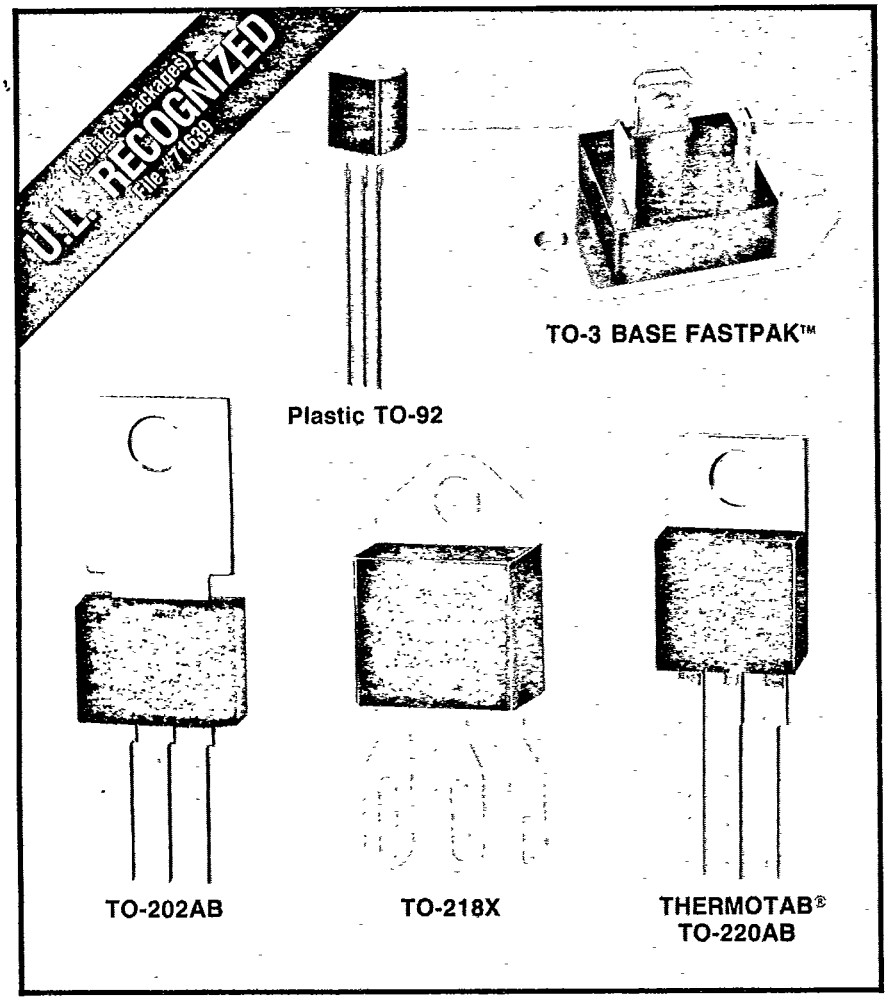

TECCOR
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TELEX 79-1600

SCR's 1-70 AMPS

NON-SENSITIVE GATE

General Information

The Teccor Electronics line of thyristor SCR semiconductors are half-wave unidirectional gate-controlled rectifiers which complement Teccor's line of sensitive gate SCR's. Teccor offers devices with current ratings from 1-70 Amps and Voltage ratings from 30-600 Volts with gate sensitivities from 10-50 milliamps. If gate currents in the 1-500 microamp ranges are required, please consult Teccor's sensitive gate SCR technical data sheets.

Electrically Isolated Packages

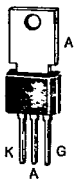
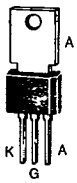
Teccor's SCR's are available in a choice of 8 different device packages. Four of the 8 packages are offered in electrically isolated construction where the case or tab is internally isolated to allow the use of low cost assembly and convenient packaging techniques.

The Teccor line of SCR's features glass passivated device junctions to insure long term device reliability and parameter stability. Teccor's glass offers a rugged, reliable barrier against junction contamination.

Features

- **Electrically Isolated Packages**
- **High Voltage Capability — 30-600 Volts**
- **High Surge Capability — up to 950 Amps**
- **Glass Passivated Chip**

SCR's—Non Sensitive Gate

TYPE	Part Number — Isolated		Part Number — Non-Isolated			I_T		V_{DRM} & V_{RRM}	I_{GT}		I_{DRM} & I_{RRM}			V_{TM}	V_{GT}	
	 TO-92	 TO-220AB	 TO-202AB	 TO-202AB	 NON-ISOLATED TO-220AB	Maximum On-State Current (1) (2) Amps $I_{T(RMS)}$	Amps $I_{T(AV)}$	Repetitive Peak Off-State Forward & Reverse Voltage Volts	DC Gate-Trigger Current V_D = 12 VDC R_L = 60Ω (4) (12) mA		Peak Off-State Forward & Reverse Current @ V_{DRM} & V_{RRM} mA T_C = 25°C	T_C = 100°C	T_C = 125°C	Peak On-State Voltage at Max Rated RMS Current T_C = 25°C (3) Volts	DC Gate-Trigger Voltage V_D = 12 VDC R_L = 60Ω (8) (13) Volts T_C = 25°C	T_C = 125°C
	FOR DIMENSIONAL OUTLINES & PACKAGE VARIATIONS SEE PAGE 67					MAX	MAX	MIN	MIN	MAX	MAXIMUM			MAX	MAX	MIN
1 Amp	S031E					1.0	0.64	30	1	10	.01	0.2	0.5	1.6	1.5	0.2
	S051E					1.0	0.64	50	1	10	.01	0.2	0.5	1.6	1.5	0.2
	S101E					1.0	0.64	100	1	10	.01	0.2	0.5	1.6	1.5	0.2
	S201E					1.0	0.64	200	1	10	.01	0.2	0.5	1.6	1.5	0.2
	S401E					1.0	0.64	400	1	10	.01	0.2	0.5	1.6	1.5	0.2
	S601E					1.0	0.64	600	1	10	.01	0.2	0.5	1.6	1.5	0.2
1.6 Amps		S0301L				1.6	1.0	30	1	10	.01	0.2	0.5	1.6	1.5	0.2
		S0501L				1.6	1.0	50	1	10	.01	0.2	0.5	1.6	1.5	0.2
		S1001L				1.6	1.0	100	1	10	.01	0.2	0.5	1.6	1.5	0.2
		S2001L				1.6	1.0	200	1	10	.01	0.2	0.5	1.6	1.5	0.2
		S4001L				1.6	1.0	400	1	10	.01	0.2	0.5	1.6	1.5	0.2
		S6001L				1.6	1.0	600	1	10	.01	0.2	0.5	1.6	1.5	0.2
3 Amps		S0303L				3.0	1.9	30	1	10	.01	0.2	0.5	1.6	1.5	0.2
		S0503L				3.0	1.9	50	1	10	.01	0.2	0.5	1.6	1.5	0.2
		S1003L				3.0	1.9	100	1	10	.01	0.2	0.5	1.6	1.5	0.2
		S2003L				3.0	1.9	200	1	10	.01	0.2	0.5	1.6	1.5	0.2
		S4003L				3.0	1.9	400	1	10	.01	0.2	0.5	1.6	1.5	0.2
		S6003L				3.0	1.9	600	1	10	.01	0.2	0.5	1.6	1.5	0.2
4 Amps			S0304F1	S0304N1		4.0	2.5	30	1	10	.01	0.2	0.5	1.6	1.5	0.2
			S0504F1	S0504N1		4.0	2.5	50	1	10	.01	0.2	0.5	1.6	1.5	0.2
			S1004F1	S1004N1		4.0	2.5	100	1	10	.01	0.2	0.5	1.6	1.5	0.2
			S2004F1	S2004N1		4.0	2.5	200	1	10	.01	0.2	0.5	1.6	1.5	0.2
			S4004F1	S4004N1		4.0	2.5	400	1	10	.01	0.2	0.5	1.6	1.5	0.2
			S6004F1	S6004N1		4.0	2.5	600	1	10	.01	0.2	0.5	1.6	1.5	0.2
6 Amps		S0306L	S0306F1			6.0	3.8	30	1	15	.01	0.2	0.5	1.6	1.5	0.2
		S0506L	S0506F1			6.0	3.8	50	1	15	.01	0.2	0.5	1.6	1.5	0.2
		S1006L	S1006F1			6.0	3.8	100	1	15	.01	0.2	0.5	1.6	1.5	0.2
		S2006L	S2006F1			6.0	3.8	200	1	15	.01	0.2	0.5	1.6	1.5	0.2
		S4006L	S4006F1			6.0	3.8	400	1	15	.01	0.2	0.5	1.6	1.5	0.2
		S6006L	S6006F1			6.0	3.8	600	1	15	.01	0.2	0.5	1.6	1.5	0.2
8 Amps		S0308L	S0308F1		S0308R	8.0	5.1	30	1	15	.01	0.2	0.5	1.6	1.5	0.2
		S0508L	S0508F1		S0508R	8.0	5.1	50	1	15	.01	0.2	0.5	1.6	1.5	0.2
		S1008L	S1008F1		S1008R	8.0	5.1	100	1	15	.01	0.2	0.5	1.6	1.5	0.2
		S2008L	S2008F1		S2008R	8.0	5.1	200	1	15	.01	0.2	0.5	1.6	1.5	0.2
		S4008L	S4008F1		S4008R	8.0	5.1	400	1	15	.01	0.2	0.5	1.6	1.5	0.2
		S6008L	S6008F1		S6008R	8.0	5.1	600	1	15	.01	0.2	0.5	1.6	1.5	0.2
					C122F	8.0	5.1	50		25	0.1	0.5		1.83	1.5	0.2
					C122A	8.0	5.1	100		25	0.1	0.5		1.83	1.5	0.2
					C122B	8.0	5.1	200		25	0.1	0.5		1.83	1.5	0.2
					C122C	8.0	5.1	300		25	0.1	0.5		1.83	1.5	0.2
					C122D	8.0	5.1	400		25	0.1	0.5		1.83	1.5	0.2
					C122E	8.0	5.1	500		25	0.1	0.5		1.83	1.5	0.2
					C122M	8.0	5.1	600		25	0.1	0.5		1.83	1.5	0.2

