SB4040S 40A SCRs

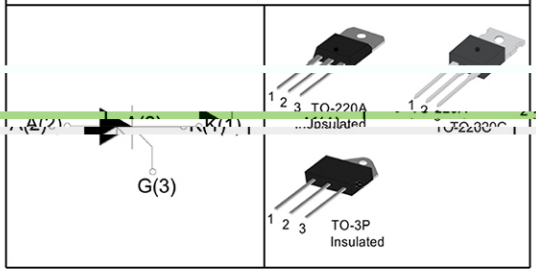
FEATURES

- High thermal cycling 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



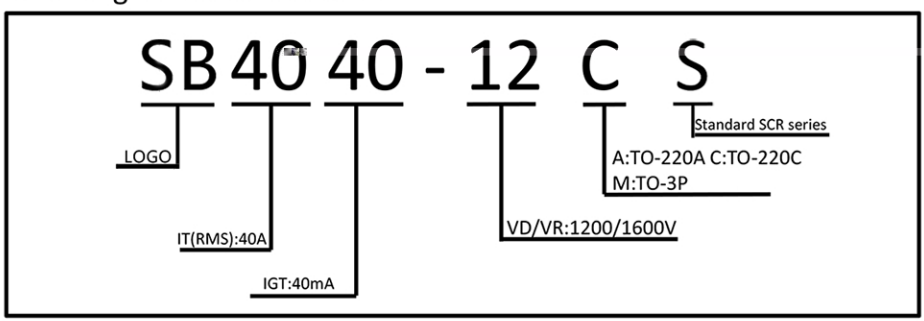
ABSOLUTE MAXIMUM RATINGS			
Parameter	**Symbol**	**Value**	**Unit**
Storage junction temperature range	Tstg	-40 ~150	℃
Operating junction temperature range	Tj	-40~125	℃
Repetitive peak off-state voltage	V_{DRM}	1200/1600	V
Repetitive peak reverse voltage	V_{RRM}	1200/1600	V
Non repetitive surge peak 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	

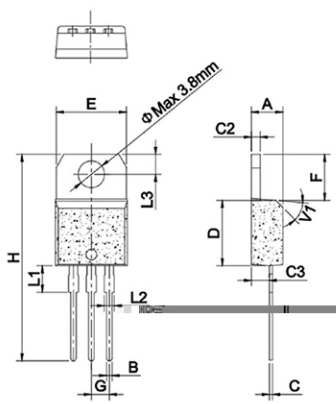
ELECTRICAL CHARACTERISTICS (T=25℃unless otherwise specified)				
Symbol	**Test Condition**		**Value**	**Unit**
I_{GT}	V =12V R =140Ω	MAX.	40	mA
V_{GT}		MAX.	1. 5	V
V_{GD}	VD=VDRM Tj=125℃	MIN.	0.2	V
I_L	I_G=1.2I_{GT}	MAX.	200	mA
I_H	IT=50mA	MAX.	100	mA
dV/dt	V_D=2/3V_{DRM} Gate Open Tj=125℃	MIN.	1000	V/μs

STATIC CHARACTERISTICS				
Symbol	**Parameter**		**Value(MAX.)**	**Unit**
V_{TM}	ITM =60A tp=380μs	Tj =25℃	1. 5	V
I_{DRM}	V_D=V_{DRM} V_R=V_{RRM}	Tj =25℃	10	μA
I_{RRM}		Tj =125℃	4	mA

Ordering Information Scheme

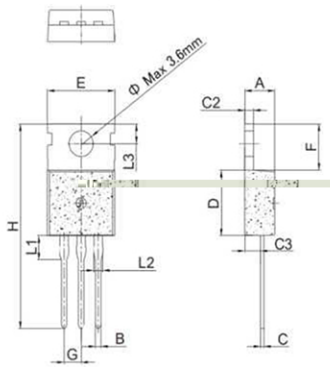


TO-220A Package Mechanical Data



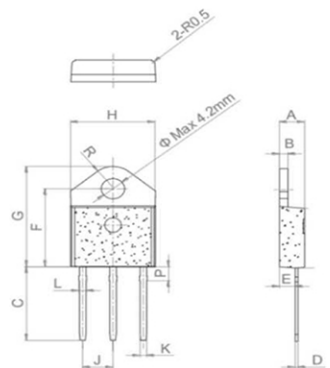
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.70		0.90	0.028		0.035
C	0.45		0.60	0.018		0.024
C2	1.30		1.48	0.048		0.052
C3	2.20		2.60	0.087		0.102
D	8.90		9.90	0.350		0.390
E	9.90		10.3	0.390		0.406
F	6.30		6.90	0.248		0.272
G		2.54			0.1	
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-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		0.052
C3	2.20		2.60	0.087		0.102
D	8.98		9.90	0.350		0.390
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	15.92		16.32	0.626		0.642
E	20.27		20.67	0.798		0.813
F	15.15		15.35	0.596		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

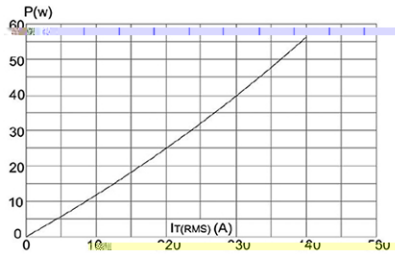


FIG.2: on-state current versus case temperature

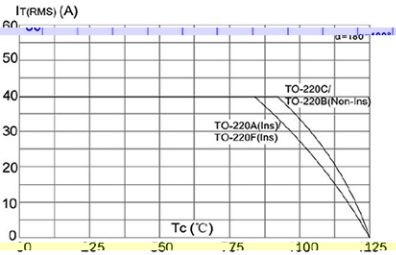


FIG.3: Surge peak on-state current versus number of cycles

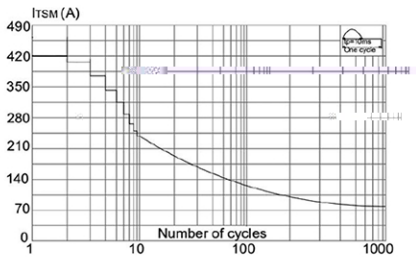


FIG.4: On-state characteristics (maximum values)

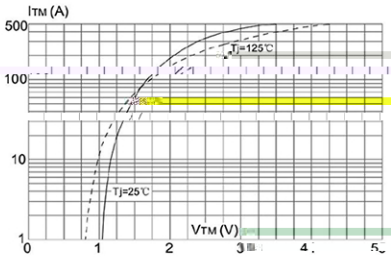


FIG.5: Non-repetitive surge peak on-state currentfor a sinusoidal pulse with width tp<10ms, and corresponding value of I2 t (dI/dt < 50A/μs)

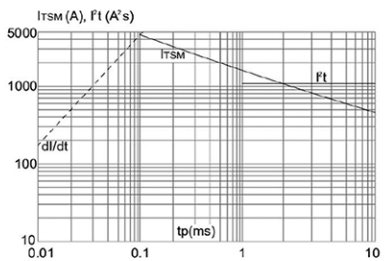


FIG.6: Relative variations of gate trigger current holding current and latching current versus junction temperature