

## BTW67 and BTW69 Series

STANDARD

50A SCRs

### MAIN FEATURES:

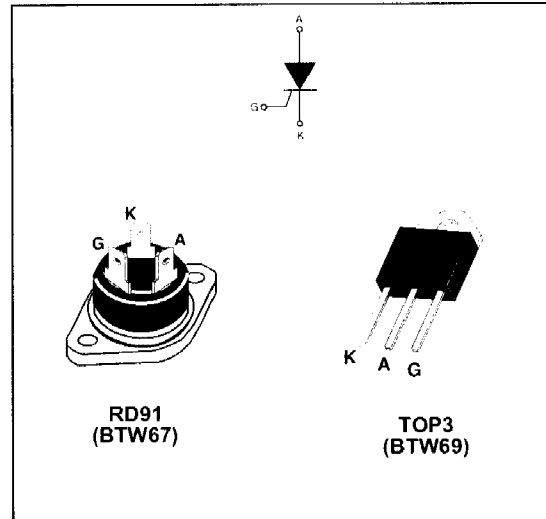
Symbol	Value	Unit
$I_{T(RMS)}$	50	A
$V_{DRM}/V_{RRM}$	600 to 1200	V
$I_{GT}$	80	mA

### 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.

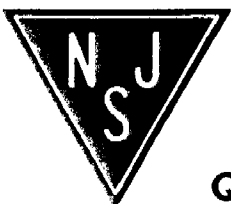
Thanks to their internal ceramic pad, they provide high voltage insulation (2500V RMS), complying with UL standards



### ABSOLUTE RATINGS (limiting values)

Symbol	Parameter	Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	RD91 $T_c = 70^\circ\text{C}$	50    A
		TOP3 Ins. $T_c = 75^\circ\text{C}$	
$I_{T(AV)}$	Average on-state current (180° conduction angle)	RD91 $T_c = 70^\circ\text{C}$	32    A
		TOP3 Ins. $T_c = 75^\circ\text{C}$	
$I_{TSM}$	Non repetitive surge peak on-state current	$t_p = 8.3 \text{ ms}$	610    A
		$t_p = 10 \text{ ms}$	
$I_t^2$	$I_t^2$ Value for fusing	$T_j = 25^\circ\text{C}$	1680 $\text{A}^2\text{s}$
$di/dt$	Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$ , $t_r \leq 100 \text{ ns}$	$F = 60 \text{ Hz}$ $T_j = 125^\circ\text{C}$	50 $\text{A}/\mu\text{s}$
$I_{GM}$	Peak gate current	$t_p = 20 \mu\text{s}$ $T_j = 125^\circ\text{C}$	8    A
$P_{G(AV)}$	Average gate power dissipation	$T_j = 125^\circ\text{C}$	1    W
$T_{stg}$	Storage junction temperature range	- 40 to + 150	$^\circ\text{C}$
$T_j$	Operating junction temperature range	- 40 to + 125	
$V_{RGM}$	Maximum peak reverse gate voltage	5	V

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### ELECTRICAL CHARACTERISTICS (T<sub>j</sub> = 25°C, unless otherwise specified)

Symbol	Test Conditions		Value	Unit	
I <sub>GT</sub>	V <sub>D</sub> = 12 V    R <sub>L</sub> = 33 Ω	MIN.	8	mA	
		MAX.	80		
V <sub>GT</sub>		MAX.	1.3	V	
V <sub>GD</sub>	V <sub>D</sub> = V <sub>DRM</sub> R <sub>L</sub> = 3.3 kΩ	T <sub>j</sub> = 125°C	MIN.	0.2	V
I <sub>H</sub>	I <sub>T</sub> = 500 mA    Gate open		MAX.	150	mA
I <sub>L</sub>	I <sub>G</sub> = 1.2 I <sub>GT</sub>		MAX.	200	mA
dV/dt	V <sub>D</sub> = 67 % V <sub>DRM</sub> Gate open	T <sub>j</sub> = 125°C	MIN.	1000	V/μs
V <sub>TM</sub>	I <sub>TM</sub> = 100 A    t <sub>p</sub> = 380 μs	T <sub>j</sub> = 25°C	MAX.	1.9	V
V <sub>IO</sub>	Threshold voltage	T <sub>j</sub> = 125°C	MAX.	1.0	V
R <sub>d</sub>	Dynamic resistance	T <sub>j</sub> = 125°C	MAX.	8.5	mΩ
I <sub>DRM</sub> I <sub>RRM</sub>	V <sub>DRM</sub> = V <sub>RRM</sub>	T <sub>j</sub> = 25°C	MAX.	10	μA
		T <sub>j</sub> = 125°C		5	mA

