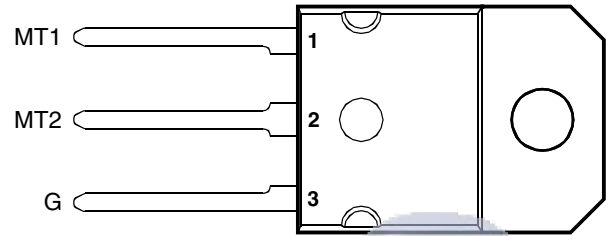


BOURNS®

- High Current Triacs
- 20 A RMS
- Glass Passivated Wafer
- 400 V to 800 V Off-State Voltage
- 150 A Peak Current
- Max I_{GT} of 50 mA (Quadrants 1 - 3)

**SOT-93 PACKAGE
(TOP VIEW)**

Pin 2 is in electrical contact with the mounting base.

MDC2ADA

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

RATING		SYMBOL	VALUE	UNIT
Repetitive peak off-state voltage (see Note 1)	TIC253D	V_{DRM}	400	V
	TIC253M		600	
	TIC253S		700	
	TIC253N		800	
Full-cycle RMS on-state current at (or below) 70°C case temperature (see Note 2)		$I_{T(RMS)}$	20	A
Peak on-state surge current full-sine-wave at (or below) 25°C case temperature (see Note 3)		I_{TSM}	150	A
Peak gate current		I_{GM}	±1	A
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 70°C derate linearly to 110°C case temperature at the rate of 500 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 peak reverse voltage and on-state current. Surge may be repeated after the device has returned to original thermal equilibrium.

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

PARAMETER		TEST CONDITIONS			MIN	TYP	MAX	UNIT
I_{DRM}	Repetitive peak off-state current	$V_D = \text{Rated } V_{DRM}$	$I_G = 0$	$T_C = 110^\circ\text{C}$			±2	mA
I_{GT}	Gate trigger current	$V_{supply} = +12\text{ V}^\dagger$	$R_L = 10\ \Omega$	$t_{p(g)} > 20\ \mu\text{s}$		15	50	mA
		$V_{supply} = +12\text{ V}^\dagger$	$R_L = 10\ \Omega$	$t_{p(g)} > 20\ \mu\text{s}$		-30	-50	
		$V_{supply} = -12\text{ V}^\dagger$	$R_L = 10\ \Omega$	$t_{p(g)} > 20\ \mu\text{s}$		-20	-50	
		$V_{supply} = -12\text{ V}^\dagger$	$R_L = 10\ \Omega$	$t_{p(g)} > 20\ \mu\text{s}$		32		
V_{GT}	Gate trigger voltage	$V_{supply} = +12\text{ V}^\dagger$	$R_L = 10\ \Omega$	$t_{p(g)} > 20\ \mu\text{s}$		0.8	2	V
		$V_{supply} = +12\text{ V}^\dagger$	$R_L = 10\ \Omega$	$t_{p(g)} > 20\ \mu\text{s}$		-0.8	-2	
		$V_{supply} = -12\text{ V}^\dagger$	$R_L = 10\ \Omega$	$t_{p(g)} > 20\ \mu\text{s}$		-0.8	-2	
		$V_{supply} = -12\text{ V}^\dagger$	$R_L = 10\ \Omega$	$t_{p(g)} > 20\ \mu\text{s}$		0.8	2	
V_T	On-state voltage	$I_T = \pm 28.2\text{ A}$	$I_G = 50\text{ mA}$	(see Note 4)		±1.4	±1.7	V

† All voltages are with respect to Main Terminal 1.

NOTE 4: This parameter must be measured using pulse techniques, $t_p \leq 1\text{ ms}$, duty cycle $\leq 2\%$. Voltage-sensing contacts separate from the current carrying contacts are located within 3.2 mm from the device body.**PRODUCT INFORMATION**DECEMBER 1971 - REVISED SEPTEMBER 2002
Specifications are subject to change without notice.

