

## RS1608 Series 16A TRIACs

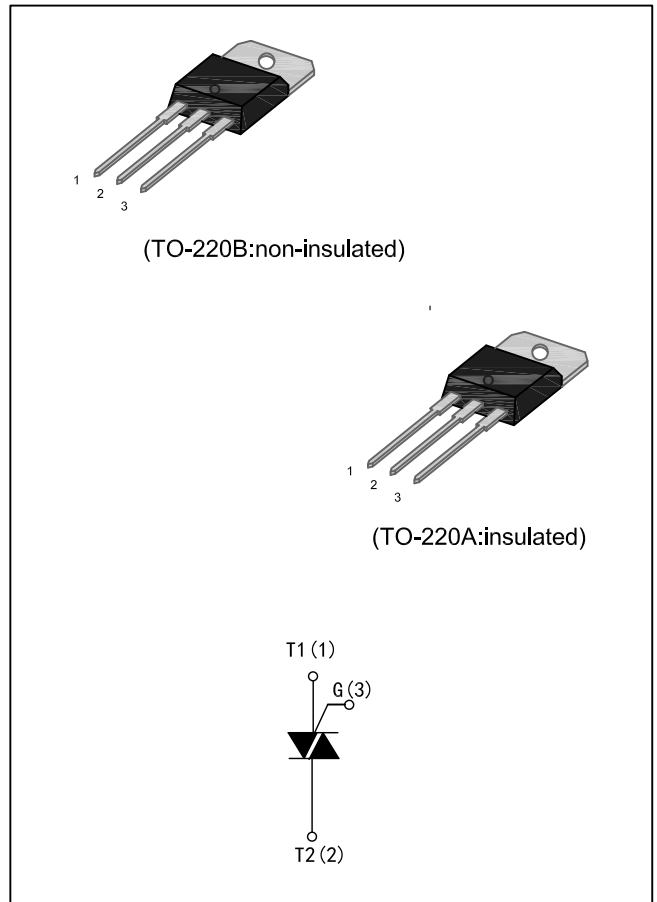
### DESCRIPTION :

High current density due to double mesa technology, SIPOS and Glass Passivation.

RS1608A/B series triacs is suitable for general purpose AC switching, They can be used as an ON/OFF function in applications such as static relays, heating regulation, induction motor starting circuits...or for phase control operation, light dimmers, motor speed controllers.

RS1608A/B-SW -CW -BW are 3 quadrants triacs, They are specially recommended for use on inductive loads.

RS1608A are isolated in internal, they provide a 2500V RMS isolation voltage from all three terminals to external heat sink.



### MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	16	A
$V_{DRM}/V_{RRM}$	600 and 800	V
$V_{TM}$	1.55	V

### ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Storage junction temperature range	$T_{stg}$	-40 to +150	°C
Operating junction temperature range	$T_j$	-40 to +125	°C
Repetitive Peak Off-state Voltage	$T_j=25^\circ\text{C}$	$V_{DRM}$	600and800
Repetitive Peak Reverse Voltage	$T_j=25^\circ\text{C}$	$V_{RRM}$	600and800
Non repetitive Surge Peak Off-state Voltage	$t_p=10\text{ms}, T_j=25^\circ\text{C}$	$V_{DSM}$	700and900
Non repetitive Peak Reverse Voltage		$V_{RSM}$	700and900
RMS on-state current (full sine wave)	RS1608B $T_c=100^\circ\text{C}$	$I_{T(RMS)}$	16
	RS1608A $T_c=86^\circ\text{C}$		
Non repetitive surge peak on-state current (full cycle, $T_j=25^\circ\text{C}$ )	$f = 60\text{ Hz}$ $t = 16.7\text{ms}$	$I_{TSM}$	168
	$f = 50\text{ Hz}$ $t = 20\text{ms}$		160
$I^2t$ Value for fusing	$t_p=10\text{ms}$	$I^2t$	144
Critical rate of rise of on-state current ( $I_G=2 \times I_{GT}, t_r \leq 100\text{ ns}, f=120\text{Hz}, T_j=125^\circ\text{C}$ )	$di/dt$	50	A/ $\mu\text{s}$
Peak gate current ( $t_p=20\mu\text{s}, T_j=125^\circ\text{C}$ )	$I_{GM}$	4	A
Peak Gate Power Dissipation ( $t_p=20\mu\text{s}, T_j=125^\circ\text{C}$ )	$P_{GM}$	10	W
Average gate power dissipation ( $T_j=125^\circ\text{C}$ )	$P_{G(AV)}$	1	W

