DIGITRON SEMICONDUCTORS

MCR264-4 – MCR264-12 THYRISTORS

SILICON CONTROLLED RECTIFIERS

Available Non-RoHS (standard) or RoHS compliant (add PBF suffix).
Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.

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

Rating		Symbol	Value	Unit
Peak Repetitive Forward and Reverse Blocking Voltage (1) (T_J = 25 to 125°C, Gate Open)	MCR264-4 MCR264-6 MCR264-8 MCR264-10 MCR264-12	V_{DRM} V_{RRM}	200 400 600 800 1000	Volts
Forward Current (T_C = 80°C) (All Conduction Angles)		$I_{T(RMS)}$ $I_{T(AV)}$	40 25	Amps
Peak Non-Repetitive Surge Current – 8.3ms (1/2 Cycle, Sine Wave) **1.5ms**		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 (300µs, 120PPS)		I_{GM}	2	Amps
Operating Junction Temperature Range		T_J	-40 to +125	°C
Storage Temperature Range		T_{stg}	-40 to +150	°C

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 ensure proper heat sinking when the device is to be used at high sustained currents.

THERMAL CHARACTERISTICS

Characteristics	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.

Characteristics		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 (1) (I_{TM} = 80A)		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

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

144 Market Street
Kenilworth NJ 07033 USA

phone +1.908.245-7200
fax +1.908.245-0555

sales@digitroncorp.com
www.digitroncorp.com

D I G I T R O N S E M I C O N D U C T O R S

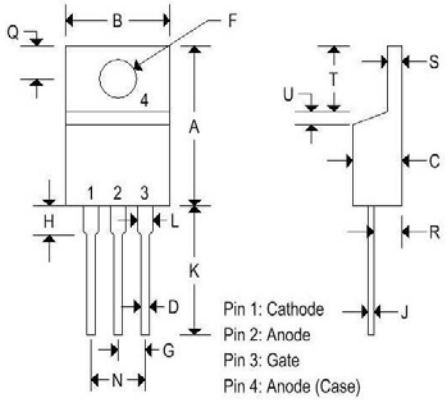
MCR264-4 – MCR264-12

THYRISTORS

SILICON CONTROLLED RECTIFIERS

MECHANICAL CHARACTERISTICS

Case	TO-220AB
Marking	Alpha-numeric
Pin out	See below



	TO-220AB			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.575	0.620	14.600	15.750
B	0.380	0.405	9.650	10.290
C	0.160	0.190	4.060	4.820
D	0.025	0.035	0.640	0.890
F	0.142	0.147	3.610	3.730
G	0.095	0.105	2.410	2.670
H	0.110	0.155	2.790	3.930
J	0.014	0.022	0.360	0.560
K	0.500	0.562	12.700	14.270
L	0.045	0.055	1.140	1.390
N	0.190	0.210	4.830	5.330
Q	0.100	0.120	2.540	3.040
R	0.080	0.110	2.040	2.790
S	0.045	0.055	1.140	1.390
T	0.235	0.255	5.970	6.480
U	-	0.050	-	1.270
V	0.045	-	1.140	-
Z	-	0.080	-	2.030