TIC253 SERIES SILICON TRIACS

BOURNS®

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

PARAMETER	TEST CONDITIONS			MIN	TYP	MAX	UNIT
I_H Holding current	$V_{supply} = +12\text{ V}^\dagger$ $V_{supply} = -12\text{ V}^\dagger$	$I_G = 0$ $I_G = 0$	Init' $I_T = 100\text{ mA}$ Init' $I_T = -100\text{ mA}$		20 -10	40 -40	mA
I_L Latching current	$V_{supply} = +12\text{ V}^\dagger$ $V_{supply} = -12\text{ V}^\dagger$	(see Note 5)			20 -20		mA
dv/dt Critical rate of rise of off-state voltage	$V_D = \text{Rated } V_D$	$I_G = 0$	$T_C = 110^\circ\text{C}$		± 450		V/ μs
$dv/dt_{(c)}$ Critical rise of commutation voltage	$V_D = \text{Rated } V_D$ $di/dt = 0.5 I_{T(RMS)}/\text{ms}$		$T_C = 80^\circ\text{C}$ $I_T = 1.4 I_{T(RMS)}$		± 1		V/ μs
di/dt Critical rate of rise of on-state current	$V_D = \text{Rated } V_D$ $di_G/dt = 50\text{ mA}/\mu\text{s}$	$I_{GT} = 50\text{ mA}$	$T_C = 110^\circ\text{C}$		± 100		A/ μs

† All voltages are with respect to Main Terminal 1.

NOTE 5: The triacs are triggered by a 15-V (open-circuit amplitude) pulse supplied by a generator with the following characteristics:

$R_G = 100\ \Omega$, $t_{p(g)} = 20\ \mu\text{s}$, $t_r \leq 15\ \text{ns}$, $f = 1\ \text{kHz}$.

thermal characteristics

PARAMETER	MIN	TYP	MAX	UNIT
$R_{\theta JC}$ Junction to case thermal resistance			1.52	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$ Junction to free air thermal resistance			36	$^\circ\text{C}/\text{W}$

TYPICAL CHARACTERISTICS

GATE TRIGGER CURRENT
vs

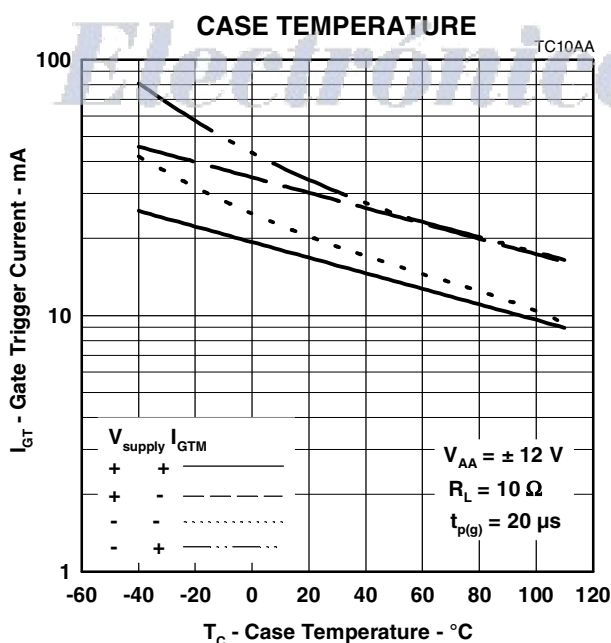


Figure 1.

