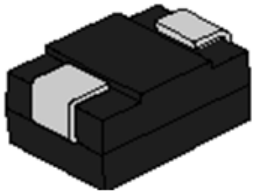
SM6P Series Transient Voltage Suppressor

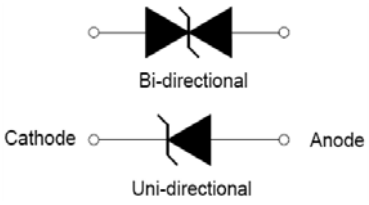
Rev.3.6

APPLICATIONS

- ✧ Auto power systems
- ✧ Can bus
- ✧ Audio\video and GPS
- ✧ ABS powers



SMC



Symbol

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℃/40s at terminals.
- ✧ Plastic package has underwriters laboratory flammability 94V-0.
- ✧ Meets MSL level 1, per J-STD-020, LF maximum peak of 260℃.
- ✧ Terminal: solder plated, solderable per J-STD-002.
- ✧ For surface mounted applications in order 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)

ABSOLUTE MAXIMUM RATINGS (T_A=25℃, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Storage and operating junction temperature range	T_{STG}/ T_J	-55 to +150	℃
Steady state power dissipation at T_L=75℃	$P_{M(AV)}$	6.5	W
Peak pulse power dissipation at 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	$R_{\theta JL}$	15	℃/W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	75	℃/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

P15C: Device Marking Code
1409: In ninth week, 2014

ELECTRICAL CHARACTERISTICS(T_A=25℃)

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	max(μA)	min(V)	max(V)	mA	max(V)	A
SM6P15A	SM6P15C	P15A	P15C	15	5	16.70	18.50	5	24.4	205
SM6P16A	SM6P16C	P16A	P16C	16	5	17.80	19.70	5	26.0	192
SM6P18A	SM6P18C	P18A	P18C	18	5	20.00	22.10	5	29.2	171
SM6P20A	SM6P20C	P20A	P20C	20	5	22.20	24.50	5	32.4	154
☆SM6P22A	SM6P22C	P22A	P22C	22	5	24.40	26.90	5	35.5	141
SM6P24A	SM6P24C	P24A	P24C	24	5	26.70	29.50	5	38.9	129
☆SM6P26A	SM6P26C	P26A	P26C	26	5	28.90	31.90	5	42.1	119
SM6P28A	SM6P28C	P28A	P28C	28	5	31.10	34.40	5	45.4	110
SM6P30A	SM6P30C	P30A	P30C	30	5	33.30	36.80	5	48.4	103
SM6P33A	SM6P33C	P33A	P33C	33	5	36.70	40.60	5	53.3	94
☆SM6P36A	SM6P36C	P36A	P36C	36	5	40.00	44.20	5	58.1	86
SM6P40A	SM6P40C	P40A	P40C	40	5	44.40	49.10	5	64.5	78
SM6P43A	SM6P43C	P43A	P43C	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

☆: Commonly used models

ORDERING INFORMATION

SM6P — 5000W SMC Series

xx — V_R Voltage

A(C) — C: Bi-directional; A: Uni-directional

RATINGS AND V-I CHARACTERISTICS CURVES (T_A=25℃, unless otherwise noted)

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

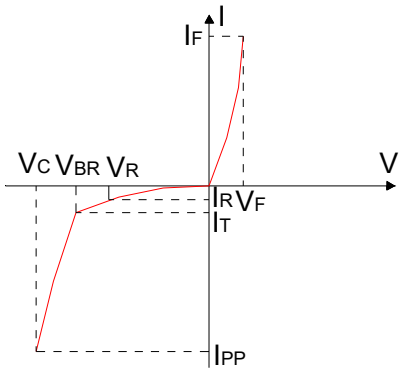


FIG.2:V- I curve characteristics (Bi-directional)

