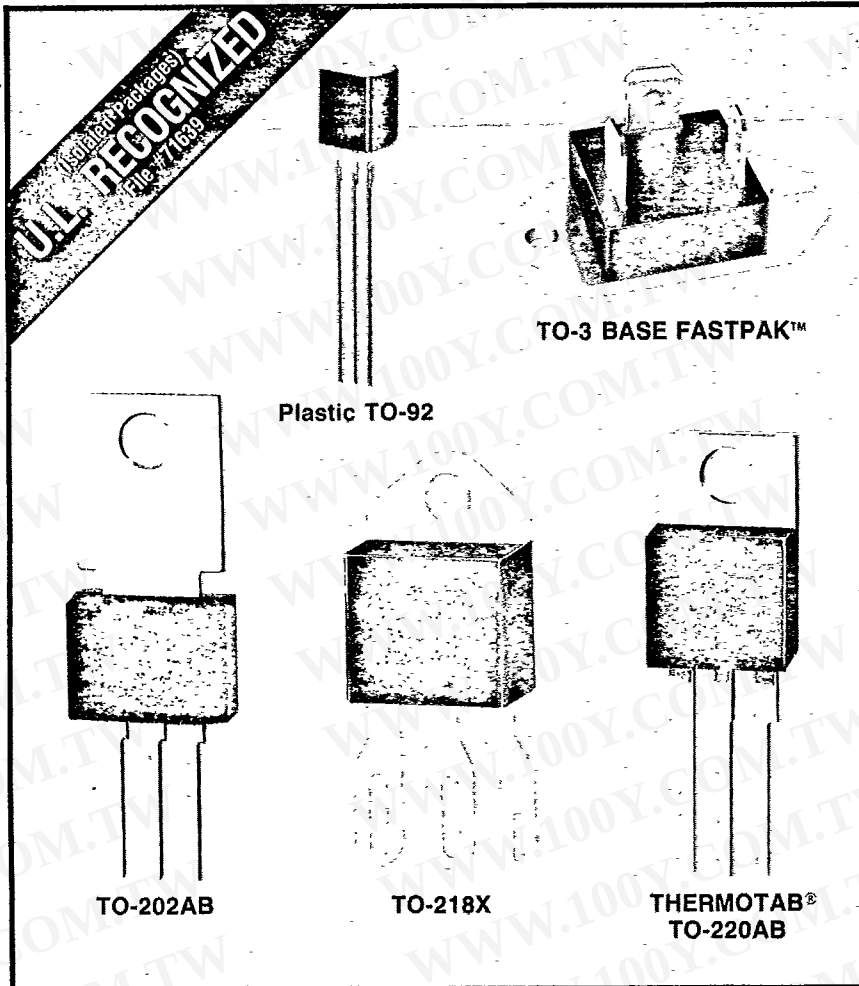




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SCR's 1-70 AMPS

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					IT		VDRM & VRRM		IGT		IDRM & IRRM			VTM		VGT	
	Isolated		Non-Isolated															
						Maximum On-State Current (1) (2)		Repetitive Peak Off-State Forward & Reverse Voltage		DC Gate-Trigger Current VD = 12 VDC RL = 60Ω (4) (12)		Peak Off-State Forward & Reverse Current @ VDRM & VRRM			Peak On-State Voltage at Max Rated RMS Current TC = 25°C (3)		DC Gate-Trigger Voltage VD = 12 VDC RL = 60Ω (8) (13)	
	TO-92	TO-220AB	TO-202AB	TO-202AB	NON-ISOLATED TO-220AB	Amps		Volts		mA		mA			Volts		Volts	
						IT(RMS)	IT(AV)					TC = 25°C	TC = 100°C	TC = 125°C			TC = 25°C	TC = 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 (TJ) 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 (TS) 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 (TC) is measured as shown on dimensional outline drawings. See "package dimensions" section of catalog.

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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 Rise of On-State Current $I_{GT} = 150mA$ With 0.1 μs Rise Time	Gate Controlled Turn-On Time Gate Pulse = 100mA M.n. Width = 5 μs With Rise Time $\leq 0.1\mu s$ (7)	Circuit Commutated Turn-Off Time (9) (10)
					Amps		Volts/ μs					
	mA	Amps	Watts	Watts	60Hz	50Hz	$T_C = 100^\circ C$	$T_C = 125^\circ C$				
	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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								

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 = 50 μ sec. $dv/dt = 20$ V/ μ s. $di/dt = -10$ amps/ μ s for ≤ 1.6 amp devices, and -30 amps/ μ s 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 $\leq 3\mu$ s.
- (12) $I_{GT} = 40$ mA maximum @ $-40^\circ C$ for C122 devices.
- (13) $V_{GT} = 2.0$ V maximum @ $-40^\circ C$ 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.

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SCR's—Non Sensitive Gate

TYPE	Part Number			IT		VDRM & VRRM	IGT		IDRM & IRRM			VTM	VGT	
	Isolated	Non-Isolated		Maximum On-State Current (1)		Repetitive Peak Off-State Forward & Reverse Voltage	DC Gate-Trigger Current VD = 12 VDC RL = 60Ω (4)		Peak Off-State Forward & Reverse Current @ VDRM & VRRM			Peak On-State Voltage at Max Rated RMS Current TC = 25°C (3)	DC Gate-Trigger Voltage VD = 12 VDC RL = 60Ω (8)	
				Amps			mA			Volts				
	TO-220AB	TO-202AB	NON-ISOLATED TO-220AB	IT(RMS)	IT(AV)		Volts		TC = 25°C	TC = 100°C	TC = 125°C		Volts	TC = 25°C
	FOR DIMENSIONAL OUTLINES & PACKAGE VARIATIONS SEE PAGE 67				MAX	MAX	MIN	MIN	MAX	MAXIMUM			MAX	MAX
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	
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
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
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

*VTM @ IT = 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 (TJ) 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 (TS) 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 (TC) is measured as shown on dimensional outline drawings. See "package dimensions" section of catalog.

NOTES FOR JEDEC DEVICES

- 2N6400-6405 series of devices also conform to the following specifications:
 - Maximum VGT = 2.5 volts @ -40°C
 - Maximum IH = 60 milliamps @ -40°C
- 2N6504-6508 series of devices also conform to the following specifications:
 - Maximum VGT = 1.5 volts @ -40°C
 - Maximum IGT = 75 milliamps @ -40°C
 - Maximum IH = 40 milliamps @ -40°C

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Electrical Specifications

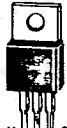
	I _H	I _{GM}	P _{GM}	P _{G(AV)}	I _{TSM}		dv/dt		I _{2t}	di/dt	t _{gt}	t _q
	DC Holding Current Gate Open (5) (14)	Peak Gate Current (11)	Peak Gate Power Dissipation (11)	Average Gate Power Dissipation	Peak One Cycle Surge Forward Current (6) (10)		Critical Rate of Applied Forward Voltage		RMS Surge (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	TC = 100°C	TC = 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					IT		VDRM & VRRM		IGT		IDRM & IRRM			VTM		VGT	
	Isolated			Non-Isolated														
						Maximum On-State Current (1)		Repetitive Peak Off-State Forward & Reverse Voltage		DC Gate-Trigger Current VD = 12 VDC RL = 60Ω (4)		Peak Off-State Forward & Reverse Current @ VDRM & VRRM			Peak On-State Voltage at Max Rated RMS Current TC = 25°C (3)		DC Gate-Trigger Voltage VD = 12 VDC RL = 60Ω (8)	
	TO-220AB	TO-218	FASTPAK TO-3 BASE	NON-ISOLATED TO-220AB	NON-ISOLATED TO-218	Amps						mA					Volts	
					IT(RMS)	IT(AV)	Volts				TC = 25°C	TC = 100°C	TC = 125°C	Volts		TC = 25°C	TC = 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

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

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Electrical Specifications

	I _H	I _{GM}	P _{GM}	P _{G(AV)}	I _{TSM}		dv/dt		I ² t	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 = 150mA 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	TC = 100°C	TC = 125°C	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	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

- See Figures 2 and 3 for current rating at specified operating case temperature.
- See Figure 1 for free air current rating
- See Figure 6 for instantaneous on-state current vs on-state voltage (typical)
- See Figure 5 for I_{GT} vs TC.
- See Figure 4 for I_H vs TC.
- For more than one full cycle rating, see Figure 9.
- See Figure 8 for t_{gt} vs I_{GT}.
- See Figure 7 for V_{GT} vs TC.

- 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
- See Figure 2 (A,B,C,D,E) for maximum allowable case temperatures @ maximum rated current.
- Pulse width ≤ 3μs.
- I_{GT} = 40 mA maximum @ -40°C for C122 devices.
- V_{GT} = 2.0 V maximum @ -40°C for C122 devices.
- Initial on-state current = 200 mA (DC) for 1 to 20 amp devices. 400 mA (DC) for 25 to 70 amp devices.

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SCR's—Non Sensitive Gate

THERMAL RESISTANCE (STEADY STATE)

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

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.

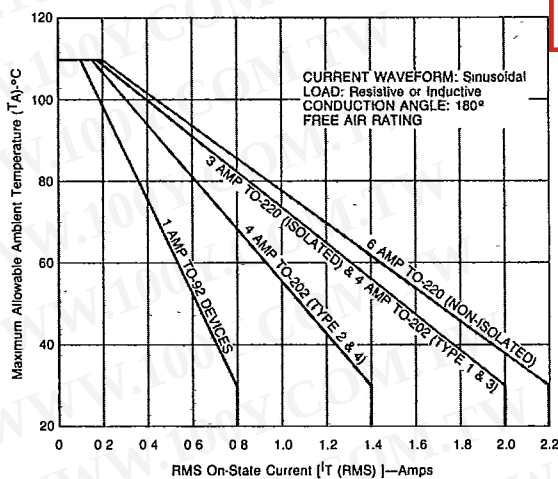
ELECTRICAL ISOLATION FROM LEADS TO CASE

U.L. RECOGNIZED FILE #71639

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

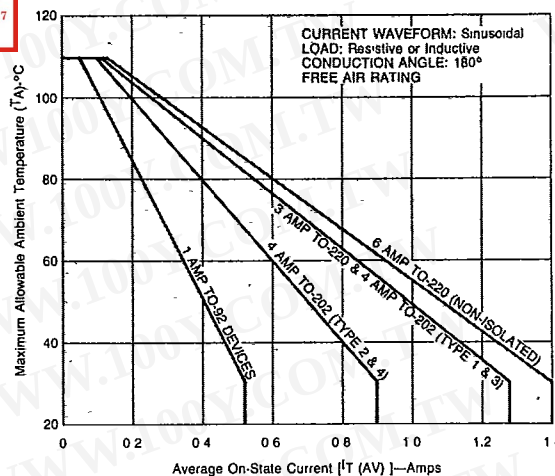
*For 4000V Isolation Use "V" Suffix

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



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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