GENERAL NOTES

- Teccor's 2N6394 Series, 2N6400 Series, and 2N6504 Series devices conform to all JEDEC registered data.
- All measurements are made at 60 Hz with a resistive load at an ambient temperature of +25°C unless otherwise specified.
- Operating temperature range (T_J) is −65°C to +125°C for TO-92 devices, 0°C to +125°C for Fastpak, and −40°C to +125°C for all other packages.
- Storage temperature range (T_S) is −65°C to +150°C for TO-92 devices, −40°C to +150°C for TO-202 and TO-220 devices, −20°C to +125°C for Fastpak and −40°C to +125°C for all others
- Lead solder temperature is a maximum of 230°C for 10 seconds maximum; 1/16" from case.
- The case temperature (T_C) is measured as shown on dimensional outline drawings. See "package dimensions" section of catalog.

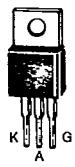
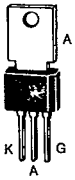
Electrical Specifications

I_H	I_{GM}	P_{GM}	$P_{G(AV)}$	I_{TSM}		dv/dt		I^2t	di/dt	t_{gt}	t_q
DC Holding Current Gate Open (5) (14)	Peak Gate Current (11)	Peak Gate Power Dissipation (11)	Average Gate Power Dissipation	Peak One Cycle Surge Forward Current (6) (10) Amps		Critical Rate of Applied Forward Voltage Volts/μs		RMS Surge (Non-Repetitive) On-State Current For a Period of 8.3 msec for Fusing	Maximum Rate of Rise of On-State Current I_{GT} = 150mA With 0.1μs Rise Time	Gate Controlled Turn-On Time Gate Pulse = 100mA Min. Width = 5μs With Rise Time ≤ 0.1μs (7)	Circuit Commutated Turn-Off Time (9) (10)
mA	Amps	Watts	Watts	60Hz	50Hz	T_C = 100°C	T_C = 125°C	Amps²sec	Amps/μs	μs	μs
MAX	MAX			MAX	MAX	MIN	MIN			MAX	MAX
20	1.5	15	0.3	30	25	40	30	3.7	50	2.0	35
20	1.5	15	0.3	30	25	40	30	3.7	50	2.0	35
20	1.5	15	0.3	30	25	40	30	3.7	50	2.0	35
20	1.5	15	0.3	30	25	40	30	3.7	50	2.0	35
20	1.5	15	0.3	30	25	30	20	3.7	50	2.0	35
20	1.5	15	0.3	30	25	30	20	3.7	50	2.0	35
20	1.5	15	0.3	30	25	40	30	3.7	50	2.0	35
20	1.5	15	0.3	30	25	40	30	3.7	50	2.0	35
20	1.5	15	0.3	30	25	40	30	3.7	50	2.0	35
20	1.5	15	0.3	30	25	40	30	3.7	50	2.0	35
20	1.5	15	0.3	30	25	30	20	3.7	50	2.0	35
20	1.5	15	0.3	30	25	30	20	3.7	50	2.0	35
20	1.5	15	0.3	30	25	40	30	3.7	50	2.0	35
20	1.5	15	0.3	30	25	40	30	3.7	50	2.0	35
20	1.5	15	0.3	30	25	40	30	3.7	50	2.0	35
20	1.5	15	0.3	30	25	40	30	3.7	50	2.0	35
20	1.5	15	0.3	30	25	30	20	3.7	50	2.0	35
20	1.5	15	0.3	30	25	30	20	3.7	50	2.0	35
20	1.5	15	0.3	30	25	40	30	3.7	50	2.0	35
20	1.5	15	0.3	30	25	40	30	3.7	50	2.0	35
20	1.5	15	0.3	30	25	40	30	3.7	50	2.0	35
20	1.5	15	0.3	30	25	40	30	3.7	50	2.0	35
20	1.5	15	0.3	30	25	30	20	3.7	50	2.0	35
20	1.5	15	0.3	30	25	30	20	3.7	50	2.0	35
30	2.0	20	0.5	100	60	175	125	41	100	2.0	35
30	2.0	20	0.5	100	60	175	125	41	100	2.0	35
30	2.0	20	0.5	100	60	175	125	41	100	2.0	35
30	2.0	20	0.5	100	60	175	125	41	100	2.0	35
30	2.0	20	0.5	100	60	175	125	41	100	2.0	35
30	2.0	20	0.5	100	60	150	100	41	100	2.0	35
30	2.0	20	0.5	100	60	175	125	41	100	2.0	35
30	2.0	20	0.5	100	60	175	125	41	100	2.0	35
30	2.0	20	0.5	100	60	175	125	41	100	2.0	35
30	2.0	20	0.5	100	60	175	125	41	100	2.0	35
30	2.0	20	0.5	100	60	175	125	41	100	2.0	35
30	2.0	20	0.5	100	60	150	100	41	100	2.0	35
30	2.0	5	0.5	90	82			34	100		
30	2.0	5	0.5	90	82			34	100		
30	2.0	5	0.5	90	82			34	100		
30	2.0	5	0.5	90	82			34	100		
30	2.0	5	0.5	90	82			34	100		
30	2.0	5	0.5	90	82			34	100		
30	2.0	5	0.5	90	82			34	100		

NOTES TO ELECTRICAL SPECIFICATIONS

(1) See Figures 2 and 3 for current rating at specified operating case temperature.
(2) See Figure 1 for free air current rating.
(3) See Figure 6 for instantaneous on-state current vs on-state voltage (typical).
(4) See Figure 5 for I_{GT} vs T_C.
(5) See Figure 4 for I_H vs T_C.
(6) For more than one full cycle rating, see Figure 9.
(7) See Figure 8 for t_{gt} vs I_{GT}.
(8) See Figure 7 for V_{GT} vs T_C.
(9) Test conditions are as follows: I_T = 1 amp for ≤ 1.6 amp devices and 2 amp for ≥ 3 amp devices. Pulse duration = 50μsec. dv/dt = 20 V/μs. di/dt = −10 amps/μs for ≤ 1.6 amp devices, and −30 amps/μs for ≥ 3 amp devices I_{GT} = 200 mA @ turn-on
(10) See Figure 2 (A,B,C,D,E) for maximum allowable case temperatures @ maximum rated current.
(11) Pulse width ≤ 3μs.
(12) I_{GT} = 40 mA maximum @ −40°C for C122 devices
(13) V_{GT} = 2.0 V maximum @ −40°C for C122 devices.
(14) Initial on-state current = 200 mA (DC) for 1 to 20 amp devices 400 mA (DC) for 25 to 70 amp devices.

