SB4040S 40A SCRs

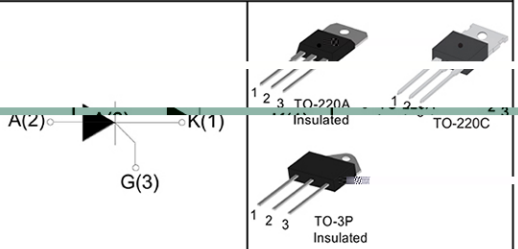
FEATURES

- High thermal, clamp 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



SMD Device Halogen Free

Pb-free

RoHS COMPLIANT

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Storage junction temperature range	Tstg	-40 ~150	℃
Operating junction temperature range	Tj	-40~125	℃
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}	420	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 (tp=10ms)	I^2t	880	A^2S
Critical rate of rise of on-state current (I =2×IGT, tr ≤ 100 ns)	di/dt	150	A/μS
Peak gate current	IGM	4	A
Peak gate power	PGM	5	W

Thermal Resistances

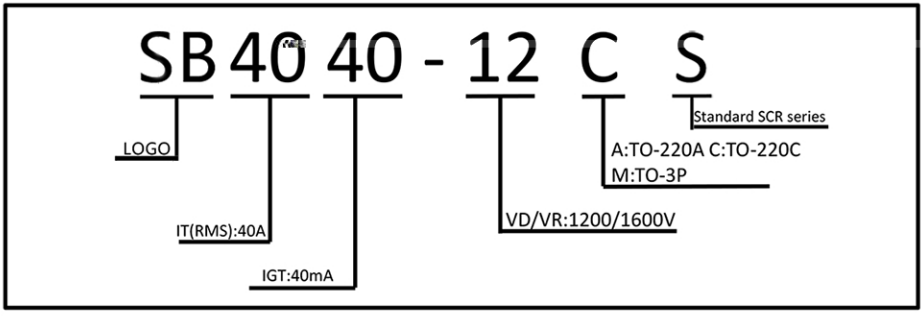
Symbol	Parameter		Value	Unit
Rth(j-c)	Junction to case (DC)	TO-220A	1.2	℃/W
		TO-220C	0.8	
		TO-3P	0.7	

Symbol	Test Conditions	Value	Unit
I_{GT}		MAX.	
V_{GT}		MAX. 1.5	V
V_{GD}	VD=VDRM Tj=125°C	MIN.	V
I_L	I_G=1.2I_{GT}	MAX. 200	mA
I_H		MAX.	mA
dV/dt	Tj=125°C V_D=2/3V_{DRM} Gate Open	MIN.	V/µs

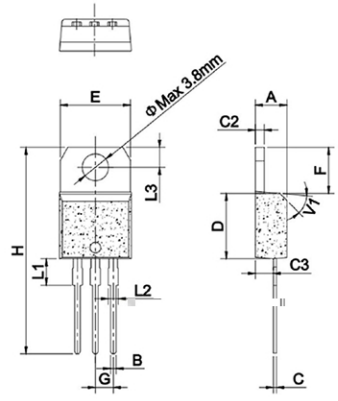
STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX.)	Unit
V_{TM}	ITM =60A tp=380µs	Tj =25°C		V
I_{DRM}	V_D=V_{DRM} V_R=V_{RRM}	Tj =25°C		µA
I_{RRM}		Tj =125°C		mA

Ordering Information Scheme

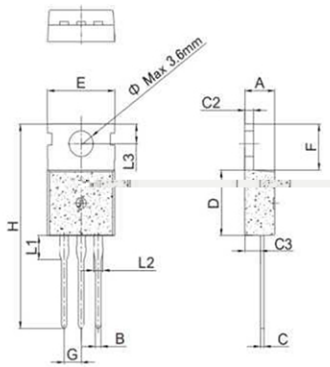


TO-220A Package Mechanical Data



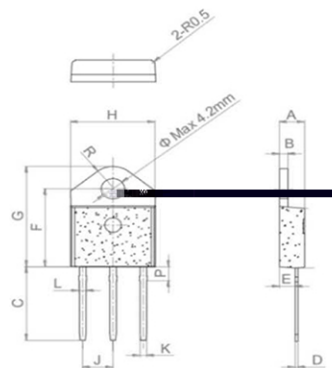
Dimensions	Millimeters		Inches	
	Min.	Max.	Min.	Max.
		4.40		0.173
	1.25		0.049	
	1.30			
	2.20	2.60	0.087	0.102
	0.90		0.035	
	0.00		0.00	
	0.45		0.018	
	0.00		0.00	
	1.23		0.048	
	0.00		0.406	
	2.40		0.094	
	0.00		0.272	
	2.54		0.1	
	8.00		0.315	
	0.00		0.102	
	3.30		0.130	
	0.00		0.173	
	1.14		0.045	
	0.00		0.134	
	2.03		0.080	
	0.00		0.116	
	3.6		0.142	

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		1.48	0.048	0.051	0.052
C3	2.20		2.60	0.087		0.102
D	8.80		9.00	0.350		0.380
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	19.92		20.32	0.784		0.800
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

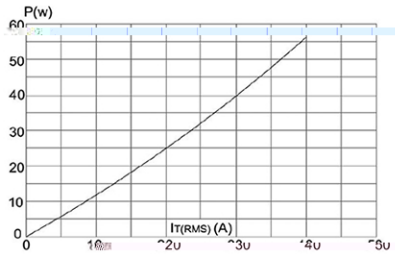


FIG.2: on-state current versus case temperature

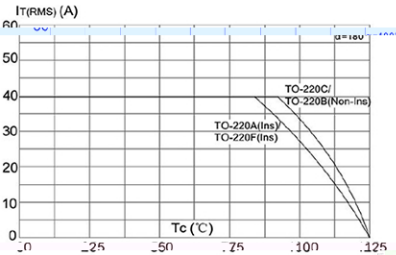


FIG.3: Surge peak on-state current versus number of cycles

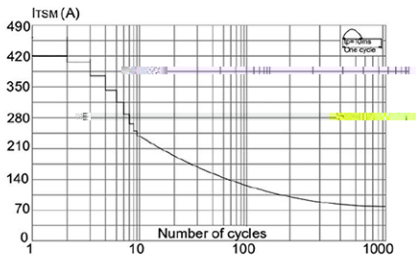


FIG.4: On-state characteristics (maximum values)

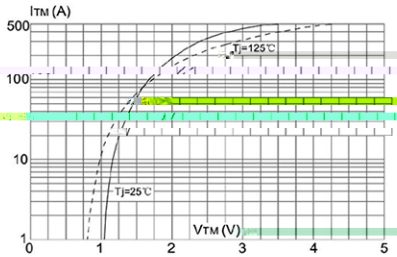


FIG.5: Non-repetitive surge peak on-state currentfor a sinusoidal pulse with width tp<10ms, and corresponding value of I2 t (dI/dt < 50A/μs)

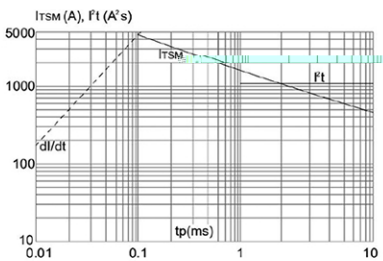


FIG.6: Relative variations of gate trigger current holding current and latching current versus junction temperature