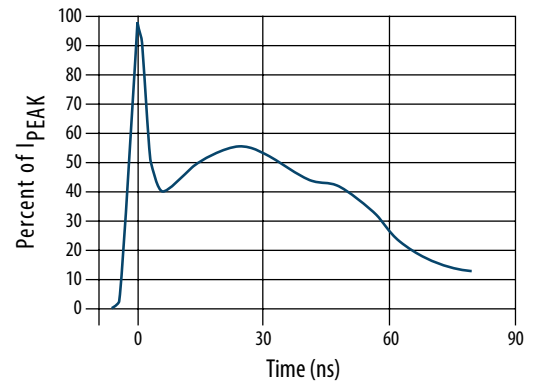


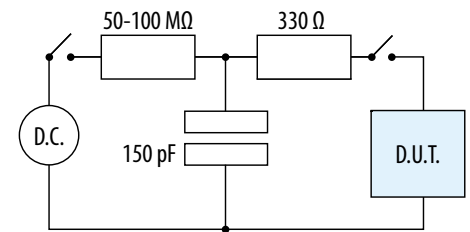
ESD Protection Requirements

Electrostatic discharge (ESD) occurs when a charge is exchanged between two objects of unequal charge potential. ESD, occurring most often between people and metal objects, is a result of a build-up of electrons that behave as a capacitor when dielectric isolation is available. Manmade materials such as the sole of a shoe achieve dielectric isolation, while a person walking on carpet creates kinetic energy. The International Electro-technical Commission (IEC) developed a human model ESD event that allows designers to take adequate protection in their electrostatic applications. The IEC defined the ESD discharge impulse with a rise time of less than 1 ns and decay time of 60 ns as highlighted in the adjacent graph. The new standard, IEC61000-4-2 identifies four levels.

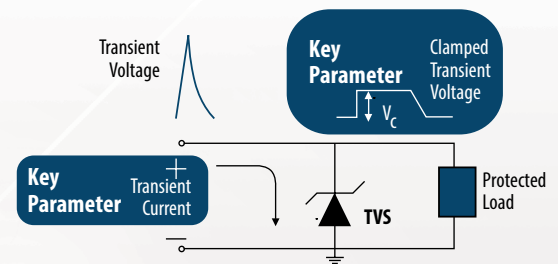


The different levels of the IEC61000-4-2 standard are outlined below:

IEC61000-4-2 Level	Contact Voltage (kV)	Air Discharge Voltage (kV)	Peak Contact Current (A)	Contact Current @ 30 ns (A)	Contact Current @ 60 ns (A)
Level 1	2	2	7.5	4	2
Level 2	4	4	15	8	4
Level 3	6	8	22.5	12	6
Level 4	8	15	30	16	8



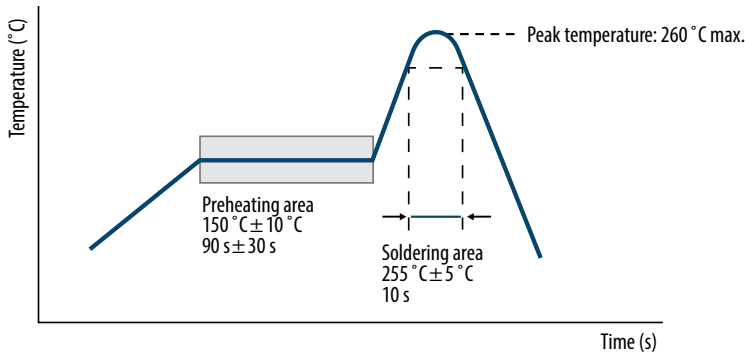
Integrated Circuit (IC) manufacturers of electrostatic sensitive devices design a level of protection into the IC to increase its robustness. However, protection circuits add cost to the device by consuming expensive silicon real estate. IC manufacturers design to standards to protect against board manufacturing processes such as IEC61000-4-2 Level 1, a 2 kV contact voltage. However, human body ESD voltages are nature-determined and can be 15 kV or more which probably will damage the IC.



IEC61000-4-2; Level 4 specifies an air discharge up to 15 kV to take this into consideration. It is common practice to protect all “people-interactive” data ports to Level 4, thereby limiting product damage and increasing the robustness of the equipment. Therefore, the external ESD protector becomes the first level of protection with the IC providing residual second level protection in the design.

