

## 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	$T_{tab} = 85\text{ °C}$	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 <sup>2</sup> 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/ $\mu$ 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 <sup>(2)</sup>	$V_D = 67\% V_{DRM}$ , gate open $T_j = 110\text{ °X}$		MIN	10	V/ $\mu$ s
(dV/dt) <sub>c</sub> <sup>(2)</sup>	$(\delta C/\delta \tau)\chi = 0.35\text{ A}/\mu\sigma$ , $T_j = 110\text{ °X}$		MIN	1.5	V/ $\mu$ 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 $\Omega$
$I_{DRM}$ $I_{RRM}$	$V_{DRM} = V_{RRM} = 600\text{ V}$		$T_j = 25\text{ °C}$	MAX.	5	$\mu$ 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.

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

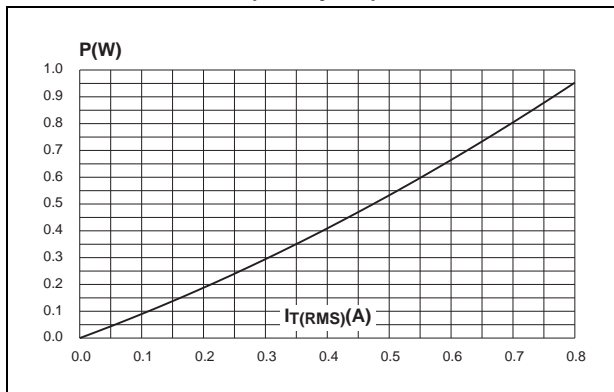


Figure 2. Relative variation of gate trigger, holding and latching current versus junction temperature

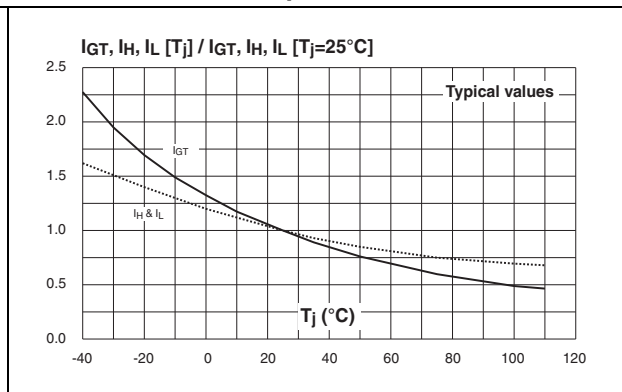


Figure 3. Surge peak on-state current versus number of cycles

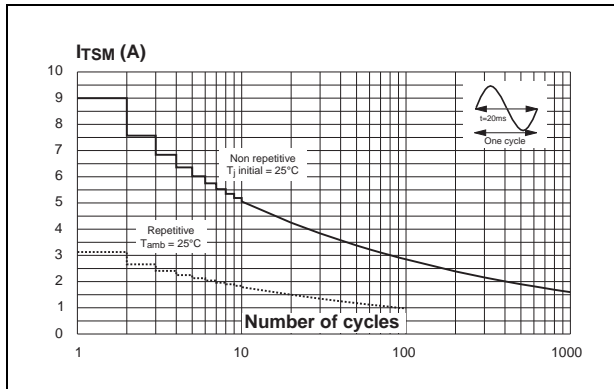


Figure 4. Non-repetitive surge peak on-state current and corresponding value of  $I^2t$

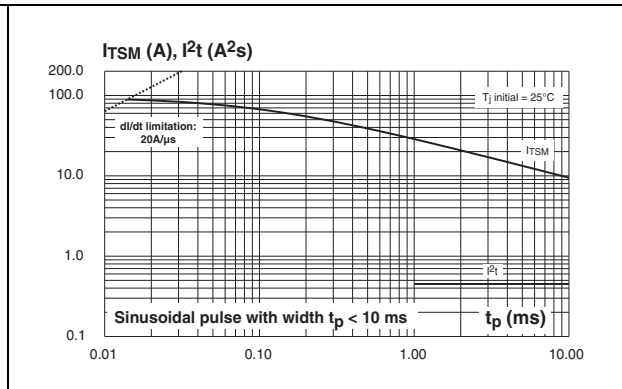


Figure 5. On-state characteristics (maximum values)

