

**TECCOR**  
ELECTRONICS, INC.

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TELEX 79-1600

# GATED TRIACS 1-40 AMPS

## General Description

These gated triacs from Teccor Electronics are part of a broad line of bidirectional semiconductors. The devices range in current ratings from 1 to 40 Amperes, and in voltage from 200 to 600 Volts.

The triac may be gate triggered from a blocking to conduction state for either polarity of applied voltage and is designed for AC switching and phase control applications such as speed and temperature modulation controls, lighting controls and static switching relays. The triggering signal is normally applied between the gate and MT1.

Teccor's gated triacs are available in a choice of different packages as shown above. Most packages are offered in the electrically isolated construction

where the case or tab is electrically isolated from the semiconductor chip. This feature facilitates the use of low cost assembly and convenient packaging techniques.

Teccor's new TO-218X package has been designed especially for steady state power handling capability. The TO-218X features large eyelet terminals for ease of soldering heavy gauge hook-up wire.

All Teccor triacs have glass passivated junctions to insure long term device reliability and parameter stability. Teccor's glass offers a rugged reliable barrier against junction contamination.

# GATED TRIACS 1-40 AMPS

I <sub>TRMS</sub>	Part Number						V <sub>DRM</sub>	I <sub>GT</sub>					I <sub>DRM</sub>			V <sub>TM</sub>		V <sub>GT</sub>	
	Isolated		Non-Isolated					Repetitive Peak Blocking Voltage (1)	DC Gate Trigger Current in Specific Operating Quadrants V <sub>D</sub> = 12 VDC R <sub>L</sub> = 60 Ω (3) (7)					Peak Off-State Current Gate Open V <sub>DRM</sub> = Max Rated Value (1)			Peak On-State Voltage at Max Rated RMS Current T <sub>C</sub> = 25°C (1) (5)		DC Gate Trigger Voltage V <sub>D</sub> = 12VDC R <sub>L</sub> = 60 Ω (2) (6)
RMS On-State Current Conduction Angle of 360° (4)							Volts		mA					mA · MAX			Volts		Volts
Amps	PLASTIC TO-92	THERMOTAB TO-220AB	SOT-89	TO-202AB	TO-202AB	NON-ISOLATED TO-220AB		MIN	I <sub>I</sub> MAX	I <sub>II</sub> MAX	I <sub>III</sub> MAX	I <sub>IV</sub> MAX	I <sub>IV</sub> TYP	T <sub>C</sub> = 25°C	T <sub>C</sub> = 100°C	T <sub>C</sub> = 125°C	MAX	MIN	MAX
1.0 Amp	FOR PACKAGE DIMENSIONS & VARIATIONS SEE PAGE 67						MIN	I <sub>I</sub> MAX	I <sub>II</sub> MAX	I <sub>III</sub> MAX	I <sub>IV</sub> MAX	I <sub>IV</sub> TYP	T <sub>C</sub> = 25°C	T <sub>C</sub> = 100°C	T <sub>C</sub> = 125°C	MAX	MIN	MAX	
				Q201U3			200	10	10	10		25	.02	0.5	1.0	1.6	0.2	2.0	
				Q401U3			400	10	10	10		25	.02	0.5	1.0	1.6	0.2	2.0	
				Q201U4			200	25	25	25		50	.02	0.5	1.0	1.6	0.2	2.5	
				Q401U4			400	25	25	25		50	.02	0.5	1.0	1.6	0.2	2.5	
		Q201E3					200	10	10	10		25	.02	0.5	1.0	1.6	0.2	2.0	
		Q401E3					400	10	10	10		25	.02	0.5	1.0	1.6	0.2	2.0	
1.6 Amps							200	10	10	10		25	.05	0.5	1.0	1.6	0.2	2.0	
		Q2001L3					400	10	10	10		25	.05	0.5	1.0	1.6	0.2	2.0	
		Q4001L3					200	25	25	25		50	.05	0.5	1.0	1.6	0.2	2.5	
		Q4001L4					400	25	25	25		50	.05	0.5	1.0	1.6	0.2	2.5	
3.0 Amps							200	10	10	10		25	.05	0.5	2.0	1.6	0.2	2.0	
		Q2003L3					400	10	10	10		25	.05	0.5	2.0	1.6	0.2	2.0	
		Q4003L3					200	25	25	25		50	.05	0.5	2.0	1.6	0.2	2.5	
4.0 Amps							400	25	25	25		50	.05	0.5	2.0	1.6	0.2	2.5	
		Q2004L3		Q2004F31	Q2004N31		200	10	10	10		25	.05	0.5	2.0	1.6	0.2	2.0	
		Q4004L3		Q4004F31	Q4004N31		400	10	10	10		25	.05	0.5	2.0	1.6	0.2	2.0	
		Q2004L4		Q2004F41	Q2004N41	Q2004R4	200	25	25	25		50	.05	0.5	2.0	1.6	0.2	2.5	
		Q4004L4		Q4004F41	Q4004N41	Q4004R4	400	25	25	25		50	.05	0.5	2.0	1.6	0.2	2.5	
		Q5004L4		Q5004F41	Q5004N41	Q5004R4	500	25	25	25		50	.05	0.5	2.0	1.6	0.2	2.5	
		Q6004L4		Q6004F41	Q6004N41	Q6004R4	600	25	25	25		50	.05	0.5	2.0	1.6	0.2	2.5	
6.0 Amps							200	25	25	25		50	.05	0.5	2.0	1.6	0.2	2.5	
		Q2006L4		Q2006F41		Q2006R4	400	25	25	25		50	.05	0.5	2.0	1.6	0.2	2.5	
		Q4006L4		Q4006F41		Q4006R4	400	25	25	25		50	.05	0.5	2.0	1.6	0.2	2.5	
		Q5006L4		Q5006F41		Q5006R4	500	25	25	25		50	.05	0.5	2.0	1.6	0.2	2.5	
		Q6006L5		Q6006F51		Q6006R5	600	50	50	50		75	.05	0.5	2.0	1.6	0.2	2.5	
						SC141B	200	50	50	50			0.1	0.5		1.83	0.2	2.5	
						SC141D	400	50	50	50			0.1	0.5		1.83	0.2	2.5	
						SC141E	500	50	50	50			0.1	0.5		1.83	0.2	2.5	
						SC141M	600	50	50	50			0.1	0.5		1.83	0.2	2.5	
						T2500B	200	25	60	25	60		0.1	2.0		2.0*	0.2	2.5	
						T2500D	400	25	60	25	60		0.1	2.0		2.0*	0.2	2.5	
						T2801B	200	80		80			0.1	2.0		3.0*	0.2	4.0	
						T2801C	300	80		80			0.1	2.0		3.0*	0.2	4.0	
						T2801D	400	80		80			0.1	2.0		3.0*	0.2	4.0	
					T2801E	500	80		80			0.1	2.0		3.0*	0.2	4.0		
					T2801M	600	80		80			0.1	2.0		3.0*	0.2	4.0		
8.0 Amps							200	25	25	25		50	.05	0.5	2.0	1.6	0.2	2.5	
		Q2008L4		Q2008F41		Q2008R4	400	25	25	25		50	.05	0.5	2.0	1.6	0.2	2.5	
		Q4008L4		Q4008F41		Q4008R4	400	25	25	25		50	.05	0.5	2.0	1.6	0.2	2.5	
		Q5008L4		Q5008F41		Q5008R4	500	25	25	25		50	.05	0.5	2.0	1.6	0.2	2.5	
		Q6008L5		Q6008F51		Q6008R5	600	50	50	50		75	.05	0.5	2.0	1.6	0.2	2.5	
						2N6342	200	50		50			0.1	2.0		1.55	0.2	2.0	
						2N6343	400	50		50			0.1	2.0		1.55	0.2	2.0	
						2N6344	600	50		50			0.1	2.0		1.55	0.2	2.0	
						2N6346	200	50	75	50	75		0.1	2.0		1.55	0.2	2.0	
						2N6347	400	50	75	50	75		0.1	2.0		1.55	0.2	2.0	
						2N6348	600	50	75	50	75		0.1	2.0		1.55	0.2	2.0	
						SC143B	200	50	50	50			0.1	0.5		1.55	0.2	2.5	
						SC143D	400	50	50	50			0.1	0.5		1.55	0.2	2.5	
						SC143E	500	50	50	50			0.1	0.5		1.55	0.2	2.5	
						SC143M	600	50	50	50			0.1	0.5		1.55	0.2	2.5	
						T2800B	200	25	60	25	60		0.1	2.0		2.0*	0.2	2.5	
						T2800C	300	25	60	25	60		0.1	2.0		2.0*	0.2	2.5	
						T2800D	400	25	60	25	60		0.1	2.0		2.0*	0.2	2.5	
						T2800E	500	25	60	25	60		0.1	2.0		2.0*	0.2	2.5	
						T2800M	600	25	60	25	60		0.1	2.0		2.0*	0.2	2.5	