ESD Protection Requirements

Recommended Pb Free Reflow Profile



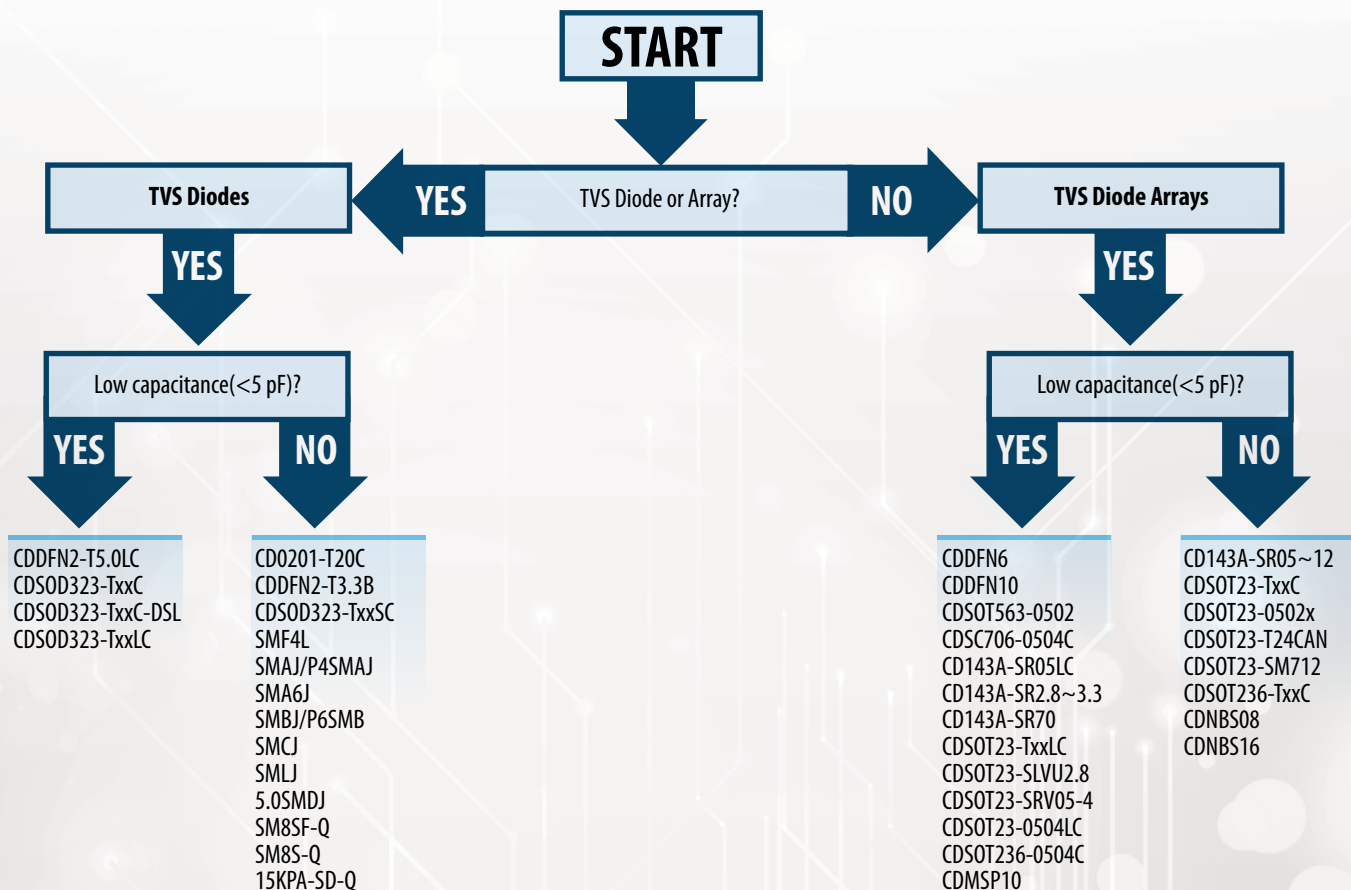
Features

- RoHS compliant*
- Discrete & array configurations
- Unidirectional & bidirectional configurations
- Standard, low and ultralow capacitance offering
- ESD protection per IEC 61000-4-2 standard
- EFT protection per IEC 61000-4-4 standard
- Surge protection per IEC 61000-4-5 standard
- SMT packages

Applications

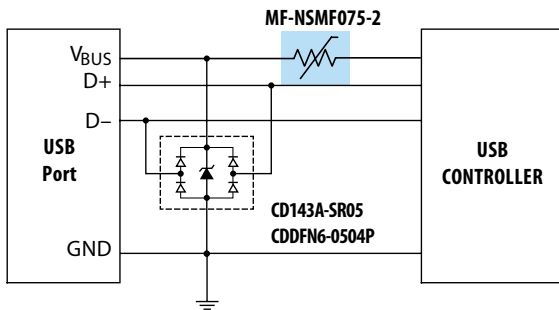
- General purpose ESD protection
- Antenna protection
- Ultra High Speed dataline protection such as USB3.x, HDMI 2.x and Ethernet (10/100, nGbE)
- Thunderbolt™ port protection
- Display Port 1.2 protection
- T1/E1

Bourns® Diode Product Selection Flowchart

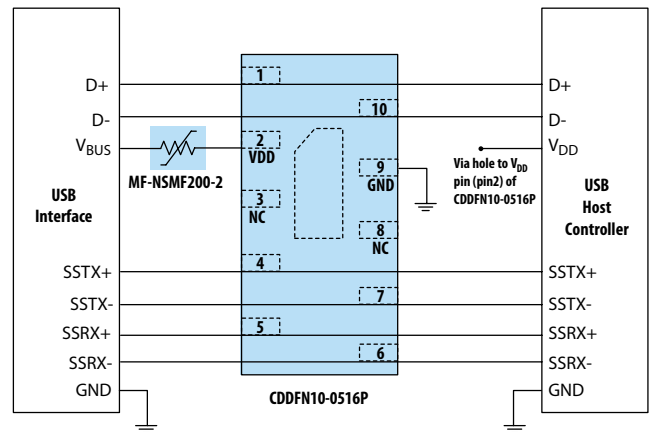


ESD Protection Product Applications

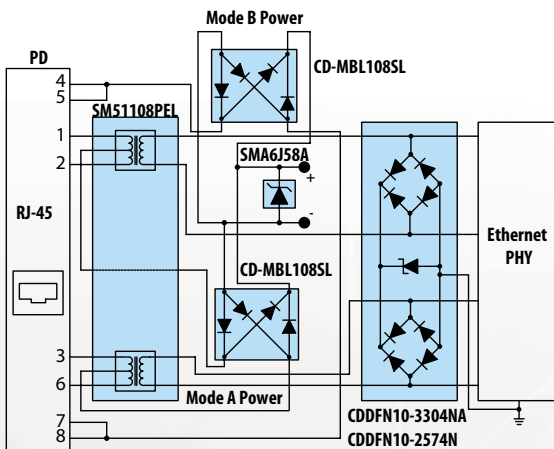
USB 2.0 Single Port Protection



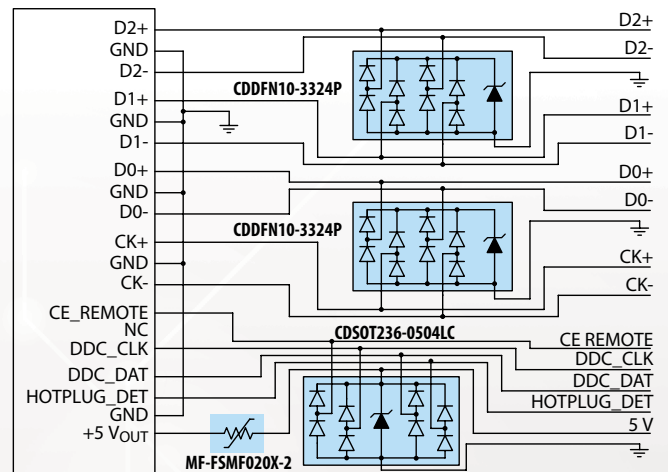
USB 3.1 ESD & Overcurrent Protection



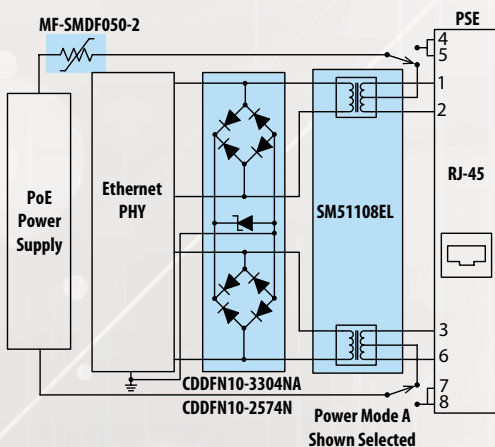
Power Over Ethernet (POE) PD Unit Protection