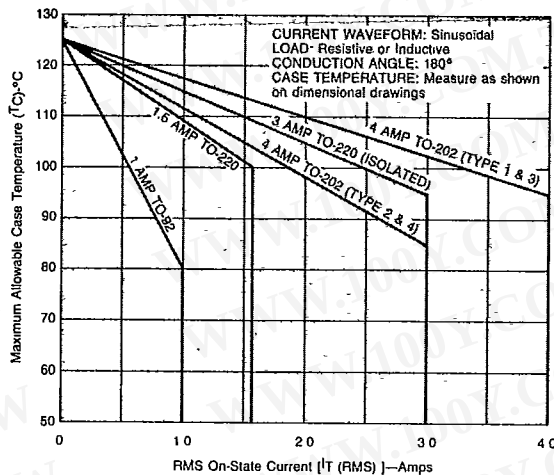


FIGURE 2B — Maximum Allowable Case Temperature vs RMS On-State Current

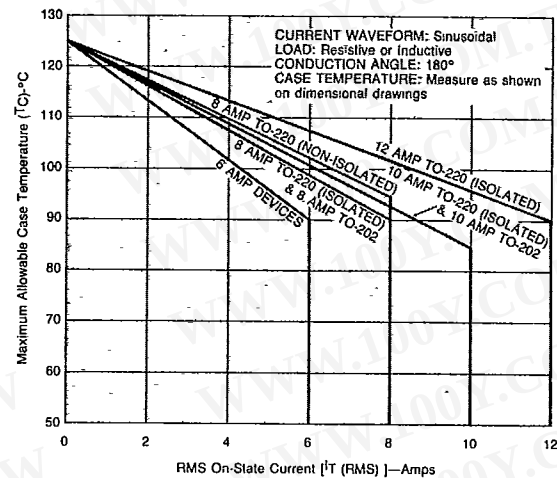


FIGURE 2C — Maximum Allowable Case Temperature vs RMS On-State Current

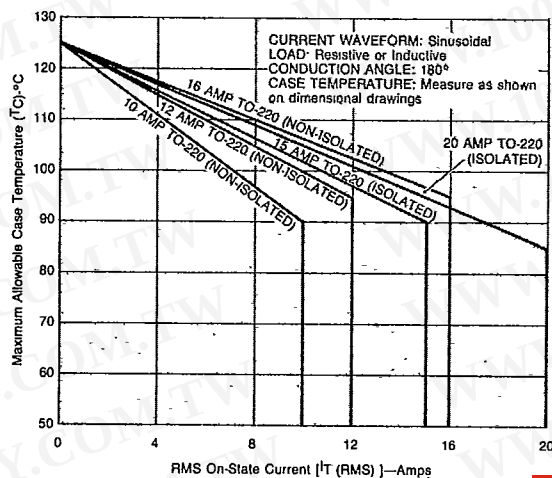
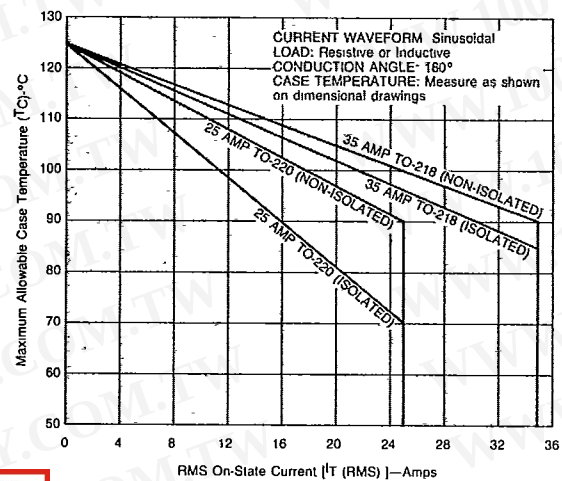


FIGURE 2D — Maximum Allowable Case Temperature vs RMS On-State Current



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

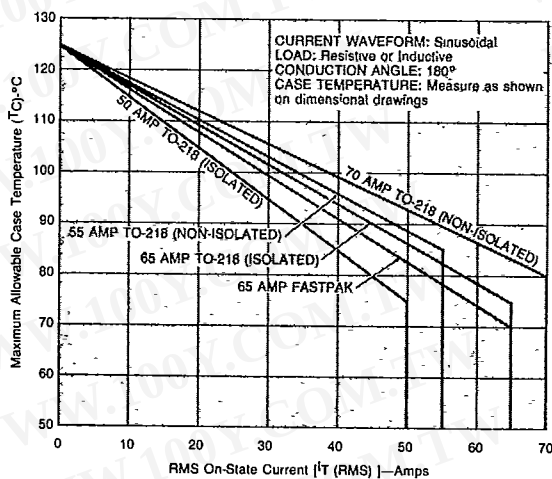
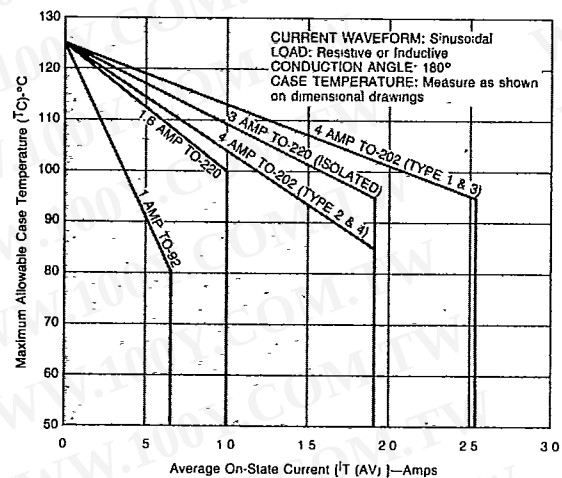


FIGURE 3A — Maximum Allowable Case Temperature vs Average On-State Current



SCR's—Non Sensitive Gate

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

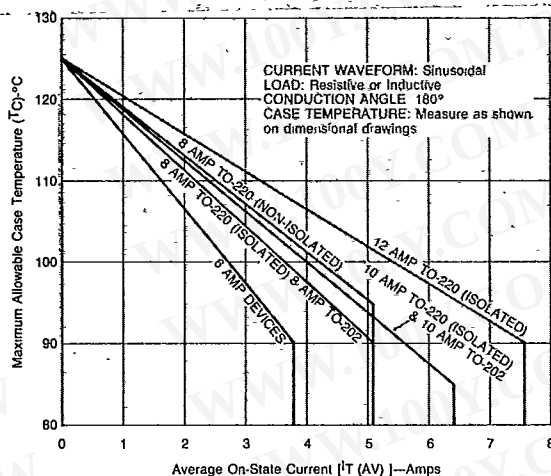


FIGURE 3C — Maximum Allowable Case Temperature vs Average On-State Current

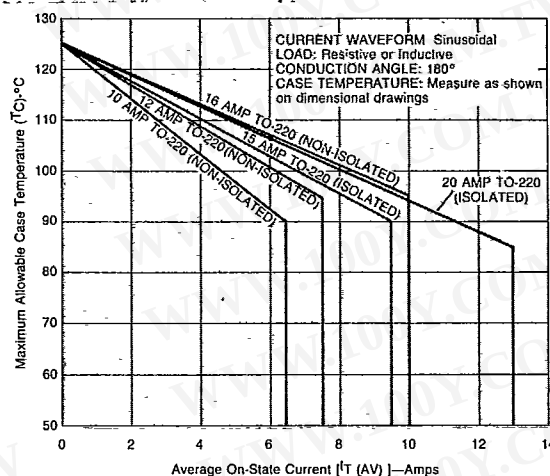


FIGURE 3D — Maximum Allowable Case Temperature vs Average On-State Current

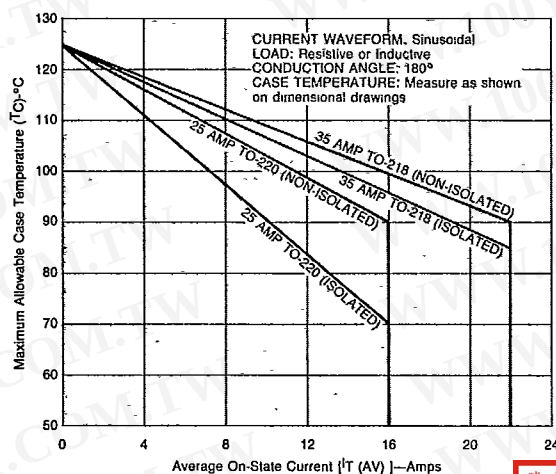


FIGURE 3E — Maximum Allowable Case Temperature vs Average On-State Current

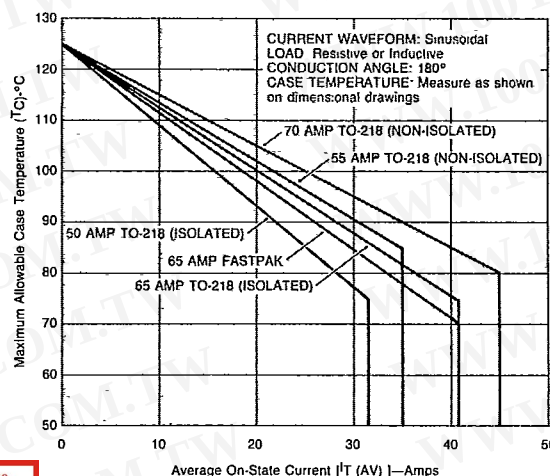


FIGURE 4 — Normalized DC Holding Current vs Case Temperature

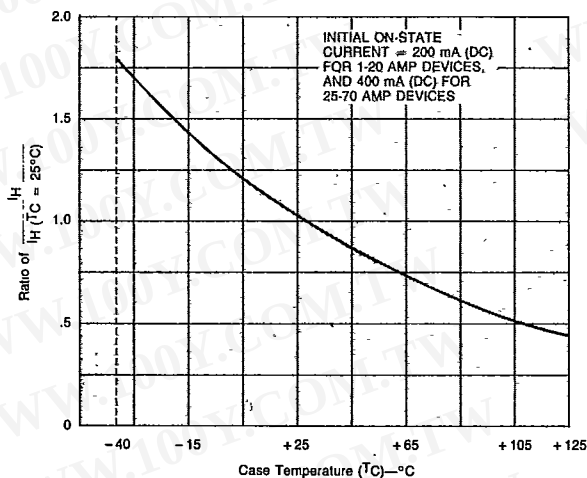
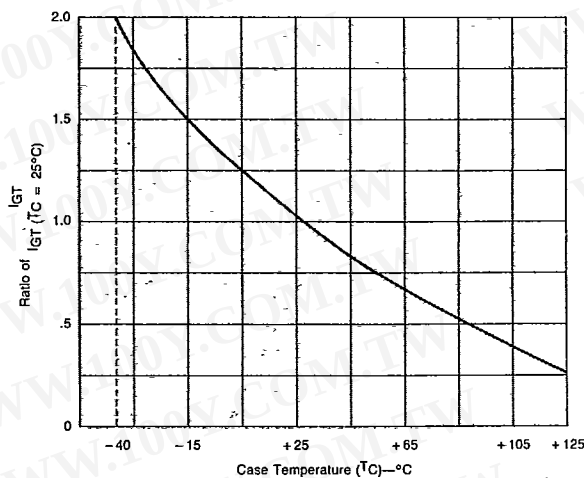