FIGURE 1 — AVERAGE CURRENT DERATING

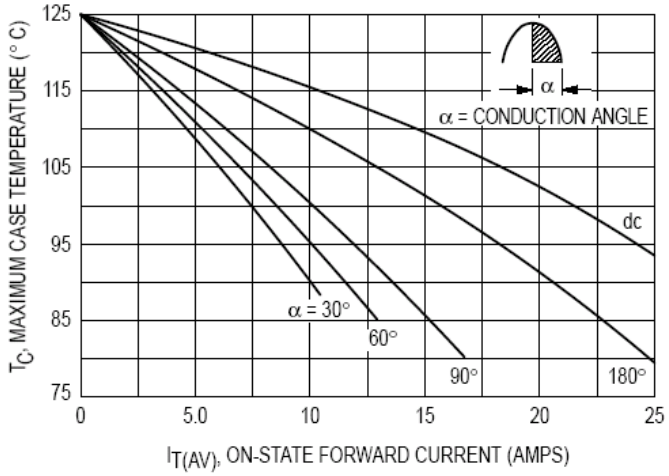


FIGURE 2 — MAXIMUM ON-STATE POWER DISSIPATION

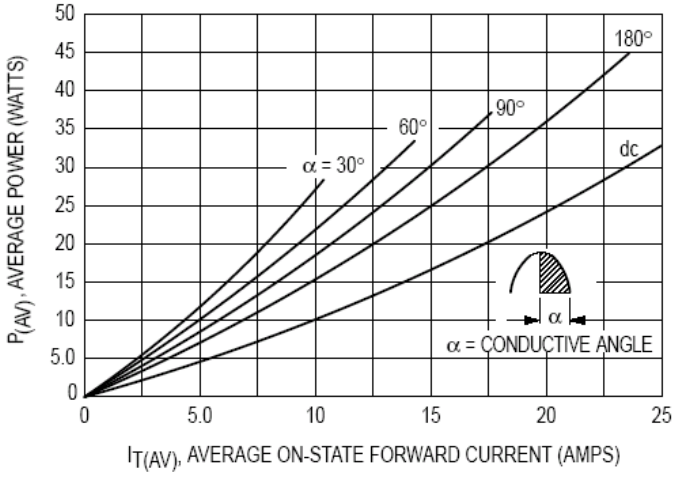


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FIGURE 3 — GATE TRIGGER CURRENT

