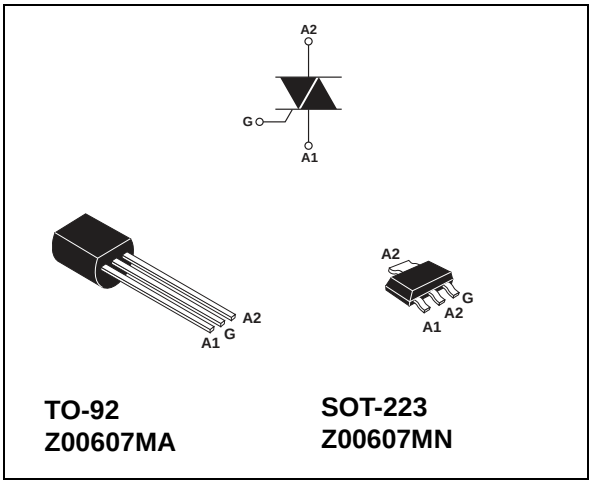
Z00607

Standard 0.8 A Triacs

Datasheet - production data



TO-92
Z00607MA

SOT-223
Z00607MN

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

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 °C	0.8	A
		TO-92	T_L = 50 °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 ms		0.45	A^2s
dI/dt	Critical rate of rise of on-state current I_G = 2 x I_{GT} , $t_r \leq 100$ ns	F = 120 Hz	T_j = 110 °C	20	A/µs
I_{GM}	Peak gate current	t_p = 20 µs	T_j = 110 °C	1	A
$P_{G(AV)}$	Average gate power dissipation		T_j = 110 °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 °C, unless otherwise specified)

Symbol	Test Conditions	Quadrant		Value	Unit
I_{GT} (1)	V_D = 12 V, R_L = 30 Ω	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 kΩ, T_j = 110 °X	ALL	MIN	0.2	V
I_H (2)	I_T = 200 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 °X		MIN	10	V/µs
(dV/dt)c (2)	(δς/δτ)χ = 0.35 A/µσ, T_j = 110 °X		MIN	1.5	V/µs

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 A t_p = 380 µs	T_j = 25 °C	MAX.	1.5	V
V_{to} (1)	Threshold voltage	T_j = 110 °C	MAX.	0.95	V
R_d (1)	Dynamic resistance	T_j = 110 °C	MAX.	420	mΩ
I_{DRM} I_{RRM}	$V_{DRM} = V_{RRM}$ = 600 V	T_j = 25 °C	MAX.	5	µA
		T_j = 110 °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 cm^2	SOT-223	60	°C/W
			TO-92	150	

1. S = Copper surface under tab.

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

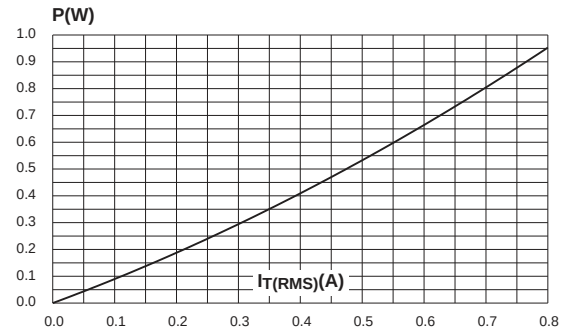


Figure 2. Relative variation of gate trigger, holding and latching current versus junction temperature

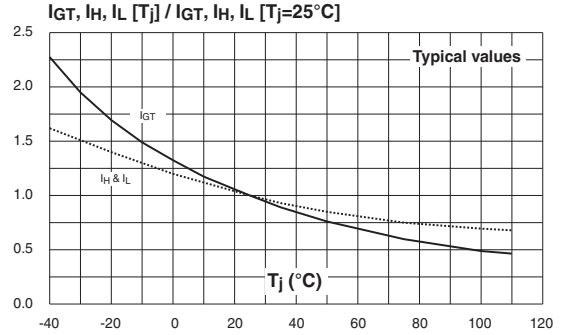


Figure 3. Surge peak on-state current versus number of cycles

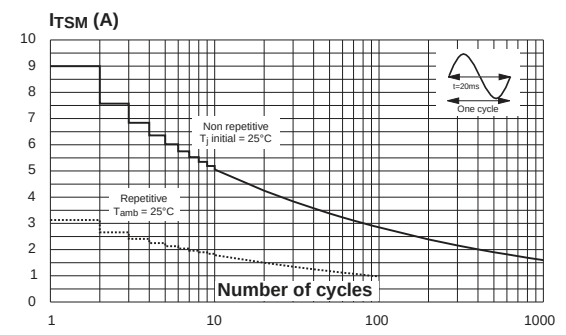


Figure 4. Non-repetitive surge peak on-state current and corresponding value of I^2t