FIGURE 5 — Normalized DC Gate-Trigger Current vs Case Temperature



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

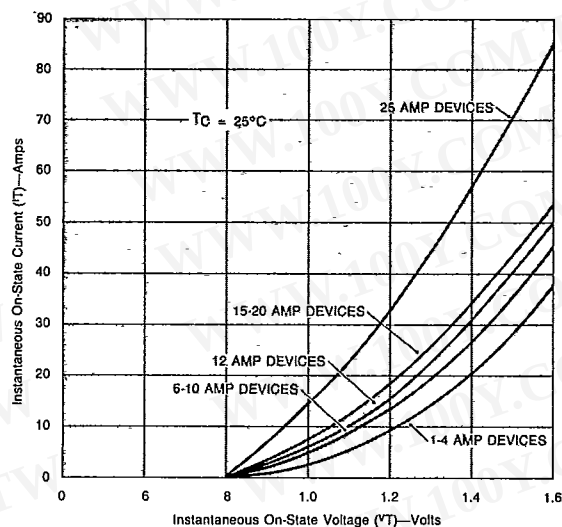


FIGURE 6B — Instantaneous On-State Current vs On-State Voltage (Typical)

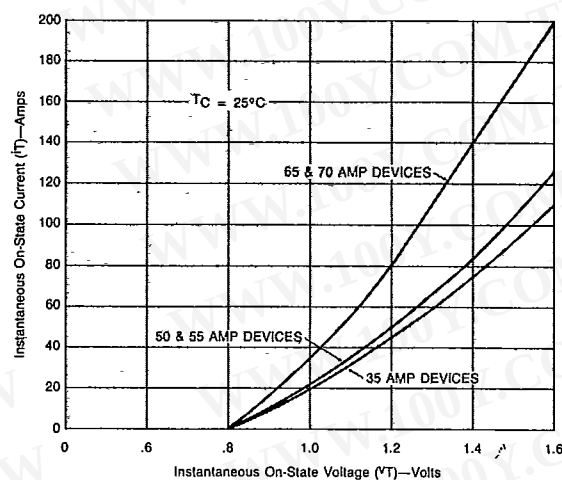


FIGURE 7 — Normalized DC Gate-Trigger Voltage vs Case Temperature

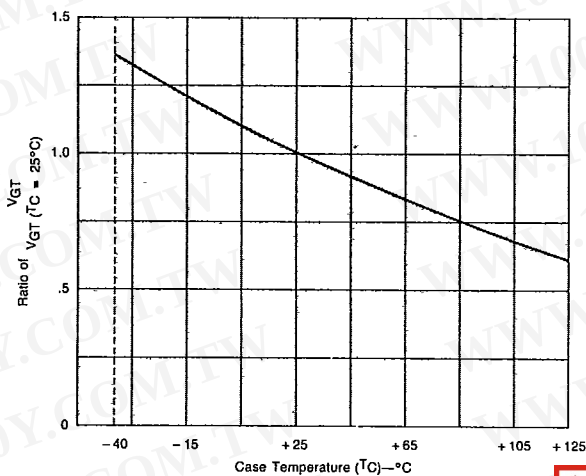


FIGURE 8 — Typical Turn-On Time vs Gate Trigger Current

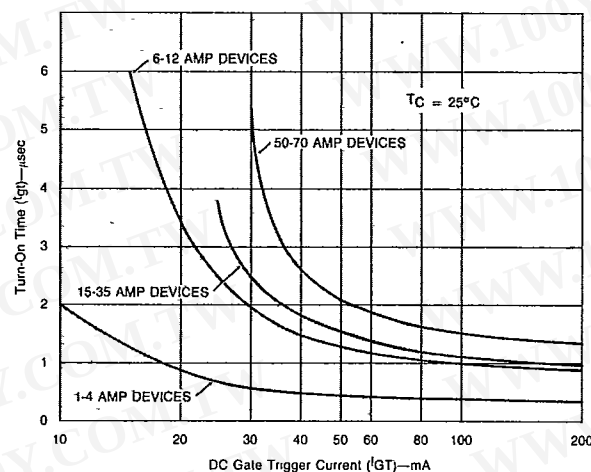


FIGURE 10A — Power Dissipation (Typical) vs RMS On-State Current

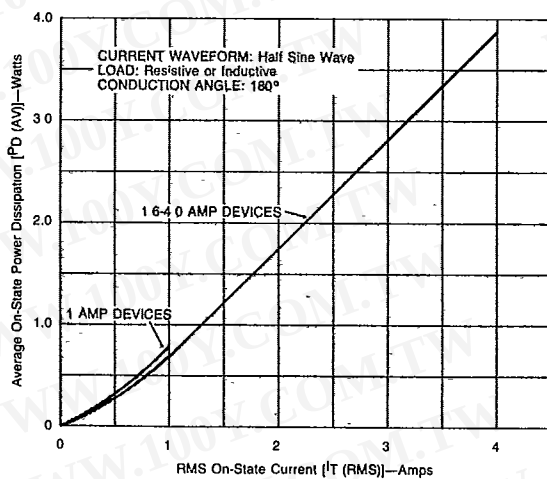
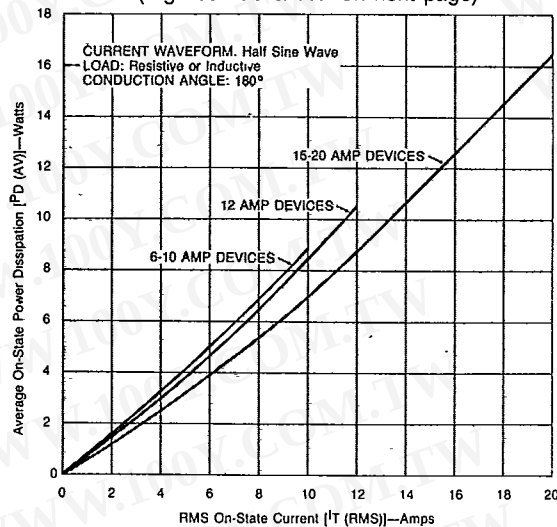


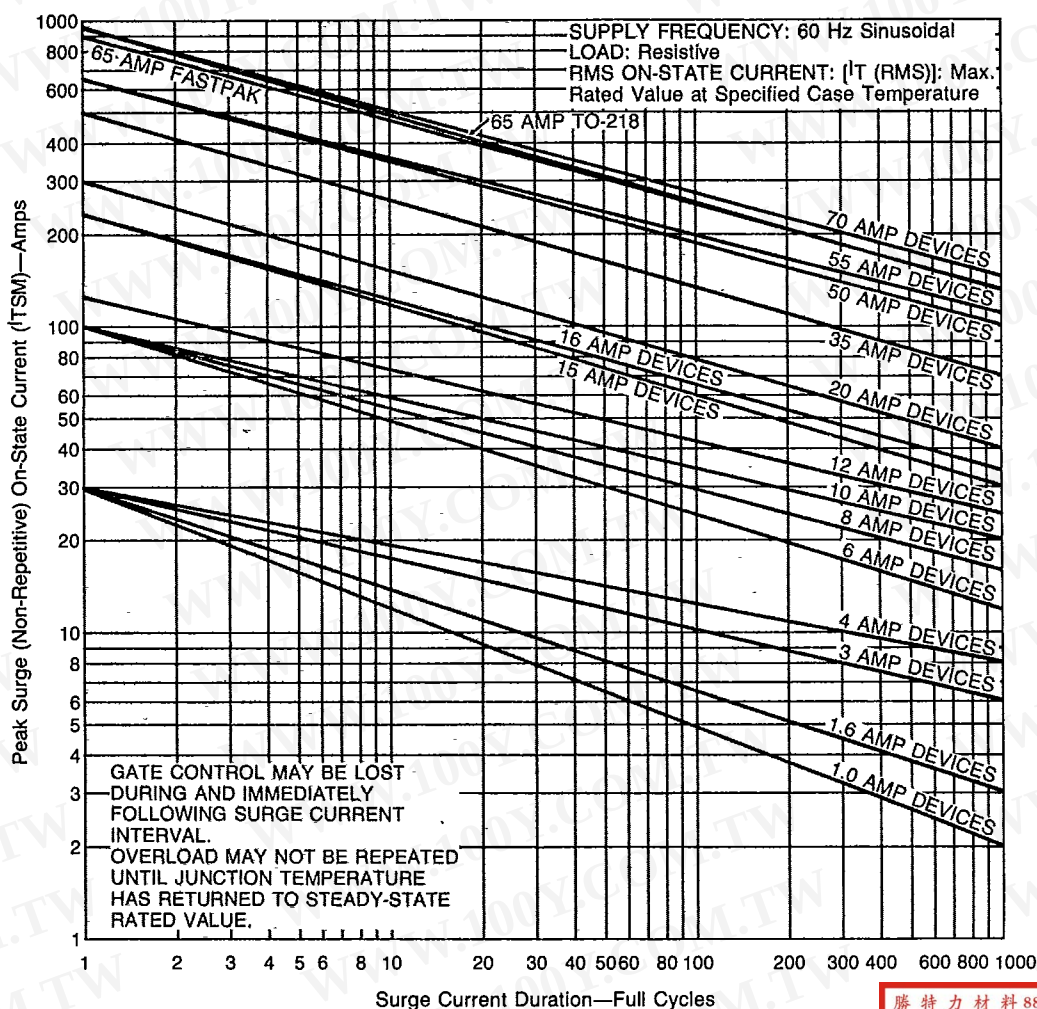
FIGURE 10B — Power Dissipation (Typical) vs RMS On-State Current
(Figures 10C & 10D on next page)



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FIGURE 9 — Peak Surge Current vs Surge Current Duration



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

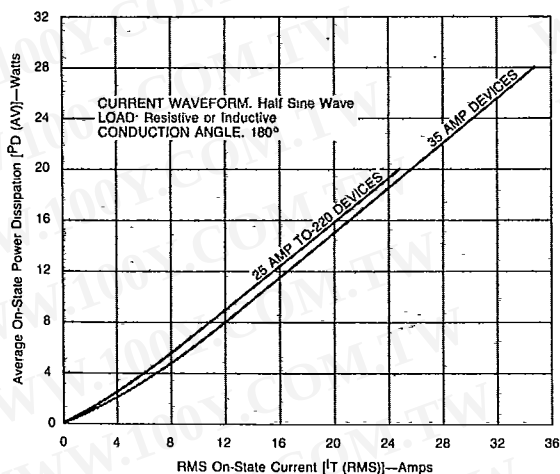
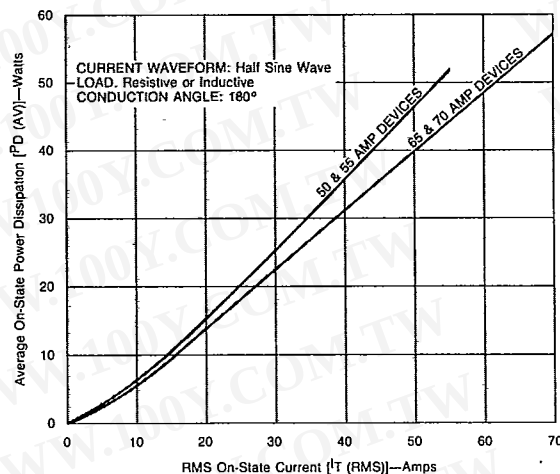


