

Surface Mount Transient Voltage Suppressors

TPSMEJ Series

Applications

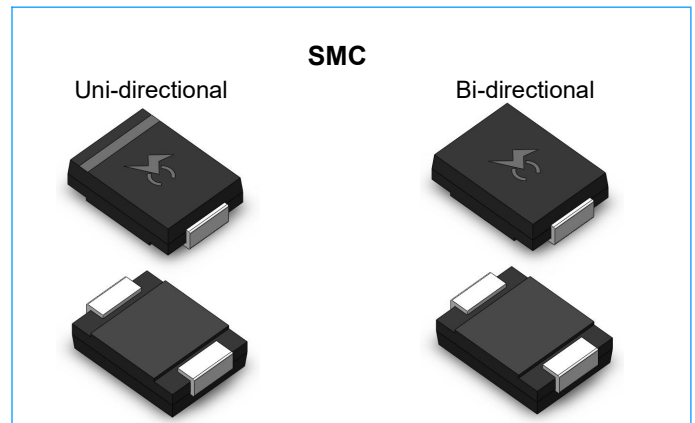
- ◆ Auto power systems
- ◆ Can bus
- ◆ Audio, video and GPS
- ◆ ABS powers

Features

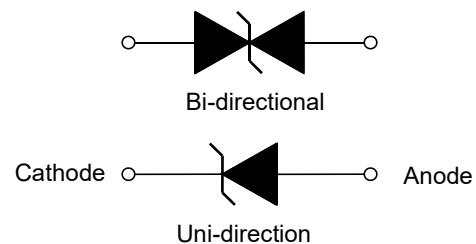
- ◆ Low profile package.
- ◆ Low inductance.
- ◆ Excellent clamping capability.
- ◆ Fast response time: typically less than 1.0ps from 0V to V_{BR} min
- ◆ High temperature to reflow soldering: 260°C/40s at terminals.
- ◆ Plastic package has underwriters laboratory flammability 94V-0.
- ◆ Meets MSL level 1, per J-STD020, LF maximum peak of 260°C.
- ◆ For surface mounted applications inorder to optimize board space.
- ◆ AEC-Q101 qualified

IEC Compatibility

- ◆ ISO16750-2 P5A 12V system (87V/2Ω/150ms 10c)
- ◆ ISO16750-2 P5A 24V system (123V/8Ω/150ms 10c)



Functional Diagram



Surface Mount Transient Voltage Suppressors

TPSMEJ Series

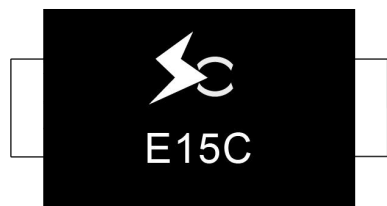
Absolute Maximum Ratings (T_A=25°C, RH=45%-75%, Unless Otherwise Noted)

Parameter	Symbol	Value	Unit
Storage and operating junction temperature range	T _{STG} /T _J	-55 to +150	°C
Steady state power dissipation at T _L =75°C	P _{M(AV)}	6.5	W
Peak pulse power dissipation on 10/1000µs waveform	P _{PP}	5000	W
Maximum instantaneous forward voltage at 100A for unidirectional only	V _F	5.0	V
Peak forward surge current, 8.3ms single half sine wave (Note 1)	I _{FSM}	300	A
Typical thermal resistance junction to lead	R _{θJL}	15	°C/W
Typical thermal resistance junction to ambient	R _{θJA}	75	°C/W

Notes:

1. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum

Marking



E15C: Device Marking Code

Surface Mount Transient Voltage Suppressors

TPSMEJ Series

Electrical Characteristics (T_A=25°C)

