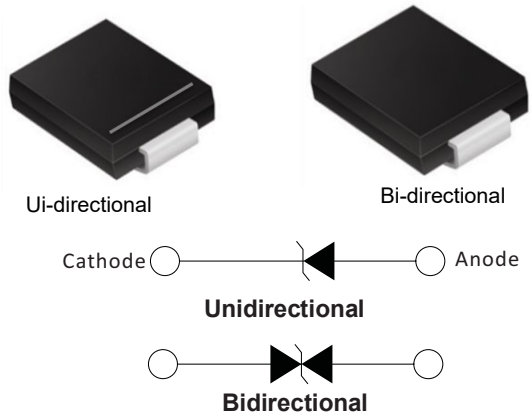
SMD50J

Transient Voltage Suppressor (TVS) is a circuit protection component that either attenuates (reduces) or filters a transient voltage spike (overvoltage), TVS diodes provide critical protection by going into avalanche breakdown within no more than a few nanoseconds after a strike, clamping the transient voltage, and routing its current to the ground.



SMD
(JEDEC DO-214AB)

Features

- Low incremental surge resistance
- Excellent clamping capability
- Low profile package with built-in strain relief
- 5000W peak pulse power capability with a 10/1000μS Waveform, repetition rate (duty cycle): 0.01%
- For surface mounted applications to optimize board space
- Typical failure mode is short from over-specified voltage or current
- IEC 61000-4-2 ESD 30 kV (Air), 30 kV (Contact)
- EFT protection of data lines in accordance with IEC 61000 -4-4
- Very fast response time

Applications

- Communication Equipment
- Security & Protection
- Industrial Control Equipment
- Power Supply
- Automotive Electronics
- New Energy
- Lightning Protection

Maximum Ratings and Characteristics

(Ratings at 25°C ambient temperature unless otherwise specified.)

Parameter	Symbol	Value	Unit
Peak Power Dissipation at T_L=25°C by 10/1000μs waveform	P_{PPM}	5000	W
Peak Power Dissipation on Infinite Heat Sink at T_L=50°C	P_D	6.5	W
Peak Forward Surge Current,8.3ms single half sinewave superimposed on rated load (JEDEC Method)	I_{FSM}	300	A
Maximum Instantaneous Forward Voltage at 100A for Unidirectional Only	V_F	5.0	V
Operating Temperature Range	T_J	-65 to 150	°C
Storage Temperature Range	T_{STG}	-65 to 175	°C
Typical Thermal Resistance Junction to Lead	$R_{\theta JL}$	15	°C/W
Typical Thermal Resistance Junction to Ambient	$R_{\theta JA}$	75	°C/W