FIGURE 10D — Power Dissipation (Typical) vs RMS On-State Current

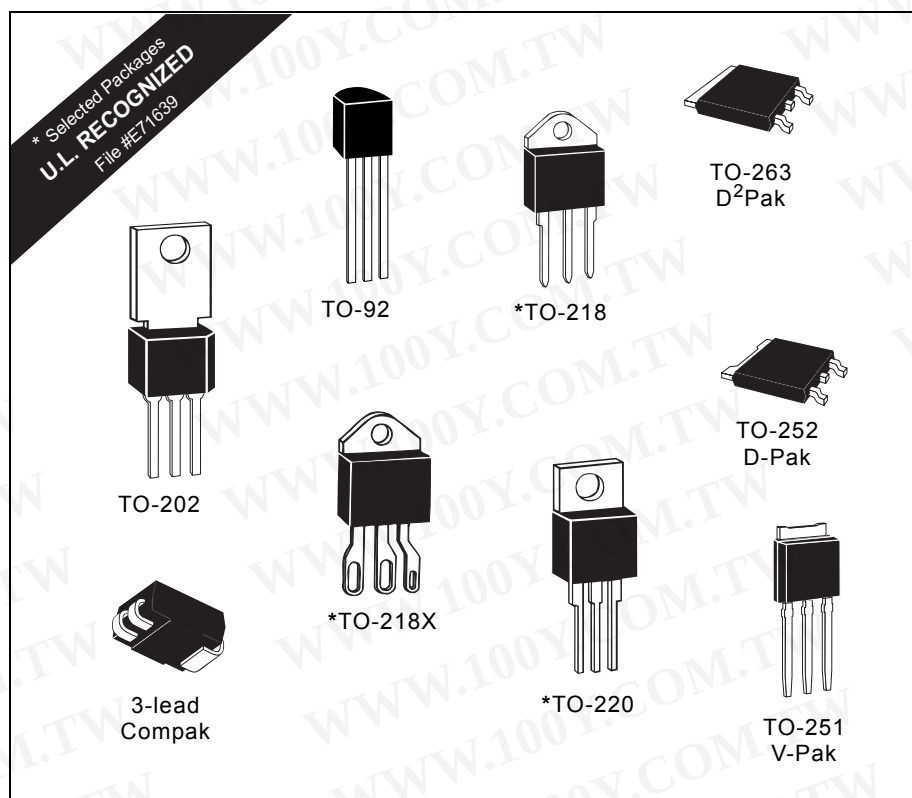


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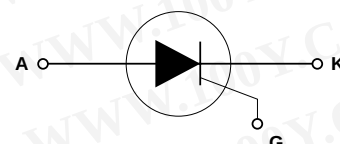
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E6



SCRs

(1 A to 70 A) **RoHS**

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General Description

The Teccor line of thyristor SCR semi-conductors are half-wave, unidirectional, gate-controlled rectifiers which complement Teccor's line of sensitive SCRs. Teccor offers devices with ratings of 1 A to 70 A and 200 V to 1000 V, with gate sensitivities from 10 mA to 50 mA. If gate currents in the 12 μ A to 500 μ A ranges are required, see "Sensitive SCRs" section of this catalog.

Three 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 SCRs features glass-passivated junctions to ensure long-term reliability and parameter stability. Teccor's glass offers a rugged, reliable barrier against junction contamination.

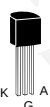
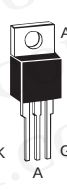
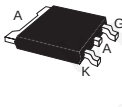
Variations of devices covered in this data sheet are available for custom design applications. Consult the factory for more information.

Features

- RoHS Compliant
- Electrically-isolated package
- High voltage capability — 200 V to 1000 V
- High surge capability — up to 950 A
- Glass-passivated chip

Compak SCR

- Surface mount package — 1 A series
- New small profile three-leaded Compak package
- Packaged in embossed carrier tape with 2,500 devices per reel
- Can replace SOT-223

TYPE	Part Number							I_T (1) (2) (15)	V_{DRM} & V_{RRM}	I_{GT} (4)		
		Isolated	Non-isolated									
												
		TO-92	TO-220	TO-202	TO-220	TO-251 V-Pak	Compak	TO-252 D-Pak				
		See "Package Dimensions" section for variations. (11)							Amps			
							$I_{T(RMS)}$ MAX	$I_{T(AV)}$ MAX	Volts MIN	mAmps MIN MAX		
1 A	S201E					S2N1		1	0.64	200	1	10
	S401E					S4N1		1	0.64	400	1	10
	S601E					S6N1		1	0.64	600	1	10
6 A		S2006L	S2006F1		S2006V		S2006D	6	3.8	200	1	15
		S4006L	S4006F1		S4006V		S4006D	6	3.8	400	1	15
		S6006L	S6006F1		S6006V		S6006D	6	3.8	600	1	15
		S8006L			S8006V		S8006D	6	3.8	800	1	15
		SK006L			SK006V		SK006D	6	3.8	1000	1	15
8 A		S2008L	S2008F1	S2008R	S2008V		S2008D	8	5.1	200	1	15
		S4008L	S4008F1	S4008R	S4008V		S4008D	8	5.1	400	1	15
		S6008L	S6008F1	S6008R	S6008V		S6008D	8	5.1	600	1	15
		S8008L		S8008R	S8008V		S8008D	8	5.1	800	1	15
		SK008L		SK008R	SK008V		SK008D	8	5.1	1000	1	15
10 A		S2010L	S2010F1	S2010R	S2010V		S2010D	10	6.4	200	1	15
		S4010L	S4010F1	S4010R	S4010V		S4010D	10	6.4	400	1	15
		S6010L	S6010F1	S6010R	S6010V		S6010D	10	6.4	600	1	15
		S8010L		S8010R	S8010V		S8010D	10	6.4	800	1	15
		SK010L		SK010R	SK010V		SK010D	10	6.4	1000	1	15
12 A				S2012R	S2012V		S2012D	12	7.6	200	1	20
				S4012R	S4012V		S4012D	12	7.6	400	1	20
				S6012R	S6012V		S6012D	12	7.6	600	1	20
				S8012R	S8012V		S8012D	12	7.6	800	1	20
				SK012R	SK012V		SK012D	12	7.6	1000	1	20

Specific Test Conditions

di/dt — Maximum rate-of-rise of on-state current; $I_{GT} = 150$ mA with ≤ 0.1 μ s rise time

dv/dt — Critical rate of applied forward voltage

I^2t — RMS surge (non-repetitive) on-state current for period of 8.3 ms for fusing

I_{DRM} and I_{RRM} — Peak off-state forward and reverse current at V_{DRM} and V_{RRM}

I_{GT} — dc gate trigger current; $V_D = 12$ V dc; $R_L = 60$ Ω for 1 to 16 A devices and 30 Ω for 20 to 70 A devices

I_{GM} — Peak gate current

I_H — dc holding current; gate open

I_T — Maximum on-state current

I_{TSM} — Peak one-cycle forward surge current

$P_{G(AV)}$ — Average gate power dissipation

P_{GM} — Peak gate power dissipation

t_{gt} — Gate controlled turn-on time; gate pulse = 100 mA; minimum width = 15 μ s with rise time ≤ 0.1 μ s

t_q — Circuit commutated turn-off time

V_{DRM} and V_{RRM} — Repetitive peak off-state forward and reverse voltage

V_{gt} — DC gate trigger voltage; $V_D = 12$ V dc; $R_L = 60$ Ω for 1 to 16 A devices and 30 Ω for 20 to 70 A devices

V_{TM} — Peak on-state voltage at maximum rated RMS current

General Notes

- 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 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, and -40 °C to +125 °C for all others.
- Lead solder temperature is a maximum of 230 °C for 10 seconds maximum; $\geq 1/16"$ (1.59 mm) from case.
- The case temperature (T_C) is measured as shown on dimensional outline drawings in the "Package Dimensions" section of this catalog.

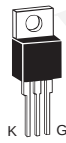
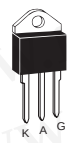
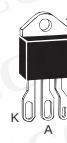
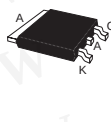
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I _{DRM} & I _{RRM}			V _{TM}	V _{GT}	I _H	I _{GM}	P _{GM}	P _{G(AV)}	I _{TSM}	dv/dt		I ² t	di/dt	t _{gt}	t _q
(14)			(3)	(8) (17)	(5) (13)	(12)	(12)		(6) (10)					(7)	(9) (10)
mAmps			Volts	Volts	mAmps	Amps	Watts	Watts	Amps	Volts/μSec		Amps ² Sec	Amps/μSec	μSec	μSec
T _C = 25 °C	T _C = 100 °C	T _C = 125 °C	T _C = 25 °C	T _C = 25 °C					60/50 Hz	T _C = 100 °C	T _C = 125 °C				
MAX			MAX	MAX	MAX					MIN	MIN			TYP	MAX
0.01	0.2	0.5	1.6	1.5	30	1.5	15	0.3	30/25	40	20	3.7	50	2	35
0.01	0.2	0.5	1.6	1.5	30	1.5	15	0.3	30/25	40	20	3.7	50	2	35
0.01	0.2	0.5	1.6	1.5	30	1.5	15	0.3	30/25	40	20	3.7	50	2	35
0.01	0.2	0.5	1.6	1.5	30	2	20	0.5	100/83	350	250	41	100	2	35
0.01	0.2	0.5	1.6	1.5	30	2	20	0.5	100/83	350	250	41	100	2	35
0.01	0.2	0.5	1.6	1.5	30	2	20	0.5	100/83	300	225	41	100	2	35
0.01	0.2	0.5	1.6	1.5	30	2	20	0.5	100/83	250	200	41	100	2	35
0.02	3		1.6	1.5	30	2	20	0.5	100/83	100		41	100	2	35
0.01	0.2	0.5	1.6	1.5	30	2	20	0.5	100/83	350	250	41	100	2	35
0.01	0.2	0.5	1.6	1.5	30	2	20	0.5	100/83	350	250	41	100	2	35
0.01	0.2	0.5	1.6	1.5	30	2	20	0.5	100/83	300	225	41	100	2	35
0.01	0.2	0.5	1.6	1.5	30	2	20	0.5	100/83	250	200	41	100	2	35
0.02	3		1.6	1.5	30	2	20	0.5	100/83	100		41	100	2	35
0.01	0.2	0.5	1.6	1.5	30	2	20	0.5	100/83	350	250	41	100	2	35
0.01	0.2	0.5	1.6	1.5	30	2	20	0.5	100/83	350	250	41	100	2	35
0.01	0.2	0.5	1.6	1.5	30	2	20	0.5	100/83	300	225	41	100	2	35
0.02	0.5	1	1.6	1.5	30	2	20	0.5	100/83	250	200	41	100	2	35
0.02	3		1.6	1.5	30	2	20	0.5	100/83	100		41	100	2	35
0.01	0.5	1	1.6	1.5	40	2	20	0.5	120/100	350	250	60	100	2	35
0.01	0.5	1	1.6	1.5	40	2	20	0.5	120/100	350	250	60	100	2	35
0.01	0.5	1	1.6	1.5	40	2	20	0.5	120/100	300	225	60	100	2	35
0.02	0.5	1	1.6	1.5	40	2	20	0.5	120/100	250	200	60	100	2	35
0.02	3		1.6	1.5	40	2	20	0.5	120/100	100		60	100	2	35

Electrical Specification Notes

- (1) See Figure E6.5 through Figure E6.16 for current rating at specified operating case temperature.
- (2) See Figure E6.1 and Figure E6.2 for free air current rating.
- (3) See Figure E6.19 and Figure E6.20 for instantaneous on-state current versus on-state voltage (typical).
- (4) See Figure E6.18 for I_{GT} versus T_C.
- (5) See Figure E6.17 for I_H versus T_C.
- (6) For more than one full cycle rating, see Figure E6.23.
- (7) See Figure E6.22 for t_{gt} versus I_{GT}.
- (8) See Figure E6.21 for V_{GT} versus T_C.
- (9) Test conditions are as follows:
 - I_T = 1 A for 1 A devices and 2 A for all other devices
 - Pulse duration = 50 μs, dv/dt = 20 V/μs, di/dt = -10 A/μs for 1 A devices, and -30 A/μs for other devices
 - I_{GT} = 200 mA at turn-on
- (10) See Figure E6.5 through Figure E6.10 for maximum allowable case temperatures at maximum rated current.
- (11) See package outlines for lead form configuration. When ordering special lead forming, add type number as suffix to part number.
- (12) Pulse width ≤ 10 μs
- (13) Initial on-state current = 200 mA dc for 1 A through 16 A devices; 400 mA dc for 20 A through 70 A devices.
- (14) T_C = T_J for test conditions in off state.
- (15) The R, K, or M package rating is intended for high surge condition use only and not recommended for ≥ 50 A rms continuous current use since narrow pin lead temperature can exceed PCB solder melting temperature. Teccor's J package or W package is recommended for ≥ 50 A rms continuous current requirements.
- (16) For various durations of an exponentially decaying current waveform, see Figure E6.3 and Figure E6.4. (t_w is defined as 5 time constants.)
- (17) Minimum non-trigger V_{GT} at 125 °C is 0.2 V.

