

# 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

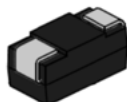
### Environmental compliance and general specifications



### Ordering part number

	SMCP	380	0	S	C
Family name	_____	_____	_____	_____	_____
V <sub>R</sub> voltage	_____	_____	_____	_____	_____
Bi-/Uni-Directional (0 = Bi, 1 = Uni)	_____	_____	_____	_____	_____
Package type	_____	_____	_____	_____	_____
Surge rating	_____	_____	_____	_____	_____

### PIN configuration

**EAT•N**

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

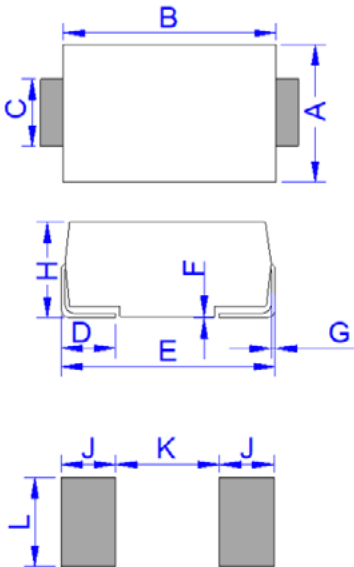
## Surge ratings

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

## Electrical characteristics (+25 °C)

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

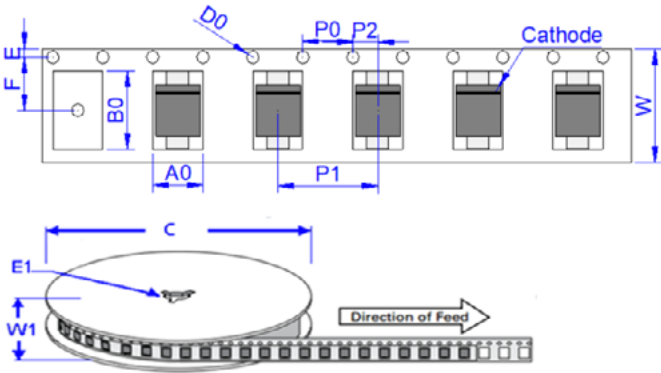
Part marking



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

Packaging information (mm)

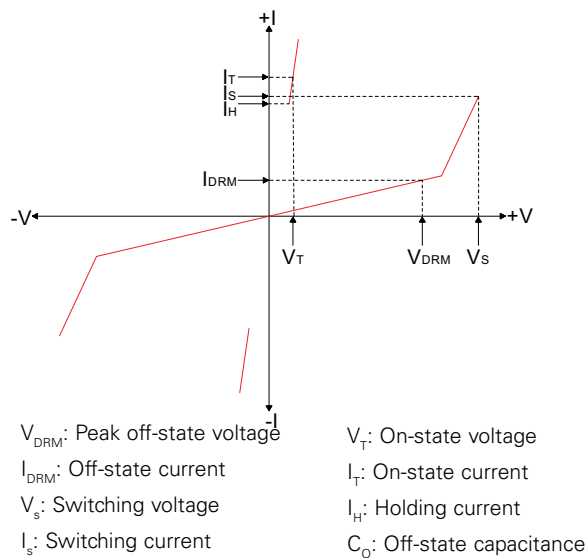
Drawing not to scale.  
Supplied in tape and reel packaging, 3,000 parts per 13" diameter reel  
(EIA-481 compliant)



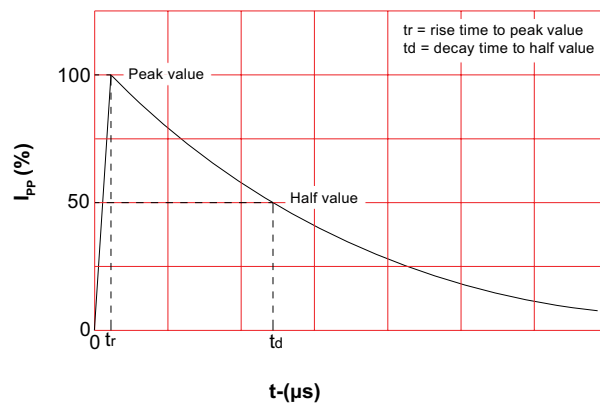
Dimension	Millimeters	Inches
A0	3.76 ± 0.3	0.148 ± 0.012
B0	5.69 ± 0.3	0.224 ± 0.012
C	330.0	13.0
D0	1.55 ± 0.1	0.061 ± 0.004
E	1.75 ± 0.2	0.069 ± 0.008
E1	13.3 ± 0.3	0.524 ± 0.012
F	5.5 ± 0.2	0.217 ± 0.008
P0	4.00 ± 0.2	0.157 ± 0.008
P1	8.00 ± 0.2	0.315 ± 0.008
P2	2.00 ± 0.2	0.079 ± 0.008
W	12.0 ± 0.2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

