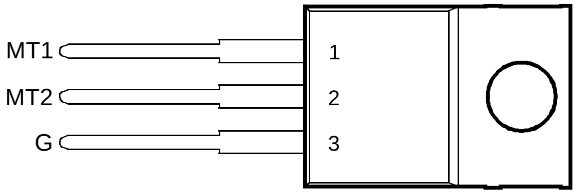
TR2.5 SERIES
SILICON TRIACS

- **Sensitive Gate Triacs**
- **2.5 A RMS**
- **Glass Passivated Wafer**
- **400 V to 800 V Off-State Voltage**
- **Max I_{GT} of 5 mA (Quadrant 1)**

TO-220 PACKAGE
(TOP VIEW)



Pin 2 is in electrical contact with the mounting base.

absolute maximum ratings over operating case temperature (unless otherwise noted)

RATING		SYMBOL	VALUE	UNIT
Repetitive peak off-state voltage (see Note 1)	TR2.5-400-14	V_{DRM}	400	V
	TR2.5-600-14		600	
	TR2.5-700-14		700	
	TR2.5-800-14		800	
Full-cycle RMS on-state current at (or below) 85°C case temperature (see Note 2)		$I_{T(RMS)}$	2.5	A
Peak on-state surge current full-sine-wave (see Note 3)		I_{TSM}	12	A
Peak on-state surge current half-sine-wave (see Note 4)		I_{TSM}	14	A
Peak gate current		I_{GM}	±0.2	A
Peak gate power dissipation at (or below) 85°C case temperature (pulse width ≤ 200 µs)		P_{GM}	1.3	W
Average gate power dissipation at (or below) 85°C case temperature (see Note 5)		$P_{G(AV)}$	0.3	W
Operating case temperature range		T_C	-40 to +110	°C
Storage temperature range		T_{stg}	-40 to +125	°C
Lead temperature 1.6 mm from case for 10 seconds		T_L	230	°C

NOTES:
1. These values apply bidirectionally for any value of resistance between the gate and Main Terminal 1.
2. This value applies for 50-Hz full-sine-wave operation with resistive load. Above 85°C derate linearly to 110°C case temperature at the rate of 100 mA/°C.
3. This value applies for one 50-Hz full-sine-wave when the device is operating at (or below) the rated value of on-state current. Surge may be repeated after the device has returned to original thermal equilibrium. During the surge, gate control may be lost.
4. This value applies for one 50-Hz half-sine-wave when the device is operating at (or below) the rated value of on-state current. Surge may be repeated after the device has returned to original thermal equilibrium. During the surge, gate control may be lost.
5. This value applies for a maximum averaging time of 20 ms.

electrical characteristics at 25°C case temperature (unless otherwise noted)

PARAMETER		TEST CONDITIONS			MIN	TYP	MAX	UNIT
I_{DRM}	Repetitive peak off-state current	V_D = rated V_{DRM}	$I_G = 0$	T_C = 110°C			±1	mA
I_{GTM}	Peak gate trigger current	V_{supply} = +12 V†	R_L = 10 Ω	$t_{p(g)}$ > 20 µs			5	mA
		V_{supply} = +12 V†	R_L = 10 Ω	$t_{p(g)}$ > 20 µs			-8	
		V_{supply} = -12 V†	R_L = 10 Ω	$t_{p(g)}$ > 20 µs			-10	
		V_{supply} = -12 V†	R_L = 10 Ω	$t_{p(g)}$ > 20 µs			25	
V_{GTM}	Peak gate trigger voltage	V_{supply} = +12 V†	R_L = 10 Ω	$t_{p(g)}$ > 20 µs		0.9	2.5	V
		V_{supply} = +12 V†	R_L = 10 Ω	$t_{p(g)}$ > 20 µs		-1.2	-2.5	
		V_{supply} = -12 V†	R_L = 10 Ω	$t_{p(g)}$ > 20 µs		-1.2	-2.5	
		V_{supply} = -12 V†	R_L = 10 Ω	$t_{p(g)}$ > 20 µs		1.2		

† All voltages are with respect to Main Terminal 1.

electrical characteristics at 25°C case temperature (unless otherwise noted) (continued)

PARAMETER		TEST CONDITIONS			MIN	TYP	MAX	UNIT
V_{TM}	Peak on-state voltage	I_{TM} = ±3.5 A	I_G = 50 mA	(see Note 6)			±1.9	V
I_H	Holding current	V_{supply} = +12 V† V_{supply} = -12 V†	I_G = 0 I_G = 0	Init' I_{TM} = 100 mA Init' I_{TM} = - 100 mA			30 -30	mA
I_L	Latching current	V_{supply} = +12 V† V_{supply} = -12 V†	(see Note 7)				40 -40	mA
dv/dt	Critical rate of rise of off-state voltage	V_{DRM} = Rated V_{DRM}	I_G = 0	T_C = 110°C		±50		V/μs
$dv/dt_{(c)}$	Critical rise of commutation voltage	V_{DRM} = Rated V_{DRM}	I_{TRM} = ±3.5 A	T_C = 85°C	±2			V/μs

† All voltages are with respect to Main Terminal 1.