SCR's—Non Sensitive Gate

TYPE	Part Number: Isolated	Part Number: Non-Isolated		I_T: Maximum On-State Current (1) Amps $I_{T(RMS)}$	I_T: Maximum On-State Current (1) Amps $I_{T(AV)}$	V_{DRM} & V_{RRM}: Repetitive Peak Off-State Forward & Reverse Voltage Volts	I_{GT}: DC Gate-Trigger Current V_D = 12 VDC R_L = 60Ω (4) mA		I_{DRM} & I_{RRM}: Peak Off-State Forward & Reverse Current @ V_{DRM} & V_{RRM} mA T_C = 25°C	I_{DRM} & I_{RRM} mA T_C = 100°C	I_{DRM} & I_{RRM} mA T_C = 125°C	V_{TM}: Peak On-State Voltage at Max Rated RMS Current T_C = 25°C (3) Volts	V_{GT}: DC Gate-Trigger Voltage V_D = 12 VDC R_L = 60Ω (8) Volts T_C = 25°C	V_{GT} Volts T_C = 125°C
	 TO-220AB	 TO-202AB	 NON-ISOLATED TO-220AB											
	FOR DIMENSIONAL OUTLINES & PACKAGE VARIATIONS SEE PAGE 67			MAX	MAX	MIN	MIN	MAX	MAXIMUM			MAX	MAX	MIN
10 Amps	S0310L	S0310F1		10	6.4	30	1	15	.01	0.2	0.5	1.6	1.5	0.2
	S0510L	S0510F1		10	6.4	50	1	15	.01	0.2	0.5	1.6	1.5	0.2
	S1010L	S1010F1		10	6.4	100	1	15	.01	0.2	0.5	1.6	1.5	0.2
	S2010L	S2010F1		10	6.4	200	1	15	.01	0.2	0.5	1.6	1.5	0.2
	S4010L	S4010F1		10	6.4	400	1	15	.01	0.2	0.5	1.6	1.5	0.2
	S6010L	S6010F1		10	6.4	600	1	15	.01	0.2	0.5	1.6	1.5	0.2
			S2800F	10	6.4	50		15		2.0		2.0*	1.5	
			S2800A	10	6.4	100		15		2.0		2.0*	1.5	
			S2800B	10	6.4	200		15		2.0		2.0*	1.5	
			S2800C	10	6.4	300		15		2.0		2.0*	1.5	
			S2800D	10	6.4	400		15		2.0		2.0*	1.5	
			S2800E	10	6.4	500		15		2.0		2.0*	1.5	
			S2800M	10	6.4	600		15		2.0		2.0*	1.5	
12 Amps	S0312L		S0312R	12	7.6	30	1	20	.01	0.5	1.0	1.6	1.5	0.2
	S0512L		S0512R	12	7.6	50	1	20	.01	0.5	1.0	1.6	1.5	0.2
	S1012L		S1012R	12	7.6	100	1	20	.01	0.5	1.0	1.6	1.5	0.2
	S2012L		S2012R	12	7.6	200	1	20	.01	0.5	1.0	1.6	1.5	0.2
	S4012L		S4012R	12	7.6	400	1	20	.01	0.5	1.0	1.6	1.5	0.2
	S6012L		S6012R	12	7.6	600	1	20	.01	0.5	1.0	1.6	1.5	0.2
			2N6394	12	7.6	50		30	.01		2.0	2.2	1.5	0.2
			2N6395	12	7.6	100		30	.01		2.0	2.2	1.5	0.2
			2N6396	12	7.6	200		30	.01		2.0	2.2	1.5	0.2
			2N6397	12	7.6	400		30	.01		2.0	2.2	1.5	0.2
			2N6398	12	7.6	600		30	.01		2.0	2.2	1.5	0.2
15 Amps	S0315L			15	9.5	30	1	30	.01	0.5	1.0	1.6	1.5	0.2
	S0515L			15	9.5	50	1	30	.01	0.5	1.0	1.6	1.5	0.2
	S1015L			15	9.5	100	1	30	.01	0.5	1.0	1.6	1.5	0.2
	S2015L			15	9.5	200	1	30	.01	0.5	1.0	1.6	1.5	0.2
	S4015L			15	9.5	400	1	30	.01	0.5	1.0	1.6	1.5	0.2
	S6015L			15	9.5	600	1	30	.01	0.5	1.0	1.6	1.5	0.2
16 Amps			S0316R	16	10	30	1	30	.01	0.5	1.0	1.6	1.5	0.2
			S0516R	16	10	50	1	30	.01	0.5	1.0	1.6	1.5	0.2
			S1016R	16	10	100	1	30	.01	0.5	1.0	1.6	1.5	0.2
			S2016R	16	10	200	1	30	.01	0.5	1.0	1.6	1.5	0.2
			S4016R	16	10	400	1	30	.01	0.5	1.0	1.6	1.5	0.2
			S6016R	16	10	600	1	30	.01	0.5	1.0	1.6	1.5	0.2
			2N6400	16	10	50		30	.01		2.0	1.7	1.5	0.2
			2N6401	16	10	100		30	.01		2.0	1.7	1.5	0.2
			2N6402	16	10	200		30	.01		2.0	1.7	1.5	0.2
			2N6403	16	10	400		30	.01		2.0	1.7	1.5	0.2
			2N6404	16	10	600		30	.01		2.0	1.7	1.5	0.2
20 Amps	S0320L			20	13	30	1	30	.01	0.5	1.0	1.6	1.5	0.2
	S0520L			20	13	50	1	30	.01	0.5	1.0	1.6	1.5	0.2
	S1020L			20	13	100	1	30	.01	0.5	1.0	1.6	1.5	0.2
	S2020L			20	13	200	1	30	.01	0.5	1.0	1.6	1.5	0.2
	S4020L			20	13	400	1	30	.01	0.5	1.0	1.6	1.5	0.2
	S6020L			20	13	600	1	30	.01	0.5	1.0	1.6	1.5	0.2

*V_{TM} @ i_T = 30Apk

GENERAL NOTES

- Teccor's 2N6394 Series, 2N6400 Series, and 2N6504 Series devices conform to all JEDEC registered data.
- All measurements are made at 60 Hz with a resistive load at an ambient temperature of +25°C unless otherwise specified.
- Operating temperature range (T_J) is −65°C to +125°C for TO-92 devices, 0°C to +125°C for Fastpak, and −40°C to +125°C for all other packages.
- Storage temperature range (T_S) is −65°C to +150°C for TO-92 devices, −40°C to +150°C for TO-202 and TO-220 devices, −20°C to +125°C for Fastpaks and −40°C to +125°C for all others.
- Lead solder temperature is a maximum of 230°C for 10 seconds maximum; 1/16" from case.
- The case temperature (T_C) is measured as shown on dimensional outline drawings. See "package dimensions" section of catalog.

NOTES FOR JEDEC DEVICES

1. 2N6400-6405 series of devices also conform to the following specifications
   a. Maximum V_{GT} = 2.5 volts @ −40°C
   b. Maximum I_H = 60 milliamps @ −40°C
2. 2N6504-6508 series of devices also conform to the following specifications
   a. Maximum V_{GT} = 1.5 volts @ −40°C
   b. Maximum I_{GT} = 75 milliamps @ −40°C
   c. Maximum I_H = 40 milliamps @ −40°C