\*V<sub>TM</sub> @ I<sub>t</sub> = 30 A<sub>PK</sub>

**GENERAL NOTES**

- All measurements are made at 60 Hz with a resistive load at an ambient temperature of +25°C unless specified otherwise
- Operating temperature range (T<sub>J</sub>) is -65°C to +125°C for TO-92 and SOT-89 devices, 0°C to +125°C for Fastpak, and -40°C to +125°C for all other devices

- Storage temperature range (T<sub>S</sub>) is -65°C to +150°C for TO-92 and SOT-89 devices, -40°C to +150°C for TO-202 devices, -20°C to +125°C for fastpaks and -40°C to +125°C for all other devices
- Lead solder temperature is a maximum of 230°C for 10 seconds maximum ≥ 1/16" from case
- The case temperature (T<sub>C</sub>) is measured as shown on the dimensions and drawings. See "Package Dimensions" section of this catalog

# Electrical Specifications

	I <sub>H</sub>	I <sub>GT</sub>	P <sub>GM</sub>	P <sub>G(AV)</sub>	I <sub>TSM</sub>		dv/dt (c)	dv/dt		t <sub>gt</sub>	I <sub>st</sub>	di/dt
	Holding Current (DC) Gate Open (1) (8) (12)	Peak Gate Trigger Current (14)	Peak Gate Power Dissipation (14) I <sub>GT</sub> ≤ I <sub>GM</sub>	Average Gate Power Dissipation	Peak One Cycle Surge (9) (13)		Critical Rate of Rise of Commutation Voltage at Rated V <sub>DRM</sub> and I <sub>T</sub> (RMS) Commutating di/dt = .54 Rated I <sub>T</sub> (RMS)/msec. Gate Unenergized (1) (4) (13)	Critical Rate of Rise of Off-State Voltage at Rated V <sub>DRM</sub> Gate Open (1)		Gate Controlled Turn-On Time I <sub>GT</sub> = 200mA 0.1 μs Rise Time (10)	RMS Surge (Non-Repetitive) Off-State Current For period of 8.3 msec for Fusing	Maximum Rate of Change of On-State Current I <sub>GT</sub> = 200 mA With 0.1 μs Rise Time
	mA	Amps	Watts	Watts	Amps		Volts/μs	Volts/μs		μs	Amps <sup>2</sup> sec.	Amps/μs
MAX					60Hz	50Hz	MIN	T <sub>C</sub> = 100°C	T <sub>C</sub> = 125°C	MAX		
15	1.0	10	0.2	10	8.3	1.0	30	20	2.5	0.41	20	
15	1.0	10	0.2	10	8.3	1.0	25	15	2.5	0.41	20	
25	1.0	10	0.2	10	8.3	1.0	45	30	3	0.41	20	
25	1.0	10	0.2	10	8.3	1.0	35	25	3	0.41	20	
15	1.0	10	0.2	20	16.7	1.0	30	20	2.5	1.6	30	
15	1.0	10	0.2	20	16.7	1.0	25	15	2.5	1.6	30	
25	1.0	10	0.2	20	16.7	1.0	45	30	3	1.6	30	
25	1.0	10	0.2	20	16.7	1.0	35	25	3	1.6	30	
15	1.0	10	0.2	20	16.7	1.0	30	20	2.5	1.6	30	
15	1.0	10	0.2	20	16.7	1.0	25	15	2.5	1.6	30	
25	1.0	10	0.2	20	16.7	1.0	45	30	3	1.6	30	
25	1.0	10	0.2	20	16.7	1.0	35	25	3	1.6	30	
20	1.2	15	0.3	30	25	2.0	45	30	2.5	3.7	50	
20	1.2	15	0.3	30	25	2.0	35	25	2.5	3.7	50	
25	1.2	15	0.3	30	25	2.0	75	50	3	3.7	50	
25	1.2	15	0.3	30	25	2.0	75	50	3	3.7	50	
20	1.2	15	0.3	40	33	2.0	45	30	2.5	6.6	50	
20	1.2	15	0.3	40	33	2.0	35	25	2.5	6.6	50	
30	1.2	15	0.3	40	33	2.0	75	50	3	6.6	50	
30	1.2	15	0.3	40	33	2.0	75	50	3	6.6	50	
30	1.2	15	0.3	40	33	2.0	50	35	3	6.6	50	
30	1.2	15	0.3	40	33	2.0	50	35	3	6.6	50	
50	1.6	18	0.5	80	65	4.0	150	100	3	26.5	70	
50	1.6	18	0.5	80	65	4.0	150	100	3	26.5	70	
50	1.6	18	0.5	80	65	4.0	125	85	3	26.5	70	
50	1.6	18	0.5	80	65	4.0	125	85	3	26.5	70	
50	1.6	10	0.5	80	74	4.0	30		3	26.5	70	
50	1.6	10	0.5	80	74	4.0	30		3	26.5	70	
50	1.6	10	0.5	80	74	4.0	30		3	26.5	70	
50	1.6	10	0.5	80	74	4.0	30		3	26.5	70	
30	1.6	16	0.2	60	50	4.0	100		2.5	15	70	
30	1.6	16	0.2	60	50	4.0	75		2.5	15	70	
	1.6	16	0.35	80	65	2.0	50		3	26.5	70	
	1.6	16	0.35	80	65	2.0	40		3	26.5	70	
	1.6	16	0.35	80	65	2.0	30		3	26.5	70	
	1.6	16	0.35	80	65	2.0	20		3	26.5	70	
	1.6	16	0.35	80	65	2.0			3	26.5	70	
50	1.8	20	0.5	100	83	4.0	175	120	3	41	70	
50	1.8	20	0.5	100	83	4.0	175	120	3	41	70	
50	1.8	20	0.5	100	83	4.0	150	100	3	41	70	
50	1.8	20	0.5	100	83	4.0	150	100	3	41	70	
40	2.0	20	0.5	100	83	4.0			2	41	70	
40	2.0	20	0.5	100	83	4.0			2	41	70	
40	2.0	20	0.5	100	83	4.0			2	41	70	
40	2.0	20	0.5	100	83	4.0			2	41	70	
40	2.0	20	0.5	100	83	4.0			2	41	70	
40	2.0	20	0.5	100	83	4.0			2	41	70	
40	2.0	20	0.5	100	83	4.0			2	41	70	
50	1.8	10	0.5	120	110	4.0	50		3	60	70	
50	1.8	10	0.5	120	110	4.0	50		3	60	70	
50	1.8	10	0.5	120	110	4.0	50		3	60	70	
50	1.8	10	0.5	120	110	4.0	50		3	60	70	
30	1.8	16	0.35	100	85	4.0	100		2.5	41	70	
30	1.8	16	0.35	100	85	4.0	85		2.5	41	70	
30	1.8	16	0.35	100	85	4.0	75		2.5	41	70	
30	1.8	16	0.35	100	85	4.0	65		2.5	41	70	
30	1.8	16	0.35	100	85	4.0			2.5	41	70	