Part Number		Marking		V _R	I _R @V _R	V _{BR} @I _T		I _T	V _C @I _{PP}	I _{PP} ^①
Uni-Polar	Bi-Polar	Uni	Bi	V	μA	Min(V)	Max(V)	MA	Max(V)	A
TPSMEJ15A	TPSMEJ15CA	E15	E15C	15	5	16.70	18.50	5	24.4	205
TPSMEJ16A	TPSMEJ16CA	E16	E16C	16	5	17.80	19.70	5	26.0	192
TPSMEJ18A	TPSMEJ18CA	E18	E18C	18	5	20.00	22.10	5	29.2	171
TPSMEJ20A	TPSMEJ20CA	E20	E20C	20	5	22.20	24.50	5	32.4	154
TPSMEJ22A	TPSMEJ22CA	E22	E22C	22	5	24.40	26.90	5	35.5	141
TPSMEJ24A	TPSMEJ24CA	E24	E24C	24	5	26.70	29.50	5	38.9	129
TPSMEJ26A	TPSMEJ26CA	E26	E26C	26	5	28.90	31.90	5	42.1	119
TPSMEJ28A	TPSMEJ28CA	E28	E28C	28	5	31.10	34.40	5	45.4	110
TPSMEJ30A	TPSMEJ30CA	E30	E30C	30	5	33.30	36.80	5	48.4	103
TPSMEJ33A	TPSMEJ33CA	E33	E33C	33	5	36.70	40.60	5	53.3	94
TPSMEJ36A	TPSMEJ36CA	E36	E36C	36	5	40.00	44.20	5	58.1	86
TPSMEJ40A	TPSMEJ40CA	E40	E40C	40	5	44.40	49.10	5	64.5	78
TPSMEJ43A	TPSMEJ43CA	E43	E43C	43	5	47.80	52.80	5	69.4	72

①.Surge waveform:10/1000μs

V_R: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

FIG.1:V- I curve characteristics (Uni-directional)

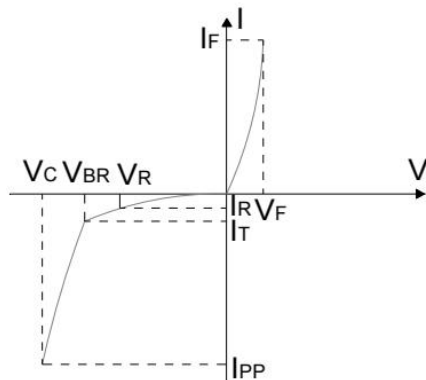


FIG.2:V- I curve characteristics (Bi-directional)