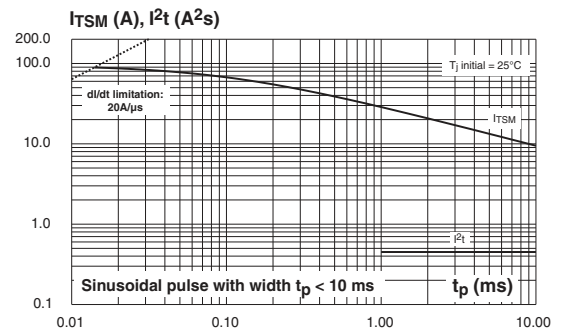


Figure 5. On-state characteristics (maximum values)

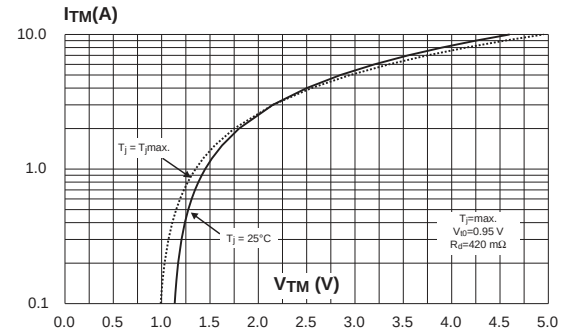


Figure 6. Relative variation of critical rate of decrease of main current versus (dV/dt)c (typical values)

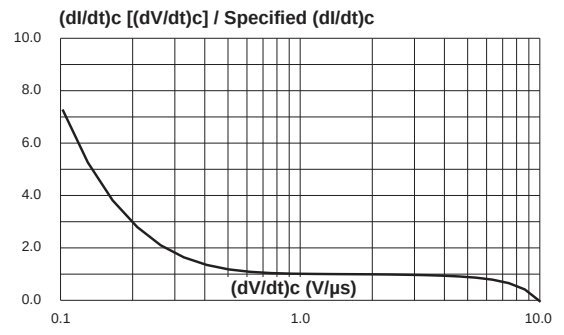


Figure 7. Relative variation of critical rate of decrease of main current versus junction temperature

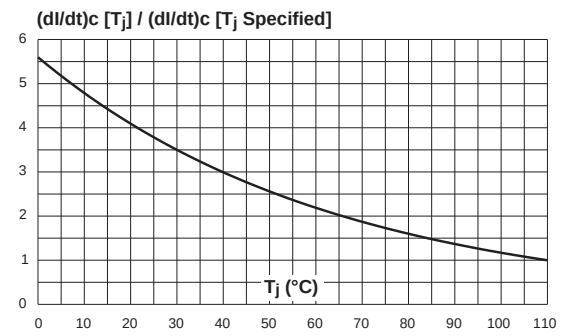
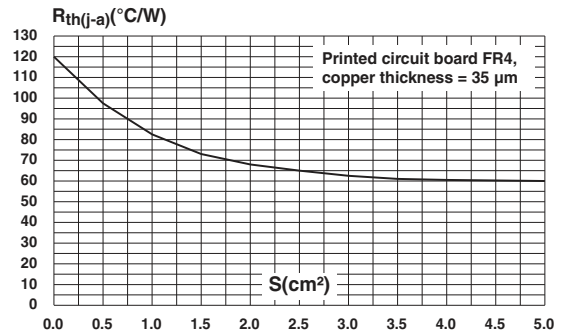
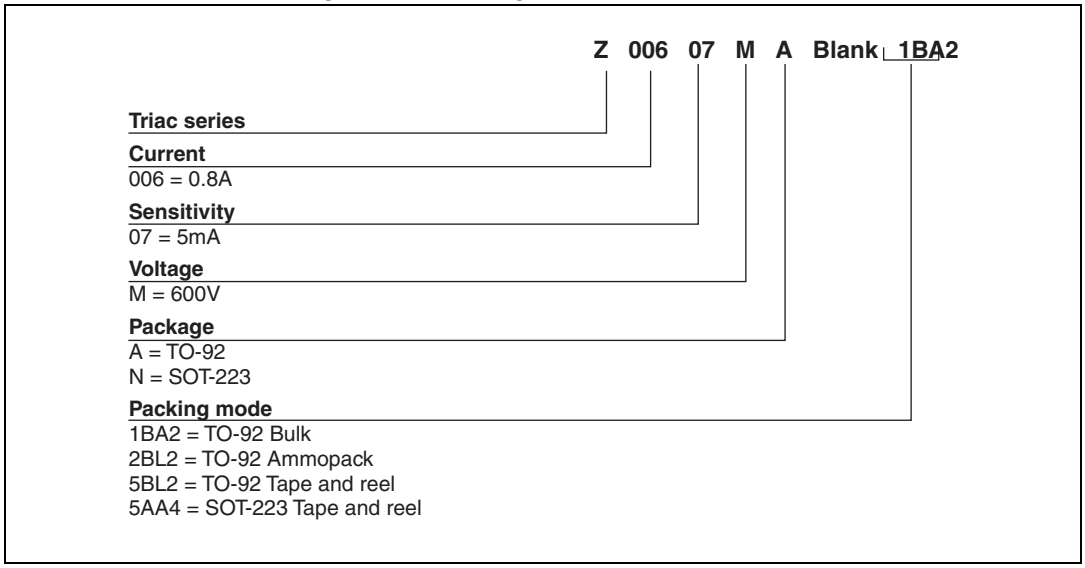


