

SMCPxxxSC

Thyristor



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)

Applications

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

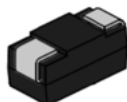
Environmental compliance and general specifications



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



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

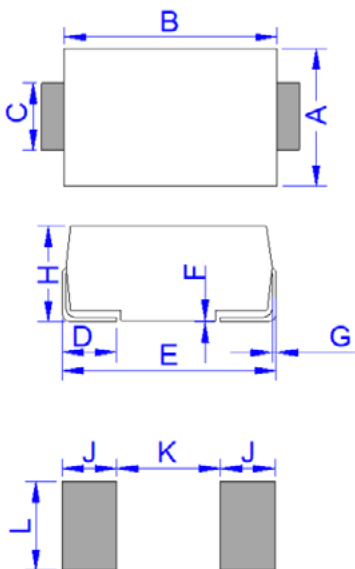
Surge ratings

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	$I_{DRM}@V_{DRM}$		$V_s@I_s$		$V_T@I_T$		I_H (mA) min	C_o (pF) max	Marking
	(μA) max	(V)	(V) max	(mA) max	(V) max	A max			
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



Dimension	Millimeters		Inches	
	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

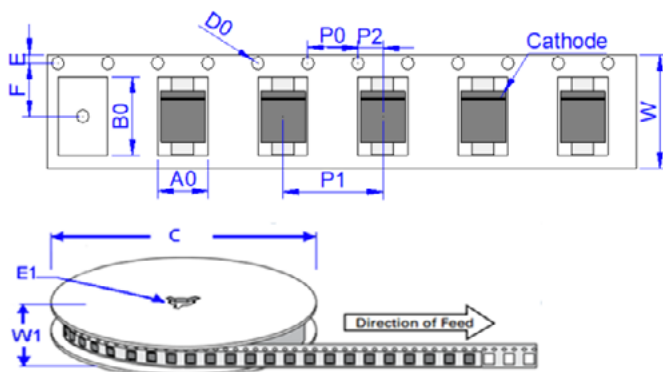


Part marking: xxxx = Date code
yyyyy- Refer to marking designator
listed in Electrical Characteristics table

Packaging information (mm)

Drawing not to scale.

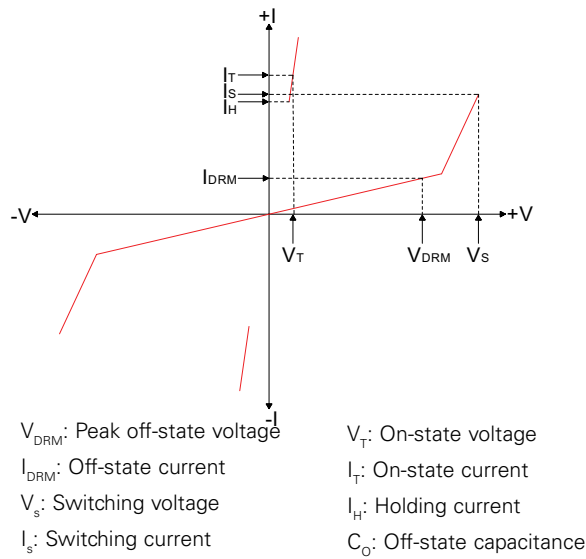
Supplied in tape and reel packaging, 3,000 parts per 13" diameter reel
(EIA-481 compliant)



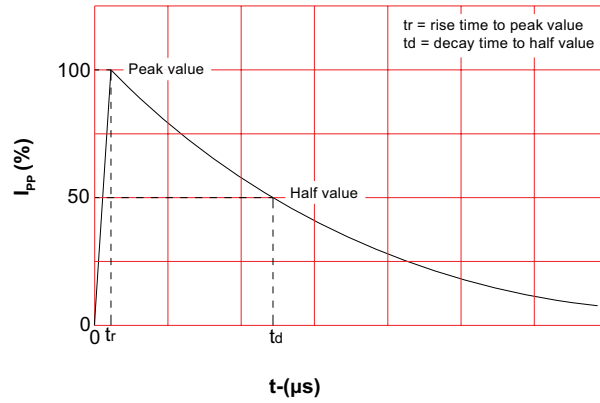
Dimension	Millimeters	Inches
A0	3.76 ± 0.3	0.148 ± 0.012
B0	5.69 ± 0.3	0.224 ± 0.012
C	330.0	13.0
D0	1.55 ± 0.1	0.061 ± 0.004
E	1.75 ± 0.2	0.069 ± 0.008
E1	13.3 ± 0.3	0.524 ± 0.012
F	5.5 ± 0.2	0.217 ± 0.008
P0	4.00 ± 0.2	0.157 ± 0.008
P1	8.00 ± 0.2	0.315 ± 0.008
P2	2.00 ± 0.2	0.079 ± 0.008
W	12.0 ± 0.2	0.472 ± 0.008
W1	15.7 ± 2.0	0.618 ± 0.079