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

## ● 3 Quadrants

Symbol	Test Condition	Quadrant		RS1608				Unit
				TW	SW	CW	BW	
I <sub>GT</sub>	V <sub>D</sub> =12V R <sub>L</sub> =33Ω	I-II-III	MAX.	5	10	35	50	mA
V <sub>GT</sub>		I-II-III	MAX.	1.3				V
V <sub>GD</sub>	V <sub>D</sub> =V <sub>DRM</sub> R <sub>L</sub> =3.3KΩ T <sub>j</sub> =125°C	I-II-III	MIN.	0.2				V
I <sub>L</sub>	I <sub>G</sub> =1.2I <sub>GT</sub>	I-III	MAX.	15	20	50	70	mA
		II	MAX.	25	35	60	80	mA
I <sub>H</sub>	I <sub>T</sub> =500mA		MAX.	10	15	40	60	mA
dV/dt	V <sub>D</sub> =67%V <sub>DRM</sub> gate open T <sub>j</sub> =125°C		MIN.	20	40	400	1000	V/μs
(dI/dt) <sub>c</sub>	(dV/dt) <sub>c</sub> =0.1V/μs T <sub>j</sub> =125°C		MIN.	3.5	8.5	---	---	A/ms
	(dV/dt) <sub>c</sub> =10V/μs T <sub>j</sub> =125°C			1.0	3.0	---	---	
	Without snubber T <sub>j</sub> =125°C			---	---	8.5	14	

## ● 4 Quadrants

Symbol	Test Condition	Quadrant		RS1608		Unit
				C	B	
I <sub>GT</sub>	V <sub>D</sub> =12V R <sub>L</sub> =33Ω	I-II-III IV	MAX.	25 50	50 100	mA
V <sub>GT</sub>		ALL	MAX.	1.3		V
V <sub>GD</sub>	V <sub>D</sub> =V <sub>DRM</sub> R <sub>L</sub> =3.3KΩ T <sub>j</sub> =125°C	ALL	MIN.	0.2		V
I <sub>L</sub>	I <sub>G</sub> =1.2I <sub>GT</sub>	I-III-IV	MAX.	40	50	mA
		II	MAX.	80	100	mA
I <sub>H</sub>	I <sub>T</sub> =500mA		MAX.	25	50	mA
dV/dt	V <sub>D</sub> =67%V <sub>DRM</sub> gate open T <sub>j</sub> =125°C		MIN.	200	400	V/μs
(dV/dt) <sub>c</sub>	(dI/dt) <sub>c</sub> =7A/ms T <sub>j</sub> =125°C		MIN.	5	10	V/μs

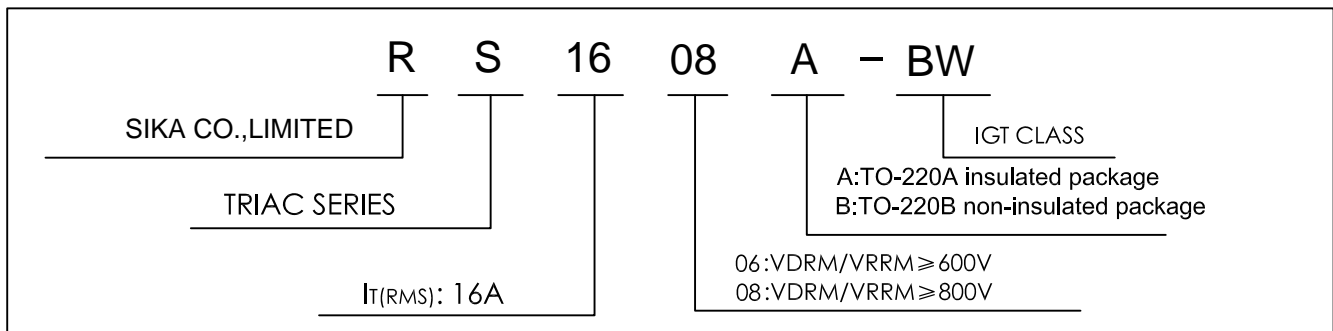
## STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX.)	Unit
$V_{TM}$	$I_{TM}=22.5A, t_p=380\mu s$	$T_j=25^\circ C$	1.55	V
$I_{DRM}$ $I_{RRM}$	$V_D=V_{DRM} V_R=V_{RRM}$	$T_j=25^\circ C$	5	$\mu A$
		$T_j=150^\circ C$	2	mA

