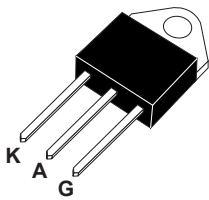
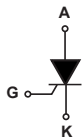


50 A 1200 V SCR in TOP3 insulated



TOP3 Isolated

Features

- Max. repetitive blocking voltage = V_{DRM} , V_{RRM} = 1200 V
- I_{GT} maximum = 80 mA
- ECOPACK2 component (RoHS and HF compliance)

Applications

- Solid state relays
- Welding equipment
- High power motor control
- Heating systems
- Controlled AC/DC bridge

Description

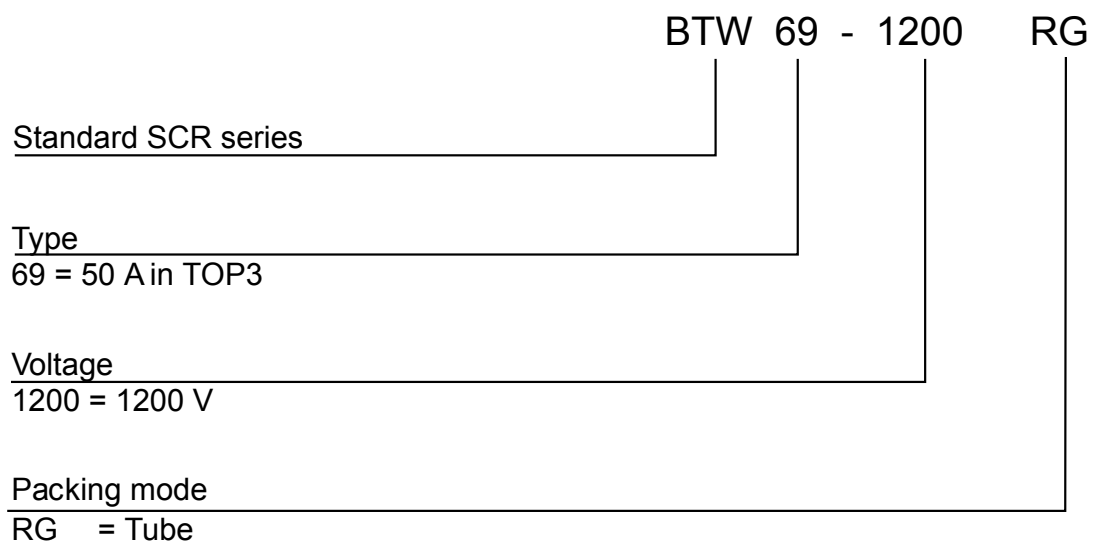
Available in a high power package TOP3-I, the BTW69-1200 is suitable in applications where power handling and power dissipation are critical, such as solid state relays, welding equipment, high power motor control and power converters.

This device offers a superior performance in surge current handling capabilities, allowing usage in industrial environment.

Thanks to its internal ceramic pad, it provide high voltage insulation ($2500V_{RMS}$).

Product status link	
BTW69-1200	
Product summary	
$I_{T(RMS)}$	50 A
V_{DRM}/V_{RRM}	1200 V
I_{GT}	80 mA

Figure 1. Ordering information scheme



1 Characteristics

Table 1. Absolute maximum ratings

Symbol	Parameters		Value	Unit	
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)		$T_C = 75\text{ °C}$	50	A
$I_{T(AV)}$	Average on-state current (180° conduction angle)		$T_C = 75\text{ °C}$	32	A
I_{TSM}	Non repetitive surge peak on-state current (full cycle, T_j initial = 25 °C, $V_R = 0$ V)		$t_p = 8.3$ ms	610	A
			$t_p = 10$ ms	580	
I^2t	I^2t value for fusing	$t_p = 10$ ms, $T_j = 25\text{ °C}$		1680	A ² s
di/dt	Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$, $t_r \leq 100$ ns	$F = 60$ Hz	$T_j = 125\text{ °C}$	50	A/ μ s
I_{GM}	Peak gate current	$t_p = 20$ μ s	$T_j = 125\text{ °C}$	8	A
$P_{G(AV)}$	Average gate power dissipation		$T_j = 125\text{ °C}$	1	W
T_{stg}	Storage junction temperature range			-40 to +150	°C
T_j	Operating junction temperature range			-40 to +125	°C
V_{GRM}	Maximum peak reverse gate voltage			5	V
V_{ins}	Insulation RMS voltage, 1 minute			2500	V

