	1	129.3	23.2
PSUR3R0V15S	PSUR3R0V15B	16.70	18.50	1	15	1	123	24.4
PSUR3R0V16S	PSUR3R0V16B	17.80	19.70	1	16	1	115.4	26
PSUR3R0V17S	PSUR3R0V17B	18.90	20.90	1	17	1	108.7	27.6
PSUR3R0V18S	PSUR3R0V18B	20.00	22.10	1	18	1	102.7	29.2
PSUR3R0V20S	PSUR3R0V20B	22.20	24.50	1	20	1	92.6	32.4
PSUR3R0V22S	PSUR3R0V22B	24.40	26.90	1	22	1	84.5	35.5

V_{RWM}: Stand-off voltage – Maximum voltage that can be applied.V_{BR}: Breakdown voltage.V_c: Clamping voltage – Peak voltage measured across the suppressor at a specified I_{pp}.I_R: Reverse leakage current.

**PSUR3R0 Series TVS, 3000W Peak Power @10x1000us Surge****Electrical Characteristics** (TA=25°C unless otherwise noted)

Part Number		V _{BR} @ I _T		I _T	V _{RWM}	I _R @ V _{RWM}	I _{pp}	V _c @ I _{pp}
Uni	Bi	Min(V)	Max(V)	(mA)	(V)	(μA)	(A)	(V)

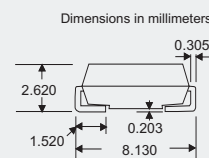
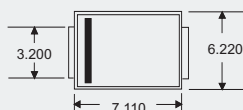
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PSUR3R0V24S	PSUR3R0V24B	26.70	29.50	1	24	1	77.1	38.9
PSUR3R0V26S	PSUR3R0V26B	28.90	31.90	1	26	1	71.3	42.1
PSUR3R0V28S	PSUR3R0V28B	31.10	34.40	1	28	1	66.1	45.4
PSUR3R0V30S	PSUR3R0V30B	33.30	36.80	1	30	1	62	48.4
PSUR3R0V33S	PSUR3R0V33B	36.70	40.60	1	33	1	56.3	53.3
PSUR3R0V36S	PSUR3R0V36B	40.00	44.20	1	36	1	51.6	58.1
PSUR3R0V40S	PSUR3R0V40B	44.40	49.10	1	40	1	46.5	64.5
PSUR3R0V43S	PSUR3R0V43B	47.80	52.80	1	43	1	43.2	69.4
PSUR3R0V45S	PSUR3R0V45B	50.00	55.30	1	45	1	41.3	72.7
PSUR3R0V48S	PSUR3R0V48B	53.30	58.90	1	48	1	38.8	77.4
PSUR3R0V51S	PSUR3R0V51B	56.70	62.70	1	51	1	36.4	82.4
PSUR3R0V54S	PSUR3R0V54B	60.00	66.30	1	54	1	34.4	87.1
PSUR3R0V58S	PSUR3R0V58B	64.40	71.20	1	58	1	32.1	93.6
PSUR3R0V60S	PSUR3R0V60B	66.70	73.70	1	60	1	31	96.8
PSUR3R0V64S	PSUR3R0V64B	71.10	78.60	1	64	1	29.1	103
PSUR3R0V70S	PSUR3R0V70B	77.80	86.00	1	70	1	26.5	113
PSUR3R0V75S	PSUR3R0V75B	83.30	92.10	1	75	1	24.8	121
PSUR3R0V78S	PSUR3R0V78B	86.70	95.80	1	78	1	23.8	126
PSUR3R0V85S	PSUR3R0V85B	94.40	104.0	1	85	1	21.9	137

V_{RWM}: Stand-off voltage – Maximum voltage that can be applied.V_{BR}: Breakdown voltage.V_c: Clamping voltage – Peak voltage measured across the suppressor at a specified I_{pp}.I_R: Reverse leakage current.

**PSUR3R0 Series TVS, 3000W Peak Power @10x1000us Surge****Electrical Characteristics** ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Part Number		V_{BR} @ I_T		I_T	V_{RWM}	I_R @ V_{RWM}	I_{pp}	V_C @ I_{pp}
Uni	Bi	Min(V)	Max(V)	(mA)	(V)	(μA)	(A)	(V)

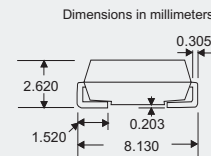
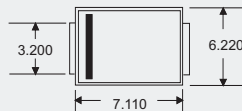
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PSUR3R0V90S	PSUR3R0V90B	100.00	111.0	1	90	1	20.5	146
PSUR3R0V100S	PSUR3R0V100B	111.00	123.0	1	100	1	18.5	162
PSUR3R0V110S	PSUR3R0V110B	122.00	135.0	1	110	1	16.9	177
PSUR3R0V120S	PSUR3R0V120B	133.00	147.0	1	120	1	15.5	193
PSUR3R0V130S	PSUR3R0V130B	144.00	159.0	1	130	1	14.4	209
PSUR3R0V150S	PSUR3R0V150B	167.00	185.0	1	150	1	12.3	243
PSUR3R0V160S	PSUR3R0V160B	178.00	197.0	1	160	1	11.6	259
PSUR3R0V170S	PSUR3R0V170B	189.00	209.0	1	170	1	10.9	275
PSUR3R0V180S	PSUR3R0V180B	201.00	222.0	1	180	1	10.3	292
PSUR3R0V190S	PSUR3R0V190B	211.00	234.0	1	190	1	9.7	307
PSUR3R0V200S	PSUR3R0V200B	224.00	247.0	1	200	1	9.3	324
PSUR3R0V210S	PSUR3R0V210B	233.00	258.0	1	210	1	8.8	337
PSUR3R0V220S	PSUR3R0V220B	244.00	270.0	1	220	1	8.4	356

 V_{RWM} : Stand-off voltage – Maximum voltage that can be applied. V_{BR} : Breakdown voltage. V_C : Clamping voltage – Peak voltage measured across the suppressor at a specified I_{pp} . I_R : Reverse leakage current.

**PSUR3R0 Series TVS, 5000W Peak Power @10x1000us Surge****Electrical Characteristics** ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Part Number		V_{BR} @ I_T		I_T	V_{RWM}	I_R @ V_{RWM}	I_{pp}	V_C @ I_{pp}
Uni	Bi	Min(V)	Max(V)	(mA)	(V)	(μA)	(A)	(V)

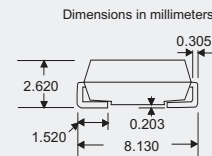
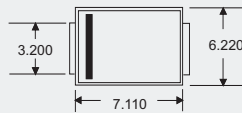
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PSUR3R0V11S-502	PSUR3R0V11B-502	12.2	13.5	10	11	5	275	18.2
PSUR3R0V12S-502	PSUR3R0V12B-502	13.3	14.7	10	12	5	252	19.9
PSUR3R0V13S-502	PSUR3R0V13B-502	14.4	15.9	10	13	5	233	21.5
PSUR3R0V14S-502	PSUR3R0V14B-502	15.6	17.2	10	14	5	216	23.2
PSUR3R0V15S-502	PSUR3R0V15B-502	16.7	18.5	1	15	5	205	24.4
PSUR3R0V16S-502	PSUR3R0V16B-502	17.8	19.7	1	16	5	193	26
PSUR3R0V17S-502	PSUR3R0V17B-502	18.9	20.9	1	17	5	181	27.6
PSUR3R0V18S-502	PSUR3R0V18B-502	20.0	22.1	1	18	5	172	29.2
PSUR3R0V20S-502	PSUR3R0V20B-502	22.2	24.5	1	20	5	155	32.4
PSUR3R0V22S-502	PSUR3R0V22B-502	24.4	26.9	1	22	2	141	35.5
PSUR3R0V24S-502	PSUR3R0V24B-502	26.7	29.5	1	24	2	129	38.9
PSUR3R0V26S-502	PSUR3R0V26B-502	28.9	31.9	1	26	2	119	42.1
PSUR3R0V28S-502	PSUR3R0V28B-502	31.1	34.4	1	28	2	110	45.4
PSUR3R0V30S-502	PSUR3R0V30B-502	33.3	36.8	1	30	2	103	48.4
PSUR3R0V33S-502	PSUR3R0V33B-502	36.7	40.6	1	33	2	93.9	53.3
PSUR3R0V36S-502	PSUR3R0V36B-502	40.0	44.2	1	36	2	86.1	58.1
PSUR3R0V40S-502	PSUR3R0V40B-502	44.4	49.1	1	40	2	77.6	64.5
PSUR3R0V43S-502	PSUR3R0V43B-502	47.8	52.8	1	43	2	72.1	69.4
PSUR3R0V45S-502	PSUR3R0V45B-502	50.0	55.3	1	45	2	68.8	72.7

 V_{RWM} : Stand-off voltage – Maximum voltage that can be applied. V_{BR} : Breakdown voltage. V_C : Clamping voltage – Peak voltage measured across the suppressor at a specified I_{pp} . I_R : Reverse leakage current.

**PSUR3R0 Series TVS, 5000W Peak Power @10x1000us Surge****Electrical Characteristics** ($T_A=25^\circ\text{C}$ unless otherwise noted)

Part Number		$V_{BR} @ I_T$		I_T	V_{RWM}	$I_R @ V_{RWM}$	I_{pp}	$V_c @ I_{pp}$
Uni	Bi	Min(V)	Max(V)	(mA)	(V)	(μA)	(A)	(V)

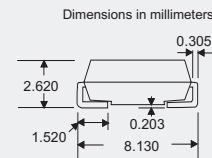
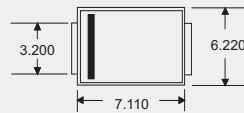
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PSUR3R0V48S-502	PSUR3R0V48B-502	53.3	58.9	1	48	2	64.7	77.4
PSUR3R0V51S-502	PSUR3R0V51B-502	56.7	62.7	1	51	2	60.7	82.4
PSUR3R0V54S-502	PSUR3R0V54B-502	60.0	66.3	1	54	2	57.5	87.1
PSUR3R0V58S-502	PSUR3R0V58B-502	64.4	71.2	1	58	2	53.5	93.6
PSUR3R0V60S-502	PSUR3R0V60B-502	66.7	73.7	1	60	2	51.7	96.8
PSUR3R0V64S-502	PSUR3R0V64B-502	71.1	78.6	1	64	2	48.6	103
PSUR3R0V70S-502	PSUR3R0V70B-502	77.8	86.0	1	70	2	44.3	113
PSUR3R0V75S-502	PSUR3R0V75B-502	83.3	92.1	1	75	2	41.4	121
PSUR3R0V78S-502	PSUR3R0V78B-502	86.7	95.8	1	78	2	39.7	126
PSUR3R0V85S-502	PSUR3R0V85B-502	94.4	104.0	1	85	2	36.5	137
PSUR3R0V90S-502	PSUR3R0V90B-502	100.0	111.0	1	90	2	34.3	146
PSUR3R0V100S-502	PSUR3R0V100B-502	111.0	123.0	1	100	2	30.9	162
PSUR3R0V110S-502	PSUR3R0V110B-502	122.0	135.0	1	110	2	28.3	177
PSUR3R0V120S-502	PSUR3R0V120B-502	133.0	147.0	1	120	2	26	193
PSUR3R0V130S-502	PSUR3R0V130B-502	144.0	159.0	1	130	2	24	209
PSUR3R0V150S-502	PSUR3R0V150B-502	167.0	185.0	1	150	2	20.6	243
PSUR3R0V160S-502	PSUR3R0V160B-502	178.0	197.0	1	160	2	19.3	259
PSUR3R0V170S-502	PSUR3R0V170B-502	189.0	209.0	1	170	2	18.2	275
PSUR3R0V180S-502	PSUR3R0V180B-502	200.0	220.0	1	180	2	17.15	291.6

 V_{RWM} : Stand-off voltage – Maximum voltage that can be applied. V_{BR} : Breakdown voltage. V_c : Clamping voltage – Peak voltage measured across the suppressor at a specified I_{pp} . I_R : Reverse leakage current.

**PSUR3R0 Series TVS, 5000W Peak Power @10x1000us Surge****Electrical Characteristics** (T_A=25°C unless otherwise noted)

Part Number		V _{BR} @ I _T		I _T	V _{RWM}	I _R @ V _{RWM}	I _{pp}	V _c @ I _{pp}
Uni	Bi	Min(V)	Max(V)	(mA)	(V)	(μA)	(A)	(V)

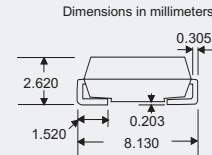
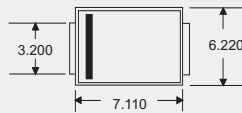
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PSUR3R0V200S-502	PSUR3R0V200B-502	224.0	247.0	1	200	2	15.43	324
PSUR3R0V220S-502	PSUR3R0V220B-502	246.0	272.0	1	220	2	14.04	356
PSUR3R0V250S-502	PSUR3R0V250B-502	279.0	309.0	1	250	2	12.35	405
PSUR3R0V350S-502	PSUR3R0V350B-502	391.0	432.0	1	350	2	8.82	567
PSUR3R0V400S-502	PSUR3R0V400B-502	447.0	494.0	1	400	2	7.72	468
PSUR3R0V440S-502	PSUR3R0V440B-502	492.0	543.0	1	440	2	7.01	713

V_{RWM}: Stand-off voltage -- Maximum voltage that can be applied.V_{BR}: Breakdown voltage.V_c: Clamping voltage -- Peak voltage measured across the suppressor at a specified I_{pp}.I_R: Reverse leakage current.

**PSUR3R0 Series TVS, 6600W Peak Power @10x1000uS Surge****Electrical Characteristics** (TA=25°C unless otherwise noted)

Part Number		V _{BR} @ I _T		I _T	V _{RWM}	I _R @ V _{RWM}	I _{pp}	V _c @ I _{pp}
Uni	Bi	Min(V)	Max(V)	(mA)	(V)	(μA)	(A)	(V)

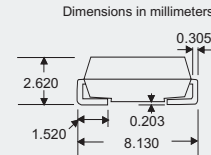
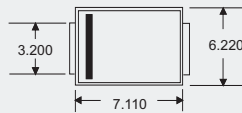
DO-214AB
PLASTIC

PSUR3R0V17S-662	PSUR3R0V17B-662	18.90	21.70	5	17	5	239.1	27.6
PSUR3R0V18S-662	PSUR3R0V18B-662	20.00	23.30	5	18	5	226	29.2
PSUR3R0V20S-662	PSUR3R0V20B-662	22.20	25.50	5	20	5	203.7	32.4
PSUR3R0V22S-662	PSUR3R0V22B-662	24.40	28.00	5	22	5	185.9	35.5
PSUR3R0V24S-662	PSUR3R0V24B-662	26.70	30.70	5	24	5	169.7	38.9
PSUR3R0V26S-662	PSUR3R0V26B-662	28.90	33.20	5	26	5	156.8	42.1
PSUR3R0V28S-662	PSUR3R0V28B-662	31.10	35.80	5	28	5	145.4	45.4
PSUR3R0V30S-662	PSUR3R0V30B-662	33.30	38.30	5	30	5	136.4	48.4
PSUR3R0V33S-662	PSUR3R0V33B-662	36.70	40.60	5	33	5	123.8	53.3
PSUR3R0V36S-662	PSUR3R0V36B-662	40.00	46.00	5	36	5	113.6	58.1
PSUR3R0V40S-662	PSUR3R0V40B-662	44.40	51.10	5	40	5	102.3	64.5
PSUR3R0V43S-662	PSUR3R0V43B-662	47.80	52.80	5	43	5	95.1	69.4
PSUR3R0V45S-662	PSUR3R0V45B-662	50.00	57.50	5	45	5	90.8	72.7
PSUR3R0V48S-662	PSUR3R0V48B-662	53.30	58.90	5	48	5	85.3	77.4
PSUR3R0V51S-662	PSUR3R0V51B-662	56.70	65.20	5	51	5	80.1	82.4
PSUR3R0V54S-662	PSUR3R0V54B-662	60.00	69.00	5	54	5	75.8	87.1
PSUR3R0V58S-662	PSUR3R0V58B-662	64.40	71.20	5	58	5	70.5	93.6
PSUR3R0V60S-662	PSUR3R0V60B-662	66.70	73.70	5	60	5	68.2	96.8

V_{RWM}: Stand-off voltage -- Maximum voltage that can be applied.V_{BR}: Breakdown voltage.V_c: Clamping voltage -- Peak voltage measured across the suppressor at a specified I_{pp}.I_R: Reverse leakage current.

**PSUR3R0 Series TVS, 8000W Peak Power @10x1000us Surge****Electrical Characteristics** (TA=25°C unless otherwise noted)

Part Number		V _{BR} @ I _T		I _T	V _{RWM}	I _R @ V _{RWM}	I _{pp}	V _c @ I _{pp}
Uni	Bi	Min(V)	Max(V)	(mA)	(V)	(μA)	(A)	(V)

DO-214AB
PLASTIC

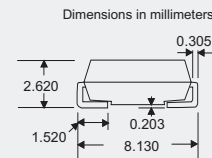
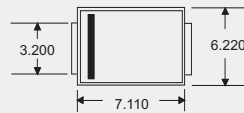
Dimensions in millimeters

PSUR3R0V17S-802	PSUR3R0V17B-802	18.90	21.70	5	17	5	290	27.6
PSUR3R0V18S-802	PSUR3R0V18B-802	20.00	23.30	5	18	5	274	29.2
PSUR3R0V20S-802	PSUR3R0V20B-802	22.20	25.50	5	20	5	247	32.4
PSUR3R0V22S-802	PSUR3R0V22B-802	24.40	28.00	5	22	5	225.4	35.5
PSUR3R0V24S-802	PSUR3R0V24B-802	26.70	30.70	5	24	5	205.7	38.9
PSUR3R0V26S-802	PSUR3R0V26B-802	28.90	33.20	5	26	5	190.1	42.1
PSUR3R0V28S-802	PSUR3R0V28B-802	31.10	35.80	5	28	5	176.2	45.4
PSUR3R0V30S-802	PSUR3R0V30B-802	33.30	38.30	5	30	5	165.3	48.4
PSUR3R0V33S-802	PSUR3R0V33B-802	36.70	40.60	5	33	5	150.1	53.3
PSUR3R0V36S-802	PSUR3R0V36B-802	40.40	46.00	5	36	5	137.8	58.1
PSUR3R0V40S-802	PSUR3R0V40B-802	44.40	51.10	5	40	5	124.1	64.5
PSUR3R0V43S-802	PSUR3R0V43B-802	47.80	52.80	5	43	5	115.3	69.4
PSUR3R0V45S-802	PSUR3R0V45B-802	50.00	57.50	5	45	5	110.1	72.7
PSUR3R0V48S-802	PSUR3R0V48B-802	53.30	58.90	5	48	5	103.4	77.4
PSUR3R0V51S-802	PSUR3R0V51B-802	56.70	65.20	5	51	5	97.1	82.4
PSUR3R0V54S-802	PSUR3R0V54B-802	60.00	69.00	5	54	5	92	87.1
PSUR3R0V58S-802	PSUR3R0V58B-802	64.40	71.20	5	58	5	85.5	93.6
PSUR3R0V60S-802	PSUR3R0V60B-802	66.70	73.70	5	60	5	82.7	96.8
PSUR3R0V64S-802	PSUR3R0V64B-802	71.10	78.60	5	64	5	77.7	103

V_{RWM}: Stand-off voltage – Maximum voltage that can be applied.V_{BR}: Breakdown voltage.V_c: Clamping voltage – Peak voltage measured across the suppressor at a specified I_{pp}.I_R: Reverse leakage current.

**PSUR3R0 Series TVS, 8000W Peak Power @10x1000us Surge****Electrical Characteristics** ($T_A=25^\circ\text{C}$ unless otherwise noted)

Part Number		V_{BR} @ I_T		I_T	V_{RWM}	I_R @ V_{RWM}	I_{pp}	V_c @ I_{pp}
Uni	Bi	Min(V)	Max(V)	(mA)	(V)	(μA)	(A)	(V)

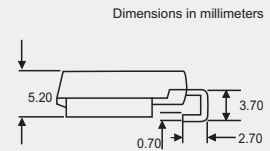
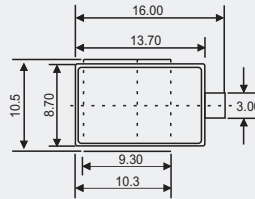
DO-214AB
PLASTIC

PSUR3R0V70S-802	PSUR3R0V70B-802	77.80	86.00	5	70	5	71	113
PSUR3R0V75S-802	PSUR3R0V75B-802	83.30	92.10	5	75	5	66.2	121
PSUR3R0V78S-802	PSUR3R0V78B-802	86.70	95.80	5	78	5	63.5	126
PSUR3R0V80S-802	PSUR3R0V80B-802	88.80	97.60	5	80	5	61.7	129.6
PSUR3R0V85S-802	PSUR3R0V85B-802	94.40	104.0	5	85	5	58.4	137

 V_{RWM} : Stand-off voltage -- Maximum voltage that can be applied. V_{BR} : Breakdown voltage. V_c : Clamping voltage -- Peak voltage measured across the suppressor at a specified I_{pp} . I_R : Reverse leakage current.

**SM8SxxA Series TVS, 6600W Peak Power @10x1000us Surge****Electrical Characteristics** ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Part Number	$V_{BR} @ I_T$		I_T	V_{RWM}	$I_R @ V_{RWM}$	$I_R @ V_{RWM}$ & $T_J = 175^{\circ}\text{C}$	I_{pp}	$V_C @ I_{pp}$
	Min(V)	Max(V)	(mA)	(V)	(μA)	(μA)	(A)	(V)



SM8S10A	11.1	12.3	5.0	10	15	250	388	17
SM8S11A	12.2	13.5	5.0	11	10	150	363	18.2
SM8S12A	13.3	14.7	5.0	12	10	150	332	19.9
SM8S13A	14.4	15.9	5.0	13	10	150	307	21.5
SM8S14A	15.6	17.2	5.0	14	10	150	284	23.2
SM8S15A	16.7	18.5	5.0	15	10	150	270	24.4
SM8S16A	17.8	19.7	5.0	16	10	150	254	26
SM8S17A	18.9	20.9	5.0	17	10	150	239	27.6
SM8S18A	20.0	22.1	5.0	18	10	150	226	29.2
SM8S20A	22.2	24.5	5.0	20	10	150	204	32.4
SM8S22A	24.4	26.9	5.0	22	10	150	186	35.5
SM8S24A	26.7	29.5	5.0	24	10	150	170	38.9
SM8S26A	28.9	31.9	5.0	26	10	150	157	42.1
SM8S28A	31.1	34.4	5.0	28	10	150	145	45.4
SM8S30A	33.3	36.8	5.0	30	10	150	136	48.4
SM8S33A	36.7	40.6	5.0	33	10	150	124	53.3
SM8S36A	40.0	44.2	5.0	36	10	150	114	58.1
SM8S40A	44.4	49.1	5.0	40	10	150	102	64.5
SM8S43A	47.8	52.8	5.0	43	10	150	95.1	69.4

 V_{RWM} : Stand-off voltage – Maximum voltage that can be applied. V_{BR} : Breakdown voltage. V_C : Clamping voltage – Peak voltage measured across the suppressor at a specified I_{pp} . I_R : Reverse leakage current.

Thyristor Surge Suppressor (TSS)

A TSS device is a PNPN device that can be thought of as a thyristor device without a gate. Upon exceeding its peak off-state voltage (V_{DRM}), a TSS device will clamp a transient voltage to within the device's switching voltage (V_s) rating. Then, once the current flowing through the TSS device exceeds its switching current, the device will crowbar and simulate a short-circuit condition. When the current flowing through the TSS device is less than the device's holding current (I_H), the TSS device will reset and return to its high off-state impedance.

Benefits

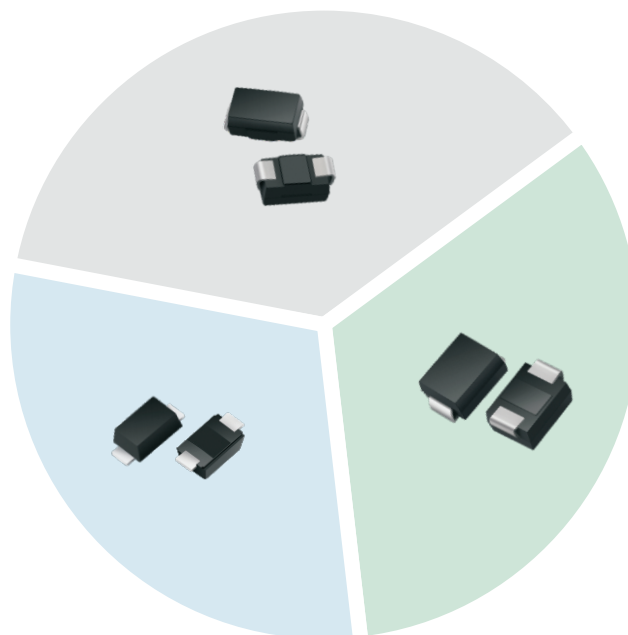
Advantages of the TSS device include its fast response time, stable electrical characteristics, long term reliability, and low capacitance. Also, because the TSS device is a crowbar device, it cannot be damaged by voltage.

Restrictions

Because the TSS device is a crowbar device, it cannot be used directly across the AC line; it must be placed behind a load. Failing to do so will result in exceeding the TSS device's maximum on-state current rating, which may cause the device to enter a permanent shortcircuit condition.

Applications

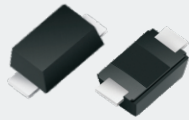
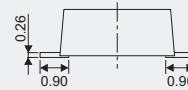
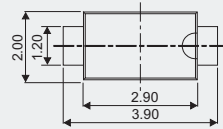
Although found in other applications, TSS devices are primarily used as the principle overvoltage protector in telecommunications and data communications circuits.