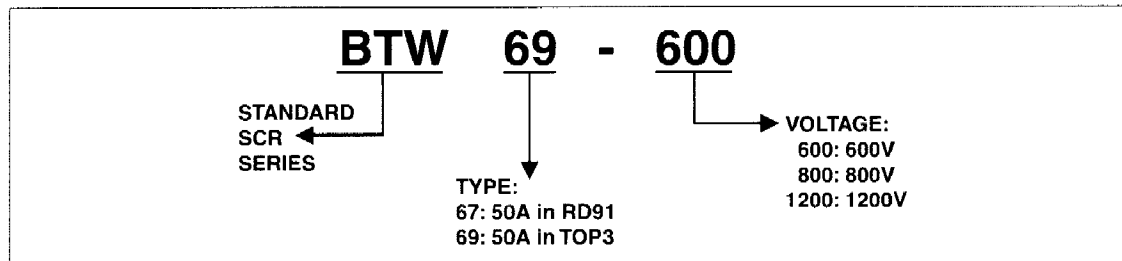
### THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
R <sub>th(j-c)</sub>	Junction to case (DC)	RD91 (Insulated)	1.0	°C/W
		TOP3 Insulated	0.9	
R <sub>th(j-a)</sub>	Junction to ambient	TOP3 Insulated	50	°C/W

### PRODUCT SELECTOR

Part Number	Voltage (xxx)			Sensitivity	Package
	600 V	800 V	1200 V		
BTW67-xxx	X	X	X	80 mA	RD91
BTW69-xxx	X	X	X	80 mA	TOP3 Ins.

### ORDERING INFORMATION



### OTHER INFORMATION

Part Number	Marking	Weight	Base Quantity	Packing mode
BTW67-xxx	BTW67xxx	20.0 g	25	Bulk
BTW69-xxx	BTW69xxx	4.5 g	120	Bulk

Note: xxx = voltage

Fig. 1: Maximum average power dissipation versus average on-state current.

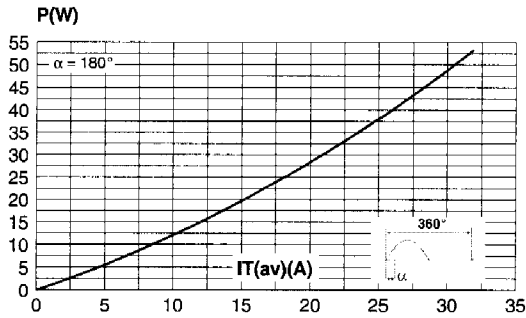


Fig. 2: Average and D.C. on-state current versus case temperature.

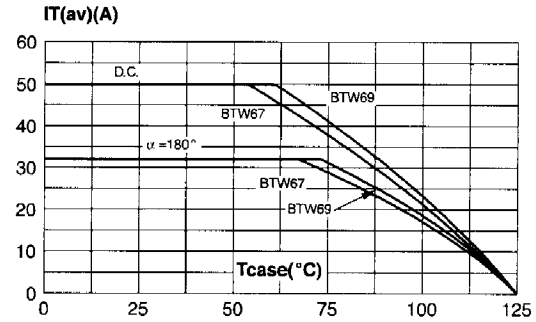


Fig. 3: Relative variation of thermal impedance versus pulse duration.