Electrical Specifications

	I_H	I_{GM}	P_{GM}	$P_{G(AV)}$	I_{TSM}		dv/dt		I^2t	di/dt	t_{gt}	t_q
	DC Holding Current Gate Open (5) (14)	Peak Gate Current (11)	Peak Gate Power Dissipation (11)	Average Gate Power Dissipation	Peak One Cycle Surge Forward Current (6) (10)		Critical Rate of Applied Forward Voltage		RMS Surge (Non-Repetitive) On-State Current For a Period of 8.3 msec for Fusing	Maximum Rate of Change of On-State Current I_{GT} = 150mA With 0.1μs Rise Time	Gate Controlled Turn-On Time Gate Pulse = 100mA Min. Width = 5μs With Rise Time ≤ 0.1μs (7)	Circuit Commutated Turn-Off Time (9) (10)
					Amps		Volts/μs					
	mA	Amps	Watts	Watts	60Hz	50Hz	T_C = 100°C	T_C = 125°C	Amps²sec	Amps/μs	μs	μs
	MAX				MAX	MAX	MIN	MIN			MAX	MAX
	30	2.0	20	0.5	100	83	175	125	41	100	2.0	35
	30	2.0	20	0.5	100	83	175	125	41	100	2.0	35
	30	2.0	20	0.5	100	83	175	125	41	100	2.0	35
	30	2.0	20	0.5	100	83	175	125	41	100	2.0	35
	30	2.0	20	0.5	100	83	175	125	41	100	2.0	35
	30	2.0	20	0.5	100	83	150	100	41	100	2.0	35
	20		20	0.5	100	85	100		40	100	2.5	35
	20		20	0.5	100	85	75		40	100	2.5	35
	20		20	0.5	100	85	50		40	100	2.5	35
	20		20	0.5	100	85	40		40	100	2.5	35
	20		20	0.5	100	85	30		40	100	2.5	35
	20		20	0.5	100	85	25		40	100	2.5	35
	20		20	0.5	100	85	20		40	100	2.5	35
	40	2.0	20	0.5	120	100	175	125	60	100	2.0	35
	40	2.0	20	0.5	120	100	175	125	60	100	2.0	35
	40	2.0	20	0.5	120	100	175	125	60	100	2.0	35
	40	2.0	20	0.5	120	100	175	125	60	100	2.0	35
	40	2.0	20	0.5	120	100	175	125	60	100	2.0	35
	40	2.0	20	0.5	120	100	150	100	60	100	2.0	35
	40	2.0	20	0.5	100				40	100	2.0	
	40	2.0	20	0.5	100				40	100	2.0	
	40	2.0	20	0.5	100				40	100	2.0	
	40	2.0	20	0.5	100				40	100	2.0	
	40	2.0	20	0.5	100				40	100	2.0	
	40	3.0	30	0.6	225	188	250	175	210	125	2.0	35
	40	3.0	30	0.6	225	188	250	175	210	125	2.0	35
	40	3.0	30	0.6	225	188	250	175	210	125	2.0	35
	40	3.0	30	0.6	225	188	250	175	210	125	2.0	35
	40	3.0	30	0.6	225	188	250	175	210	125	2.0	35
	40	3.0	30	0.6	225	188	200	150	210	125	2.0	35
	40	3.0	30	0.6	225	188	250	175	210	125	2.0	35
	40	3.0	30	0.6	225	188	250	175	210	125	2.0	35
	40	3.0	30	0.6	225	188	250	175	210	125	2.0	35
	40	3.0	30	0.6	225	188	250	175	210	125	2.0	35
	40	3.0	30	0.6	225	188	200	150	210	125	2.0	35
	40	2.0	20	0.5	160				100	125		
	40	2.0	20	0.5	160				100	125		
	40	2.0	20	0.5	160				100	125		
	40	2.0	20	0.5	160				100	125		
	40	2.0	20	0.5	160				100	125		
	40	3.0	30	0.6	300	255	250	175	374	125	2.0	35
	40	3.0	30	0.6	300	255	250	175	374	125	2.0	35
	40	3.0	30	0.6	300	255	250	175	374	125	2.0	35
	40	3.0	30	0.6	300	255	250	175	374	125	2.0	35
	40	3.0	30	0.6	300	255	250	175	374	125	2.0	35
	40	3.0	30	0.6	300	255	200	150	374	125	2.0	35

NOTES TO ELECTRICAL SPECIFICATIONS

(1) See Figures 2 and 3 for current rating at specified operating case temperature.
(2) See Figure 1 for free air current rating.
(3) See Figure 6 for instantaneous on-state current vs on-state voltage (typical).
(4) See Figure 5 for I_{GT} vs T_C.
(5) See Figure 4 for I_H vs T_C.
(6) For more than one full cycle rating, see Figure 9.
(7) See Figure 8 for t_{gt} vs I_{GT}.
(8) See Figure 7 for V_{GT} vs T_C.
(9) Test conditions are as follows: I_T = 1 amp for ≤ 1.6 amp devices and 2 amp for ≥ 3 amp devices. Pulse duration = 50μsec. dv/dt = 20 V/μs, di/dt = −10 amps/μs for ≤ 1.6 amp devices. and −30 amps/μs for ≥ 3 amp devices. I_{GT} = 200 mA @ turn-on.
(10) See Figure 2 (A,B,C,D,E) for maximum allowable case temperatures @ maximum rated current.
(11) Pulse width ≤ 3μs.
(12) I_{GT} = 40 mA maximum @ −40°C for C122 devices.
(13) V_{GT} = 2.0 V maximum @ −40°C for C122 devices.
(14) Initial on-state current = 200 mA (DC) for 1 to 20 amp devices. 400 mA (DC) for 25 to 70 amp devices.

SCR's—Non Sensitive Gate

TYPE	Part Number: Isolated			Part Number: Non-Isolated		I_T Maximum On-State Current (1) Amps		V_{DRM} & V_{RRM} Repetitive Peak Off-State Forward & Reverse Voltage	I_{GT} DC Gate-Trigger Current V_D = 12 VDC R_L = 60Ω (4)		I_{DRM} & I_{RRM} Peak Off-State Forward & Reverse Current @ V_{DRM} & V_{RRM} mA			V_{TM} Peak On-State Voltage at Max Rated RMS Current T_C = 25°C (3)	V_{GT} DC Gate-Trigger Voltage V_D = 12 VDC R_L = 60Ω (8) Volts	
	TO-220AB	TO-218	FASTPAK TO-3 BASE	NON-ISOLATED TO-220AB	NON-ISOLATED TO-218	$I_{T(RMS)}$	$I_{T(AV)}$	Volts	mA		T_C = 25°C	T_C = 100°C	T_C = 125°C	Volts	T_C = 25°C	T_C = 125°C
	FOR DIMENSIONAL OUTLINES & PACKAGE VARIATIONS SEE PAGE 67					MAX	MAX	MIN	MIN	MAX	MAXIMUM			MAX	MAX	MIN
25 Amps	S0325L			S0325R		25	16	30	1	30	.01	1.0	2.0	1.6	1.5	0.2
	S0525L			S0525R		25	16	50	1	30	.01	1.0	2.0	1.6	1.5	0.2
	S1025L			S1025R		25	16	100	1	30	.01	1.0	2.0	1.6	1.5	0.2
	S2025L			S2025R		25	16	200	1	30	.01	1.0	2.0	1.6	1.5	0.2
	S4025L			S4025R		25	16	400	1	30	.01	1.0	2.0	1.6	1.5	0.2
	S6025L			S6025R		25	16	600	1	30	.01	1.0	2.0	1.6	1.5	0.2
				2N6504		25	16	50		40	.01		2.0	1.8		0.2
				2N6505		25	16	100		40	.01		2.0	1.8		0.2
				2N6506		25	16	200		40	.01		2.0	1.8		0.2
				2N6507		25	16	400		40	.01		2.0	1.8		0.2
				2N6508		25	16	600		40	.01		2.0	1.8		0.2
35 Amps		S0335J			S0335W	35	22	30	5	40	.01	1.0	2.0	1.8	1.5	0.2
		S0535J			S0535W	35	22	50	5	40	.01	1.0	2.0	1.8	1.5	0.2
		S1035J			S1035W	35	22	100	5	40	.01	1.0	2.0	1.8	1.5	0.2
		S2035J			S2035W	35	22	200	5	40	.01	1.0	2.0	1.8	1.5	0.2
		S4035J			S4035W	35	22	400	5	40	.01	1.0	2.0	1.8	1.5	0.2
		S6035J			S6035W	35	22	600	5	40	.01	1.0	2.0	1.8	1.5	0.2
50 Amps		S0550J				50	32	50	5	40	.01	1.0	2.0	1.8	1.5	0.2
		S1050J				50	32	100	5	40	.01	1.0	2.0	1.8	1.5	0.2
		S2050J				50	32	200	5	40	.01	1.0	2.0	1.8	1.5	0.2
		S4050J				50	32	400	5	40	.01	1.0	2.0	1.8	1.5	0.2
		S6050J				50	32	600	5	40	.01	1.0	2.0	1.8	1.5	0.2
55 Amps					S0555W	55	35	50	5	40	.01	1.0	2.0	1.8	1.5	0.2
					S1055W	55	35	100	5	40	.01	1.0	2.0	1.8	1.5	0.2
					S2055W	55	35	200	5	40	.01	1.0	2.0	1.8	1.5	0.2
					S4055W	55	35	400	5	40	.01	1.0	2.0	1.8	1.5	0.2
					S6055W	55	35	600	5	40	.01	1.0	2.0	1.8	1.5	0.2
65 Amps			S0565P			65	41	50	5	50	.02	1.5	3.0	1.8	2.0	0.2
			S1065P			65	41	100	5	50	.02	1.5	3.0	1.8	2.0	0.2
			S2065P			65	41	200	5	50	.02	1.5	3.0	1.8	2.0	0.2
			S4065P			65	41	400	5	50	.02	1.5	3.0	1.8	2.0	0.2
			S6065P			65	41	600	5	50	.02	1.5	3.0	1.8	2.0	0.2
		S0565J				65	41	50	5	50	.02	1.5	3.0	1.8	2.0	0.2
		S1065J				65	41	100	5	50	.02	1.5	3.0	1.8	2.0	0.2
		S2065J				65	41	200	5	50	.02	1.5	3.0	1.8	2.0	0.2
		S4065J				65	41	400	5	50	.02	1.5	3.0	1.8	2.0	0.2
		S6065J				65	41	600	5	50	.02	1.5	3.0	1.8	2.0	0.2
70 Amps					S0570W	70	45	50	5	50	.02	1.5	3.0	1.8	2.0	0.2
					S1070W	70	45	100	5	50	.02	1.5	3.0	1.8	2.0	0.2
					S2070W	70	45	200	5	50	.02	1.5	3.0	1.8	2.0	0.2
					S4070W	70	45	400	5	50	.02	1.5	3.0	1.8	2.0	0.2
					S6070W	70	45	600	5	50	.02	1.5	3.0	1.8	2.0	0.2