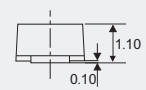


Thyristor Surge Suppressor (DO-219AB)

Part Number	V_{DRM} @ $I_{DRM}=5\mu A$	V_S @ $100V/\mu s$	I_S	V_T @ $I_T=2.2$ Amps	I_T	I_H	C_o
	Min(V)	Max(V)	Max(mA)	Max(V)	Max(A)	Min(mA)	Max(pF)

DO-219AB
PLASTIC

Dimensions in millimeters



P0080FA	6	25	800	4	2.2	50	50
P0300FA	25	40	800	4	2.2	50	70
P0640FA	58	77	800	4	2.2	150	50
P0720FA	65	88	800	4	2.2	150	50
P0900FA	75	98	800	4	2.2	150	45
P1100FA	90	130	800	4	2.2	150	45
P1300FA	120	160	800	4	2.2	150	45
P1500FA	140	180	800	4	2.2	150	40
P1800FA	170	220	800	4	2.2	150	40
P2000FA	180	220	800	4	2.2	150	40
P2300FA	190	260	800	4	2.2	150	35
P2600FA	220	300	800	4	2.2	150	35
P3100FA	275	350	800	4	2.2	150	30
P3500FA	320	400	800	4	2.2	150	30
P3800FA	360	460	800	4	2.2	150	25
P4200FA	400	540	800	4	2.2	150	25

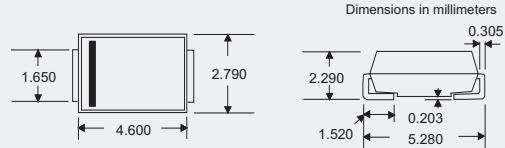
Surge Ratings

Series	I_{PP} 2/10 μs Amps	I_{PP} 8/20 μs Amps	I_{PP} 10/160 μs Amps	I_{PP} 10/560 μs Amps	I_{PP} 10/1000 μs Amps	I_{TSM} 60 Hz Amps	di/dt Amps/ μs
A	100	100	60	15	15	10	500



Thyristor Surge Suppressor (DO-214AC)

Part Number	V_{DRM} @ $I_{DRM}=5\mu A$	V_S @ $100V/\mu s$	I_S	V_T @ $I_T=2.2\text{ Amps}$	I_T	I_H	Co
	Min(V)	Max(V)	Max(mA)	Max(V)	Max(A)	Min(mA)	Max(pF)

DO-214AC
PLASTIC

P0080T_	6	25	800	4	2.2	50	50
P0300T_	25	40	800	4	2.2	50	70
P0640T_	58	77	800	4	2.2	150	50
P0720T_	65	88	800	4	2.2	150	50
P0900T_	75	98	800	4	2.2	150	45
P1100T_	90	130	800	4	2.2	150	45
P1300T_	120	160	800	4	2.2	150	45
P1500T_	140	180	800	4	2.2	150	40
P1800T_	170	220	800	4	2.2	150	40
P2000T_	180	220	800	4	2.2	150	40
P2300T_	190	260	800	4	2.2	150	35
P2600T_	220	300	800	4	2.2	150	35
P3100T_	275	350	800	4	2.2	150	30
P3500T_	320	400	800	4	2.2	150	30
P3800T_	360	460	800	4	2.2	150	25
P4200T_	400	540	800	4	2.2	150	25

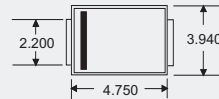
Surge Ratings

Series	I_{PP} 2/10 μs Amps	I_{PP} 8/20 μs Amps	I_{PP} 10/160 μs Amps	I_{PP} 10/560 μs Amps	I_{PP} 10/1000 μs Amps	I_{TSM} 60 Hz Amps	di/dt Amps/ μs
A	150	150	90	50	45	20	500
B	250	250	250	100	80	30	500

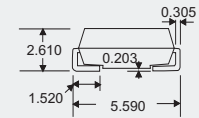


Thyristor Surge Suppressor (DO-214AA)

Part Number	V_{DRM} @ $I_{DRM}=5\mu A$	V_S @ $100V/\mu s$	I_S	V_T @ $I_T=2.2$ Amps	I_T	I_H	Co
	Min(V)	Max(V)	Max(mA)	Max(V)	Max(A)	Min(mA)	Max(pF)

DO-214AA
PLASTIC

Dimensions in millimeters



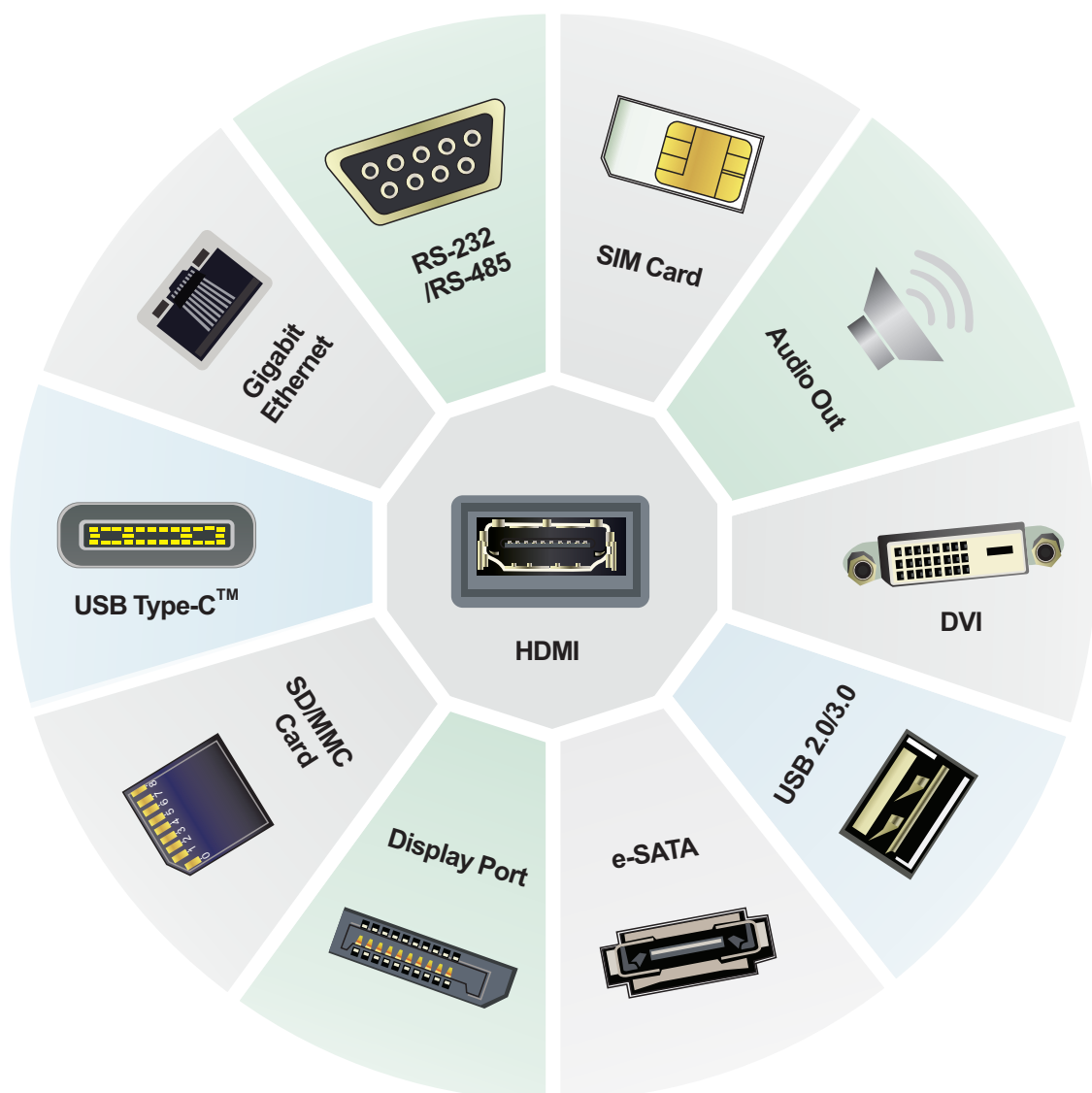
P0080S_	6	25	800	4	2.2	50	50
P0300S_	25	40	800	4	2.2	50	70
P0640S_	58	77	800	4	2.2	150	50
P0720S_	65	88	800	4	2.2	150	50
P0900S_	75	98	800	4	2.2	150	45
P1100S_	90	130	800	4	2.2	150	45
P1300S_	120	160	800	4	2.2	150	45
P1500S_	140	180	800	4	2.2	150	40
P1800S_	170	220	800	4	2.2	150	40
P2000S_	180	220	800	4	2.2	150	40
P2300S_	190	260	800	4	2.2	150	35
P2600S_	220	300	800	4	2.2	150	35
P3100S_	275	350	800	4	2.2	150	30
P3500S_	320	400	800	4	2.2	150	30
P3800S_	360	460	800	4	2.2	150	25
P4200S_	400	540	800	4	2.2	150	25

Surge Ratings

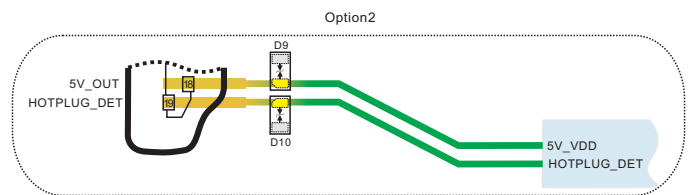
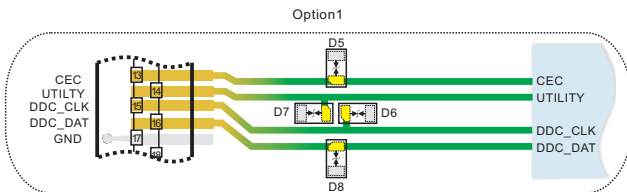
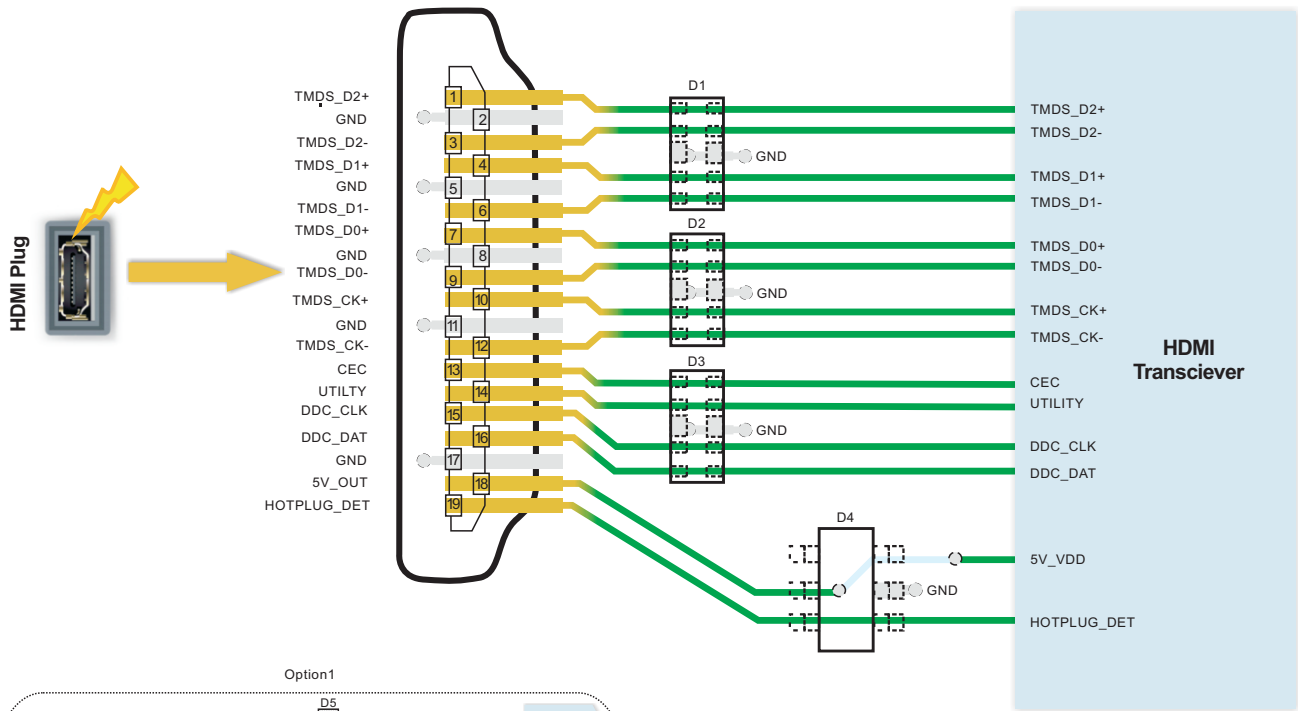
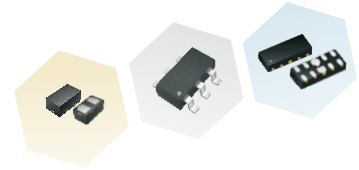
Series	I_{PP} 2/10 μs Amps	I_{PP} 8/20 μs Amps	I_{PP} 10/160 μs Amps	I_{PP} 10/560 μs Amps	I_{PP} 10/1000 μs Amps	I_{TSM} 60 Hz Amps	di/dt Amps/ μs
A	150	150	90	50	45	20	500
B	250	250	150	100	80	30	500
C	500	400	200	150	100	50	500



ESD/Surge Solution By Applications



HDMI Connector Pins: 19 pins
 TMDS Voltage : 2.8V~3.3V
 DDC data / clock Voltage: 0~5V
 CEC Voltage: 0~3.3V
 HOT PLUG detect Voltage: 0~3.3V
 HDMI maximum throughput: ~1.65Gbps per lane / HDMI 1.1-1.2
 3.4Gbps per lane / HDMI 1.3-1.4
 6.0Gbps per lane / HDMI2.0



Layout Guidelines

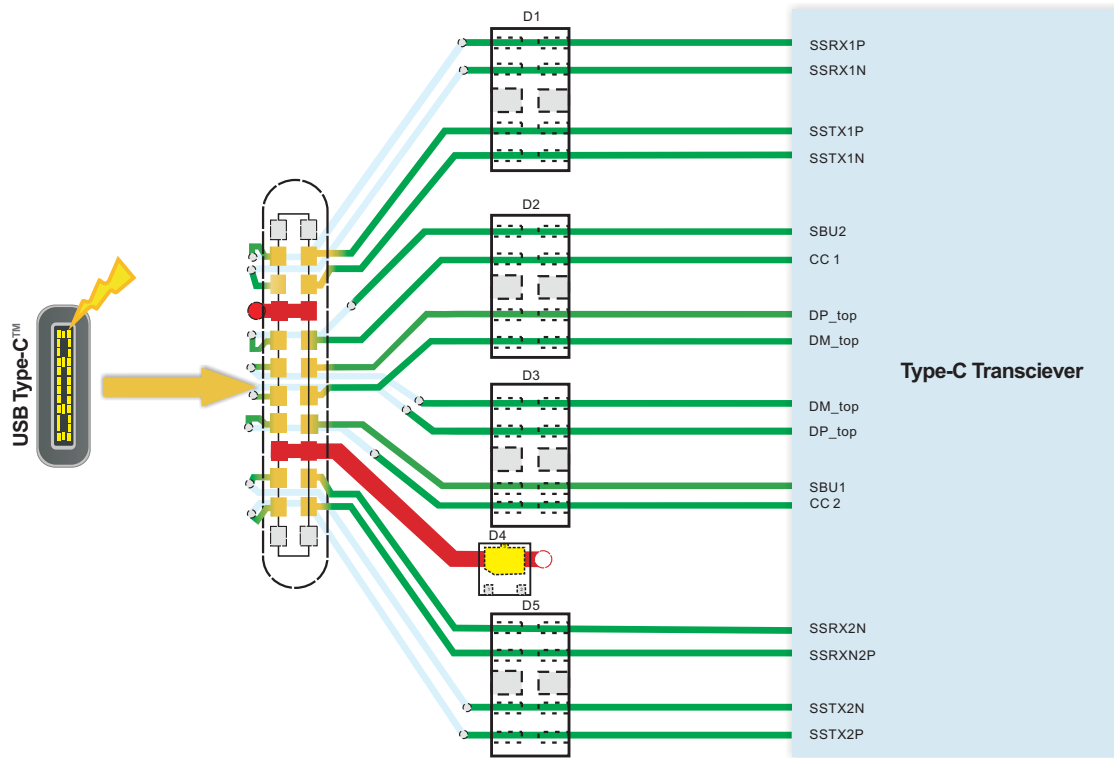
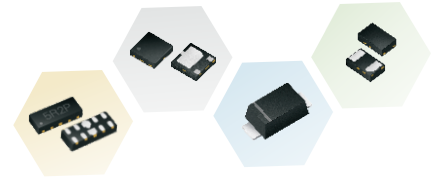
- The optimum placement is as close to the connector as possible.
- Keeping any unprotected traces away from the protected traces
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces
- The flow-through package avoid sharp corner and via for layout

ESD Solutions for HDMI Port

NO	Part#	Channels	V _{RWM} (V)	I _{PP} @8/20uS(A)	V _c @I _{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D1-D3	PT10A054U	4	5.0	3.0	15	0.5	8	DFN2510-10L
D4	PT236A053U	3	5.0	3.0	25	3.0	8	SOT23-6
D5-D10	PT4C051V	1	5.0	6.0	11	12	25	DFN0603
	PT2C051N	1	5.0	5.0	15	15	8	DFN1006

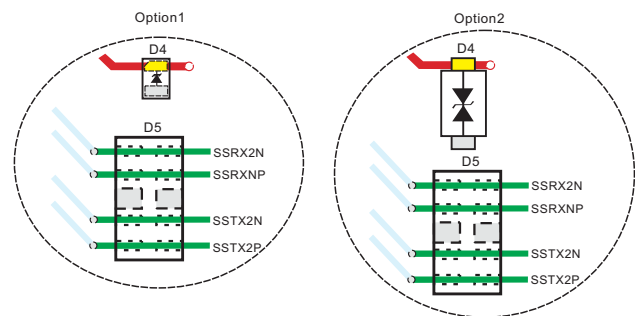


Signal Range on SuperSpeed+ Lines: 0~3.6V
 Operating Freq on SuperSpeed+ Lines: 5 Ghz
 Signal Range on CO, SBU, and DP / DM Lines: 0~5V
 Operating Freq on CC, SBU, and DP / DM Lines: ≤ 480 MHZ



Layout Guidelines

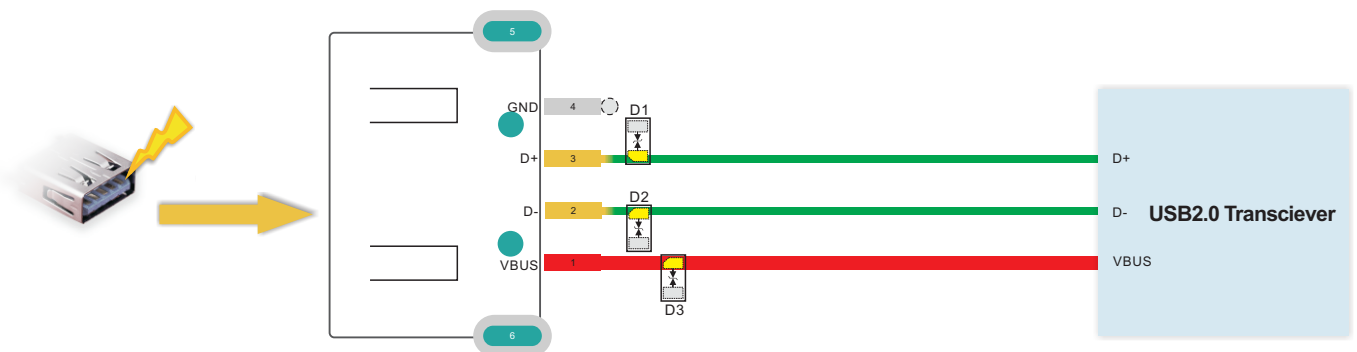
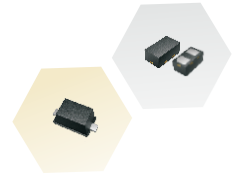
- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces which are between the TVS and the connector.
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces between the TVS and the connector by using rounded corners with the largest radii possible.



ESD/EOS Solutions for Type-C Port

NO	Part#	Channels	V_{RWM} (V)	I_{PP} @8/20uS(A)	V_C @ I_{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Surge Rating @8/20uS (V)	Package
D1~D3, D5	PT10A054U	4	5.0	3.0	15	0.5	8	-	DFN2510-10L
	PT10A054UU	4	5.0	3.0	11	0.36	12	-	
D4	PSUR3D121N	1	12	180	29	950	30	380	DFN2020
	PSUR3D241P	1	24	200	33	750	30	430	
D4	PSUR1610DNV12	1	12	70	24	400	30	160	DFN1610
	PSUR1610DNV24E	1	24	105	35	215	30	240	
D4	PT1A241VE	1	24	200	35	330	30	440	SOD-123

Signal Range on legacy D+/- Lines: 0.3~3.6V
Operating Freq on legacy D+/- Lines: up to 480 MHZ



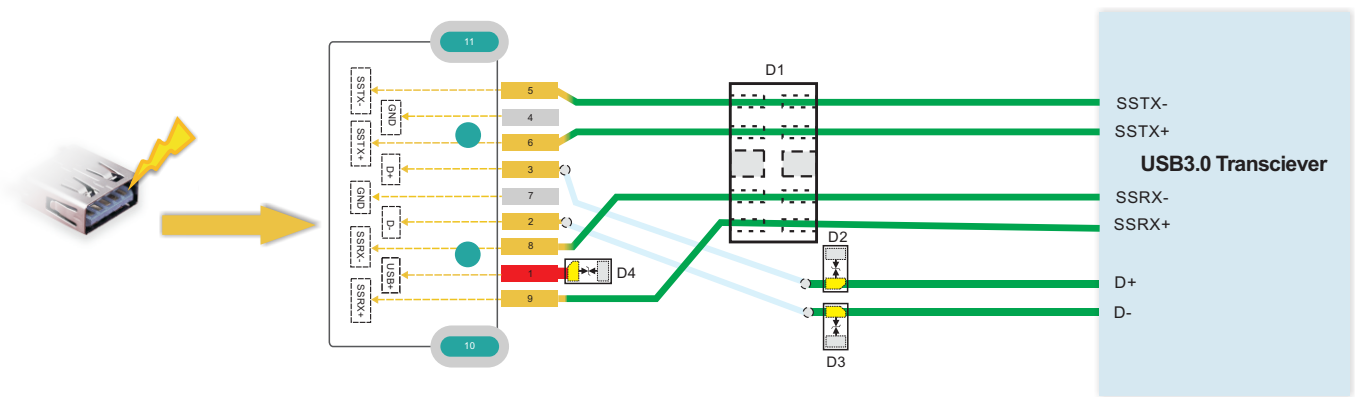
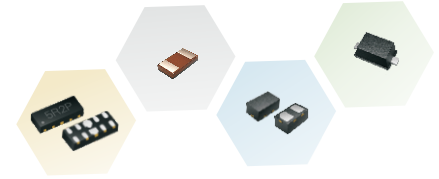
Layout Guidelines

- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces which are between the TVS and the connector.
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces between the TVS and the connector by using rounded corners with the largest radii possible.

ESD Solutions for USB2.0 Port

NO	Part#	Channels	V_{RWM} (V)	I_{PP} @8/20uS(A)	V_C @ I_{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D1,D2	PT4C051U	1	5.0	3.0	15.8	0.5	8	DFN0603
	PT2C051L	1	5.0	3.0	19.8	3.0	8	DFN1006
D3	PT4C051V	1	5.0	6.0	11	12	25	DFN0603
	PT2C051N	1	5.0	5.0	15	15	8	DFN1006
	PT5C051V	1	5.0	5.0	25	15	8	SOD-523

Signal Range on SuperSpeed+ Lines: 1.8~3.6V
 Operating Freq on SuperSpeed+ Lines: 5 Ghz
 Signal Range on legacy D+/- Lines: 0~5V
 Operating Freq on legacy D+/- Lines: up to 480 MHZ



Layout Guidelines

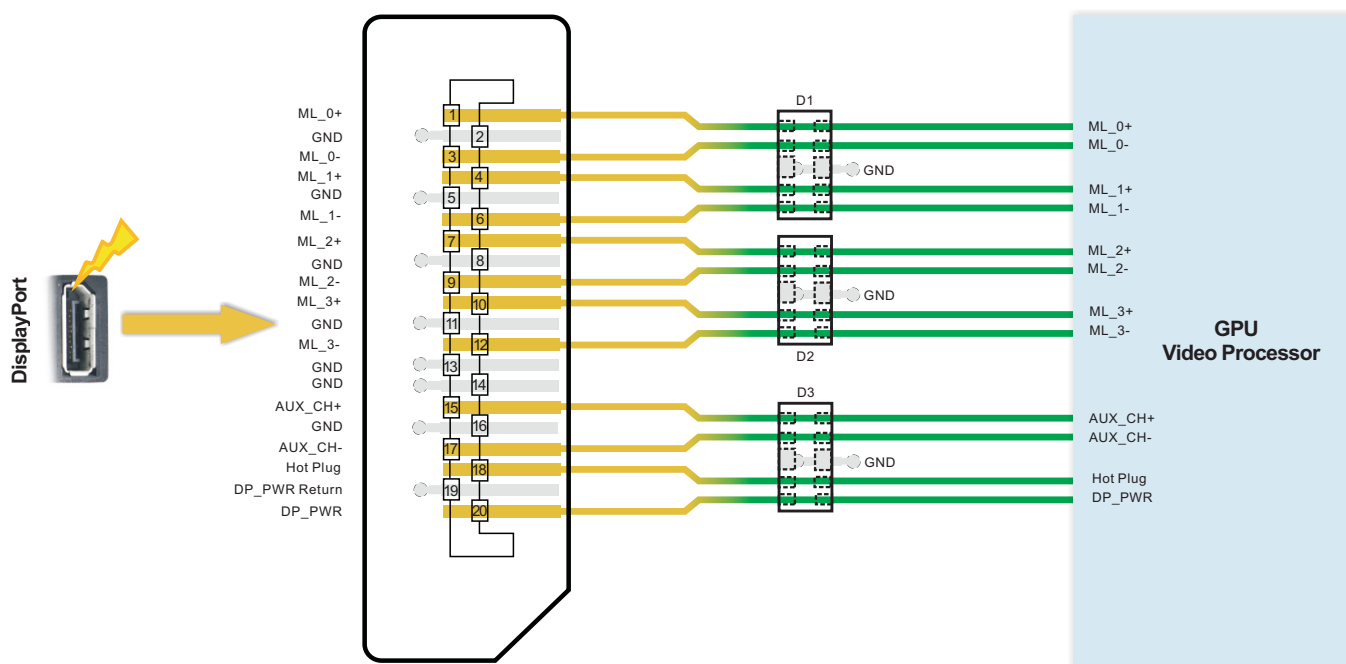
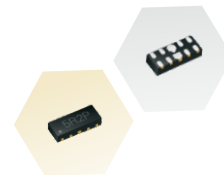
- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces which are between the TVS and the connector.
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces between the TVS and the connector by using rounded corners with the largest radii possible.