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TYPE	Part Number						I _T		V _{DRM} & V _{RRM}	I _{GT}		I _{DRM} & I _{RRM}				
	Isolated			Non-isolated												
								(1) (15)		Volts	(4)	(14)				
	TO-220	TO-218X	TO-218	TO-220	TO-218X	TO-218	TO-263 D ² Pak	Amps				mAmps				
	I _{T(RMS)}	I _{T(AV)}	MAX		MIN	MIN	MAX	MAX								
See "Package Dimensions" section for variations. (11)																
15 A	S2015L							15	9.5	200	1	30	0.01	0.5	1	
	S4015L							15	9.5	400	1	30	0.01	0.5	1	
	S6015L							15	9.5	600	1	30	0.01	0.5	1	
	S8015L							15	9.5	800	1	30	0.02	1	2	
	SK015L							15	9.5	1000	1	30	0.02	3		
16 A				S2016R			S2016N	16	10	200	1	30	0.01	0.5	1	
				S4016R			S4016N	16	10	400	1	30	0.01	0.5	1	
				S6016R			S6016N	16	10	600	1	30	0.01	0.5	1	
				S8016R			S8016N	16	10	800	1	30	0.02	1	2	
				SK016R			SK016N	16	10	1000	1	30	0.02	3		
20 A	S2020L							20	12.8	200	1	30	0.01	0.5	1	
	S4020L							20	12.8	400	1	30	0.01	0.5	1	
	S6020L							20	12.8	600	1	30	0.01	0.5	1	
	S8020L							20	12.8	800	1	30	0.02	1.0	2	
	SK020L							20	12.8	1000	1	30	0.02	3		
25 A	S2025L			S2025R			S2025N	25	16	200	1	35	0.01	1	2	
	S4025L			S4025R			S4025N	25	16	400	1	35	0.01	1	2	
	S6025L			S6025R			S6025N	25	16	600	1	35	0.01	1	2	
	S8025L			S8025R			S8025N	25	16	800	1	35	0.02	1.5	3	
	SK025L			SK025R			SK025N	25	16	1000	1	35	0.02	3		
35 A		S2035J	S2035K					35	22	200	5	40	0.01	1	2	
		S4035J	S4035K					35	22	400	5	40	0.01	1	2	
		S6035J	S6035K					35	22	600	5	40	0.01	1	2	
		S8035J	S8035K					35	22	800	5	40	0.02	1.5	3	
			SK035K					35	22	1000	5	40	0.02	3		
40 A				S2040R			S2040N	40	25	200	5	40	0.01	1	2	
				S4040R			S4040N	40	25	400	5	40	0.01	1	2	
				S6040R			S6040N	40	25	600	5	40	0.01	1	2	
				S8040R			S8040N	40	25	800	5	40	0.02	1.5	3	
				SK040R			SK040N	40	25	1000	5	40	0.03	5		
55 A				S2055R	S2055W	S2055M	S2055N	55	35	200	5	40	0.01	1	2	
				S4055R	S4055W	S4055M	S4055N	55	35	400	5	40	0.01	1	2	
				S6055R	S6055W	S6055M	S6055N	55	35	600	5	40	0.01	1	2	
				S8055R	S8055W	S8055M	S8055N	55	35	800	5	40	0.02	1.5	3	
				SK055R		SK055M	SK055N	55	35	1000	5	40	0.03	5		
65 A		S2065J	S2065K					65	41	200	5	50	0.02	1.5	3	
		S4065J	S4065K					65	41	400	5	50	0.02	1.5	3	
		S6065J	S6065K					65	41	600	5	50	0.02	1.5	3	
		S8065J	S8065K					65	41	800	5	50	0.02	2	5	
			SK065K					65	41	1000	5	50	0.03	5		
70 A					S2070W			70	45	200	5	50	0.02	1.5	3	
					S4070W			70	45	400	5	50	0.02	1.5	3	
					S6070W			70	45	600	5	50	0.02	1.5	3	
					S8070W			70	45	800	5	50	0.02	2	5	

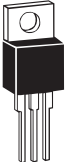
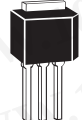
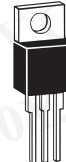
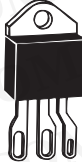
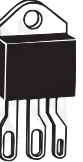
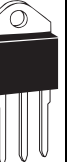
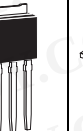
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V _{TM}	V _{GT}	I _H	I _{GM}	P _{GM}	P _{G(AV)}	I _{TSM}	dv/dt		I ² t	di/dt	t _{gt}	t _q
(3)	(8) (17)	(5) (13)	(12)	(12)		(6) (10) (16)					(7)	(9) (10)
Volts	Volts											
T _C = 25 °C	T _C = 25 °C	mAmps	Amps	Watts	Watts	Amps	Volts/μSec					
						60/50 Hz	T _C = 100 °C	T _C = 125 °C	Amps ² Sec	Amps/μSec	μSec	μSec
MAX	MAX	MAX					MIN	MIN			TYP	MAX
1.6	1.5	40	3	30	0.6	225/188	450	350	210	125	2	35
1.6	1.5	40	3	30	0.6	225/188	450	350	210	125	2	35
1.6	1.5	40	3	30	0.6	225/188	425	325	210	125	2	35
1.6	1.5	40	3	30	0.6	225/188	400	300	210	125	2	35
1.6	1.5	40	3	30	0.6	225/188	200		210	125	2	35
1.6	1.5	40	3	30	0.6	225/188	450	350	210	125	2	35
1.6	1.5	40	3	30	0.6	225/188	450	350	210	125	2	35
1.6	1.5	40	3	30	0.6	225/188	425	325	210	125	2	35
1.6	1.5	40	3	30	0.6	225/188	400	300	210	125	2	35
1.6	1.5	40	3	30	0.6	225/188	200		210	125	2	35
1.6	1.5	40	3	30	0.6	300/255	450	350	374	125	2	35
1.6	1.5	40	3	30	0.6	300/255	450	350	374	125	2	35
1.6	1.5	40	3	30	0.6	300/255	425	325	374	125	2	35
1.6	1.5	40	3	30	0.6	300/255	400	300	374	125	2	35
1.6	1.5	40	3	30	0.6	300/255	200		374	125	2	35
1.6	1.5	50	3.5	35	0.8	350/300	450	350	510	150	2	35
1.6	1.5	50	3.5	35	0.8	350/300	450	350	510	150	2	35
1.6	1.5	50	3.5	35	0.8	350/300	425	325	510	150	2	35
1.6	1.5	50	3.5	35	0.8	350/300	400	300	510	150	2	35
1.6	1.5	50	3.5	35	0.8	350/300	200		510	150	2	35
1.8	1.5	50	3.5	35	0.8	500/425	450	350	1035	150	2	35
1.8	1.5	50	3.5	35	0.8	500/425	450	350	1035	150	2	35
1.8	1.5	50	3.5	35	0.8	500/425	425	325	1035	150	2	35
1.8	1.5	50	3.5	35	0.8	500/425	400	300	1035	150	2	35
1.8	1.5	50	3.5	35	0.8	500/425	200		1035	150	2	35
1.8	1.5	60	3.5	35	0.8	520/430	650	550	1122	175	2.5	35
1.8	1.5	60	3.5	35	0.8	520/430	650	550	1122	175	2.5	35
1.8	1.5	60	3.5	35	0.8	520/430	600	500	1122	175	2.5	35
1.8	1.5	60	3.5	35	0.8	520/430	500	475	1122	175	2.5	35
1.8	1.5	60	3.5	35	0.8	520/430	250		1122	175	2.5	35
1.8	1.5	60	4	40	0.8	650/550	650	550	1750	175	2.5	35
1.8	1.5	60	4	40	0.8	650/550	650	550	1750	175	2.5	35
1.8	1.5	60	4	40	0.8	650/550	600	500	1750	175	2.5	35
1.8	1.5	60	4	40	0.8	650/550	500	475	1750	175	2.5	35
1.8	1.5	60	4	40	0.8	650/550	250		1750	175	2.5	35
1.8	2	80	5	50	1	950/800	650	550	3745	200	2.5	35
1.8	2	80	5	50	1	950/800	650	550	3745	200	2.5	35
1.8	2	80	5	50	1	950/800	600	500	3745	200	2.5	35
1.8	2	80	5	50	1	950/800	500	475	3745	200	2.5	35
1.8	2	80	5	50	1	950/800	250		3745	200	2.5	35
1.8	2	80	5	50	1	950/800	650	550	3745	200	2.5	35
1.8	2	80	5	50	1	950/800	650	550	3745	200	2.5	35
1.8	2	80	5	50	1	950/800	600	500	3745	200	2.5	35
1.8	2	80	5	50	1	950/800	500	475	3745	200	2.5	35

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Thermal Resistance (Steady State) R _{θJC} [R _{θJA}] °C/W (TYP.)											
Pkg. Code	L	F	F2	R	J	W	K	M	D	V	N
Type	 TO-220 Isolated	 TO-202 Type 1 Non-isolated	 TO-202 Type 2 Non-isolated	 TO-220 Non-isolated	 TO-218X Isolated	 TO-218X Non-isolated	 TO-218 Isolated	 TO-218 Non-isolated	 TO-252 D-Pak Surface Mount	 TO-251AA V-Pak Non-isolated	 TO-263 D²Pak Non-isolated
1 A	See below										
6 A	4.0 [50]	4.3 [45]	9.5 [70]						1.7	2.3 [70]	
8 A	3.4	3.9		1.8 [40]					1.5	2.0	
10 A	3.0	3.4		1.6					1.45	1.7	
12 A				1.5					1.4	1.6	
15 A	2.5										
16 A				1.3							1.3
20 A	2.4										
25 A	2.35			1.0							1.0
35 A					0.70		0.70				
40 A				0.6							0.6
55 A				0.5		0.53		0.53			0.5
65 A					0.86		0.86				
70 A						0.60					

Thermal Resistance (Steady State) R _{θJC} [R _{θJA}] °C/W (TYP.)		
Package Code	C	E
Type	 Compak	 TO-92
1 A	35 *	50 [145]

* Mounted on 1cm² copper foil surface; two-ounce copper foil

Electrical Isolation

Teccor's isolated SCR packages will withstand a minimum high potential test of 2500 V ac rms from leads to mounting tab over the device's operating temperature range. The following table shows standard and optional isolation ratings.

