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)

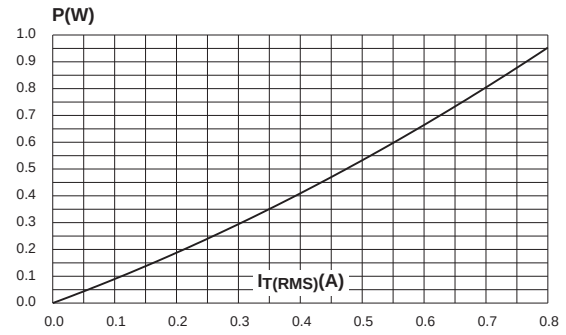


Figure 2. Relative variation of gate trigger, holding and latching current versus junction temperature

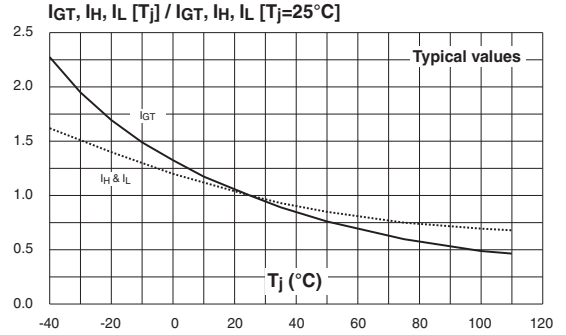


Figure 3. Surge peak on-state current versus number of cycles

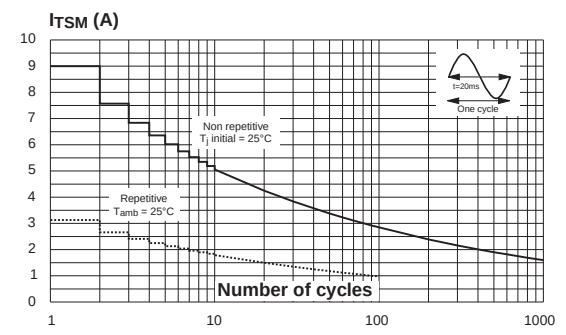


Figure 4. Non-repetitive surge peak on-state current and corresponding value of I^2t

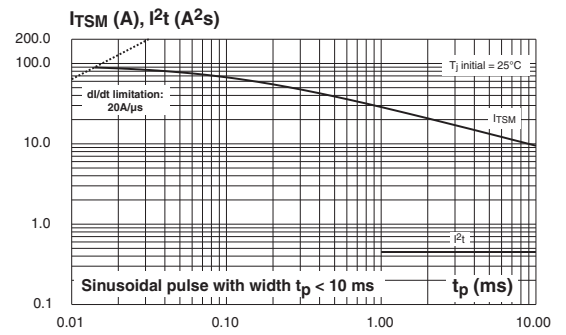


Figure 5. On-state characteristics (maximum values)

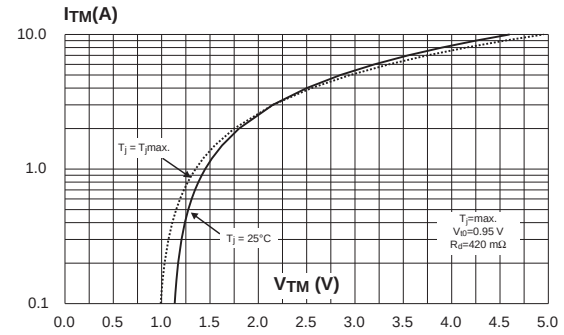


Figure 6. Relative variation of critical rate of decrease of main current versus (dV/dt)c (typical values)

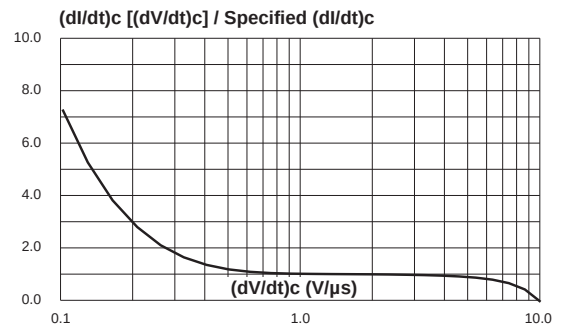


Figure 7. Relative variation of critical rate of decrease of main current versus junction temperature