GENERAL NOTES

- Teccor's 2N6394 Series, 2N6400 Series, and 2N6504 Series devices conform to all JEDEC registered data.
- All measurements are made at 60 Hz with a resistive load at an ambient temperature of +25°C unless otherwise specified.
- Operating temperature range (T_J) is −65°C to +125°C for TO-92 devices, 0°C to +125°C for Fastpak, and −40°C to +125°C for all other packages.
- Storage temperature range (T_S) is −65°C to +150°C for TO-92 devices, −40°C to +150°C for TO-202 and TO-220 devices, −20°C to +125°C for Fastpaks, and −40°C to +125°C for all others.
- Lead solder temperature is a maximum of 230°C for 10 seconds maximum; 1/16" from case.
- The case temperature (T_C) is measured as shown on dimensional outline drawings. See "package dimensions" section of catalog.

NOTES FOR JEDEC DEVICES

1. 2N6400-6405 series of devices also conform to the following specifications
   a. Maximum V_{GT} = 2.5 volts @ −40°C
   b Maximum I_H = 60 milliamps @ −40°C
2. 2N6504-6508 series of devices also conform to the following specifications
   a. Maximum V_{GT} = 1.5 volts @ −40°C
   b. Maximum I_{GT} = 75 milliamps @ −40°C
   c. Maximum I_H = 40 milliamps @ −40°C

Electrical Specifications

I_H	I_{GM}	P_{GM}	$P_{G(AV)}$	I_{TSM}		dv/dt		I^2t	di/dt	t_{gt}	t_q
DC Holding Current Gate Open (5) (14)	Peak Gate Current (11)	Peak Gate Power Dissipation (11)	Average Gate Power Dissipation	Peak One Cycle Surge Forward Current (6) (10) Amps		Critical Rate of Applied Forward Voltage Volts/μs		RMS Surge (Non-Repetitive) On-State Current For a Period of 8.3 msec for Fusing	Maximum Rate of Change of On-State Current I_{GT} = 150mA With 0.1μs Rise Time	Gate Controlled Turn-On Time Gate Pulse = 150mA Min Width = 5μs With Rise Time ≤ 0.1μs (7)	Circuit Commutated Turn-Off Time (9) (10)
				60Hz	50Hz	T_C = 100°C	T_C = 125°C				
mA	Amps	Watts	Watts					Amps²sec	μs	μs	μs
MAX				MAX	MAX	MIN	MIN			MAX	MAX
40	3.5	35	0.8	350	300	250	175	510	150	2.0	35
40	3.5	35	0.8	350	300	250	175	510	150	2.0	35
40	3.5	35	0.8	350	300	250	175	510	150	2.0	35
40	3.5	35	0.8	350	300	250	175	510	150	2.0	35
40	3.5	35	0.8	350	300	250	175	510	150	2.0	35
40	3.5	35	0.8	350	300	200	150	510	150	2.0	35
	2.0	20	0.5	300	255			375	150	2.0	
	2.0	20	0.5	300	255			375	150	2.0	
	2.0	20	0.5	300	255			375	150	2.0	
	2.0	20	0.5	300	255			375	150	2.0	
	2.0	20	0.5	300	255			375	150	2.0	
50	3.5	35	0.8	500	425	250	175	1035	150	2.0	35
50	3.5	35	0.8	500	425	250	175	1035	150	2.0	35
50	3.5	35	0.8	500	425	250	175	1035	150	2.0	35
50	3.5	35	0.8	500	425	250	175	1035	150	2.0	35
50	3.5	35	0.8	500	425	250	175	1035	150	2.0	35
50	3.5	35	0.8	500	425	200	150	1035	150	2.0	35
50	4.0	40	0.8	650	550	425	300	1750	175	2.5	35
50	4.0	40	0.8	650	550	425	300	1750	175	2.5	35
50	4.0	40	0.8	650	550	425	300	1750	175	2.5	35
50	4.0	40	0.8	650	550	425	300	1750	175	2.5	35
50	4.0	40	0.8	650	550	375	250	1750	175	2.5	35
50	4.0	40	0.8	650	550	425	300	1750	175	2.5	35
50	4.0	40	0.8	650	550	425	300	1750	175	2.5	35
50	4.0	40	0.8	650	550	425	300	1750	175	2.5	35
50	4.0	40	0.8	650	550	425	300	1750	175	2.5	35
50	4.0	40	0.8	650	550	375	250	1750	175	2.5	35
50	5.0	50	1.0	900	750	425	300	3360	200	2.5	35
50	5.0	50	1.0	900	750	425	300	3360	200	2.5	35
50	5.0	50	1.0	900	750	425	300	3360	200	2.5	35
50	5.0	50	1.0	900	750	425	300	3360	200	2.5	35
50	5.0	50	1.0	900	750	375	250	3360	200	2.5	35
50	5.0	50	1.0	950	800	425	300	3745	200	2.5	35
50	5.0	50	1.0	950	800	425	300	3745	200	2.5	35
50	5.0	50	1.0	950	800	425	300	3745	200	2.5	35
50	5.0	50	1.0	950	800	425	300	3745	200	2.5	35
50	5.0	50	1.0	950	800	375	250	3745	200	2.5	35
50	5.0	50	1.0	950	800	425	300	3745	200	2.5	35
50	5.0	50	1.0	950	800	425	300	3745	200	2.5	35
50	5.0	50	1.0	950	800	425	300	3745	200	2.5	35
50	5.0	50	1.0	950	800	375	250	3745	200	2.5	35

NOTES TO ELECTRICAL SPECIFICATIONS

(1) See Figures 2 and 3 for current rating at specified operating case temperature.
(2) See Figure 1 for free air current rating
(3) See Figure 6 for instantaneous on-state current vs on-state voltage (typical)
(4) See Figure 5 for I_{GT} vs T_C.
(5) See Figure 4 for I_H vs T_C.
(6) For more than one full cycle rating, see Figure 9.
(7) See Figure 8 for t_{gt} vs I_{GT}.
(8) See Figure 7 for V_{GT} vs T_C.
(9) Test conditions are as follows: I_T = 1 amp for ≤ 1.6 amp devices and 2 amp for ≥ 3 amp devices. Pulse duration = 50μsec, dv/dt = 20 V/μs, di/dt = −10 amps/μs for ≤ 1.6 amp devices, and −30 amps/μs for ≥ 3 amp devices. I_{GT} = 200 mA @ turn-on
(10) See Figure 2 (A.B.C.D.E) for maximum allowable case temperatures @ maximum rated current.
(11) Pulse width ≤ 3μs.
(12) I_{GT} = 40 mA maximum @ −40°C for C122 devices.
(13) V_{GT} = 2.0 V maximum @ −40°C for C122 devices.
(14) Initial on-state current = 200 mA (DC) for 1 to 20 amp devices. 400 mA (DC) for 25 to 70 amp devices.

SCR's—Non Sensitive Gate

THERMAL RESISTANCE (STEADY STATE)

$R_{\theta JC}/R_{\theta JA}$ °C/W (TYP.)