Electrical Isolation * from Leads to Mounting Tab			
V AC RMS	TO-220 Isolated	TO-218X Isolated	TO-218 Isolated
2500	Standard	Standard	Standard
4000	Optional **	N/A	N/A

* UL Recognized File #E71639

** For 4000 V isolation, use "V" suffix in part number.

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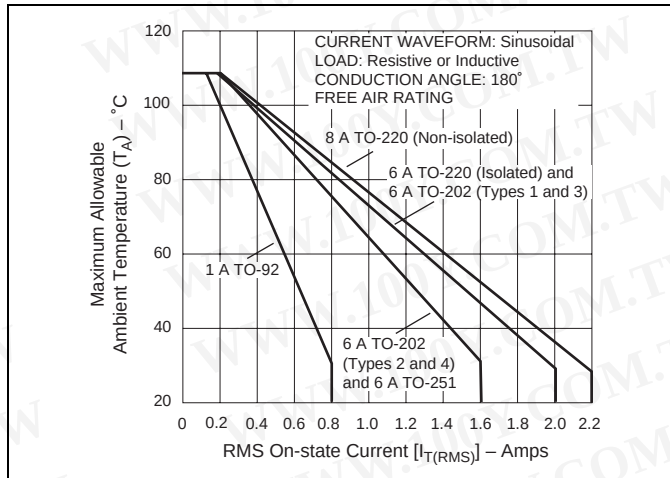


Figure E6.1 Maximum Allowable Ambient Temperature versus RMS On-state Current

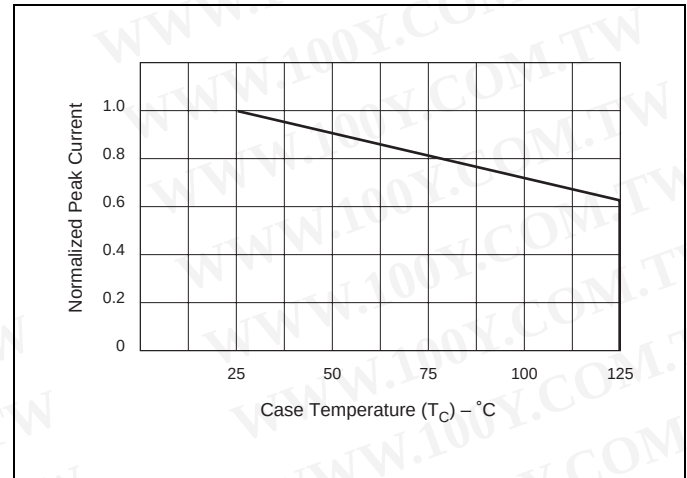


Figure E6.4 Peak Capacitor Discharge Current Derating (6 A through 55 A)

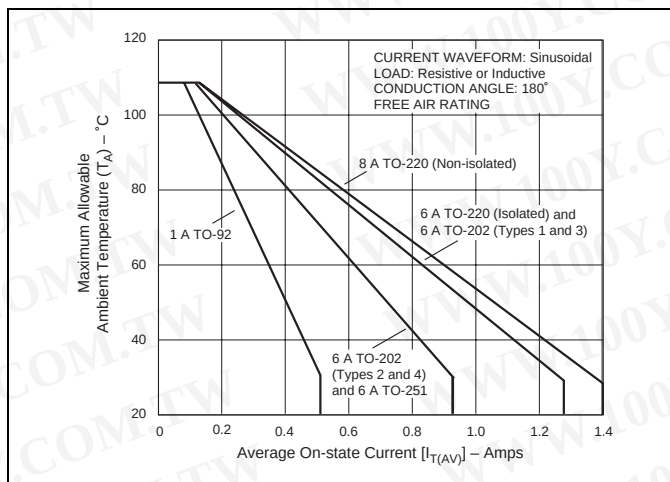


Figure E6.2 Maximum Allowable Ambient Temperature versus Average On-state Current

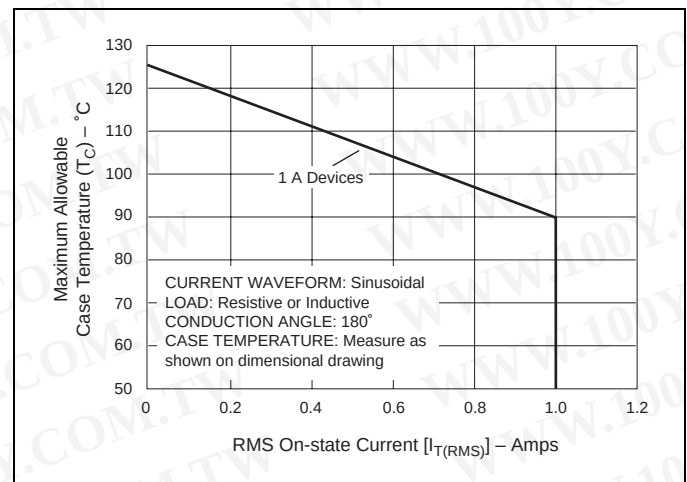


Figure E6.5 Maximum Allowable Case Temperature versus RMS On-state Current (1 A)

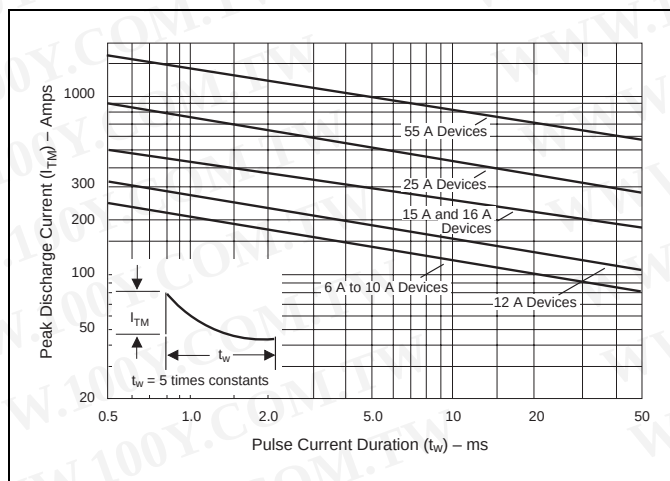


Figure E6.3 Peak Capacitor Discharge Current (6 A through 55 A)

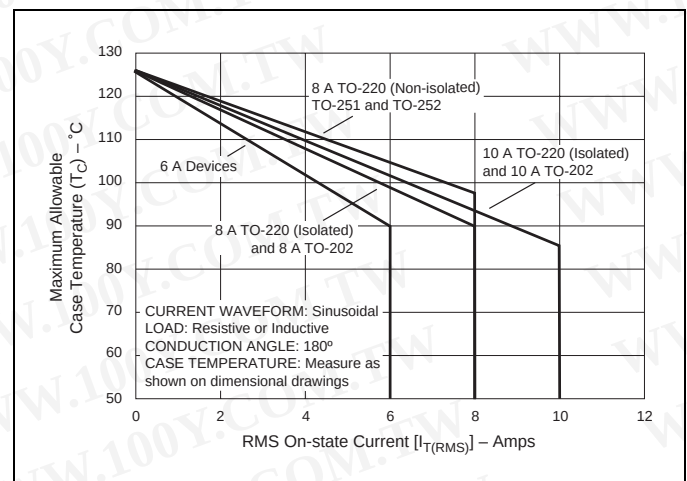


Figure E6.6 Maximum Allowable Case Temperature versus RMS On-state Current (6 A, 8 A, and 10 A)

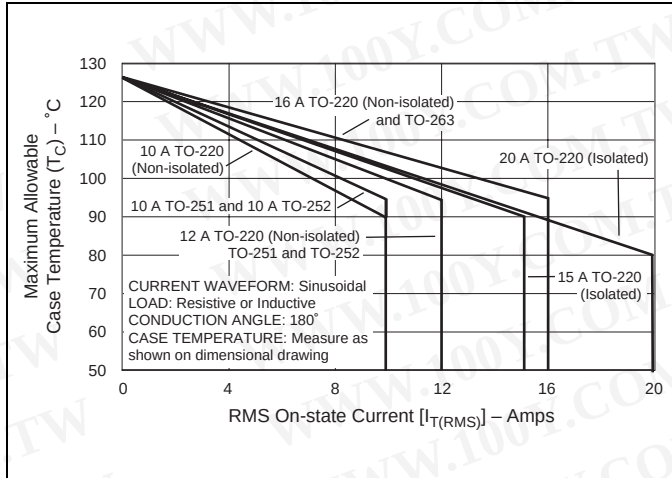


Figure E6.7 Maximum Allowable Case Temperature versus RMS On-state Current (10 A, 12 A, 16 A, and 20 A)

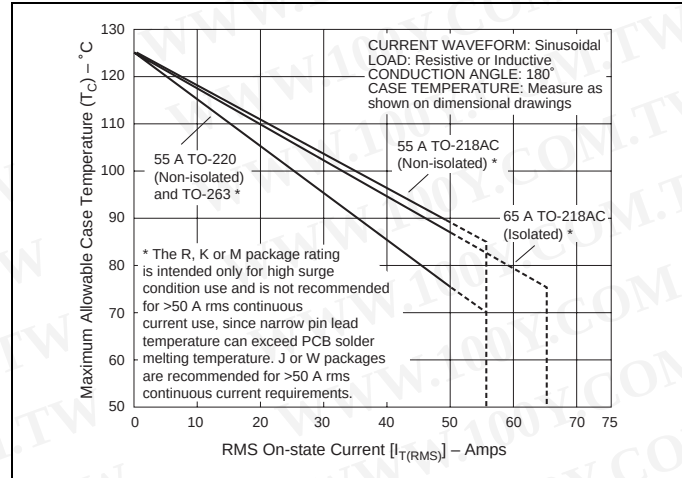


Figure E6.10 Maximum Allowable Case Temperature versus RMS On-state Current (55 A and 65 A)

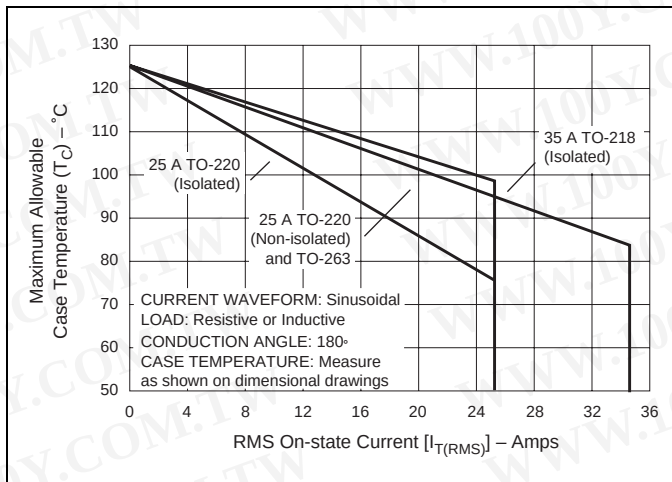


Figure E6.8 Maximum Allowable Case Temperature versus RMS On-state Current (25 A and 35 A)

