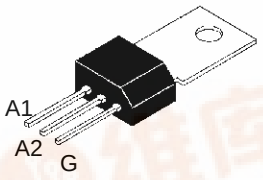
SGS-THOMSON MICROELECTRONICS

Z0410xE/F

STANDARD TRIACS

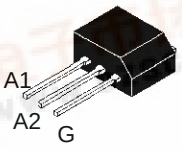
FEATURES

- $I_{T(RMS)}$ = 4A
- V_{DRM} = 400V to 800V
- $I_{GT} \leq 25mA$



TO202-1
(Plastic)

Z0410xE



TO202-2
(Plastic)

Z0410xF

DESCRIPTION

The Z0410xE/F series of triacs uses a high performance TOP GLASS PNPN technology. These parts are intended for general purpose switching and phase control applications.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	Z0410xE/F	Tc= 75 °C	4	A
		Z0410xF	Ta= 25 °C	0.95	
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25°C)		tp = 8.3 ms	22	A
			tp = 10 ms	20	
I^2t	I^2t Value for fusing		tp = 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/µs.		Repetitive F = 50 Hz	10	A/µs
			Non Repetitive	50	
T_{stg} T_j	Storage and operating junction temperature range			- 40, + 150 - 40, + 125	°C
Tl	Maximum lead temperature for soldering during 10s at 4.5mm from case			260	°C

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

Z0410xE/F

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth(j-a)	Junction to ambient	Z0410xE	80	°C/W
		Z0410xF	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 W P_{GM} = 3 W (tp = 20 µs) I_{GM} = 1.2 A (tp = 20 µs)

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Sensitivity	Unit
					10	
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj= 25°C	I-II-III-IV	MAX	25	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj= 25°C	I-II-III-IV	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj= 125°C	I-II-III-IV	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 40mA I_T = 5.5A dI_G/dt = 0.5A/µs	Tj= 25°C	I-II-III-IV	TYP	2	µs
I_H *	I_T= 50 mA Gate open	Tj= 25°C		MAX	25	mA
I_L	I_G= 1.2 I_{GT}	Tj= 25°C	I-III-IV	TYP	25	mA
			II	TYP	50	
V_{TM} *	I_{TM}= 5.5A tp= 380µs	Tj= 25°C		MAX	2	V
I_{DRM} I_{RRM}	V_D = V_{DRM} V_R = V_{RRM}	Tj= 25°C		MAX	5	µA
		Tj= 110°C		MAX	200	
dV/dt *	VD=67%V_{DRM} Gate open	Tj= 110°C		MIN	200	V/µs
				TYP	400	
(dV/dt)c *	(dI/dt)c = 1.8 A/ms	Tj= 110°C		MIN	5	V/µs

* For either polarity of electrode A_2 voltage with reference to electrode A_1

ORDERING INFORMATION

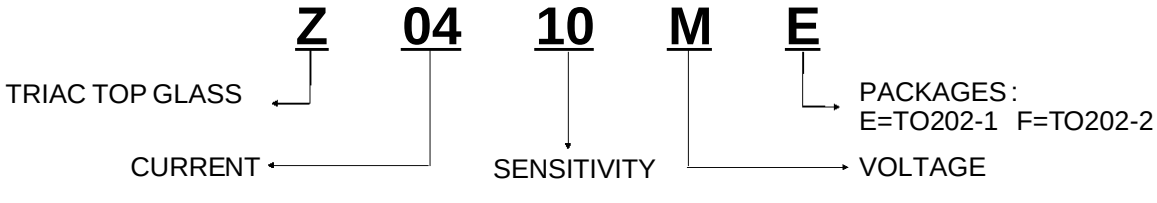


Fig.1 : Maximum RMS power dissipation versus RMS on-state current.

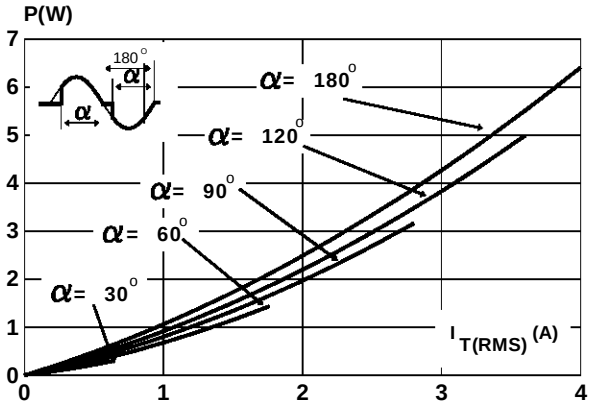


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperature (Tamb and Tcase) for different thermal resistances heatsink + contact (TO202-1).