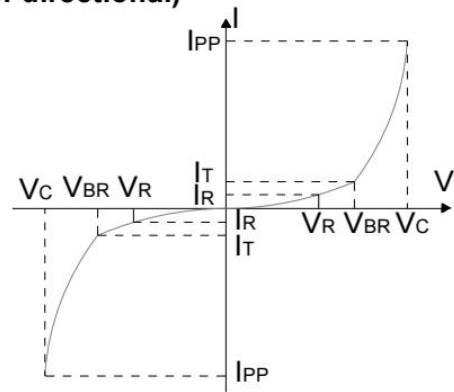


FIG.3: Pulse waveform

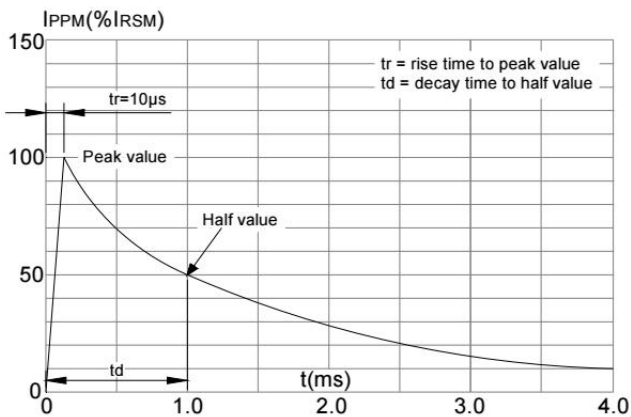


FIG.4: Pulse derating curve

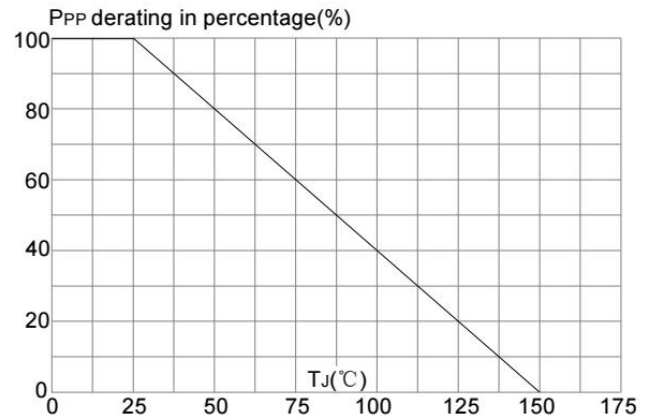


FIG.5: ISO16750 -2 test pulse 5A

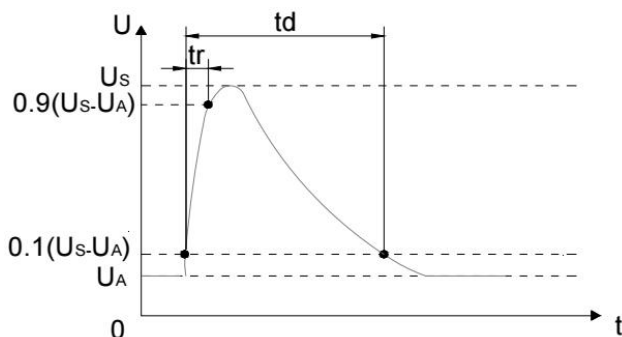


FIG.6: Parameters for test pulse 5a

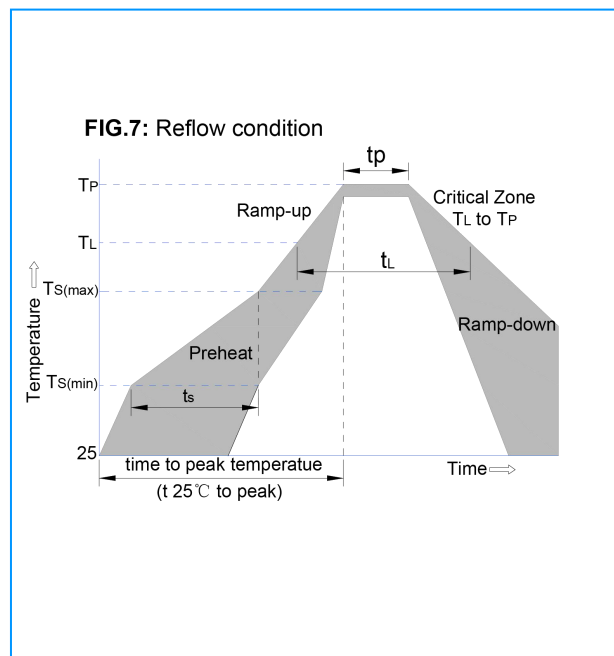
Parameter	12V system	24V system
U_s	79Vto101V	151Vto202V
R_i	0.5 Ω to4 Ω	1 Ω to8 Ω
t_d	40msto400ms	100ms to 350ms
t_r	5-10ms	5-10ms