## NOTES TO ELECTRICAL SPECIFICATIONS

- For either polarity of MT2 with reference to MT1 terminal
- For either polarity of gate voltage (VGT) with reference to MT1 terminal
- See definition of quadrants
- See figures 1A, B, C, D, E, F and Figure 2 for current rating at specific operating temperature
- See figures 3A, B, and C for I<sub>T</sub> vs V<sub>T</sub>

- See figure 5 for VGT vs T<sub>C</sub>
- See figure 4 for I<sub>GT</sub> vs T<sub>C</sub>
- See figure 6 for I<sub>H</sub> vs T<sub>C</sub>
- See figure 7 for surge rating with specific durations
- See figures 8A and B for I<sub>gt</sub> vs I<sub>GT</sub>
- See package outlines for lead form configurations. When ordering special lead forming, add type number as suffix to part number

- Initial on-state current = 200 mA(DC) for 1-10 amp devices. 400 mA(DC) for 12 amp to 40 amp devices.
- See figure 1(A, B, C, D, E and F) for maximum allowable case temperature @ maximum rated current
- Pulse width ≤ 3μsec

# GATED TRIACS 1-40 AMPS

ITRMS	Part Number						VDRM	IGT					IDRM			VTM	VGT		
	Isolated			Non-Isolated				Repetitive Peak Blocking Voltage (1)	DC Gate Trigger Current in Specific Operating Quadrants V <sub>D</sub> = 12 VDC (3) (7) (15)					Peak Off-State Current Gate Open V <sub>DRM</sub> = Max Rated Value (1)	Peak On-State Voltage at Max Rated RMS Current T <sub>C</sub> = 25°C (1) (5)	DC Gate Trigger Voltage V <sub>D</sub> = 12VDC (2) (6) (15)			
RMS On-State Current Angle of 360° (4)							Volts		mA							mA - MAX			Volts
Amps	THERMOTAB TO-220AB	ISOLATED TO-218X	FASTPAK TO-3-BASE	TO-202AB	NON-ISOLATED TO-220AB	NON-ISOLATED TO-218X		Q1 MAX	QII MAX	QIII MAX	QIV MAX	QIV TYP	T <sub>C</sub> = 25°C	T <sub>C</sub> = 100°C	T <sub>C</sub> = 125°C	MAX	MIN	MAX	
MAX	FOR PACKAGE DIMENSIONS & VARIATIONS SEE PAGE 67						MIN												
8.0 Amps					T2802B		200	50	50	50			0.1	2.0		2.0*	0.2	2.5	
					T2802C		300	50	50				0.1	2.0		2.0*	0.2	2.5	
					T2802D		400	50	50				0.1	2.0		2.0*	0.2	2.5	
					T2802E		500	50	50				0.1	2.0		2.0*	0.2	2.5	
					T2802M		600	50	50				0.1	2.0		2.0*	0.2	2.5	
10.0 Amps	Q2010L5			Q2010F51	Q2010R5		200	50	50	50	75	.05	0.5	2.0		1.6	0.2	2.5	
	Q4010L5			Q4010F51	Q4010R5		400	50	50	50	75	.05	0.5	2.0		1.6	0.2	2.5	
	Q5010L5			Q5010F51	Q5010R5		500	50	50	50	75	.05	0.5	2.0		1.6	0.2	2.5	
	Q6010L5			Q6010F51	Q6010R5		600	50	50	50	75	.05	0.5	2.0		1.6	0.2	2.5	
					SC146B		200	50	50	50			0.1	0.5		1.65	0.2	2.5	
					SC146D		400	50	50	50			0.1	0.5		1.65	0.2	2.5	
					SC146E		500	50	50	50			0.1	0.5		1.65	0.2	2.5	
12.0 Amps	Q2012L5			Q2012R5	Q2012R5		200	50	50	50	75	.05	0.5	2.0		1.6	0.2	2.5	
	Q4012L5			Q4012R5	Q4012R5		400	50	50	50	75	.05	0.5	2.0		1.6	0.2	2.5	
	Q5012L5			Q5012R5	Q5012R5		500	50	50	50	75	.05	0.5	2.0		1.6	0.2	2.5	
	Q6012L5			Q6012R5	Q6012R5		600	50	50	50	75	.05	0.5	2.0		1.6	0.2	2.5	
					2N6342A		200	50		50			0.1	2.0		1.75	0.2	2.0	
					2N6343A		400	50		50			0.1	2.0		1.75	0.2	2.0	
					2N6344A		600	50		50			0.1	2.0		1.75	0.2	2.0	
					2N6346A		200	50	75	50	75		0.1	2.0		1.75	0.2	2.0	
					2N6347A		400	50	75	50	75		0.1	2.0		1.75	0.2	2.0	
					2N6348A		600	50	75	50	75		0.1	2.0		1.75	0.2	2.0	
					SC149B		200	50	50	50			0.1	0.5		1.65	0.2	2.5	
					SC149D		400	50	50	50			0.1	0.5		1.65	0.2	2.5	
					SC149E		500	50	50	50			0.1	0.5		1.65	0.2	2.5	
15.0 Amps	Q2015L5			Q2015R5	Q2015R5		200	50	50	50	75	.05	0.5	2.0		1.6	0.2	2.5	
	Q4015L5			Q4015R5	Q4015R5		400	50	50	50	75	.05	0.5	2.0		1.6	0.2	2.5	
	Q5015L5			Q5015R5	Q5015R5		500	50	50	50	75	.05	0.5	2.0		1.6	0.2	2.5	
	Q6015L5			Q6015R5	Q6015R5		600	50	50	50	75	.05	0.5	2.0		1.6	0.2	2.5	
					SC151B		200	50	50	50			0.1	0.5		1.52	0.2	2.5	
					SC151D		400	50	50	50			0.1	0.5		1.52	0.2	2.5	
					SC151E		500	50	50	50			0.1	0.5		1.52	0.2	2.5	
25.0 Amps	Q2025L6	Q2025P		Q2025R6	Q2025R6		200	80	80	80	100	0.1	1.0	5.0		1.8	0.2	2.5	
	Q4025L6	Q4025P		Q4025R6	Q4025R6		400	80	80	80	100	0.1	1.0	5.0		1.8	0.2	2.5	
	Q5025L6	Q5025P		Q5025R6	Q5025R6		500	80	80	80	100	0.1	1.0	5.0		1.8	0.2	2.5	
	Q6025L6	Q6025P		Q6025R6	Q6025R6		600	80	80	80	100	0.1	1.0	5.0		1.8	0.2	2.5	
				SC129B		200	50	50	50			0.1	1.0		1.58	0.2	2.5		
				SC129D		400	50	50	50			0.1	1.0		1.58	0.2	2.5		
				SC129E		500	50	50	50			0.1	1.0		1.58	0.2	2.5		
				SC129M		600	50	50	50			0.1	1.0		1.58	0.2	2.5		
		Q2025J6			Q2025W6		200	80	80	80	100	0.1	1.0	5.0		1.8	0.2	2.5	
		Q4025J6			Q4025W6		400	80	80	80	100	0.1	1.0	5.0		1.8	0.2	2.5	
		Q5025J6			Q5025W6		500	80	80	80	100	0.1	1.0	5.0		1.8	0.2	2.5	
40.0 Amps		Q2040P					200	100	100	100		0.2	2.0	5.0		1.8	0.2	2.5	
		Q4040P					400	100	100	100		0.2	2.0	5.0		1.8	0.2	2.5	
		Q5040P					500	100	100	100		0.2	2.0	5.0		1.8	0.2	2.5	
		Q6040P					600	100	100	100		0.2	2.0	5.0		1.8	0.2	2.5	
		Q2040J7			Q2040W7		200	100	100	100		0.2	2.0	5.0		1.8	0.2	2.5	
		Q4040J7			Q4040W7		400	100	100	100		0.2	2.0	5.0		1.8	0.2	2.5	
		Q5040J7			Q5040W7		500	100	100	100		0.2	2.0	5.0		1.8	0.2	2.5	
	Q6040J7			Q6040W7		600	100	100	100		0.2	2.0	5.0		1.8	0.2	2.5		