GATE TRIGGER VOLTAGE
vs

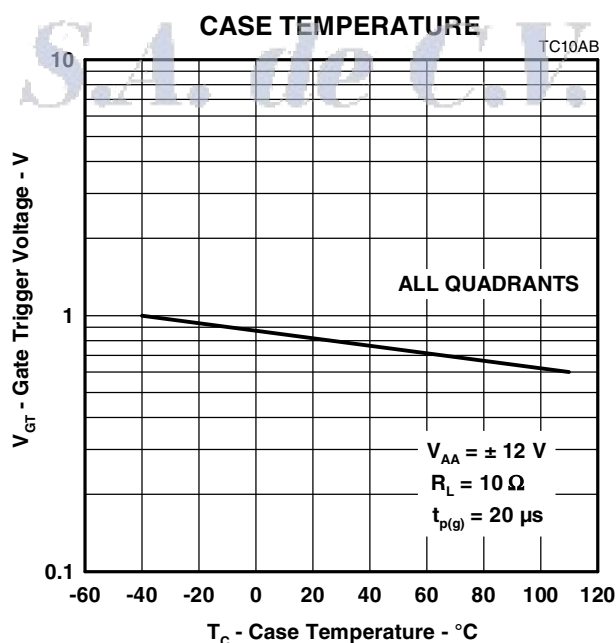


Figure 2.

PRODUCT INFORMATION

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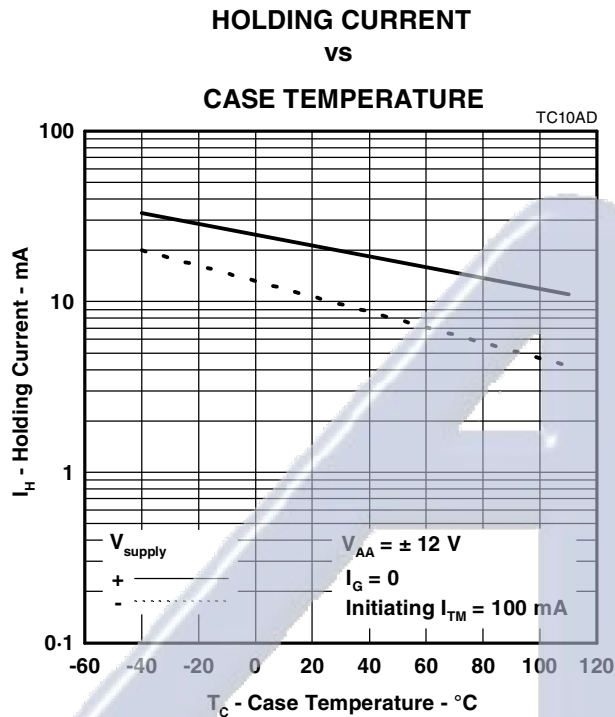
BOURNS®**TYPICAL CHARACTERISTICS**

Figure 3.

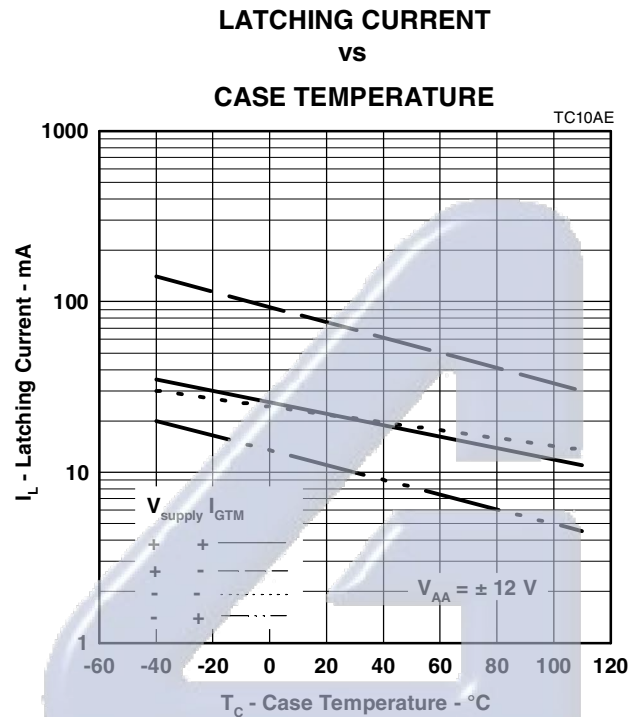


Figure 4.

*Electrónica S.A. de C.V.***PRODUCT INFORMATION**

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