SMCPxxxSC

Thyristor

Applications

- Consumer electronics
- Telecommunications
- Computing and servers
- Networking equipment

Product features

- Low profile SMB package
- Lower capacitance
- Low on-state voltage
- Excellent capability of absorbing transient surge
- Quick response to surge voltage (ns level)
- Eliminates overvoltage caused by fast rising transients
- Meets moisture sensitivity level (MSL) level 1
- UL 497B recognized.
  File No. : E198449 Guide QVGQ2
- SMCPxxxSC tested and confirmed compatible with Bussmann series TCP brick fuse (see page 4)

Environmental compliance and general specifications

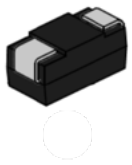
Pb HALOGEN HF FREE RoHS

Ordering part number

SMCP 380 0 S C

- Family name
- V_R voltage
- Bi-/Uni-Directional (0 = Bi, 1 = Uni)
- Package type
- Surge rating

PIN configuration



Powering Business Worldwide

Absolute maximum ratings

(+25 °C, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Operating junction temperature range	T_J	-40 to +125	°C
Repetitive peak pulse current	I_{PP}	100	A
Storage temperature range	T_{STG}	-60 to +150	°C

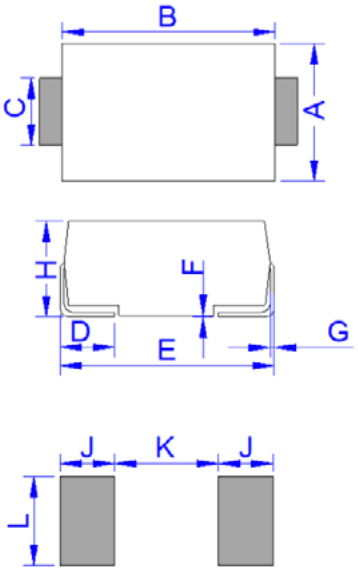
Surge ratings

Family	I_{PP} (A) minimum			
	2×10 µs	8×20 µs	10×360 µs	10×1000 µs
SMCP	500	400	175	100

Electrical characteristics (+25 °C)

Part number	I_{DRM}@V_{DRM} (µA) max	(V)	V_S@ I_S (V) max	(mA) max	V_T@ I_T (V) max	A max	I_H (mA) min	C_O (pF) max	Marking
SMCP0080SC	1	6	15	800	4	2.2	30	60	CP-8C
SMCP0300SC	1	25	40	800	4	2.2	30	60	CP03C
SMCP0640SC	1	58	77	800	4	2.2	120	60	CP06C
SMCP0720SC	1	65	87	800	4	2.2	120	50	CP07C
SMCP1300SC	1	120	160	800	4	2.2	120	50	CP13C
SMCP1500SC	1	140	180	800	4	2.2	120	45	CP15C
SMCP1800SC	1	170	220	800	4	2.2	120	45	CP18C
SMCP2300SC	1	190	260	800	4	2.2	120	40	CP23C
SMCP2600SC	1	220	300	800	4	2.2	120	40	CP26C
SMCP3100SC	1	275	350	800	4	2.2	120	35	CP31C
SMCP3500SC	1	320	400	800	4	2.2	120	35	CP35C
SMCP3800SC	1	340	450	800	4	2.2	120	35	CP38C
SMCP4200SC	1	400	520	800	4	2.2	120	35	CP42C

Mechanical parameters, pad layout- mm/inches



	Millimeters		Inches	
Dimension	**Minimum**	**Maximum**	**Minimum**	**Maximum**
A	3.30	3.94	0.130	0.155
B	4.30	4.80	0.169	0.189
C	1.90	2.20	0.075	0.087
D	0.95	1.52	0.037	0.060
E	5.20	5.60	0.205	0.220
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	2.10	2.40	0.083	0.094
J	2.20		0.087	
K		2.60		0.102
L	2.30		0.091	

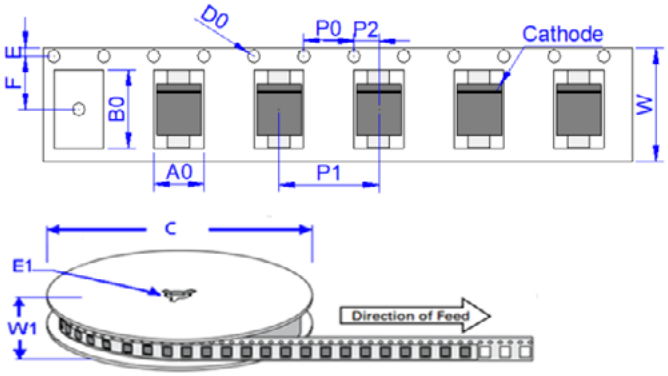
Part marking

Part marking: xxxx = Date code
yyyyy- Refer to marking designator listed in Electrical Characteristics table

Packaging information (mm)

Drawing not to scale.

