

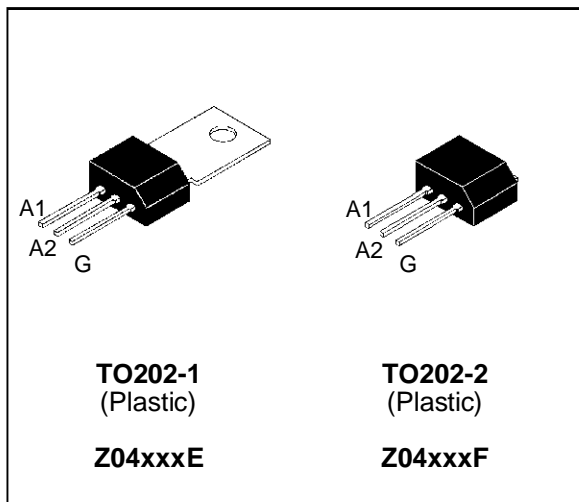
## SENSITIVE GATE TRIACS

### FEATURES

- $I_{T(RMS)} = 4A$
- $V_{DRM} = 400V$  to  $800V$
- $I_{GT} \leq 3mA$  to  $\leq 10mA$

### DESCRIPTION

The Z04xxxE/F series of triacs uses a high performance TOP GLASS PNPN technology. These parts are intended for general purpose applications where gate high sensitivity is required.



### ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	Z04xxxE/F $T_C = 75^\circ C$	4	A
		Z04xxxF $T_a = 25^\circ C$	0.95	
$I_{TSM}$	Non repetitive surge peak on-state current ( $T_j$ initial = $25^\circ C$ )	$t_p = 8.3$ ms	22	A
		$t_p = 10$ ms	20	
$I^2t$	$I^2t$ Value for fusing	$t_p = 10$ ms	2	$A^2s$
$di/dt$	Critical rate of rise of on-state current $I_G = 50$ mA $di_G/dt = 0.1$ A/ $\mu s$ .	Repetitive F = 50 Hz	10	A/ $\mu s$
		Non Repetitive	50	
$T_{stg}$ $T_j$	Storage and operating junction temperature range		- 40, + 150 - 40, + 125	$^\circ C$
TI	Maximum lead temperature for soldering during 10s at 4.5mm from case		260	$^\circ C$

Symbol	Parameter	Voltage				Unit
		D	M	S	N	
$V_{DRM}$ $V_{RRM}$	Repetitive peak off-state voltage $T_j = 125^\circ C$	400	600	700	800	V

## Z04xxxE/F

### THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth(j-a)	Junction to ambient	Z04xxxE	80	°C/W
		Z04xxxF	100	
Rth(j-c)	Junction to case for D.C		10	°C/W
Rth(j-c)	Junction to case for A.C 360° conduction angle (F=50Hz)		7.5	°C/W

### GATE CHARACTERISTICS (maximum values)

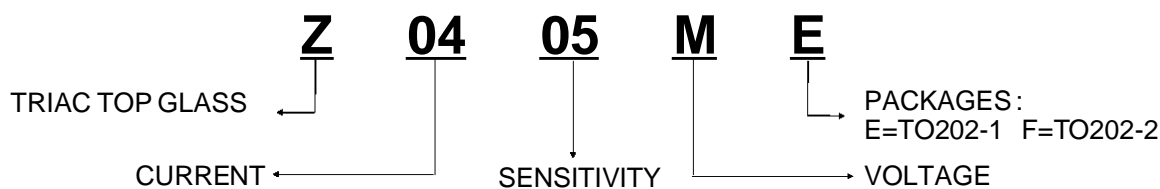
$P_G (AV) = 0.2 \text{ W}$   $P_{GM} = 3 \text{ W}$  ( $t_p = 20 \mu\text{s}$ )  $I_{GM} = 1.2 \text{ A}$  ( $t_p = 20 \mu\text{s}$ )

