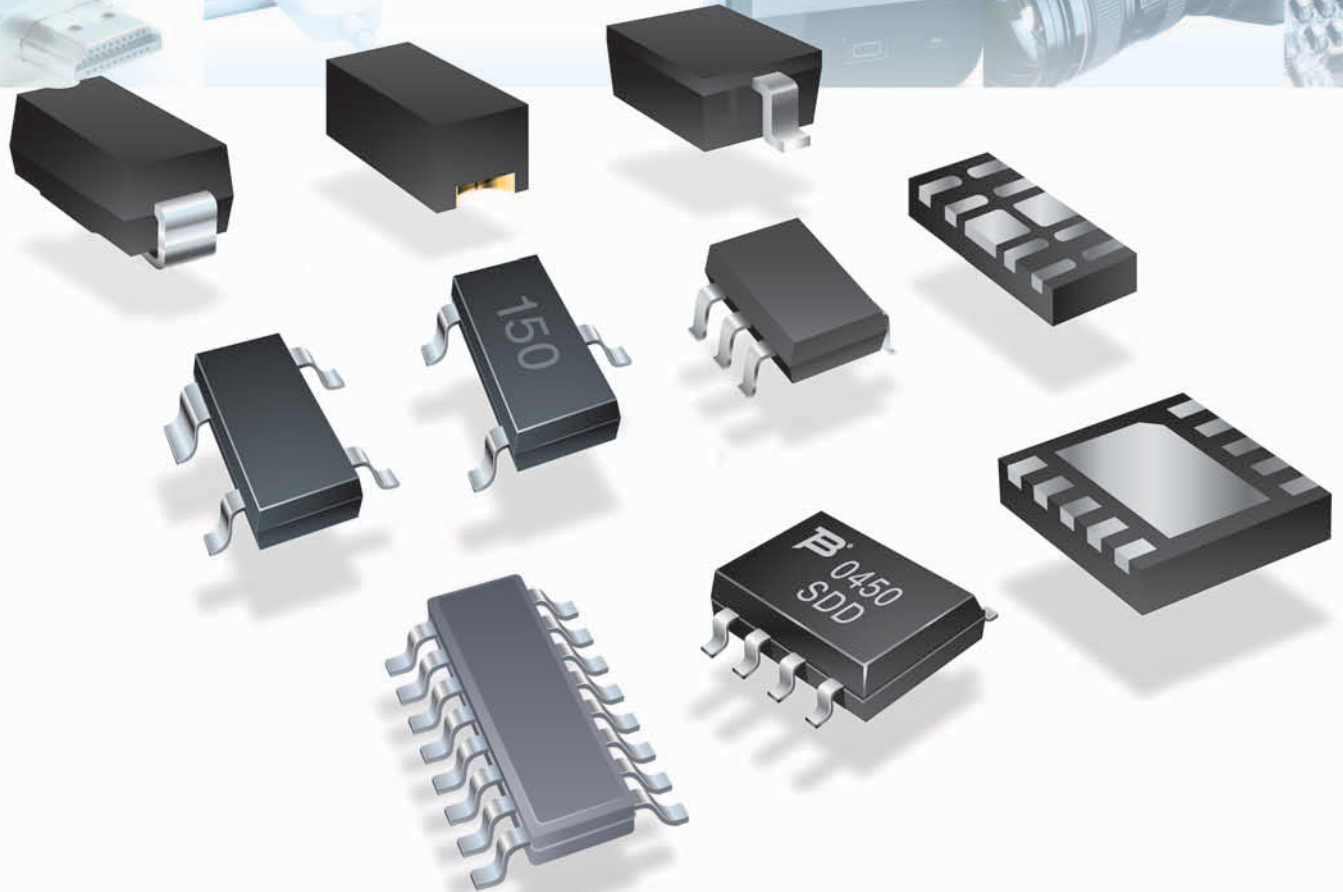


Bourns® Transient Voltage Suppressor (TVS) Diodes

Short Form Brochure

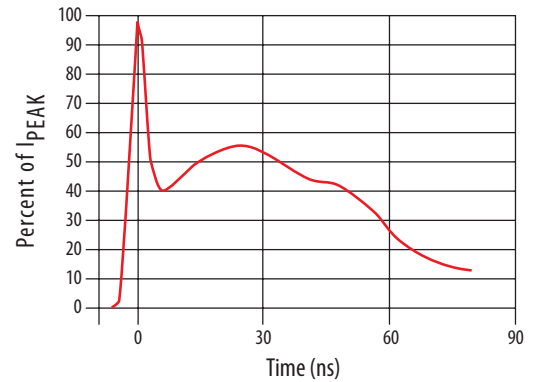
Schottky Diodes • Steering Diodes • Transient Voltage Suppressor (TVS) Diodes • Transient Voltage Suppressor (TVS) Diode Arrays



BOURNS®

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.

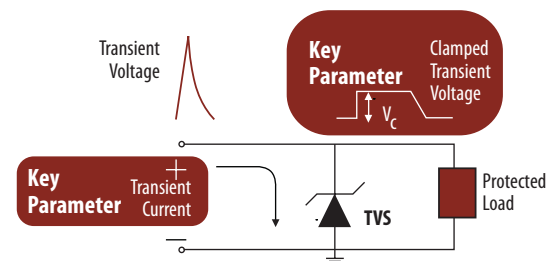
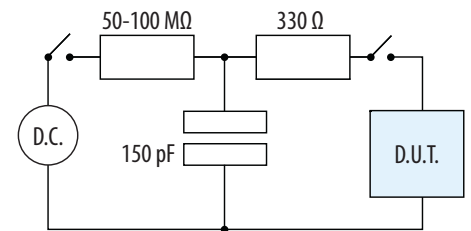


The different levels of the IEC61000-4-2 standard are outlined below:

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

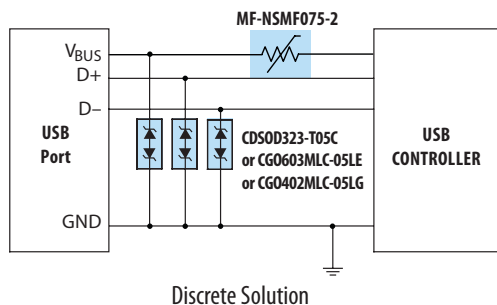
Integrated Circuit (IC) manufacturers of electrostatic sensitive devices design a level of protection into the IC to increase its robustness. However, protection circuits add cost to the device by consuming expensive silicon real estate. IC manufacturers design to standards to protect against board manufacturing 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.