Figure 8. SOT-223 Thermal resistance junction to ambient versus copper surface under tab



2 Ordering information scheme

Figure 9. Ordering information scheme

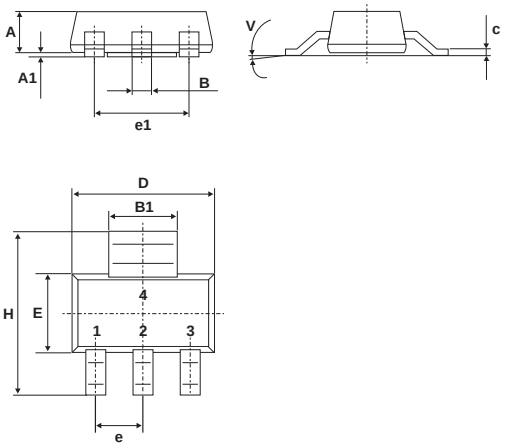


3 Packaging information

- Epoxy meets UL94, V0
- Lead-free package

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: www.st.com. ECOPACK® is an ST trademark.

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)

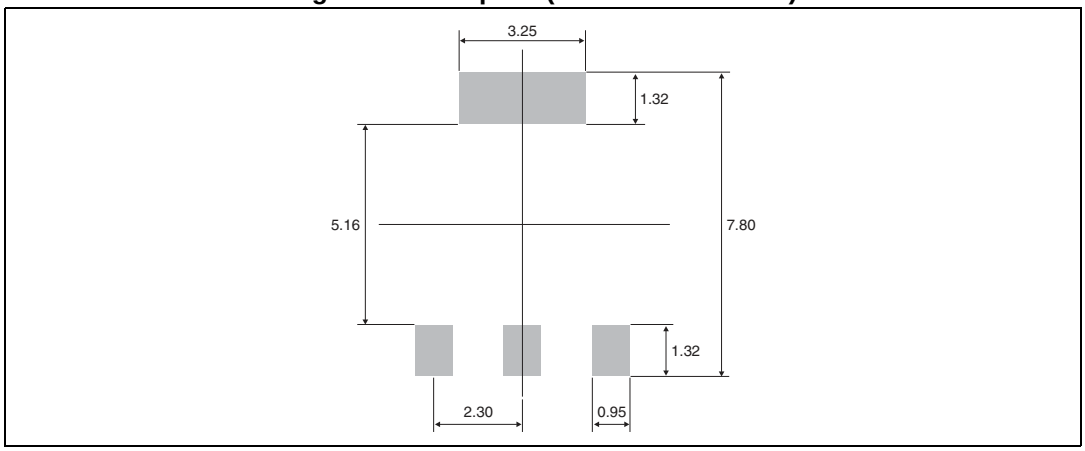
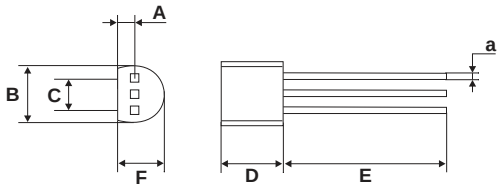


Table 6. TO-92 dimensions



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

4 Ordering information

Table 7. Ordering information

Ordering type	Marking	Package	Weight	Base quantity	Delivery mode
Z00607MA 1BA2	Z0607MA	TO-92	0.2 g	2500	Bulk
Z00607MA 2BL2	Z0607MA			2000	Ammopack
Z00607MA 5BL2	Z0607MA			2000	Tape and reel
Z00607MN 5AA4	Z06M	SOT-223	0.12 g	1000	Tape and reel

5 Revision history

Table 8. Document revision history

Date	Revision	Changes
Oct-2001	4	Last update.
25-Mar-2005	5	Package: TO-92 tape and reel delivery mode 5BL2 added.
21-Jun-2005	6	Markings updated from Z006xxxx to Z06xxxx
13-Sep-2005	7	Z00607MA 2BL2: marking corrected from 00607mA to Z0607MA
12-Apr-2007	8	Reformatted to current standard. Added SOT-223 package. Changed Tj from +125 to +110 in *Table 1*
19-Jun-2014	9	Updated marking for Z00607MN 5AA4 in *Table 7*.

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