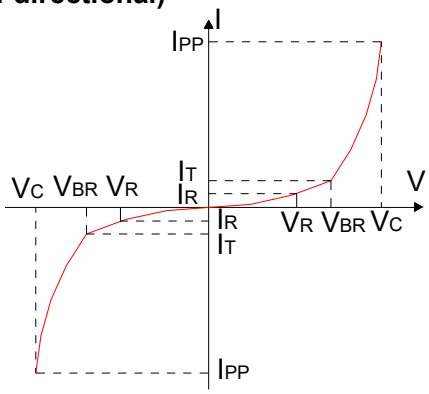


FIG.3: Pulse waveform

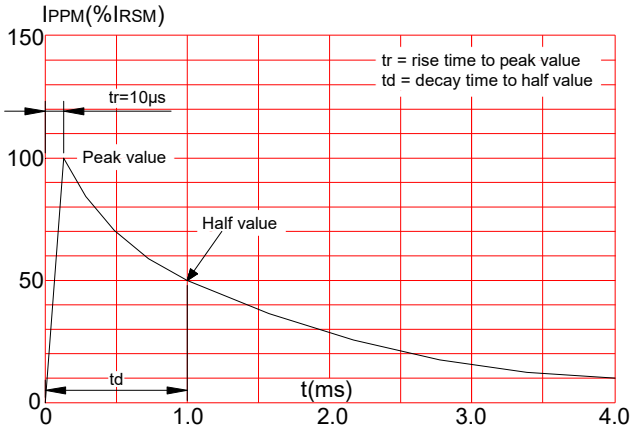


FIG.4: Pulse derating curve

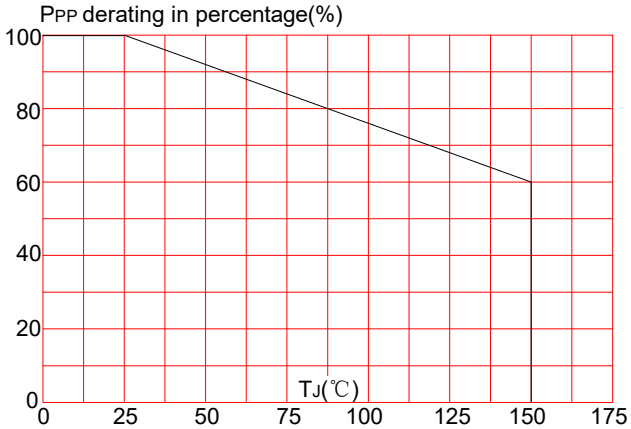


FIG.5: ISO16750 -2 test pulse 5a

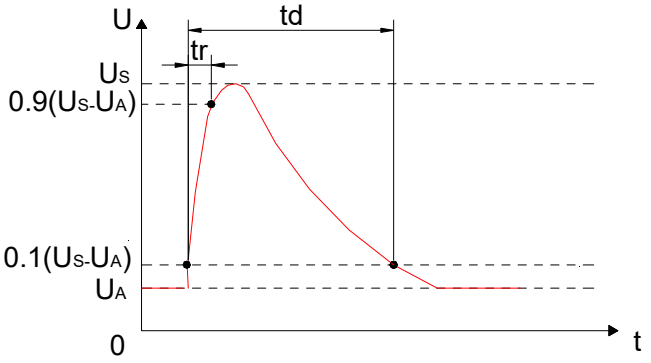
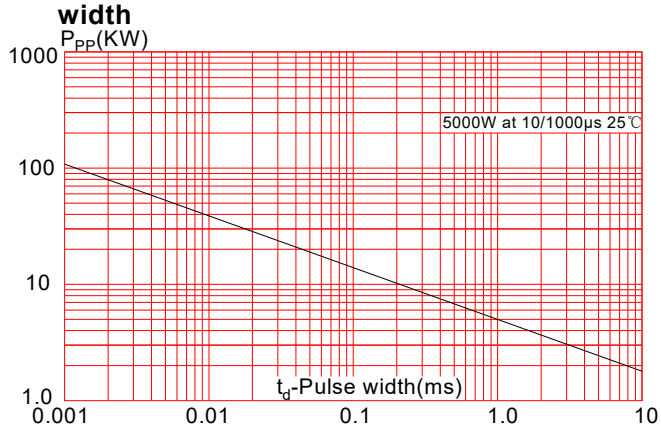


FIG.6: Parameters for test pulse 5a

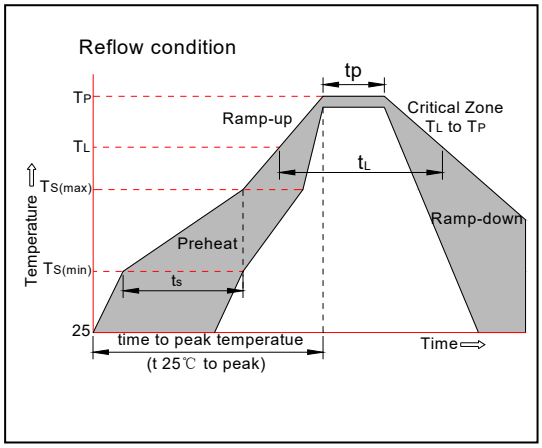
Parameter	12V system	24V system
Us	79V to 101V	151V to 202V
Ri	0.5Ω to 4Ω	1 Ω to 8Ω
td	40ms to 400ms	100ms to 350ms
tr	5-10ms	5-10ms