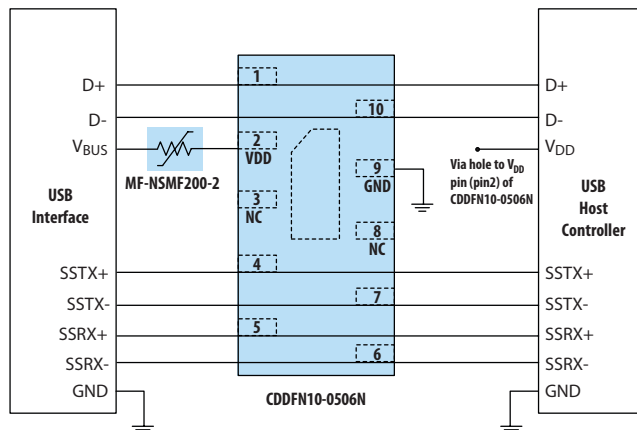


ESD Protection Product Applications

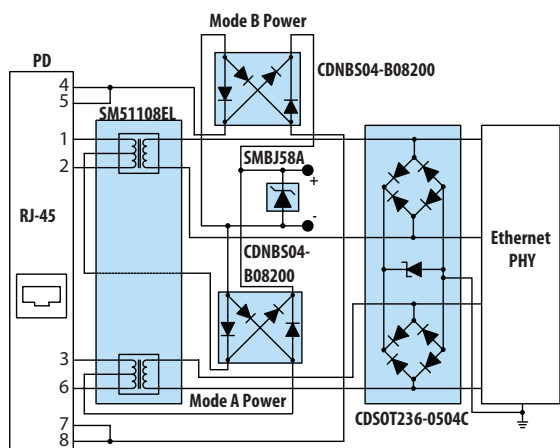
USB 2.0 Single Port Protection



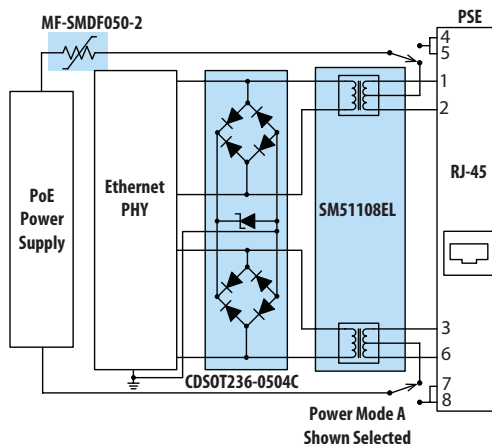
USB 3.0 ESD & Overcurrent Protection



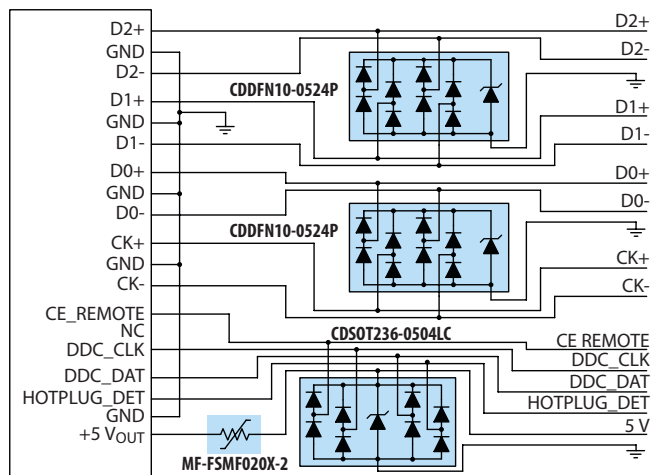
Power Over Ethernet (POE) PD Unit Protection



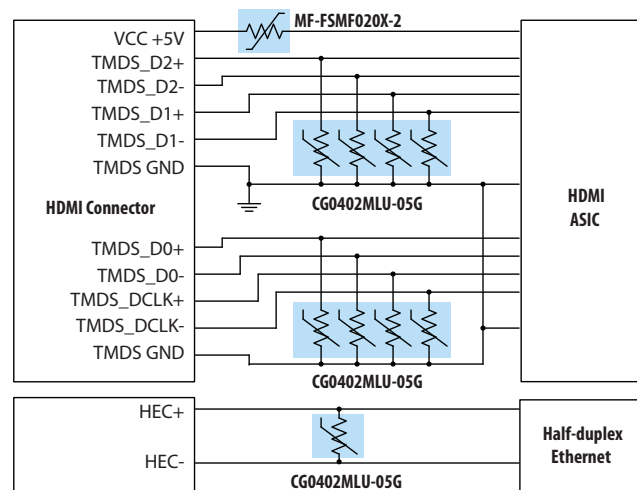
Power Over Ethernet (POE) PSE Unit Protection



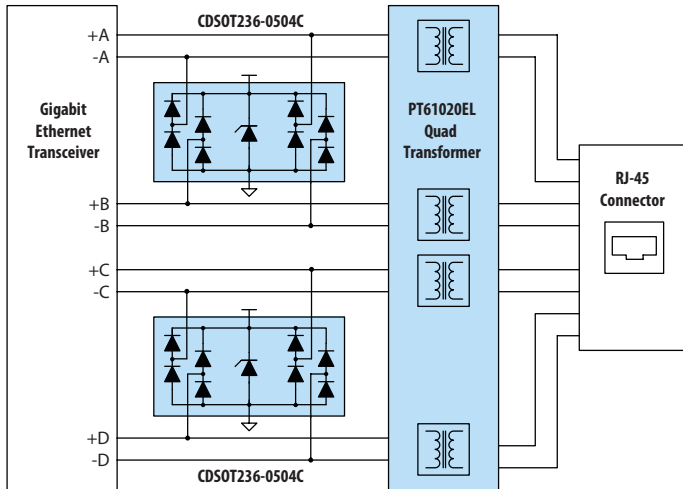
HDMI 1.3 ESD & Overcurrent Protection



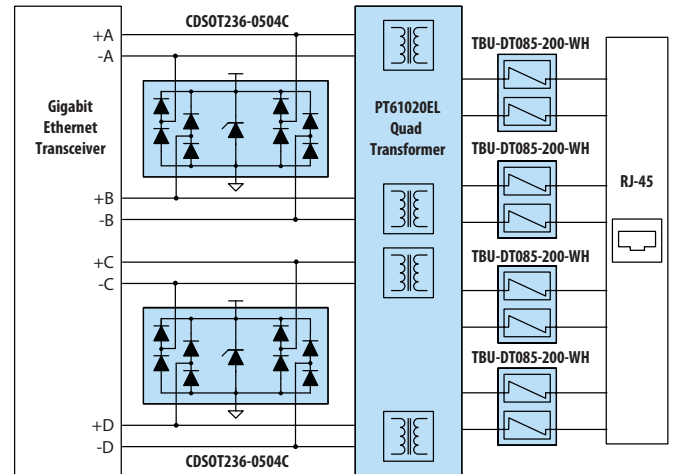
HDMI 1.4 ESD & Overcurrent Protection



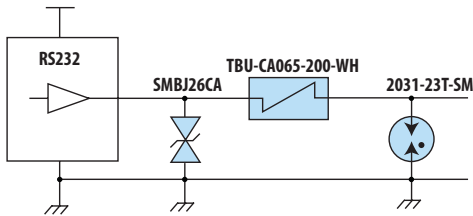
Ethernet ESD Protection



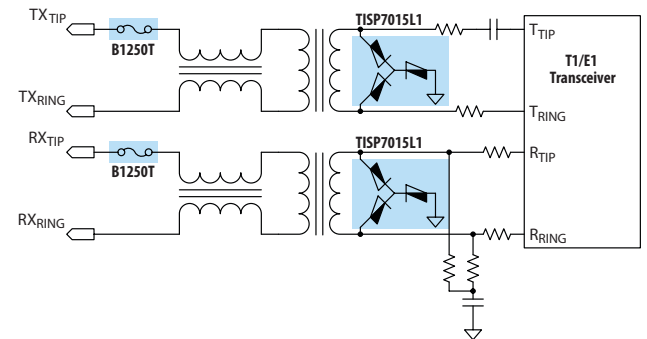
Ethernet Power Contact & Surge Protection