\*VTM @ I<sub>t</sub> = 30APK

**GENERAL NOTES**

- All measurements are made at 60 Hz with a resistive load at an ambient temperature of +25°C unless specified otherwise
- Operating temperature range (T<sub>J</sub>) is -65°C to +125°C for TO-92 and SOT-89 devices, 0°C to +125°C for Fastpak, and -40°C to +125°C for all other devices

- Storage temperature range (T<sub>S</sub>) is -65°C to +150°C for TO-92 and SOT-89 devices -40°C to +150°C for TO-202 devices -20°C to +125°C for fastpaks and -40°C to +125°C for all other devices
- Lead solder temperature is a maximum of 230°C for 10 seconds max max  $\geq 1/16$  from case
- The case temperature (T<sub>C</sub>) is measured as shown on the dimensional outline drawings. See "Package Dimensions" section of this catalog
- All 25 amp isolated TO-220 packages contain beryllium oxide (BEO)

# Electrical Specifications

	IH	IGTM	PGM	PG(AV)	ITSM		dv/dt (c)		dv/dt		Igt	I <sup>2</sup> t	di/dt	
					Peak One Cycle Surge (9) (13)	Critical Rate of Rise of Commutation Voltage at Rated VDRM and I <sub>T</sub> (RMS) Commutating di/dt = .54 Rated I <sub>T</sub> (RMS)/msec. Gate Unenergized (1) (4) (13)	Critical Rate of Rise of Off-State Voltage at Rated VDRM Gate Open (1)		Gate Controlled Turn-On Time I <sub>GT</sub> = 200mA 0.1 μs Rise Time (10)	RMS Surge (Non-Repetitive) On-State Current For period of 8.3 msec for Fusing				Maximum Rate of Change of On-State Current I <sub>GT</sub> = 200 mA With 0.1 μs Rise Time
							Volts/μs							
mA	Amps	Watts	Watts	Amps		Volts/μs		MIN						
MAX					60Hz	50Hz	MIN	T <sub>C</sub> = 100°C	T <sub>C</sub> = 125°C	MAX				
60	1.8	16	0.35	100	85	4	100			2.5	41	70		
60	1.8	16	0.35	100	85	4	85			2.5	41	70		
60	1.8	16	0.35	100	85	4	75			2.5	41	70		
60	1.8	16	0.35	100	85	4	65			2.5	41	70		
60	1.8	16	0.35	100	85	4	60			2.5	41	70		
50	1.8	20	0.5	120	100	4	200	150		3	60	70		
50	1.8	20	0.5	120	100	4	200	150		3	60	70		
50	1.8	20	0.5	120	100	4	175	120		3	60	70		
50	1.8	20	0.5	120	100	4	175	120		3	60	70		
50	1.8	10	0.5	120	110	4	100			3	60	70		
50	1.8	10	0.5	120	110	4	100			3	60	70		
50	1.8	10	0.5	120	110	4	100			3	60	70		
50	1.8	10	0.5	120	110	4	100			3	60	70		
50	1.8	10	0.5	120	110	4	100			3	60	70		
50	1.8	20	0.5	120	100	4	250	175		3	60	100		
50	1.8	20	0.5	120	100	4	250	175		3	60	100		
50	1.8	20	0.5	120	100	4	200	150		3	60	100		
50	1.8	20	0.5	120	100	4	200	150		3	60	100		
40	2.0	20	0.5	120	113	4	100			2	60	100		
40	2.0	20	0.5	120	113	4	75			2	60	100		
40	2.0	20	0.5	120	113	4	60			2	60	100		
40	2.0	20	0.5	120	113	4	100			2	60	100		
40	2.0	20	0.5	120	113	4	75			2	60	100		
40	2.0	20	0.5	120	113	4	60			2	60	100		
50	2.0	10	0.5	120	110	4	100			3	60	100		
60	2.0	10	0.5	120	110	4	100			3	60	100		
50	2.0	10	0.5	120	110	4	100			3	60	100		
50	2.0	10	0.5	120	110	4	100			3	60	100		
70	2.0	20	0.5	150	125	4	300	200		4	93	100		
70	2.0	20	0.5	150	125	4	300	200		4	93	100		
70	2.0	20	0.5	150	125	4	200	150		4	93	100		
70	2.0	20	0.5	150	125	4	200	150		4	93	100		
50	2.0	10	0.5	120	110	4	100			4	60	100		
50	2.0	10	0.5	120	110	4	100			4	60	100		
50	2.0	10	0.5	120	110	4	100			4	60	100		
50	2.0	10	0.5	120	110	4	100			4	60	100		
80	2.0	20	0.5	250	208	5	375	250		4	259	100		
80	2.0	20	0.5	250	208	5	375	250		4	259	100		
80	2.0	20	0.5	250	208	5	300	200		4	259	100		
80	2.0	20	0.5	250	208	5	300	200		4	259	100		
75	3.5	10	0.5	250	230	4				4	259	100		
75	3.5	10	0.5	250	230	4				4	259	100		
75	3.5	10	0.5	250	230	4				4	259	100		
75	3.5	10	0.5	250	230	4				4	259	100		
80	4.0	40	0.8	300	250	5	375	250		4	374	150		
80	4.0	40	0.8	300	250	5	375	250		4	374	150		
80	4.0	40	0.8	300	250	5	300	200		4	374	150		
80	4.0	40	0.8	300	250	5	300	200		4	374	150		
100	4.0	40	0.8	300	250	5	450	300		5	374	150		
100	4.0	40	0.8	300	250	5	450	300		5	374	150		
100	4.0	40	0.8	300	250	5	375	250		5	374	150		
100	4.0	40	0.8	300	250	5	375	250		5	374	150		
100	4.0	40	0.8	400	335	5	450	300		5	664	150		
100	4.0	40	0.8	400	335	5	450	300		5	664	150		
100	4.0	40	0.8	400	335	5	375	250		5	664	150		
100	4.0	40	0.8	400	335	5	375	250		5	664	150		