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

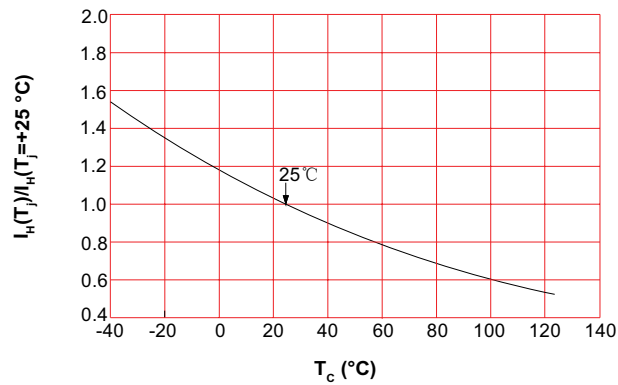
V-I curve characteristics (Uni-directional)



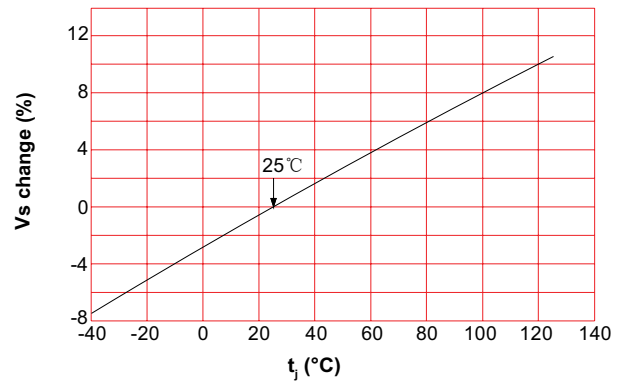
Pulse waveform



Normalized DC holding current vs. case temperature

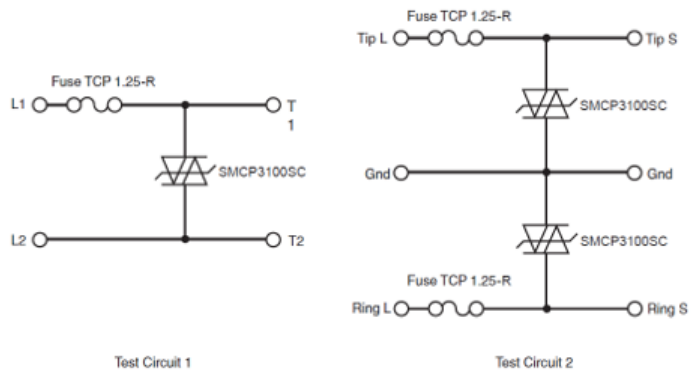


Normalized vs. change vs. junction temperature



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



Solder reflow profile

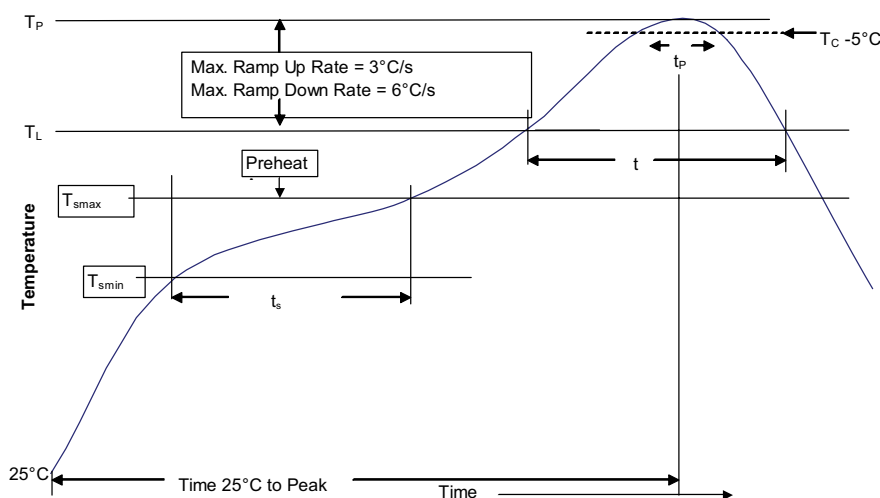


Table 1 - Standard SnPb solder (T_C)

Package thickness	Volume mm ³ <350	Volume mm ³ ≥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 mm ³ <350	Volume mm ³ 350 - 2000	Volume mm ³ >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)	183 °C	217 °C
Time (t_L) maintained above T_L	60-150 seconds	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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