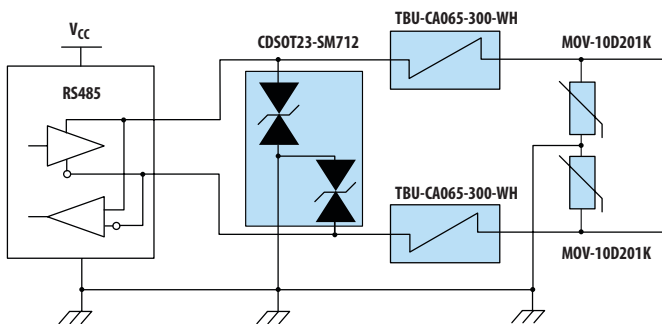
RS-232 Serial Port Surge Protection



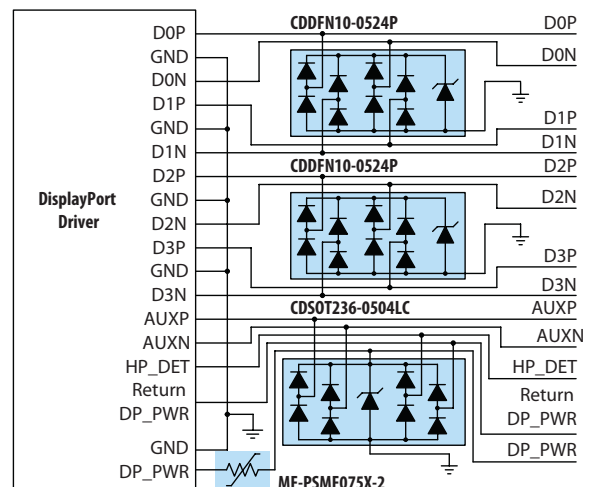
T1/E1 ITU-T Standard



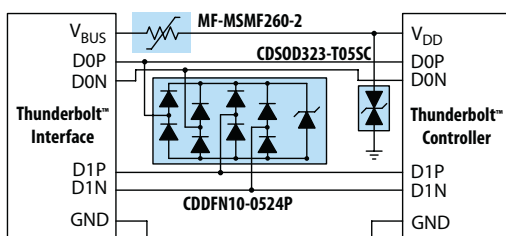
RS-485 Serial Port ESD/EFT/ Surge Protection



Display Port 1.2 ESD & Overcurrent Protection



Thunderbolt™ Port ESD & Overcurrent Protection



Discrete Small Signal Schottky Barrier Diodes



Part Number	Pkg. Size	Electrical Characteristics (T _A = 25 °C)										
		V _{rrm} (V)	V _r (V)	I _o (mA)	I _{surge} (A)	V _f max. (V)	@ I _f (mA)	I _r max. (uA)	@ V _r (V)	C _t max. (pF)	@ V _r (V)	@ F (MHz)
CD0603-B00340	0603	45	40	30	0.5 (8.3ms)	0.37	1	1	40	1.5	1	1
CD1005-B00340	1005	45	40	30	0.5 (8.3ms)	0.37	1	1	40	1.5	1	1
CD0603-B0230	0603	35	30	200	2 (8.3ms)	0.50	200	30	30	12	10	1
CD1005-B0230	1005	35	30	200	3 (8.3ms)	0.50	200	30	30	12	10	1
CD0603-B0240	0603	45	40	200	2 (8.3ms)	0.55	200	10	30	12	10	1
CD1005-B0240	1005	45	40	200	3 (8.3ms)	0.55	200	10	30	12	10	1
CD1005-B0520	1005	30	20	500	2 (8.3ms)	0.47	500	100	20	12	10	1
CD0603-B0130L	0603	35	30	100	1 (8.3ms)	0.44	100	30	30	100	0	1
CD1005-B0130L	1005	35	30	100	1 (8.3ms)	0.44	100	30	30	9	10	1
CD0603-B0140L	0603	45	40	100	1 (8.3ms)	0.55	100	30	10	9	10	1
CD1005-B0140L	1005	45	40	100	1 (8.3ms)	0.55	100	30	10	9	10	1
CD0603-B0140R	0603	45	40	100	1 (8.3ms)	0.45	10	1	10	9	10	1
CD1005-B0140R	1005	45	40	100	1 (8.3ms)	0.45	10	1	10	9	10	1

Discrete Low 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)	P _{pk} (W)	V _{br} min. (V)	@ I _f (mA)	C _t Typ (pF)	@ V _r (V)	@ F (MHz)	
CDS0D323-T03	SOD-323	3.3	19	20	350	4	1	3	0	1	
CDS0D323-T05	SOD-323	5	18.3	17	350	6	1	3	0	1	
CDS0D323-T08	SOD-323	8	18.5	17	350	8.5	1	3	0	1	
CDS0D323-T12	SOD-323	12	28.3	11	350	13.3	1	3	0	1	
CDS0D323-T15	SOD-323	15	31.8	10	350	16.7	1	3	0	1	
CDS0D323-T18	SOD-323	18	45	8	350	20	1	3	0	1	
CDS0D323-T24	SOD-323	24	56	6	350	26.7	1	3	0	1	
CDS0D323-T03C	SOD-323	3.3	19	20	350	4	1	3	0	1	
CDS0D323-T05C	SOD-323	5	18.3	17	350	6	1	3	0	1	
CDS0D323-T08C	SOD-323	8	18.5	17	350	8.5	1	3	0	1	
CDS0D323-T12C	SOD-323	12	28.3	11	350	13.3	1	3	0	1	
CDS0D323-T15C	SOD-323	15	31.8	10	350	16.7	1	3	0	1	
CDS0D323-T18C	SOD-323	18	45	8	350	20	1	3	0	1	
CDS0D323-T24C	SOD-323	24	56	6	350	26.7	1	3	0	1	
CDS0D323-T12C-DSL	SOD-323	12	28.3	11	350	13.3	1	3	0	1	
CDS0D323-T24C-DSL	SOD-323	24	56	6	350	26.7	1	3	0	1	

Symbols & Terms

C _t	Diode Capacitance
I _o	Average Rectified Current
I _f	Forward Current
I _r	Reverse Current
I _{surge}	Non-Repetitive Current
I _{rsm}	Reverse Surge Current
I _L	Leakage Voltage
P _{pk}	Peak Pulse Power Dissipation
T _d	Response Time
V _f	Forward Voltage
V _r	Reverse Voltage
V _{rrm}	Repetitive Reverse Peak Voltage
V _{rwm}	Working Peak Reverse Voltage
V _{rsm}	Reverse Voltage @ I _{rsm}
V _{br}	Breakdown Voltage
V _{wm}	Working Peak Voltage
V _{DC}	Operating Voltage
V _c	Clamping Voltage
V _t	Trigger Voltage

Discrete Ultra Low 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)	P _{pk} (W)	V _{br min.} (V)	@ I _f (mA)	C _t Typ (pF)	@ V _r (V)	@ F (MHz)
CDSOD323-T05L	SOD-323	5	18.3	15	350	6	1	1	0	1
CDSOD323-T08L	SOD-323	8	18.3	15	350	8.5	1	1	0	1
CDSOD323-T12L	SOD-323	12	28.6	11	350	13.3	1	1	0	1
CDSOD323-T15L	SOD-323	15	31.8	10	350	16.7	1	1	0	1
CDSOD323-T18L	SOD-323	18	45	8	350	20	1	1	0	1
CDSOD323-T24L	SOD-323	24	56	6	350	26.7	1	1	0	1
CDSOD323-T05LC	SOD-323	5	18.3	15	250	6	1	1	0	1
CDSOD323-T08LC	SOD-323	8	18.3	15	250	8.5	1	1	0	1
CDSOD323-T12LC	SOD-323	12	28.6	11	250	13.3	1	1	0	1
CDSOD323-T15LC	SOD-323	15	31.8	10	250	16.7	1	1	0	1
CDSOD323-T18LC	SOD-323	18	45	8	250	20	1	1	0	1
CDSOD323-T24LC	SOD-323	24	56	6	250	26.7	1	1	0	1
CDDFN2-T5.0LC	DFN-2	5	25			7	1	0.5	0	1