**NOTES TO ELECTRICAL SPECIFICATIONS**

- For either polarity of MT2 with reference to MT1 terminal
- For either polarity of gate voltage (VGT) with reference to MT1 terminal
- See definition of quadrants
- See figures 1A, B, C, D, E, F and Figure 2 for current rating at specific operating temperature
- See figures 3A, B and C for I<sub>T</sub> vs V<sub>T</sub>










- See figure 5 for VGT vs T<sub>C</sub>
- See figure 4 for IGT vs T<sub>C</sub>
- See figure 6 for I<sub>H</sub> vs T<sub>C</sub>
- See figure 7 for surge rating with specific durations
- See figures 8A and B for Igt vs IGT
- See package outlines for lead form configurations. When ordering special lead forming, add type number as suffix to part number

- Initial on-state current = 200 mA(DC) for 1-10 amp devices, 400 mA(DC) for 12 amp to 40 amp devices
- See figure 1(A, B, C, D, E and F) for maximum allowable case temperature @ maximum rated current
- Pulse width ≤ 3μsec
- R<sub>L</sub> = 60Ω for 8-12 amp tracs; R<sub>L</sub> = 30Ω for 15-40 amp tracs

# Electrical Specifications

## THERMAL RESISTANCE (STEADY STATE)

$$R_{\theta JC} / R_{\theta JA} \text{ } ^\circ\text{C/W (TYP.)}$$

Type	 SOT-89	 TO-92	 TYPE 1 TO-202AB	 TYPE 2 TO-202AB	 THERMOTAB TO-220AB	 NON-ISOLATED TO-220AB	 ISOLATED TO-218X	 NON-ISOLATED TO-218X	 FASTPAK TO-3 BASE
1.0 Amp	30	50/105							
1.6 Amp					5.2 /60				
3.0 Amp					4.4/50				
4.0 Amp			3.5/45	6/70	3.6	2.5/40			
6.0 Amp			3.8		3.3	2.1			
8.0 Amp			3.3		2.8	1.8			
10.0 Amp			3.5		2.6	1.5			
12.0 Amp					2.3	1.4			
15.0 Amp					2.0	1.3			
25.0 Amp					1.2	1.1	1.32	1.02	1.3
40.0 Amp							0.95	0.85	0.9

## ELECTRICAL ISOLATION FROM LEADS TO CASE

U.I. RECOGNIZED FILE #71639

VAC (RMS)	TO-92	ISOLATED TO-220AB	ISOLATED TO-218	FASTPAK TO-3 BASE
1600	Standard	—	—	—
2500	No	Standard	Standard	Standard
4000	No	Optional*	No	No

\*For 4000V Isolation use "V" Suffix.

### GATE CHARACTERISTICS

Teccor triacs may be gated with in-phase signals (using standard AC line) in which quadrants I & III are used, or by applying unipolar pulses (gate always positive or negative), where if a negative pulse is applied, quadrants II & III are used, and quadrants I & IV are used when a positive pulse is applied. However, due to higher gate requirements for quadrant IV, it is recommended that only negative pulses be applied. If positive pulses are required see logic triac section of catalog or contact factory. In all cases, if maximum surge capability is required, pulses should be a minimum of one magnitude above minimum I<sub>GT</sub> rating with a steep rising waveform (1 μsec rise time)

### ELECTRICAL ISOLATION

Most Teccor isolated triac packages will withstand a minimum high potential test of 2500 VAC (RMS) from leads to case, over the operating temperature range of the device. See isolation table for standard and optional isolation ratings.

### Definition of Operating Quadrants

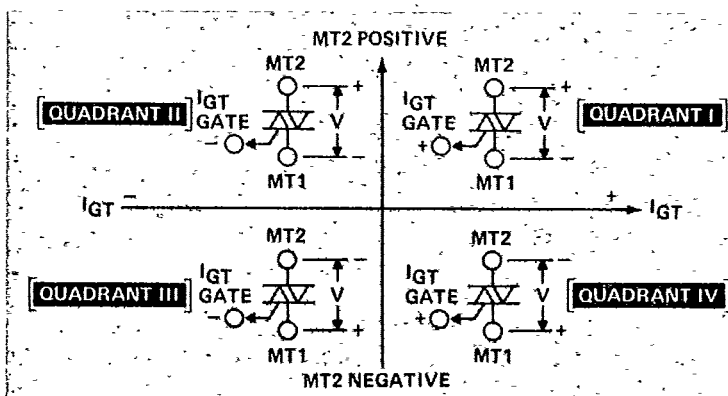
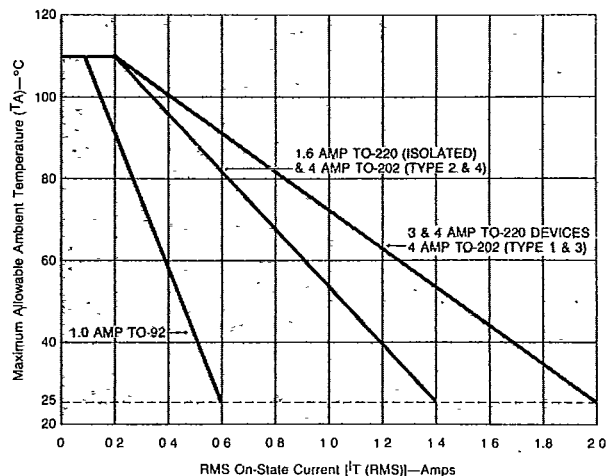