### ELECTRICAL CHARACTERISTICS

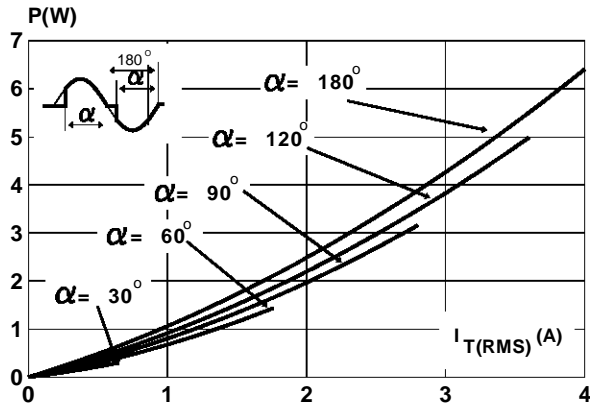
Symbol	Test Conditions	Quadrant		Sensitivity			Unit	
				02	05	09		
$I_{GT}$	$V_D = 12\text{V (DC)}$ $R_L = 33\Omega$	$T_j = 25^\circ\text{C}$	I-II-III-IV	MAX	3	5	10	mA
$V_{GT}$	$V_D = 12\text{V (DC)}$ $R_L = 33\Omega$	$T_j = 25^\circ\text{C}$	I-II-III-IV	MAX	1.5			V
$V_{GD}$	$V_D = V_{DRM}$ $R_L = 3.3\text{k}\Omega$	$T_j = 125^\circ\text{C}$	I-II-III-IV	MIN	0.2			V
tgt	$V_D = V_{DRM}$ $I_G = 40\text{mA}$ $I_T = 5.5\text{A}$ $dI_G/dt = 0.5\text{A}/\mu\text{s}$	$T_j = 25^\circ\text{C}$	I-II-III-IV	TYP	2			$\mu\text{s}$
$I_H^*$	$I_T = 50 \text{ mA}$ Gate open	$T_j = 25^\circ\text{C}$		MAX	3	5	10	mA
$I_L$	$I_G = 1.2 I_{GT}$	$T_j = 25^\circ\text{C}$	I-III-IV	TYP	3	5	10	mA
			II	TYP	6	10	20	
$V_{TM}^*$	$I_{TM} = 5.5\text{A}$ $t_p = 380\mu\text{s}$	$T_j = 25^\circ\text{C}$		MAX	2			V
$I_{DRM}$ $I_{RRM}$	$V_D = V_{DRM}$ $V_R = V_{RRM}$	$T_j = 25^\circ\text{C}$		MAX	5			$\mu\text{A}$
		$T_j = 110^\circ\text{C}$		MAX	200			
dV/dt *	$V_D = 67\%V_{DRM}$ Gate open	$T_j = 110^\circ\text{C}$		MIN	10	20	100	V/ $\mu\text{s}$
				TYP	20	50	150	
(dV/dt)c *	(dl/dt)c = 0.55 A/ms	$T_j = 110^\circ\text{C}$		MIN	1	1	2	V/ $\mu\text{s}$
	(dl/dt)c = 1.8 A/ms			TYP	1	1	2	

\* For either polarity of electrode A<sub>2</sub> voltage with reference to electrode A<sub>1</sub>

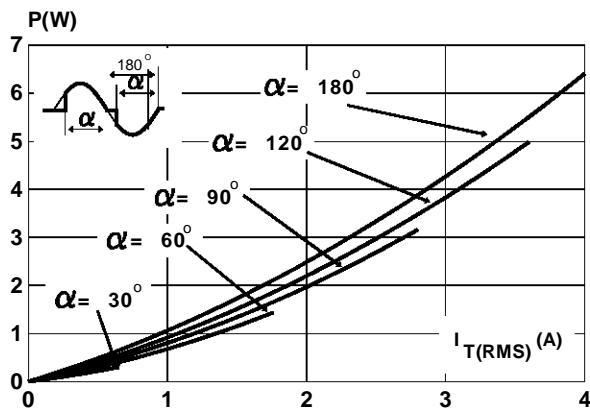
### ORDERING INFORMATION



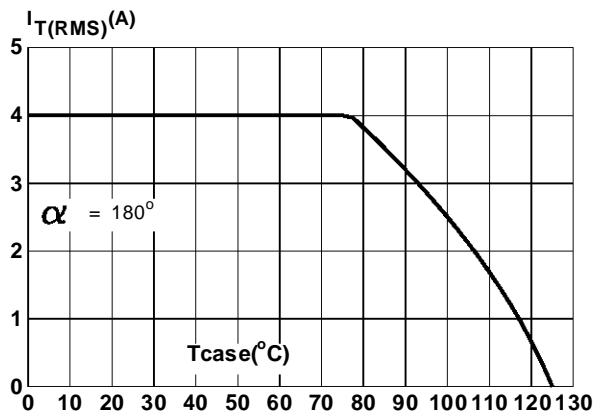
**Fig.1** : Maximum RMS power dissipation versus RMS on-state current.