ESD Solutions for USB3.0 Port

NO	Part#	Channels	V_{RWM} (V)	I_{PP} @8/20uS(A)	V_C @ I_{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D1	PT10A054U	4	5.0	3.0	15	0.5	8	DFN2510-10L
D2,D3	PT4C051U	1	5.0	3.0	15.8	0.5	8	DFN0603
	PT2C051U	1	5.0	3.0	15	0.3	8	DFN1006
	PESD0402V05U	1	5.0	-	35	0.05	15	0402
D4	PT4C051V	1	5.0	6.0	11	12	25	DFN0603
	PT2C051N	1	5.0	5.0	15	15	8	DFN1006
	PT5C051V	1	5.0	5.0	25	15	8	SOD-523



Signal Range on ML Lines+/- : 0.8~5V
 Signal Speed on ML Lines+/- : up to 8.1Gbps
 Signal Range on AUX_CH : 0.8~5V
 Signal Speed on AUX_CH : 1Mbps
 Hot Plug signal voltage : 0~3.3V
 DP_PWR voltage : 3.3V



Layout Guidelines

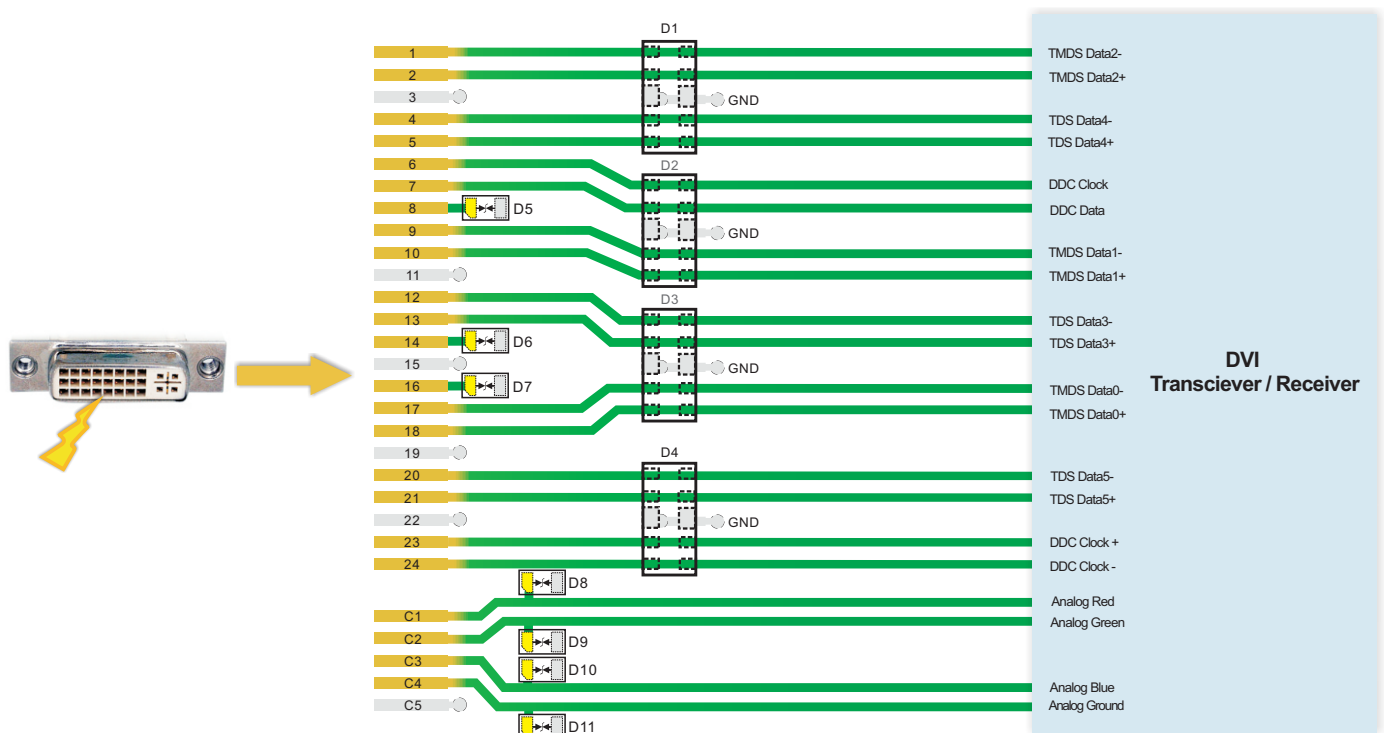
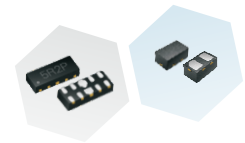
- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces

ESD Solutions for Display Port

NO	Part#	Channels	V_{RWM} (V)	I_{PP} @8/20uS(A)	V_C @ I_{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D1~D3	PT10A054U	4	5.0	3.0	15	0.5	8	DFN2510-10L
	PT10A054UU	4	5.0	3.0	11	0.36	12	

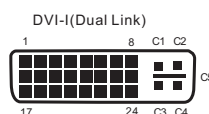


Signal Range on TMDS Data+/- : 0.8~3.3V
 Signal Speed on TMDS Data+/- : up to 1.65Gbps
 Signal Range on DDC Clock+/-: 0~3.3V
 Signal Speed on DDC Clock+/-: 165MHz
 Signal Range on Analog Red / Green / Blue : 0~3.3V
 Signal Range on Analog Vertical/Horizontal Sync : 0~3.3V
 Signal Range on Hot Plug Detect : 0~3.3V



Layout Guidelines

- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces



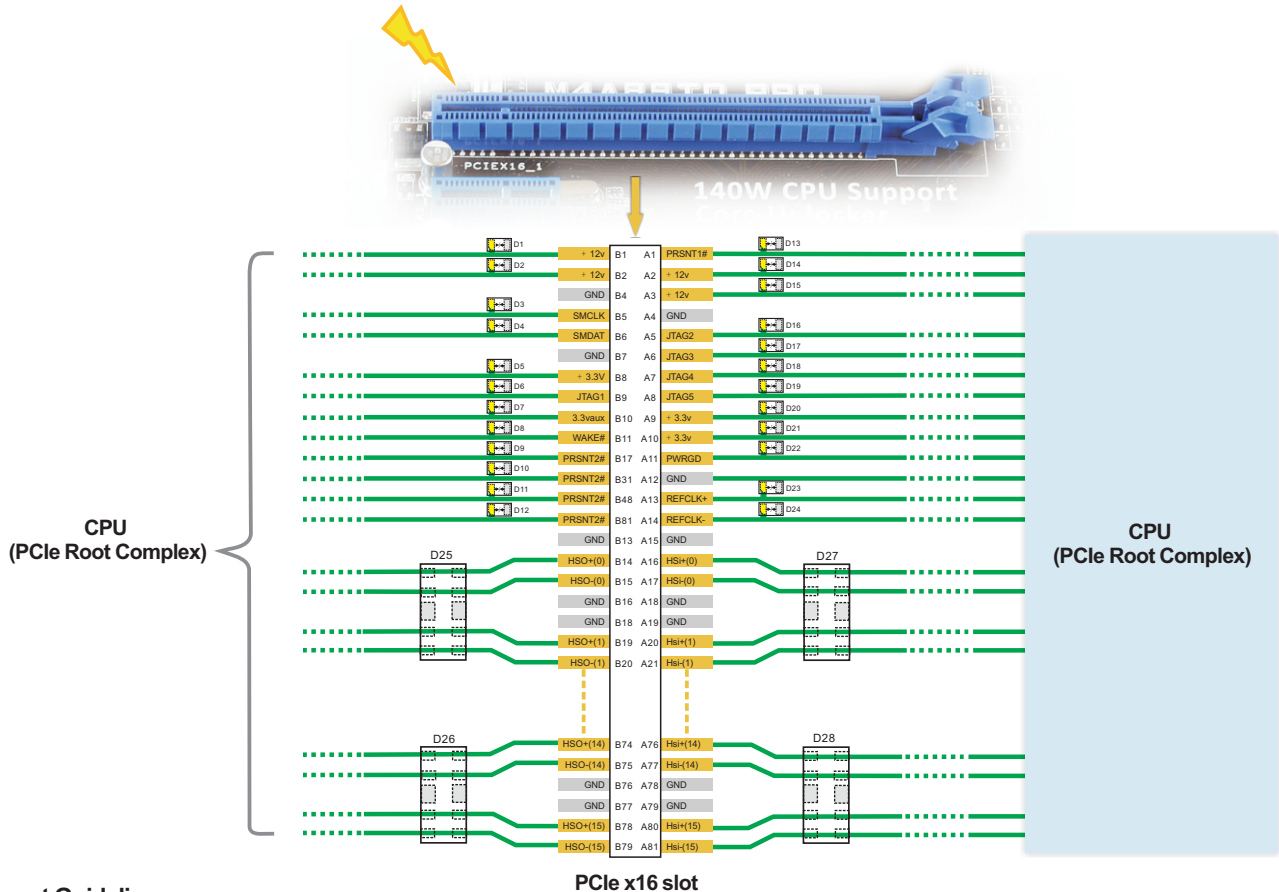
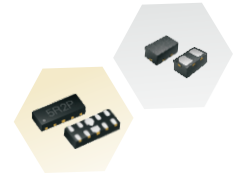
DVI - I Connector Pin Assignments					
Pin #	Signal	Pin #	Signal	Pin #	Signal
1	TMDS Data2-	9	TMDS Data1-	17	TMDS Data0-
2	TMDS Data2+	10	TMDS Data1+	18	TMDS Data0+
3	TDS Data2/4 Shield	11	TDS Data1/3 Shield	19	TDS Data0/5Shield
4	TDS Data4-	12	TDS Data3-	20	TDS Data5-
5	TDS Data4+	13	TDS Data3+	21	TDS Data5+
6	DDC Clock	14	+5V Power	22	DDC Clock Shield
7	DDC Data	15	Ground	23	DDC Clock +
8	Analog Vertical Sync	16	Hot Plug Detect	24	DDC Clock -
C1	Analog Red	C2	Analog Green	C3	Analog Blue
C4	Analog Horizontal Sync	C5	Analog Ground	N/A	N/A

ESD Solutions for DVI Port

NO	Part#	Channels	V _{RWM} (V)	I _{PP} @8/20uS(A)	V _C @I _{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D1~D4	PT10A054U	4	5.0	3.0	15	0.5	8	DFN2510-10L
D6	PT2C051N	1	5.0	5.0	15	15	8	DFN1006
	PT4C051V	1	5.0	6.0	11	12	25	DFN0603
D5,D7~D11	PT4C051V	1	5.0	6.0	11	12	25	DFN0603
	PT2C051N	1	5.0	5.0	15	15	8	DFN1006



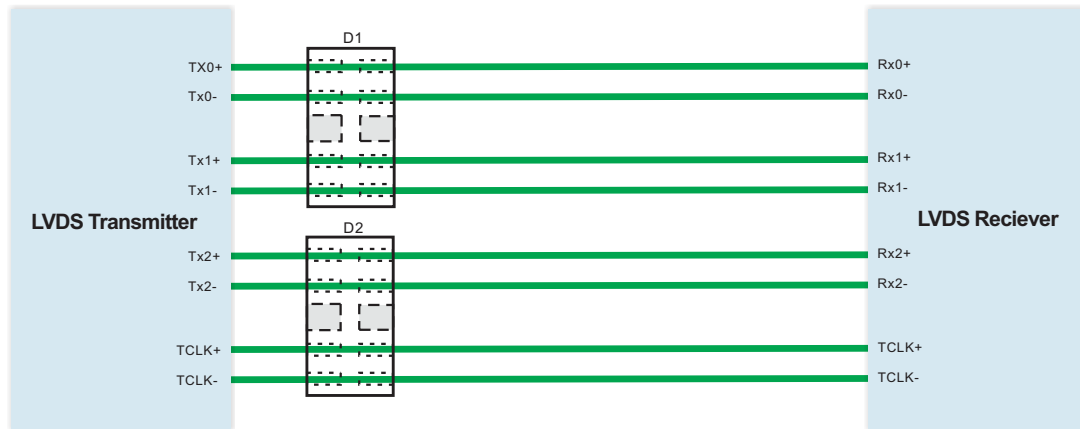
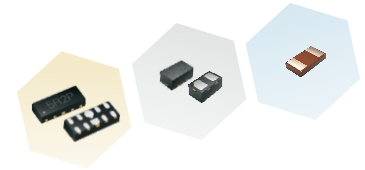
Signal Range on HSO+/- : 0.8~2.8V
 Signal Speed on HSO+/- : up to 5Gbps
 Signal Range on HSI+/- : 0.8~2.8V
 Signal Speed on HSI+/- : up to 5Gbps
 Signal Range on JTAG1~5 / WBKE# / PRSNT1# / PRSNT2# / PWRGD : 0.8~4V
 Signal Range on REFCLK+/- : 0~3.3V
 Signal Speed on REFCLK+/- : 100MHz
 Signal Range on SMCLK / SMDBT : 0~3.3V
 Signal Speed on SMCLK / SMDBT : 100KHz



ESD Solutions for PCIe x16 Port

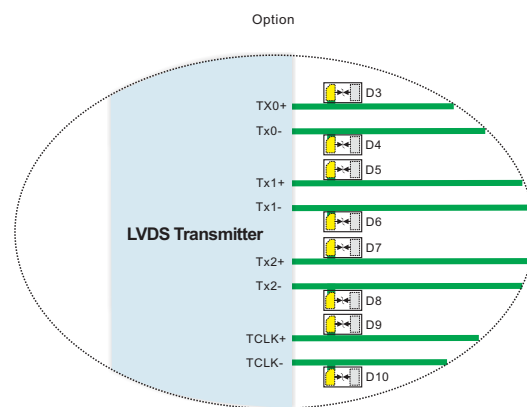
NO	Part#	Channels	V _{RWM} (V)	I _{PP} @8/20uS(A)	V _c @I _{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D1,D2,D14,D15	PT2C121V	1	12	5.0	25	30	8	DFN1006
D3~D13,D16~D22	PT2C051N	1	5.0	5.0	15	15	8	DFN1006
D23,D24	PT2C051U	1	5.0	3.0	15	0.3	8	DFN1006
D25~D28	PT10A054U	4	5.0	3.0	15	0.5	8	DFN2510-10L

Signal Range on Tx+/- : 0~2.2V
Signal Speed on Tx+/- : up to 655Mbps
Signal Range on TCLK+/- : 0~2.2V
Signal Speed on TCLK+/- : 4~95MHz



Layout Guidelines

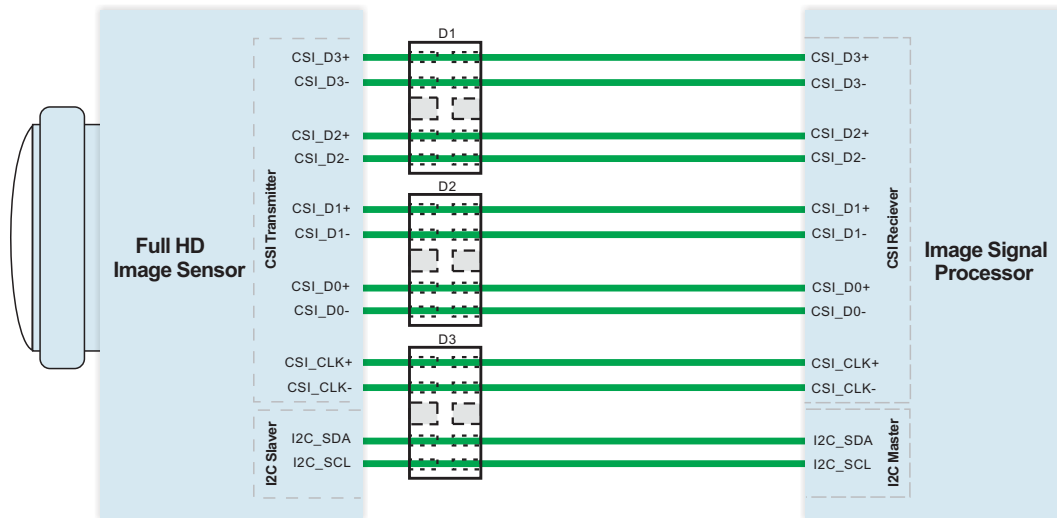
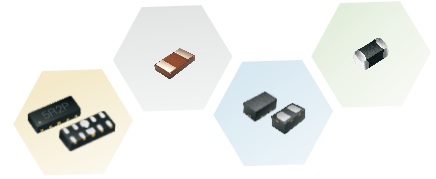
- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces



ESD Solutions for LVDS Interface

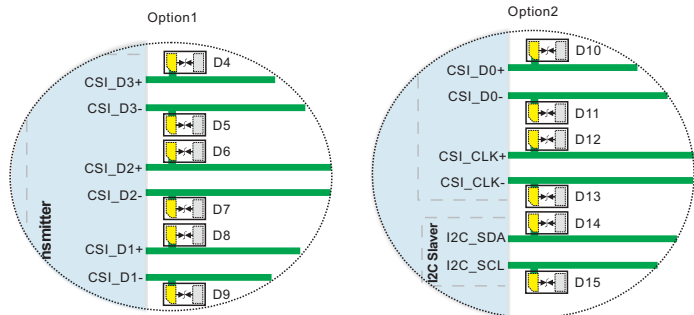
NO	Part#	Channels	V _{RWM} (V)	I _{PP} @8/20uS(A)	V _C @I _{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D1,D2	PT10A054U	4	5.0	3.0	15	0.5	8	DFN2510-10L
D3~D10	PT2C051U	1	5.0	3.0	15	0.3	8	DFN1006
	PT4C051U	1	5.0	3.0	15.8	0.5	8	DFN0603
	PESD0402V05U	1	5.0	-	35	0.05	15	0402

Signal Range on CSI_Dn+/- : 0.1~0.3V
 Signal Speed on CSI_Dn+/- : up to 1.5Gbps
 Signal Range on CSI_CLK+/- : 0~3.3V
 Signal Speed on CSI_CLK+/- : 25~104MHz
 Signal Range on I2C_SDA/SCL : 0~3.3V
 Signal Speed on I2C_SDA/SCL : 400K~1MHz



Layout Guidelines

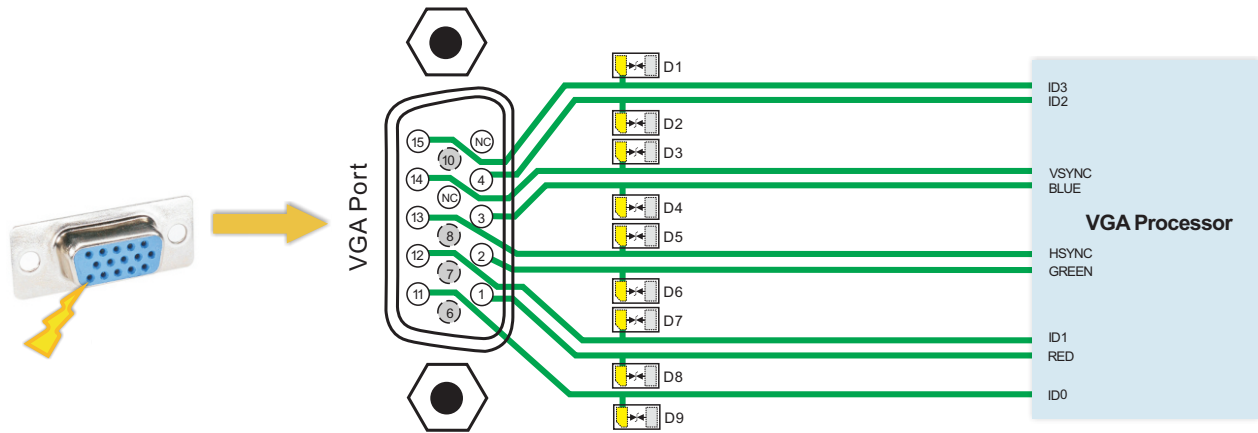
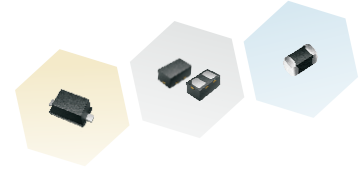
- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces



ESD Solutions for MIPI-CSI Interface

NO	Part#	Channels	V _{RWM} (V)	I _{PP} @8/20uS(A)	V _C @I _{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D1~D3	PT10A054U	4	5.0	3.0	15	0.5	8	DFN2510-10L
D4~D13	PT2C051U	1	5.0	3.0	15	0.3	8	DFN1006
	PT4C051U	1	5.0	3.0	15.8	0.5	8	DFN0603
	PESD0402V05U	1	5.0	-	35	0.05	15	0402
D14,D15	PT2C051N	1	5.0	5.0	15	15	8	DFN1006
	PT4C051V	1	5.0	6.0	11	12	25	DFN0603
	PESD0402V05P03	1	5.0	-	-	3.0	8	0402
	PESD0201V05P03	1	5.0	-	-	3.0	8	0201

Signal Range on Red / Green / Blue: 0~0.714V
Signal Range on HSYNC / VSYNC: 0~3.3V
Signal Speed on HSYNC / VSYNC: 0~5MHz
Signal Range on ID0~ID3: 0~3.3V



Layout Guidelines

- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces



VGA Connector Pin Assignments					
Pin #	Signal	Pin #	Signal	Pin #	Signal
1	RED	6	RGND	11	ID0
2	GREEN	7	GGND	12	ID1
3	BLUE	8	BGND	13	HSYNC
4	ID2	9	KEY	14	VSYNC
5	GND	10	SGND	15	ID3

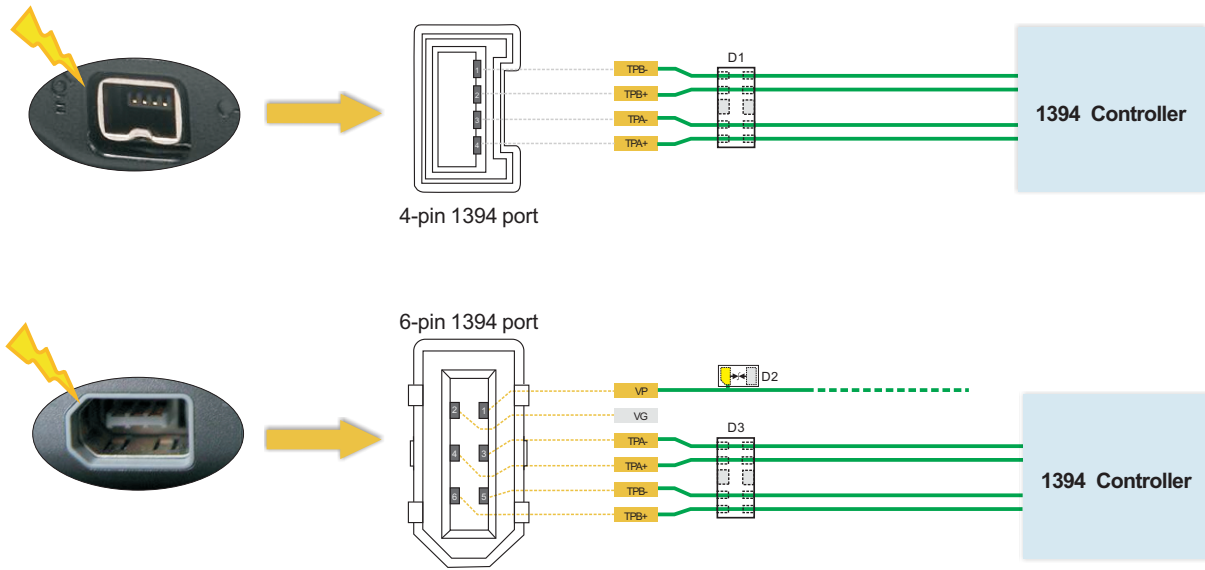
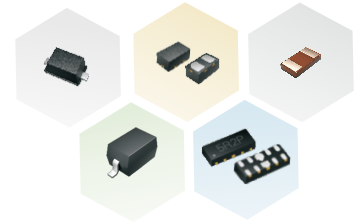
ESD Solutions for VGA Port

NO	Part#	Channels	V _{RWM} (V)	I _{PP} @8/20uS(A)	V _C @I _{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D1~D9	PT4C051V	1	5.0	6.0	11	12	25	DFN0603
	PT2C051N	1	5.0	5.0	15	15	8	DFN1006
	PT5C051V	1	5.0	5.0	25	15	8	SOD-523
	PESD0201V05P03	1	5.0	-	-	3.0	8	0201
	PESD0402V05P03	1	5.0	-	-	3.0	8	0402
	PESD0603V05P03	1	5.0	-	-	3.0	8	0603



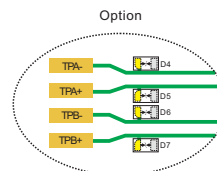
Signal Range on TPA+/-,TPB+/-:
Signal Speed on TPA+/-,TPB+/-:
Signal Range on VP:

0.8~2.8V
up to 800Mbps
5~12V



Layout Guidelines

- The optimum placement is as close to the connector as possible.
- Keeping any unprotected traces away from the protected traces
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces

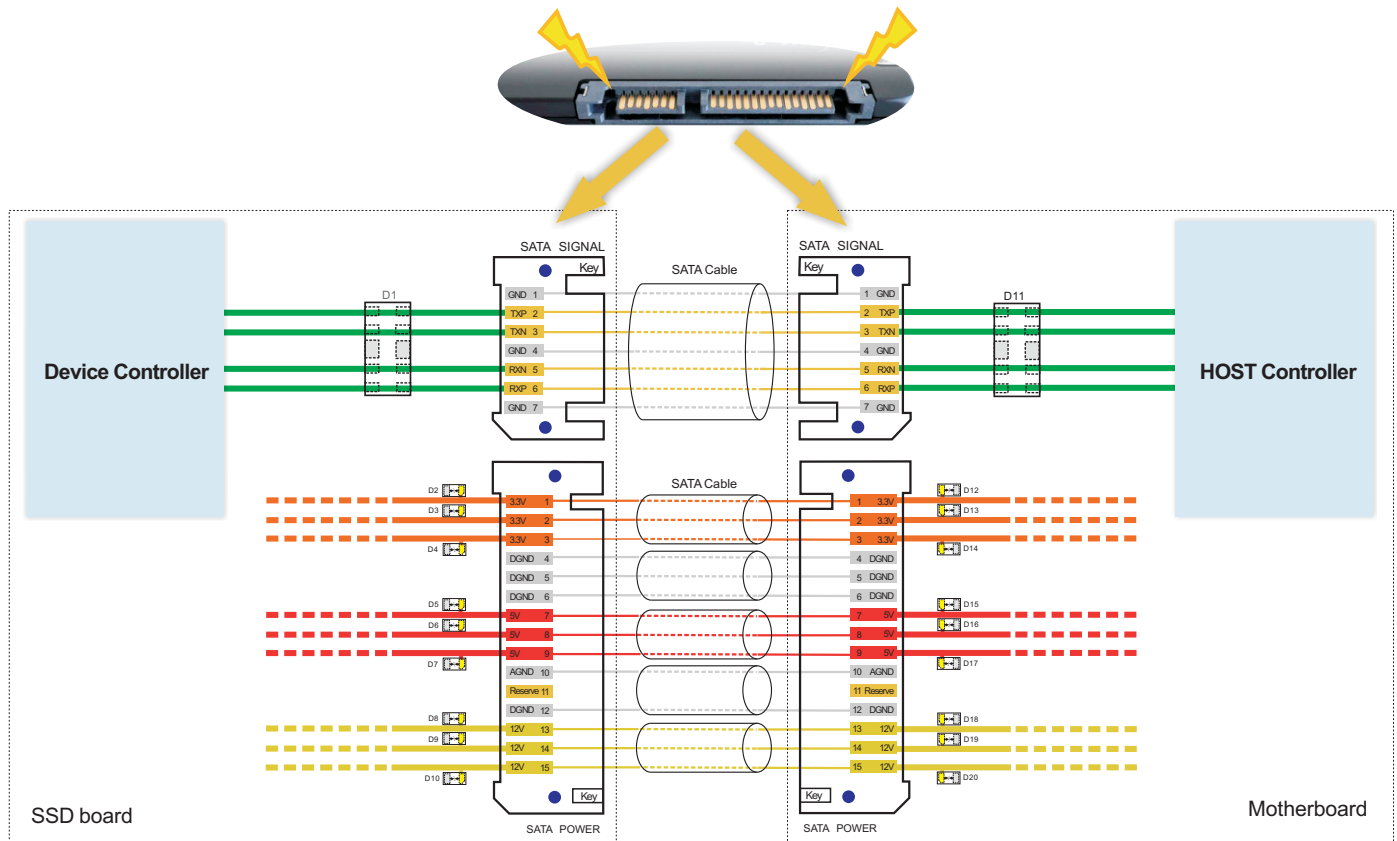
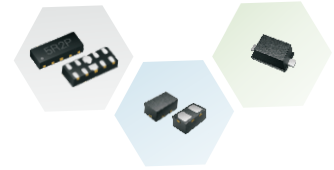