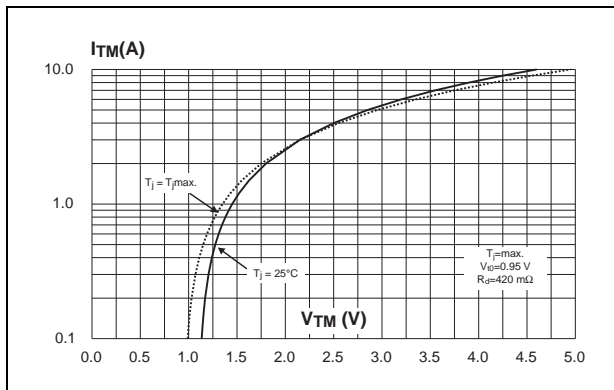


Figure 6. Relative variation of critical rate of decrease of main current versus  $(dV/dt)_c$  (typical values)

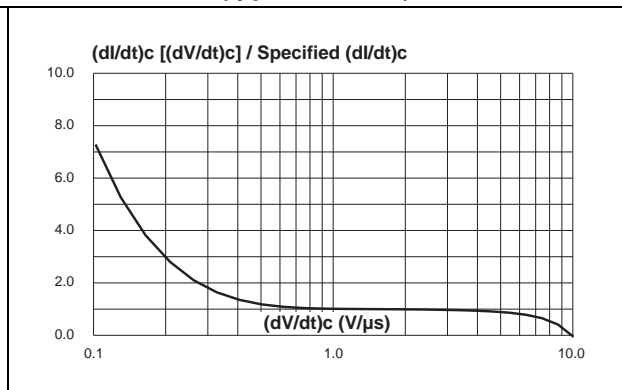


Figure 7. Relative variation of critical rate of decrease of main current versus junction temperature

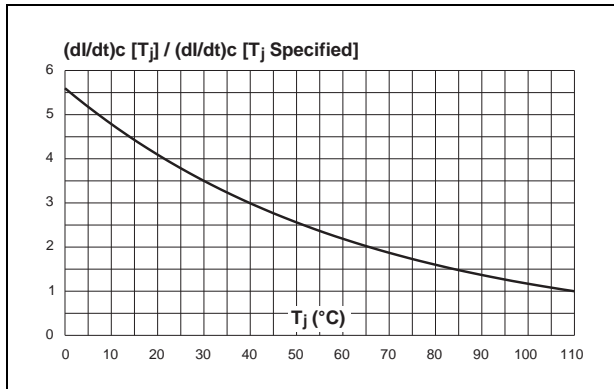
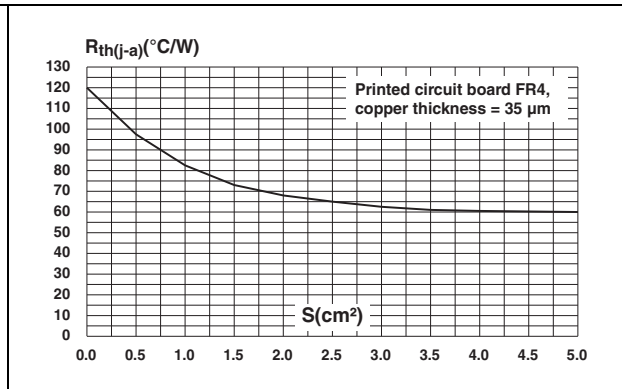
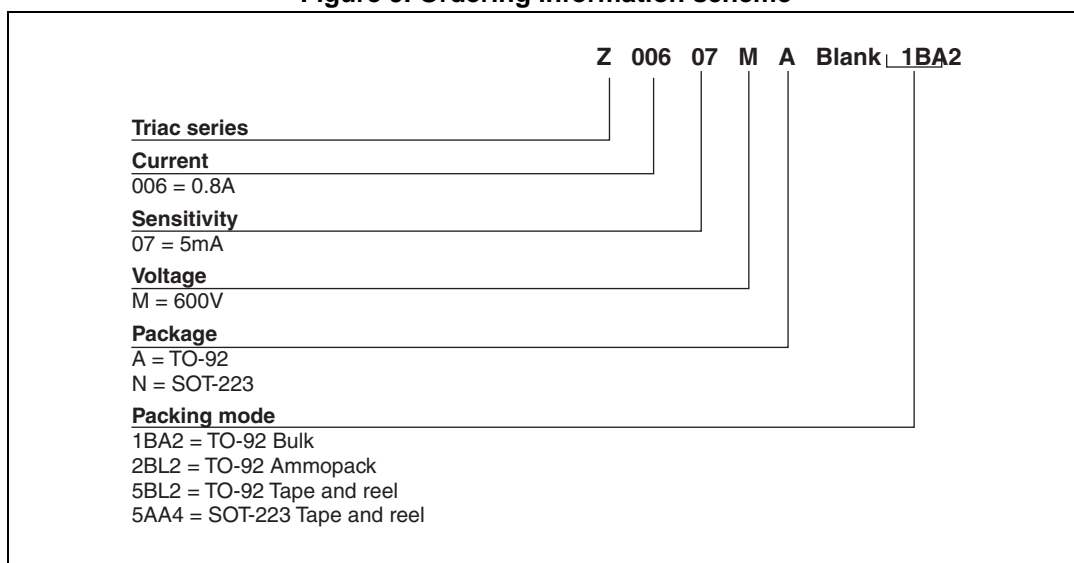