■Electrical Characteristics (TA=25℃ unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	Breakdown Voltage V_{BR}@I_T			Maximum Reverse Leakage I_R @ V_{RWM} (μA)	Working Peak Reverse Voltage V_{RWM} (V)	Maximum Reverse Surge Current I_{PP} (2) (A)	Maximum Clamping Voltage Vc @ I_{PP} (V)
		Min(V)	Max (V)	I_T (1)(mA)				
SMD50J11V	SMD50J11B	12.2	13.5	1.0	800.0	11.0	274.7	18.2
SMD50J12V	SMD50J12B	13.3	14.7	1.0	800.0	12.0	251.3	19.9
SMD50J13V	SMD50J13B	14.4	15.9	1.0	500.0	13.0	232.6	21.5
SMD50J14V	SMD50J14B	15.6	17.2	1.0	200.0	14.0	215.5	23.2
SMD50J15V	SMD50J15B	16.7	18.5	1.0	100.0	15.0	204.9	24.4
SMD50J16V	SMD50J16B	17.8	19.7	1.0	50.0	16.0	192.3	26
SMD50J17V	SMD50J17B	18.9	20.9	1.0	20.0	17.0	181.2	27.6
SMD50J18V	SMD50J18B	20.0	22.1	1.0	10.0	18.0	171.2	29.2
SMD50J19V	SMD50J19B	21.1	23.3	1.0	10.0	19.0	162.3	30.8
SMD50J20V	SMD50J20B	22.2	24.5	1.0	5.0	20.0	154.3	32.4
SMD50J22V	SMD50J22B	24.4	26.9	1.0	5.0	22.0	140.8	35.5
SMD50J24V	SMD50J24B	26.7	29.5	1.0	5.0	24.0	128.5	38.9
SMD50J26V	SMD50J26B	28.9	31.9	1.0	5.0	26.0	118.8	42.1
SMD50J28V	SMD50J28B	31.1	34.4	1.0	5.0	28.0	110.1	45.4
SMD50J30V	SMD50J30B	33.3	36.8	1.0	5.0	30.0	103.3	48.4
SMD50J33V	SMD50J33B	36.7	40.6	1.0	5.0	33.0	93.8	53.3
SMD50J36V	SMD50J36B	40.0	44.2	1.0	5.0	36.0	86.1	58.1
SMD50J40V	SMD50J40B	44.4	49.1	1.0	5.0	40.0	77.5	64.5
SMD50J43V	SMD50J43B	47.8	52.8	1.0	5.0	43.0	72.0	69.4
SMD50J45V	SMD50J45B	50.0	55.3	1.0	5.0	45.0	68.8	72.7
SMD50J48V	SMD50J48B	53.3	58.9	1.0	5.0	48.0	64.6	77.4
SMD50J51V	SMD50J51B	56.7	62.7	1.0	5.0	51.0	60.7	82.4
SMD50J54V	SMD50J54B	60.0	66.3	1.0	5.0	54.0	57.4	87.1
SMD50J58V	SMD50J58B	64.4	71.2	1.0	5.0	58.0	53.4	93.6
SMD50J60V	SMD50J60B	66.7	73.7	1.0	5.0	60.0	51.7	96.8
SMD50J64V	SMD50J64B	71.1	78.6	1.0	5.0	64.0	48.5	103
SMD50J70V	SMD50J70B	77.8	86.0	1.0	5.0	70.0	44.2	113
SMD50J75V	SMD50J75B	83.3	92.1	1.0	5.0	75.0	41.3	121
SMD50J78V	SMD50J78B	86.7	95.8	1.0	5.0	78.0	39.7	126

■Electrical Characteristics (TA=25℃ unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	Breakdown Voltage V_{BR}@I_T			Maximum Reverse Leakage I_R @ V_{RWM} (μA)	Working Peak Reverse Voltage V_{RWM} (V)	Maximum Reverse Surge Current I_{PP} (2) (A)	Maximum Clamping Voltage Vc @ I_{PP} (V)
		Min(V)	Max (V)	I_T (1)(mA)				
SMD50J85V	SMD50J85B	94.4	104.0	1.0	5.0	85.0	36.5	137
SMD50J90V	SMD50J90B	100.0	111.0	1.0	5.0	90.0	34.2	146
SMD50J100V	SMD50J100B	111.0	123.0	1.0	5.0	100.0	30.9	162
SMD50J110V	SMD50J110B	122.0	135.0	1.0	5.0	110.0	28.2	177
SMD50J120V	SMD50J120B	133.0	147.0	1.0	5.0	120.0	25.9	193
SMD50J130V	SMD50J130B	144.0	159.0	1.0	5.0	130.0	23.9	209
SMD50J140V	SMD50J140B	155.0	171.0	1.0	5.0	140.0	22.0	226.8
SMD50J150V	SMD50J150B	167.0	185.0	1.0	5.0	150.0	20.6	243
SMD50J160V	SMD50J160B	178.0	197.0	1.0	5.0	160.0	19.3	259
SMD50J170V	SMD50J170B	189.0	209.0	1.0	5.0	170.0	18.2	275
SMD50J180V	SMD50J180B	200.2	220.0	1.0	5.0	180.0	17.1	291.6
SMD50J190V	SMD50J190B	211.0	232.0	1.0	5.0	190.0	16.2	307.8
SMD50J200V	SMD50J200B	224.0	247.0	1.0	5.0	200.0	15.4	324
SMD50J220V	SMD50J220B	246.0	272.0	1.0	5.0	220.0	14.0	356
SMD50J250V	SMD50J250B	279.0	309.0	1.0	5.0	250.0	12.3	405
SMD50J300V	SMD50J300B	335.0	371.0	1.0	5.0	300.0	10.3	486
SMD50J350V	SMD50J350B	391.0	432.0	1.0	5.0	350.0	8.8	567
SMD50J400V	SMD50J400B	447.0	494.0	1.0	5.0	400.0	7.7	648
SMD50J440V	SMD50J440B	492.0	543.0	1.0	5.0	440.0	7.0	713

Notes:

(1) Pulse Test：tp≤50ms Pulse test: tp≤50ms.