Table 2. Electrical characteristics ($T_j = 25\text{ °C}$, unless otherwise specified)

Symbol	Test conditions	T_j		Value	Unit
I_{GT}	$V_D = 12$ V, $R_L = 33\ \Omega$		Min.	8	mA
			Max	80	
V_{GT}			Max	1.3	V
V_{GD}	$V_D = V_{DRM}$, $R_L = 3.3$ k Ω	125 °C	Min.	0.2	V
I_H	$I_T = 500$ mA, gate open		Max.	150	mA
I_L	$I_G = 1.2 \times I_{GT}$		Max.	200	mA
dV/dt	$V_D = 67\%$, V_{DRM} gate open	125 °C	Min.	1000	V/ μ s
V_{TM}	$I_{TM} = 100$ A, $t_p = 380$ μ s		Max.	1.9	V
V_{TO}	Threshold on-state voltage	125 °C	Max.	1.0	V
R_D	On-state dynamic resistance	125 °C	Max.	8.5	m Ω
I_{DRM}/I_{RRM}	$V_D = V_{DRM}$, $V_R = V_{RRM}$	25 °C	Max.	10	μ A
		125 °C		5	mA

Table 3. Thermal resistance

Symbol	Parameters	Value	Unit
$R_{th(j-c)}$	Junction to case (D.C)	0.9	°C/W
$R_{th(j-a)}$	Junction to ambient (D.C)	50	