TYPE	PLASTIC TO-92	THERMOTAB TO-220AB	TYPE 1 TO-202	TYPE 2 TO-202	NON-ISOLATED TO-220AB	ISOLATED TO-218X	NON-ISOLATED TO-218X	FASTPAK TO-3 BASE
1.0 Amp	50/145							
1.6 Amp		6.7						
3.0 Amp		6.3/50						
4.0 Amp			5.6/45	9.5/70				
6.0 Amp		4.0	4.3					
8.0 Amp		3.4	3.9		2.1/40			
10.0 Amp		3.0	3.4		1.9			
12.0 Amp		2.1			1.7			
15.0 Amp		1.95						
16.0 Amp					1.5			
20.0 Amp		1.8						
25 Amp		2.5			1.1			
35 Amp						.70	.50	
50 Amp						.80		
55 Amp							.53	
65 Amp						.86		.80
70 Amp							.60	

ELECTRICAL ISOLATION

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

ELECTRICAL ISOLATION FROM LEADS TO CASE

U.L. RECOGNIZED FILE #71639

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

*For 4000V Isolation Use "V" Suffix

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

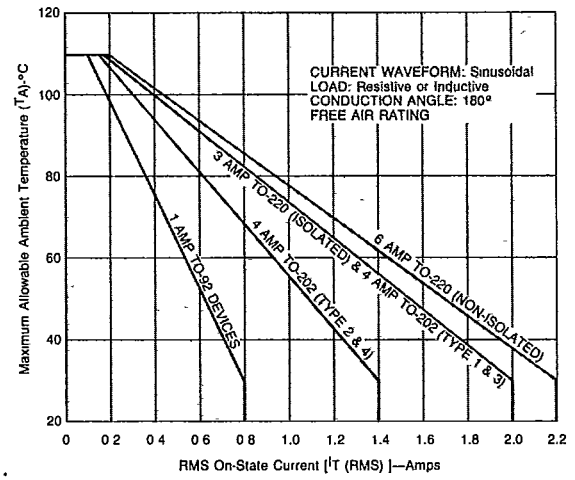
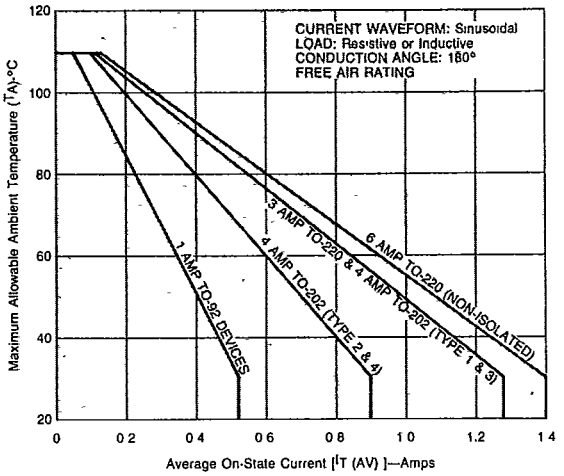


FIGURE 1B — Maximum Allowable Ambient Temperature vs Average On-State Current



SCR's—Non Sensitive Gate

FIGURE 2A — Maximum Allowable Case Temperature vs RMS On-State Current

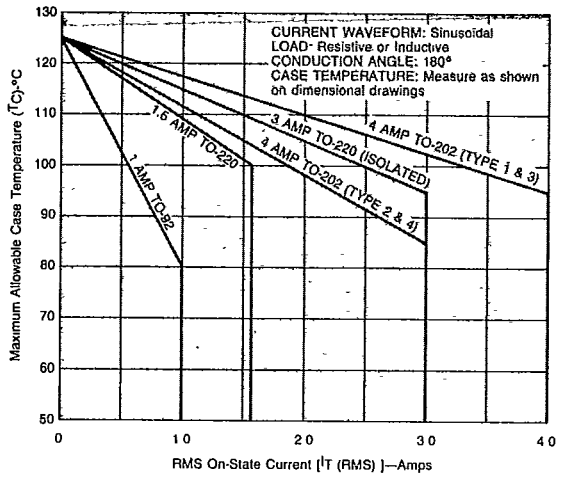


FIGURE 2B — Maximum Allowable Case Temperature vs RMS On-State Current

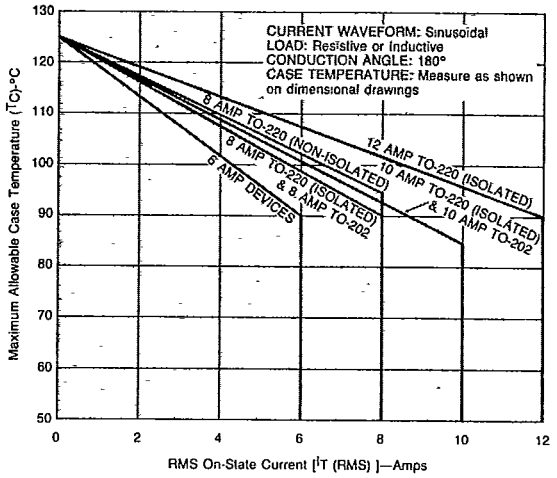


FIGURE 2C — Maximum Allowable Case Temperature vs RMS On-State Current

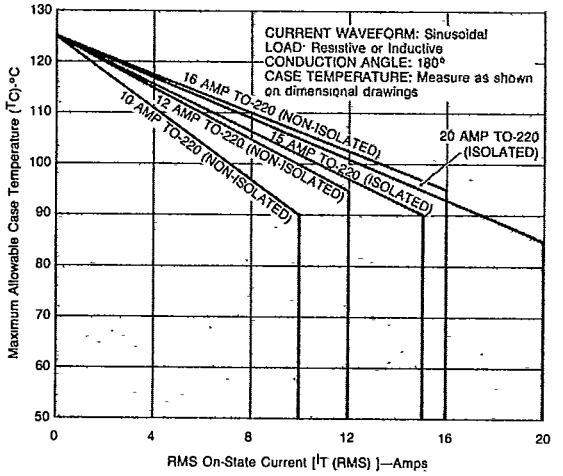


FIGURE 2D — Maximum Allowable Case Temperature vs RMS On-State Current

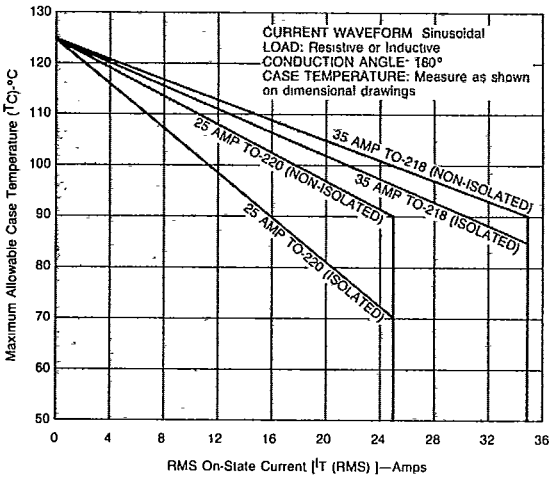


FIGURE 2E — Maximum Allowable Case Temperature vs RMS On-State Current

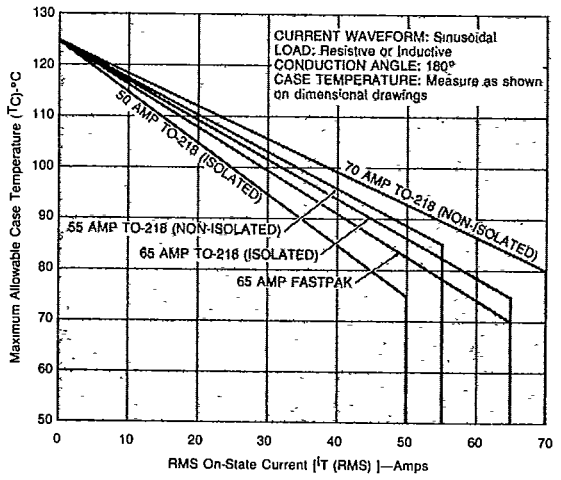
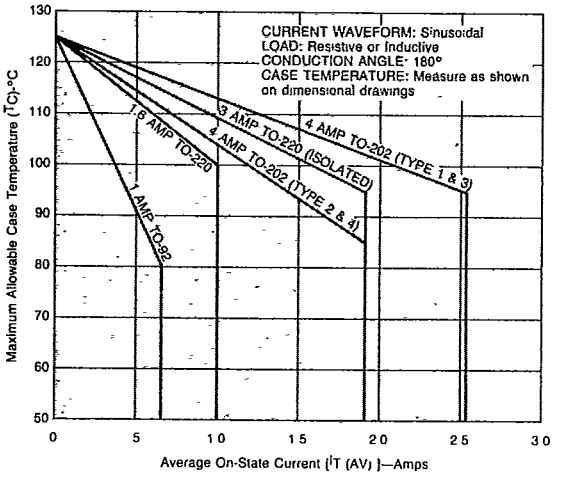


