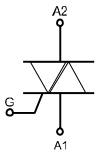
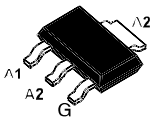


TO-92
(Z01xxA)



SOT-223
(Z01xxN)

DESCRIPTION 1A TRIACs

The Z01 series is suitable for general purpose AC switching applications. They can be found in applications such as home appliances (electro valve, pump, door lock, small lamp control), fan speed controllers,... Different gate current sensitivities are available, allowing optimized performances when controlled directly from microcontrollers.

MAIN FEATURES:

Symbol	Value	Unit
$I_{T(RMS)}$	1	A
V_{DRM}/V_{RRM}	600 to 800	V
$I_{GT\ (Q_1)}$	3 to 25	mA

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (full sine wave)	SOT-223	Ttab = 90°C	1	A
		TO-92	Tl = 50°C		
I_{TSM}	Non repetitive surge peak on-state current (full cycle, Tj initial = 25°C)	F = 50 Hz	t = 20 ms	8	A
		F = 60 Hz	t = 16.7 ms	8.5	
I^2t	I^2t Value for fusing	tp = 10 ms		0.35	A^2s
dI/dt	Critical rate of rise of on-state current I_G = 2 x I_{GT}, tr < 100 ns	F = 120 Hz	Tj = 125°C	20	A/µs
I_{GM}	Peak gate current	tp = 20 µs	Tj = 125°C	1	A
$P_{G(AV)}$	Average gate power dissipation		Tj = 125°C	0.1	W
T_{stg} T_j	Storage junction temperature range Operating junction temperature range			-40 to + 150 -40 to + 125	°C

ELECTRICAL CHARACTERISTICS (Tj = 25°C, unless otherwise specified)

Symbol	Test Conditions	Quadrant		Z01xx				Unit
				03	07	09	10	
I_{GT} (1)	V_D = 12 V R_L = 30 Ω	I - II - III IV	MAX.	3 5	5 7	10 10	25 25	mA
V_{GT}		ALL	MAX.	1.3				V
V_{GD}	V_D = V_{DRM} R_L = 3.3 kΩ Tj = 125°C	ALL	MIN.	0.2				V
I_H (2)	I_T = 50 mA		MAX.	7	10	10	25	mA
I_L	I_G = 1.2 I_{GT}	I - III - IV	MAX.	7	10	15	25	mA
		II		15	20	25	50	
dV dt (2)	V_D = 67 %V_{DRM} gate open Tj = 110°C		MIN.	10	20	50	100	V/µs
(dV/dt)c (2)	(dI dt)c = 0.44 A/ms Tj = 110°C		MIN.	0.5	1	2	5	V/µs

STATIC CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
V_{TM} (2)	I_{TM} = 1.4 A tp = 380 µs	Tj = 25°C	MAX.	1.6	V
V_{to} (2)	Threshold voltage	Tj = 125°C	MAX.	0.95	V
R_d (2)	Dynamic resistance	Tj = 125°C	MAX.	400	mΩ
I_{DRM}	V_{DRM} = V_{RRM}	Tj = 25°C	MAX.	5	µA
I_{RRM}		Tj = 125°C		0.5	mA

Note 1: minimum IGT is guaranted at 5% of IGT max.

Note 2: for both polarities of A2 referenced to A1

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 = 5 cm^2	SOT-223	60	°C W
			TO-92	150	

S = Copper surface under tab

PRODUCT SELECTOR

Part Number	Voltage			Sensitivity	Type	Package
	600 V	700 V	800 V			
Z0103MA	X			3 mA	Standard	TO-92
Z0103MN	X			3 mA	Standard	SOT-223
Z0103SA		X		3 mA	Standard	TO-92
Z0103SN		X		3 mA	Standard	SOT-223
Z0103NA			X	3 mA	Standard	TO-92
Z0103NN			X	3 mA	Standard	SOT-223
Z0107MA	X			5 mA	Standard	TO-92
Z0107MN	X			5 mA	Standard	SOT-223
Z0107SA		X		5 mA	Standard	TO-92
Z0107SN		X		5 mA	Standard	SOT-223
Z0107NA			X	5 mA	Standard	TO-92
Z0107NN			X	5 mA	Standard	SOT-223
Z0109MA	X			10 mA	Standard	TO-92
Z0109MN	X			10 mA	Standard	SOT-223
Z0109SA		X		10 mA	Standard	TO-92
Z0109SN		X		10 mA	Standard	SOT-223
Z0109NA			X	10 mA	Standard	TO-92
Z0109NN			X	10 mA	Standard	SOT-223
Z0110MA	X			25 mA	Standard	TO-92
Z0110MN	X			25 mA	Standard	SOT-223
Z0110SA		X		25 mA	Standard	TO-92
Z0110SN		X		25 mA	Standard	SOT-223
Z0110NA			X	25 mA	Standard	TO-92
Z0110NN			X	25 mA	Standard	SOT-223

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

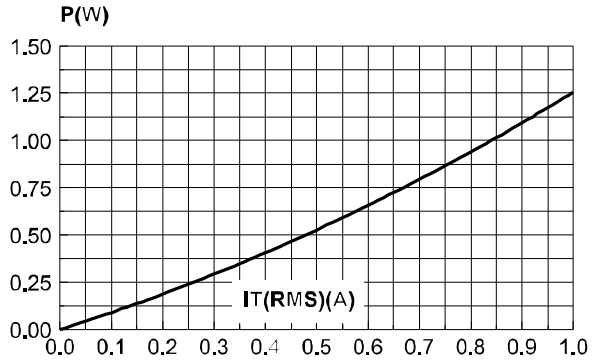


Fig. 2-1: RMS on-state current versus ambient temperature (full cycle).