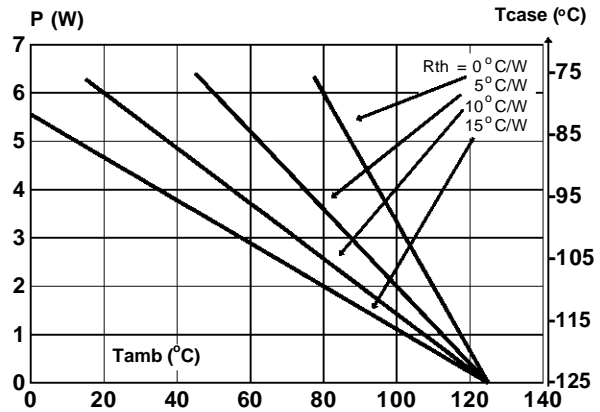
**Fig.3** : Maximum RMS power dissipation versus RMS on-state current.



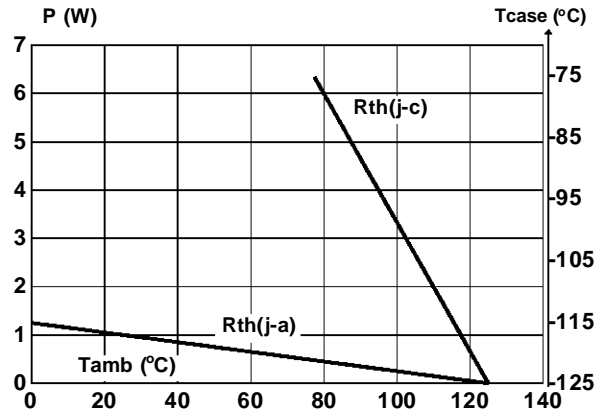
**Fig.5** : RMS on-state current versus case temperature (TO202-1).



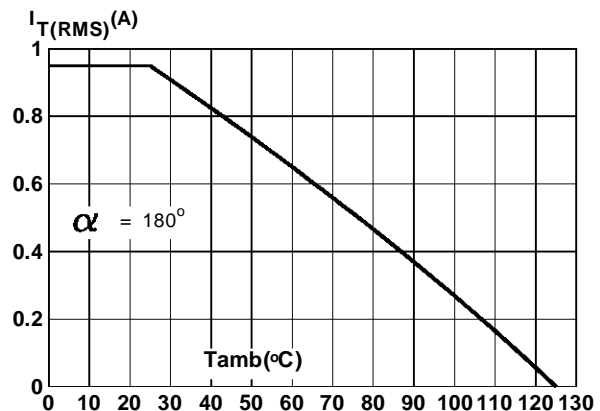
**Fig.2** : Correlation between maximum RMS power dissipation and maximum allowable temperature (Tamb and Tcase) for different thermal resistances heatsink + contact (TO202-1).



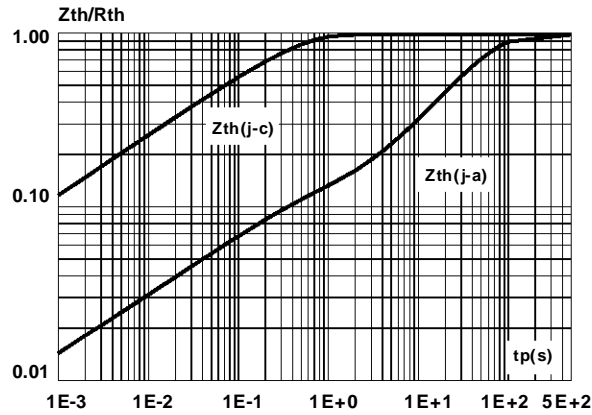
**Fig.4** : Correlation between maximum RMS power dissipation and maximum allowable temperature (Tamb and Tcase) (TO202-2).