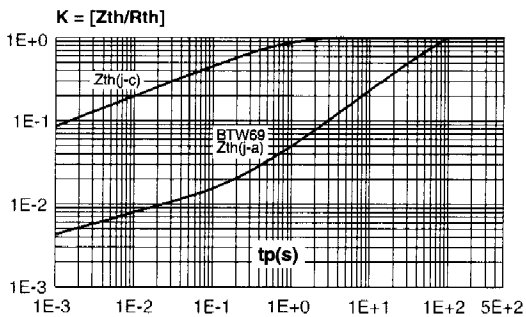


Fig. 4: Relative variation of gate trigger current, holding current and latching current versus junction temperature.

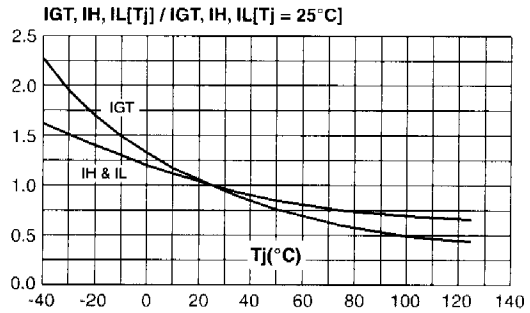


Fig. 5: Surge peak on-state current versus number of cycles.

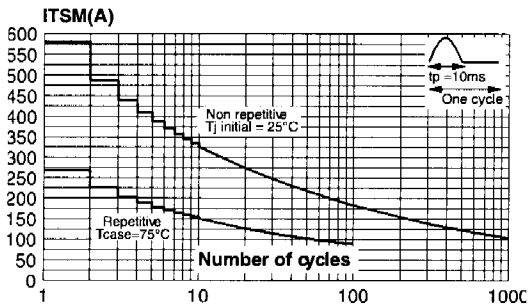
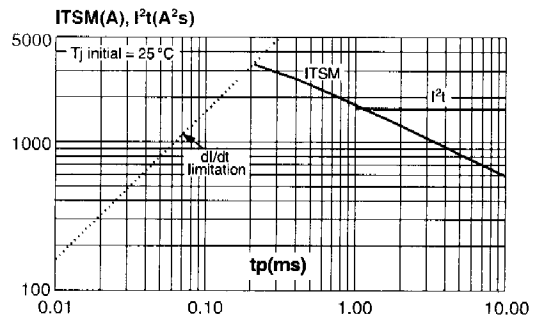
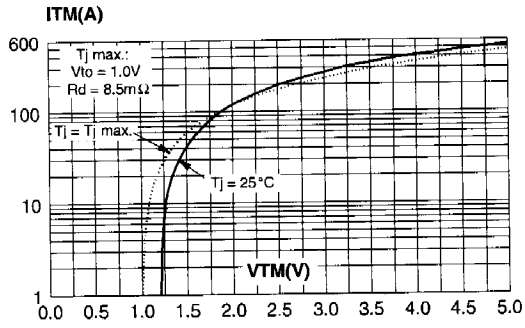


Fig. 6: Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10\text{ms}$ , and corresponding value of  $I^2t$ .



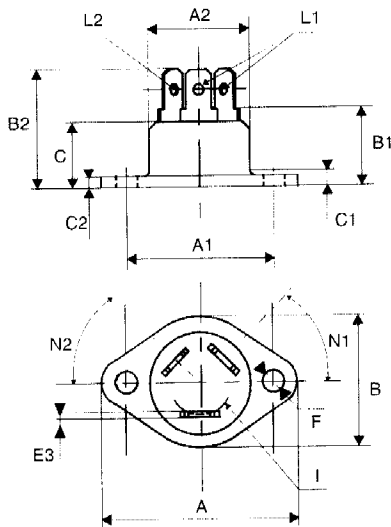
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Fig. 7: On-state characteristics (maximum values).



## PACKAGE MECHANICAL DATA

RD91 (Plastic)



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A		40.00		1.575
A1	29.90	30.30	1.177	1.193
A2		22.00		0.867
B		27.00		1.063
B1	13.50	16.50	0.531	0.650
B2		24.00		0.945
C		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°