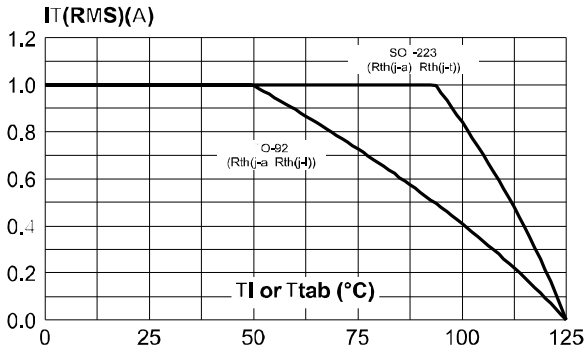


Fig. 2-2: RMS on-state current versus ambient temperature (full cycle).

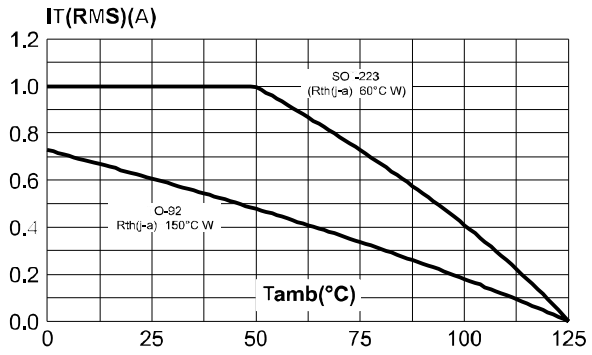


Fig. 3: Relative variation of thermal impedance junction to ambient versus pulse duration.

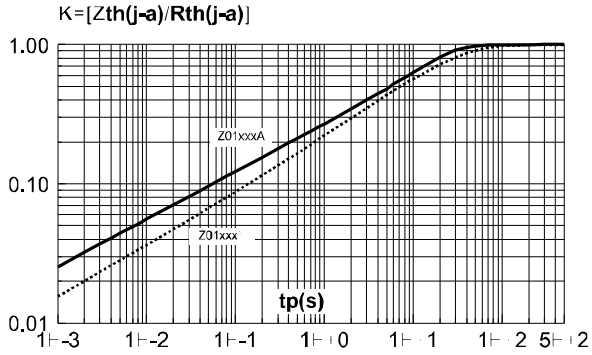


Fig. 4: Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values).

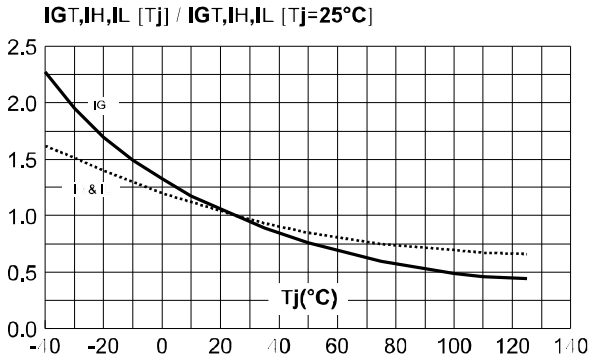


Fig. 5: Surge peak on-state current versus number of cycles.

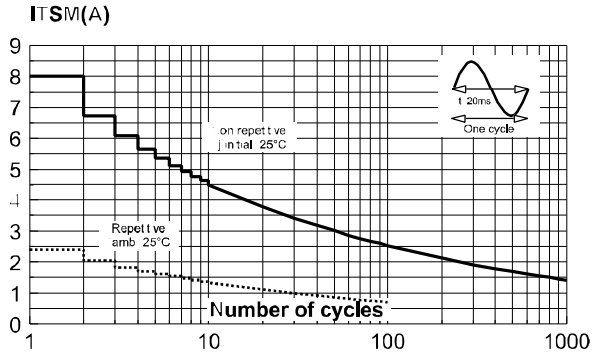


Fig. 6: Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp < 10ms, and corresponding value of I^2t.