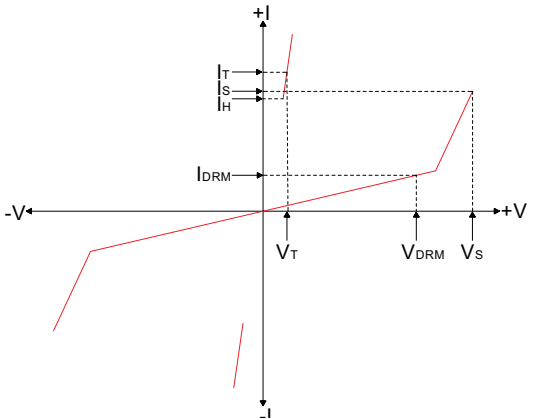
Supplied in tape and reel packaging, 3,000 parts per 13" diameter reel (EIA-481 compliant)



Dimension	Millimeters	Inches
A0	3.76 ± 0.3	0.148 ± 0.012
B0	5.69 ± 0.3	0.224 ± 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	5.5 ± 0.2	0.217 ± 0.008
P0	4.00 ± 0.2	0.157 ± 0.008
P1	8.00 ± 0.2	0.315 ± 0.008
P2	2.00 ± 0.2	0.079 ± 0.008
W	12.0 ± 0.2	0.472 ± 0.008
W1	15.7 ± 2.0	0.618 ± 0.079

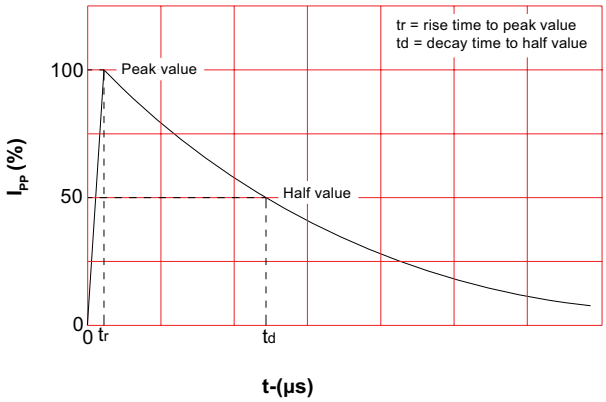
Ratings and V-I characteristic curves (+25 °C unless otherwise noted)

V- I curve characteristics (Uni-directional)

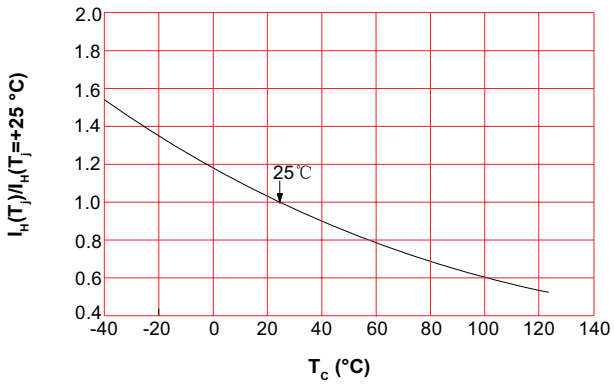


V_{DRM}: Peak off-state voltage
I_{DRM}: Off-state current
V_s: Switching voltage
I_s: Switching current
V_T: On-state voltage
I_T: On-state current
I_H: Holding current
C_O: Off-state capacitance

