

## SB4040S 40A SCRs

### FEATURES

High thermal conductivity performance

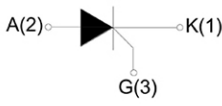


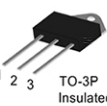
- High voltage capacity
- Very high current surge capability

### APPLICATIONS

- Line rectifying 50/60 Hz
- Softstart AC motor control
- DC Motor control
- Power converter
- AC power control
- Lighting and temperature control

### Parameters Summary

$V_{DRM}: 1200/1600V$  (1200V/1600V)  
 $I_T(RMS): 40A$   
 $I_{TSM}: 120A$

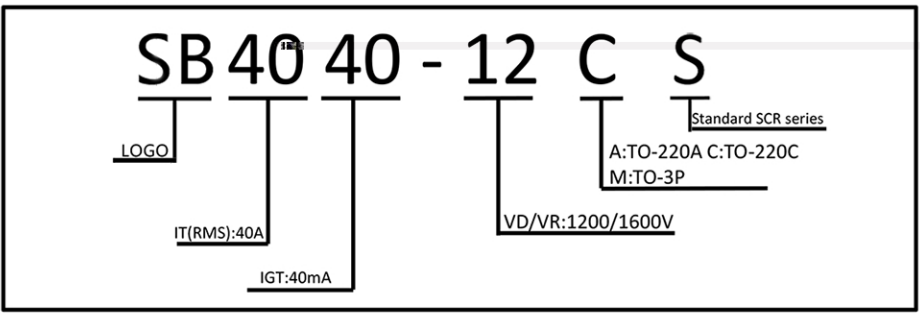

ABSOLUTE MAXIMUM RATINGS			
Parameter	Symbol	Value	Unit
Storage junction temperature range	$T_{stg}$	-40 ~ 150	$^{\circ}C$
Operating junction temperature range	$T_j$	-40 ~ 125	$^{\circ}C$
Repetitive peak off-state voltage	$V_{DRM}$	1200/1600	V
Repetitive peak reverse voltage	$V_{RRM}$	1200/1600	V
Non repetitive surge peak Off-state voltage	$V_{DSM}$	$V_{DRM} + 100$	V
Non repetitive peak reverse voltage	$V_{RSM}$	$V_{RRM} + 100$	V
Non repetitive surge peak on-state current	$I_{TSM}$	120	A
RMS on-state current (180° conduction angle)	$I_T(RMS)$	40	A
Average on-state current (180° conduction angle)	$I_{T(AV)}$	25	A
$I^2t$ value for fusing ( $t_p=10ms$ )	$I^2t$	880	$A^2S$
Critical rate of rise of on-state current ( $I=2 \times I_{GT}$ , $t_r \leq 100ns$ )	$di/dt$	150	$A/\mu S$
Peak gate current	$I_{GM}$	4	A
Peak gate power	$PGM$	5	W

Thermal Resistances			
Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case (DC)	TO-220A	1.2
		TO-220C	0.8
		TO-3P	0.7