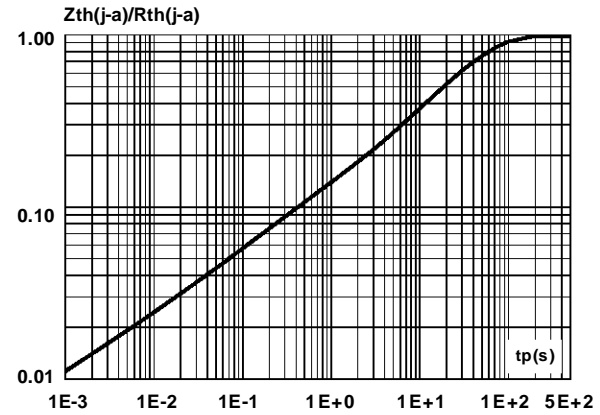
**Fig.6** : RMS on-state current versus case temperature (TO202-2).



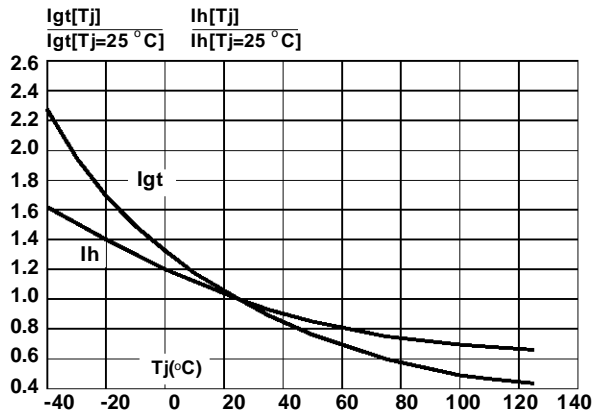
**Fig.7** : Relative variation of thermal impedance versus pulse duration (TO202-1).



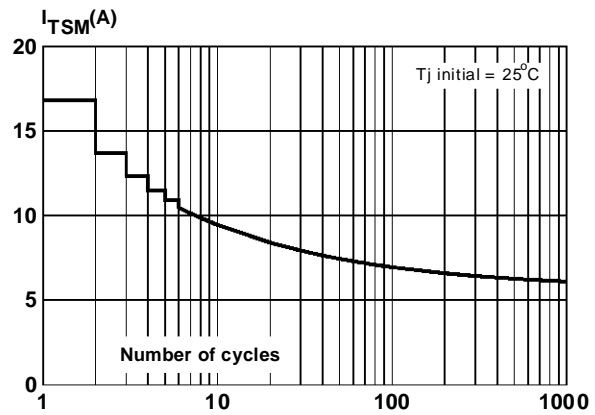
**Fig.8** : Relative variation of thermal impedance junction to ambient versus pulse duration (TO202-2).



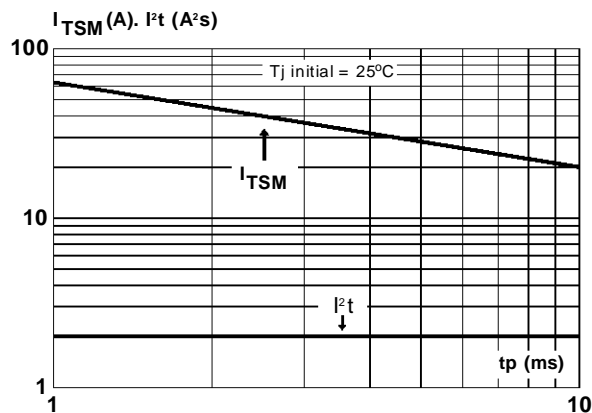
**Fig.9** : Relative variation of gate trigger current and holding current versus junction temperature.



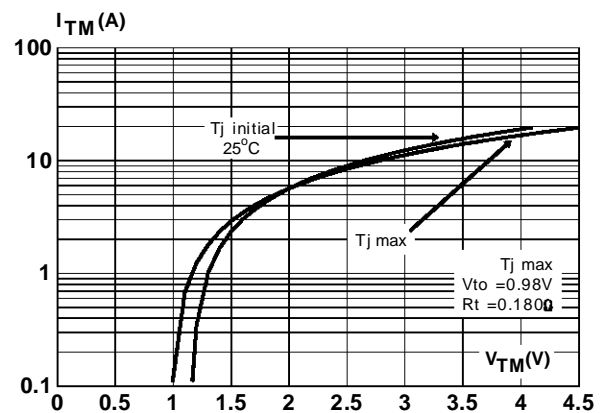
**Fig.10** : Non repetitive surge peak on-state current versus number of cycles.



