

Sensitive Triacs

(0.8 - 8.0 Amps)

General Description

Teccor's line of sensitive gate triacs includes devices with current capabilities through 8 amperes. Voltage ranges are available from 200 to 600 volts. This line features devices with guaranteed gate control in the second and fourth quadrants as well as control in the commonly used first and third quadrants. Four-quadrant control devices require sensitive gate triacs. They lend themselves to be controlled by digital circuitry where positive-only or negative-only pulses must control AC current in both directions through the device. It should be noted that triacs with low I_{GT} values in the second and fourth quadrants will have lower dv/dt characteristics.

The sensitive gate triac is a bidirectional AC switch and is gate controlled for either polarity of main terminal voltage. Its primary purpose is for AC switching and phase control applications such as motor speed controls, temperature modulation controls, and lighting controls.

A wide range of package variations are available. The plastic TO-92 and THERMOTAB configurations feature Teccor's electrically isolated construction where the case or mounting tab is internally isolated from the semiconductor chip and lead attachments. Non-isolated plastic TO-202 packages are available. Tape-and-reel

capability and tube packing also are available. See "Packing Options" section of this catalog.

All Teccor triacs have glass passivated junctions. This glassing process prevents migration of contaminants and ensures long-term device reliability with parameter stability.

Variations of devices covered in this data sheet are available for custom design applications. Please consult the factory for more information.

Features

- Electrically-isolated packages
- Glass-passivated junctions ensure long device reliability and parameter stability
- Voltage capability up to 600 Volts
- Surge capability up to 80 Amps