FIGURE 3A — Maximum Allowable Case Temperature vs Average On-State Current



SCR's—Non Sensitive Gate

FIGURE 3B — Maximum Allowable Case Temperature vs Average On-State Current

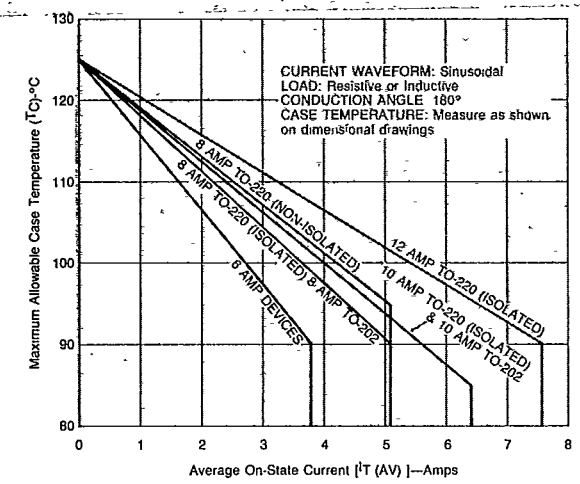


FIGURE 3C — Maximum Allowable Case Temperature vs Average On-State Current

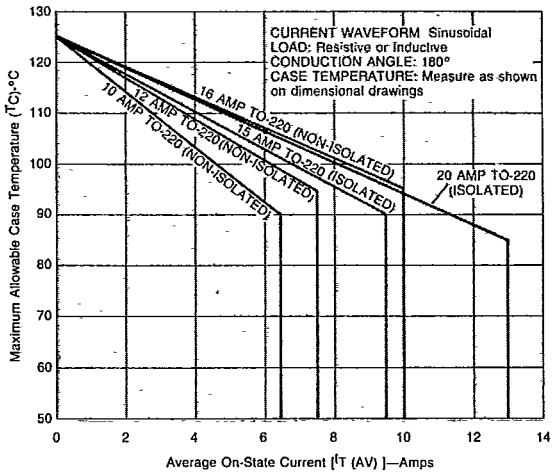


FIGURE 3D — Maximum Allowable Case Temperature vs Average On-State Current

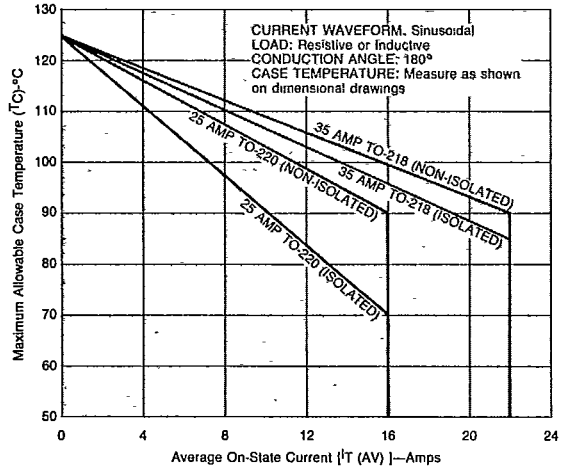


FIGURE 3E — Maximum Allowable Case Temperature vs Average On-State Current

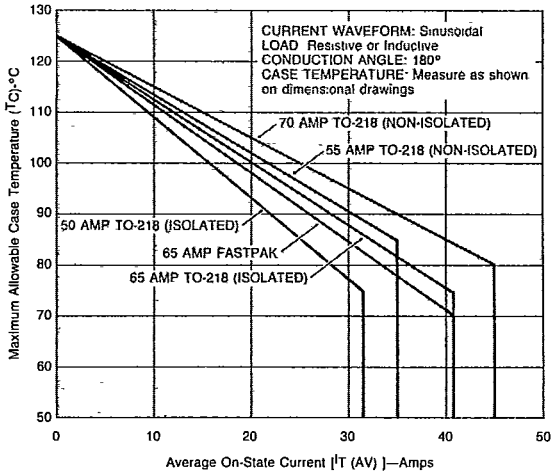


FIGURE 4 — Normalized DC Holding Current vs Case Temperature

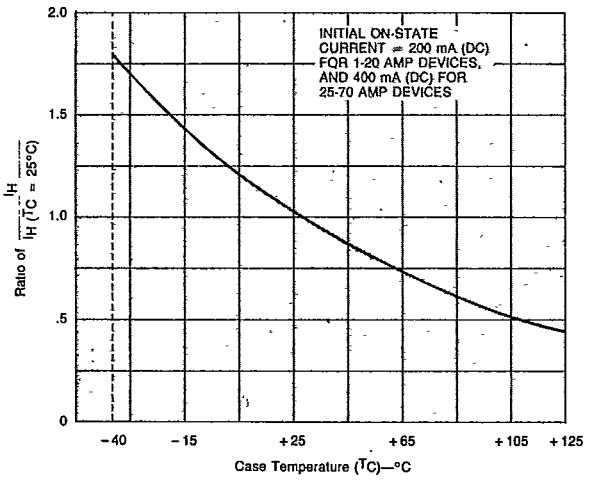
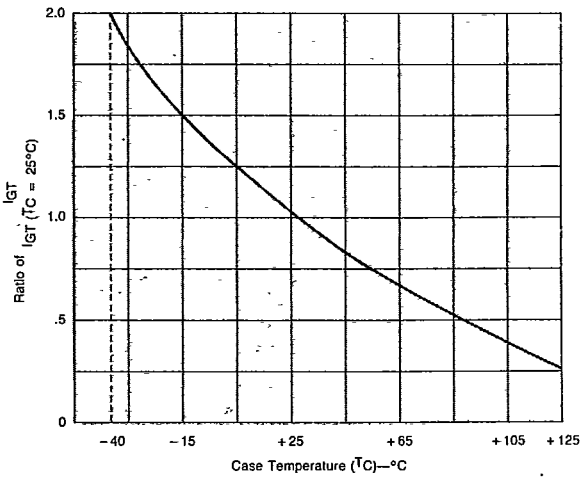


FIGURE 5 — Normalized DC Gate-Trigger Current vs Case Temperature



SCR's—Non Sensitive Gate

FIGURE 6A — Instantaneous On-State Current vs On-State Voltage (Typical)

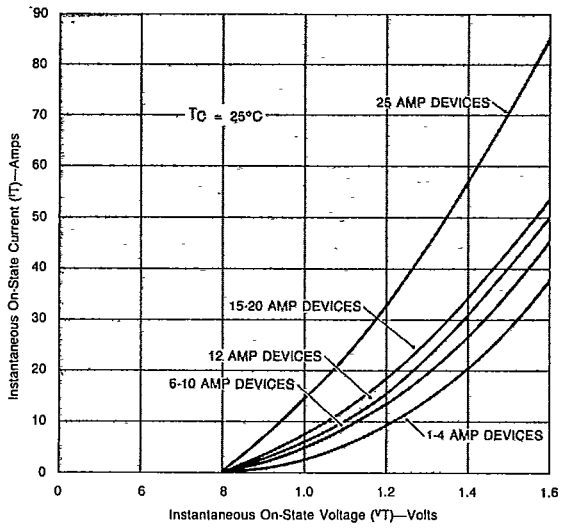


FIGURE 6B — Instantaneous On-State Current vs On-State Voltage (Typical)