ESD Solutions for IEEE1394 Port

NO	Part#	Channels	V_{RWM} (V)	I_{PP} @8/20uS(A)	V_C @ I_{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D1,D3	PT10A054U	4	5.0	3.0	15	0.5	8	DFN2510-10L
D2	PT4C121V	1	12	8.0	20	10	30	DFN0603
	PT2C121V	1	12	5.0	25	30	8	DFN1006
	PT5C121V	1	12	5.0	25	30	8	SOD-523
	PT3C121V	1	12	6.0	25	70	8	SOD-323
D4~D7	PT4C051U	1	5.0	3.0	15.8	0.5	8	DFN0603
	PT2C051U	1	5.0	3.0	15	0.3	8	DFN1006
	PESD0402V05U	1	5.0	-	35	0.05	15	0402

Signal Range on TX+/-,RX+/- :
Signal Speed on TX+/-,RX+/- :

0.8~2.8V
up to 6Gbps



Layout Guidelines

- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces

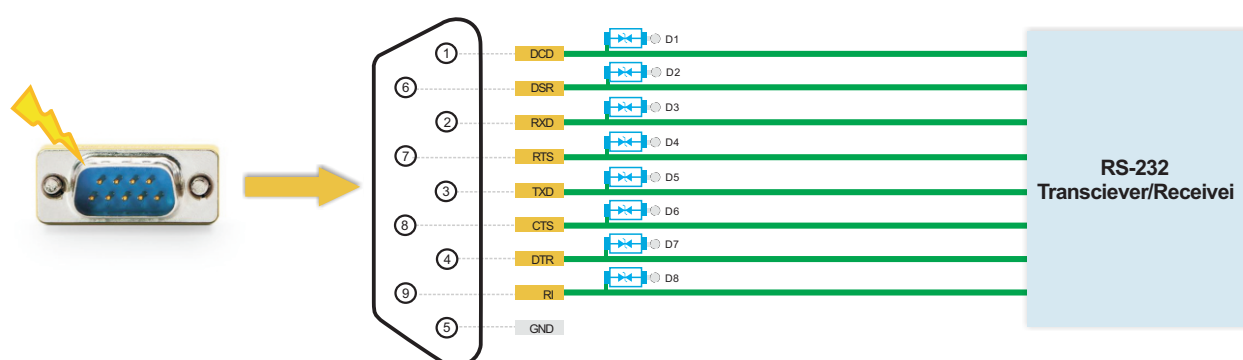
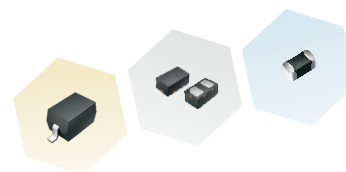
ESD Solutions for SATA Port

NO	Part#	Channels	V _{RWM} (V)	I _{PP} @8/20uS(A)	V _c @I _{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D1,D11	PT10A054UU	4	5.0	3.0	11	0.36	12	DFN2510-10L
D2~D7 D12~D17	PT4C051V	1	5.0	6.0	11	12	25	DFN0603
	PT2C051N	1	5.0	5.0	15	15	8	DFN1006
	PT5C051V	1	5.0	5.0	25	15	8	SOD-523
D8~D10 D18~D20	PT4C121V	1	12	8.0	20	10	30	DFN0603
	PT2C121V	1	12	5.0	25	30	8	DFN1006
	PT5C121V	1	12	5.0	25	30	8	SOD-523



Signal Range on DCD/RXD/TXD/DTR/DSR/RTS/CTS :
Signal Speed on RXD/TXD:

-15~15V
20Kbps



Layout Guidelines

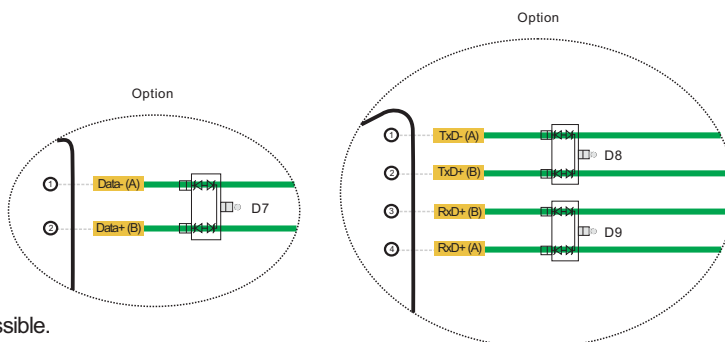
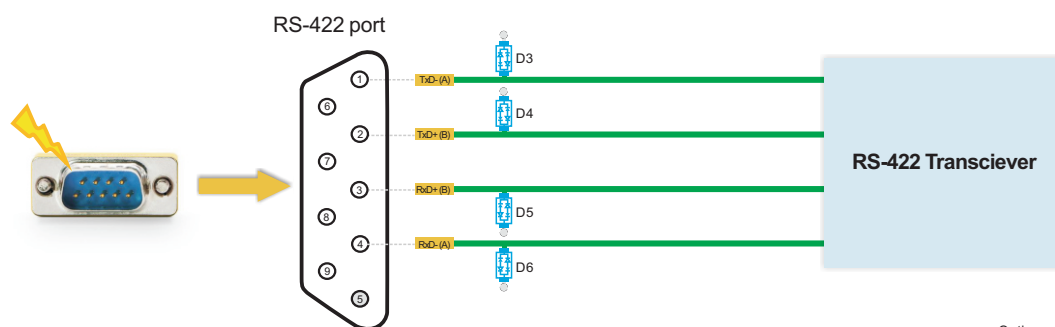
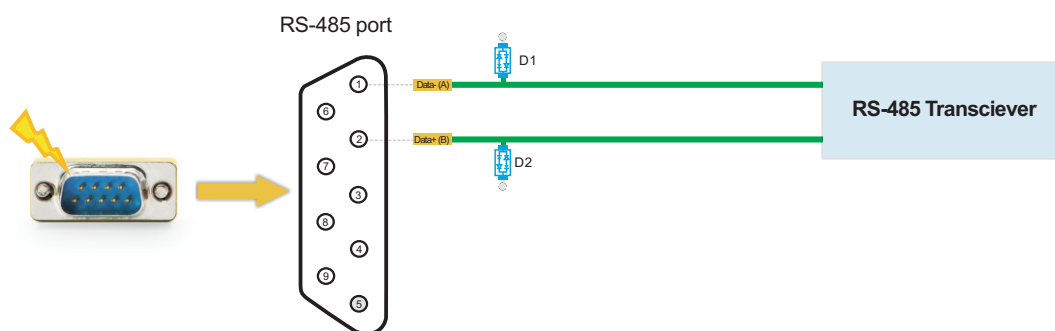
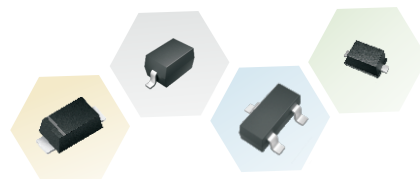
- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces

ESD Solutions for RS-232 Port

NO	Part#	Channels	V_{RWM} (V)	I_{PP} @8/20uS(A)	V_C @ I_{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D1~D8	PT2C241V	1	24	3.0	64	15	8	DFN1006
	PT3C241V	1	24	3.0	54	30	8	SOD-323
	PESD0402V24P03	1	24	-	-	3.0	8	0402
	PESD0603V24P03	1	24	-	-	3.0	8	0603

Signal Range on A/B:
Signal Speed on A/B:

-7~+12V
up to 10Mbps



Layout Guidelines

- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces

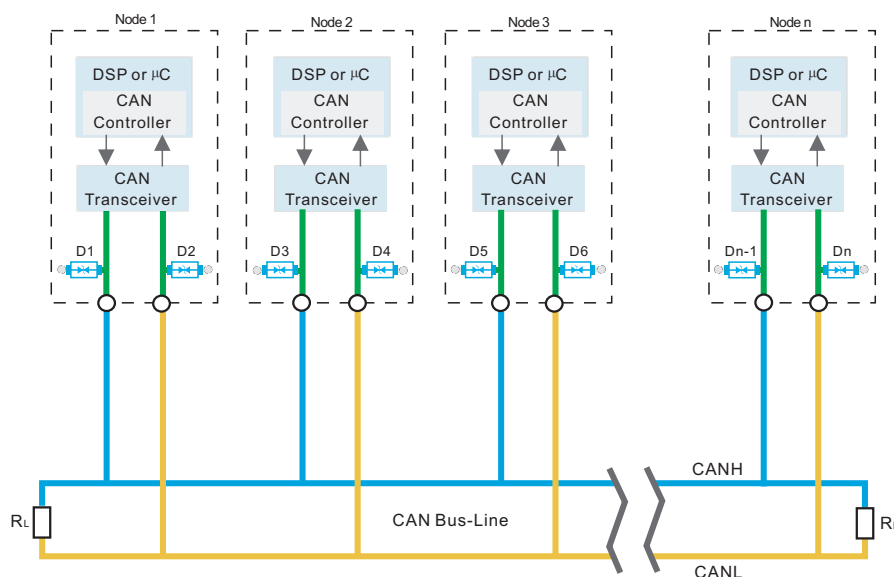
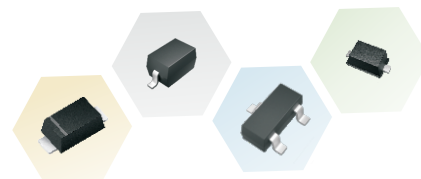
ESD Solutions for RS-485/422 Port

NO	Part#	Channels	V_{RWM} (V)	I_{PP} @8/20uS(A)	V_C @ I_{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D1~D6	PT5C121V	1	12	5.0	25	30	8	SOD-523
	PT3C121V	1	12	6.0	25	70	8	SOD-323
	PSUR200V12B	1	12	185	27.6	-	30	DO-219AB
D7~D9	PT23C712V	2	7/12	28	18	70	30	SOT-23



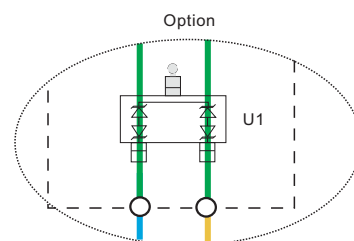
Signal Range on CANH / L:
Signal Speed on CANH / L:

-12~12V
up to 1Mbps



Layout Guidelines

- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces

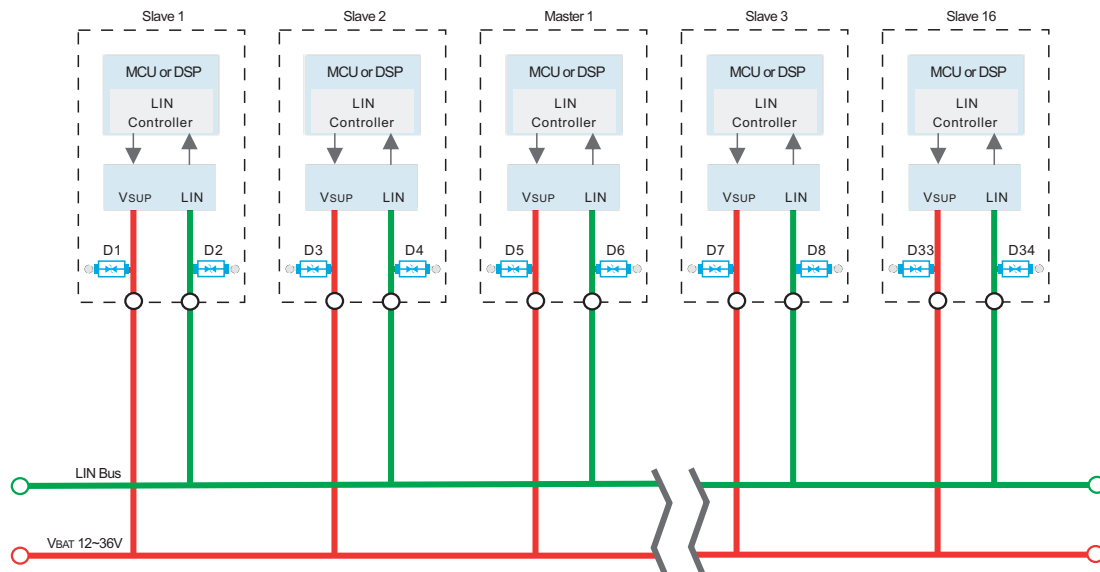
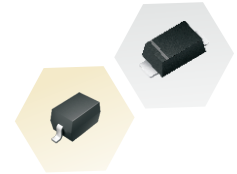


ESD Solutions for CAN Bus

NO	Part#	Channels	V_{RWM} (V)	I_{PP} @8/20uS(A)	V_C @ I_{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D1~Dn	PT5C121V	1	12	5.0	25	30	8	SOD-523
	PT3C121V	1	12	6.0	25	70	8	SOD-323
	PSUR200V12B	1	12	185	27.6	-	30	DO-219AB
U1	PT23C121V	1	12	12	30	45	30	SOT-23

Signal Range on LIN:
Signal Speed on LIN :

12~36V
up to 20Kbps



Layout Guidelines

- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces

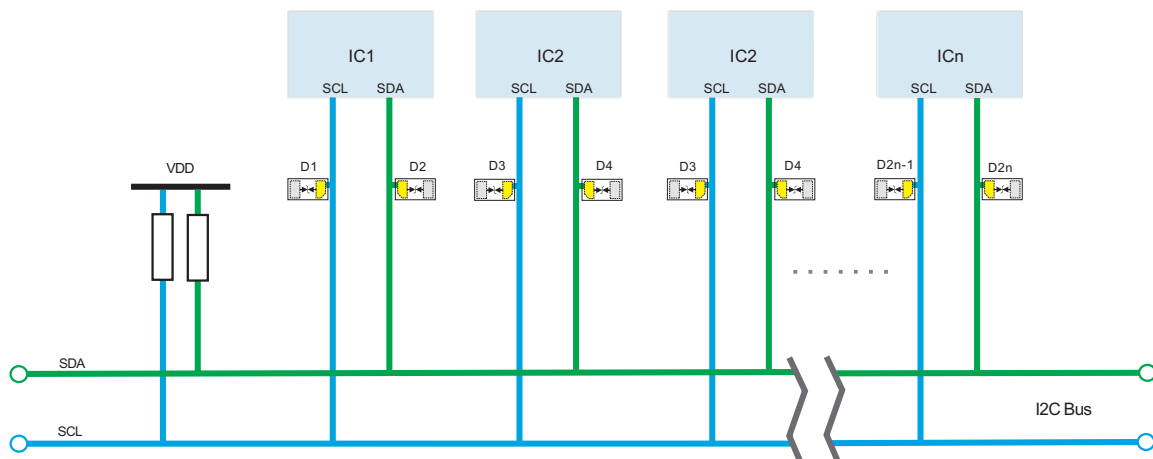
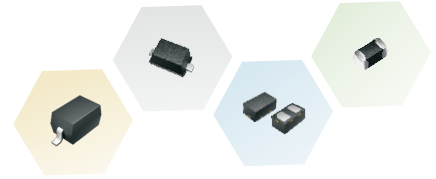
ESD Solutions for LIN Bus

NO	Part#	Channels	V_{RWM} (V)	I_{PP} @8/20uS(A)	V_C @ I_{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D1~D34	PT3C121V	1	12	6.0	25	70	8	SOD-323
	PT3C241V	1	24	3.0	54	30	8	
	PT3C361V	1	36	3.0	80	30	8	
D1~D34	PSUR200V12B	1	12	185	27.6	-	30	DO-219AB
	PSUR200V24B	1	24	300	32.6	-	30	
	PSUR200V36B	1	36	45	60.8	-	30	



Signal Range on SDA/SCL:
Signal Speed on SDA/SCL:
Maximum capacitive load of I2C:

0.8~5V
up to 3.4Mbps
400pF



Layout Guidelines

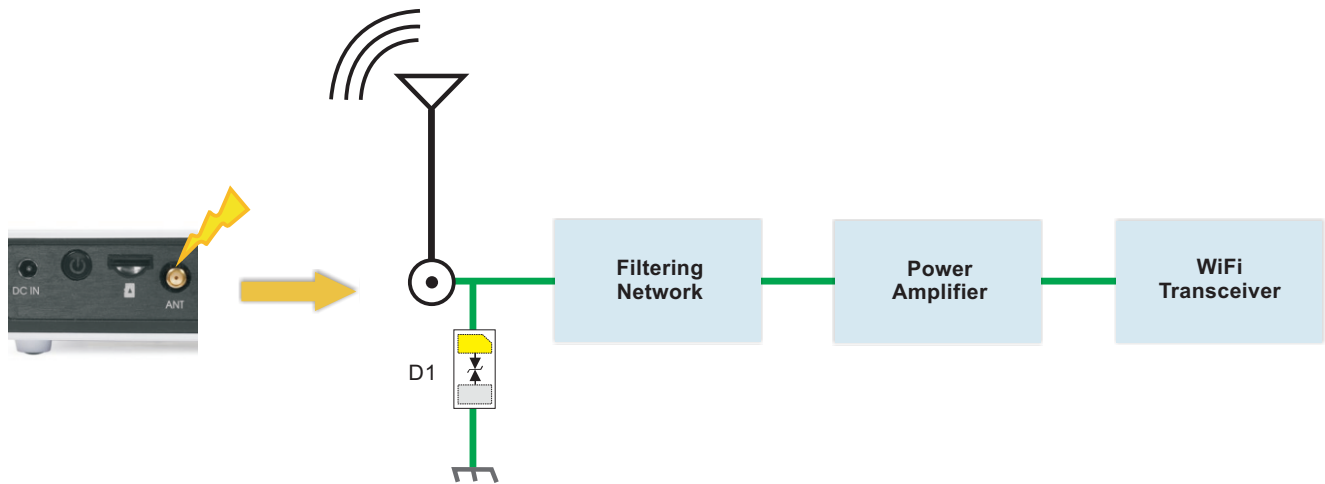
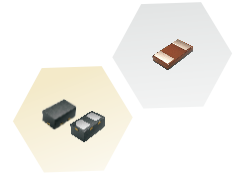
- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces

ESD Solutions for I2C Bus

NO	Part#	Channels	V _{RWM} (V)	I _{PP} @8/20uS(A)	V _C @I _{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D1~D2n	PT4C051V	1	5.0	6.0	11	12	25	DFN0603
	PESD0201V05P03	1	5.0	-	-	3.0	8	0201
	PT2C051N	1	5.0	5.0	15	15	8	DFN1006
	PESD0402V05P03	1	5.0	-	-	3.0	8	0402
	PT5C051V	1	5.0	5.0	25	15	8	SOD-523
	PESD0603V05P03	1	5.0	-	-	3.0	8	0603
	PT3C051V	1	5.0	10	15	100	8	SOD-323

Signal Range on ANT RF:
Signal Speed on ANT RF :

<2mV
up to 5Gbps



Layout Guidelines

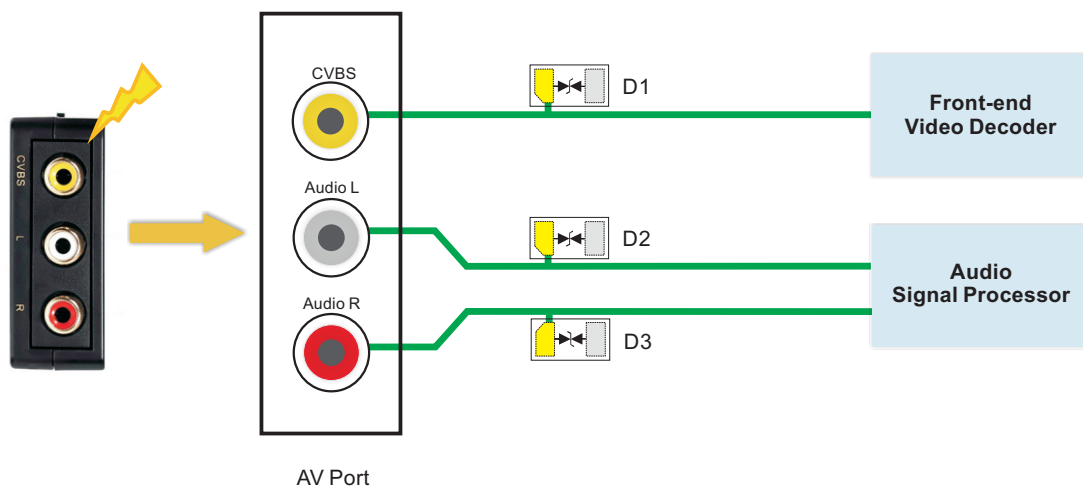
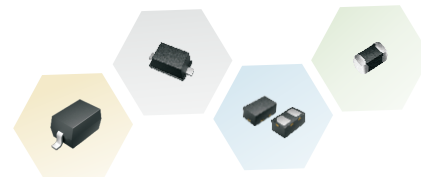
- The optimum placement is as close to the connector as possible.
- Keeping any unprotected traces away from the protected traces
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces

ESD Solutions for ANT Port

NO	Part#	Channels	V _{RWM} (V)	I _{PP} @8/20uS(A)	V _C @I _{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D1	PT4C051U	1	5.0	3.0	15.8	0.5	8	DFN0603
	PT4C181UUR	1	18	4.0	8.0	0.4	15	
	PESD0201V18U	1	18	-	35	0.05	15	0201
	PT2C051U	1	5.0	3.0	15	0.3	8	DFN1006
	PT2C181UUR	1	18	4.0	8.0	0.35	15	
	PESD0402V03U	1	3.3	-	35	0.05	15	0402
	PESD0402V18U	1	18	-	35	0.05	15	
	PESD0603V05U	1	5.0	-	35	0.05	15	0603
	PESD0603V18U	1	18	-	35	0.05	15	

Signal Range on CVBS:
Signal Speed on CVBS:
Signal Range on Audio L/R:
Signal Speed on Audio L/R:

<1.2V
up to 8Mbps
<5V
up to 20KHz



Layout Guidelines

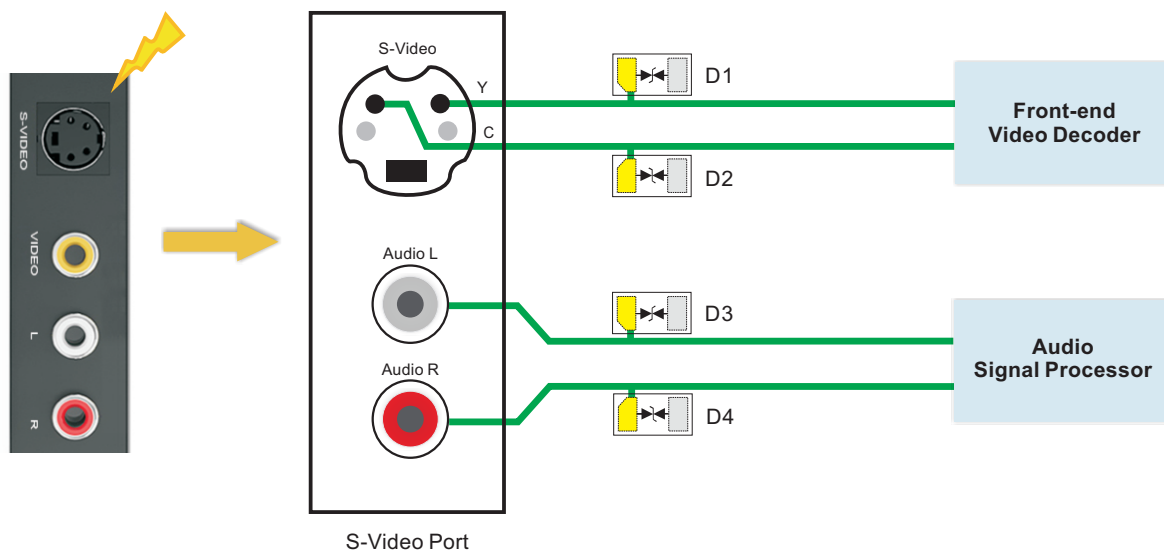
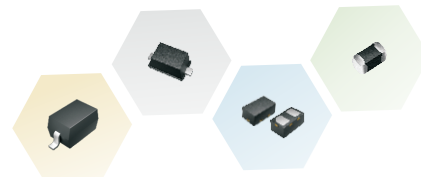
- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces

ESD Solutions for AV Port

NO	Part#	Channels	V _{RWM} (V)	I _{PP} @8/20uS(A)	V _C @I _{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D1~D3	PT2C051N	1	5.0	5.0	15	15	8	DFN1006
	PESD0402V05P03	1	5.0	-	-	3.0	8	0402
	PT5C051V	1	5.0	5.0	25	15	8	SOD-523
	PESD0603V05P03	1	5.0	-	-	3.0	8	0603
	PT3C051V	1	5.0	10	15	100	8	SOD-323

Signal Range on Y/C:
Signal Speed on Y/C:
Signal Range on Audio L/R:
Signal Speed on Audio L/R:

<1.2V
up to 8Mbps
<5V
up to 20KHz



Layout Guidelines

- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces

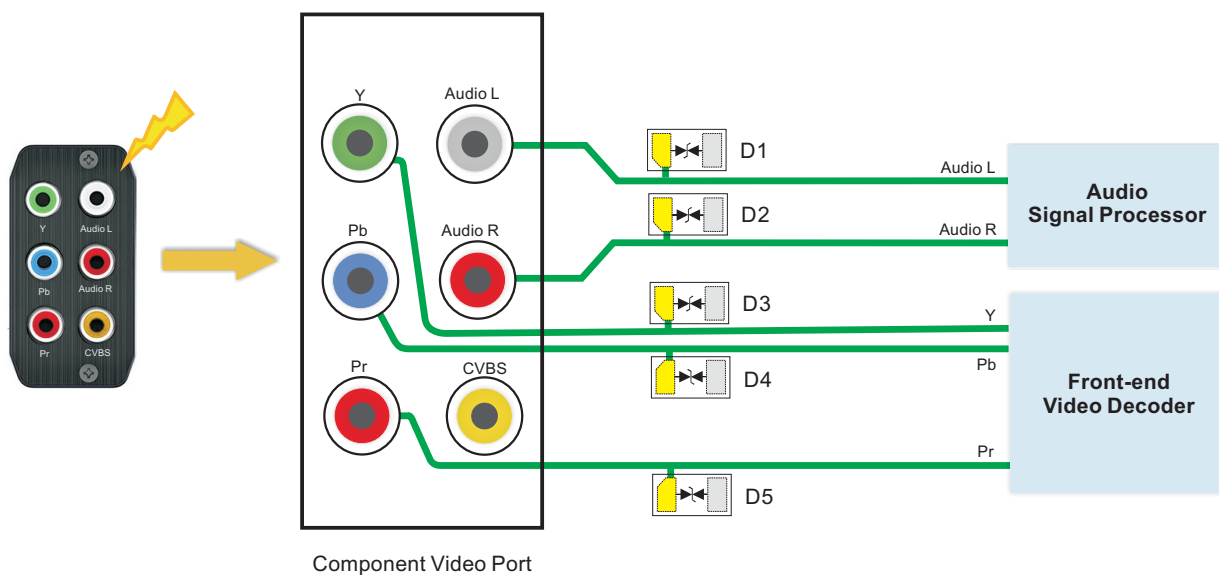
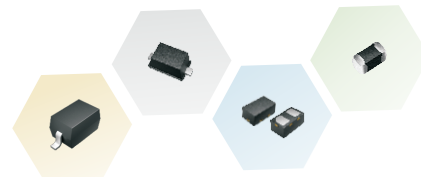
ESD Solutions for S-Video Port

