

Description

The Z00607 is suitable for low power AC switching applications. Typical applications include home appliances (electrovalve, pump, door lock, small lamp control), fan speed controllers,...

Thanks to the low gate triggering current these triacs can be driven directly by microcontrollers.

Features

- On-state rms current = 0.8 A
- Repetitive peak off-state voltage = 600 V
- Gate triggering current = 5 mA

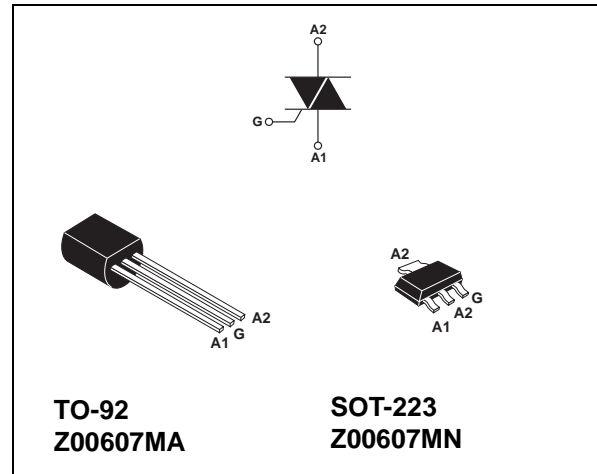
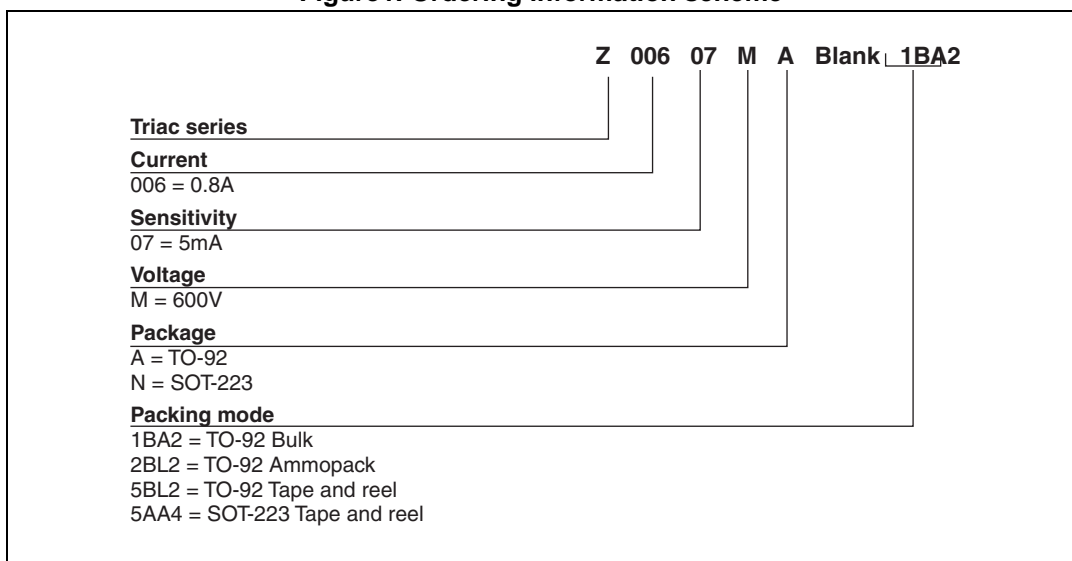


Figure1. Ordering information scheme



1 Characteristics

Table 1. Absolute maximum ratings

Symbol	Parameter		Value	Unit	
$I_{T(RMS)}$	On-state rms current (full sine wave)	SOT-223	$T_{tab} = 85\text{ °C}$	0.8	A
		TO-92	$T_L = 50\text{ °C}$		
I_{TSM}	Non repetitive surge peak on-state current (full cycle, T_j initial = 25 °C)	F = 50 Hz	t = 20 ms	9	A
		F = 60 Hz	t = 16.7 ms	9.5	
I^2t	I^2t Value for fusing	$t_p = 10\text{ ms}$		0.45	A ² s
dl/dt	Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$, $t_r \leq 100\text{ ns}$	F = 120 Hz	$T_j = 110\text{ °C}$	20	A/ μ s
I_{GM}	Peak gate current	$t_p = 20\text{ }\mu$ s	$T_j = 110\text{ °C}$	1	A
$P_{G(AV)}$	Average gate power dissipation		$T_j = 110\text{ °C}$	0.1	W
T_{stg} T_j	Storage junction temperature range Operating junction temperature range			- 40 to + 150 - 40 to + 110	°C