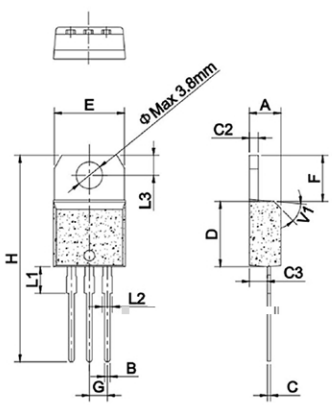


Symbol	Parameter
$V_{RM}$	ITM = 60A tp=380 $\mu$ s
$I_{TSM}$	
$I_{TSM}$	

### Ordering Information Scheme

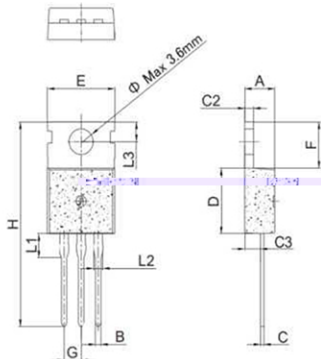


### TO-220A Package Mechanical Data



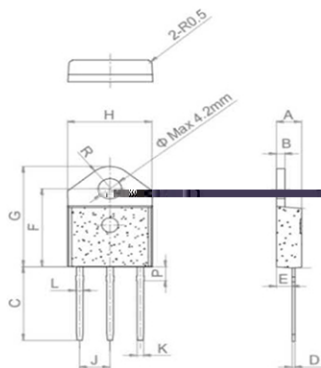
Dimension	Value (mm)
L1	1.4
L2	1.4
L3	1.4
E	4.4
H	9.3
G	0.45
B	0.22
A	0.45
C2	0.22
D	0.22
C3	0.22
F	0.22

## TO-220C Package Mechanical Data



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.70		0.90	0.028		0.035
C	0.45		0.60	0.018		0.024
C2	1.30		1.46	0.051		0.058
C3	2.20		2.60	0.087		0.102
E	9.90		10.3	0.390		0.406
F	6.30		6.90	0.248		0.272
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.39			0.133	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
e		3.6			0.142	

## TO-3P Package Mechanical Data



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	1.40		1.60	0.055		0.062
C	15.48		15.88	0.609		0.625
C2	0.50		0.70	0.019		0.027
C3	2.70		2.90	0.106		0.114
D	15.32		16.32	0.603		0.642
E	20.27		20.67	0.798		0.813
F	15.15		15.35	0.590		0.604
G		5.45			0.214	0.216
H	1.10		1.30	0.043		0.051
L1	1.15		1.35	0.045		0.053
L2	2.68		3.08	0.105		0.121
L3		4.20			0.165	
e	4.40		4.60	0.173		0.181

FIG.1 Maximum power dissipation versus on-state current

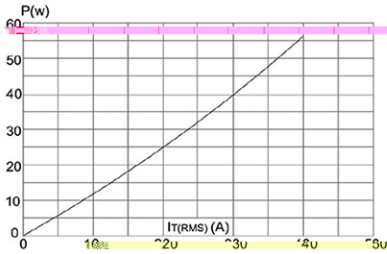


FIG.2: on-state current versus case temperature

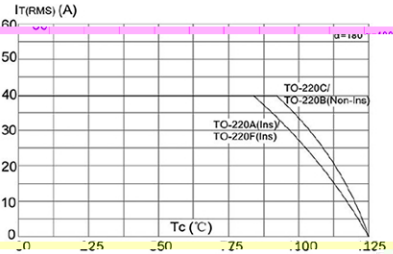


FIG.3: Surge peak on-state current versus number of cycles

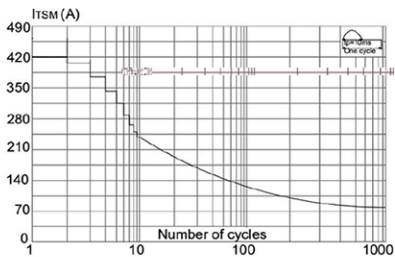


FIG.4: On-state characteristics (maximum values)

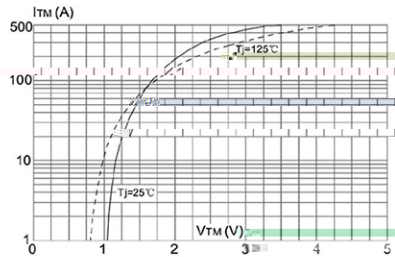


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10\text{ms}$ , and corresponding value of  $I_2 t (di/dt < 50\text{A}/\mu\text{s})$

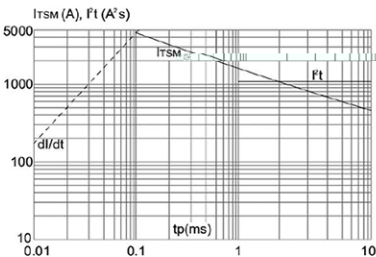


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature

