

BTW67 and BTW69 Series

STANDARD 50A SCRS

Table 1: Main Features

Symbol	Value	Unit
I _{T(RMS)}	50	Α
V _{DRM} /V _{RRM}	600 to 1200	V
I _{GT}	80	mA

DESCRIPTION

Available in high power packages, the **BTW67** / **BTW69** Series is suitable in applications where power handling and power dissipation are critical, such as solid state relays, welding equipment, high power motor control.

Based on a clip assembly technology, they offer a superior performance in surge current handling capabilities.

Thanks to their internal ceramic pad, they provide high voltage insulation ($2500V_{RMS}$), complying with UL standards (file ref: E81734).

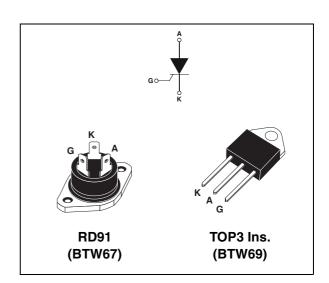


Table 2: Order Codes

Part Numbers	Marking
BTW67-xxx	BTW67xxx
BTW69-xxxRG	BTW69xxx

Table 3: Absolute Ratings (limiting values)

Symbol	Parameter	Value	Unit			
I	RMS on-state current	RD91	$T_c = 70^{\circ}C$	50	Α	
I _{T(RMS)}	(180° conduction angle)	TOP3 Ins.	$T_c = 75^{\circ}C$	50		
IT	Average on-state current	RD91	$T_c = 70^{\circ}C$	00	Α	
$IT_{(AV)}$	(180° conduction angle)	TOP3 Ins.	$T_c = 75^{\circ}C$	32		
l	Non repetitive curse peak on state current	$t_p = 8.3 \text{ ms}$	T _i = 25°C	610	Α	
ITSM	Non repetitive surge peak on-state current	$t_p = 10 \text{ ms}$	1	580	^	
l²t	I ² t Value for fusing	$T_j = 25^{\circ}C$	1680	A ² s		
dl/dt	Critical rate of rise of on-state current $I_G = 2$ $x I_{GT}$, $t_r \le 100 \text{ ns}$ $F = 60 \text{ Hz}$		T _j = 125°C	50	A/μs	
I_{GM}	Peak gate current $t_p = 20 \mu s$ $T_j = 125$		$T_j = 125^{\circ}C$	8	Α	
P _{G(AV)}	Average gate power dissipation	1	W			
T _{stg} T _j	Storage junction temperature range Operating junction temperature range			- 40 to + 150 - 40 to + 125	°C	
V_{RGM}	Maximum peak reverse gate voltage			5	V	

Tables 4: Electrical Characteristics ($T_j = 25$ °C, unless otherwise specified)

Symbol	Test Conditions		Value	Unit	
I _{GT}			MIN.	8	mA
'G1	$V_D = 12 \text{ V}$ $R_L = 33 \Omega$		MAX.	80	111/3
V _{GT}			MAX.	1.3	V
V _{GD}	$V_D = V_{DRM}$ $R_L = 3.3 \text{ k}\Omega$	T _j = 125°C	MIN.	0.2	V
I _H	I _T = 500 mA Gate open		MAX.	150	mA
IL	$I_G = 1.2 \times I_{GT}$		MAX.	200	mA
dV/dt	$V_D = 67 \% V_{DRM}$ Gate open $T_j = 125$ °C		MIN.	1000	V/µs
V _{TM}	$I_{TM} = 100 \text{ A}$ tp = 380 µs $T_j = 25^{\circ}\text{C}$		MAX.	1.9	V
V _{t0}	Threshold voltage $T_j = 125^{\circ}C$		MAX.	1.0	V
R _d	Dynamic resistance $T_j = 125^{\circ}C$		MAX.	8.5	mΩ
I _{DRM}	$V_{DRM} = V_{RRM}$	T _j = 25°C	MAX.	10	μΑ
I _{RRM}	VDHM — VHHM	T _j = 125°C	IVIAX.	5	mA

Table 5: Thermal resistance

Symbol	Parameter		Value	Unit
R _{th(j-c)}	lunction to coop (D.C.)	RD91 (Insulated)	1.0	°C/W
' 'th(j-c)	Junction to case (D.C.)	TOP3 Insulated	0.9	- C/VV
R _{th(j-a)}	Junction to ambient (D.C.)	TOP3 Insulated	50	°C/W

Figure 1: Maximum average power dissipation versus average on-state current

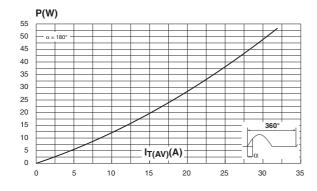
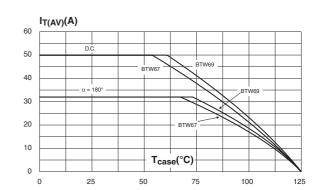


Figure 2: Average and D.C. on-state current versus case temperature



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Figure 3: Relative variation of thermal impedance versus pulse duration

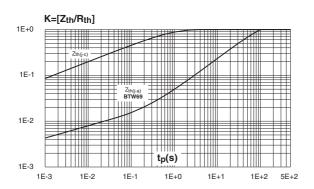


Figure 5: Surge peak on-state current versus number of cycles

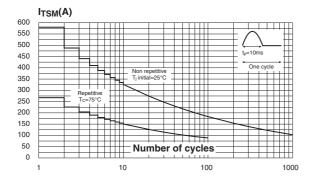


Figure 7: On-state characteristics (maximum values)

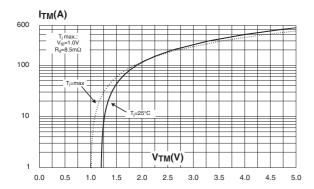


Figure 4: Relative variation of gate trigger current, holding current and latching current versus junction temperature

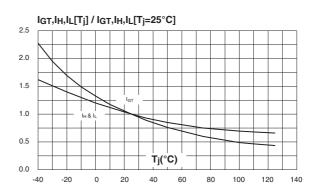
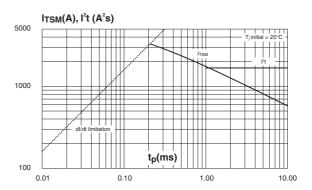


Figure 6: Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp < 10 ms, and corresponding values of I^2t



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Figure 8: Ordering Information Scheme

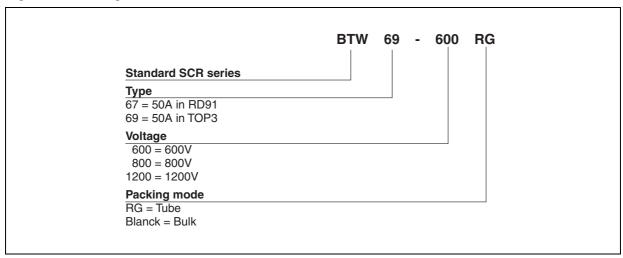
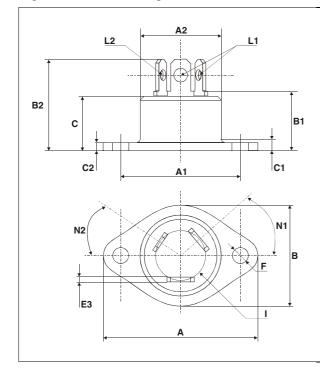


Table 6: Product Selector

Part Numbers	Voltage (xxx)			Sonsitivity	Package	
Part Numbers	600 V	800 V	1200 V	Sensitivity Pack		
BTW67-xxx	Х	Х	Х	80 mA	RD91	
BTW69-xxx	Х	Х	Х	80 mA	TOP3 Ins.	

Figure 9: RD91 Package Mechanical Data



	DIMENSIONS			
REF.	Millimeters		Inc	hes
	Min.	Max.	Min.	Max.
Α		40.00		1.575
A1	29.90	30.30	1.177	1.193
A2		22.00		0.867
В		27.00		1.063
B1	13.50	16.50	0.531	0.650
B2		24.00		0.945
С		14.00		0.551
C1		3.50		0.138
C2	1.95	3.00	0.077	0.118
E3	0.70	0.90	0.027	0.035
F	4.00	4.50	0.157	0.177
I	11.20	13.60	0.441	0.535
L1	3.10	3.50	0.122	0.138
L2	1.70	1.90	0.067	0.075
N1	33°	43°	33°	43°
N2	28°	38°	28°	38°

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DIMENSIONS REF. Millimeters Inches Н Min. Typ. Max. Min. Тур. Max. 4.4 4.6 0.173 Α 0.181 ØL В 1.45 1.55 0.057 0.061 14.35 С 15.60 0.565 0.614 ĸ D 0.5 0.7 0.020 0.028 G Ε 2.7 2.9 0.106 0.114 F 15.8 16.5 0.622 0.650 G 20.4 21.1 0.815 0.831 Н 15.1 15.5 0.594 0.610 0.222 5.4 5.65 0.213 С K 3.4 3.65 0.134 0.144 ØL 4.08 4.17 0.161 0.164 Р 1.20 1.40 0.047 0.055 D R 4.60 0.181

Figure 10: TOP3 Insulated Package Mechanical Data

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a Lead-free second level interconnect . The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com.

Table 7: Ordering Information

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
BTW67-xxx	BTW67xxx	RD91	20 g	25	Bulk
BTW69-xxxRG	BTW69xxx	TOP3 Ins.	4.5 g	30	Tube

Note: xxx = voltage

Table 8: Revision History

Date	Revision	Description of Changes
Apr-2001	4A	Last update.
13-Feb-2006	5	TOP3 Insulated delivery mode changed from bulk to tube. ECOPACK statement added.

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