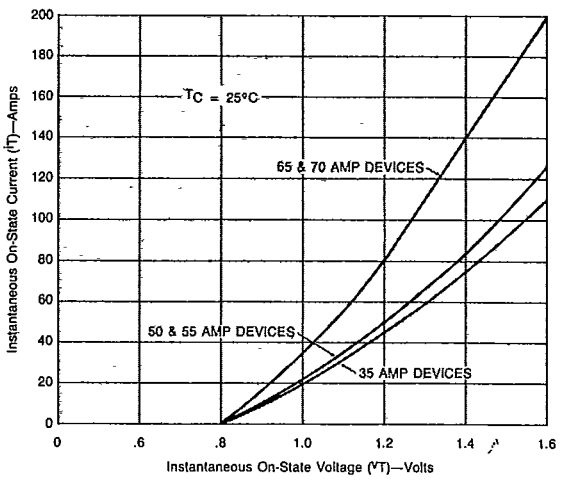


FIGURE 7 — Normalized DC Gate-Trigger Voltage vs Case Temperature

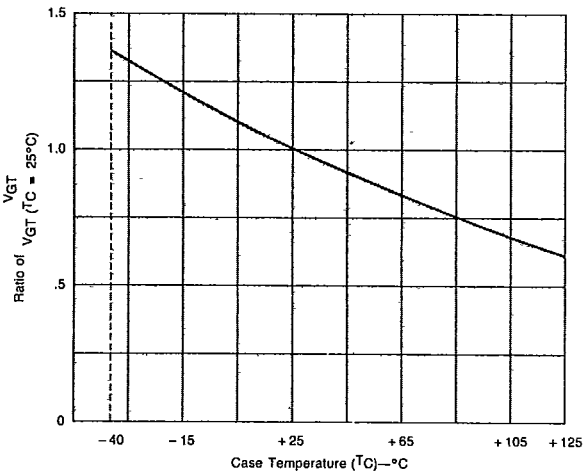


FIGURE 8 — Typical Turn-On Time vs Gate Trigger Current

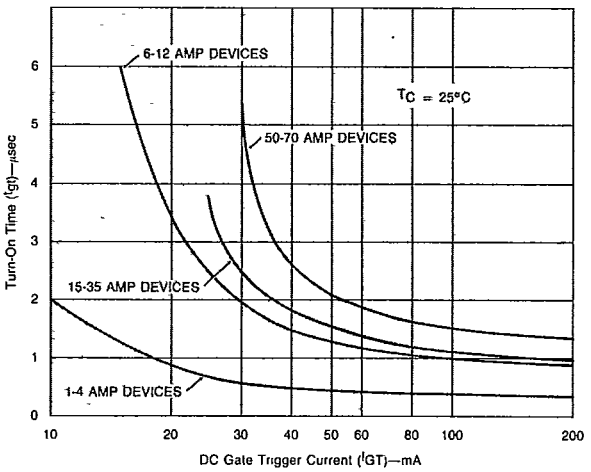


FIGURE 10A — Power Dissipation (Typical) vs RMS On-State Current

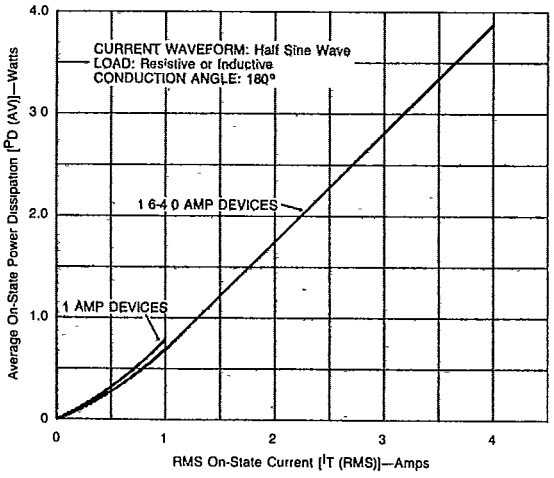
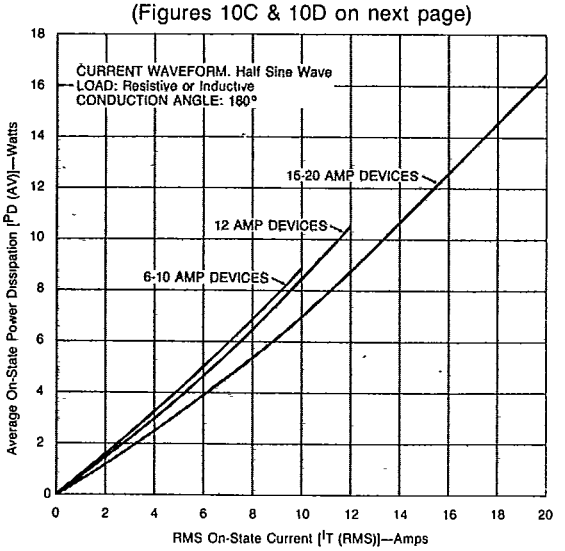


FIGURE 10B — Power Dissipation (Typical) vs RMS On-State Current

(Figures 10C & 10D on next page)



SCR's—Non Sensitive Gate

FIGURE 9 — Peak Surge Current vs Surge Current Duration

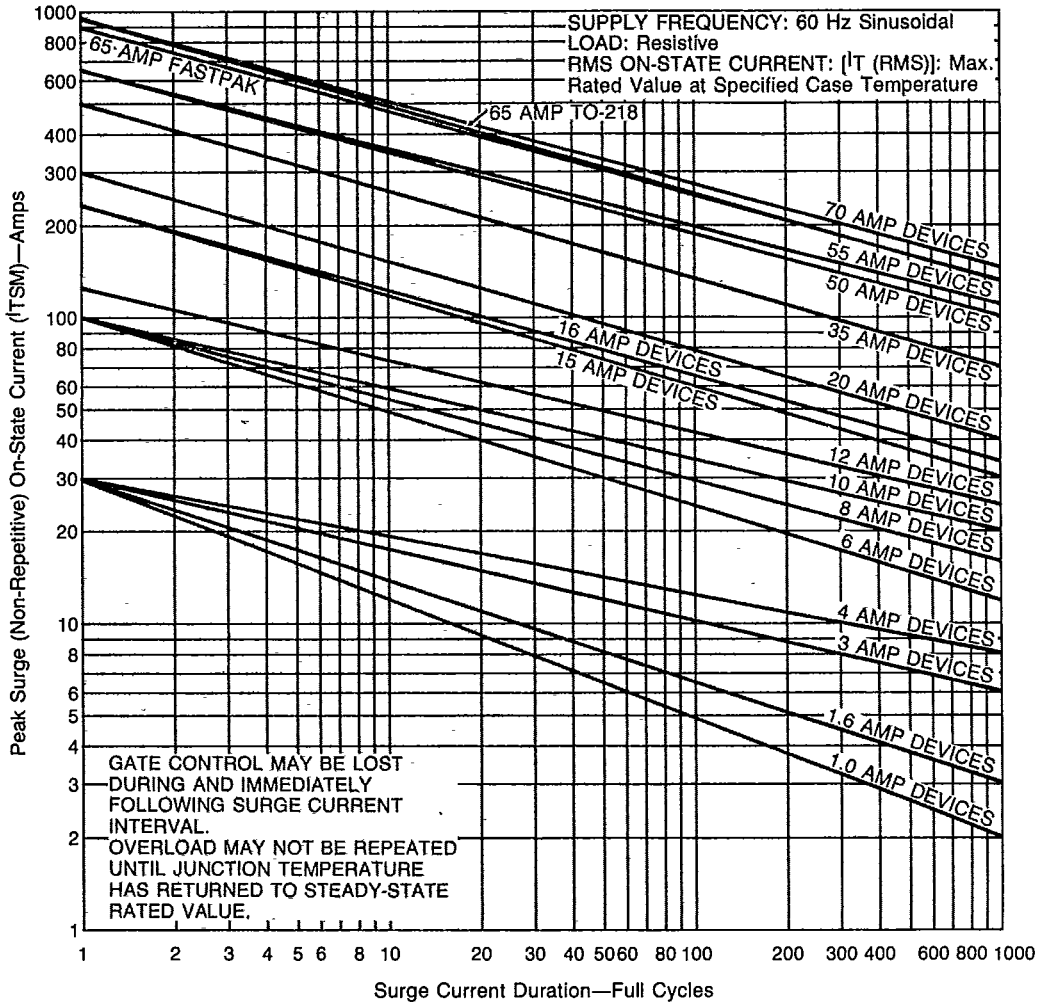


FIGURE 10C — Power Dissipation (Typical) vs RMS On-State Current

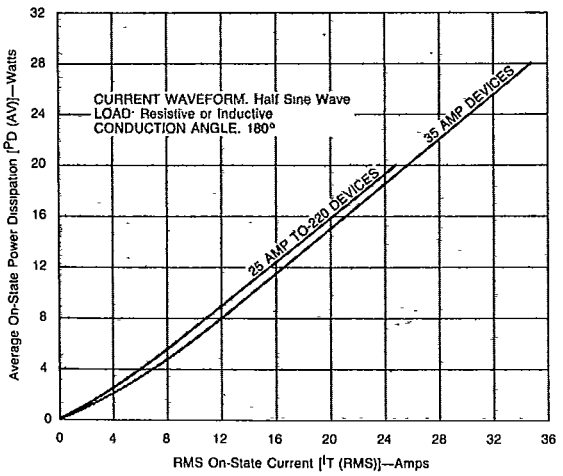


FIGURE 10D — Power Dissipation (Typical) vs RMS On-State Current