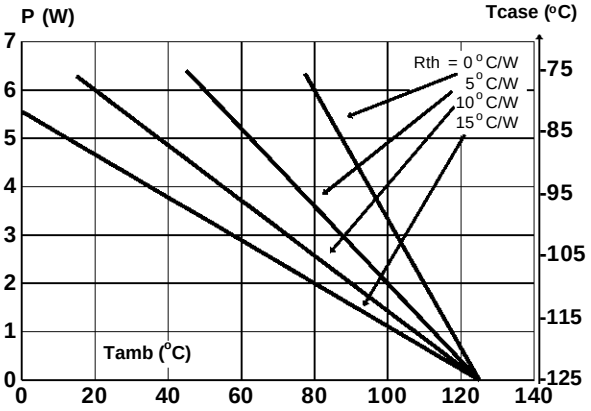


Fig.3 : Maximum RMS power dissipation versus RMS on-state current.

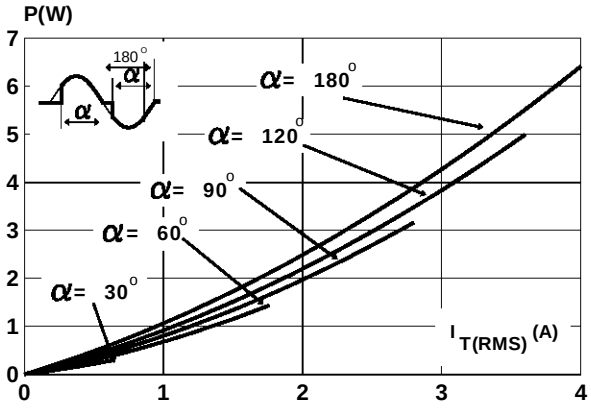


Fig.4 : Correlation between maximum RMS power dissipation and maximum allowable temperature (Tamb and Tcase) (TO202-2).

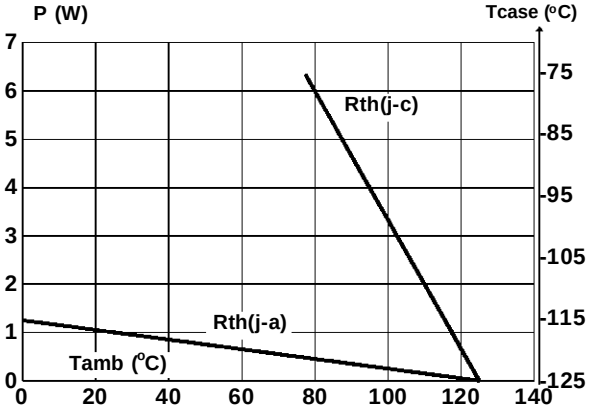


Fig.5 : RMS on-state current versus case temperature (TO202-1).

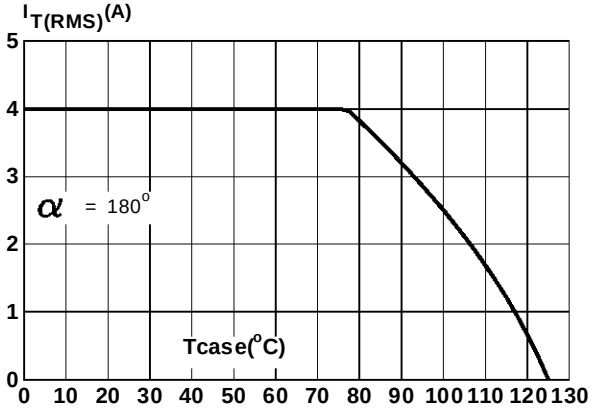


Fig.6 : RMS on-state current versus case temperature (TO202-2).