Discrete Standard Capacitance Transient Voltage Suppressor (TVS) Diodes



Part Number	Pkg. Size	Electrical Characteristics (T _A = 25 °C)								
		I _{pp} (A)	V _C (V)	I _{pp} (A)	P _{pk} (W)	V _{br min.} (V)	@ I _f (mA)	C _t Typ (pF)	@ V _r (V)	@ F (MHz)
CDSOD323-T03S	SOD-323	3.3	10.9	43	500	4	1	500	0	1
CDSOD323-T05S	SOD-323	5	13.5	42	500	6	1	350	0	1
CDSOD323-T08S	SOD-323	8	16.9	34	500	8.5	1	250	0	1
CDSOD323-T12S	SOD-323	12	25.9	21	500	13.3	1	150	0	1
CDSOD323-T15S	SOD-323	15	30	17	500	16.7	1	100	0	1
CDSOD323-T18S	SOD-323	18	40	9	500	20	1	90	0	1
CDSOD323-T24S	SOD-323	24	49	12	500	26.7	1	88	0	1
CDSOD323-T36S	SOD-323	36	75	5	500	40	1	75	0	1
CDSOD323-T03SC	SOD-323	3.3	10.9	43	400	4	1	200	0	1
CDSOD323-T05SC	SOD-323	5	14.5	28	400	6	1	175	0	1
CDSOD323-T08SC	SOD-323	8	18.5	17	400	8.5	1	150	0	1
CDSOD323-T12SC	SOD-323	12	29.5	14	400	13.3	1	50	0	1
CDSOD323-T15SC	SOD-323	15	33	12	400	16.7	1	40	0	1
CDSOD323-T18SC	SOD-323	18	40	9	400	20	1	40	0	1
CDSOD323-T24SC	SOD-323	24	46.2	9	400	26.7	1	40	0	1
CDSOD323-T36SC	SOD-323	36	75	5	400	40	1	35	0	1
CDDFN2-T3.3LC	DFN-2	3	5	1	40	4	1	13	0	1
CDDFN2-T4.7C	DFN-2	5	15	5	75	5.1	1	15	0	1
CDDFN2-T5.0C	DFN-2	5	15	5	75	6	1	15	0	1
CDDFN2-T12C	DFN-2	12	25	1	25	13	1	12	0	1
CDDFN2-T24C	DFN-2	24	47	1	47	25	1	10	0	1
CD0603-T05C	0603	5	15	5.1	100	5.1	1	15	0	1
CD0603-T12C	0603	12	25	1	100	13	1	12	0	1
CD0603-T24C	0603	24	47	1	100	25	1	10	0	1
CD1005-T05C	1005	5	15	5.1	100	5.1	1	15	0	1
CD1005-T12C	1005	12	25	1	100	13	1	12	0	1
CD1005-T24C	1005	24	47	1	100	25	1	10	0	1

Discrete 400 W Transient Voltage Suppressor (TVS) Diodes



Unidirectional Part Number	Bidirectional Part Number	Pkg. Size	Electrical Characteristics (T _A = 25 °C)					
			V _{rwm} (V)	V _{rsm} (V)	I _{rsm} (A)	P _{pk} (W)	V _{br} min. (V)	@ I _f (mA)
SMAJ5.0A	SMBJ5.0CA	SMA	5	9.2	43.5	400	6.4	10
SMAJ6.0A	SMBJ6.0CA	SMA	6	10.3	38.8	400	6.67	10
SMAJ6.5A	SMBJ6.5CA	SMA	6.5	11.2	35.7	400	7.22	10
SMAJ7.0A	SMBJ7.0CA	SMA	7	12	33.3	400	7.78	10
SMAJ7.5A	SMBJ7.5CA	SMA	7.5	12.9	31	400	8.33	1
SMAJ8.0A	SMBJ8.0CA	SMA	8	13.6	29.4	400	8.89	1
SMAJ8.5A	SMBJ8.5CA	SMA	8.5	14.4	27.7	400	9.44	1
SMAJ9.0A	SMBJ9.0CA	SMA	9	15.4	26	400	10	1
SMAJ10A	SMBJ10CA	SMA	10	17	23.5	400	11.1	1
SMAJ11A	SMBJ11CA	SMA	11	18.2	22	400	12.2	1
SMAJ12A	SMBJ12CA	SMA	12	19.9	20.1	400	13.3	1
SMAJ13A	SMBJ13CA	SMA	13	21.5	18.6	400	14.4	1
SMAJ14A	SMBJ14CA	SMA	14	23.2	17.2	400	15.6	1
SMAJ15A	SMBJ15CA	SMA	15	24.4	16.4	400	16.7	1
SMAJ16A	SMBJ16CA	SMA	16	26	15.3	400	17.8	1
SMAJ17A	SMBJ17CA	SMA	17	27.6	14.5	400	18.9	1
SMAJ18A	SMBJ18CA	SMA	18	29.2	13.7	400	20	1
SMAJ20A	SMBJ20CA	SMA	20	32.4	12.3	400	22.2	1
SMAJ22A	SMBJ22CA	SMA	22	35.5	11.2	400	24.4	1
SMAJ24A	SMBJ24CA	SMA	24	38.9	10.3	400	26.7	1
SMAJ26A	SMBJ26CA	SMA	26	42.1	9.5	400	28.9	1
SMAJ28A	SMBJ28CA	SMA	28	45.4	8.8	400	31.1	1
SMAJ30A	SMBJ30CA	SMA	30	48.4	8.3	400	33.3	1
SMAJ33A	SMBJ33CA	SMA	33	53.3	7.5	400	36.7	1
SMAJ36A	SMBJ36CA	SMA	36	58.1	6.9	400	40	1
SMAJ40A	SMBJ40CA	SMA	40	64.5	6.2	400	44.4	1
SMAJ43A	SMBJ43CA	SMA	43	69.4	5.7	400	47.8	1
SMAJ45A	SMBJ45CA	SMA	45	72.7	5.5	400	50	1
SMAJ48A	SMBJ48CA	SMA	48	77.4	5.2	400	53.3	1
SMAJ51A	SMBJ51CA	SMA	51	82.4	4.9	400	56.7	1
SMAJ54A	SMBJ54CA	SMA	54	87.1	4.6	400	60	1
SMAJ58A	SMBJ58CA	SMA	58	93.6	4.3	400	64.4	1
SMAJ60A	SMBJ60CA	SMA	60	96.8	4.1	400	66.7	1
SMAJ64A	SMBJ64CA	SMA	64	103	3.9	400	71.1	1
SMAJ70A	SMBJ70CA	SMA	70	113	3.5	400	77.8	1
SMAJ75A	SMBJ75CA	SMA	75	121	3.3	400	83.3	1
SMAJ78A	SMBJ78CA	SMA	78	126	3.2	400	86.7	1
SMBJ85A	SMBJ85CA	SMA	85	137	2.9	400	94.4	1
SMBJ90A	SMBJ90CA	SMA	90	146	2.7	400	100	1
SMBJ100A	SMBJ100CA	SMA	100	162	2.5	400	111	1
SMBJ110A	SMBJ110CA	SMA	110	177	2.3	400	122	1
SMBJ120A	SMBJ120CA	SMA	120	193	2	400	133	1
SMBJ130A	SMBJ130CA	SMA	130	209	1.9	400	144	1
SMBJ150A	SMBJ150CA	SMA	150	243	1.6	400	167	1
SMBJ160A	SMBJ160CA	SMA	160	259	1.5	400	178	1
SMBJ170A	SMBJ170CA	SMA	170	275	1.4	400	189	1