NOTES: 6. This parameter must be measured using pulse techniques, t_p = ≤ 1 ms, duty cycle ≤ 2 %. Voltage-sensing contacts separate from the current carrying contacts are located within 3.2 mm from the device body.

7. The triacs are triggered by a 15-V (open circuit amplitude) pulse supplied by a generator with the following characteristics: R_G = 100 Ω, $t_{p(g)}$ = 20 µs, t_r = ≤ 15 ns, f = 1 kHz.

thermal characteristics

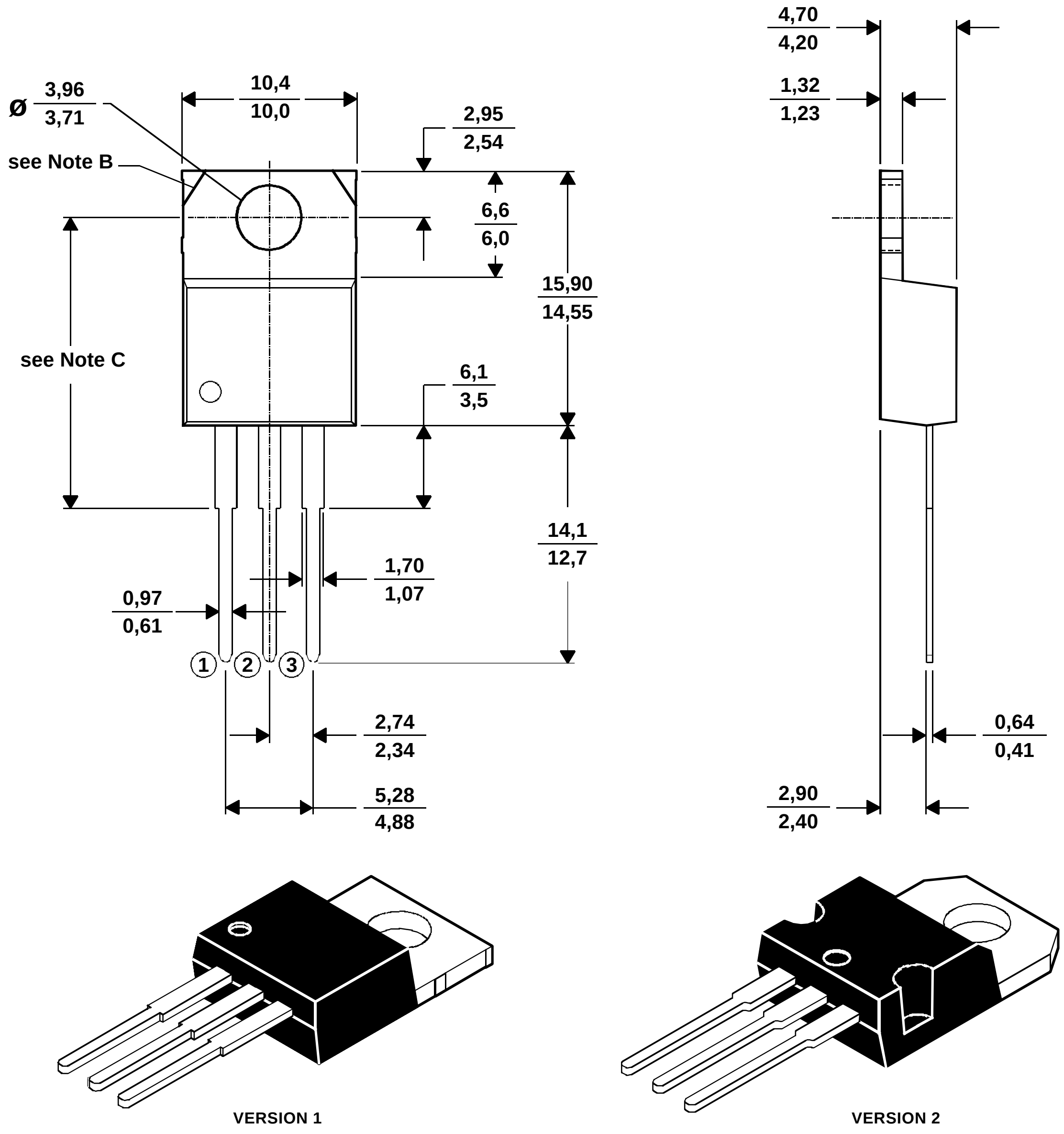
PARAMETER		MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction to case thermal resistance			10	°C/W
$R_{\theta JA}$	Junction to free air thermal resistance			62.5	°C/W

MECHANICAL DATA

TO-220
3-pin plastic flange-mount package

This single-in-line package consists of a circuit mounted on a lead frame and encapsulated within a plastic compound. The compound will withstand soldering temperature with no deformation, and circuit performance characteristics will remain stable when operated in high humidity conditions. Leads require no additional cleaning or processing when used in soldered assembly.

TO220



ALL LINEAR DIMENSIONS IN MILLIMETERS

NOTES:
- A. The centre pin is in electrical contact with the mounting tab.
- B. Mounting tab corner profile according to package version.
- C. Typical fixing hole centre stand off height according to package version. Version 1, 18.0 mm. Version 2, 17.6 mm.