Table 2. Electrical characteristics ($T_j = 25\text{ °C}$, unless otherwise specified)

Symbol	Test Conditions	Quadrant		Value	Unit
$I_{GT}^{(1)}$	$V_D = 12\text{ V}$, $R_L = 30\text{ }\Omega$	I - II - III	MAX	5	mA
		IV		7	
V_{GT}		ALL	MAX	1.3	V
V_{GD}	$V_D = V_{DRM}$, $R_L = 3.3\text{ k}\Omega$, $T_j = 110\text{ °X}$	ALL	MIN	0.2	V
$I_H^{(2)}$	$I_T = 200\text{ mA}$		MX.	5	mA
I_L	$I_G = 1.2 I_{GT}$	I - III - IV	MAX	10	mA
		II		20	
dV/dt ⁽²⁾	$V_D = 67\% V_{DRM}$, gate open $T_j = 110\text{ °X}$		MIN	10	V/ μ s
(dV/dt) _c ⁽²⁾	$(\delta c/\delta \tau)\chi = 0.35\text{ A}/\mu\sigma$, $T_j = 110\text{ °X}$		MIN	1.5	V/ μ s

1. minimum I_{GT} is guaranteed at 5% of I_{GT} max.
2. for both polarities of A2 referenced to A1.

Table 3. Static characteristics

Symbol	Test Conditions		Value	Unit		
$V_{TM}^{(1)}$	$I_{TM} = 1.1\text{ A}$	$t_p = 380\text{ }\mu$ s	$T_j = 25\text{ °C}$	MAX.	1.5	V
$V_{to}^{(1)}$	Threshold voltage		$T_j = 110\text{ °C}$	MAX.	0.95	V
$R_d^{(1)}$	Dynamic resistance		$T_j = 110\text{ °C}$	MAX.	420	m Ω
I_{DRM} I_{RRM}	$V_{DRM} = V_{RRM} = 600\text{ V}$		$T_j = 25\text{ °C}$	MAX.	5	μ A
			$T_j = 110\text{ °C}$		0.1	mA

1. for both polarities of A2 referenced to A1.

Table 4. Thermal resistances

Symbol	Parameter		Value	Unit	
$R_{th(j-t)}$	Junction to tab (AC)	SOT-223	25	°C/W	
$R_{th(j-l)}$	Junction to lead (AC)	TO-92	60		
$R_{th(j-a)}$	Junction to ambient	$S^{(1)} = 5 \text{ cm}^2$	SOT-223	60	°C/W
			TO-92	150	

1. S = Copper surface under tab.

Figure2. Maximum power dissipation versus RMS on-state current (full cycle)

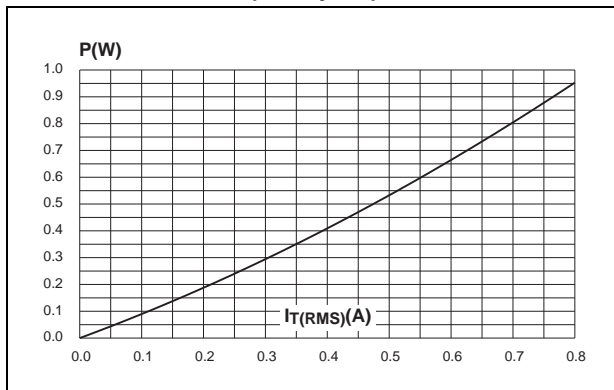


Figure3. Relative variation of gate trigger, holding and latching current versus junction temperature