Figure 8. SOT-223 Thermal resistance junction to ambient versus copper surface under tab



## 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](http://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 <sup>(1)</sup>	6.30	6.50	6.70	0.248	0.256	0.264
e		2.3			0.090	
e1		4.6			0.181	
E <sup>(1)</sup>	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)**

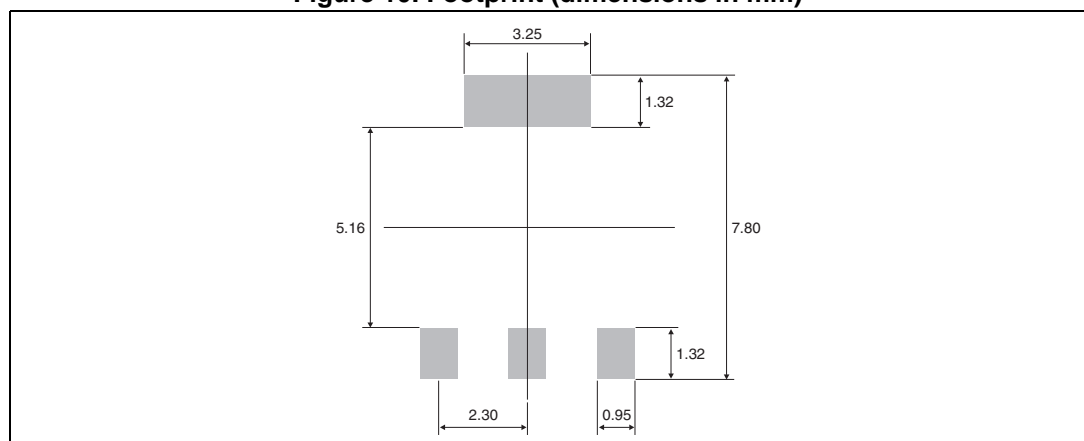


Table 6. TO-92 dimensions

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 <a href="#">Table 1</a>
19-Jun-2014	9	Updated marking for Z00607MN 5AA4 in <a href="#">Table 7</a> .

**Please Read Carefully:**

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

**UNLESS OTHERWISE SET FORTH IN ST'S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.**

**ST PRODUCTS ARE NOT DESIGNED OR AUTHORIZED FOR USE IN: (A) SAFETY CRITICAL APPLICATIONS SUCH AS LIFE SUPPORTING, ACTIVE IMPLANTED DEVICES OR SYSTEMS WITH PRODUCT FUNCTIONAL SAFETY REQUIREMENTS; (B) AERONAUTIC APPLICATIONS; (C) AUTOMOTIVE APPLICATIONS OR ENVIRONMENTS, AND/OR (D) AEROSPACE APPLICATIONS OR ENVIRONMENTS. WHERE ST PRODUCTS ARE NOT DESIGNED FOR SUCH USE, THE PURCHASER SHALL USE PRODUCTS AT PURCHASER'S SOLE RISK, EVEN IF ST HAS BEEN INFORMED IN WRITING OF SUCH USAGE, UNLESS A PRODUCT IS EXPRESSLY DESIGNATED BY ST AS BEING INTENDED FOR "AUTOMOTIVE, AUTOMOTIVE SAFETY OR MEDICAL" INDUSTRY DOMAINS ACCORDING TO ST PRODUCT DESIGN SPECIFICATIONS. PRODUCTS FORMALLY ESCC, QML OR JAN QUALIFIED ARE DEEMED SUITABLE FOR USE IN AEROSPACE BY THE CORRESPONDING GOVERNMENTAL AGENCY.**

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 2014 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Philippines - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

[www.st.com](http://www.st.com)



# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[STMicroelectronics:](#)

[Z00607MN 5AA4](#)