## THERMAL RESISTANCES

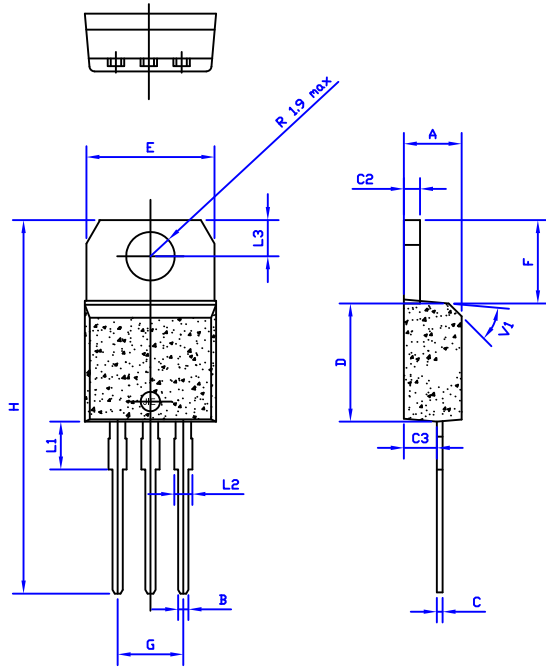
Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to Case(AC)	TO-220B	2.1	$^\circ C/W$
		TO-220A	1.2	
$R_{th(j-a)}$	Junction to ambient ( $S=1cm^2$ )	TO-220A	60	$^\circ C/W$
		TO-220B	60	

## ORDERING INFORMATION



PACKAGE MECHANICAL DATA

TO-220A insulated package and TO-220B non-insulated package



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.4		4.6	0.173		1.181
B	0.61		0.88	0.024		0.034
C	0.46		0.70	0.018		0.027
C2	1.23		1.32	0.048		0.051
C3	2.4		2.72	0.094		0.107
D	8.6		9.7	0.338		0.382
E	9.8		10.4	0.386		0.409
F	6.2		6.6	0.244		0.259
G	4.8		5.4	0.189		0.213
H	28.0		29.8	11.0		11.7
L1		3.75			0.147	
L2	1.14		1.7	0.044		0.066
L3	2.65		2.95	0.104		0.116
V1		40°			40°	

FIG.1: Maximum power dissipation versus RMS on-state current (full cycle)

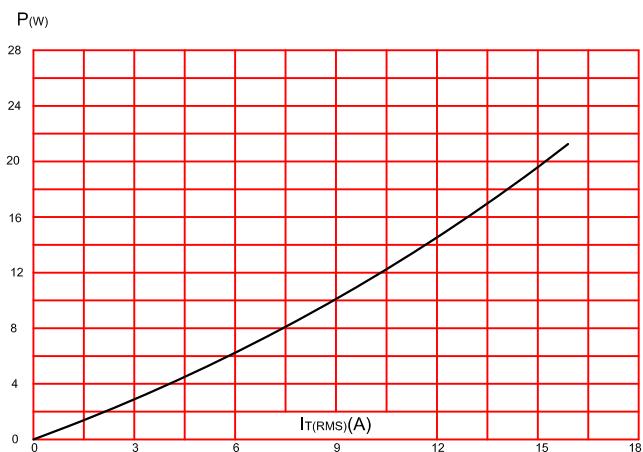


FIG.2: RMS on-state current versus case temperature (full cycle)

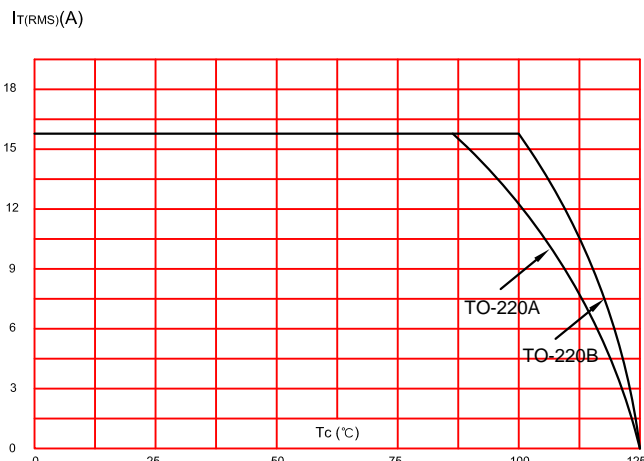


FIG.3: On-state characteristics (maximum values).