HDMI 2.0 ESD & Overcurrent Protection

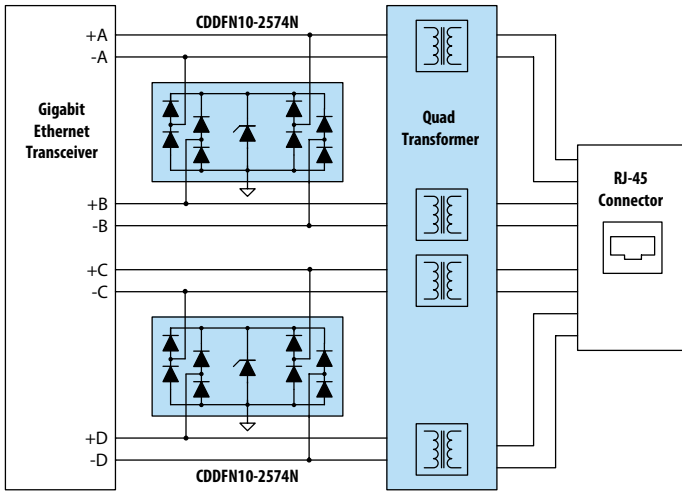


Power Over Ethernet (POE) PSE Unit Protection

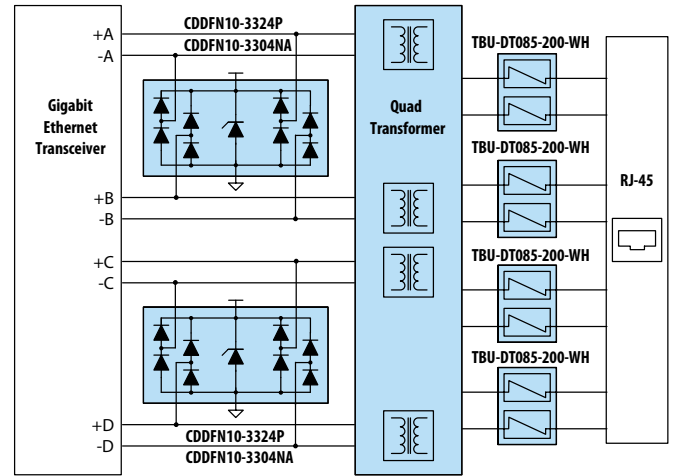


ESD Protection Product Applications

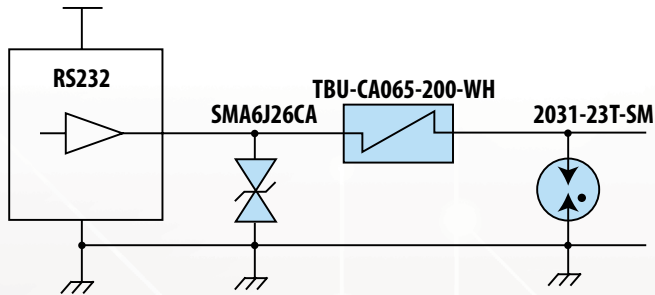
Gb Ethernet Surge and ESD Protection



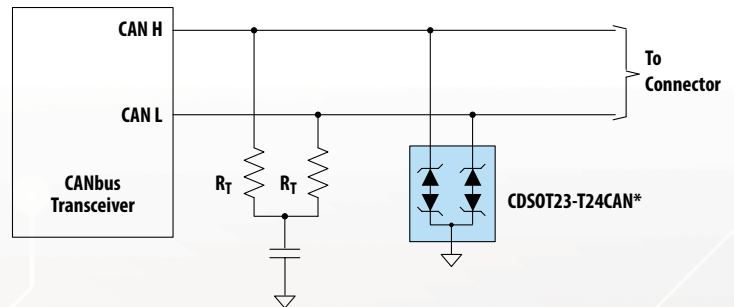
Ethernet Power Contact & Surge Protection