(2) Surge current waveform per Fig. 3 and derated per Fig.2.

■ **Characteristics**(Typical)

FIG1:Peak Pulse Power Rating Curve

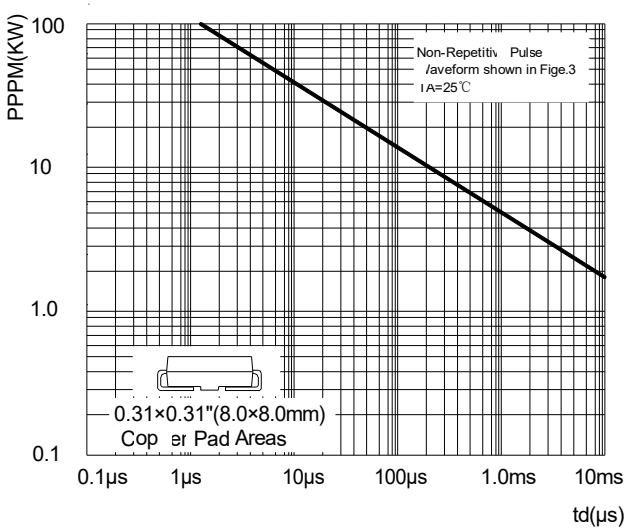


FIG2: Pulse Power or Current vs. Initial Junction Temperature

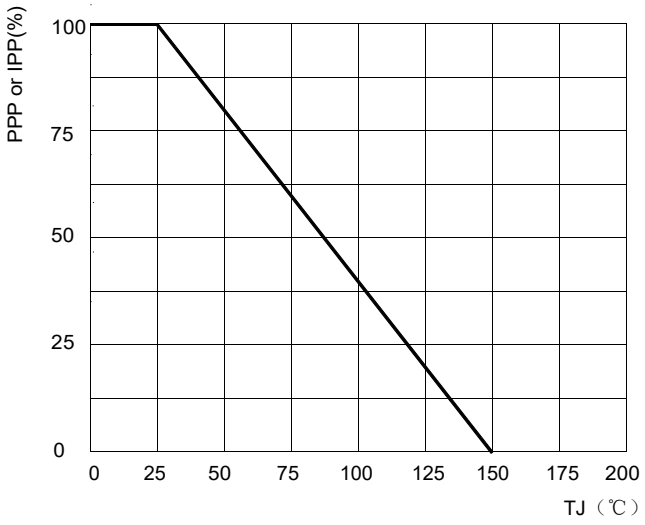


FIG3: Pulse Waveform

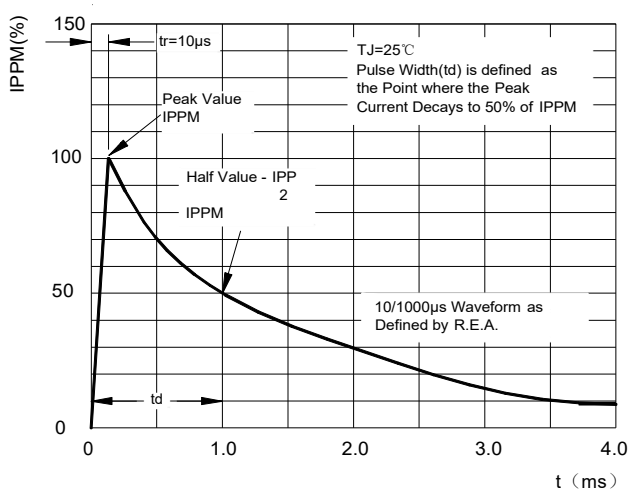


FIG4:Typical Transient Thermal Impedance

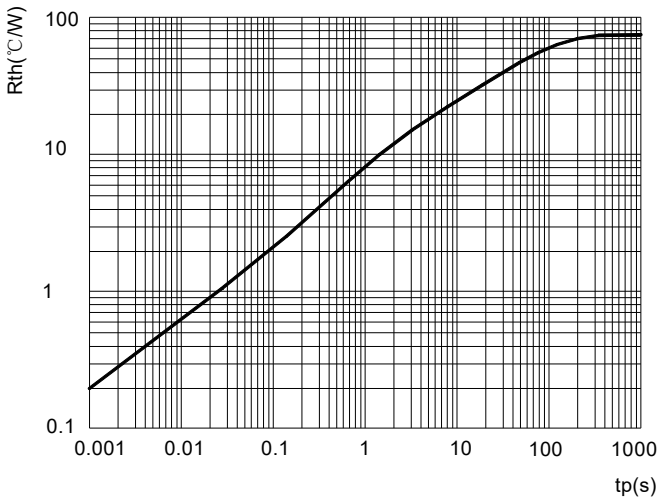


FIG5: Maximum Non-Repetitive Surge Current