**Fig.11** : Non repetitive surge peak on-state current for a sinusoidal pulse with width :  $tp \leq 10ms$ , and corresponding value of  $I^2t$ .



**Fig.12** : On-state characteristics (maximum values).



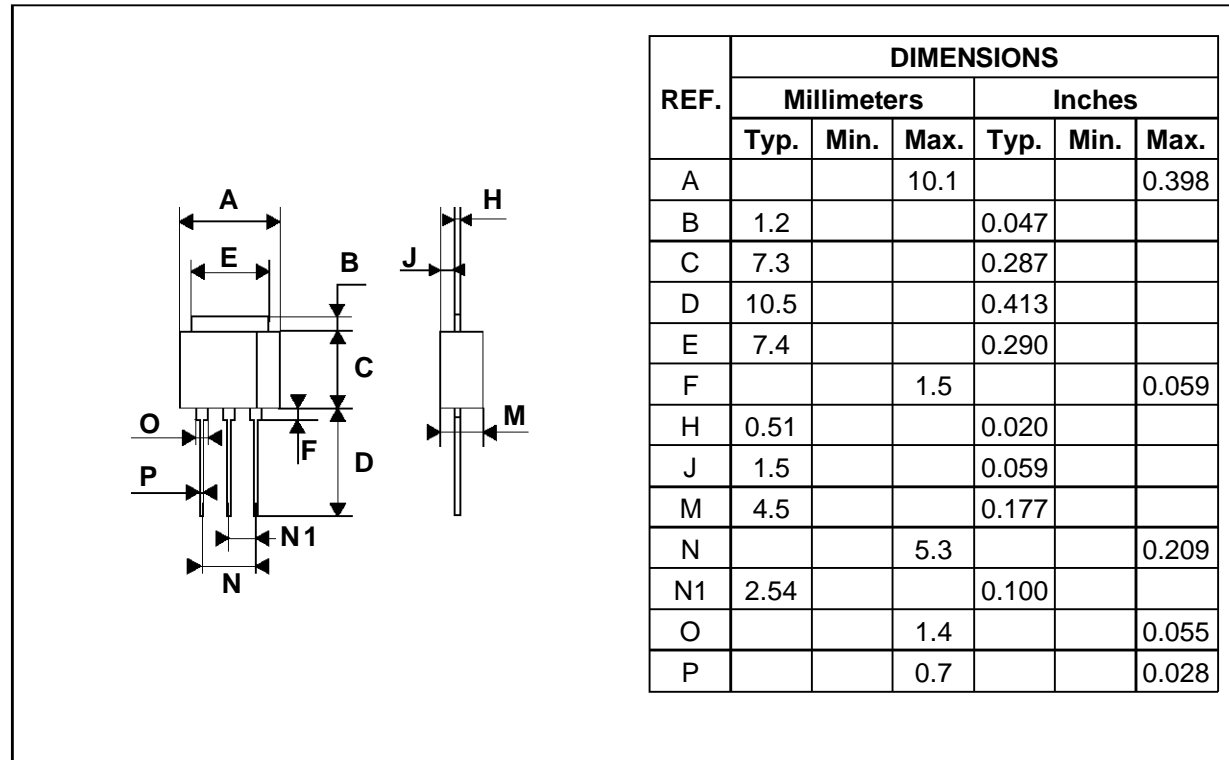
**PACKAGE MECHANICAL DATA**  
TO202-1 (Plastic)

REF.	DIMENSIONS					
	Millimeters			Inches		
	Typ.	Min.	Max.	Typ.	Min.	Max.
A			10.1			0.398
B	13.7			0.540		
C	7.3			0.287		
D	10.5			0.413		
F			1.5			0.059
G	3.2			0.126		
H	0.51			0.020		
I		3.16	3.20		0.124	0.126
J	1.5			0.059		
M	4.5			0.177		
N			5.3			0.209
N1	2.54			0.100		
O			1.4			0.055
P			0.7			0.028

Marking : type number  
Weight : 1.4 g

**Z04xxxE/F**

**PACKAGE MECHANICAL DATA**  
TO202-2 (Plastic)



Marking : type number  
Weight : 1.0 g

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