Discrete 600 W Transient Voltage Suppressor (TVS) Diodes



Unidirectional Part Number	Bidirectional Part Number	Pkg. Size	Electrical Characteristics (T _A = 25 °C)					
			V _{rwsm} (V)	V _{rsm} (V)	I _{rsm} (A)	P _{pk} (W)	V _{br min.} (V)	@ I _f (mA)
SMBJ5.0A	SMBJ5.0CA	SMB	5	9.2	65.2	600	6.4	10
SMBJ6.0A	SMBJ6.0CA	SMB	6	10.3	58.3	600	6.67	10
SMBJ6.5A	SMBJ6.5CA	SMB	6.5	11.2	53.6	600	7.22	10
SMBJ7.0A	SMBJ7.0CA	SMB	7	12	50	600	7.78	10
SMBJ7.5A	SMBJ7.5CA	SMB	7.5	12.9	46.5	600	8.33	1
SMBJ8.0A	SMBJ8.0CA	SMB	8	13.6	44.1	600	8.89	1
SMBJ8.5A	SMBJ8.5CA	SMB	8.5	14.4	41.7	600	9.44	1
SMBJ9.0A	SMBJ9.0CA	SMB	9	15.4	39	600	10	1
SMBJ10A	SMBJ10CA	SMB	10	17	35.3	600	11.1	1
SMBJ11A	SMBJ11CA	SMB	11	18.2	33	600	12.2	1
SMBJ12A	SMBJ12CA	SMB	12	19.9	30.2	600	13.3	1
SMBJ13A	SMBJ13CA	SMB	13	21.5	27.9	600	14.4	1
SMBJ14A	SMBJ14CA	SMB	14	23.2	25.8	600	15.6	1
SMBJ15A	SMBJ15CA	SMB	15	24.4	24	600	16.7	1
SMBJ16A	SMBJ16CA	SMB	16	26	23.1	600	17.8	1
SMBJ17A	SMBJ17CA	SMB	17	27.6	21.7	600	18.9	1
SMBJ18A	SMBJ18CA	SMB	18	29.2	20.5	600	20	1
SMBJ20A	SMBJ20CA	SMB	20	32.4	18.5	600	22.2	1
SMBJ22A	SMBJ22CA	SMB	22	35.5	16.9	600	24.4	1
SMBJ24A	SMBJ24CA	SMB	24	38.9	15.4	600	26.7	1
SMBJ26A	SMBJ26CA	SMB	26	42.1	14.2	600	28.9	1
SMBJ28A	SMBJ28CA	SMB	28	45.4	13.2	600	31.1	1
SMBJ30A	SMBJ30CA	SMB	30	48.4	12.4	600	33.3	1
SMBJ33A	SMBJ33CA	SMB	33	53.3	11.3	600	36.7	1
SMBJ36A	SMBJ36CA	SMB	36	58.1	10.3	600	40	1
SMBJ40A	SMBJ40CA	SMB	40	64.5	9.3	600	44.4	1
SMBJ43A	SMBJ43CA	SMB	43	69.4	8.6	600	47.8	1
SMBJ45A	SMBJ45CA	SMB	45	72.7	8.3	600	50	1
SMBJ48A	SMBJ48CA	SMB	48	77.4	7.7	600	53.3	1
SMBJ51A	SMBJ51CA	SMB	51	82.4	7.3	600	56.7	1
SMBJ54A	SMBJ54CA	SMB	54	87.1	6.9	600	60	1
SMBJ58A	SMBJ58CA	SMB	58	93.6	6.4	600	64.4	1
SMBJ60A	SMBJ60CA	SMB	60	96.8	6.2	600	66.7	1
SMBJ64A	SMBJ64CA	SMB	64	103	5.8	600	71.1	1
SMBJ70A	SMBJ70CA	SMB	70	113	5.3	600	77.8	1
SMBJ75A	SMBJ75CA	SMB	75	121	4.9	600	83.3	1
SMBJ78A	SMBJ78CA	SMB	78	126	4.7	600	86.7	1
SMBJ85A	SMBJ85CA	SMB	85	137	4.4	600	94.4	1
SMBJ90A	SMBJ90CA	SMB	90	146	4.1	600	100	1
SMBJ100A	SMBJ100CA	SMB	100	162	3.7	600	111	1
SMBJ110A	SMBJ110CA	SMB	110	177	3.4	600	122	1
SMBJ120A	SMBJ120CA	SMB	120	193	3.1	600	133	1
SMBJ130A	SMBJ130CA	SMB	130	209	2.9	600	144	1
SMBJ150A	SMBJ150CA	SMB	150	243	2.5	600	167	1
SMBJ160A	SMBJ160CA	SMB	160	259	2.3	600	178	1
SMBJ170A	SMBJ170CA	SMB	170	275	2.2	600	189	1

Discrete 1500 W Transient Voltage Suppressor (TVS) Diodes



Unidirectional Part Number	Bidirectional Part Number	Pkg. Size	Electrical Characteristics (T _A = 25 °C)					
			V _{rwsm} (V)	V _{rsm} (V)	I _{rsm} (A)	P _{pk} (W)	V _{br min.} (V)	@ I _f (mA)
SMCJ5.0A	SMCJ5.0CA	SMC	5	9.2	163	1500	6.4	10
SMCJ6.0A	SMCJ6.0CA	SMC	6	10.3	145.6	1500	6.67	10
SMCJ6.5A	SMCJ6.5CA	SMC	6.5	11.2	133.9	1500	7.22	10
SMCJ7.0A	SMCJ7.0CA	SMC	7	12	125	1500	7.78	10
SMCJ7.5A	SMCJ7.5CA	SMC	7.5	12.9	116.3	1500	8.33	1
SMCJ8.0A	SMCJ8.0CA	SMC	8	13.6	110.3	1500	8.89	1
SMCJ8.5A	SMCJ8.5CA	SMC	8.5	14.4	104.2	1500	9.44	1
SMCJ9.0A	SMCJ9.0CA	SMC	9	15.4	97.4	1500	10	1
SMCJ10A	SMCJ10CA	SMC	10	17	88.2	1500	11.1	1
SMCJ11A	SMCJ11CA	SMC	11	18.2	82.4	1500	12.2	1
SMCJ12A	SMCJ12CA	SMC	12	19.9	75.3	1500	13.3	1
SMCJ13A	SMCJ13CA	SMC	13	21.5	69.7	1500	14.4	1
SMCJ14A	SMCJ14CA	SMC	14	23.2	64.7	1500	15.6	1
SMCJ15A	SMCJ15CA	SMC	15	24.4	61.5	1500	16.7	1
SMCJ16A	SMCJ16CA	SMC	16	26	57.7	1500	17.8	1
SMCJ17A	SMCJ17CA	SMC	17	27.6	53.3	1500	18.9	1
SMCJ18A	SMCJ18CA	SMC	18	29.2	51.4	1500	20	1
SMCJ20A	SMCJ20CA	SMC	20	32.4	46.3	1500	22.2	1
SMCJ22A	SMCJ22CA	SMC	22	35.5	42.2	1500	24.4	1
SMCJ24A	SMCJ24CA	SMC	24	38.9	38.6	1500	26.7	1
SMCJ26A	SMCJ26CA	SMC	26	42.1	35.6	1500	28.9	1
SMCJ28A	SMCJ28CA	SMC	28	45.4	33	1500	31.1	1
SMCJ30A	SMCJ30CA	SMC	30	48.4	31	1500	33.3	1
SMCJ33A	SMCJ33CA	SMC	33	53.3	28.1	1500	36.7	1
SMCJ36A	SMCJ36CA	SMC	36	58.1	25.8	1500	40	1
SMCJ40A	SMCJ40CA	SMC	40	64.5	23.3	1500	44.4	1
SMCJ43A	SMCJ43CA	SMC	43	69.4	21.6	1500	47.8	1
SMCJ45A	SMCJ45CA	SMC	45	72.7	20.6	1500	50	1
SMCJ48A	SMCJ48CA	SMC	48	77.4	19.4	1500	53.3	1
SMCJ51A	SMCJ51CA	SMC	51	82.4	18.2	1500	56.7	1
SMCJ54A	SMCJ54CA	SMC	54	87.1	17.2	1500	60	1
SMCJ58A	SMCJ58CA	SMC	58	93.6	16	1500	64.4	1
SMCJ60A	SMCJ60CA	SMC	60	96.8	15.5	1500	66.7	1
SMCJ64A	SMCJ64CA	SMC	64	103	14.6	1500	71.1	1
SMCJ70A	SMCJ70CA	SMC	70	113	13.3	1500	77.8	1
SMCJ75A	SMCJ75CA	SMC	75	121	12.4	1500	83.3	1
SMCJ78A	SMCJ78CA	SMC	78	126	11.4	1500	86.7	1
SMCJ85A	SMCJ85CA	SMC	85	137	10.4	1500	94.4	1
SMCJ90A	SMCJ90CA	SMC	90	146	10.3	1500	100	1
SMCJ100A	SMCJ100CA	SMC	100	162	9.3	1500	111	1
SMCJ110A	SMCJ110CA	SMC	110	177	8.4	1500	122	1
SMCJ120A	SMCJ120CA	SMC	120	193	7.9	1500	133	1
SMCJ130A	SMCJ130CA	SMC	130	209	7.2	1500	144	1
SMCJ150A	SMCJ150CA	SMC	150	243	6.2	1500	167	1
SMCJ160A	SMCJ160CA	SMC	160	259	5.8	1500	178	1
SMCJ170A	SMCJ170CA	SMC	170	275	5.5	1500	189	1