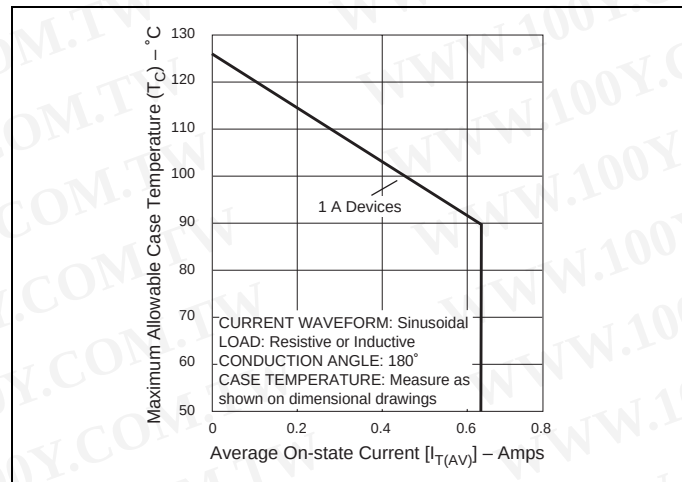


Figure E6.11 Maximum Allowable Case Temperature versus Average On-state Current (1 A)

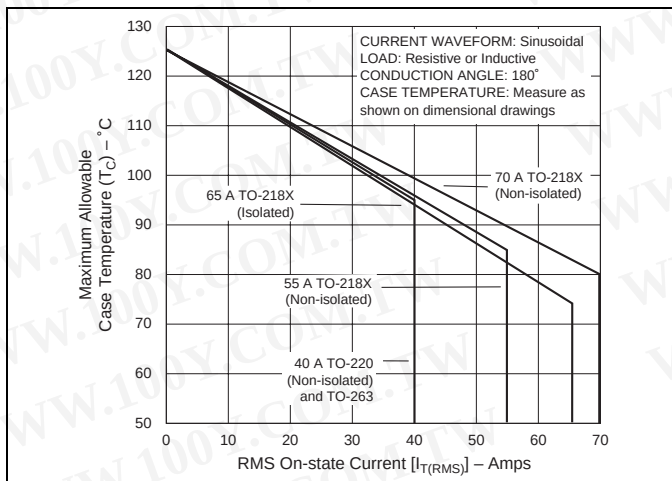


Figure E6.9 Maximum Allowable Case Temperature versus RMS On-state Current (40 A through 70 A)

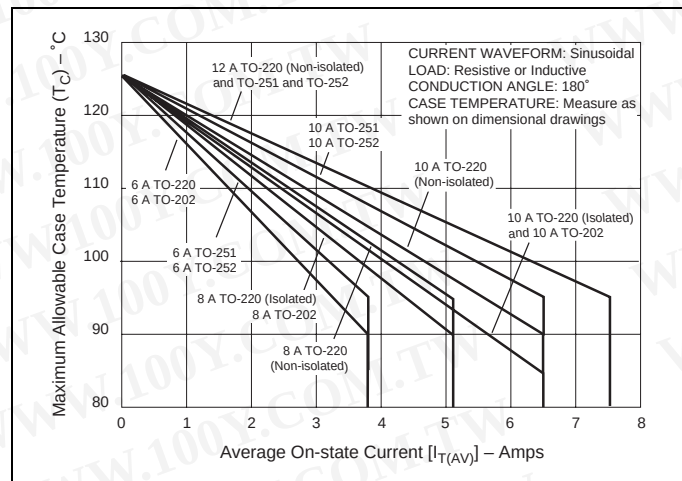


Figure E6.12 Maximum Allowable Case Temperature versus Average On-state Current (8 A, 10 A, and 12 A)

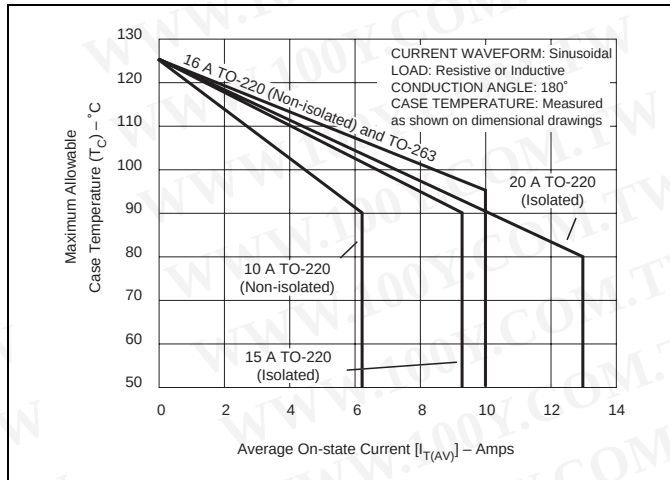


Figure E6.13 Maximum Allowable Case Temperature versus Average On-state Current (10 A through 20 A)

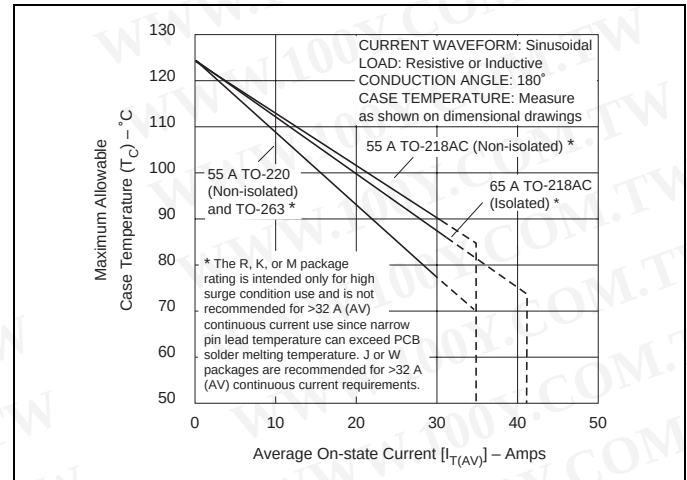


Figure E6.16 Maximum Allowable Case Temperature versus Average On-state Current (55 A and 65 A)

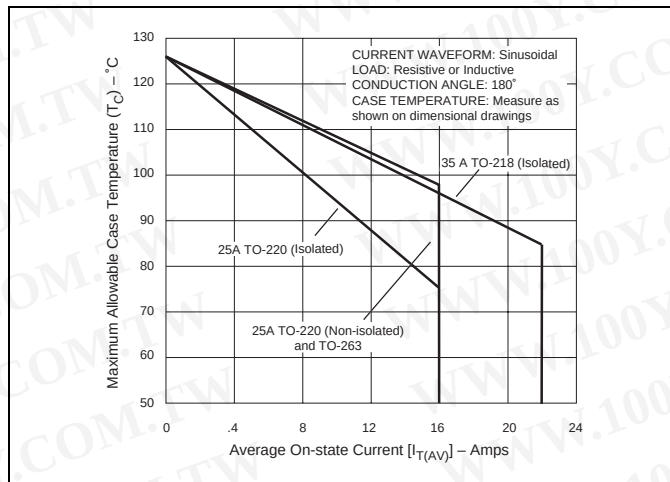


Figure E6.14 Maximum Allowable Case Temperature versus Average On-state Current (25 A and 35 A)

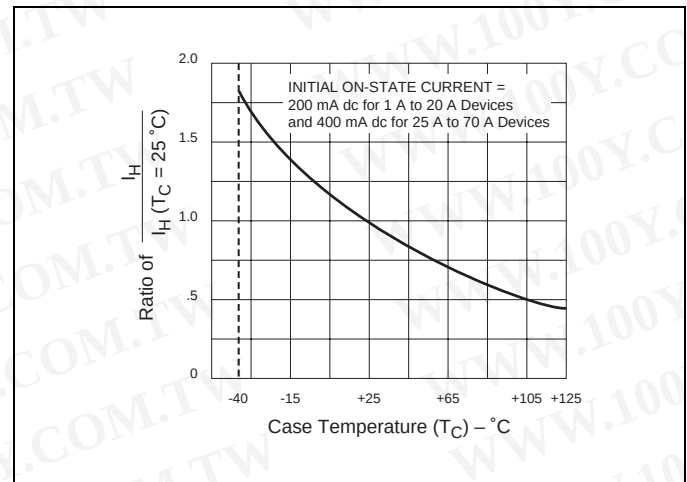


Figure E6.17 Normalized dc Holding Current versus Case Temperature

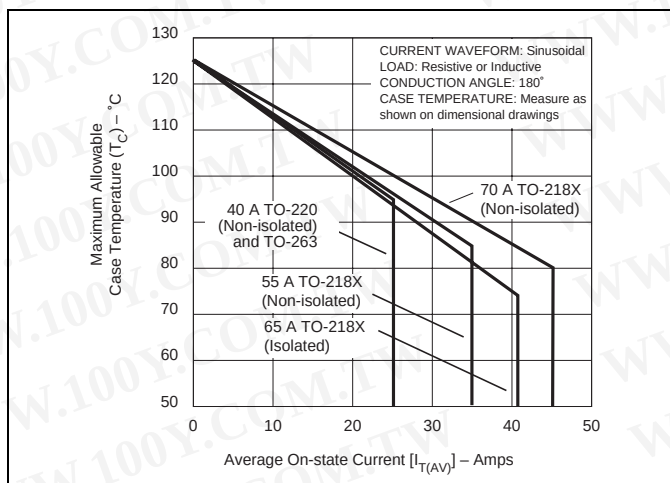


Figure E6.15 Maximum Allowable Case Temperature versus Average On-state Current (40 A through 70 A)

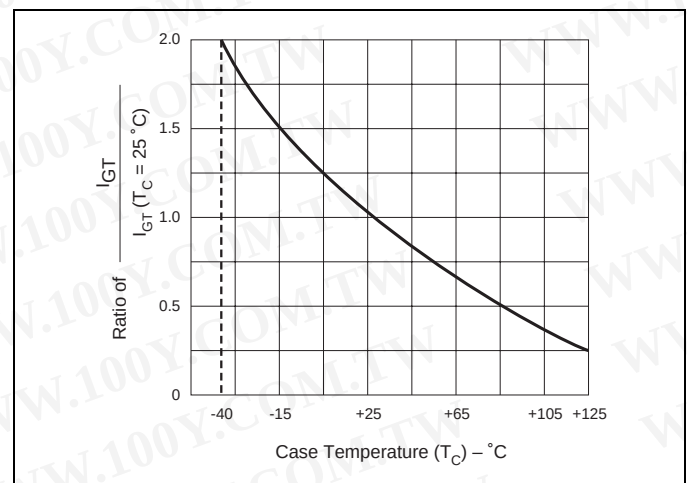


Figure E6.18 Normalized DC Gate-Trigger Current versus Case Temperature

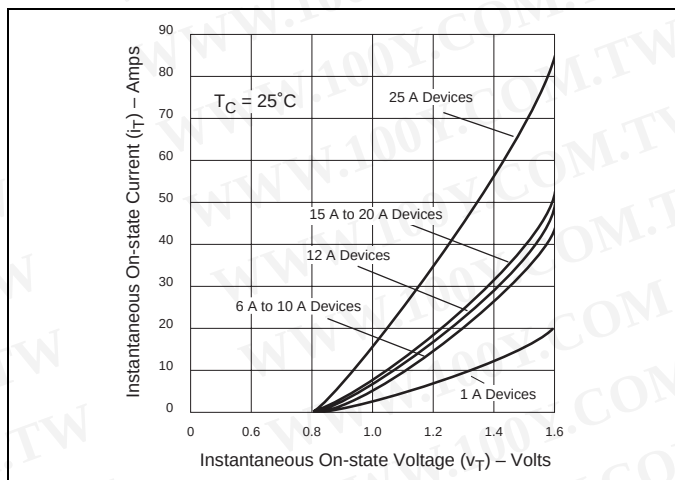


Figure E6.19 Instantaneous On-state Current versus On-state Voltage (Typical) (6 A through 25 A)

