

Standard

4 A Triacs

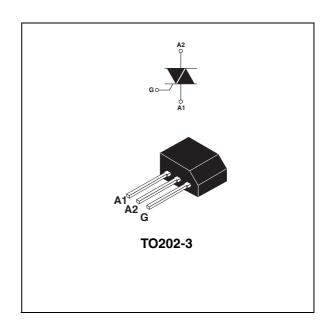
Main features

Symbol	Value	Unit
I _{T(RMS)}	4	А
V _{DRM} /V _{RRM}	600 to 800	V
I _{GT (Q1)}	3 to 25	mA

Description

The **Z04** series is suitable for general purpose AC switching applications. They can be found in applications such as home appliances (electrovalve, pump, door lock, small lamp control), fan speed controllers,...

Different gate current sensitivities are available, allowing optimized performances when controlled directly from microcontrollers.



Order codes

Part Number	Marking
Z04xxyF ⁽¹⁾	Z04xxyF ⁽¹⁾

^{1.} xx = sensitivity, y = voltage

Table 1. Absolute maximum ratings

u.b.io	, as o state maximum runnings					
Symbol	Parameter	Value	Unit			
I _{T(RMS)}	RMS on-state current (full sine wave)		$T_{amb} = 25^{\circ} C$	4	Α	
T (NIVIO)	(()		T _I = 30° C	-		
I	Non repetitive surge peak on-state current	F = 50 Hz	t = 20 ms	20	Α	
(full cycle, T _j initial = 25° C)	F = 60 Hz	t = 16.7 ms	21			
l ² t	I ² t Value for fusing	t _p = 10 ms		2.2	A ² s	
dI/dt	Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$, $t_r \le 100 \text{ ns}$	F = 120 Hz	T _j = 125° C	20	A/μs	
I _{GM}	Peak gate current	t _p = 20 μs	T _j = 125° C	1.2	Α	
P _{G(AV)}	Average gate power dissipation $T_j = 125^{\circ} C$		0.2	W		
T _{stg} T _j	Storage junction temperature range Operating junction temperature range		- 40 to + 150 - 40 to + 125	° C		

Characteristics Z04

1 Characteristics

Table 2. Electrical Characteristics (Tj = 25° C, unless otherwise specified)

Symbol Test Conditions Quadrant			Z 04				Unit	
Symbol	rest conditions	Quadrant		02	05	09	10	Unit
I _{GT} ⁽¹⁾	V _D = 12 V R _I = 30 Ω	I - II - III - IV	MAX	3	5	10	25	mA
V _{GT}	_ =		MAX ·	1.3			V	
V_{GD}	$\begin{array}{c} V_D = V_{DRM} R_L = 3.3 \ k\Omega \\ T_j = 125^{\circ} \ C \end{array} \qquad \text{ALL}$		MIN.	0.2				>
I _H ⁽²⁾	I _T = 50 mA		MAX ·	3	5	10	25	mA
IL	I _I		MAX	6	10	15	25	mA
'L	IG - 1.2 IG	II		12	15	25	50	1117
dV/dt (2)	$V_D = 6 \% V_{DRM}$ gate open $T_j = 110^{\circ} C$		MIN.	10	20	100	200	V/µs
(dV/dt)c (2)	$(dI/dt)c = 1.8 \text{ A/ms}$ $T_j = 110$	° C	MIN.	0.5	1	2	5	V/µs

^{1.} minimum IGT is guaranted at 5% of IGT max.

Table 3. Static Characteristics

Symbol	Test Co	Value	Unit		
V _{TM} ⁽¹⁾	$I_{TM} = 5.5 \text{ A}$ $t_p = 380 \mu\text{s}$	T _j = 25° C	MAX.	2.0	V
V _{to} (1)	Threshold voltage	T _j = 125° C	MAX.	0.95	V
R _d ⁽¹⁾	Dynamic resistance	T _j = 125° C	MAX.	180	mΩ
I _{DRM} V – V		T _j = 25° C	MAX.	5	μΑ
I _{RRM}	I _{RRM} V _{DRM} = V _{RRM}		IVIAA.	0.5	mA

^{1.} for both polarities of A2 referenced to A1.

Table 4. Thermal resistances

Symbol	Parameter	Value	Unit
R _{th(j-I)}	Junction to lead (AC)	15	° C/W
R _{th(j-a)}	Junction to ambient	100	° C/W

^{2.} for both polarities of A2 referenced to A1.