RS-232 Serial Port Surge Protection

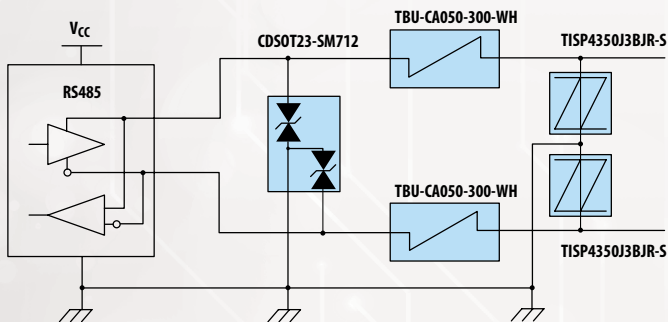


CANbus Protection

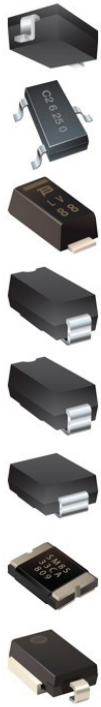


**Q" suffix for AEC-Q101 compliance.

RS-485 Serial Port ESD/EFT/ Surge Protection



AEC-Q Compliant Transient Voltage Suppressor (TVS) Diodes

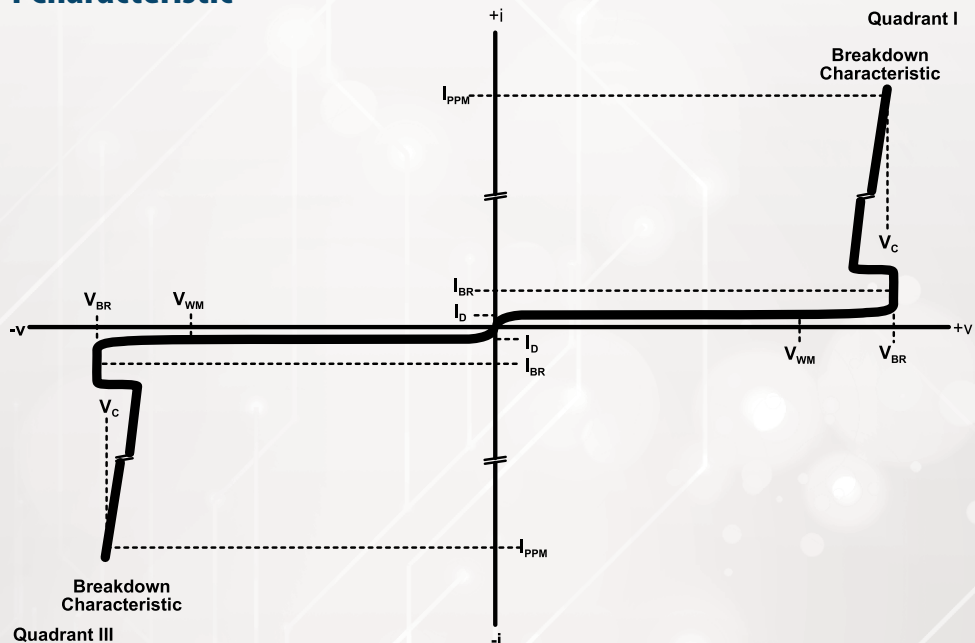


Part Number	Pkg. Size	V_{WM}	P_{PP} (W)	
			8/20 μ s	10/1000 μ s
CDSOD323-TxxC-DSLQ	SOD-323	12, 24	350	
CDSOD323-TxxS-Q	SOD-323	5	500	
CDSOT23-T24CAN-Q	SOT-23	24	500	
CDSOT23-TxxC-Q	SOT-23	3.3 ~ 15	500	
CDSOT23-TxxLC-Q	SOT-23	5, 8	500	
SMF4L-Q	SOD-123F	3.3, 5, 8		400
SMAJ-Q	DO-214AC (SMA)	28, 36		400
P4SMA-Q	DO-214AC (SMA)	6.8~250		400
SMA6J-Q	DO-214AC (SMA)	5~43		600
SMBJ-Q	DO-214AA (SMB)	12~58		600
P6SMB-Q	DO-214AA (SMB)	6.8~250		600
SMCJ-Q	DO-214AB (SMC)	12~58		1,500
1.5SMC-Q	DO-214AB (SMC)	5.8~111		1,500
SMLJ-Q	DO-214AB (SMC)	12~58		3,000
5.0SMDJ-Q	DO-214AB (SMC)	5~170		5,000
SM8SF-Q	DFN	24~36		7,000
SM8S-Q	DO-218	16~43		6,600
15KPA-SD-Q	DO-218	16~66		15,000

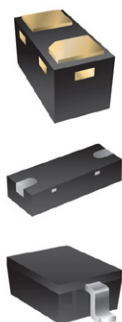
Symbols & Terms

V_{BR}	Breakdown Voltage
V_{RWM}	Working Maximum Reverse Voltage
V_C	Clamping Voltage
I_D	Leakage Current
I_{PP}	Peak Pulse Current
P_{PK}	Peak Pulse Power
C_t	Capacitance

V-I Characteristic



Low/Standard Capacitance Transient Voltage Suppressor (TVS) Diodes



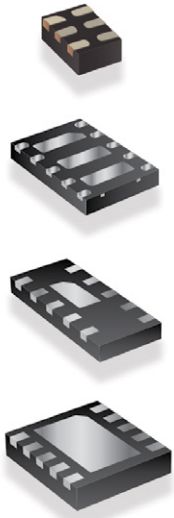
Part Number	Pkg. Size	Electrical Characteristics (T _A = 25 °C)			
		V _{WM} (V)	V _C (V)	I _{pp} (A) 8/20 μs	C _p (pF)
CD0201-T20C	0201	20	34		10
CD0201-T2.0LC	0201	2	5.5	7	0.18
CDDFN2-T3.3B	DFN2 (0402)	3.3	8	5	13.5
CDDFN2-T5.0LC	DFN2 (0402)	5	25	3	0.5
CDSOD323-T03S	SOD-323	3.3	10.9	43	500
CDSOD323-T05S	SOD-323	5	13.5	42	350
CDSOD323-T08S	SOD-323	8	16.9	34	250
CDSOD323-T12S	SOD-323	12	25.9	21	150
CDSOD323-T15S	SOD-323	15	30	17	100
CDSOD323-T18S	SOD-323	18	40	9	90
CDSOD323-T24S	SOD-323	24	49	12	88
CDSOD323-T36S	SOD-323	36	75	5	75
CDSOD323-T03SC	SOD-323	3.3	10.9	43	200
CDSOD323-T05SC	SOD-323	5	14.5	28	175
CDSOD323-T08SC	SOD-323	8	18.5	17	150
CDSOD323-T12SC	SOD-323	12	29.5	14	50
CDSOD323-T15SC	SOD-323	15	33	12	40
CDSOD323-T18SC	SOD-323	18	40	9	40
CDSOD323-T24SC	SOD-323	24	46.2	9	40
CDSOD323-T36SC	SOD-323	36	75	5	35
CDSOD323-T03	SOD-323	3.3	19	20	3
CDSOD323-T05	SOD-323	5	18.3	17	3
CDSOD323-T08	SOD-323	8	18.5	17	3
CDSOD323-T12	SOD-323	12	28.3	11	3
CDSOD323-T15	SOD-323	15	31.8	10	3
CDSOD323-T18	SOD-323	18	45	8	3
CDSOD323-T24	SOD-323	24	56	6	3
CDSOD323-T03C	SOD-323	3.3	19	20	3
CDSOD323-T05C	SOD-323	5	18.3	17	3
CDSOD323-T08C	SOD-323	8	18.5	17	3
CDSOD323-T12C	SOD-323	12	28.3	11	3
CDSOD323-T15C	SOD-323	15	31.8	10	3
CDSOD323-T18C	SOD-323	18	45	8	3
CDSOD323-T24C	SOD-323	24	56	6	3
CDSOD323-T05L	SOD-323	5	18.3	15	1
CDSOD323-T08L	SOD-323	8	18.3	15	1
CDSOD323-T12L	SOD-323	12	28.6	11	1
CDSOD323-T15L	SOD-323	15	31.8	10	1
CDSOD323-T18L	SOD-323	18	45	8	1
CDSOD323-T24L	SOD-323	24	56	6	1
CDSOD323-T05LC	SOD-323	5	18.3	15	1
CDSOD323-T08LC	SOD-323	8	18.3	15	1
CDSOD323-T12LC	SOD-323	12	28.6	11	1
CDSOD323-T15LC	SOD-323	15	31.8	10	1
CDSOD323-T18LC	SOD-323	18	45	8	1
CDSOD323-T24LC	SOD-323	24	56	6	1
CDSOD323-T12C-DSL	SOD-323	12	28.3	11	3
CDSOD323-T24C-DSL	SOD-323	24	56	6	3

Transient Voltage Suppressor (TVS) Diodes for Surge/ESD protection



Part Number	Pkg. Size	V_{WM} (V)	V_{BR} (V)	P_{PP} (W) 10/1000 μ s
SMF4L	SOD-123F	5 - 85	6.4 - 94.4	400
SMAJ	DO-214AC (SMA)	5 - 495	6.4 - 522	400
P4SMA	DO-214AC (SMA)	5.8 - 495	6.8 - 550	400
SMA6J	DO-214AC (SMA)	5 - 130	6.4 - 144	600
SMBJ	DO-214AA (SMB)	5 - 495	6.4 - 522	600
P6SMB	DO-214AA (SMB)	5.8 - 495	6.8 - 550	600
1.5SMBJ	DO-214AA (SMB)	12 - 85	13.3 - 94.4	1,500
SMCJ	DO-214AB (SMC)	5 - 495	6.4 - 522	1,500
1.5SMC	DO-214AB (SMC)	5.8 - 495	6.8 - 550	1,500
SMLJ	DO-214AB (SMC)	5 - 170	6.4 - 189	3,000
5.0SMDJ	DO-214AB (SMC)	5 - 170	6.4 - 189	5,000