FIGURE 2 — Maximum Allowable Ambient Temperature vs On-State Current



# GATED TRIACS 1-40 AMPS

FIGURE 1A — Maximum Allowable Case Temperature vs On-State Current

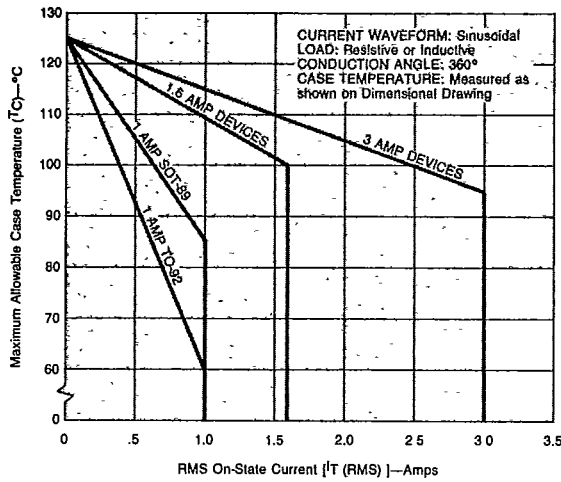


FIGURE 1B — Maximum Allowable Case Temperature vs On-State Current

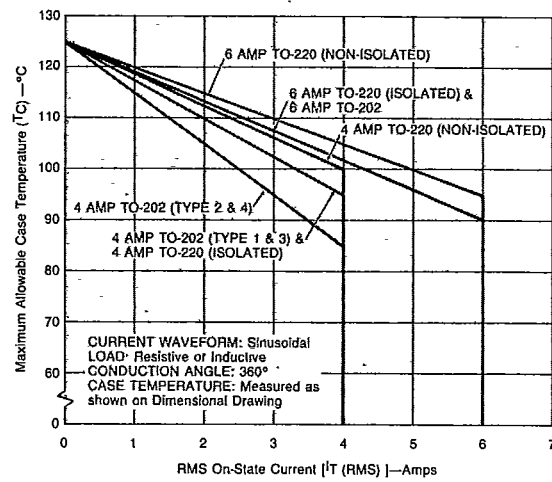


FIGURE 1C — Maximum Allowable Case Temperature vs On-State Current

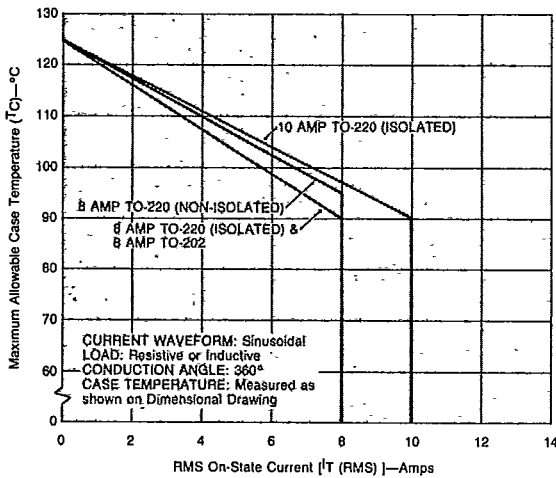


FIGURE 1D — Maximum Allowable Case Temperature vs On-State Current

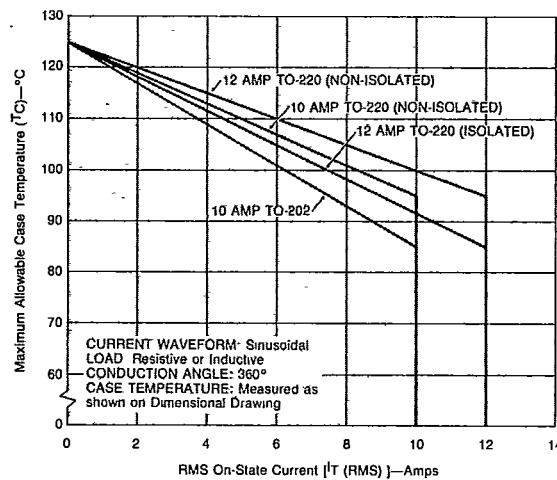


FIGURE 1E — Maximum Allowable Case Temperature vs On-State Current

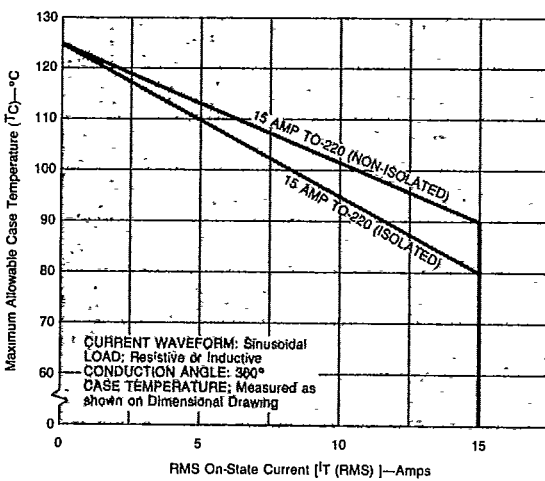
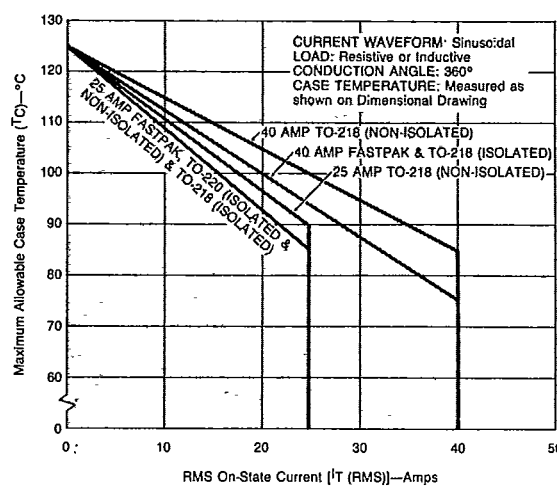
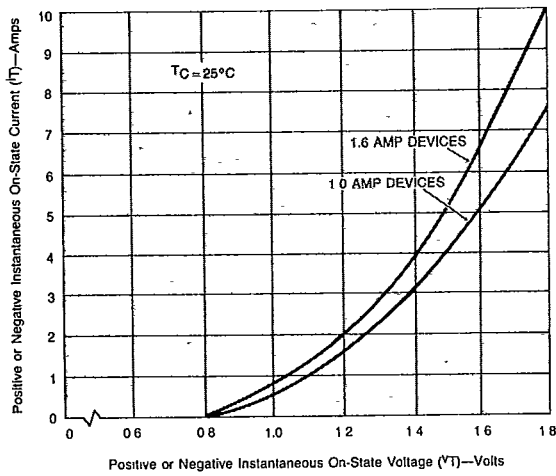