1.1 Characteristics (curves)

Figure 2. Maximum average power dissipation versus average on-state current

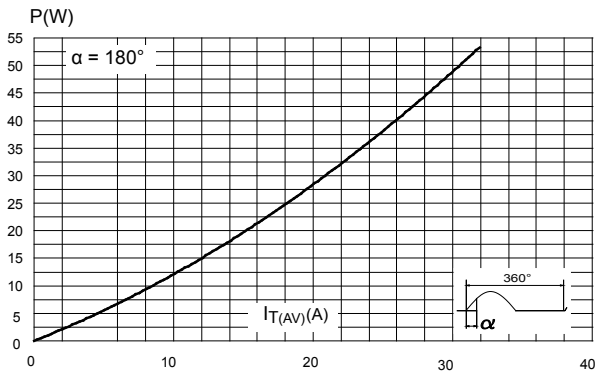


Figure 3. Average on-state current versus case temperature

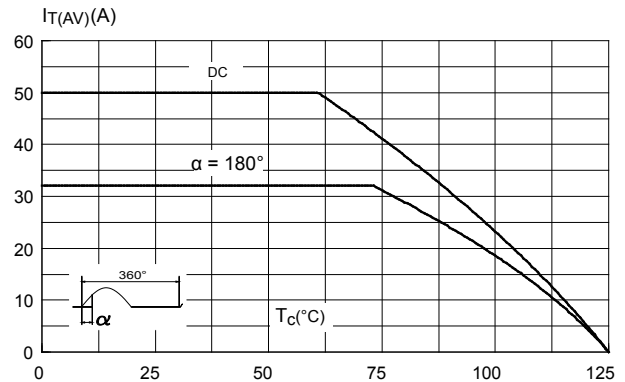


Figure 4. Relative variation of thermal impedance versus pulse duration

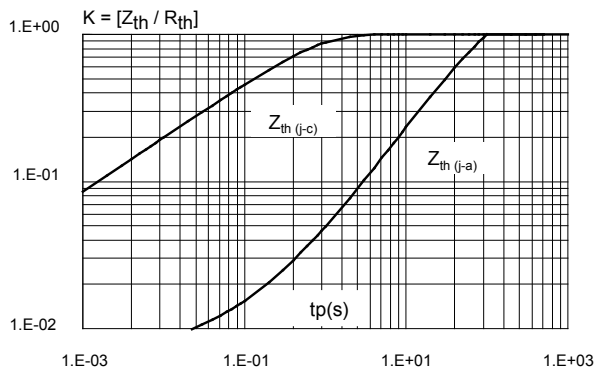


Figure 5. Relative variation of gate trigger current, holding current and latching current versus junction temperature

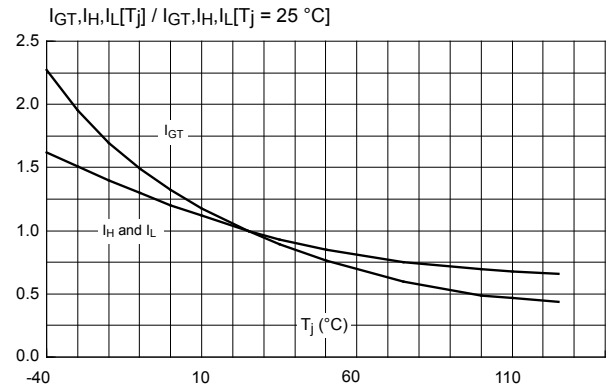


Figure 6. Surge peak on-state current versus number of cycles

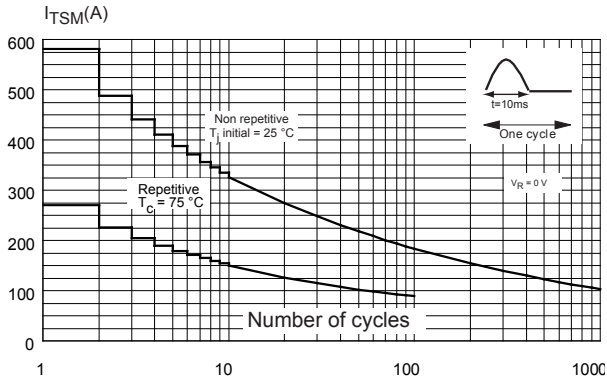


Figure7. Non repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10$ ms, and corresponding value of I^2t

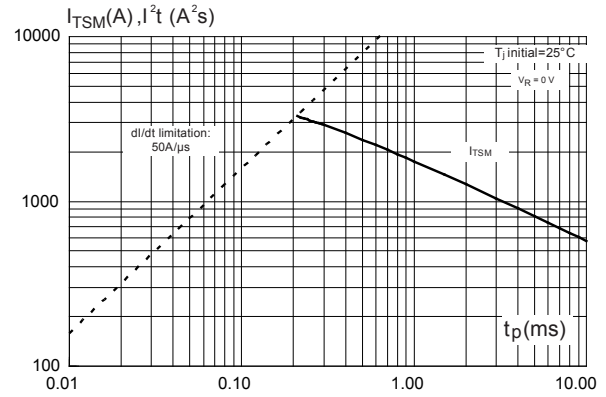
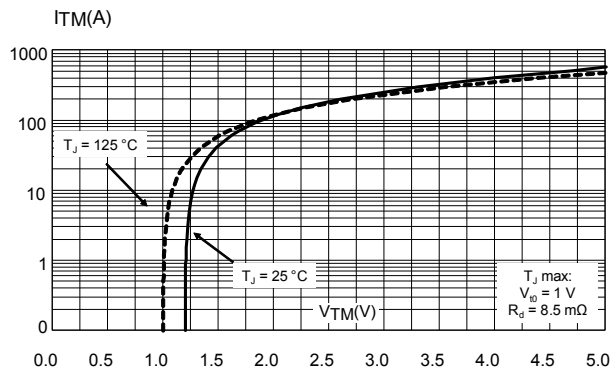