Electrical Specifications

l _T (resec)		Part No.	Non-Isolated	Visem		l _e)T		le.	·	Vm	V.	77
RMS On-State Current Conduc- tion Angle of 360° (11)	MT1 LL MT2	MT1 MT2	MT2 Q	Repetitive Peak Blocking Voltage (1)	DC Gate Trigger Current in Specific Operating Quadrants $V_D = 12VDC$ $R_L = 60\Omega$ (3) (6) mAmps		Peak Off-State Current Gate Open V _{DRM} = Max Rated Value (1) (13) mAmps		Peak On-State Voltage at Max Rated RMS Current T _C = 25°C (1) (4)	DC Gate Trigger Voltage $V_D = 12VDC$ $R_L = 60\Omega$ (2) (5) Volts			
	TO-92	THERMOTAB TO-220	TO-202AB	Volts	QI	QII	QIII	QIV	T _C = 25°C	T _C = 110°C	Volts	T _C = 110°C	T _C = 25°C
MAX		imensions" section	n for variations.	MIN	GP342-025	M.	AX		MAX	MAX	MAX	MIN	MAX
2	L2XSE3 L2XXE3			200 460	3	3	3	3	.01 .61	0.1 0.1	1.6 1.6	0.2 0.2	2.0 2.0
	7.000	.		100	-	-	3	-	.01	0,1	1.0	8.2	2.0
	1368	+		200			5	8	.01	0.1	1.6	0.2	2.0
	EXMES	3 3 3 3 3		400	5	5	5	5	.61	0.1	1.6	6.2	2.0
0.0	1,000			100	•		5	- 5	.01	0.1	1.6	0.2	2.0
Amp	44.02 (AB)			200	3	- 5	5	10	.91	0.1	1.6	0.2	2.0
				400	5	5	5	10	.01	9,1	1.8	6.2	2.0
	LOSE			100	3		5	10	.01	0,1	1.6	0.2	2.0
	LZZSES			200	10	10	18	20	.01	0.1	1.6	0.2	2.0
	LAXIES SXXES	 		400 800	10	10	10 10	20	.01	0,1 8,1	1,8 1,6	0.2	2.0 2.0
	L201E3			200	3	3	3	3	.01	0.1	1.6	0.2	2.0
ll l	L401E3			400	3	3	3	3	.01	0.1	1.6	0.2	2.0
	L601E3			600	3	3	3	3	.01	0.1	1.6	0.2	2.0
	L201E5			200	5	5	5	5	.01	0.1	1.6	0.2	2.0
1.0	L401E5			400	5	5	5	5	.01	0.1	1.6	0.2	2.0
Amp	L601E5			600	5	5	5	5	.01	0.1	1.6	0.2	2.0
	L201E6			200	5	5	5	10	.01	0.1	1.6	0.2	2.0
	L401E6			400	5	5	5	10	.01	0.1	1.6	0.2	2.0
][L601E6			600	5	5	5	10	.01	0.1	1.6	0.2	2.0
	L201E8 L401E8			200 400	10	10 10	10	20	.01	0.1 0.1	1.6 1.6	0.2	2.0
	L601E8	-		600	10	10	10	20	.01	0.1	1.6	0.2	2.0
		L2004L3	L2004F31	200	3	3	3	3	.01	0.2	1.6	0.2	2.0
		LARRAGA	LAUDAF31	400	3	3	3	3	.01	0.2	1.6	0.2	2.0
		Leonal 3	LEGIST	600	3	3	3	3	.01	0.2	1.8	0.2	2.0
2.0		2200010	LEGGES	200	3	. 5	- 5	5	.01	0.2	1.6	9.2	2.0
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		LEGGLE	LACOUPSI	500	- 5	-	5	-	.01	0.2	1.8	0.2	2.0
		LANCES LANCES	Láteure:	200 400	3	9	3	10	.01	0,2 0,2	1.6	0.2 0.2	2.0 2.0
		LESSONS	1,000,000	800	-	5	5	10	.01	0.2	1.6	0.2	2.0
		Landers	COLON	200	10	10	10	20	.01	0.2	1.6	0.2	2.0
		2000	LACOUPS:	400	10	10	10	20	.01	0.2	1.8	0.2	2.0
		Libraria	LEAVEN	600	10	10	10	20	.01	0,2	1.6	0.2	2.0
		L2006L5		200	5	5	5	5	.02	0.5	1.6	0.2	2.0
6.0 Amps		L4006L5		400	5	5	5	5	.02	0.5	1.6	0.2	2.0
		L6006L5 L2006L6		600 200	5 5	5 5	5 5	5 10	.02	0.5 0.5	1.6 1.6	0.2	2.0
		L4006L6		400	5	5	5	10	.02	0.5	1.6	0.2	2.0
		L6006L6		600	5	5	5	10	.02	0.5	1.6	0.2	2.0
		L2006L8		200	10	10	10	20	.02	0.5	1.6	0.2	2.0
		L4006L8		400	10	10	10	20	.02	0.5	1.6	0.2	2.0
		L6006L8		600	10	10	10	20	.02	0.5	1.6	0.2	2.0
100		1.20001.0		260	5	5	5	18	.02	0,5	1.8	9.2	2.0
		LADORLS		400	9	•	8	10	.02	0.5	1.6	0.2	2.0
CO Action		Leseule		690	. 5	5	5	10	.02	0.5	1.8	0.2	2.0
		L2006L2		200	10	10	10	20	.02	0,5	1.6	0.2	2.0
		LAGOSLS LGGGSLS		400 800	10	10	10	20 20	.92	0.5	1.6	0.2	2.0
		10.22.00.00130		600	10				.02	0.5	1.0	0.2	2.9

See General Notes and Electrical Specification Notes on page 1-4.

Helding Fear Current Gate G											
Holdrigg Peak Current Gate Care	ha	lane	Pos	Parm	lreu		dv/dt(c)	dv/dt	t	14	dildt
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Comman	Initial	Current	Dissipation	Dissipation						l	On-State
Amps		(12)			(8) (1	10)		Voltage at		I .	Current
MATING M	ľ		(12)					Gate Open		}	I _{GT} = 50mA
MAMPS							1		nise rime		With 0.1µs Rise Time
MAX	(1)(7)				Amp	os	(1)(10)			loi i using	Tilse Tille
MAX	mAmps	Amps	Watts	Watts	60Hz	50Hz	Volts/μSec	T _C = 100°C	μSec	Amps ² Sec	Amps/μSec
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See General Notes and Electrical Specification Notes on page 1-4.