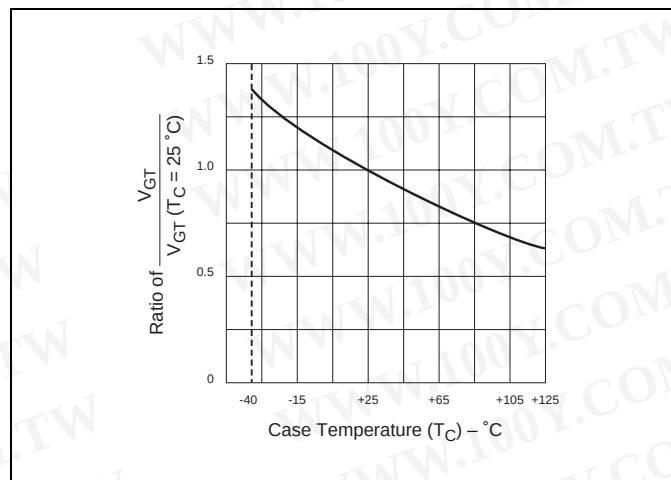


Figure E6.21 Normalized DC Gate-trigger Voltage versus Case Temperature

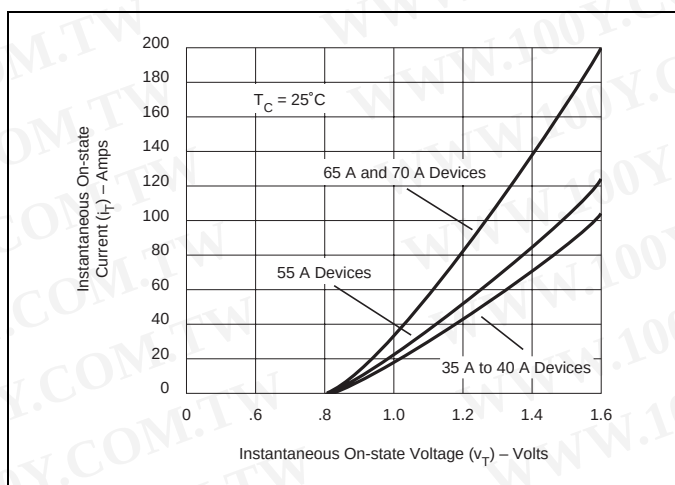


Figure E6.20 Instantaneous On-state Current versus On-state Voltage (Typical) (35 A through 70 A)

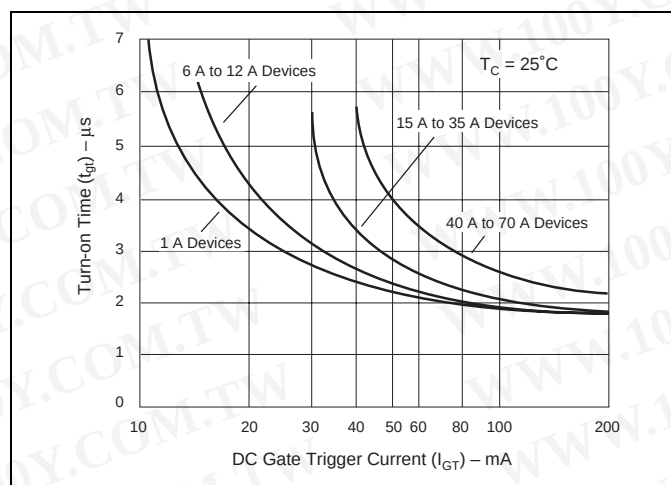


Figure E6.22 Typical Turn-on Time versus Gate-trigger Current

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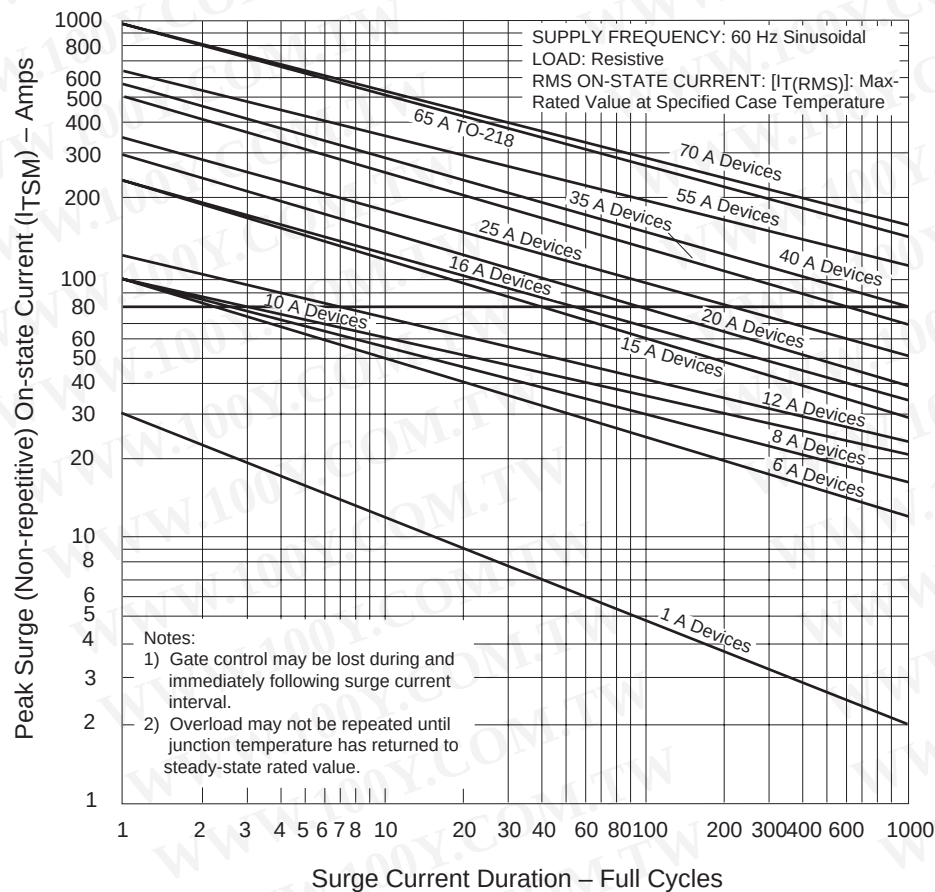


Figure E6.23 Peak Surge Current versus Surge Current Duration

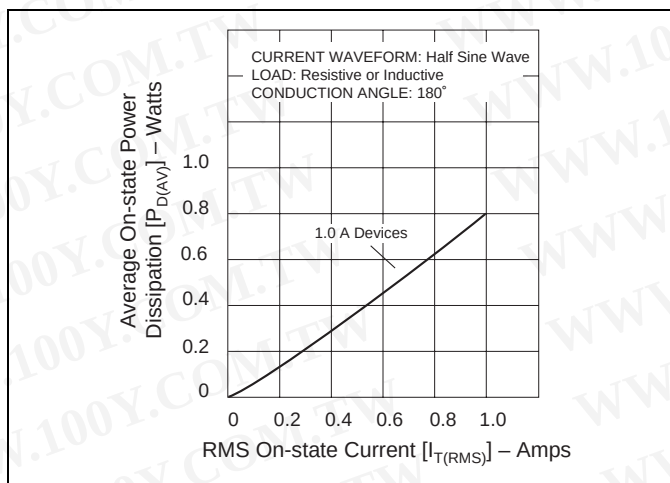


Figure E6.24 Power Dissipation (Typical) versus RMS On-state Current (1 A)

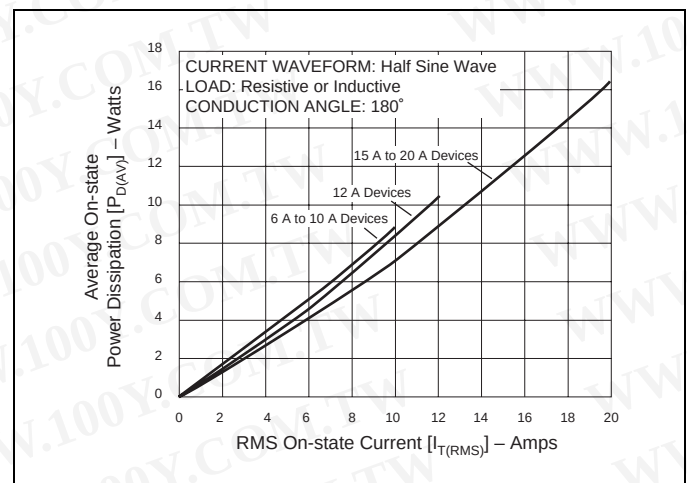


Figure E6.25 Power Dissipation (Typical) versus RMS On-state Current (6 A through 20 A)

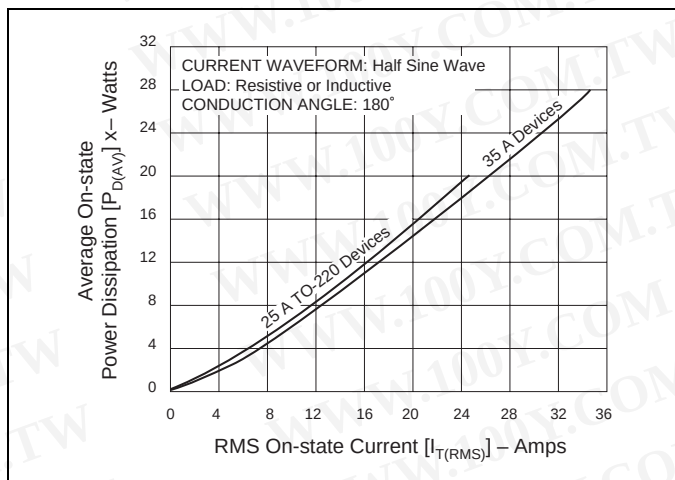


Figure E6.26 Power Dissipation (Typical) versus RMS On-state Current (25 A and 35 A)

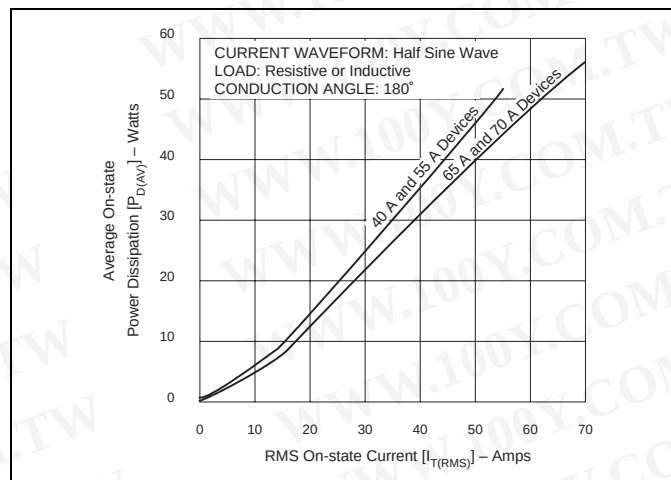


Figure E6.27 Power Dissipation (Typical) versus RMS On-state Current (40 A through 70 A)

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