Steering/TVS Diode Arrays



Part Number	Pkg. Size	Absolute Max. Ratings ($T_A = 25^\circ\text{C}$)			Electrical Characteristics ($T_A = 25^\circ\text{C}$)		Schematic
		V_{wm} (V)	V_C (V)	I_{pp} (A)	V_{br} min. (V)	C_{typ} (pF)	
CDDFN6-3312P	DFN6	3.3	13	3	4.5	0.18	
CDDFN6-0504P	DFN6	5.0	8.1	6.5	6.0	1.2	
CDDFN10-2574N	DFN10	2.5	11.0	45	3.0	1.7	
CDDFN10-3324P	DFN10	3.3	7.5	4	4.5	0.45	
CDDFN10-3304NA	DFN10	3.3	18.0	25	3.9	4	
CDDFN10-0506N	DFN10	5.0	10.0	3.5	6.0	0.25	
CDDFN10-0516P	DFN10	5.0	7.2	4.0	6.0	0.25	
CDDFN10-0524P	DFN10	5.0	12.0	3.8	6.0	0.5	

Transient Voltage Suppressor (TVS) Diode Arrays



Part Number	Pkg. Size	Absolute Max. Ratings ($T_A = 25^\circ\text{C}$)			Electrical Characteristics ($T_A = 25^\circ\text{C}$)		Schematic	
		V_{wm} (V)	V_C (V)	I_{pp} (A)	$V_{br\ min.}$ (V)	C_t typ (pF)		
CDSOT23-SLVU2.8	SOT23	2.8	21	30	3.0	2.5/20		
CDSOT23-0502U	SOT-23	5.0	8.0	16	6.0	32.5		
CDSOT23-0502B	SOT-23	5.0	9	8.5	6.0	15		
CDSOT23-SM712	SOT23	7.0, 12.0	14.0, 26.0	17	7.5	75		
CDSOT23-T24CAN	SOT23	24.0	40.0	8	26.2	22		
CDSOT23-T03	SOT23	3.3	10.9	43	4.0	500		
CDSOT23-T05	SOT23	5.0	13.5	42	6.0	350		
CDSOT23-T08	SOT23	8.0	16.9	34	8.5	250		
CDSOT23-T12	SOT23	12.0	25.9	21	13.3	150		
CDSOT23-T15	SOT23	15.0	30.0	17	16.7	100		
CDSOT23-T24	SOT23	24.0	49.0	12	26.7	88		
CDSOT23-T36	SOT23	36.0	76.8	9	40.0	80		
CDSOT23-T03C	SOT23	3.3	10.9	43	4.0	300		
CDSOT23-T05C	SOT23	5.0	13.5	42	6.0	210		
CDSOT23-T08C	SOT23	8.0	16.9	34	8.5	150		
CDSOT23-T12C	SOT23	12.0	25.9	21	13.3	90		
CDSOT23-T15C	SOT23	15.0	30.0	17	16.7	60		
CDSOT23-T24C	SOT23	24.0	49.0	12	26.7	63		
CDSOT23-T36C	SOT23	36.0	76.8	9	40.0	60		
CDSOT23-T03LC	SOT23	3.3	10.9	43	4.0	5		
CDSOT23-T05LC	SOT23	5.0	13.5	42	6.0	5		
CDSOT23-T08LC	SOT23	8.0	16.9	34	8.5	5		
CDSOT23-T12LC	SOT23	12	25.9	27	13.3	5		
CDSOT23-T15LC	SOT23	15	30.0	17	16.7	5		
CDSOT23-T24LC	SOT23	24.0	26.7	12	26.7	5		
CDSOT23-T36LC	SOT23	36.0	76.8	9	40.0	5		


Transient Voltage Suppressor (TVS) Diode Arrays



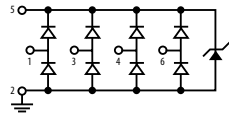
Part Number	Pkg. Size	Absolute Max. Ratings ($T_A = 25^\circ\text{C}$)			Electrical Characteristics ($T_A = 25^\circ\text{C}$)		Schematic
		V_{wm} (V)	V_C (V)	I_{pp} (A)	V_{br} min. (V)	C typ (pF)	
CD143A-SR2.8	SOT-143	2.8	5.0	12	3.0	4.5	
CD143A-SR3.3	SOT-143	3.3	7.0	12	3.5	4.5	
CD143A-SR05	SOT-143	5.0	20.0	30	6.0	10	
CD143A-SR05LC	SOT-143	5.0	20.0	13	6.1	3	
CD143A-SR12	SOT-143	12.0	30.0	16	13.3	10	
CD143A-SR70	SOT-143	70.0	7.0	24	85	10	

Steering Diode Arrays



Part Number	Pkg. Size	Absolute Max. Ratings ($T_A = 25^\circ\text{C}$)			Electrical Characteristics ($T_A = 25^\circ\text{C}$)		Schematic
		V_{WM} (V)	V_C (V)	I_{PP} (A)	V_{BR} min. (V)	C typ (pF)	
CDSOT563-0502	SOT563	5.0	9.0	6	6.0	2.0	



Part Number	Pkg. Size	Absolute Max. Ratings ($T_A = 25^\circ\text{C}$)			Electrical Characteristics ($T_A = 25^\circ\text{C}$)		Schematic
		V_{WM} (V)	V_C (V)	I_{PP} (A)	V_{BR} min. (V)	C typ (pF)	
CDSOT563-0504C	SC70-6L	5.0	9.0	6.5	6.0	1.6	

Transient Voltage Suppressor (TVS) Diode Arrays



Part Number	Pkg. Size	Absolute Max. Ratings ($T_A = 25^\circ\text{C}$)			Electrical Characteristics ($T_A = 25^\circ\text{C}$)		Schematic
		V_{WM} (V)	V_C (V)	I_{PP} (A)	$V_{BR\ min.}$ (V)	C_{typ} (pF)	
CDSOT23-SRV05-4	SOT23-6	5.0	15.0	30	6.0	3.5	
CDSOT23-SR208	SOT23-6			0.7		5.0	
CDSOT236-0502	SOT23-6	5.0		7.0	6.0	2.8	
CDSOT236-0504C	SOT23-6	5.0	10.0	5.5	6.0	1.2	
CDSOT236-0504LC	SOT23-6	5.0	8.1	4.7	6.0	0.65	
CDSOT236-T05	SOT23-6	5.0	2.1.0	17.0	6.0	150	
CDSOT236-T12	SOT23-6	12.0	29.2	12.0	13.3	80	
CDSOT236-T15	SOT23-6	15.0	34.6	10.0	16.7	50	
CDSOT236-T24	SOT23-6	24.0	58.3	6.0	26.7	40	
CDSOT236-T05C	SOT23-6	5.0	2.1.0	17.0	6.0	150	
CDSOT236-T12C	SOT23-6	12.0	29.2	12.0	13.3	80	
CDSOT236-T15C	SOT23-6	15.0	34.6	10.0	16.7	50	
CDSOT236-T24C	SOT23-6	24.0	58.3	6.0	26.7	40	