Electrical Specifications

General Notes

- All measurements are made with 60Hz resistive load and at an ambient temperature of +25°C unless otherwise specified.
- Operating temperature range (T_J) is -65°C to +110°C for TO-92 devices; -40°C to 110°C for all other devices.
- Storage temperature range (T_S) is -65°C to +150°C for TO-92 devices; -40°C to +150°C for TO-202 devices; and -40°C to +125°C for TO-220 devices.
- Lead solder temperature is a maximum of 230°C for 10 seconds maximum at a minimum of 1/16" (1.59mm) from case.
- The case temperature (T_C) is measured as shown on dimensional outline drawings. See "Package Dimensions" section of this catalog.

Electrical Specification Notes

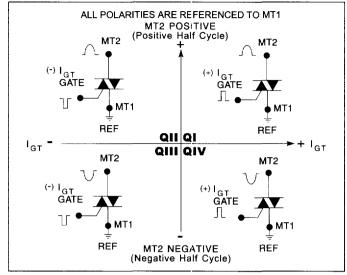
- For either polarity of MT2 with reference to MT1 terminal.
- For either polarity of gate voltage V_{GT} with reference to MT1 terminal.
- (3) See definition of quadrants and gate characteristics.
- (4) See Figure 1.4 for i_T vs v_T.
- (5) See Figure 1.6 for V_{GT} vs T_C.
- (6) See Figure 1.7 for IGT vs TC.
- (7) See Figure 1.5 for I_H vs T_C.
- (8) See Figure 1.9 for surge rating and specific duration.
- (9) See Figure 1.8 for tat vs IGT.
- (10) See Figures 1.2 and 1.3 for maximum allowable case temperature at maximum rated current.
- (11) See Figures 1.1, 1.2, and 1.3 for T_A or T_C vs I_T (RMS).
- (12) Pulse width ≤ 10 us.
- (13) $T_C = T_1$ for test conditions in off-state.

Gate Characteristics

Teccor triacs may be turned on between gate and MT1 terminals in the following ways:

- With in-phase signals (using standard AC line) Quadrants I and III are used.
- By applying unipolar pulses (gate always positive or negative)
 with negative gate pulses Quadrants II and III are used and with positive gate pulses Quadrants I and IV are used.

When maximum surge capability is required, pulses should be a minimum of one magnitude above I_{GT} rating with a steep rising waveform ($\leq 1\mu$ sec rise time).



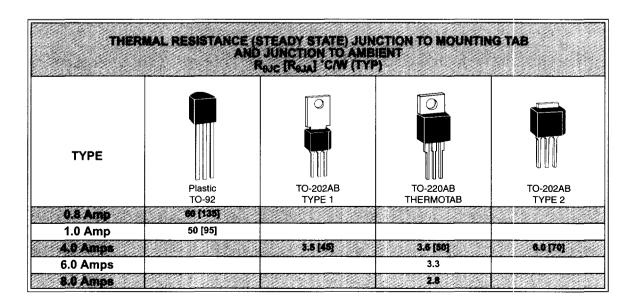
Definition of Quadrants

Electrical Isolation

Teccor's isolated triac packages will withstand a minimum high potential test of 2500 VAC RMS from leads to mounting tab over the device's operating temperature range. See isolation table below for standard isolation ratings.

ELECTRICA	LISOLATION MOUNTING TAB
VAC(RMS)	TO-220AB THERMOTAB *
2500	Standard

* U.L. Recognized File #E71639



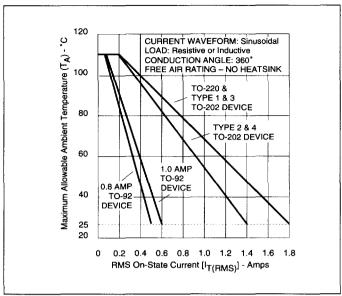


Figure 1.1 Maximum Allowable Ambient Temperature vs On-State

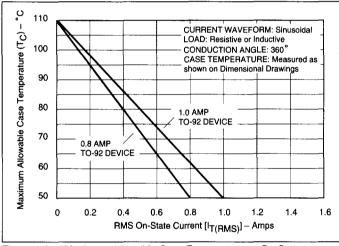


Figure 1.2 Maximum Allowable Case Temperature vs On-State Current (0.8 and 1.0 Amp)