Discrete 3000 W Transient Voltage Suppressor (TVS) Diodes



Unidirectional Part Number	Bidirectional Part Number	Pkg. Size	Electrical Characteristics (T _A = 25 °C)					
			V _{rw} (V)	V _{rsm} (V)	I _{rsm} (A)	P _{pk} (W)	V _{br} min. (V)	@ I _f (mA)
SMLJ5.0A	SMLJ5.0CA	SMC	5	9.2	326	3000	6.4	10
SMLJ6.0A	SMLJ6.0CA	SMC	6	10.3	291.3	3000	6.67	10
SMLJ6.5A	SMLJ6.5CA	SMC	6.5	11.2	267.9	3000	7.22	10
SMLJ7.0A	SMLJ7.0CA	SMC	7	12	250	3000	7.78	10
SMLJ7.5A	SMLJ7.5CA	SMC	7.5	12.9	232.6	3000	8.33	1
SMLJ8.0A	SMLJ8.0CA	SMC	8	13.6	220.6	3000	8.89	1
SMLJ8.5A	SMLJ8.5CA	SMC	8.5	14.4	208.4	3000	9.44	1
SMLJ9.0A	SMLJ9.0CA	SMC	9	15.4	194.8	3000	10	1
SMLJ10A	SMLJ10CA	SMC	10	17	176.4	3000	11.10	1
SMLJ11A	SMLJ11CA	SMC	11	18.2	164.8	3000	12.2	1
SMLJ12A	SMLJ12CA	SMC	12	19.9	150.6	3000	13.3	1
SMLJ13A	SMLJ13CA	SMC	13	21.5	139.4	3000	14.4	1
SMLJ14A	SMLJ14CA	SMC	14	23.2	129.4	3000	15.6	1
SMLJ15A	SMLJ15CA	SMC	15	24.4	123	3000	16.7	1
SMLJ16A	SMLJ16CA	SMC	16	26	115.4	3000	17.8	1
SMLJ17A	SMLJ17CA	SMC	17	27.6	106.6	3000	18.9	1
SMLJ18A	SMLJ18CA	SMC	18	29.2	102.8	3000	20	1
SMLJ20A	SMLJ20CA	SMC	20	32.4	92.6	3000	22.2	1
SMLJ22A	SMLJ22CA	SMC	22	35.5	84.4	3000	24.4	1
SMLJ24A	SMLJ24CA	SMC	24	38.9	77.2	3000	26.7	1
SMLJ26A	SMLJ26CA	SMC	26	42.1	71.2	3000	28.9	1
SMLJ28A	SMLJ28CA	SMC	28	45.4	66	3000	31.1	1
SMLJ30A	SMLJ30CA	SMC	30	48.4	62	3000	33.3	1
SMLJ33A	SMLJ33CA	SMC	33	53.3	56.2	3000	36.7	1
SMLJ36A	SMLJ36CA	SMC	36	58.1	51.6	3000	40	1
SMLJ40A	SMLJ40CA	SMC	40	64.5	46.4	3000	44.4	1
SMLJ43A	SMLJ43CA	SMC	43	69.4	43.2	3000	47.8	1
SMLJ45A	SMLJ45CA	SMC	45	72.7	41.2	3000	50	1
SMLJ48A	SMLJ48CA	SMC	48	77.4	38.8	3000	53.3	1
SMLJ51A	SMLJ51CA	SMC	51	82.4	36.4	3000	56.7	1
SMLJ54A	SMLJ54CA	SMC	54	87.1	34.4	3000	60	1
SMLJ58A	SMLJ58CA	SMC	58	93.6	32	3000	64.4	1
SMLJ60A	SMLJ60CA	SMC	60	96.8	31	3000	66.7	1
SMLJ64A	SMLJ64CA	SMC	64	103	29.2	3000	71.1	1
SMLJ70A	SMLJ70CA	SMC	70	113	26.6	3000	77.8	1
SMLJ75A	SMLJ75CA	SMC	75	121	24.8	3000	83.3	1
SMLJ78A	SMLJ78CA	SMC	78	126	22.8	3000	86.7	1
SMLJ85A	SMLJ85CA	SMC	85	137	20.8	3000	94.4	1
SMLJ90A	SMLJ90CA	SMC	90	146	20.6	3000	100	1
SMLJ100A	SMLJ100CA	SMC	100	162	18.6	3000	111	1
SMLJ110A	SMLJ110CA	SMC	110	177	16.8	3000	122	1
SMLJ120A	SMLJ120CA	SMC	120	193	15.60	3000	133	1
SMLJ130A	SMLJ130CA	SMC	130	209	14.4	3000	144	1
SMLJ150A	SMLJ150CA	SMC	150	243	12.4	3000	167	1
SMLJ160A	SMLJ160CA	SMC	160	259	11.6	3000	178	1
SMLJ170A	SMLJ170CA	SMC	170	275	11.00	3000	189	1

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_{br} (V)	I_O (A)	V_f max. (V)	@ I_f (mA)	I_r max. (uA)	@ V_r (mA)	C_{typ} (pF)	@ V_r (V)	@ F (MHz)	
CDSOT23-SR208	SOT23-6	20		0.7	1.2	50	1	5	4	0	1	See Page 2
CD143A-SR2.8	SOT-143A	2.8	3.0	30	1.0	15	5	2.8	4.5	0	1	
CD143A-SR3.3	SOT-143A	3.3	3.5	12	1.0	15	5	3.3	4.5	0	1	
CD143A-SR05	SOT-143A	5.0	6.0	30	1.5	15	5	5.0	10	0	1	
CD143A-SR05LC	SOT-143	5.0	6.1	1	1.0	15	1	5	2	0	1	
CD143A-SR12	SOT-143A	12.0	13.3	16	1.5	15	1	12	10	0	1	
CD143A-SR70	SOT-143A	70		24	1.5	1000	1	70	10	0	1	