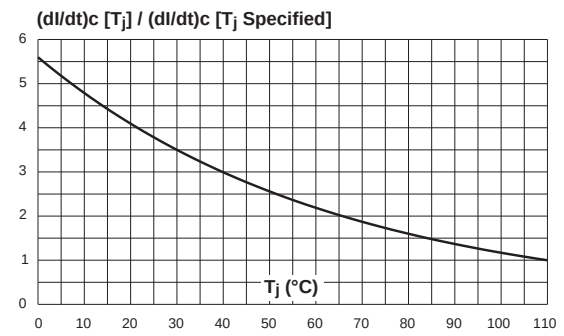
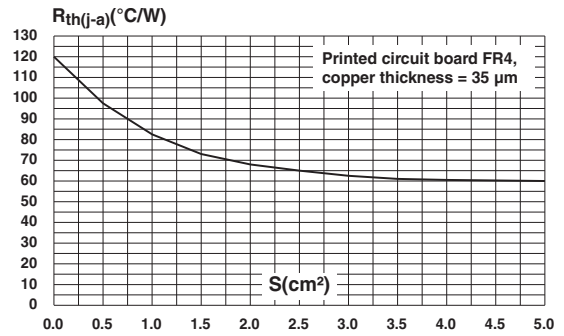
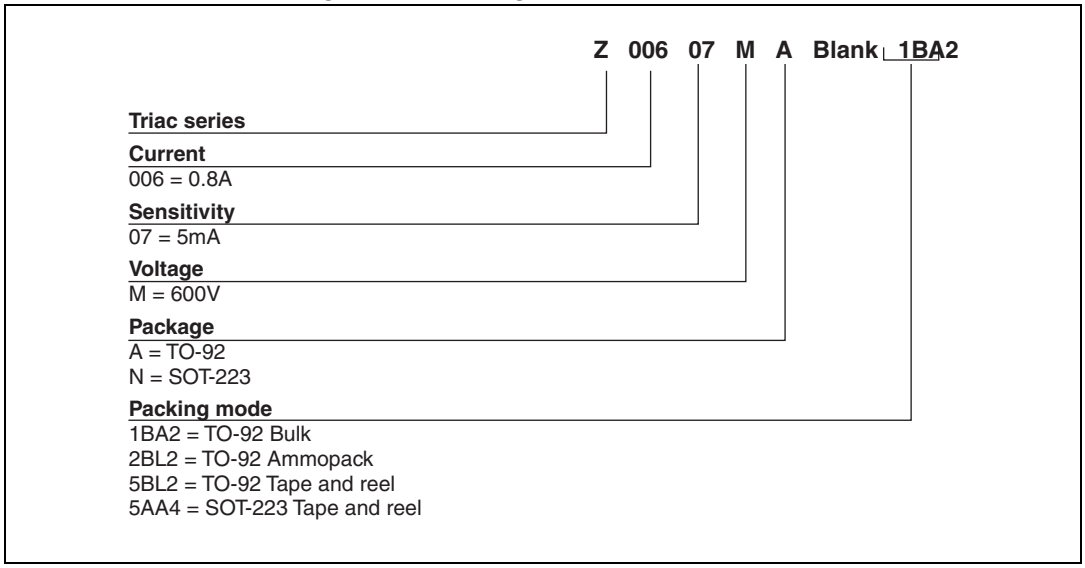


Figure 8. SOT-223 Thermal resistance junction to ambient versus copper surface under tab



2 Ordering information scheme

Figure 9. Ordering information scheme

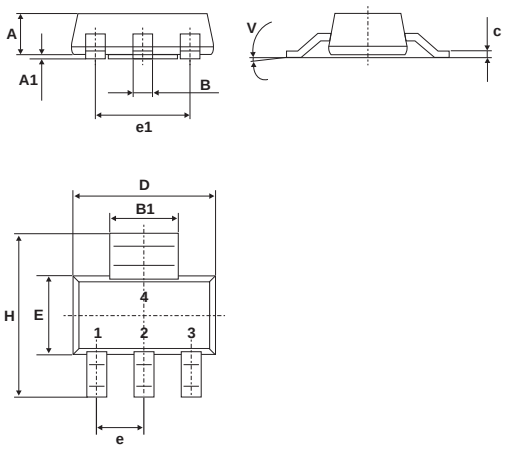


3 Packaging information

- 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)

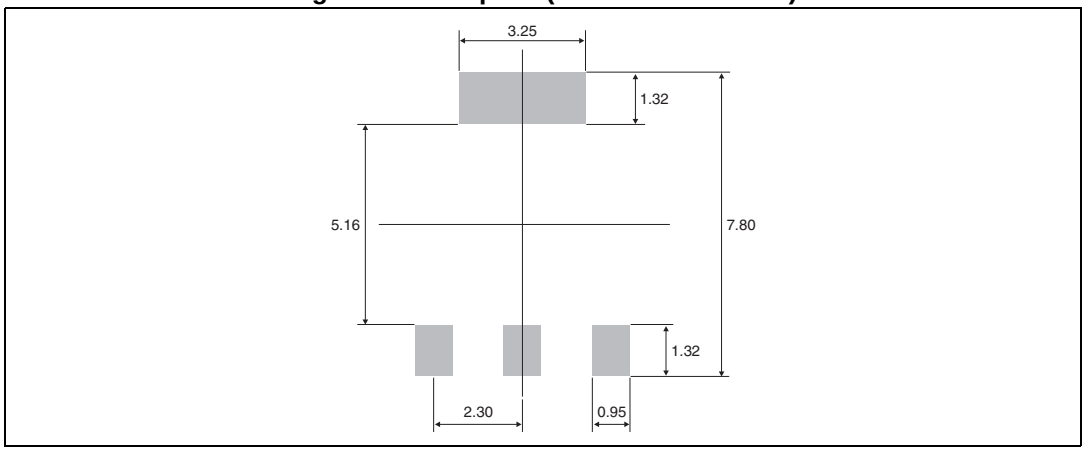
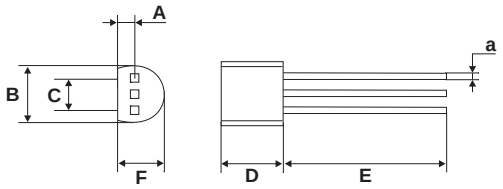


Table 6. TO-92 dimensions



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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