NO	Part#	Channels	V_{RWM} (V)	I_{PP} @8/20uS(A)	V_C @ I_{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D1~D4	PT2C051N	1	5.0	5.0	15	15	8	DFN1006
	PESD0402V05P03	1	5.0	-	-	3.0	8	0402
	PT5C051V	1	5.0	5.0	25	15	8	SOD-523
	PESD0603V05P03	1	5.0	-	-	3.0	8	0603
	PT3C051V	1	5.0	10	15	100	8	SOD-323



Signal Range on Y/Pb/Pr:
Signal Speed on Y/Pb/Pr:
Signal Range on Audio L/R:
Signal Speed on Audio L/R:

<1.2V
up to 8Mbps
<5V
up to 20KHz



Layout Guidelines

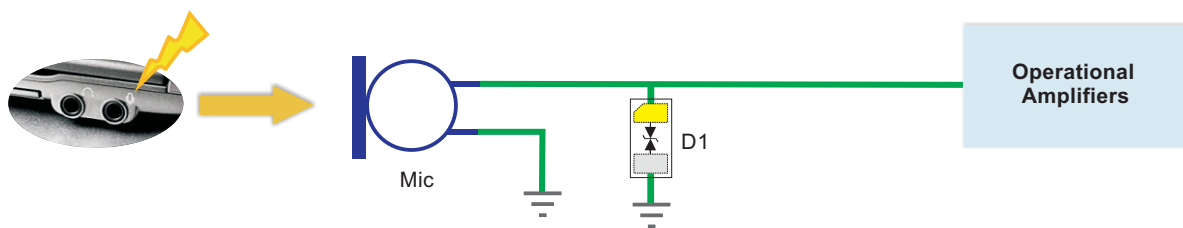
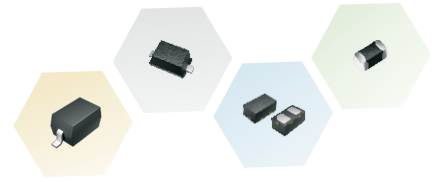
- The optimum placement is as close to the connector as possible.
- Keeping any unprotected traces away from the protected traces
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces

ESD Solutions for Component Video Port

NO	Part#	Channels	V_{RWM} (V)	I_{PP} @8/20uS(A)	V_C @ I_{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D1~D5	PT2C051N	1	5.0	5.0	15	15	8	DFN1006
	PESD0402V05P03	1	5.0	-	-	3.0	8	0402
	PT5C051V	1	5.0	5.0	25	15	8	SOD-523
	PESD0603V05P03	1	5.0	-	-	3.0	8	0603
	PT3C051V	1	5.0	10	15	100	8	SOD-323

Signal Range on Microphone input:
Signal Speed on Microphone input:

<10mV
8~20KHz



Layout Guidelines

- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces

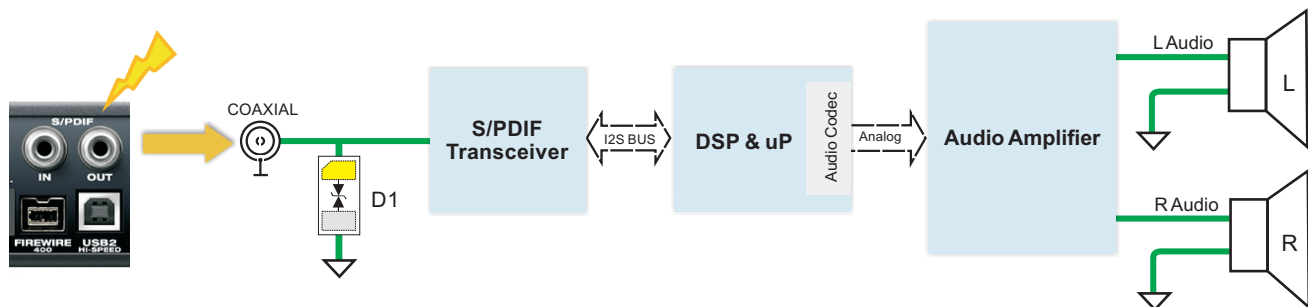
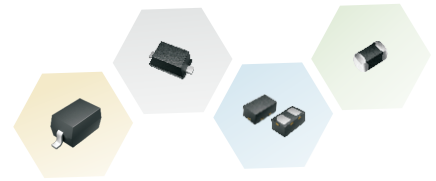
ESD Solutions for Microphone port

NO	Part#	Channels	V_{RWM} (V)	I_{PP} @8/20uS(A)	V_C @ I_{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D1	PT4C051V	1	5.0	6.0	11	12	25	DFN0603
	PESD0201V05P03	1	5.0	-	-	3.0	8	0201
	PT2C051N	1	5.0	5.0	15	15	8	DFN1006
	PESD0402V05P03	1	5.0	-	-	3.0	8	0402
	PT5C051V	1	5.0	5.0	25	15	8	SOD-523
	PESD0603V05P03	1	5.0	-	-	3.0	8	0603



Signal Range on Coaxial line:
Signal Speed on Coaxial line:

0~0.5V
0~216KHz



Layout Guidelines

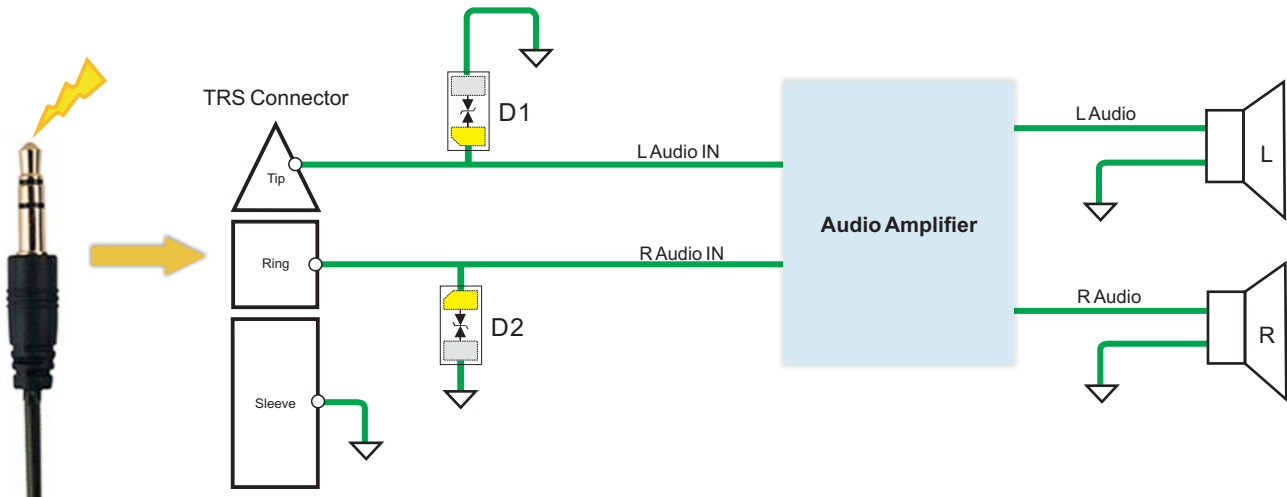
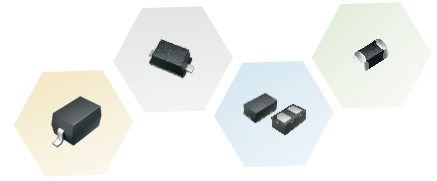
- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces

ESD Solutions for S/PDIF Port

NO	Part#	Channels	V_{RWM} (V)	I_{PP} @8/20uS(A)	V_C @ I_{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D1	PT4C051V	1	5.0	6.0	11	12	25	DFN0603
	PESD0201V05P03	1	5.0	-	-	3.0	8	0201
	PT2C051N	1	5.0	5.0	15	15	8	DFN1006
	PESD0402V05P03	1	5.0	-	-	3.0	8	0402
	PT5C051V	1	5.0	5.0	25	15	8	SOD-523
	PESD0603V05P03	1	5.0	-	-	3.0	8	0603
	PT3C051V	1	5.0	10	15	100	8	SOD-323

Signal Range on Tip/Ring:
Signal Speed on Tip/Ring:

0~1.2V
8~20KHz



Layout Guidelines

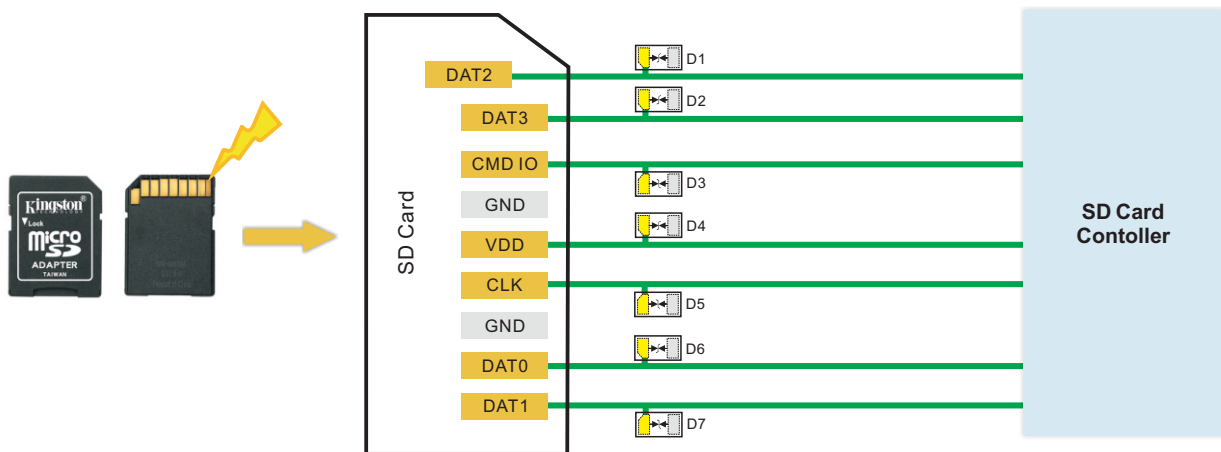
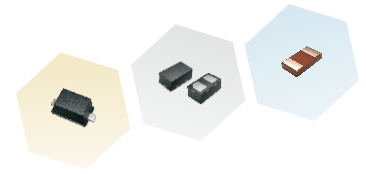
- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces

ESD Solutions for Analog Audio Port

NO	Part#	Channels	V_{RWM} (V)	I_{PP} @8/20uS(A)	V_C @ I_{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D1,D2	PT4C051V	1	5.0	6.0	11	12	25	DFN0603
	PESD0201V05P03	1	5.0	-	-	3.0	8	0201
	PT2C051N	1	5.0	5.0	15	15	8	DFN1006
	PESD0402V05P03	1	5.0	-	-	3.0	8	0402
	PT5C051V	1	5.0	5.0	25	15	8	SOD-523
	PESD0603V05P03	1	5.0	-	-	3.0	8	0603
	PT3C051V	1	5.0	10	15	100	8	SOD-323

Signal Range on DAT0~DAT3,CLK,CMD IO:
Signal Speed on DAT0~DAT3,CLK,CMD IO:

0.8~3.6V
Up to 25Mbps



Layout Guidelines

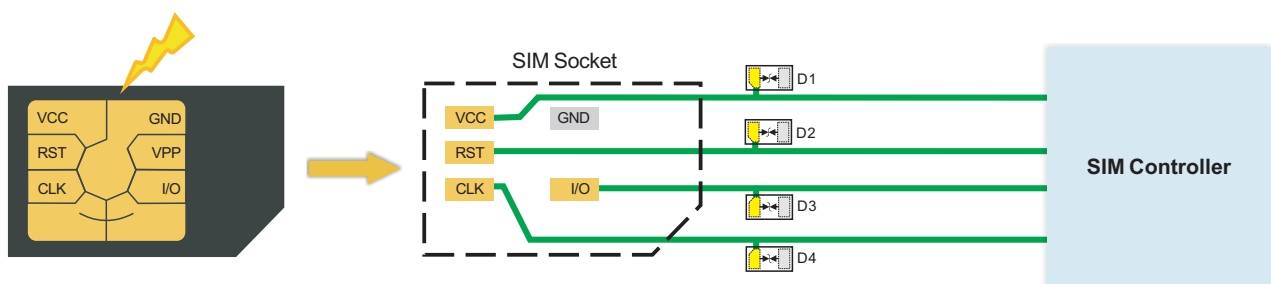
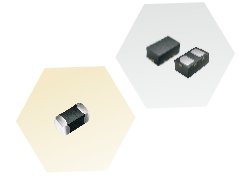
- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces

ESD Solutions for SD Card Interface

NO	Part#	Channels	V _{RWM} (V)	I _{PP} @8/20uS(A)	V _C @I _{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D4	PT4C051V	1	5.0	6.0	11	12	25	DFN0603
	PT2C051N	1	5.0	5.0	15	15	8	DFN1006
	PT5C051V	1	5.0	5.0	25	15	8	SOD-523
D1~D3 D5~D7	PT4C051U	1	5.0	3.0	15.8	0.5	8	DFN0603
	PT2C051U	1	5.0	3.0	15	0.3	8	DFN1006
	PESD0402V05U	1	5.0	-	35	0.05	15	0402
	PESD0603V05U	1	5.0	-	35	0.05	15	0603



Signal Range on RST: 0.8~5V
 Signal Speed on RST: Low Speed Signal
 Signal Range on CLK,I/O: 0.8~5V
 Signal Speed on CLK: Up to 5MHz
 Signal Speed on I/O: Low Speed Signal



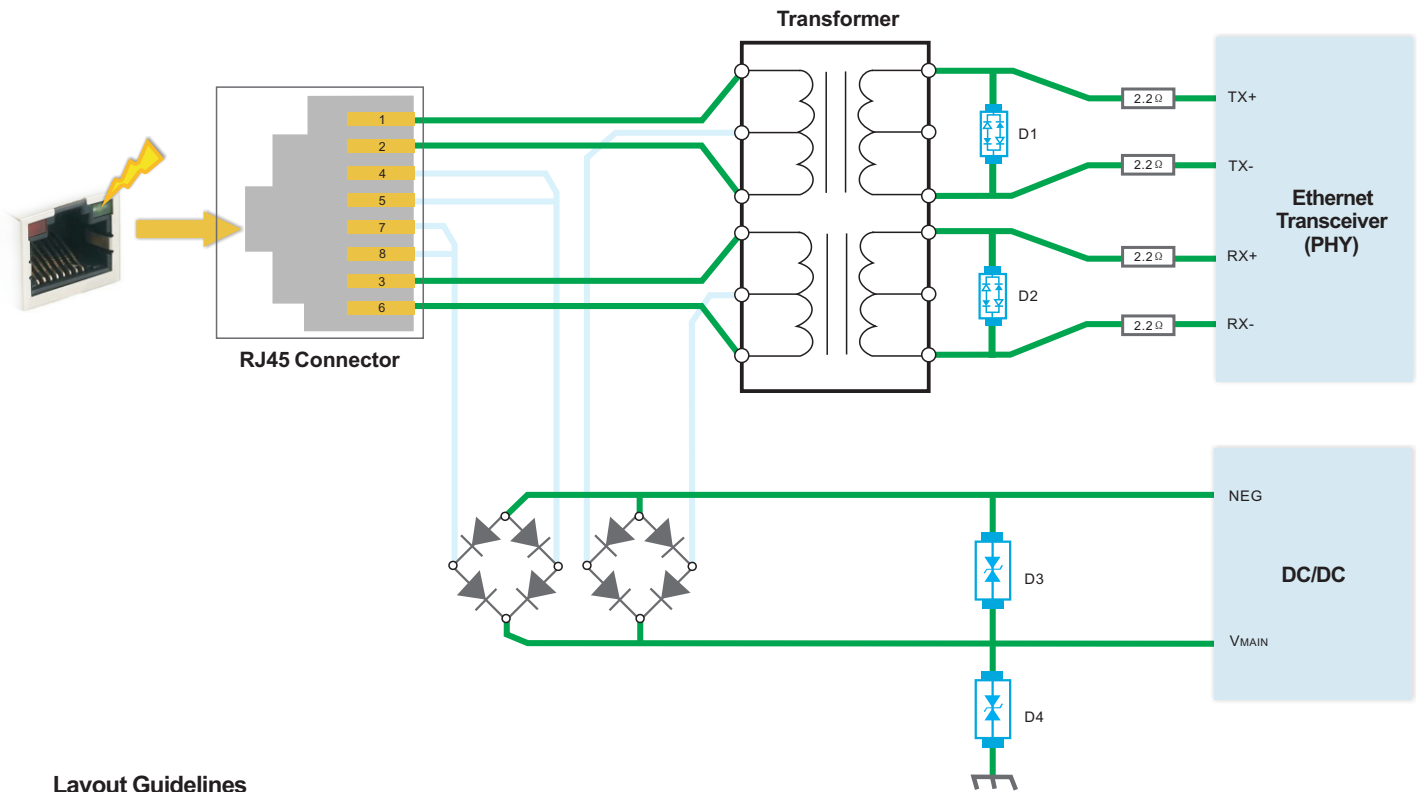
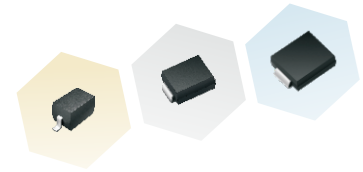
Layout Guidelines

- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces

ESD Solutions for SIM Card Interface

NO	Part#	Channels	V_{RWM} (V)	I_{PP} @8/20uS(A)	V_c @ I_{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D1	PT4C051V	1	5.0	6.0	11	12	25	DFN0603
	PT2C051N	1	5.0	5.0	15	15	8	DFN1006
D2~D4	PT4C051V	1	5.0	6.0	11	12	25	DFN0603
	PESD0201V05P03	1	5.0	-	-	3.0	8	0201
	PT2C051N	1	5.0	5.0	15	15	8	DFN1006
	PESD0402V05P03	1	5.0	-	-	3.0	8	0402

Signal Range on TX/RX+/- Lines: 0.8~3.3V
Signal Speed on TX/RX+/- Lines: up to 125MHZ



Layout Guidelines

- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces

ESD \ EOS Solutions for PHY IC

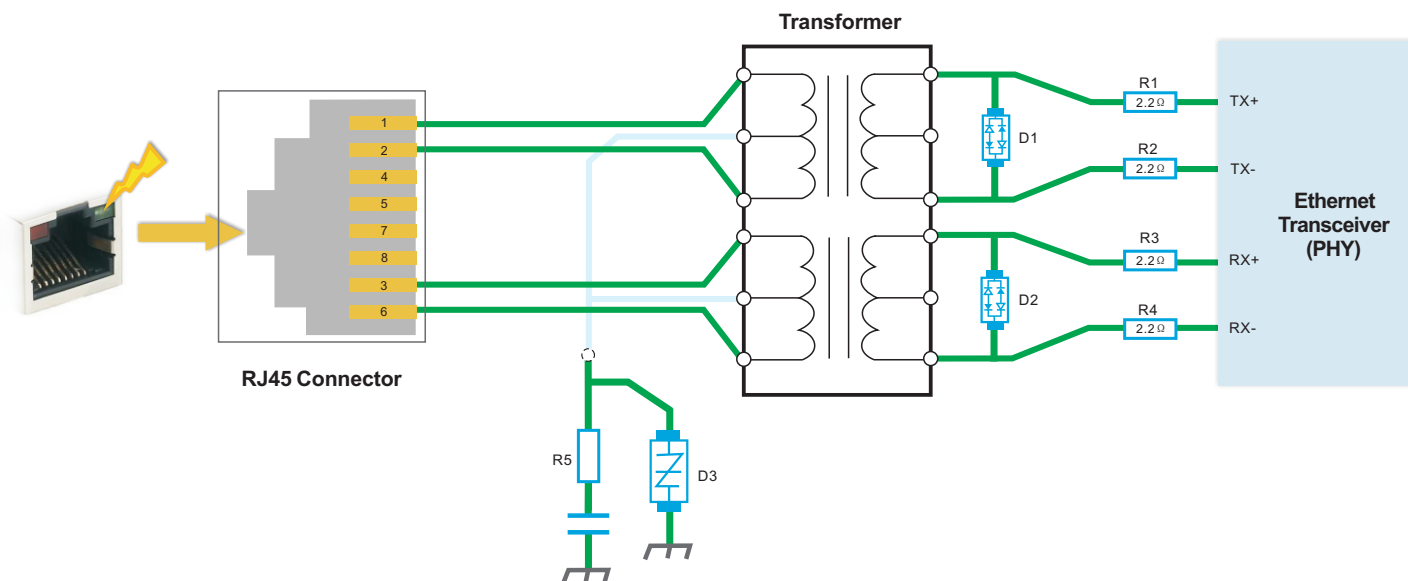
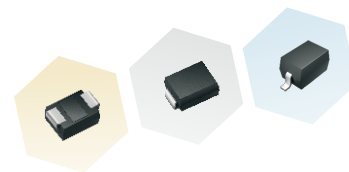
NO	Part#	Channels	V_{RWM} (V)	I_{PP} @8/20uS(A)	V_C @ I_{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D1,D2	PT3C031L	1	3.3	20	18	1.0	20	SOD-323

Lightning Surge Solutions for RJ45 PoE - PD (10/100Mbps)

NO	Part#	V_{RWM} (V)	I_{PP} @10/700uS (A)	V_C @ I_{PP} (V)	Surge Rating @10/700uS (V)	Package
D3,D4	PSUR600V58B	58	17.5	84	700	DO-214AA
	PSUR3R0V58B	58	90	84	3600	DO-214AB
	PSUR3R0V58B-502	58	150	86	6000	



Signal Range on TX/RX+/- Lines: 0.8~3.3V
Signal Speed on TX/RX+/- Lines: up to 125MHZ



Layout Guidelines

- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces

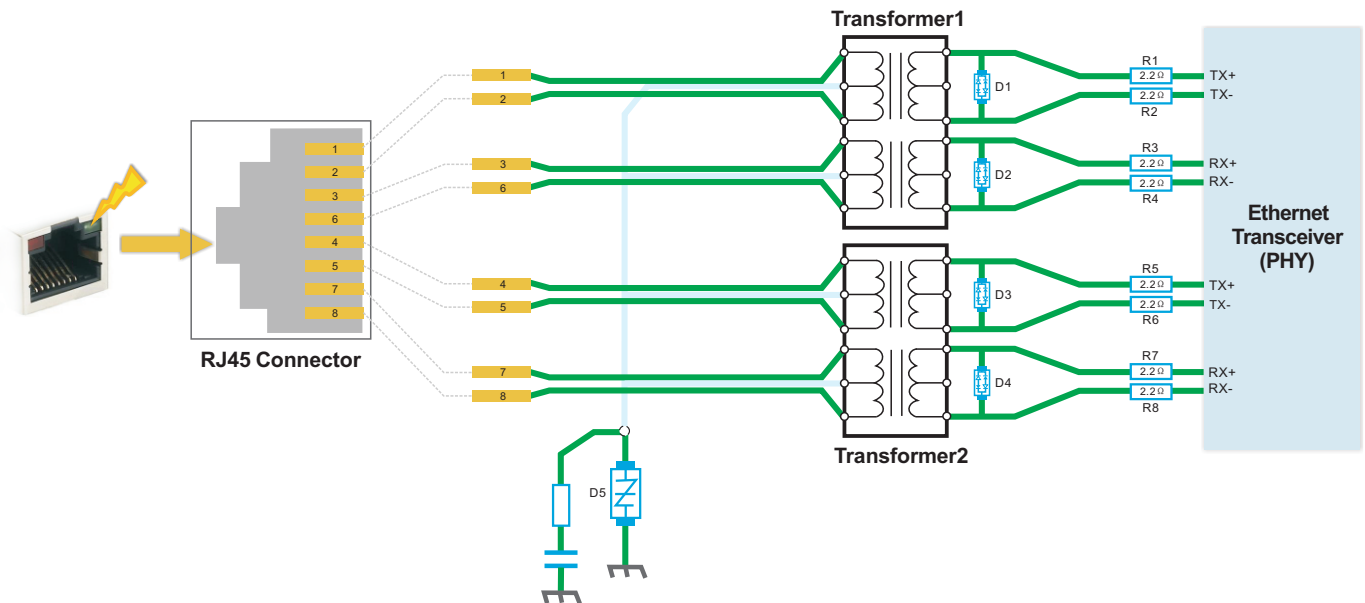
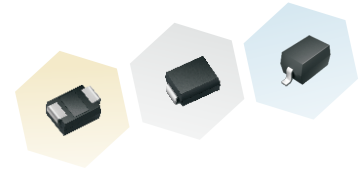
ESD \ EOS Solutions for PHY IC

NO	Part#	Channels	V_{RWM} (V)	I_{PP} @8/20uS(A)	V_C @ I_{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D1,D2	PT3C031L	1	3.3	20	18	1.0	20	SOD-323
	PT3C051L	1	5.0	14	20	1.5	30	

Lightning Surge Solutions for RJ45 Port (10/100Mbps)

NO	Part#	V_{DRM} (V)	I_{PP} @10/700uS (A)	V_C @ I_{PP} (V)	Surge Rating @10/700uS (V)	Package
D3	P4200SC	400	150	7	6000	DO-214AA

Signal Range on TX/RX+/- Lines: 0.8~3.3V
Signal Speed on TX/RX+/- Lines: up to 125MHZ