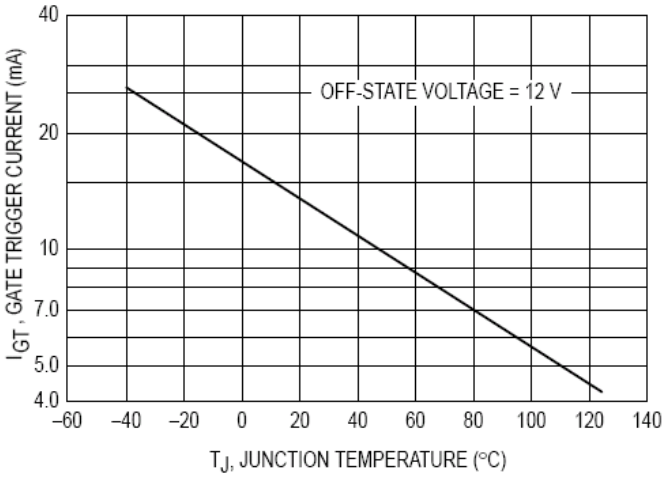


FIGURE 4 — NEW GATE TRIGGER VOLTAGE

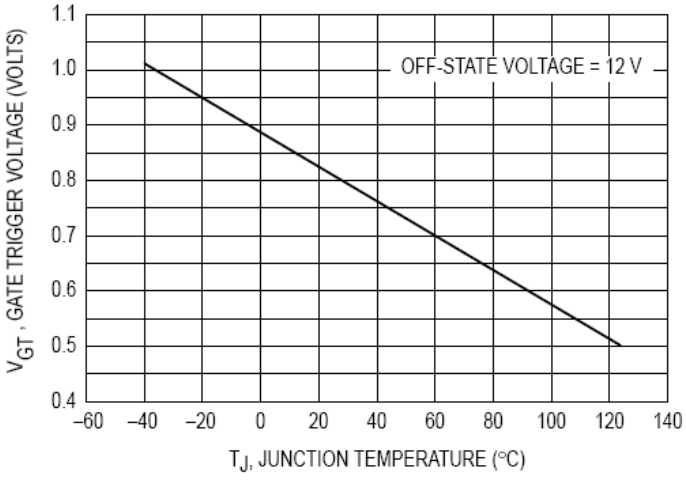


FIGURE 5 — HOLDING CURRENT

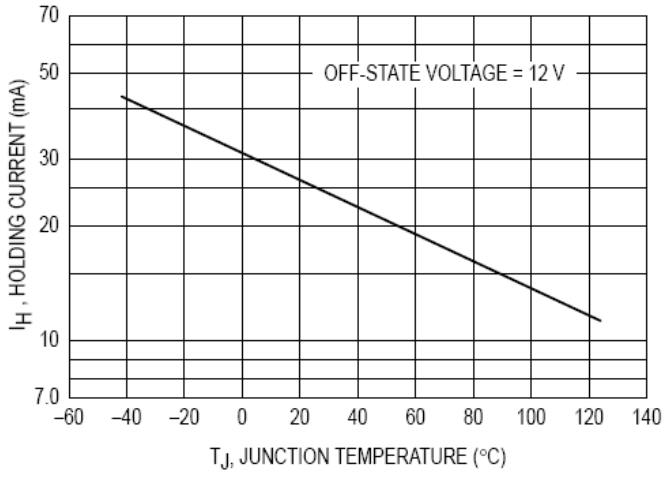


FIGURE 6 — TYPICAL FORWARD VOLTAGE

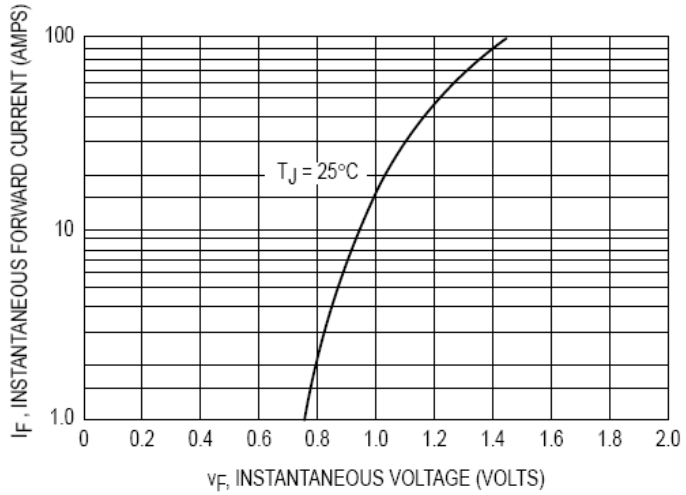
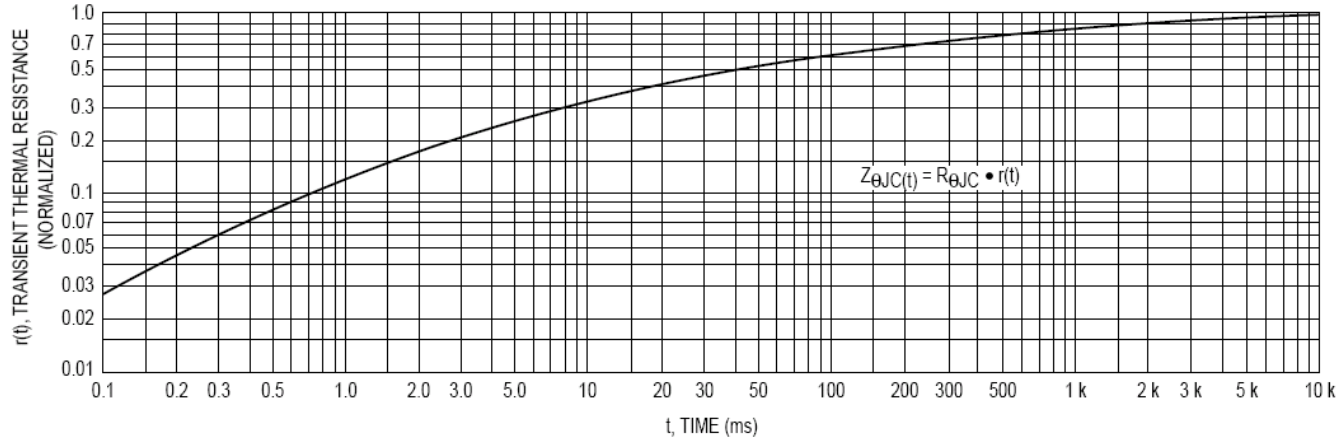


FIGURE 7 — THERMAL RESPONSE



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