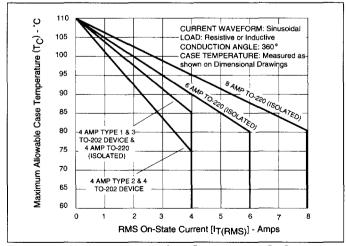


Figure 1.3 Maximum Allowable Case Temperature vs On-State Current (4, 6, and 8 Amp)

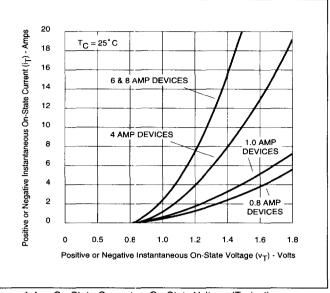


Figure 1.4 On-State Current vs On-State Voltage (Typical)

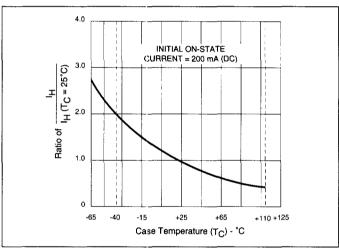


Figure 1.5 Normalized DC Holding Current vs Case Temperature

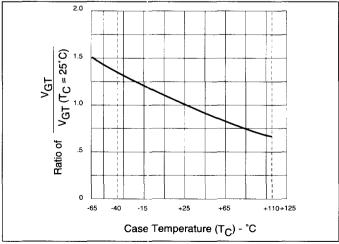


Figure 1.6 Normalized DC Gate Trigger Voltage for All Quadrants vs Case Temperature

Electrical Specifications

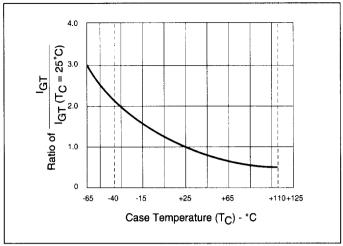


Figure 1.7 Normalized DC Gate Trigger Current for All Quadrants vs Case Temperature

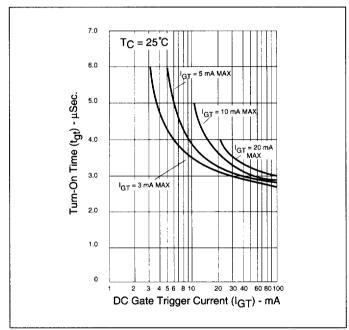


Figure 1.8 Turn-On Time vs Gate Trigger Current (Typical)

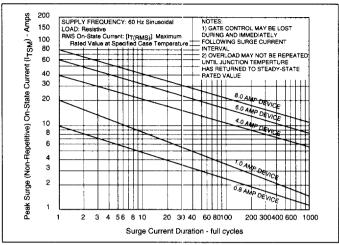


Figure 1.9 Peak Surge Current vs Surge Current Duration

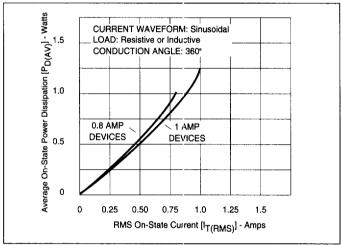


Figure 1.10 Power Dissipation (Typ.) vs RMS On-State Current (0.8 and 1 Amp)

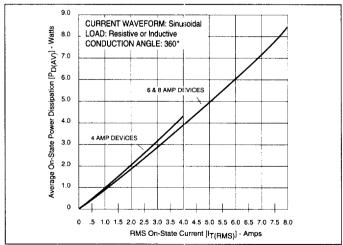


Figure 1.11 Power Dissipation (Typ.) vs RMS On-State Current (4, 6, and 8 Amp)

1-6