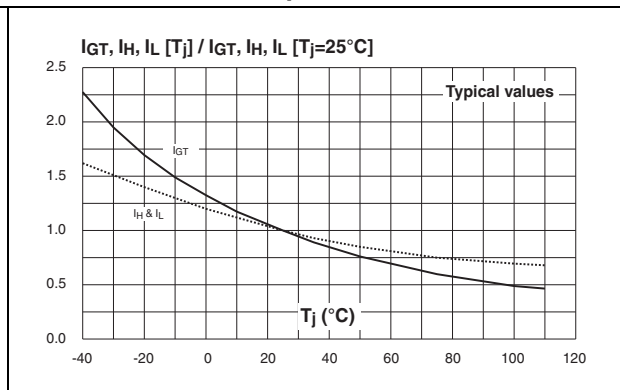


Figure4. Surge peak on-state current versus number of cycles

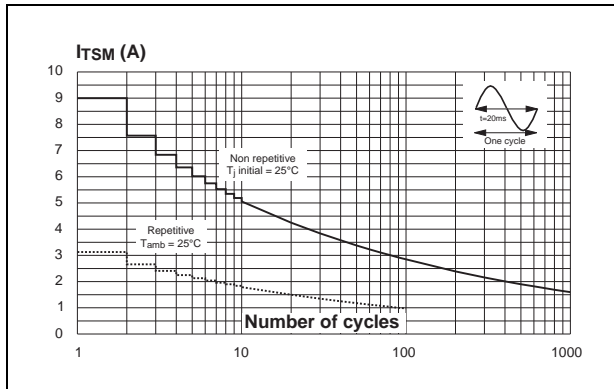


Figure5. Non-repetitive surge peak on-state current and corresponding value of I^2t

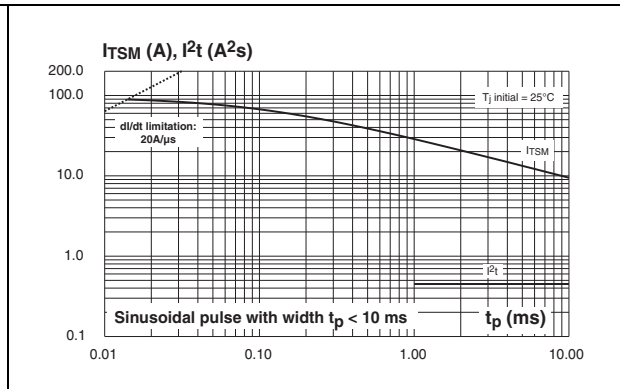


Figure6. On-state characteristics (maximum values)

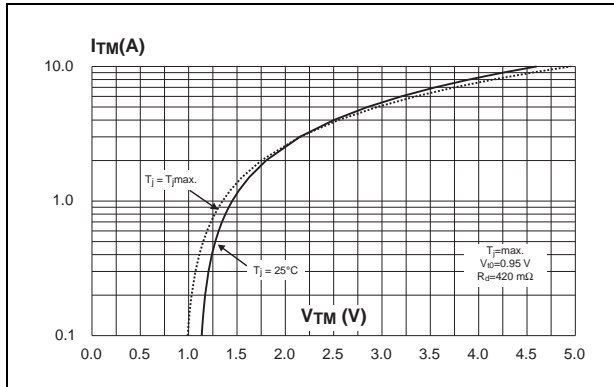


Figure7. Relative variation of critical rate of decrease of main current versus $(dV/dt)_c$ (typical values)

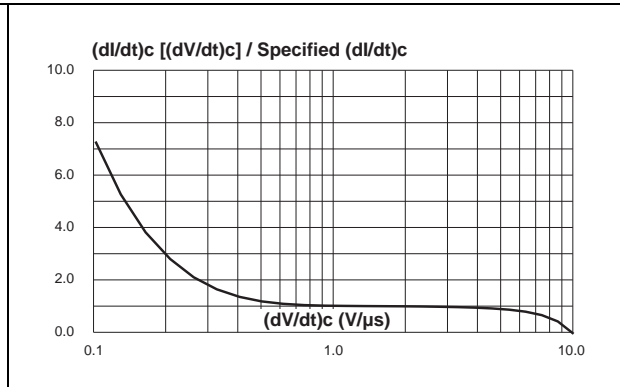


Figure8. Relative variation of critical rate of decrease of main current versus junction temperature