Transient Voltage Suppressor (TVS) Diode Arrays



Part Number	Pkg. Size	Absolute Max. Ratings (T _A = 25 °C)			Electrical Characteristics (T _A = 25 °C)		Schematic
		V _{WM} (V)	V _C (V)	I _{PP} (A)	V _{br} min. (V)	C typ (pF)	
CDNBS08-T03	SO-8	3.0	10.9	43	3.3	450	
CDNBS08-T05	SO-8	5.0	13.5	42	6.0	308	
CDNBS08-T08	SO-8	8.0	16.9	34	8.5	300	
CDNBS08-T12	SO-8	12.0	25.9	27	13.3	105	
CDNBS08-T15	SO-8	15.0	30.0	17	16.7	80	
CDNBS08-T24	SO-8	24.0	49.0	12	26.7	50	
CDNBS08-T36	SO-8	36.0	76.8	9	40	45	
CDNBS08-T03C	SO-8	3.0	10.9	43	3.3	450	
CDNBS08-T05C	SO-8	5.0	13.5	42	6.0	308	
CDNBS08-T08C	SO-8	8.0	16.9	34	8.5	300	
CDNBS08-T12C	SO-8	12.0	25.9	27	13.3	105	
CDNBS08-T15C	SO-8	15.0	30.0	17	16.7	80	
CDNBS08-T24C	SO-8	24.0	49.0	12	26.7	50	
CDNBS08-T36C	SO-8	36.0	76.8	9	40	45	

Transient Voltage Suppressor (TVS) Diode Arrays




Part Number	Pkg. Size	Absolute Max. Ratings ($T_A = 25^\circ\text{C}$)			Electrical Characteristics ($T_A = 25^\circ\text{C}$)		Schematic
		V_{wm} (V)	V_C (V)	I_{pp} (A)	V_{br} min. (V)	C typ (pF)	
CDNBS08-SLVU2.8-4	S0-8	2.8	21.0	30	3.0	6	
CDNBS08-SLVU2.8-8	S0-8	2.8	17.0	30	3.0	6	
CDNBS08-SRDA3.3-4	S0-8	3.3	10.9	43.0	4.0	15	
CDNBS08-SRDA05-4	S0-8	5.0	13.5	42.0	6.0	15	
CDNBS08-SRDA12-4	S0-8	12.0	25.9	27.0	13.3	15	
CDNBS08-SRDA15-4	S0-8	15.0	30.0	17.0	16.7	15	
CDNBS08-SMDA05-6	S0-8	5.0	18.0	12.0	6.0	100	
CDNBS08-PLC03-6	S0-8	6.0	20.0	100.0	6.8	8	
CDNBS08-T58CC	S0-8	58.0	100.0	24.0	68.0	55	




Part Number	Pkg. Size	Absolute Max. Ratings ($T_A = 25^\circ\text{C}$)			Electrical Characteristics ($T_A = 25^\circ\text{C}$)		Schematic
		V_{wm} (V)	V_C (V)	I_{pp} (A)	V_{br} min. (V)	C typ (pF)	
CDNBS16-T03	16L NSOIC	3.0	23.0	43	4.5	15	
CDNBS16-T05	16L NSOIC	5.0	24.0	42	6.0	15	
CDNBS16-T08	16L NSOIC	8.0	26.0	30	8.5	15	
CDNBS16-T12	16L NSOIC	12.0	33.0	21	13.3	15	
CDNBS16-T15	16L NSOIC	15.0	39.0	15	16.7	15	
CDNBS16-T24	16L NSOIC	24.0	57.0	10	26.7	15	
CDNBS16-T36	16L NSOIC	36.0	72.0	7	40.0	15	
CDNBS16-T03C	16L NSOIC	3.0	23.0	43	4.5	15	
CDNBS16-T05C	16L NSOIC	5.0	24.0	42	6.0	15	
CDNBS16-T08C	16L NSOIC	8.0	26.0	30	8.5	15	
CDNBS16-T12C	16L NSOIC	12.0	33.0	21	13.3	15	
CDNBS16-T15C	16L NSOIC	15.0	39.0	15	16.7	15	
CDNBS16-T24C	16L NSOIC	24.0	57.0	10	26.7	15	
CDNBS16-T36C	16L NSOIC	36.0	72.0	7	40.0	15	

Power Transient Voltage Suppressor (PTVS) Diodes




Part Number	Pkg. Type	Package Size (mm)			Electrical Characteristics (T _A = 25 °C)						
		Length	Width	Height	V _{wm} (V)	V _{br min.} (V)	V _c (V)	I _{pp} (kA)	I _D (μA)	C _t typ (nF)	
PTVS1-022C-H	Surface Mount	8	6	2.5	22	24	28	1	10	2	✓
PTVS1-026C-H	Surface Mount	8	6	2.5	26	28	30	1	10	1.5	✓
PTVS1-029C-H	Surface Mount	8	6	2.5	29	32	34	1	10	1.5	✓
PTVS1-043C-H	Surface Mount	8	6	2.5	43	48	56	1	10	1	✓
PTVS1-058C-H	Surface Mount	8	6	2.5	58	64	67	1	10	0.8	✓
PTVS1-066C-H	Surface Mount	8	6	2.5	66	72	86	1	10	0.7	✓
PTVS1-076C-H	Surface Mount	8	6	2.5	76	85	91	1	10	0.6	✓
PTVS1-086C-H	Surface Mount	8	6	2.5	86	96	99	1	10	0.5	✓
PTVS2-022C-H	Surface Mount	8	6	2.5	22	24	28	2	10	4	✓
PTVS2-026C-H	Surface Mount	8	6	2.5	26	28	30	2	10	3	✓
PTVS2-029C-H	Surface Mount	8	6	2.5	29	32	34	2	10	3	✓
PTVS2-043C-H	Surface Mount	8	6	2.5	43	48	56	2	10	2	✓
PTVS2-058C-H	Surface Mount	8	6	2.5	58	64	67	2	10	1.5	✓
PTVS2-066C-H	Surface Mount	8	6	2.5	66	72	86	2	10	1.3	✓
PTVS2-076C-H	Surface Mount	8	6	2.5	76	85	91	2	10	1.1	✓
PTVS2-086C-H	Surface Mount	8	6	2.5	86	96	99	2	10	1	✓