Layout Guidelines

- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces

ESD \ EOS Solutions for PHY IC

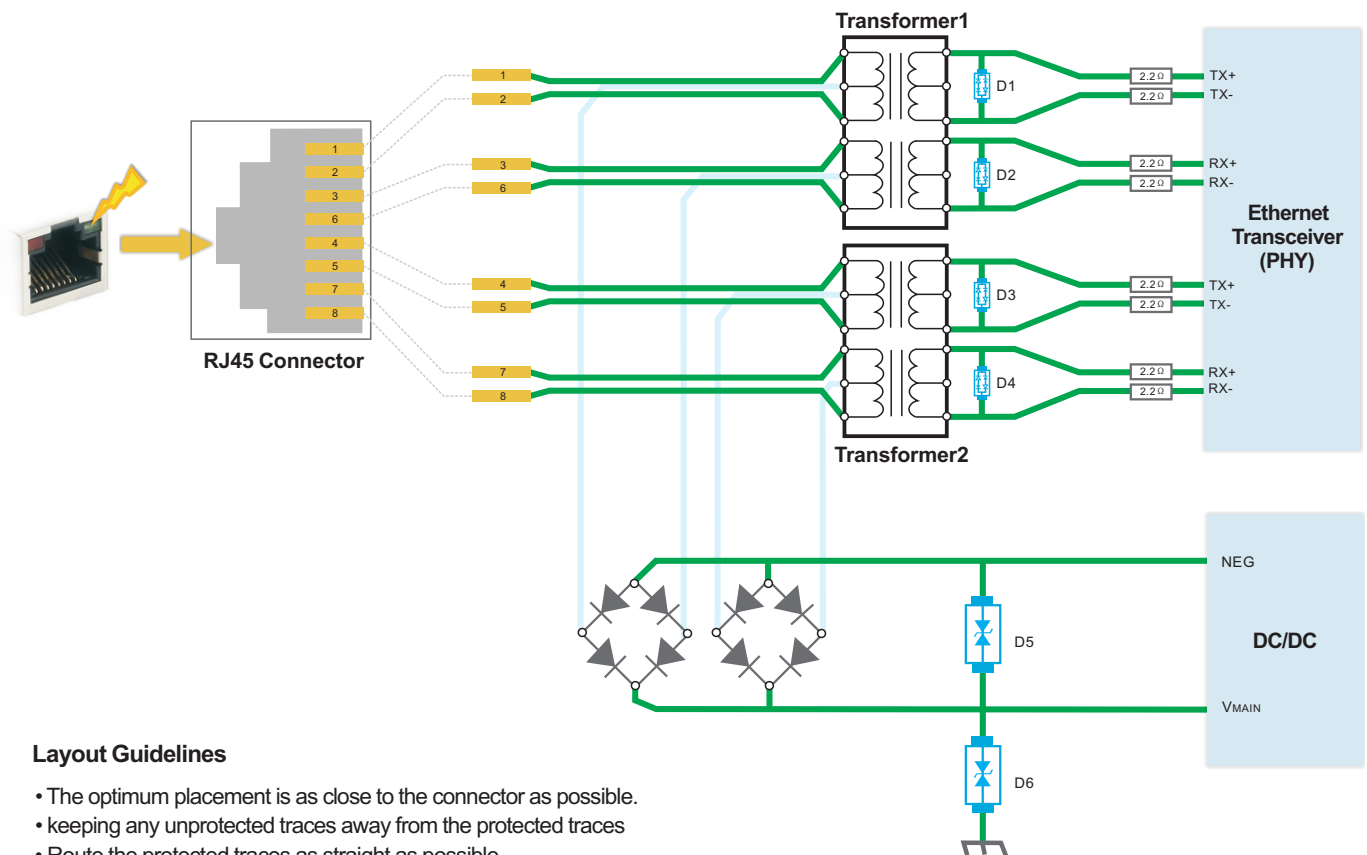
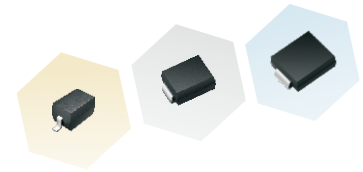
NO	Part#	Channels	V_{RWM} (V)	I_{PP} @8/20uS(A)	V_C @ I_{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D1~D4	PT3C031L	1	3.3	20	18	1.0	20	SOD-323
	PT3C051L	1	5.0	14	20	1.5	30	

Lightning Surge Solutions for RJ45 Port (10/1000Mbps)

NO	Part#	V_{DRM} (V)	I_{PP} @10/700uS (A)	V_C @ I_{PP} (V)	Surge Rating @10/700uS (V)	Package
D5	P4200SC	400	150	7	6000	DO-214AA

Signal Range on TX/RX+/- Lines:
Signal Speed on TX/RX+/- Lines:

0.8~3.3V
up to 125MHZ



Layout Guidelines

- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces

ESD \ EOS Solutions for PHY IC

NO	Part#	Channels	V_{RWM} (V)	I_{PP} @8/20uS(A)	V_c @ I_{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D1~D4	PT3C031L	1	3.3	20	18	1.0	20	SOD-323

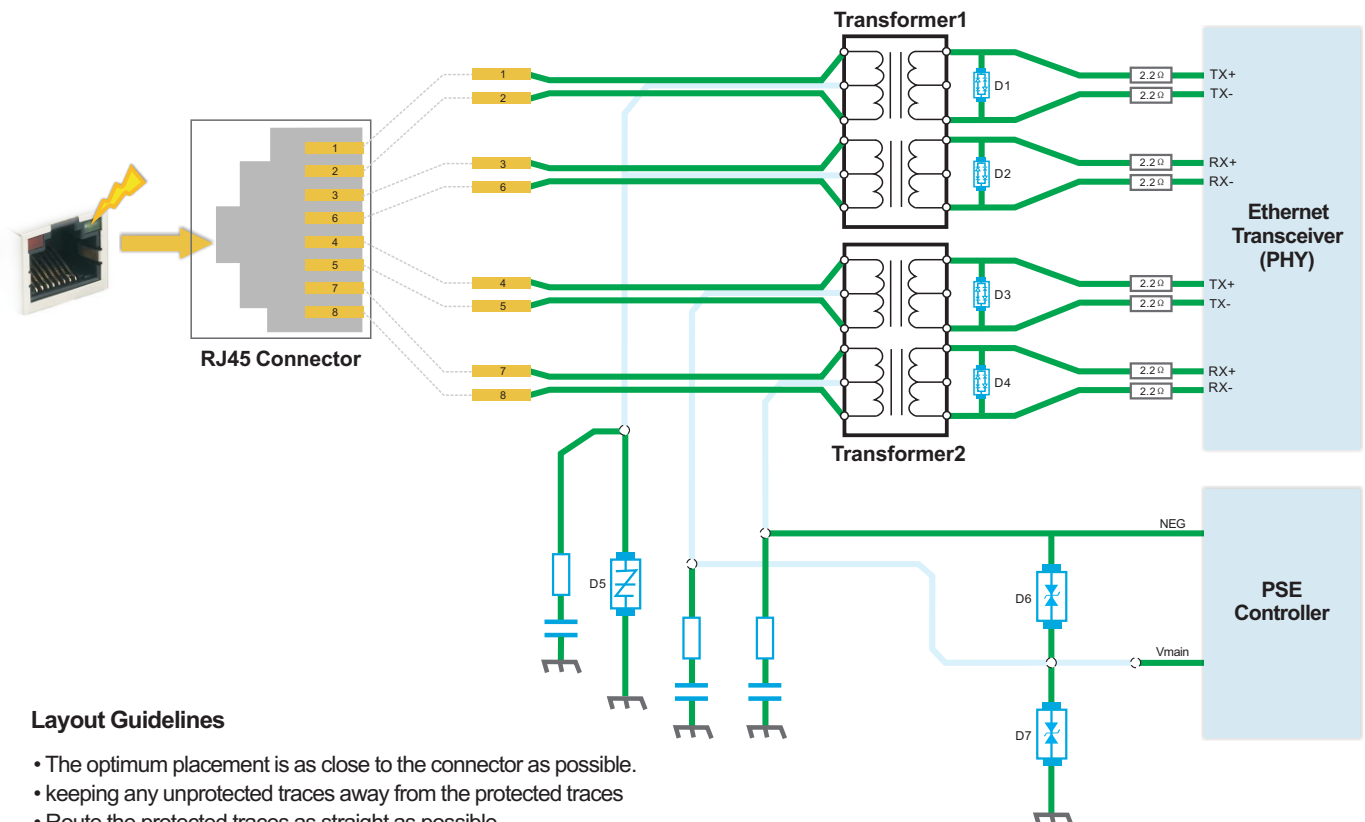
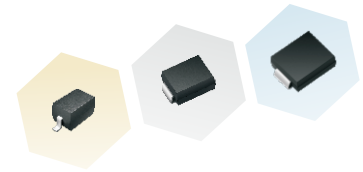
Lightning Surge Solutions for RJ45 PoE - PD (10/1000Mbps)

NO	Part#	V_{RWM} (V)	I_{PP} @10/700uS (A)	V_c @ I_{PP} (V)	Surge Rating @10/700uS (V)	Package
D5,D6	PSUR600V58B	58	17.5	84	700	DO-214AA
	PSUR3R0V58B	58	90	84	3600	DO-214AB
	PSUR3R0V58B-502	58	150	86	6000	



Signal Range on TX/RX+/- Lines:
Signal Speed on TX/RX+/- Lines:

0.8~3.3V
up to 125MHZ



Layout Guidelines

- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces

ESD \ EOS Solutions for PHY IC

NO	Part#	Channels	V _{RWM} (V)	I _{PP} @8/20uS(A)	V _C @I _{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D1~D4	PT3C031L	1	3.3	20	18	1.0	20	SOD-323

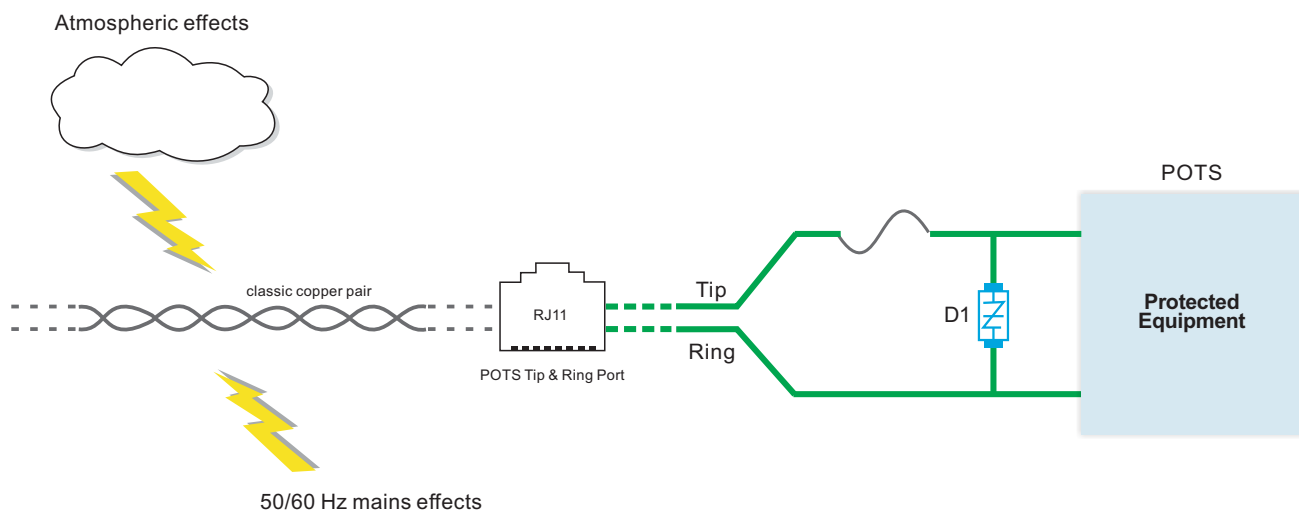
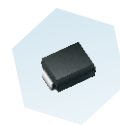
Lightning Surge Solutions for RJ45 PoE - PSE (10/100Mbps)

NO	Part#	V _{RWM} (V)	I _{PP} @10/700uS (A)	V _C @I _{PP} (V)	Surge Rating @10/700uS (V)	Package
D5	P4200SC	-	150	7	6000	DO-214AA
D6,D7	PSUR600V58B	58	17.5	84	700	DO-214AA
	PSUR3R0V58B	58	90	84	3600	DO-214AB
	PSUR3R0V58B-502	58	150	86	6000	



Signal Range:
Signal Speed:

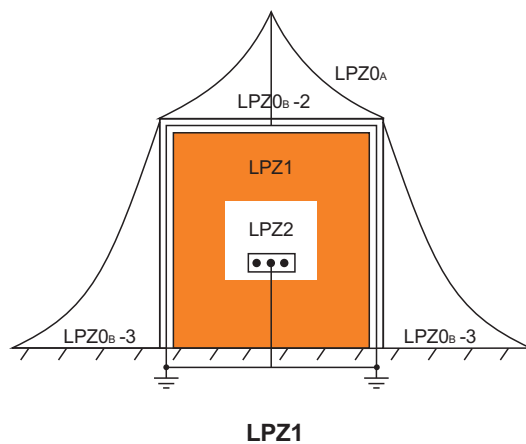
up to 275V
tens of kHz



Design Notes

- The above protection solution is for POTS (Plain Old Telephone Service) Tip & Ring Port protection where there is no ground reference. This is often called a “metallic” connection. Metallic applications are usually associated with the CPE end of the line. POTS lines carry normal voice telephone signals. During ringing, the voltages can approach 275 volts. These solutions can also be used for most DSL applications.

- These solutions are designed to comply with: TIA-968-A, UL60950 & EN60950 & YD/T 950-1998 ITU K.21 & YD/T 993-1998



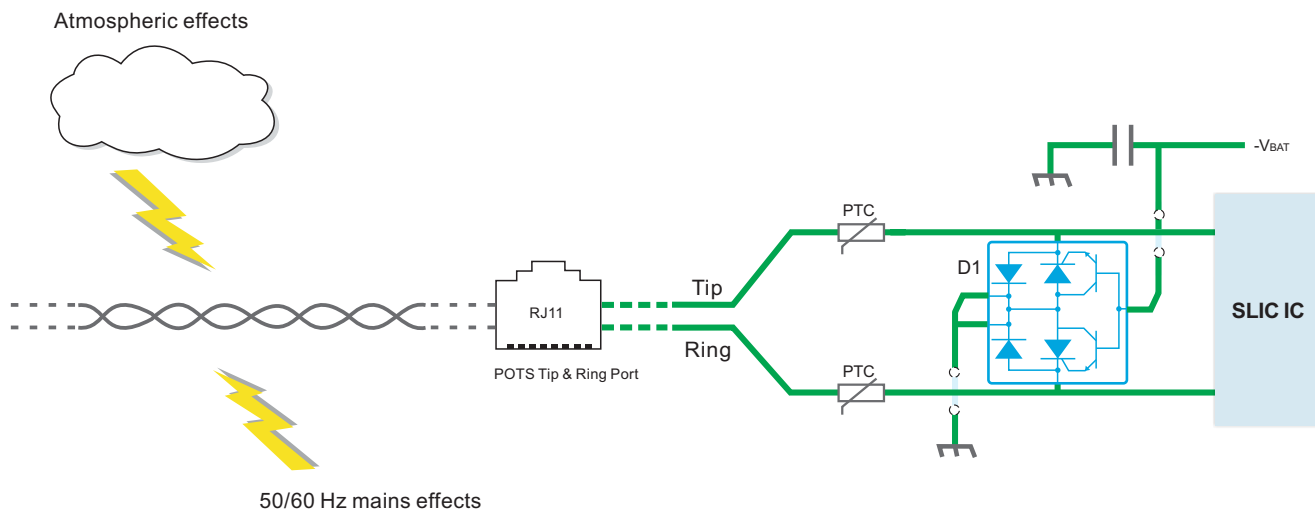
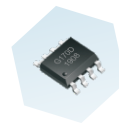
Lightning Surge Solutions for POTS RJ11 Port

NO	Part#	V _{DRM} (V)	I _{PP} @10/700uS (A)	V _C @I _{PP} (V)	Surge Rating @10/700uS (V)	Package
D5	P3100SB	275	100	6	4000	DO-214AA
	P3100SC	275	150	6	6000	



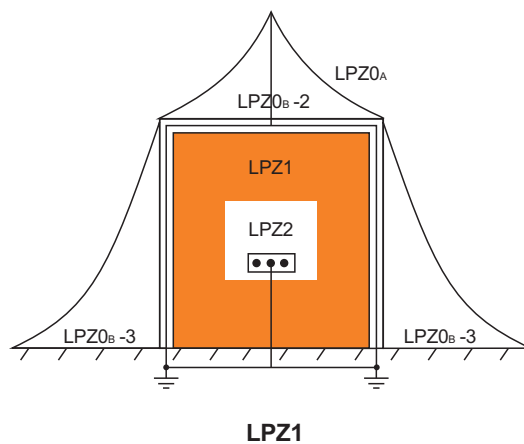
Signal Range:
Signal Speed:

N/A
N/A



Design Notes

- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces which are between the TVS and the connector.
- Route the protected traces as straight as possible.
- These solutions are designed to comply with: TIA-968-A, UL60950 & EN60950 & YD/T 950-1998 ITU K.21 & YD/T 993-1998

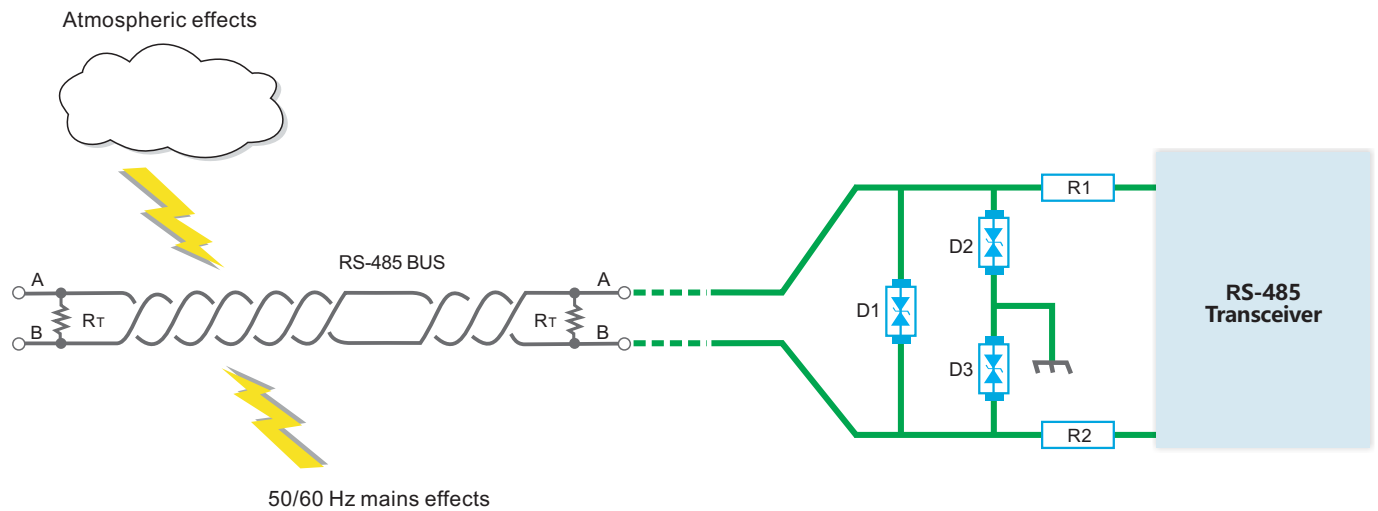
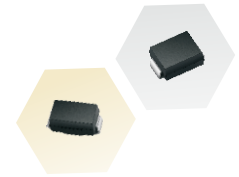


Lightning Surge Solutions for RJ11 SLIC

NO	Part#	V_{DRM} (V)	I_{PP} @10/700uS (A)	V_C @ I_{PP} (V)	Surge Rating @10/700uS (V)	Package
D1	PT61089L	up to -170	50	-	2000	SO-8
	PT61089H	up to -170	150	-	6000	

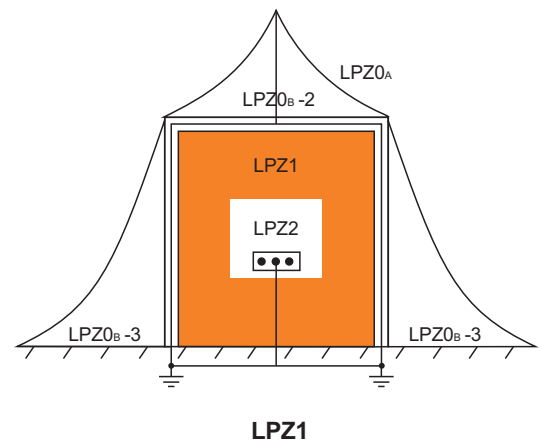
Signal Range on A/B:
Signal Speed on A/B:

-6~+6V
up to 10Mbps



Design Notes

- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces which are between the TVS and the connector.
- Route the protected traces as straight as possible.
- These solutions are designed to comply with: TIA-968-A, UL60950 & EN60950 & YD/T 950-1998 ITU K.21 & YD/T 993-1998

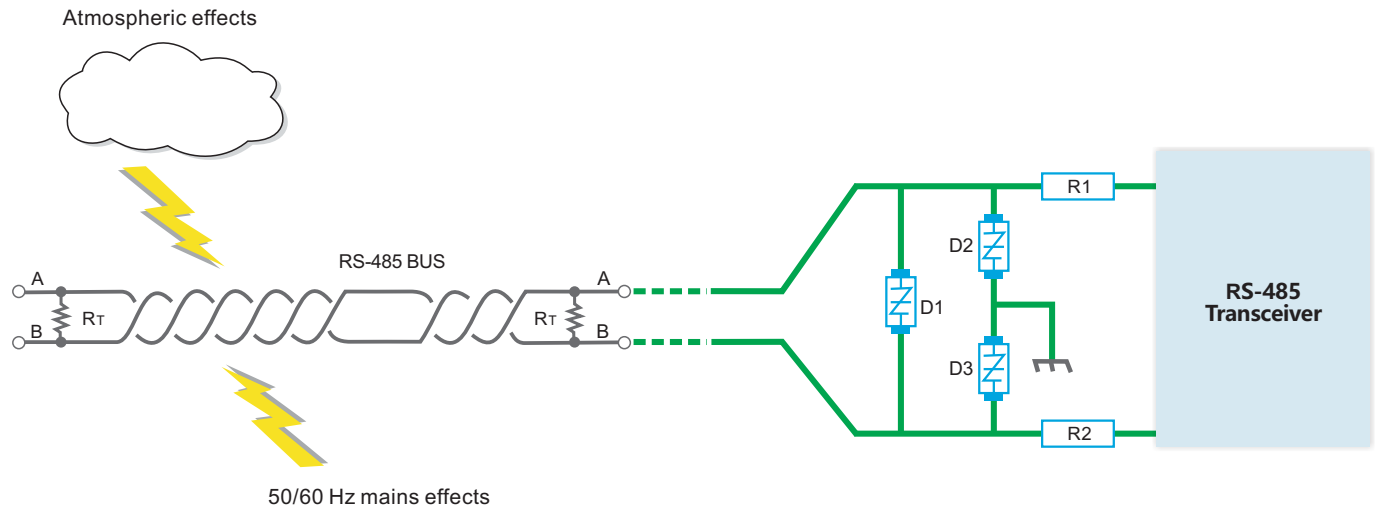
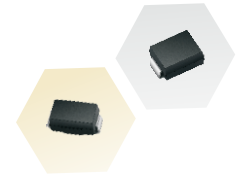


Lightning Surge Solutions for RS-485 Port

NO	Part#	V_{RWM} (V)	I_{PP} @10/700uS (A)	V_C @ I_{PP} (V)	Surge Rating @10/700uS (V)	Package
D1~D3	PSUR400V7.0B	7.0	75	11.2	3000	DO-214AC
	PSUR400V12B	12	50	20.4	2000	
D1~D3	PSUR600V7.0B	7.0	132.5	12	5300	DO-214AA
	PSUR600V10B	10	87.5	16.8	3500	

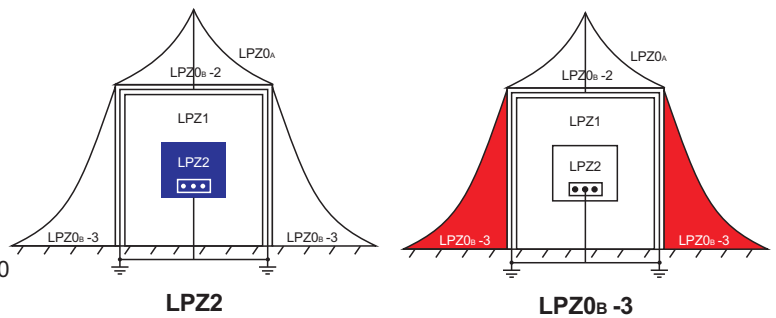
Signal Range on A/B:
Signal Speed on A/B:

-6~+6V
up to 10Mbps



Design Notes

- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces which are between the TVS and the connector.
- Route the protected traces as straight as possible.
- These solutions are designed to comply with: TIA-968-A, UL60950 & EN60950 & YD/T 950-1998 ITU K.21 & YD/T 993-1998



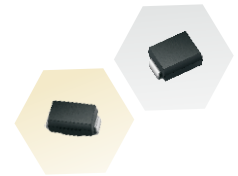
Lightning Surge Solutions for RS-485 Port

NO	Part#	V _{DRM} (V)	I _{PP} @10/700uS (A)	V _C @I _{PP} (V)	Surge Rating @10/700uS (V)	Package
D1~D3	P0080TB	6.0	100	9	4000	DO-214AC
	P0080SC	6.0	150	5	6000	DO-214AA

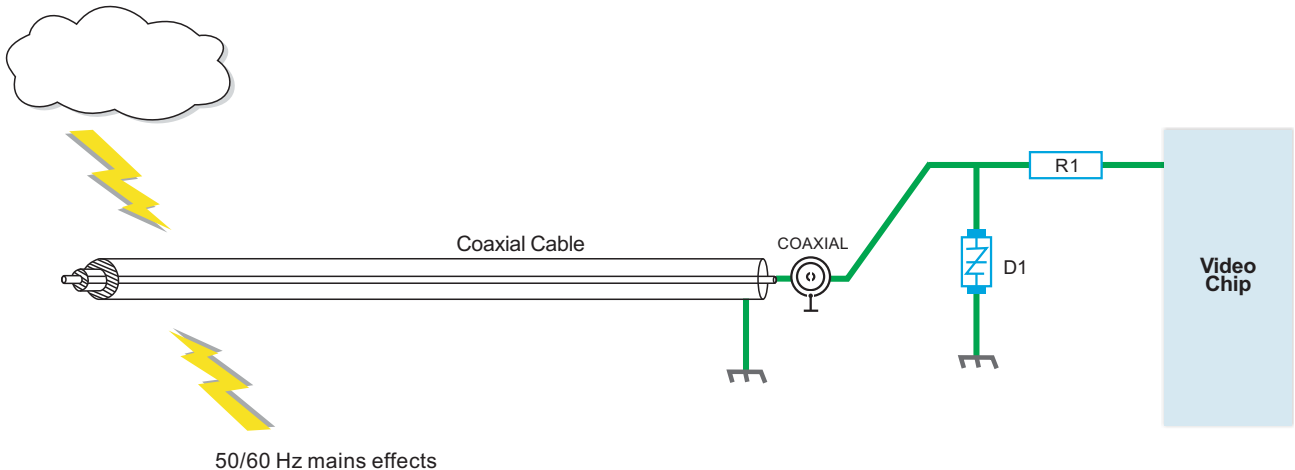


Signal Range on Coaxial Cable:
Signal Speed on Coaxial Cable:

<5V
N/A

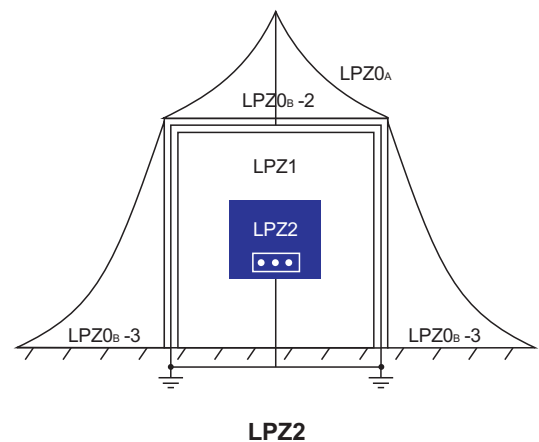


Atmospheric effects



Design Notes

- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces which are between the TVS and the connector.
- Route the protected traces as straight as possible.
- These solutions are designed to comply with: TIA-968-A, UL60950 & EN60950 & YD/T 950-1998 ITU K.21 & YD/T 993-1998



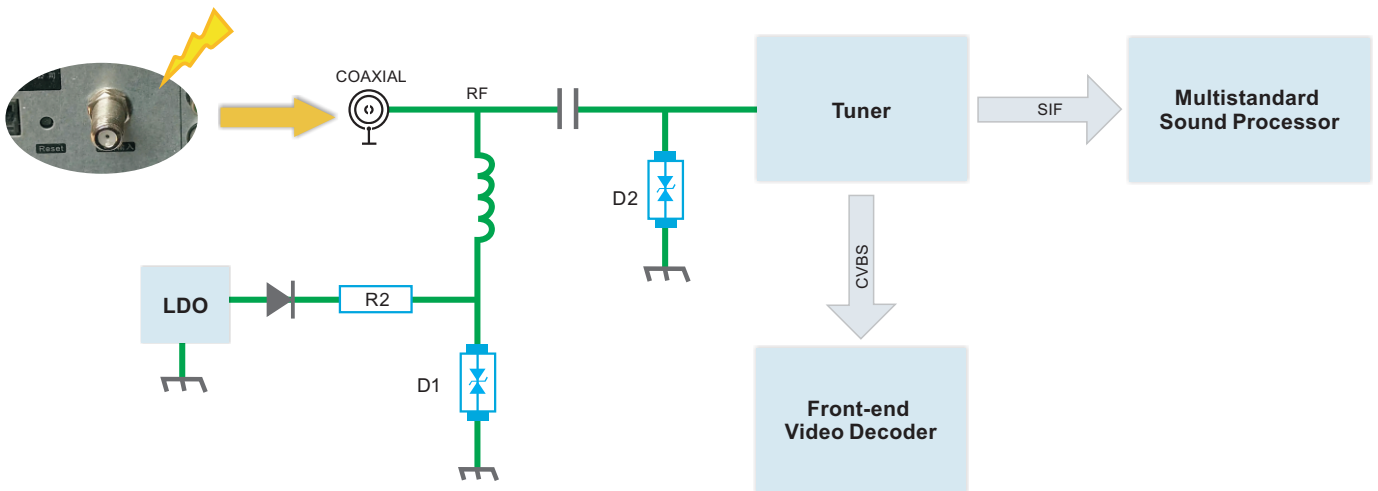
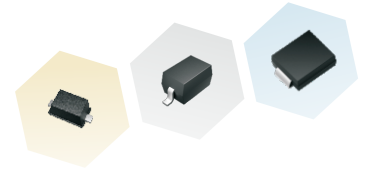
Lightning Surge Solutions for Coaxial Port

NO	Part#	V _{DRM} (V)	I _{PP} @10/700uS (A)	V _C @I _{PP} (V)	Surge Rating @10/700uS (V)	Package
D1	P0080TB	6.0	100	9	4000	DO-214AC
	P0080SC	6.0	150	5	6000	DO-214AA



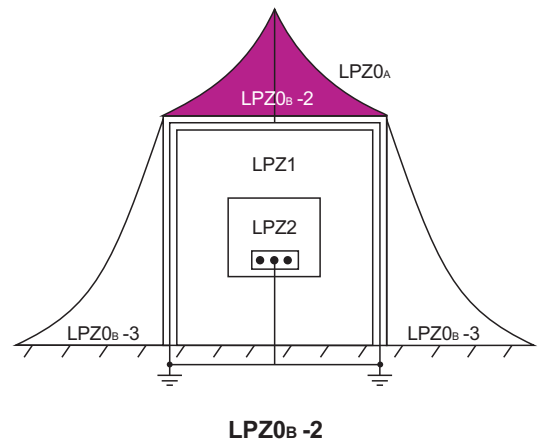
Signal Range on Coaxial Cable:
Signal Speed on Coaxial Cable:

<5V
up to 800Mbps



Layout Guidelines

- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces



ESD Solutions for Cable TV Coaxial Port

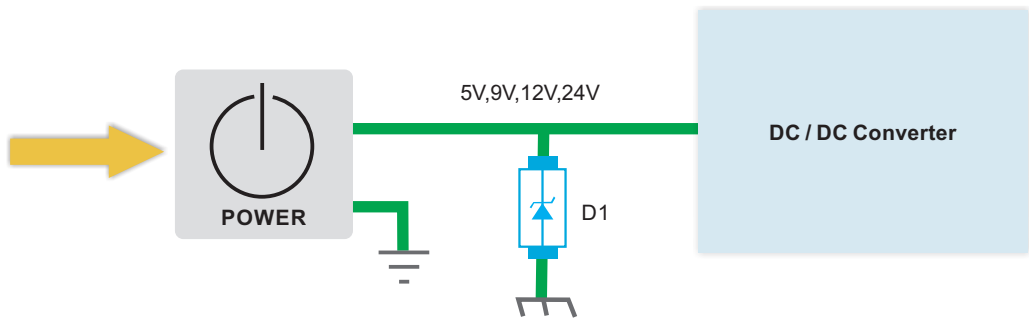
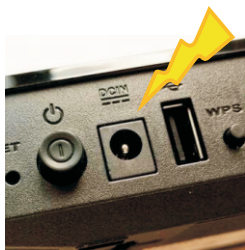
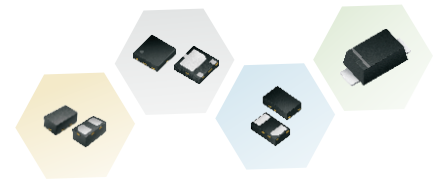
NO	Part#	Channels	V_{RWM} (V)	I_{PP} @8/20uS(A)	V_C @ I_{PP} (V)	Cap. (pF)	ESD Level Contact(kV)	Package
D2	PT5C051U	1	5.0	3.0	20	0.35	15	SOD-523
	PT5C051L	1	5.0	3.0	20	1.5	8	SOD-523
	PT3C051L	1	5.0	14	20	1.5	30	SOD-323

Lightning Surge Solutions for Cable TV Coaxial Port

NO	Part#	V_{DRM} (V)	I_{PP} @8/20uS (A)	V_C @ I_{PP} (V)	Surge Rating @8/20uS (V)	Package
D1	PSUR3R0V6.0B	6.0	3000	20	6000	DO-214AB

Signal Range on DC/DC Power:
Signal Speed on DC/DC Power:

N/A
N/A



Layout Guidelines

- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces

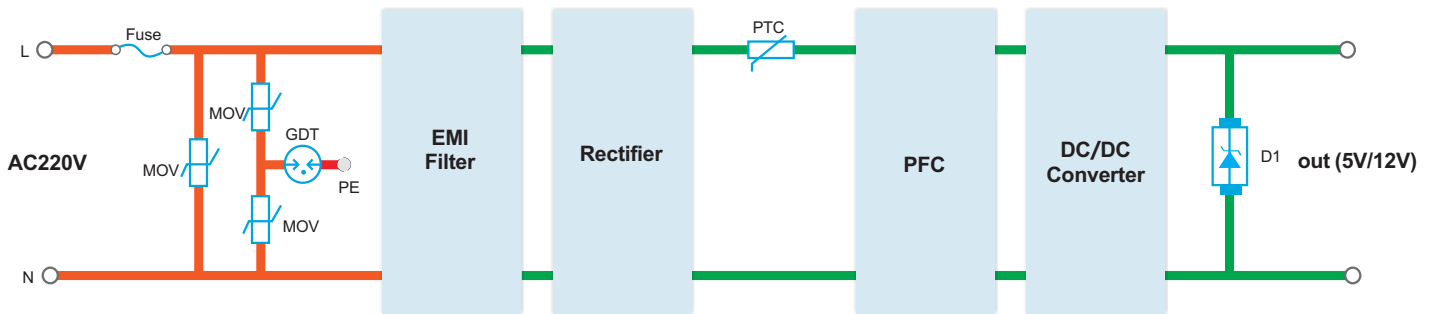
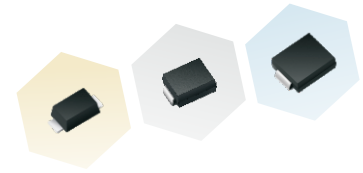
ESD \ EOS Solutions for Vbus & DC/DC Power port

NO	Part#	Channels	V _{RWM} (V)	I _{PP} @8/20uS(A)	V _C @I _{PP} (V)	ESD Level Contact(kV)	Surge Rating @8/20uS (V)	Package
D1	PSUR0402V051B (Bi)	1	5.0	40	12	30	90	DFN1006
	PSUR0402V071B (Bi)	1	7.0	40	12	30	90	
	PSUR0402V151S	1	15	38	28	30	100	
D1	PSUR1610DNV05	1	5.0	110	15	30	230	DFN1610
	PSUR1610DNV07	1	7.0	100	15	30	210	
	PSUR1610DNV12	1	12	70	24	30	160	
	PSUR1610DNV24E	1	24	105	35	30	240	
D1	PSUR3D071N	1	7.5	240	23	30	500	DFN2020
	PSUR3D121N	1	12	180	29	30	380	
	PSUR3D241N	1	24	100	52	30	250	
	PSUR3D241P	1	24	200	33	30	430	
D1	PT1A071VE	1	7.0	200	18	30	420	SOD-123
	PT1A121VE	1	12	200	28	30	430	
	PT1A241VE	1	24	200	35	30	440	



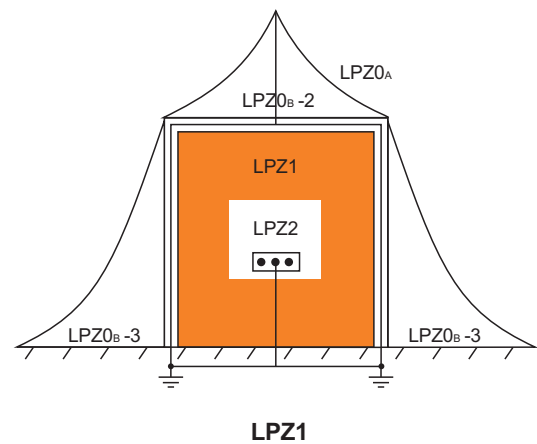
Signal Range:
Signal Speed:

N/A
N/A



Design Notes

- Due to TVS low power ratings, TVS diodes can be used as secondary protectors as above diagram D1 applied.
- The DC output of the power supply will experience less severe transient surges than the AC input. For this reason, TVS diodes can be used.
- Regulatory standards will vary depending on the product to be protected. Examples include: IEC 61000-4-5 UL1414 UL1449

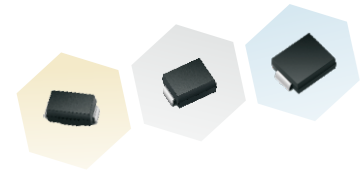


Lightning / Load Switching Surge Protection for Power Supply

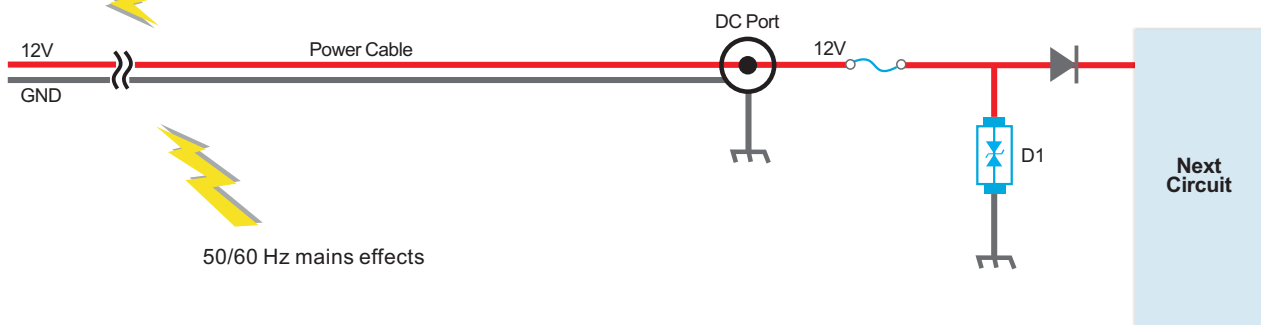
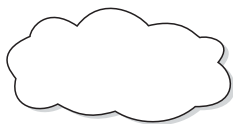
NO	Part#	V_{RWM} (V)	I_{PP} @8/20uS (A)	V_C @ I_{PP} (V)	Surge Rating @8/20uS (V)	Package
D1	PSUR200V5.0B	5.0	255	17.2	520	DO-219AB
	PSUR200V12B	12	185	27.6	400	
D1	PSUR600V5.0B	5.0	440	17.2	900	DO-214AA
	PSUR600V7.0B	7.0	440	20	900	
	PSUR400V12S	12	265	31.2	560	



Signal Range : N/A
Signal Speed : N/A

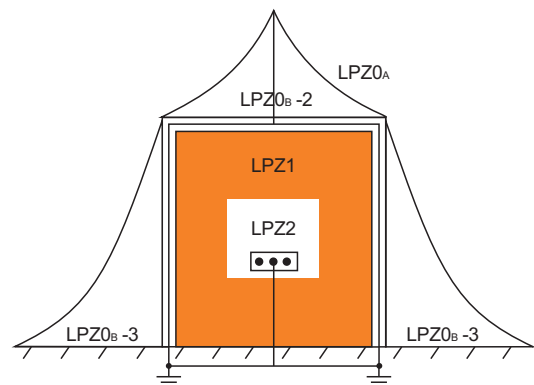


Atmospheric effects



Layout Guidelines

- The optimum placement is as close to the connector as possible.
- Keeping any unprotected traces away from the protected traces which are between the TVS and the connector.
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces between the TVS and the connector by using rounded corners with the largest radii possible.



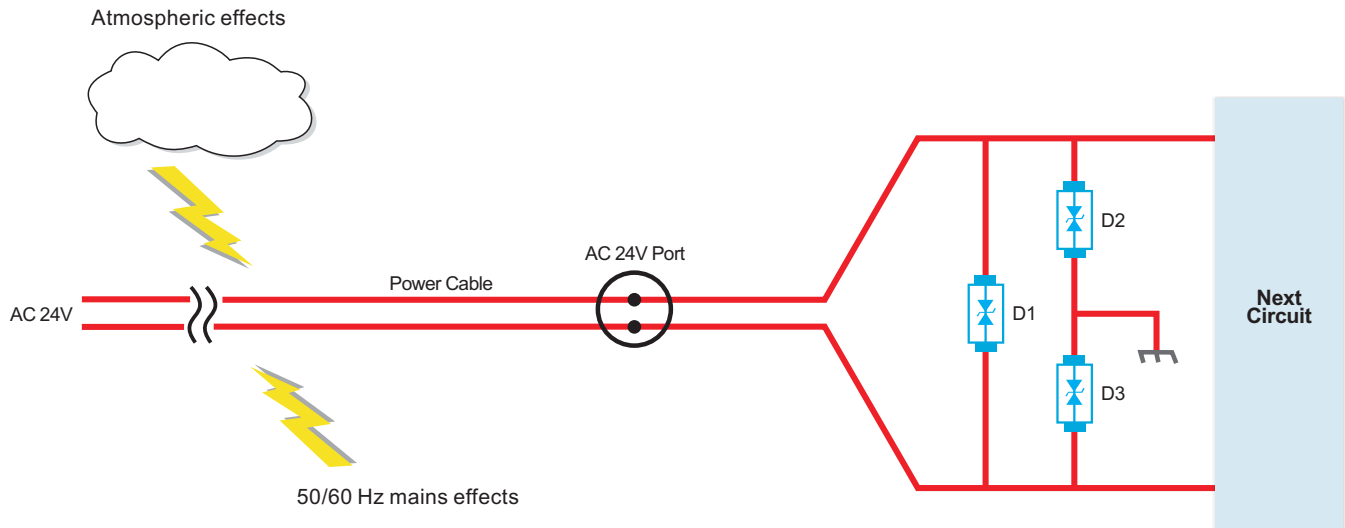
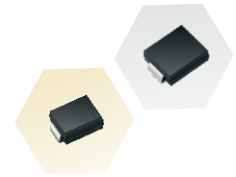
LPZ1

Lightning Surge Protection for DC 12V Port

NO	Part#	V_{RWM} (V)	I_{PP} @8/20 μ S (A)	V_C @ I_{PP} (V)	Surge Rating @8/20 μ S (V)	Package
D1	PSUR400V15B	15	435	30.2	900	DO-214AC
	PSUR600V15B	15	450	34.8	930	DO-214AA
	PSUR1R5V15B	15	1400	33.6	2800	DO-214AB

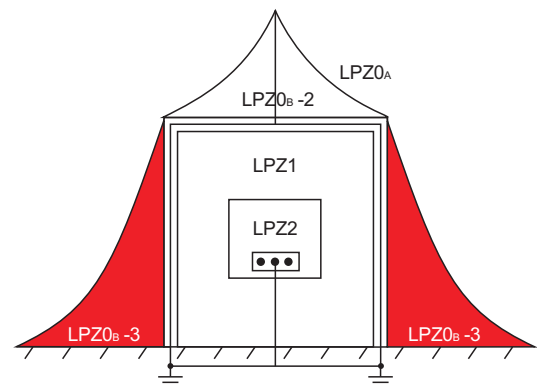


Signal Range : N/A
Signal Speed : N/A



Layout Guidelines

- The optimum placement is as close to the connector as possible.
- keeping any unprotected traces away from the protected traces which are between the TVS and the connector.
- Route the protected traces as straight as possible.
- Eliminate any sharp corners on the protected traces between the TVS and the connector by using rounded corners with the largest radii possible.



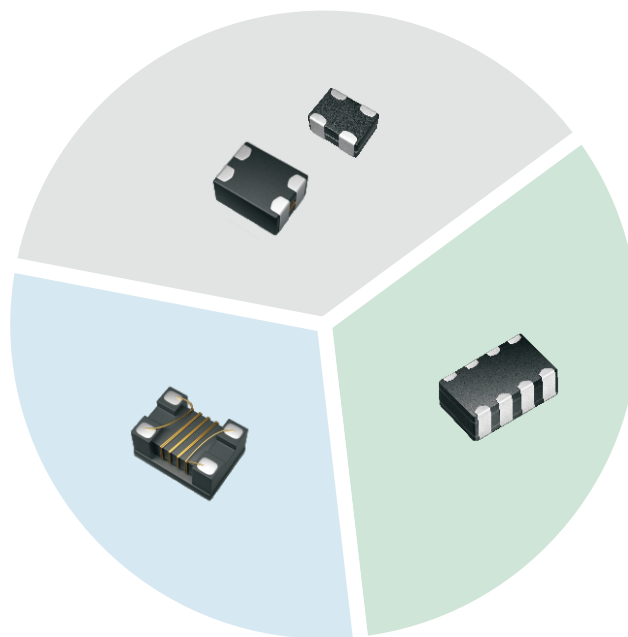
LPZ0B -3

Lightning Surge Protection for AC 24V Port

NO	Part#	V_{RWM} (V)	I_{PP} @8/20 μ S (A)	V_C @ I_{PP} (V)	Surge Rating @8/20 μ S (V)	Package
D1~D3	PSUR600V40B	40	165	68	390	DO-214AA
	PSUR1R5V40B	40	440	72	960	DO-214AB
	PSUR3R0V40B	40	1050	68	2100	
	PSUR3R0V40B-502	40	2650	84	5300	

About CMF

The CMF (common mode filter) is used for noise suppression of differential transmission and power lines. It is effective for suppression of radiation noise from electronic devices and cables, and wires for self-poisoning countermeasures (improved reception sensitivity) and noise immunity inside of wireless devices.

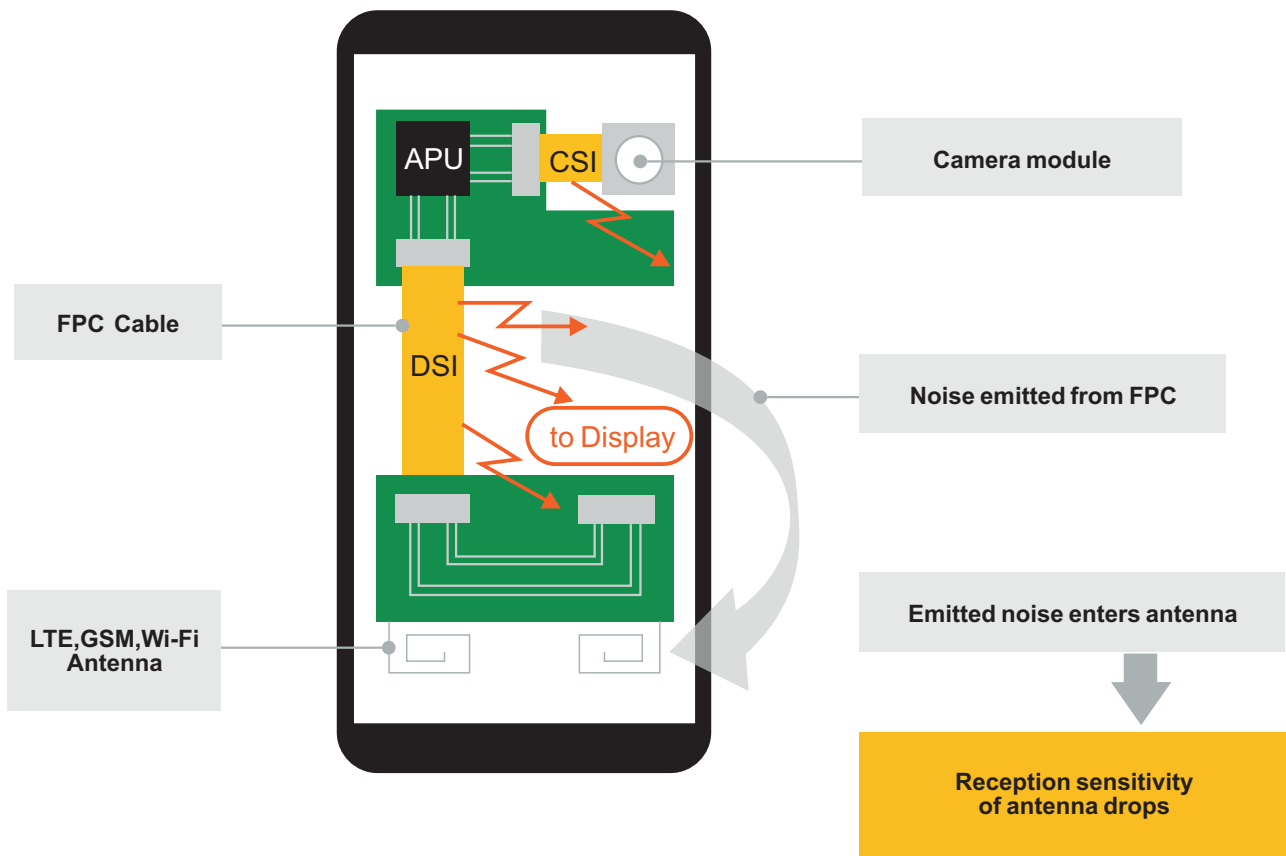




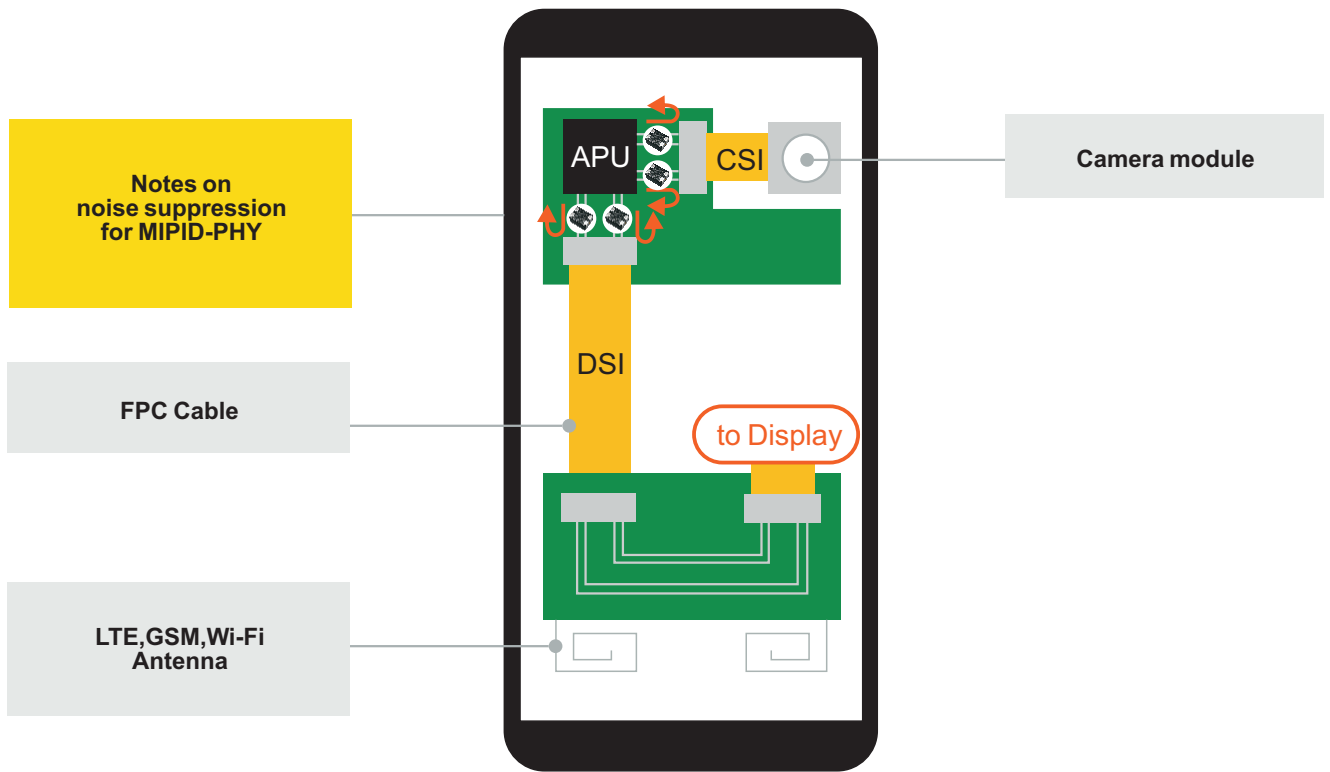
Signal speed

USB 2.0 (480M)	MIPI D-phy Ver1.1 (1.5Gbps)	HDMI 1.4 (1.7Gbps)	MIPI C-phy Ver1.0 (2.5Gsym/s)	MIPI D-phy Ver1.0 (2.5Gbps)	USB3.1 gen1 (5Gbps)	HDMI 2.0 (6Gbps)	Display Port 1.4 (8.1Gbps)	USB 3.1 gen2 (10Gbps)	HDMI 2.1 (12Gbps)
0806 08x0.6mm	PCMF042L900MFR 3.3GHz 100mA max 								
	PCMF042H250MFR 8GHz 100mA max 								
1210 1.2x1.0mm	PCMF112L900MFR-HS 3.5GHz 100mA max 								
	PCMF112H120MFR 8.0GHz 100mA max 								
2012 2.0x1.2mm	PCMF112L350MFR 3.5GHz 100mA max 								
	PCMF112H900MFR 7GHz 100mA max 								
	PCMF112H900MFR(W) 10GHz 400mA 								
	PCMF212L900MFR 4.5GHz 400mA 								
	PCMF212H900MFR 7.5GHz 400mA 								
	PCMF214L101MFR 3.5GHz 100mA max 								

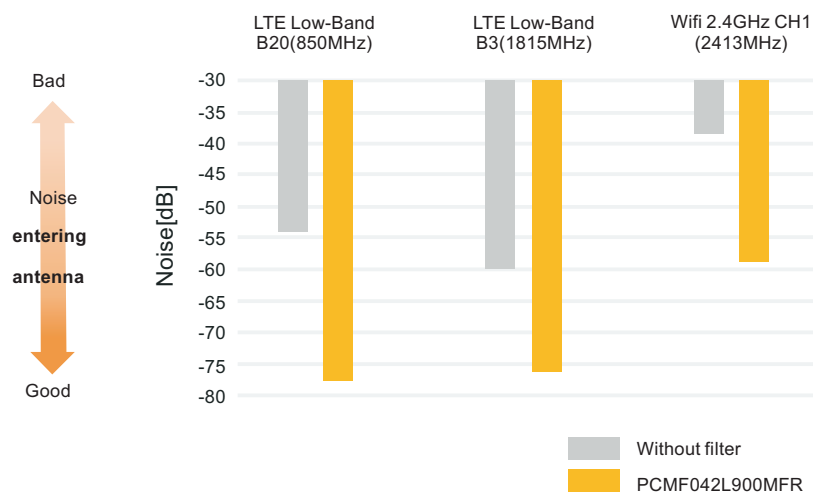
Noise is emitted from the FPC cable by digital signals that pass through MIPI D-PHY lines between the main board and module, and this noise can enter the antenna in the wireless circuit, which can result in reduced reception sensitivity of the antenna. For this reason, noise passing through MIPI D-PHY lines must be removed.