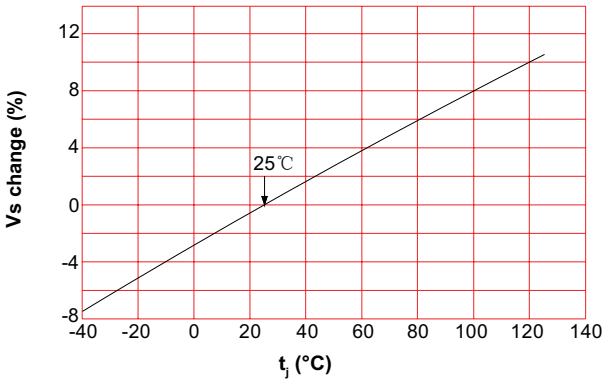
Pulse waveform



Normalized DC holding current vs. case temperature

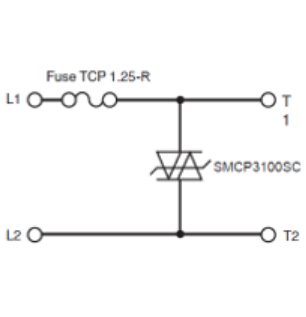


Normalized vs. change vs. junction temperature

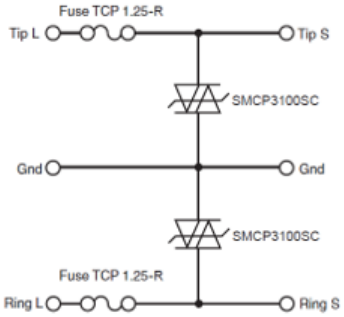


Special Investigation

The SMCPxxxSC family has been tested and confirmed compatible with the Bussmann series TCP brick fuse. The SMCP3100SC with the TCP1.25-R is compliant with Telcordia GR-1089 (lightning and AC power fault), FCC Part 68 and UL 60950 (AC power fault). To provide easier specification experience, Eaton can provide a special test report confirming the coordination between the SMCP3100SC and the TCP1.25-R devices



Test Circuit 1



Test Circuit 2

Solder reflow profile

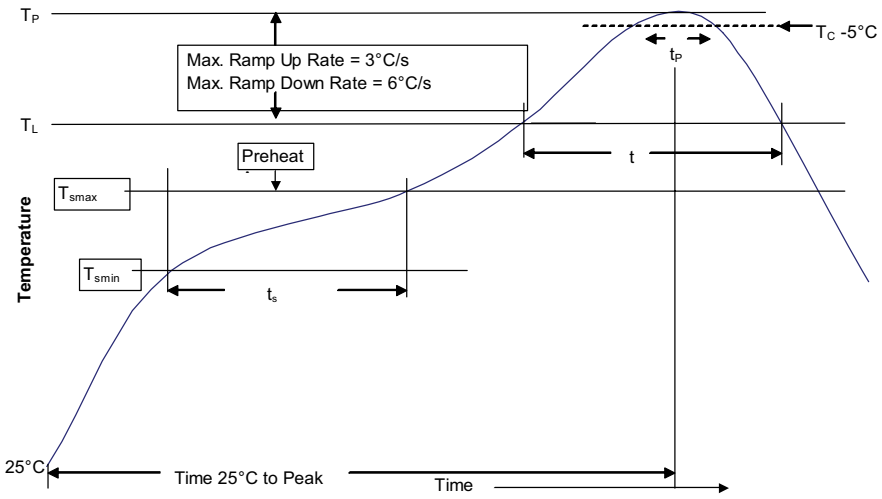


Table 1 - Standard SnPb solder (T_C)

Package thickness	Volume mm3 <350	Volume mm3 ≥350
<2.5 mm	235 °C	220 °C
≥2.5 mm	220 °C	220 °C

Table 2 - Lead (Pb) free solder (T_C)

Package thickness	Volume mm³ <350	Volume mm³ 350 - 2000	Volume mm³ >2000
<1.6 mm	260 °C	260 °C	260 °C
1.6 – 2.5 mm	260 °C	250 °C	245 °C
>2.5 mm	250 °C	245 °C	245 °C

Reference J-STD-020

Profile feature		Standard SnPb solder	Lead (Pb) free solder
Preheat and soak	• Temperature min. (T_{smin})	100 °C	150 °C
	• Temperature max. (T_{smax})	150 °C	200 °C
	• Time (T_{smin} to T_{smax}) (t_S)	60-120 seconds	60-180 seconds
Ramp up rate T_L to T_p		3 °C/ second max.	3 °C/ second max.
Liquidous temperature (T_L) Time (t_L) maintained above T_L		183 °C 60-150 seconds	217 °C 60-150 seconds
Peak package body temperature (T_P)*		Table 1	Table 2
Time (t_p)* within 5 °C of the specified classification temperature (T_C)		20 seconds*	30 seconds*
Ramp-down rate (T_p to T_L)		6 °C/ second max.	6 °C/ second max.
Time 25 °C to peak temperature		6 minutes max.	8 minutes max.

* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.

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