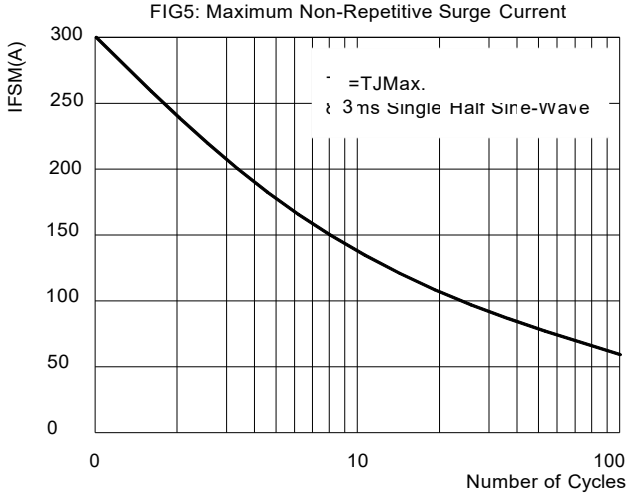
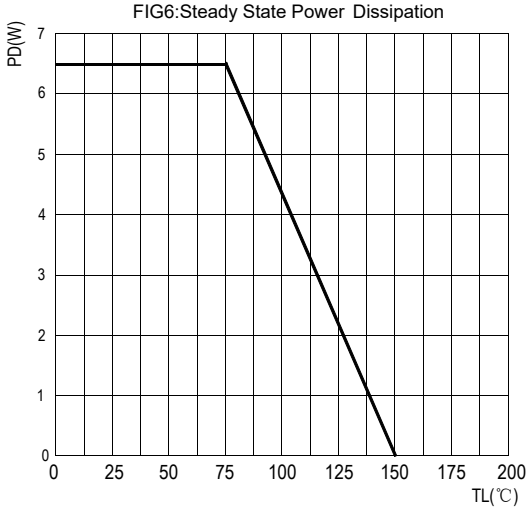
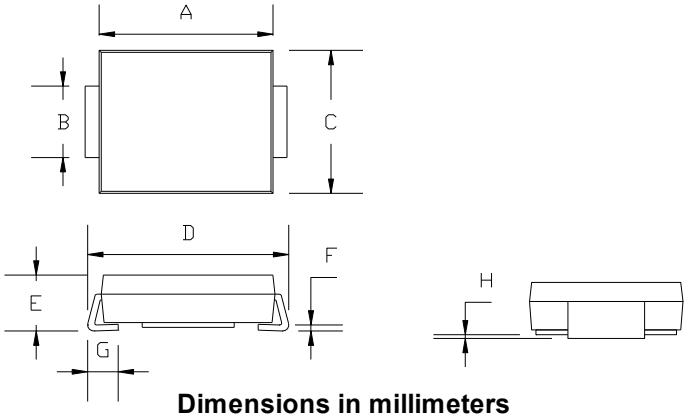


FIG6:Steady State Power Dissipation



■ Outline Dimensions

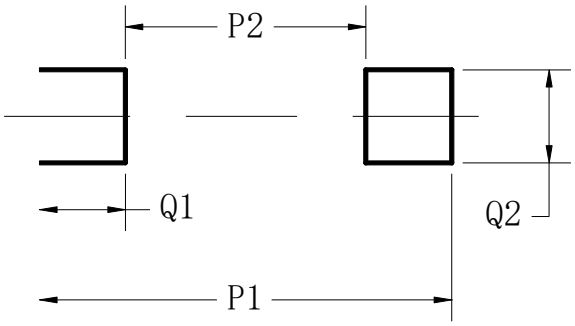
DO-214AB(SMD)



Dimensions in millimeters

DO-214AB (SMD)		
Dim	Min	Max
A	6.60	7.11
B	2.85	3.27
C	5.59	6.22
D	7.75	8.13
E	1.99	2.61
F	0.15	0.31
G	0.76	1.52
H	0.05	0.20

■ Suggested pad layout



Dimensions in millimeters

Dim	Min
P1	9.9
P2	3.84
Q1	3.03
Q2	3.82