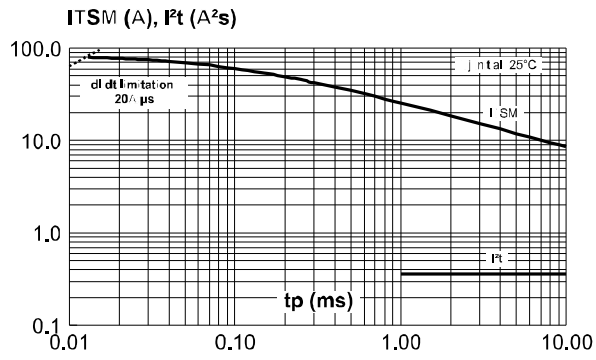


Fig. 7: On-state characteristics (maximum values).

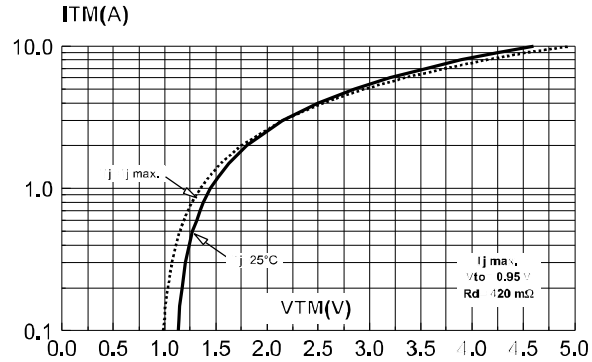


Fig. 8: Relative variation of critical rate of decrease of main current versus (dV/dt)c (typical values).

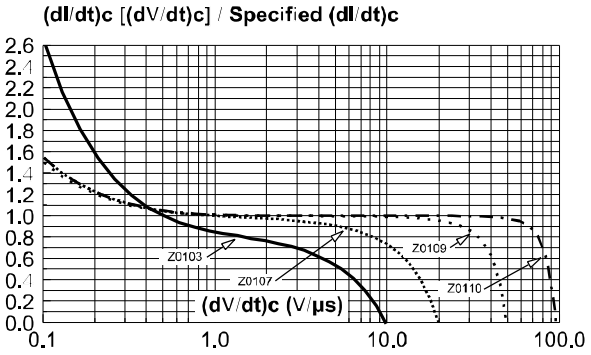


Fig. 9: Relative variation of critical rate of decrease of main current versus junction temperature.

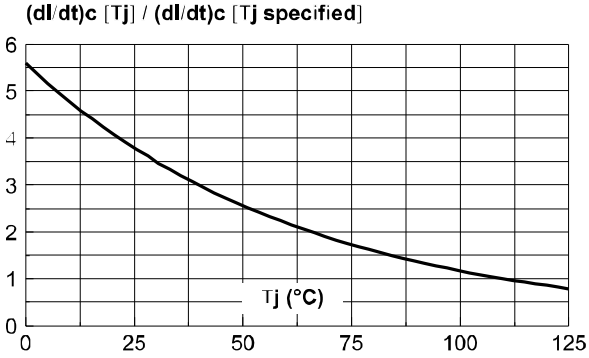
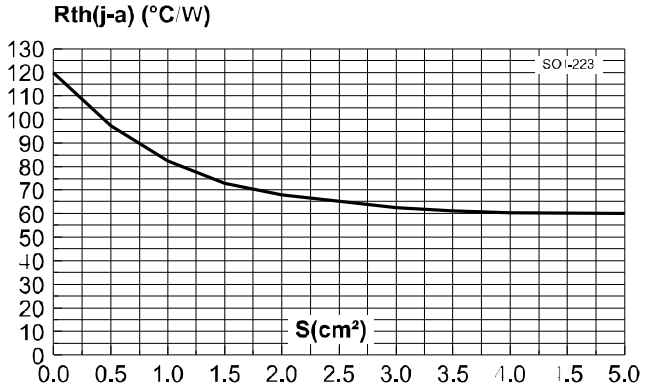
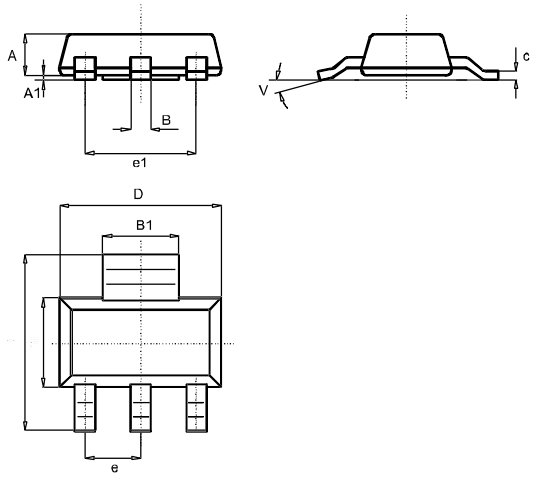


Fig. 10: SOT-223 Thermal resistance junction to ambient versus copper surface under tab (printed circuit board FR4, copper thickness: 35µm).



PACKAGE MECHANICAL DATA

SOT-223 (Plastic)



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			1.80			0.071
A1	0.02		0.1	0.0008		0.004
B	0.60	0.70	0.85	0.024	0.027	0.034
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	6.30	6.50	6.70	0.248	0.256	0.264
e		2.3			0.090	
e1		4.6			0.181	
E	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					

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