FIGURE 1F — Maximum Allowable Case Temperature vs On-State Current

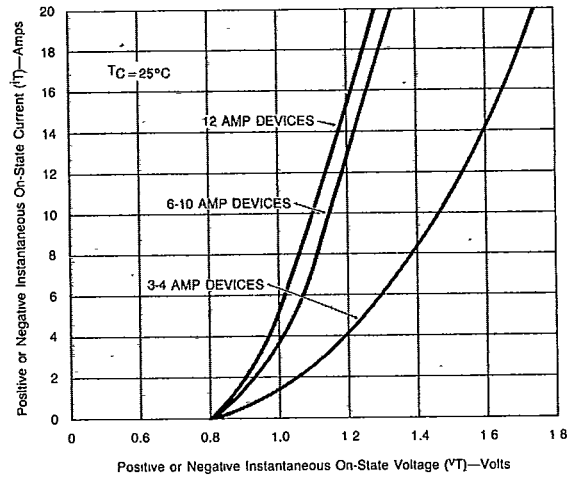


# GATED TRIACS 1-40 AMPS

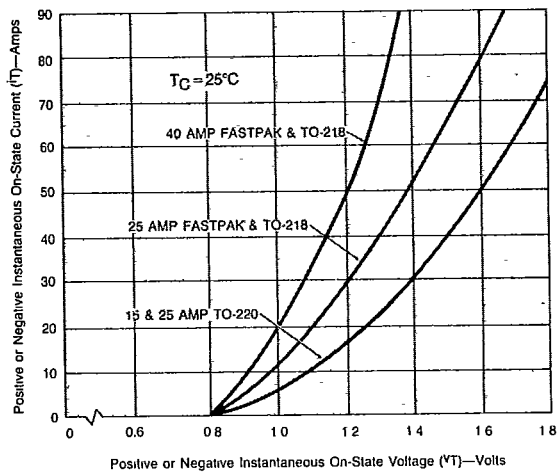
**FIGURE 3A — On-State Current vs On-State Voltage (Typical)**



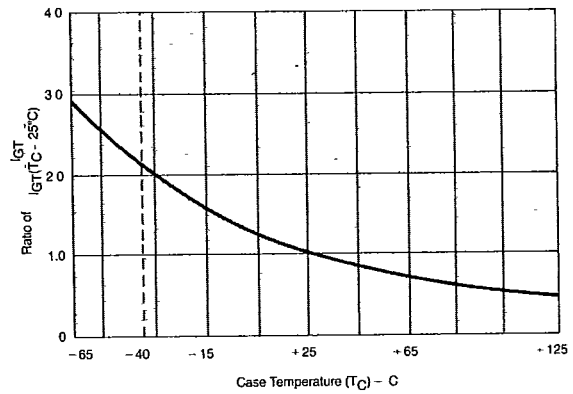
**FIGURE 3B — On-State Current vs On-State Voltage (Typical)**



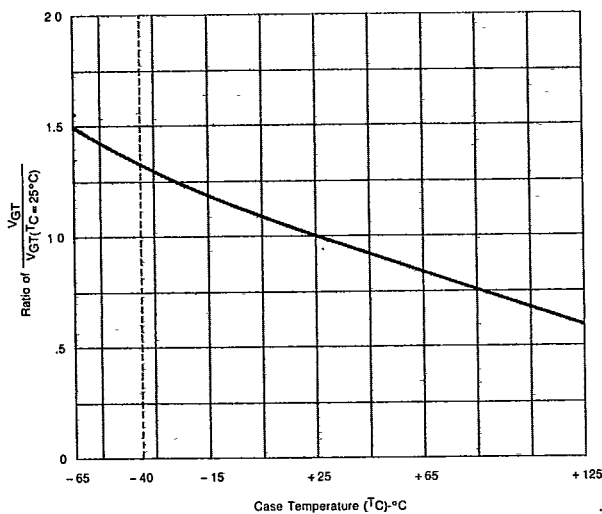
**Figure 3C — On-State Current vs On-State Voltage (Typical)**



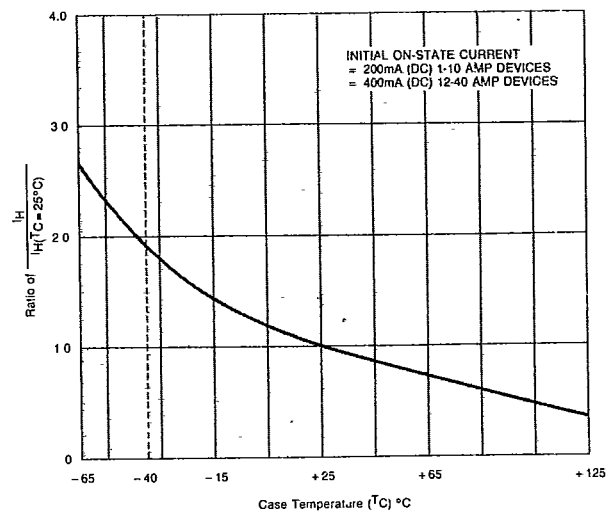
**FIGURE 4 — Normalized DC Gate Trigger Current for All Quadrants vs Case Temperature**