A noise filter is inserted into the interface section of the main board for reducing the outflow of noise to the FPC cable.

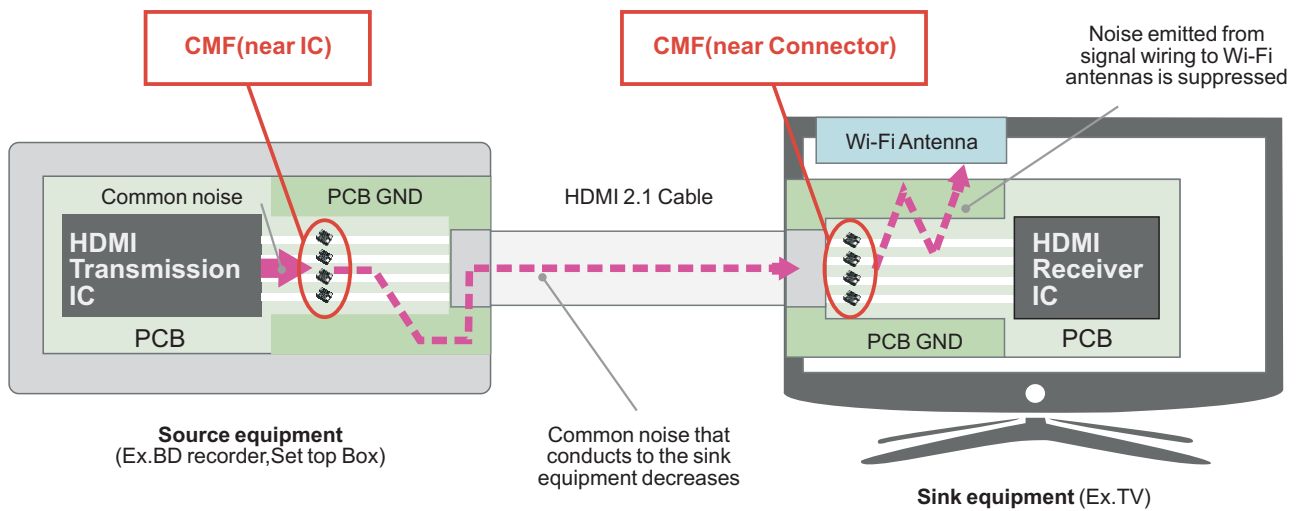


Example of noise suppression effect

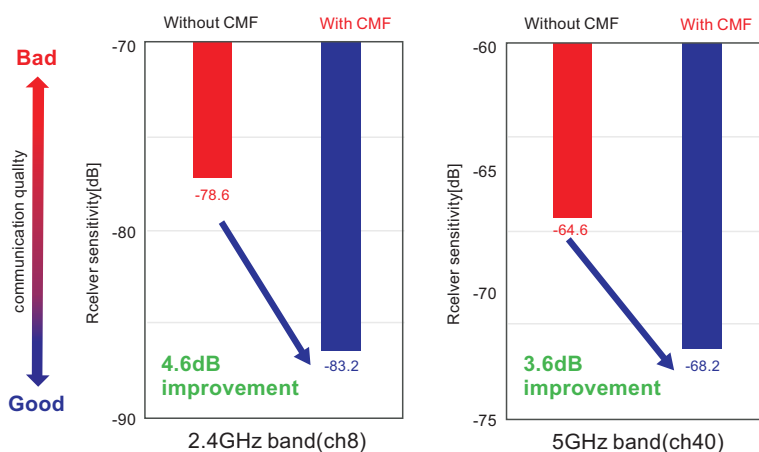


The PCMF042L900MFR was used to successfully reduce noise entering the antenna in the LTE low-band/high-band and Wifi 2.4 GHz wide-area band

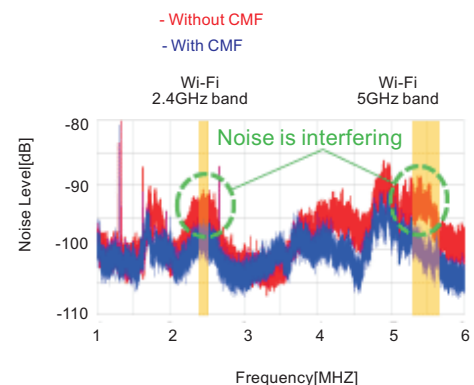
CMFs are installed near the output pins of the IC at the HDMI source side and near the connectors at the sink side. The source-side CMF installed near the IC can suppress the common mode noise generated from the transmission ICs at the source side by preventing the propagation of common mode noise at the sink side. The sink-side CMF can suppress the common mode noise generated from the HDMI signal wiring of the sink equipment by preventing common mode noise from entering the Wi-Fi antenna.



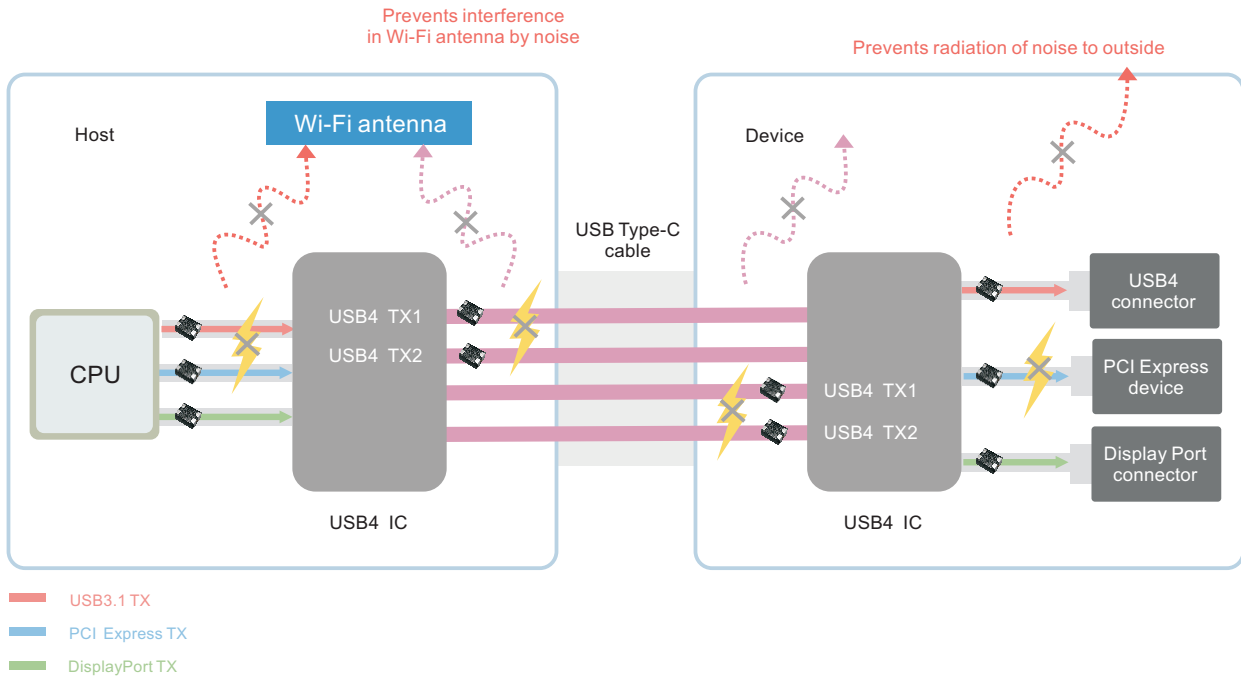
Wi-Fi Receiver sensitivity



Coupling noise of Antenna

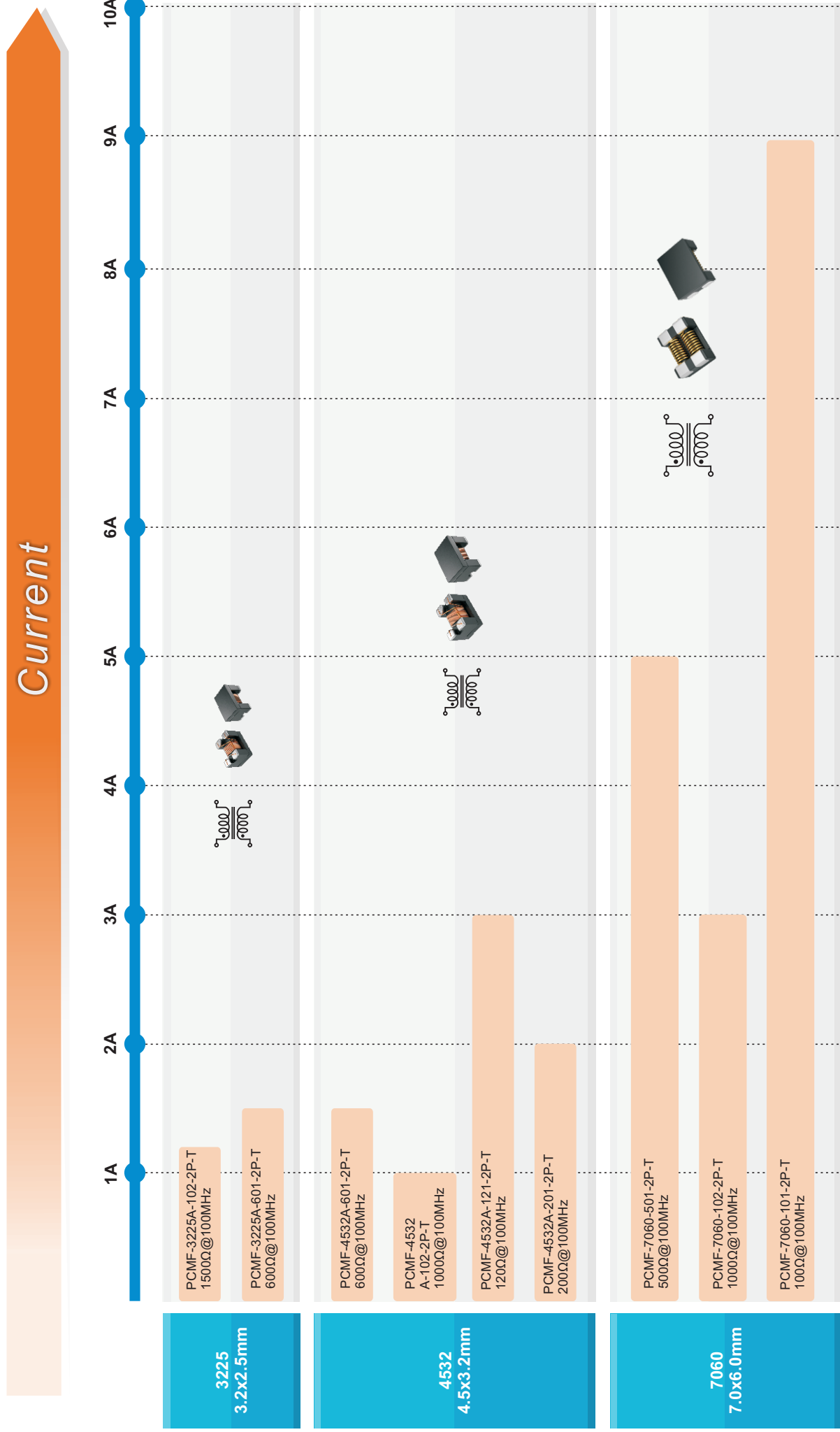


The simplified diagram below shows an example of common mode filter (CMF) installation locations for the combination of a device and a host capable of USB4, USB 3.1 Gen 2, PCI Express, and DisplayPort communication.



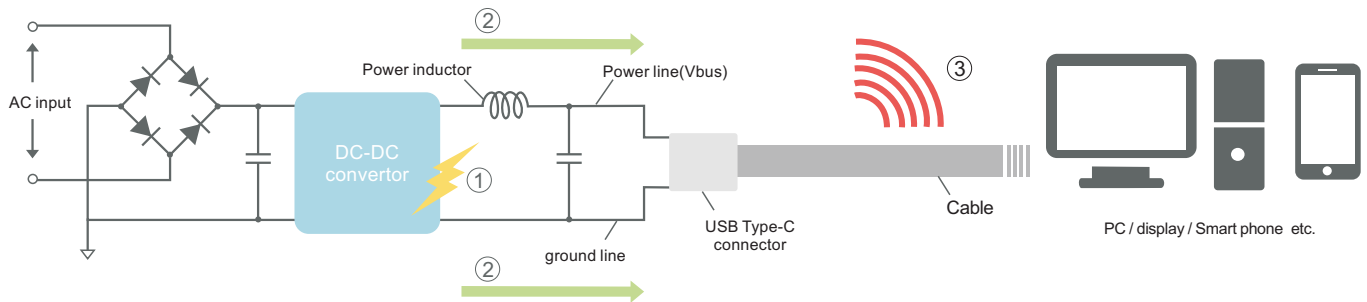
Effective measures for suppressing noise occurring during USB4 communication are as follows:

- Install common mode choke coils (CMFs) on the differential transmission lines of the host and device.
- Place the CMFs near the IC.
- Select the CMF locations to prevent noise from radiating from the wires.



• Noise issues affecting devices employing USB Power Delivery

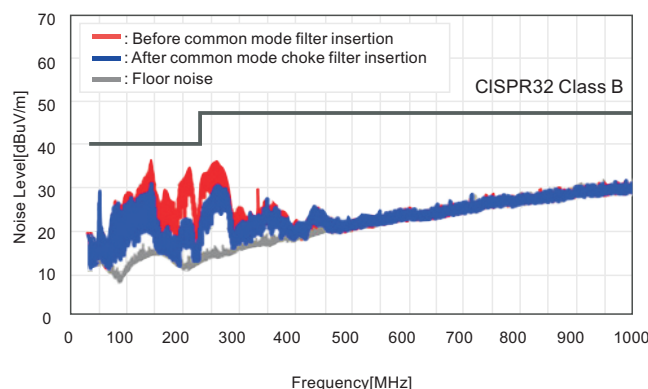
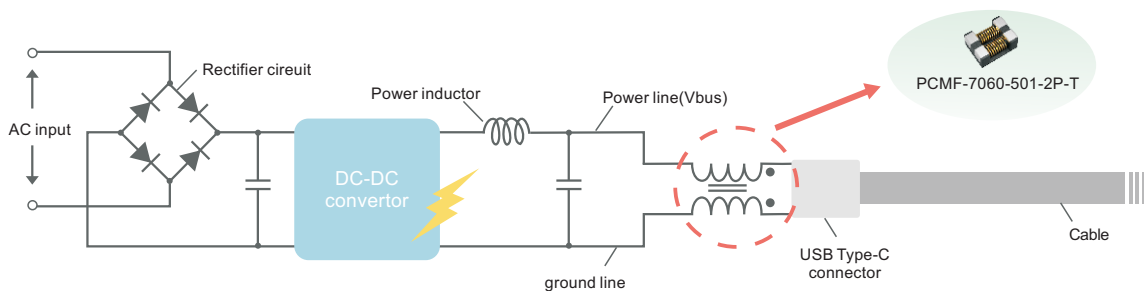
noise generation occurred in a wide frequency band below 500 MHz. Particularly strong noise emission was confirmed in the range from 100~300 MHz.



- ❶ Generation of switching noise by feed-side DC-DC converter
- ❷ Noise leakage from the USB connector to the cable via the power line and ground line
- ❸ Emission from power line of cable

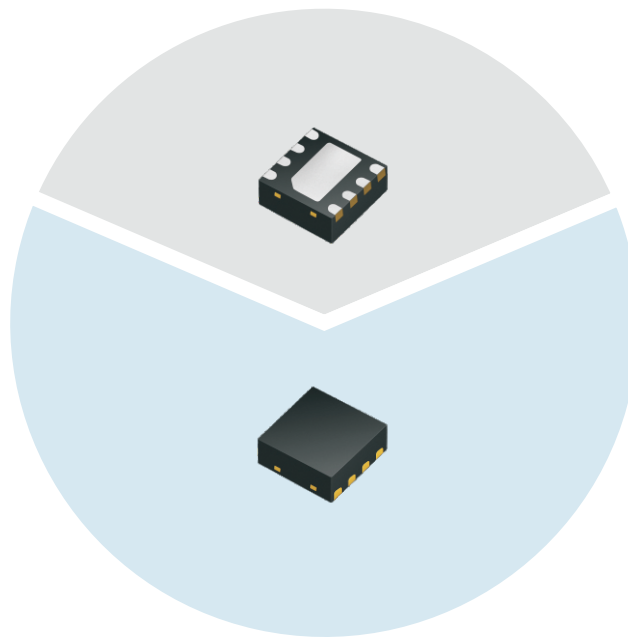
• Insertion of common mode filter for noise suppression

Since the high noise level on the power line and ground line causes noise to be emitted from the cable, inserting common mode choke coils before the USB connector on the output side of the DC-DC converter is likely to be effective.

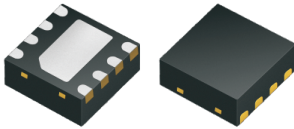


About SSC IC

SSC IC is a versatile Active EMI management IC designed to provide system wide reduction of Electromagnetic Interference (EMI) and Radio Frequency Interference (RFI) from clock and data sources. It allows significant system cost savings by reducing the number of circuit board layers, ferrite beads, shielding and other passive components that are traditionally required to pass EMI regulations. This allows operation on aperiodic as well periodic signals. By the precise placement of the edges of the reconstructed input signal, the peak energy of the output is distributed over a wider and controlled energy band thereby significantly lowering system EMI compared to the typical narrow band signal produced by oscillators and most frequency generators.



SSC6309



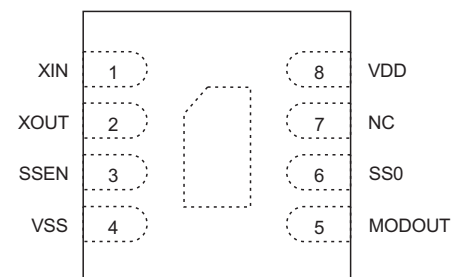
Description

The SSC6309 is a versatile Active EMI Reduction IC designed to provide system wide reduction of EMI and RFI from clock and data sources.

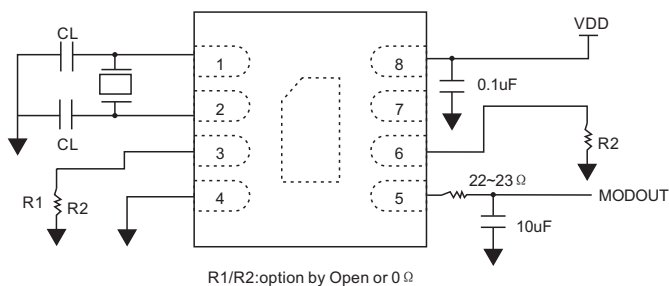
Cost Savings

- Reducing ferrite beads
- Reducing shielding
- Reducing the number of circuit board layers
- Reducing other passive components

Pin Configuration



Application Schematic



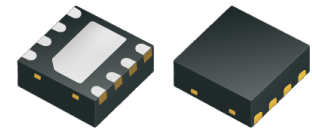
Features

- FCC approved method of EMI attenuation
- Multiple Deviation Selections
- Power Down Mode
- 8-pin WDFN package
- AEC-Q100 Grade 1 and Grade 2 certified

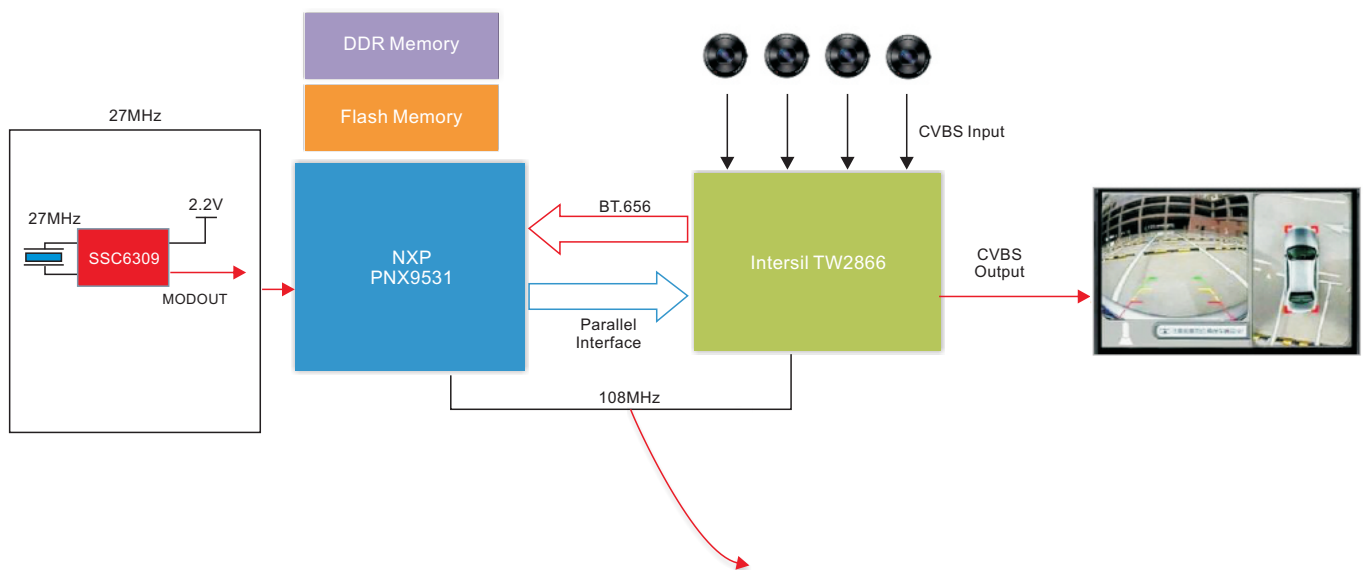
Application

Place SSC6309 at PN9531 to reduce the EMI for clock/data transmission between NXP and Intersil chips as well as Memory interface.

SSC6309



Block Diagram

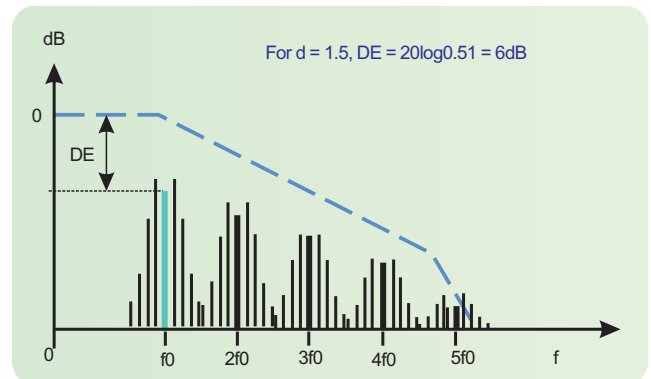


EMI Comparison @ 108MHz

	108MHz	324MHz	540MHz	756MHz	972MHz
NOSS	-7.00	-20.00	-32.17	-30.17	-37.83
SSC6309	-11.67	-26.33	-38.50	-37.17	-45.00

• SS Modulation Basics

If a sinusoidal signal of frequency f_c is frequency modulated by a sinusoidal signal of frequency f_m (modulation rate) by a maximum amount Δf (deviation) the resulting spectrum of the modulated signal is comprised of the carrier frequency and sidebands spaced at intervals of " f_m " over the frequency band



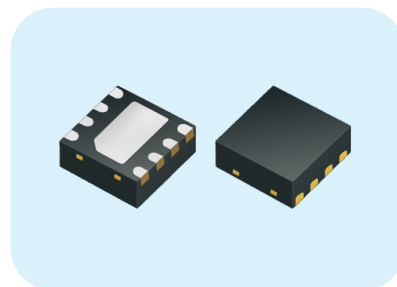
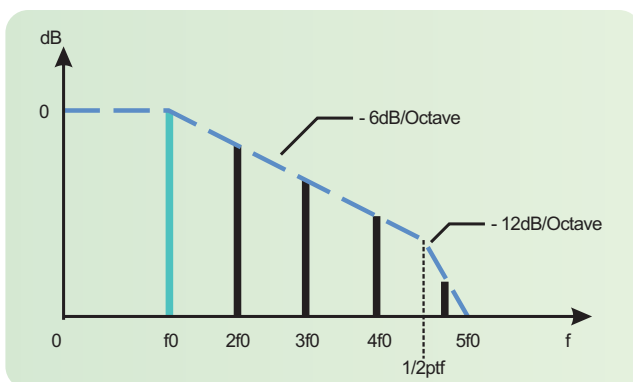
Sine wave modulation on a Real World Clock

- The Peak amplitude of the harmonics are suppressed
- DE dB suppression at the fundamental

Input



No Modulation; Normalized to 0dB



Modout



SSC6309 is based on spread spectrum technology