FIG.7:Peak pulse power dissipation vs. pulse width

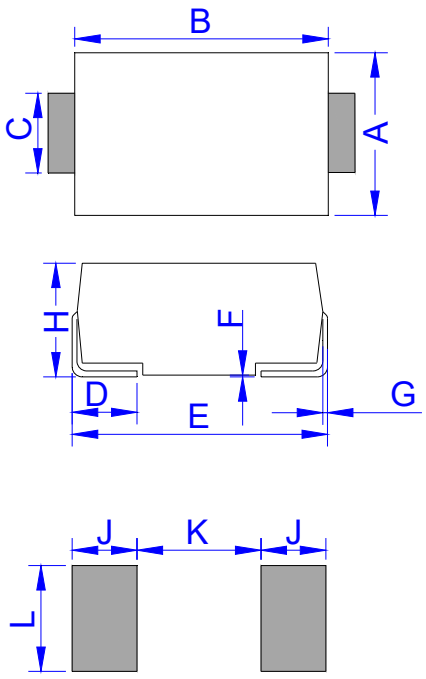


SOLDERING PARAMETERS

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



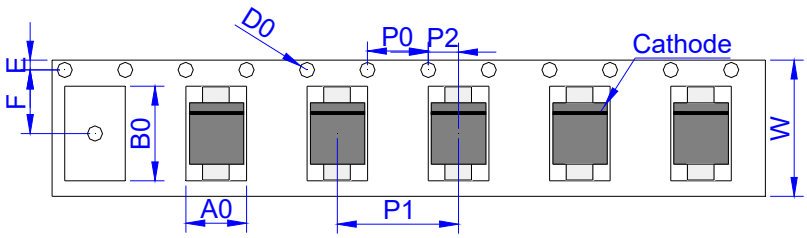
PACKAGE MECHANICAL DATA

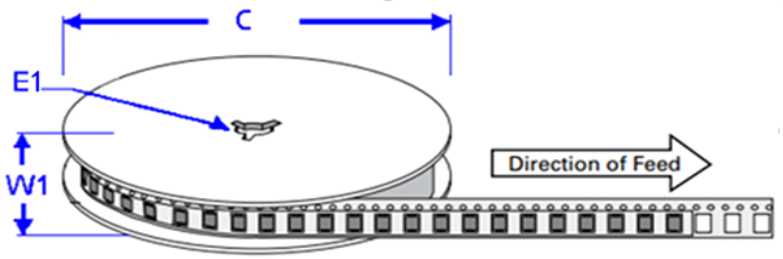


DO-214AB (SMC)

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	

TAPE AND REEL SPECIFICATION-SMC





Ref.	Dimensions	
	Millimeters	Inches
A0	6.05 ± 0.3	0.238 ± 0.012
B0	8.31 ± 0.3	0.327 ± 0.012
C	330.0	13.0
D0	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
P0	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
W1	19.7 ± 2.0	0.776 ± 0.079

PART No.	UNIT WEIGHT (g/PCS) typ.	REEL (PCS)	PER CARTON (PCS)	DESCRIPTION
SM6PxxA/C	0.342	3,000	48,000	13 inch reel pack

JieJie products are not designed for, and shall not be used for, any purpose (including, without limitation, automotive, military, aerospace, medical, life-saving, life-sustaining or nuclear facility applications, devices intended for surgical implant into the body, or any other application in which the failure or lack of desired operation of the product may result in personal injury, death, or property damage) other than those expressly set forth in applicable JieJie product documentation. Warranties granted by JieJie shall be deemed void for products used for any purpose not expressly set forth in applicable JieJie documentation. JieJie shall not be liable for any claims or damages arising out of products used in applications not expressly intended by JieJie as set forth in applicable JieJie documentation. The sale and use of JieJie products is subject to JieJie terms and conditions of sale, unless otherwise agreed by JieJie.

Information furnished in this document is believed to be accurate and reliable. However, Jiangsu JieJie Microelectronics Co., Ltd. assumes no responsibility for the consequences of use without consideration for such information nor use beyond it.

Information mentioned in this document is subject to change without notice, apart from that when an agreement is signed, Jiangsu JieJie complies with the agreement.

Products and information provided in this document have no infringement of patents. Jiangsu JieJie assumes no responsibility for any infringement of other rights of third parties which may result from the use of such products and information.

This document is the 3.6th version which is made in 21-Mar.-2023. This document supersedes and replaces all information previously supplied.