**FIGURE 5 — Normalized DC Gate Trigger Voltage for All Quadrants vs Case Temperature**



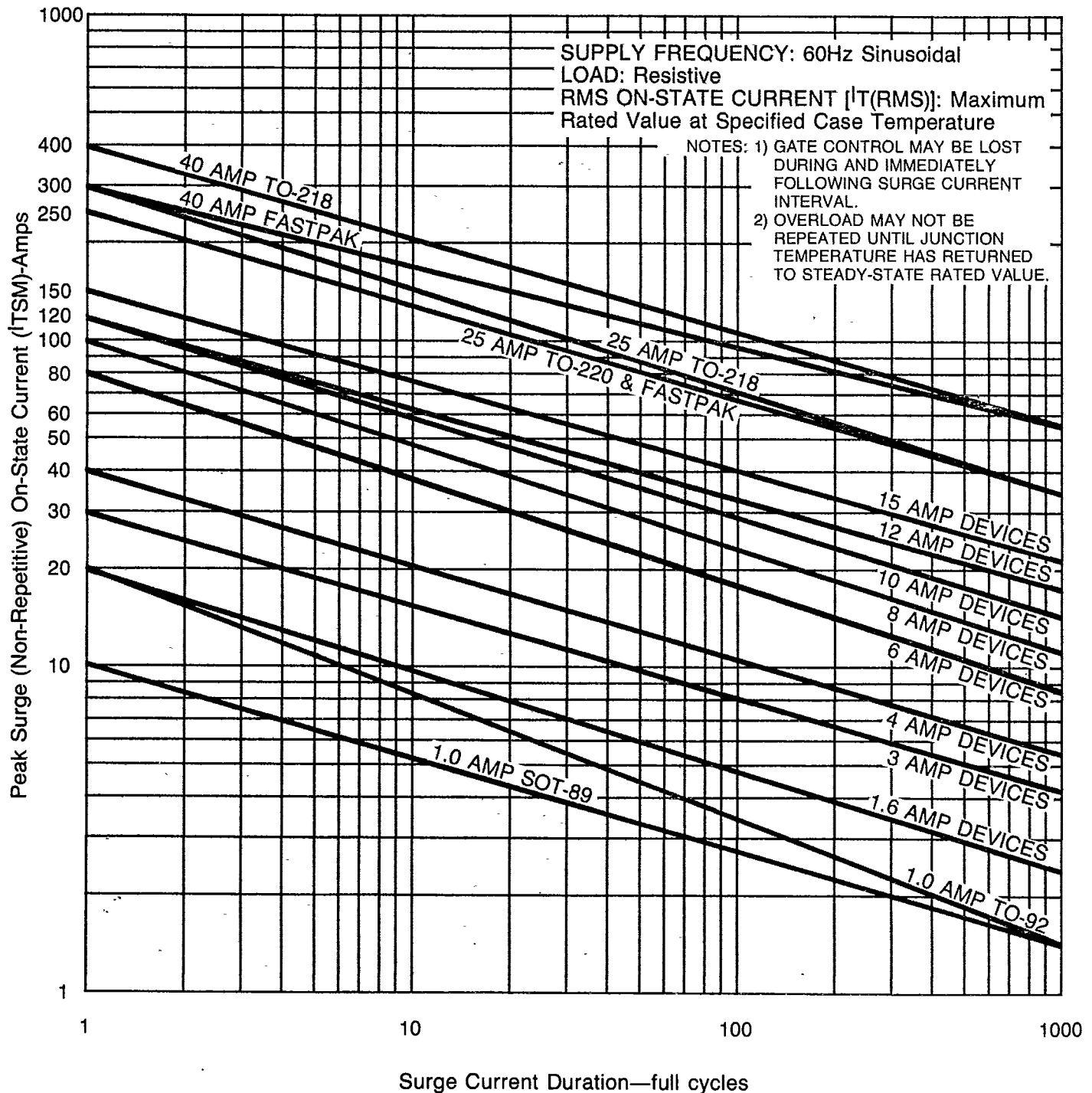
**FIGURE 6 — Normalized DC Holding Current vs Case Temperature**





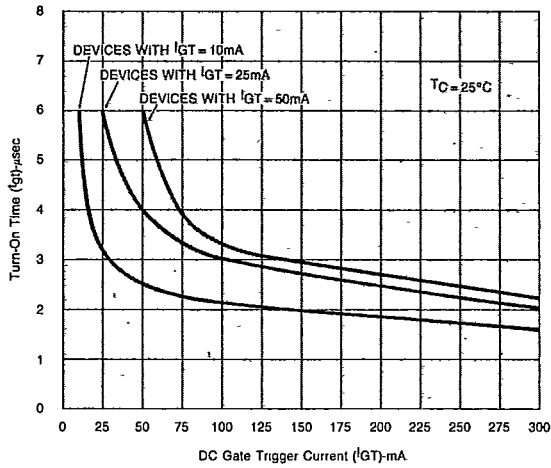
# GATED TRIACS 1-40 AMPS

## FIGURE 7—Peak Surge Current vs Surge Current Duration

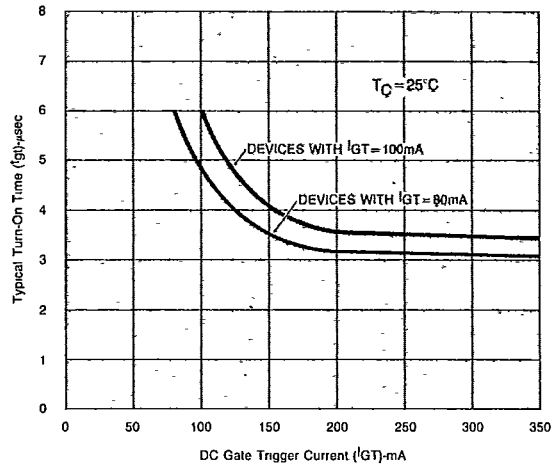


# GATED TRIACS 1-40 AMPS

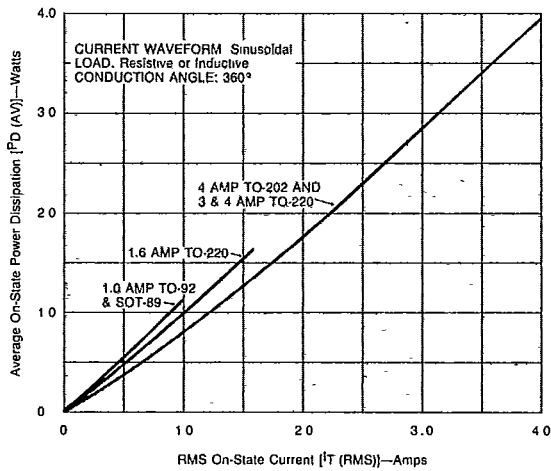
**FIGURE 8A — Typical Turn-On Time vs Gate Trigger Current**



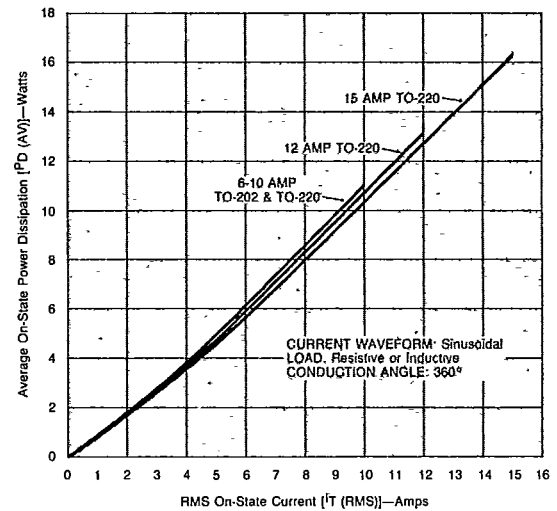
**FIGURE 8B — Turn-On Time vs Gate Trigger Current (Typical)**



**FIGURE 9A — Power Dissipation (Typ.) vs On-State Current**



**FIGURE 9B — Power Dissipation (Typ.) vs On-State Current**



**FIGURE 9C — Power Dissipation (Typ.) vs On-State Current**

