Thyristors
Silicon Controlled Rectifiers

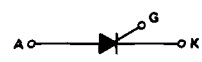
MCR264-4* thru* MCR264-10*

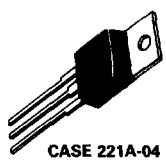
*Motorola preferred devices

SCRs
40 AMPERES RMS
200 thru 800 VOLTS

. . . designed for back-to-back SCR output devices for solid state relays or applications requiring high surge operation.

- Photo Glass Passivated Blocking Junctions for High Temperature Stability, Center Gate for Uniform Parameters
- 400 Amperes Surge Capability
- Blocking Voltage to 800 Volts





CASE 221A-04
(TO-220AB)
STYLE 3

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MAXIMUM RATINGS (T_J = 25°C unless otherwise noted.)

Rating	Symbol	Value	Unit
Peak Repetitive Forward and Reverse Blocking Voltage, Note 1 (T_J = 25 to 125°C, Gate Open)	V_{DRM} V_{RRM}		Volts
MCR264-4		200	
MCR264-6		400	
MCR264-8		600	
MCR264-10		800	
Forward Current (T_C = 80°C) (All Conduction Angles)	$I_{T(RMS)}$ $I_{T(AV)}$	40 25	Amps
Peak Non-Repetitive Surge Current — 8.3 ms (1/2 Cycle, Sine Wave) 1.5 ms	I_{TSM}	400 450	Amps
Forward Peak Gate Power	P_{GM}	20	Watts
Forward Average Gate Power	$P_{G(AV)}$	0.5	Watt
Forward Peak Gate Current (300 μs, 120 PPS)	I_{GM}	2	Amps
Operating Junction Temperature Range	T_J	−40 to +125	°C
Storage Temperature Range	T_{stg}	−40 to +150	°C

Note 1. V_{DRM} and V_{RRM} for all types can be applied on a continuous basis. Ratings apply for zero or negative gate voltage; however, positive gate voltage shall not be applied concurrent with negative potential on the anode. Blocking voltages shall not be tested with a constant current source such that the voltage ratings of the devices are exceeded.

These devices are rated for use in applications subject to high surge conditions. Care must be taken to insure proper heat sinking when the device is to be used at high sustained currents.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	60	°C/W

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Forward or Reverse Blocking Current (V_{AK} = Rated V_{DRM} or V_{RRM}, Gate Open) T_J = 25°C T_J = 125°C	I_{DRM}, I_{RRM}	— —	— —	10 2	μA mA
Forward "On" Voltage, Note 1 (I_{TM} = 80 A)	V_{TM}	—	1.4	2	Volts
Gate Trigger Current (Continuous dc) (Anode Voltage = 12 Vdc, R_L = 100 Ohms, T_C = −40°C)	I_{GT}	— —	15 30	50 90	mA
Gate Trigger Voltage (Continuous dc) (Anode Voltage = 12 Vdc, R_L = 100 Ohms)	V_{GT}	—	1	1.5	Volts
Gate Non-Trigger Voltage (Anode Voltage = Rated V_{DRM}, R_L = 100 Ohms, T_J = 125°C)	V_{GD}	0.2	—	—	Volts
Holding Current (Anode Voltage = 12 Vdc)	I_H	—	30	60	mA
Turn-On Time (I_{TM} = 40 A, I_{GT} = 60 mAdc)	t_{gt}	—	1.5	—	μs
Critical Rate-of-Rise of Off-State Voltage (Gate Open, V_D = Rated V_{DRM}, Exponential Waveform)	dv/dt	—	50	—	V/μs

Note 1. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%.

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FIGURE 1 — AVERAGE CURRENT DERATING

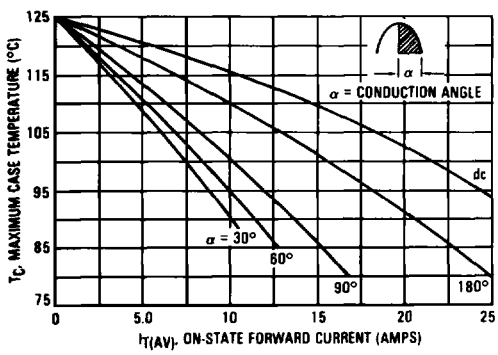

FIGURE 2 — MAXIMUM ON-STATE POWER DISSIPATION

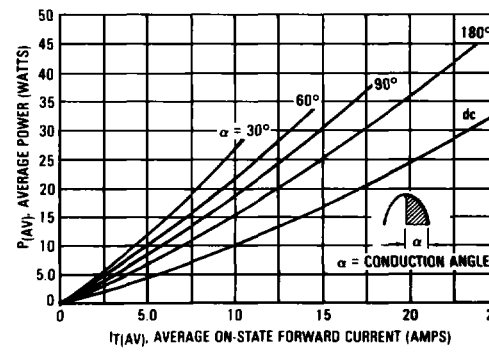

FIGURE 3 — GATE TRIGGER CURRENT

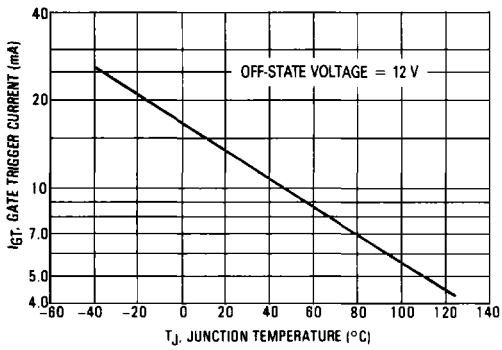

FIGURE 4 — NEW GATE TRIGGER VOLTAGE

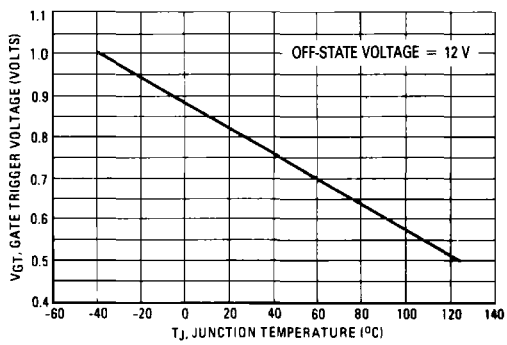

FIGURE 5 — HOLDING CURRENT

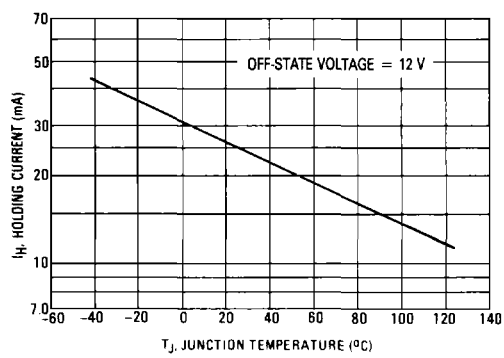

FIGURE 6 — TYPICAL FORWARD VOLTAGE

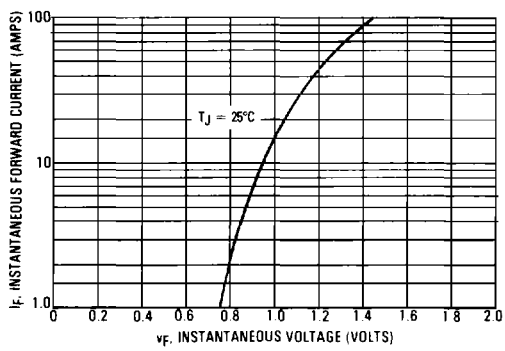

FIGURE 7 — THERMAL RESPONSE