Transient Voltage Suppressor (TVS) Diode Arrays



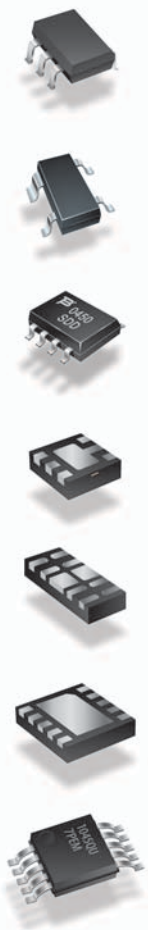
Part Number	Pkg. Size	Absolute Max. Ratings ($T_A = 25^\circ\text{C}$)			Electrical Characteristics ($T_A = 25^\circ\text{C}$)					Schematic
		V_{wm} (V)	V_c (V)	I_{pp} (A)	V_{br} min. (V)	@ I_f (mA)	C_t typ (pF)	@ V_r (V)	@ F (MHz)	
CDSOT23-T03	SOT23	3.3	10.9	43	4.0	1	500	0	1	
CDSOT23-T05	SOT23	5.0	13.5	42	6.0	1	350	0	1	
CDSOT23-T08	SOT23	8.0	16.9	34	8.5	1	250	0	1	
CDSOT23-T12	SOT23	12	25.9	21	13.3	1	150	0	1	
CDSOT23-T15	SOT23	15	30.0	17	16.7	1	100	0	1	
CDSOT23-T24	SOT23	24	49.0	12	26.7	1	88	0	1	
CDSOT23-T36	SOT23	36	76.8	9	40.0	1	80	0	1	
CDSOT23-T03C	SOT23	3.3	10.9	43	4.0	1	300	0	1	
CDSOT23-T05C	SOT23	5.0	13.5	42	6.0	1	210	0	1	
CDSOT23-T08C	SOT23	8.0	16.9	34	8.5	1	150	0	1	
CDSOT23-T12C	SOT23	12	25.9	27	13.3	1	90	0	1	
CDSOT23-T15C	SOT23	15	30.0	17	16.7	1	60	0	1	
CDSOT23-T24C	SOT23	24	49.0	12	26.7	1	63	0	1	
CDSOT23-T36C	SOT23	36	76.8	9	40.0	1	60	0	1	
CDSOT23-T03LC	SOT23	3.3	10.9	43	4.0	1	5	0	1	
CDSOT23-T05LC	SOT23	5.0	13.5	42	6.0	1	5	0	1	
CDSOT23-T08LC	SOT23	8.0	16.9	34	8.5	1	5	0	1	
CDSOT23-T12LC	SOT23	12	25.9	27	13.3	1	5	0	1	
CDSOT23-T15LC	SOT23	15	30.0	17	16.7	1	5	0	1	
CDSOT23-T24LC	SOT23	24	49.0	12	26.7	1	5	0	1	
CDSOT23-T36LC	SOT23	36	76.8	9	40.0	1	5	0	1	
CDSOT23-SILVU2.8	SOT23	2.8	21	30	3.0	1	2.5/20	0	1	
CDSOT23-SM712	SOT23	7 / 12	14/26	17	7.5 / 13.3	1	75	0	1	

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)	I _f (mA)	C _t typ (pF)	V _r (V)	F (MHz)		
CDSOT236-T05	SOT23-6	5.0	21	17	6.0	1	150	0	1		
CDSOT236-T12	SOT23-6	12	29.2	12	13.3	1	80	0	1		
CDSOT236-T15	SOT23-6	15	34.6	10	16.7	1	50	0	1		
CDSOT236-T24	SOT23-6	24	58.3	6	26.7	1	40	0	1		
CDSOT236-T05C	SOT23-6	5.0	21	17	6.0	1	150	0	1		
CDSOT236-T12C	SOT23-6	12	29.2	12	13.3	1	80	0	1		
CDSOT236-T15C	SOT23-6	15	34.6	10	16.7	1	50	0	1		
CDSOT236-T24C	SOT23-6	24	58.3	6	26.7	1	40	0	1		
CDSOT23-SRV05-4	SOT23-6	5.0	15	5	6	1	3.5	0	1	See Page 4	
CDNBS08-T03	8L NSOIC	3.0	10.9	43	3.3	1	Max vs. typ	0	1		
CDNBS08-T05	8L NSOIC	5.0	13.5	42	6.0	1		0	1		
CDNBS08-T08	8L NSOIC	8.0	16.9	34	8.5	1		0	1		
CDNBS08-T12	8L NSOIC	12	25.9	27	13.3	1		0	1		
CDNBS08-T15	8L NSOIC	15	30.0	17	16.7	1		0	1		
CDNBS08-T24	8L NSOIC	24	49.0	12	26.7	1		0	1		
CDNBS08-T36	8L NSOIC	36	76.8	9	40.0	1		0	1		
CDNBS08-T03C	8L NSOIC	3.0	10.9	43	3.3	1		0	1		
CDNBS08-T05C	8L NSOIC	5.0	13.5	42	6.0	1		0	1		
CDNBS08-T08C	8L NSOIC	8.0	16.9	34	8.5	1		0	1		
CDNBS08-T12C	8L NSOIC	12	25.9	27	13.3	1		0	1		
CDNBS08-T15C	8L NSOIC	15	30.0	17	16.7	1		0	1		
CDNBS08-T24C	8L NSOIC	24	49.0	12	26.7	1		0	1		
CDNBS08-T36C	8L NSOIC	36	76.8	9	40.0	1		0	1		
CDNBS08-PLC03-6	8L NSOIC	6.0	20	100	6.8	1		6	0	1	
CDNBS08-SLVU2.8-4	8L NSOIC	2.8	21	30	3.0	1		6	0	1	
CDNBS08-SLVU2.8-8	8L NSOIC	2.8	17	30	3.0	1	6	0	1		
CDNBS08-SRDA3.3-4	8L NSOIC	3.3	10.9	43	4.0	1	Max vs. typ	0	1		
CDNBS08-SRDA05-4	8L NSOIC	5.0	13.5	42	6.0	1		0	1		
CDNBS08-SRDA12-4	8L NSOIC	12	25.9	27	13.3	1		0	1		
CDNBS08-SRDA15-4	8L NSOIC	15	30.0	17	16.7	1		0	1		
CDNBS08-SRDA3.3-6	8L NSOIC	3.3	10.9	43	4.0	1	Max vs. typ	0	1		
CDNBS08-SRDA05-6	8L NSOIC	5.0	13.5	42	6.0	1		0	1		
CDNBS16-T03	16L NSOIC	3.0	23	43	4.5	1	Max vs. typ	0	1		
CDNBS16-T05	16L NSOIC	5.0	24	42	6.0	1		0	1		
CDNBS16-T08	16L NSOIC	8.0	26	30	8.5	1		0	1		
CDNBS16-T12	16L NSOIC	12	33	21	13.3	1		0	1		
CDNBS16-T15	16L NSOIC	15	39	15	16.7	1		0	1		
CDNBS16-T24	16L NSOIC	24	57	10	26.7	1		0	1		
CDNBS16-T36	16L NSOIC	36	72	7	40.0	1		0	1		
CDNBS16-T03C	16L NSOIC	3.0	23	43	4.5	1		Max vs. typ	0		1
CDNBS16-T05C	16L NSOIC	5.0	24	42	6.0	1	0		1		
CDNBS16-T08C	16L NSOIC	8.0	26	30	8.5	1	0		1		
CDNBS16-T12C	16L NSOIC	12	33	21	13.3	1	0		1		
CDNBS16-T15C	16L NSOIC	15	39	15	16.7	1	0		1		
CDNBS16-T24C	16L NSOIC	24	57	10	26.7	1	0		1		
CDNBS16-T36C	16L NSOIC	36	72	7	40.0	1	0		1		
CDWBS16-PLC05-6	16L WSOIC	6	16	200	8	1	50		0	1	See Page 4