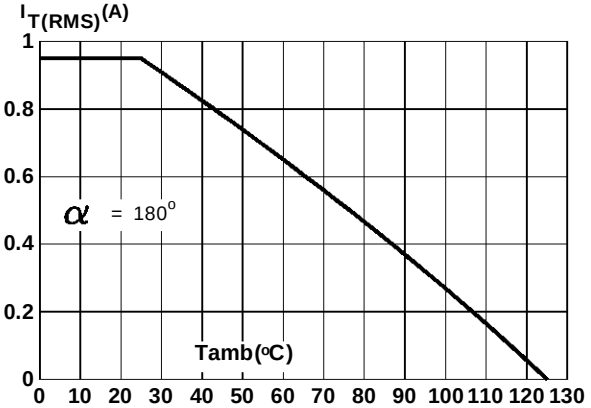


Fig.6 : Relative variation of thermal impedance versus pulse duration (TO202-1).

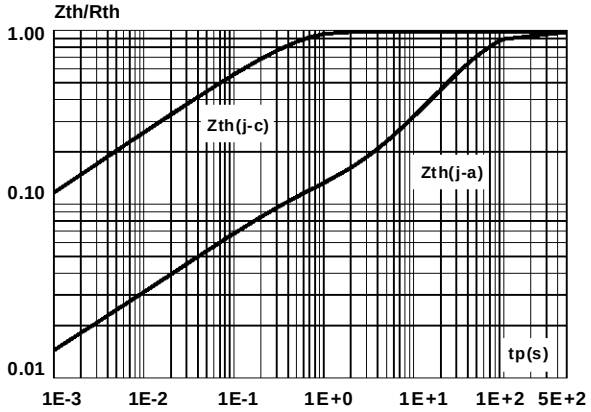


Fig.7 : Relative variation of thermal impedance junction to ambient versus pulse duration (TO202-2).

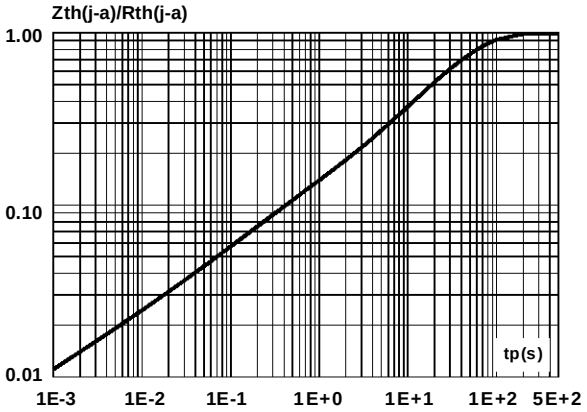


Fig.9 : Relative variation of gate trigger current and holding current versus junction temperature.

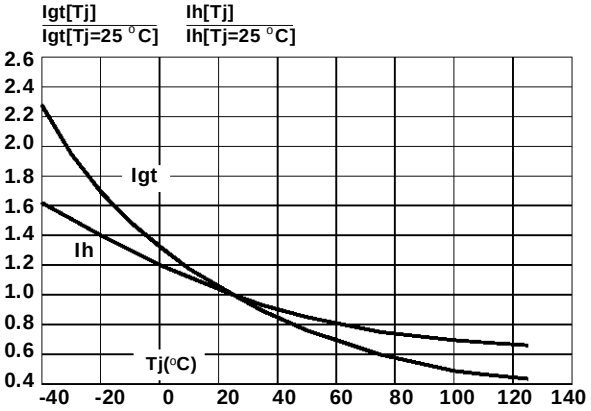


Fig.10 : Non repetitive surge peak on-state current versus number of cycles.

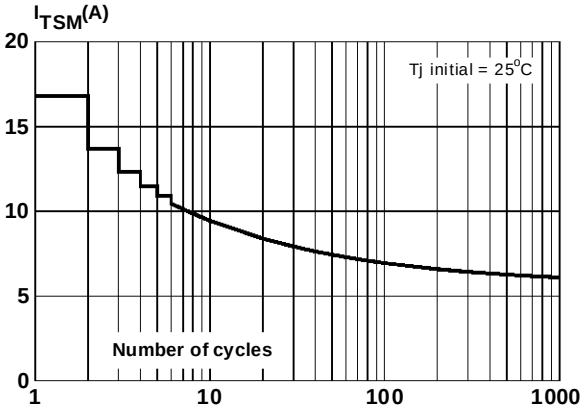


Fig.11 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : tp ≤ 10ms, and corresponding value of I^2t.