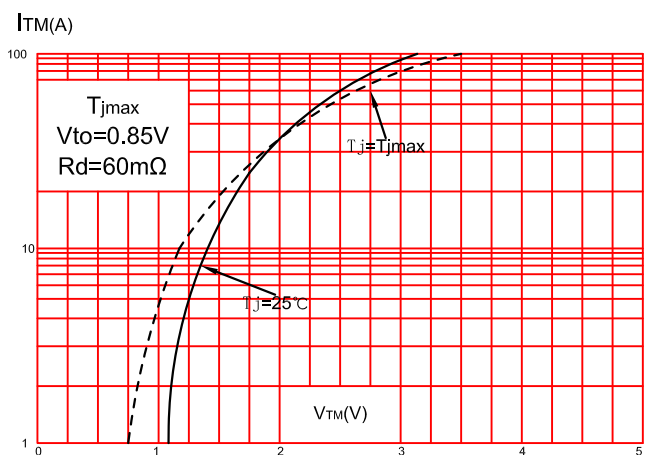


FIG.4: Surge peak on-state current versus number of cycles.

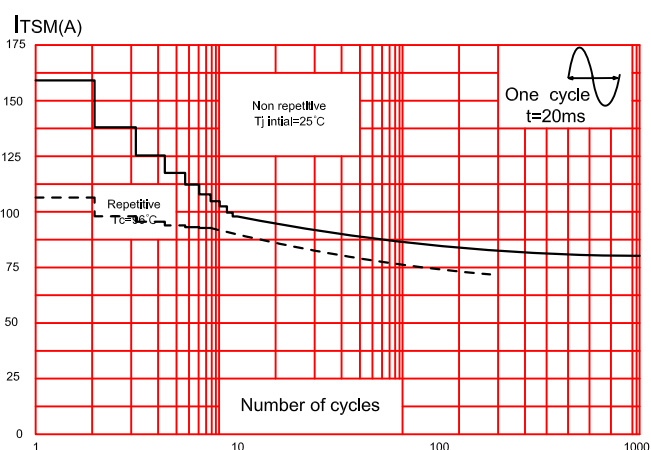


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10ms$ , and corresponding value of  $I^2t$ .

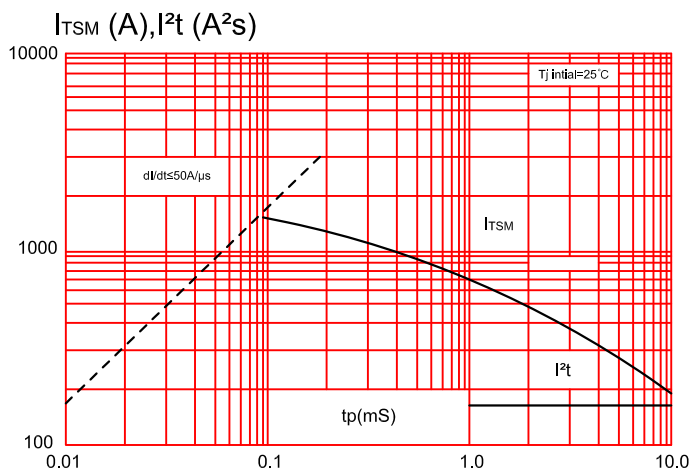
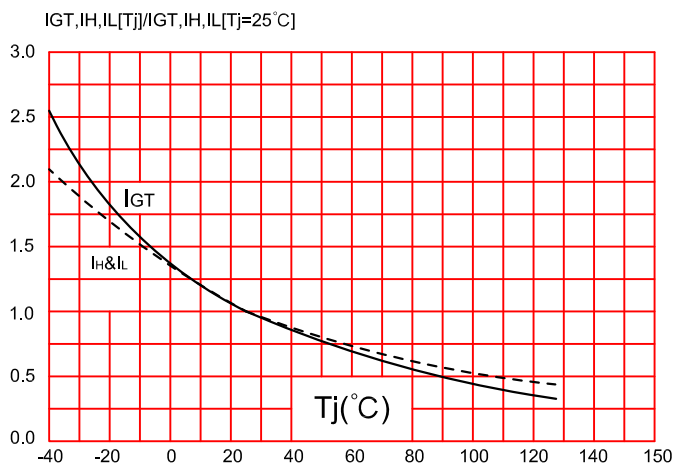


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature (typical values)



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