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

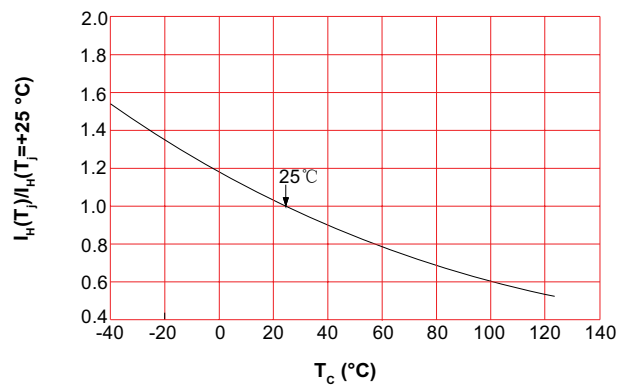
### V-I curve characteristics (Uni-directional)



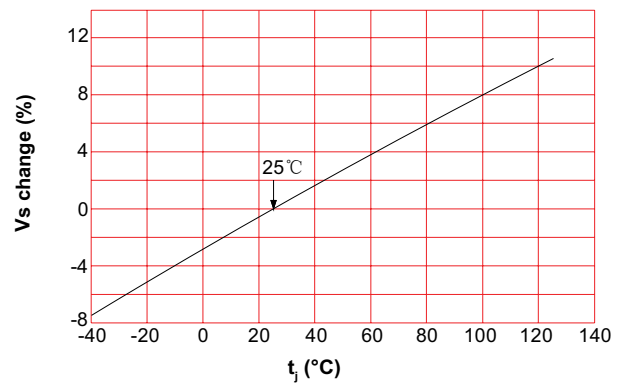
### Pulse waveform



### Normalized DC holding current vs. case temperature

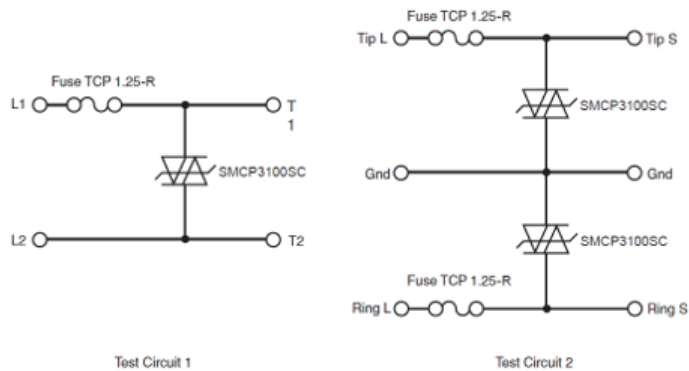


### Normalized vs. change vs. junction temperature



### 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

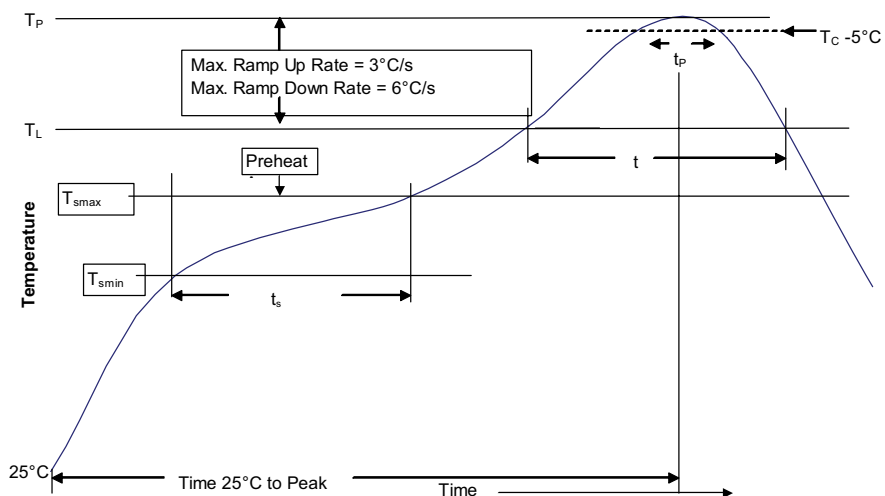


Table 1 - Standard SnPb solder ( $T_C$ )

Package thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> ≥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 <sup>3</sup> <350	Volume mm <sup>3</sup> 350 - 2000	Volume mm <sup>3</sup> >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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