Z04 Characteristics

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

Figure 2. RMS on-state current versus ambient temperature (full cycle)

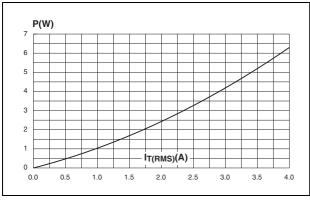
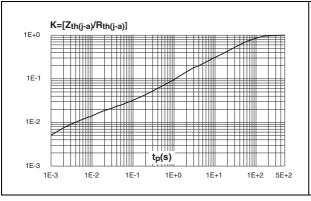


Figure 3. Relative variation of thermal impedance versus pulse duration

Figure 4. Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values)



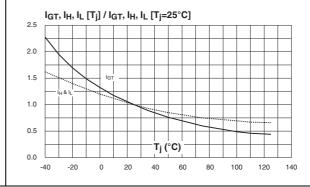
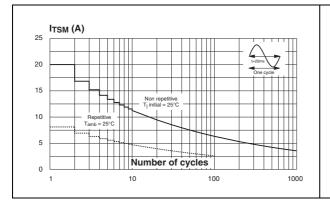
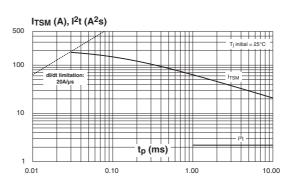


Figure 5. Surge peak on-state current versus number of cycles

Figure 6. Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10$ ms and corresponding value of I^2t





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Figure 7. On-state characteristics (maximum values)

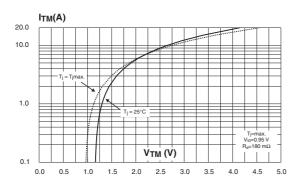


Figure 8. Relative variation of critical rate of decrease of main current versus (dV/dt)c (typical values)

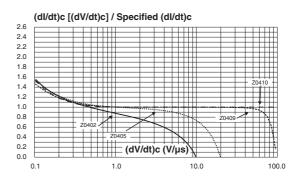
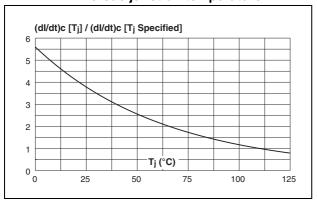


Figure 9. Relative variation of critical rate of decrease of main current versus junction temperature



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2 Ordering information scheme

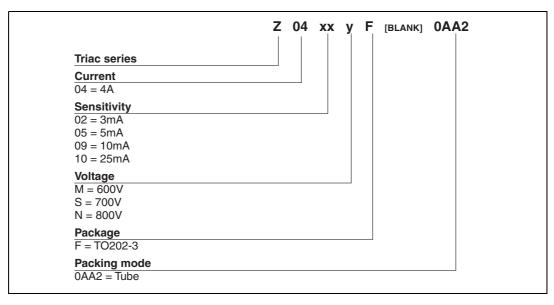


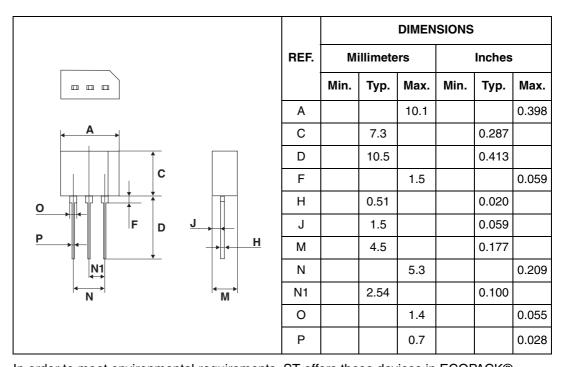
Table 5. Product selector

Part Number		Voltage		Consistivity	Type	Dookowa
Part Number	600 V	700 V	800 V	Sensitivity	Туре	Package
Z0402MF	Х			3 mA		
Z0402SF		Х		3 mA		
Z0402NF			Х	3 mA		
Z0405MF	Х			5 mA		
Z0405SF		Х		5 mA		
Z0405NF			Х	5 mA	Standard	TO202-3
Z0409MF	Х			10 mA	Stanuaru	10202-3
Z0409SF		Х		10 mA		
Z0409NF			Х	10 mA		
Z0410MF	Х			25 mA		
Z0410SF		Х		25 mA		
Z0410NF			Х	25 mA		

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Package information Z04

3 Package information



In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a lead-free second level interconnect. The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com.

4 Ordering information

Ordering type	Marking	Weight	Base qty	Delivery mode
Z04xxyF 0AA2 ⁽¹⁾	Z04xxyF ⁽¹⁾	0.8 g	50	Tube

^{1.} xx = sensitivity, y = voltage

5 Revision history

Date	Revision	Description of Changes
Oct-2001	4	Last update.
13-Feb-2006	5	TO202-3 delivery mode changed from bulk to tube. ECOPACK statement added.
31-Mar-2006	6	Reformatted to current standard. Lead marking changed on page 1
12-05-2006	7	Typographical error for (dV/dt)c corrected in Table 2.

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