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)	I_f (mA)	C_t typ (pF)	V_r (V)	F (MHz)	
CDSOT23-S2004	SOT23	240			300	0.1	3	0	1	
CDSOT23-0502B	SOT23-3L	5	8	5	6	1	12	0	1	
CDSOT23-0502U	SOT23-3L	5	8	5	6	1	50	0	1	
CDSOT236-0502	SOT236	5	7.5	5	6	1	2.8	2.5	1	
CDSOT236-0504LC	SOT23-6L	5	10	4.7	6	1	0.5	2.5	1	
CDSOT236-0504C	SOT23-6L	5	10	5	6	1	1	2.5	1	
CDNBS08-SMDA05-6	SO-8	5	9.8	1	6	1	100	0	1	
CDSOT563-0502	SOT563	5	9	5	6	1	2.8	2.5	1	
CDSOT563-T05C	SOT563	5	12	9	6	1	40	0	1	
CDSOT353-T05	SOT353	5	13	2	6	1	9.5	2.5	1	
CDSC706-0504C	SC70-6L	5	9	5	6	1	1.6	0	1	
CDDFN6-0504P	DFN6	5	8.1	6.5	6	1	1.2	2.5	1	
CDDFN10-0524P	DFN10	5	10	3.8	6	1	0.5	2.5	1	
CDDFN10-0506N	DFN10	5	10	3.5	6	1	0.25	2.5	1	
CDDFN10-3304N	DFN10	3.3	20	20	3.9	1	4	0	1	
CDMSP10-0504M	MSOP-10L	5			6	1	0.55	2.5	1	

Bourns® TVS Diode Arrays Competitive Cross Reference

ProTek	Semtech	Littelfuse	MicroSemi	OnSemi	AOS	Semitel	STM	Bourns
PSR05-LF	SR05			ESD5B5.0ST1G				CD0603-T05C CD143A-SR05
PSR12-LF	SR12				AOZ8001A-05			CD143A-SR05LC
PSR2.8-LF	SR2.8				AOZ8001A-12			CD143A-SR12
PSR3.3-LF	SR3.3							CD143A-SR2.8
PSR70-LF	SR70							CD143A-SR3.3
	RClamp0524P			ESD7004				CD143A-SR70
PLR3304	RClamp3304N			NUP4105MU				CDDFN10-0524P
	UCLAMP1211P.TCT							CDDFN10-3304N
	UClamp0511P/UClamp0501T							CDDFN2-T12C
	UCLAMP3311P.TCT							CDDFN2-T5.0C
	RClamp0521P.TCT							CDDFN2-T3.3LC
	RClamp0504P							CDDFN2-T5.0LC
	RClamp0504M/0514M/0524M				AOZ8002DI			CDDFN6-0504P
PLC03-3.3-LF-T13	LC03-3.3				AOZ8005FI/8006FI/8007FI			CDMSP10-0504M
PLC03-6-LF-T13	LC03-6	SP03-6		LC03-6R2				CDNBS08-PLC03-3.3
SLUV2.8-4-LF	SLVU2.8-4	SPLV2.8-4				SE52V8P8U		CDNBS08-PLC03-6
SLUV2.8-8-LF	SLVU2.8-8							CDNBS08-SLVU2.8-4
PSMDA05-6							ESDA6V1U1	CDNBS08-SLVU2.8-8
SRDA05-4-LF	SRDA05-4			NUP4201DR2/SRDA05-4				CDNBS08-SMDA05-6
	SRDA05-6			NUP4201D				CDNBS08-SRDA05-4
SRDA05-6-LF								CDNBS08-SRDA05-6
SRDA12-4-LF	SRDA12-4							CDNBS08-SRDA05-6
SRDA15-4-LF	SRDA15-4							CDNBS08-SRDA12-4
SRDA3.3-4-LF	SRDA3.3-4			NUP4106D				CDNBS08-SRDA15-4
SRDA3.3-6-LF	SRDA3.3-6							CDNBS08-SRDA3.3-4
SMDAxx-LF	SMDAxx		SMDBxxE3					CDNBS08-SRDA3.3-6
SMDAxxC-LF	SMDAxxC		SMDBxxCE3					CDNBS08-Txx
SM16LCxx-LF	LCDAXX-8							CDNBS08-TxxC
SM16LCxxC-LF	LCDAXXC-8							CDNBS16-Txx
PLR0504F-P-T7				NUP4202WTT2G		SE55VTSC70-6U		CDNBS16-TxxC
GBLCxx-LF						SESLCxV3D323-2U		CDS0706-0504C
GBLCxxC-LF						SESLCxV3D323-2B		CDS0D323-Txx
GBLCxxLC-LF								CDS0D323-TxxC
GBLCxxCLC-LF								CDS0D323-TxxLC
PSDxx-LF	uClamp3301D			SDxx				CDS0D323-TxxS
PSDxxC-LF	SDxxC			SDxxC				CDS0D323-TxxSC
					AOZ8902CI			CDSOT235-0504C
	RCLAMP0504S				AOZ8000CI/8901CI/8904	SE55VT236-6U	USBLC6-25C6	CDSOT236-0502
					AOZ8005CI/8005CIL/8007CI		DVIULC6-45C6	CDSOT236-0504C
PSMSxx-LF	SMSxx	SPxx04BAHT					HDMIULC6-45C6	CDSOT236-0504LC
PSMSxxC-LF	SMSxxC	SPxx05BAHT					ESDA6V15C5	CDSOT236-Txx
ESOTxx-LCC-1							ESDA6V1-55C6/17-55C6/19-55C6	CDSOT236-TxxC
				MMBD2004S-7-F				CDSOT236-TxxLC
SLVU2.8-LF	SLVU2.8	SPLV2.8						CDSOT23-S2004
PSM712-LF-T7	SM712							CDSOT23-SLVU2.8
USB208-LF-T7							DALC208SC6	CDSOT23-SM712
SRV05-4-P-T7	SRV05-4	SP3050-04HTG		NUP4201MR6T1G			USBLC6-45C6	CDSOT23-SR208
PSOTxx-LF								CDSOT23-SRV05-4
PSOTxxC-LF	SMxx	SPxx02BAHT						CDSOT23-Txx
PSOTxxLC-LF	SLxx			SLxxT1G			ESDA6V1L/14V2L/25L	CDSOT23-TxxC
						SE55VT353-5/553-5	ESDAL-C6V1-W5	CDSOT23-TxxLC
					AOZ8001KIL		USBLC6-2P6	CDSOT353-T05
	UClamp0505A			NUP5120X6T1G		SE55VT563-6		CDSOT563-0502
PLC01-6.TD	LC01-6							CDSOT563-T05C
		SMAJxxxA	SMAJxxxA	1SMAxxxA			SMAJxxxA	CDWBS16-PLC01-6
		SMAJ1xxxCA	SMAJxxxCA	1SMAxxxCA			SMAJxxxCA	SMAJxxxA
		SMBJxxxA	SMBJxxxA	1SMBxxxA			SMBJxxxA	SMAJxxxCA
		SMBJxxxCA	SMBJxxxCA	1SMBxxxCA			SMBJxxxA	SMBJxxxA
		SMCJxxxA	SMCJxxxA	1SMCxxxA			SMCJxxxA	SMBJxxxCA
		SMCJxxxCA	SMCJxxxCA	1SMCxxxCA			SMCJxxxA	SMCJxxxA
			SMLJxxxA					SMCJxxxCA
			SMLJxxxCA					SMLJxxxA
								SMLJxxxCA

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