Part Number	Pkg. Type	Package Size (mm)			Electrical Characteristics (T _A = 25 °C)						
		Length	Width	Height	V _{wm} (V)	V _{br min.} (V)	V _c (V)	I _{pp} (kA)	I _D (μA)	C _t typ (nF)	
PTVS3-066C-M	Surface Mount	18.72	14.6	7.24	66	72	120	3	10	2	✓
PTVS3-076C-M	Surface Mount	18.72	14.6	7.24	76	85	135	3	10	1.7	✓
PTVS6-066C-M	Surface Mount	18.72	14.6	7.24	66	72	120	6	10	4.1	✓
PTVS6-076C-M	Surface Mount	18.72	14.6	7.24	76	85	135	6	10	3.3	✓
PTVS10-066C-M	Surface Mount	18.72	14.6	7.24	66	72	120	10	10	6.7	✓
PTVS10-076C-M	Surface Mount	18.72	14.6	7.24	76	85	135	10	10	5.5	✓
PTVS10-086C-M	Surface Mount	18.72	14.6	7.24	86	101	157	10	10	5	



Part Number	Pkg. Type	Package Size (mm)			Electrical Characteristics (T _A = 25 °C)						
		Length	Width	Height	V _{wm} (V)	V _{br min.} (V)	V _c (V)	I _{pp} (kA)	I _D (μA)	C _t typ (nF)	
PTVS3-058C-SH	Surface Mount	10.8	9	7	58	64	110	3	10	2.3	✓
PTVS3-076C-SH	Surface Mount	10.8	9	7.9	76	85	140	3	10	1.7	✓
PTVS6-058C-SH	Surface Mount	13	11.5	7	58	64	110	6	10	4.5	
PTVS6-076C-SH	Surface Mount	13	11.5	7.9	76	85	140	6	10	3.3	
PTVS10-058C-SH	Surface Mount	18.6	14.5	11	58	64	110	10	10	8	
PTVS10-076C-SH	Surface Mount	18.6	14.5	12	76	85	140	10	10	6	
PTVS15-058C-SH	Surface Mount	21	16	11	58	64	110	15	10	12	✓
PTVS15-076C-SH	Surface Mount	21	16	12	76	85	150	15	10	9	✓

Power Transient Voltage Suppressor (PTVS) Diodes



Part Number	Pkg. Type	Package Size (mm)			Electrical Characteristics (T _A = 25 °C)						
		Length	Width	Height	V _{WM} (V)	V _{BR} min. (V)	V _C (V)	I _{PP} (kA)	I _D (μA)	C _T typ (pF)	RU
PTVS1-066C-TH	Through-Hole	24.15	7	14.5	66	71	86	1	10	0.744	
PTVS1-190C-TH	Through-Hole	24.15	7	14.5	190	200	227	1	10	0.274	
PTVS1-380C-TH	Through-Hole	24.15	8	14	380	422	520	1	10	0.12	✓
PTVS3-015C-TH	Through-Hole	24.15	9.3	16.8	15	16	28	3	10	7.5	
PTVS3-058C-TH	Through-Hole	24.15	9.3	16.8	58	64	110	3	10	2.3	✓
PTVS3-076C-TH	Through-Hole	24.15	9.3	16.8	76	85	140	3	10	1.7	✓
PTVS3-380C-TH	Through-Hole	24.15	9.3	16.8	380	401	520	3	10	0.35	
PTVS3-430C-TH	Through-Hole	24.15	9.3	16.8	430	440	580	3	10	0.4	
PTVS6-058C-TH	Through-Hole	24.15	11.5	18	58	64	110	6	10	4.5	
PTVS6-076C-TH	Through-Hole	24.15	11.5	18	76	85	140	6	10	3.3	
PTVS6-380C-TH	Through-Hole	24.15	11.5	18	380	401	520	6	10	0.65	
PTVS6-430C-TH	Through-Hole	24.15	11.5	18	430	440	580	6	10	0.7	
PTVS10-058C-TH	Through-Hole	24.15	14	21	58	64	110	10	10	7.50	
PTVS10-076C-TH	Through-Hole	24.15	14	21	76	85	140	10	10	5.6	
PTVS10-170C-TH	Through-Hole	24.15	14	21	170	190	260	10	10	2.5	
PTVS10-320C-TH	Through-Hole	24.15	14	21	320	336	440	10	10	1.4	
PTVS10-380C-TH	Through-Hole	24.15	14	21	380	401	520	10	10	1.2	
PTVS10-430C-TH	Through-Hole	24.15	14	21	430	440	580	10	10	1.1	
PTVS10-470C-TH	Through-Hole	24.15	14	21	470	470	630	10	10	1	
PTVS15-058C-TH	Through-Hole	24.15	16	23.5	58	64	110	15	10	12	✓
PTVS15-076C-TH	Through-Hole	24.15	16	23.5	76	85	150	15	10	9	✓
PTVS20-015C-TH	Through-Hole	24.5	16	23.5	15	16	44	20	10	38.7	✓



Part Number	Pkg. Type	Package Size (mm)			Electrical Characteristics (T _A = 25 °C)						
		Length	Width	Height	V _{WM} (V)	V _{BR} min. (V)	V _C (V)	I _{PP} (kA)	I _D (μA)	C _T typ (pF)	RU
PTVS20-015C-H	DFN	17	15	2.5	15	16	26	20	10	38.7	✓