Figure8 On-state characteristics (maximum values)



2 Package information

2.1 TOP3 Ins. package information

- ECOPACK® (Lead-free plating and Halogen free package compliance)
- Lead-free package leads finishing
- Recommended torque: 1.05 N·m (max. torque: 1.2 N·m)

Figure 9. TOP3 Isolated package outline

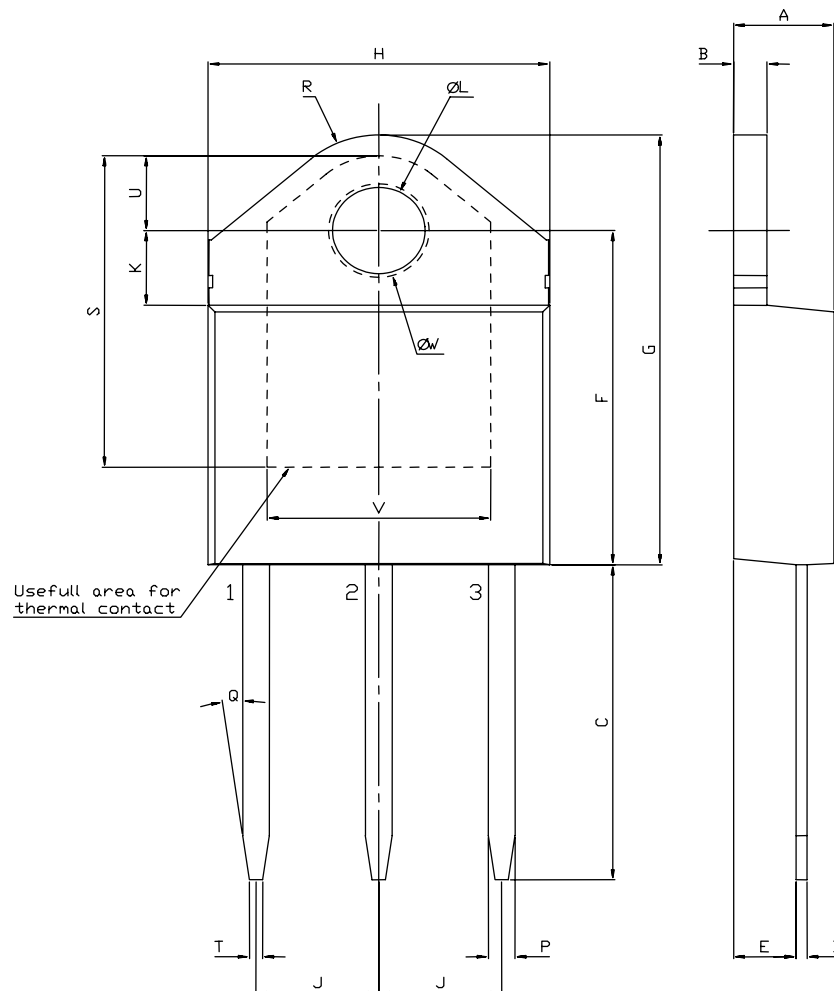


Table 4. TOP3 Isolated mechanical data

Ref.	Dimensions					
	mm			Inches ⁽¹⁾		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.1732		0.1811
B	1.45		1.55	0.0571		0.0610
C	14.35		15.60	0.5650		0.6142
D	0.50		0.70	0.0197		0.0276
E	2.70		2.90	0.1063		0.1142
F	15.80		16.50	0.6220		0.6496
G	20.40		21.10	0.8031		0.8307
H	15.10		15.50	0.5945		0.6102
J	5.40		5.65	0.2126		0.2224
K	3.40		3.65	0.1339		0.1437
L	4.08		4.17	0.1606		0.1642
M	1.20		1.40	0.0472		0.0551
R		4.60			0.1811	

1. Inches given for reference only

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