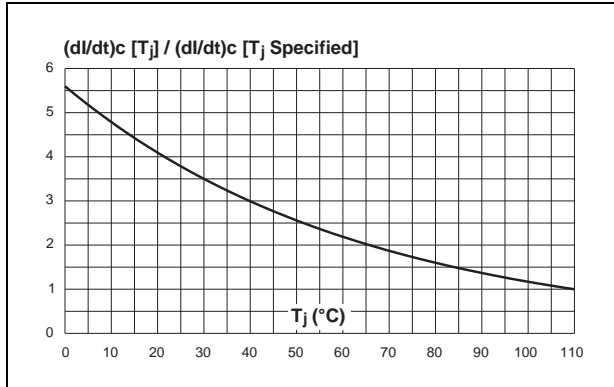


Figure9. SOT-223 Thermal resistance junction to ambient versus copper surface under tab

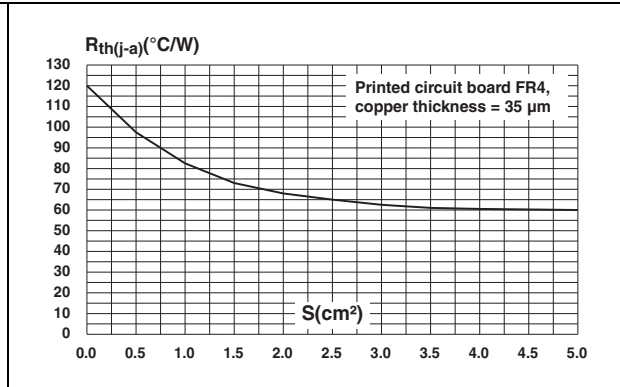


Table 5. SOT-223 dimensions

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			1.80			0.071
A1		0.02	0.10		0.001	0.004
B	0.60	0.70	0.85	0.024	0.027	0.033
B1	2.90	3.00	3.15	0.114	0.118	0.124
c	0.24	0.26	0.35	0.009	0.010	0.014
D ⁽¹⁾	6.30	6.50	6.70	0.248	0.256	0.264
e		2.3			0.090	
e1		4.6			0.181	
E ⁽¹⁾	3.30	3.50	3.70	0.130	0.138	0.146
H	6.70	7.00	7.30	0.264	0.276	0.287
V	10° max					

1. Do not include mold flash or protrusions. Mold flash or protrusions shall not exceed 0.15mm (0.006inches)

Figure 10. Footprint (dimensions in mm)

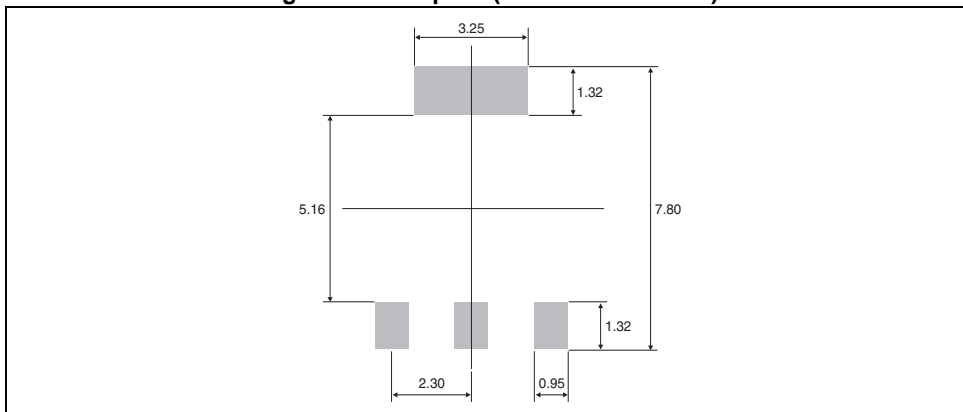


Table 6. TO-92 dimensions

Ref.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A		1.35			0.053	
B			4.70			0.185
C		2.54			0.100	
D	4.40			0.173		
E	12.70			0.500		
F			3.70			0.146
a			0.50			0.019

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