Bourns® TVS Diode Arrays Competitive Cross Reference

Bourns	ProTek	Semtech	Littelfuse	MicroSemi	OnSemi	AOS	Semitel	STM
CD143A-SR05	PSR05-LF	SR05						
CD143A-SR05LC						AOZ8001A-05 AOZ8001A-12		
CD143A-SR12	PSR12-LF	SR12						
CD143A-SR2.8	PSR2.8-LF	SR2.8						
CD143A-SR3.3	PSR3.3-LF	SR3.3						
CD143A-SR70	PSR70-LF	SR70						
CDDFN10-0524P		RClamp0524P			ESD7004			
CDDFN10-3304NA	PLR3304	RClamp3304N			NUP4105MU			
CDDFN10-0524P		RClamp0524P			ESD7004			
CDDFN10-3304NA	PLR3304	RClamp3304N			NUP4105MU			
CDDFN10-0524P		RClamp0524P			ESD7004	AOZ8808DI-05		
CDDFN10-0524P					ESD8104MUTAG			
CDDFN10-2574N		RClamp2574N	SP2574N					
CDDFN10-3304NA	PLR3304	RClamp3304N			NUP4105MU			
CDDFN10-3324P								HS051-4N10
CDDFN2-T5.0LC		RClamp0521P,TCT						
CDDFN6-0504P		RClamp0504P				AOZ8002DI		
CDNBS08-PLC03-6	PLC03-6-LF-T13	LC03-6	SP03-6		LC03-6R2			
CDNBS08-SLVU2.8-4	SLUV2.8-4-LF	SLVU2.8-4	SPLV2.8-4				SE52V8P8U	
CDNBS08-SLVU2.8-8	SLUV2.8-8-LF	SLVU2.8-8						
CDNBS08-SMDA05-6	PSMDA05-6							ESDA6V1U1
CDNBS08-SRDA05-4	SRDA05-4-LF	SRDA05-4			NUP4201DR2/SRDA05-4 NUP4201D			
CDNBS08-SRDA05-6		SRDA05-6						
CDNBS08-SRDA05-6	SRDA05-6-LF							
CDNBS08-SRDA12-4	SRDA12-4-LF	SRDA12-4						
CDNBS08-SRDA15-4	SRDA15-4-LF	SRDA15-4						
CDNBS08-SRDA3.3-4	SRDA3.3-4-LF	SRDA3.3-4						
CDNBS08-SRDA3.3-6	SRDA3.3-6-LF	SRDA3.3-6			NUP4106D			
CDNBS08-Txx	SMDAxx-LF	SMDAxx		SMDBxxE3				
CDNBS08-TxxC	SMDAxxC-LF	SMDAxxC		SMDBxxCE3				
CDNBS16-Txx	SM16LCxx-LF	LCDAxx-8						
CDNBS16-TxxC	SM16LCxxC-LF	LCDAxxC-8						
CDS0706-0504C	PLR0504F-P-T7					NUP4202W1T2G	SES5VTSC70-6U SESLCxV3D323-2U SESLCxV3D323-2B	
CDS0D323-Txx	GBLCxx-LF							
CDS0D323-TxxC	GBLCxxC-LF							
CDS0D323-TxxL	GBLCxxLC-LF							
CDS0D323-TxxLC	GBLCxxCLC-LF							
CDS0D323-TxxS	PSDxx-LF	uClamp3301D			SDxx			
CDS0D323-TxxSC	PSDxxC-LF	SDxxC			SDxxC			
CDS0T235-0504C						AOZ8902CI		
CDS0T236-0502								USBLC6-2SC6
CDS0T236-0504C		RCLAMP0504S				AOZ8000CI/8901CI/8904 AOZ8005CI/8005CIL/8007CI	SE55VT236-6U	DVIULC6-4SC6 HDMIULC6-4SC6 ESDA6V1SC5 ESDA6V1-5SC6/17-5SC6/19-5SC6
CDS0T236-0504LC								
CDS0T236-Txx	PSMSxx-LF	SMSxx	SPxx04BAHT					
CDS0T236-TxxC	PSMSxxC-LF	SMSxxC	SPxx05BAHT					
CDS0T236-TxxLC	ESOTxx-LCC-1							
CDS0T23-SLVU2.8	SLVU2.8-LF	SLVU2.8	SPLV2.8					
CDS0T23-SM712	PSM712-LF-T7	SM712						
CDS0T23-SR208	USB208-LF-T7							DALC208SC6
CDS0T23-SRV05-4	SRV05-4-P-T7	SRV05-4	SP3050-04HTG		NUP4201MR6T1G			USBLC6-4SC6
CDS0T23-Txx	PSOTxx-LF							
CDS0T23-TxxC	PSOTxxC-LF	SMxx	SPxx02BAHT					ESDA6V1L/14V2L/25L
CDS0T23-TxxLC	PSOTxxLC-LF	SLxx			SLxxT1G			ESDA6V1-4BC6
CDS0T563-0502						AOZ8001KIL		USBLC6-2P6
SMAJxxxA			SMAJxxxA	SMAJxxxA	1SMAxxxA			SMAJxxxA
SMAJxxxCA			SMAJ1xxxCA	SMAJxxxCA	1SMAxxxCA			SMAJxxxCA
SMBJxxxA			SMBJxxxA	SMBJxxxA	1SMBxxxA			SMBJxxxA
SMBJxxxCA			SMBJxxxCA	SMBJxxxCA	1SMBxxxCA			SMBJxxxCA
SMCJxxxA			SMCJxxxA	SMCJxxxA	1SMCxxxA			SMCJxxxA
SMCJxxxCA			SMCJxxxCA	SMCJxxxCA	1SMCxxxCA			SMCJxxxCA
SMLJxxxA				SMLJxxxA				
SMLJxxxCA				SMLJxxxCA				
1.5SMBJxxxA								SMB15FxxA

Bourns® Power TVS Diode Arrays Competitive Cross Reference

Bourns	Littelfuse
PTVS1-022C-H	
PTVS1-026C-H	
PTVS1-029C-H	
PTVS1-043C-H	
PTVS1-058C-H	
PTVS1-066C-H	
PTVS1-066C-TH	
PTVS1-076C-H	AK1-076C-Y
PTVS1-086C-H	
PTVS1-190C-TH	
PTVS1-380C-TH	AK1-380C-Y
PTVS2-022C-H	
PTVS2-026C-H	
PTVS2-029C-H	
PTVS2-043C-H	
PTVS2-058C-H	
PTVS2-066C-H	
PTVS2-076C-H	
PTVS2-086C-H	
15KPA-SD-Q	
PTVS3-015C-TH	AK3-015C
PTVS3-058C-TH	AK3-058C
PTVS3-058C-SH	
PTVS3-066C-M	LTKAK3-066C
PTVS3-076C-M	
PTVS3-076C-SH	
PTVS3-076C-TH	AK3-076C
PTVS3-380C-TH	AK3-380C
PTVS3-430C-TH	AK3-430C
PTVS6-058C-SH	
PTVS6-058C-TH	AK6-058C
PTVS6-066C-M	LTKAK6-066C
PTVS6-076C-M	LTKAK6-076C
PTVS6-076C-SH	
PTVS6-076C-TH	AK6-076C
PTVS6-380C-TH	AK6-380C
PTVS6-430C-TH	AK6-430C
PTVS10-058C-SH	
PTVS10-058C-TH	AK10-058C-Y
PTVS10-066C-M	LTKAK10-066C
PTVS10-076C-M	LTKAK10-076C
PTVS10-076C-TH	AK10-076C-Y
PTVS10-170C-TH	AK10-170C-Y
PTVS10-320C-TH	
PTVS10-380C-TH	AK10-380C-Y
PTVS10-430C-TH	AK10-430C-Y
PTVS10-470C-TH	
PTVS15-058C-TH	AK15-058C-Y
PTVS10-076C-SH	
PTVS10-086C-M	
PTVS15-058C-SH	
PTVS15-076C-SH	
PTVS15-076C-TH	AK15-076C-Y
PTVS20-015C-TH	AK20-016C-Y
PTVS20-015C-H	AK20-016C-Y*

*Competitor part is in a through-hole package.



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