Surface Mount Transient Voltage Suppressors

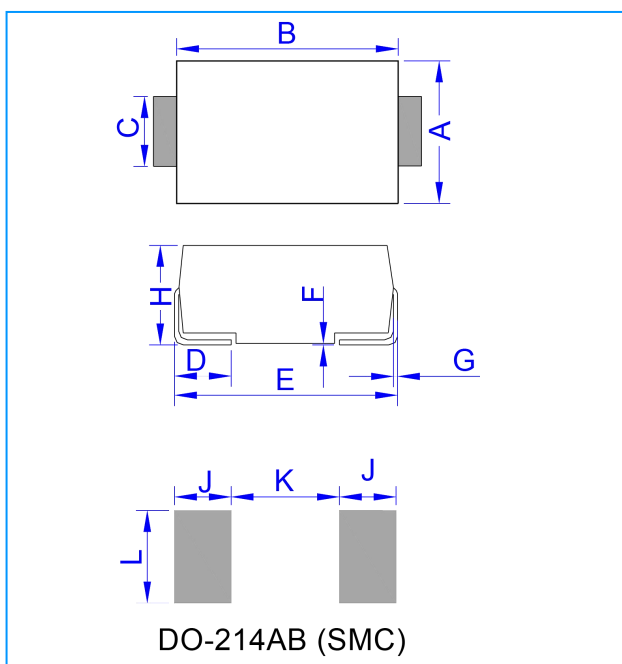
TPSMEJ Series

Soldering Parameters

Reflow Condition		Pb-Free assembly (see FIG.7)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time (Min to Max) (t_s)	60-180 secs.
Average ramp up rate (Liquidus Temp(T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L -Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T_L)(Liquidus)	+217°C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_P)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_p)		20-40secs. Max
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260°C



Package Mechanical Data

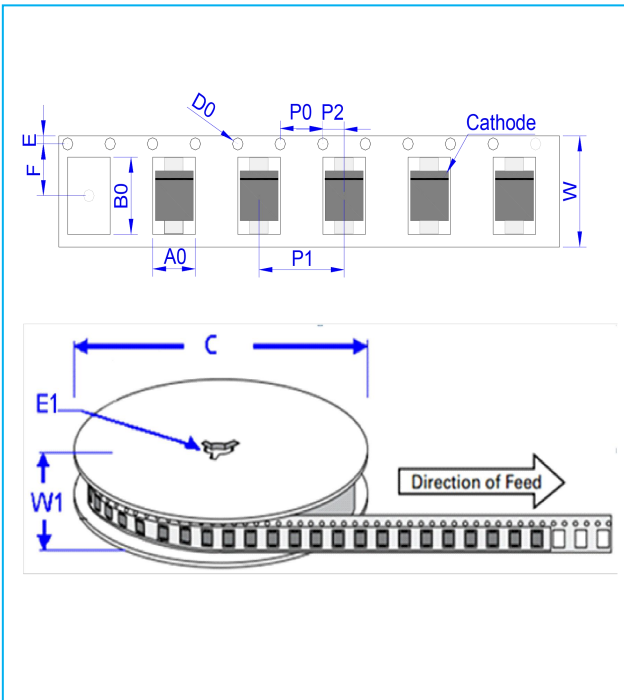


Ref.	Dimensions			
	Millimeters		Inches	
	Min	Max	Min	Max
A	5.75	6.25	0.226	0.246
B	6.90	7.40	0.272	0.291
C	2.75	3.25	0.108	0.128
D	0.95	1.52	0.037	0.060
E	7.70	8.20	0.303	0.323
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	2.15	2.62	0.085	0.103
J	2.40	---	0.094	---
K	---	4.20	---	0.165
L	3.30	---	0.130	---

Surface Mount Transient Voltage Suppressors

TPSMEJ Series

Tape And Reel Specification-SMC



Ref.	Dimensions	
	Millimeters	Inches
AO	6.05 ± 0.3	0.238 ± 0.012
BO	8.31 ± 0.3	0.327 ± 0.012
C	330.0	13.0
DO	1.55 ± 0.1	0.061 ± 0.004
E	1.75 ± 0.2	0.069 ± 0.008
E1	13.3 ± 0.3	0.524 ± 0.012
F	7.50 ± 0.2	0.295 ± 0.008
PO	4.00 ± 0.2	0.157 ± 0.008
P1	8.00 ± 0.2	0.3145 ± 0.008
P2	2.00 ± 0.2	0.079 ± 0.008
W	16.0 ± 0.2	0.630 ± 0.008
W2	19.7 ± 2.0	0.776 ± 0.079

Packaging

Part No	Unit Weight (g/PCS) typ	Package	Quantity	Tape & Reel
TPSMEJXXA	0.342	SMC(DO-214AB)	3000	13inch