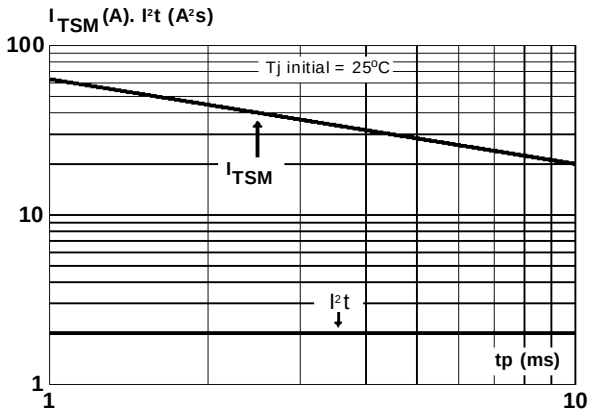
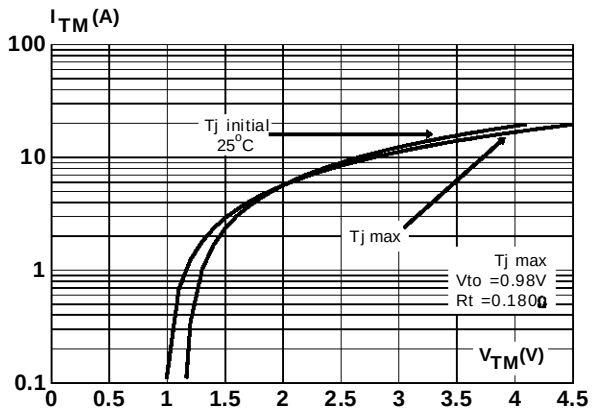
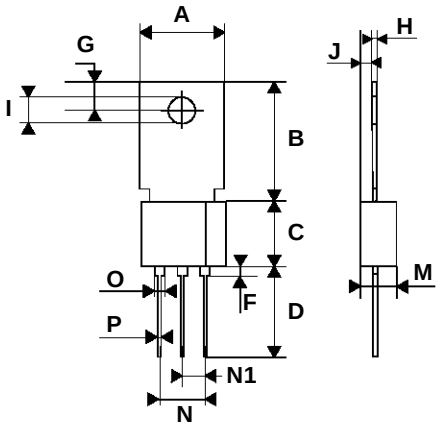


Fig.12 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA
TO202-1 (Plastic)

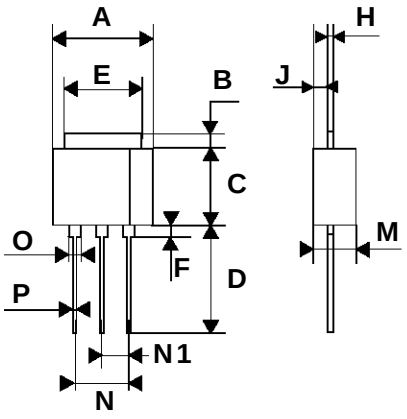


REF.	DIMENSIONS					
	Millimeters			Inches		
	Typ.	Min.	Max.	Typ.	Min.	Max.
A			10.1			0.398
B	13.7			0.540		
C	7.3			0.287		
D	10.5			0.413		
F			1.5			0.059
G	3.2			0.126		
H	0.51			0.020		
I		3.16	3.20		0.124	0.126
J	1.5			0.059		
M	4.5			0.177		
N			5.3			0.209
N1	2.54			0.100		
O			1.4			0.055
P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

Marking : type number
Weight : 1.4 g

PACKAGE MECHANICAL DATA

TO202-2 (Plastic)



REF.	DIMENSIONS					
	Millimeters			Inches		
	Typ.	Min.	Max.	Typ.	Min.	Max.
A			10.1			0.398
B	1.2			0.047		
C	7.3			0.287		
D	10.5			0.413		
E	7.4			0.290		
F			1.5			0.059
H	0.51			0.020		
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 : 1.0 g