DIGITRON™ Semiconductors

High-reliability discrete products
and engineering services since 1977

MCR101-MCR104 SERIES

SILICON CONTROLLED RECTIFIERS

FEATURES

- Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.
- Available as non-RoHS (Sn/Pb plating), standard, and as RoHS by adding "-PBF" suffix.

MAXIMUM RATINGS.

Rating	Symbol	Value	Unit
Peak reverse blocking voltage			
MCR101	V_{RRM}	15	Volts
MCR102		30	
MCR103		60	
MCR104		100	
Forward current RMS (all conduction angles)	$I_{T(RMS)}$	0.8	Amps
Peak forward surge current (1/2 cycle, sine wave 60 Hz, T_A = 25°C)	I_{TSM}	6.0	Amps
Circuit fusing considerations (t = 1 to 8.3ms, T_A = 25°C)	I^2t	0.15	A^2s
Forward peak gate power (T_A = 25°C)	P_{GM}	0.1	Watts
Forward average gate power (T_A = 25°C)	$P_{G(AV)}$	0.01	Watts
Forward peak gate current (T_A = 25°C, 300µs, 120PPS)	I_{GM}	1.0	Amps
Reverse peak gate voltage	V_{GM}	4.0	Volts
Operating junction temperature range @ rated V_{RRM} and V_{DRM}	T_J	-65 to +85	°C
Storage temperature range	T_{stg}	-65 to +150	°C
Lead solder temperature (<1/16" from case, 10 sec. max.)	-	+230	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal resistance, junction-to-case	$R_{\theta JC}$	75	°C/W
Thermal resistance, junction-to-ambient	$R_{\theta JA}$	200	°C/W

ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise specified)

Characteristic	Symbol	Min	Max	Unit
Peak forward blocking voltage(1) (T_C = 85°C)				
MCR101	v_{DRM}	15	-	Volts
MCR102		30	-	
MCR103		60	-	
MCR104		100	-	
Peak forward blocking current (Rated V_{DRM} @ T_C = 85°C)	I_{DRM}	-	100	µA
Peak reverse blocking current (Rated V_{RRM} @ T_C = 85°C)	I_{RRM}	-	100	µA
Forward "on" voltage(2) (I_{TM} = 1.0A peak @ T_A = 25°C)	V_{TM}	-	1.7	Volts
Gate trigger current (continuous dc)(3) (V_{AK} = 7Vdc, R_L = 100Ω, T_C = 25°C)	I_{GT}	-	200	µA
Gate trigger voltage (continuous dc) (V_{AK} = 7Vdc, R_L = 100Ω)				
T_C = 25°C	V_{GT}	-	0.8	Volts
T_C = -65°C		-	1.2	
T_C = 85°C	V_{GD}	0.1	-	
Holding current (V_{AK} = 7Vdc, initiating current = 20mA)				mA
T_C = 25°C	I_H	-	5.0	
T_C = -65°C		-	10	

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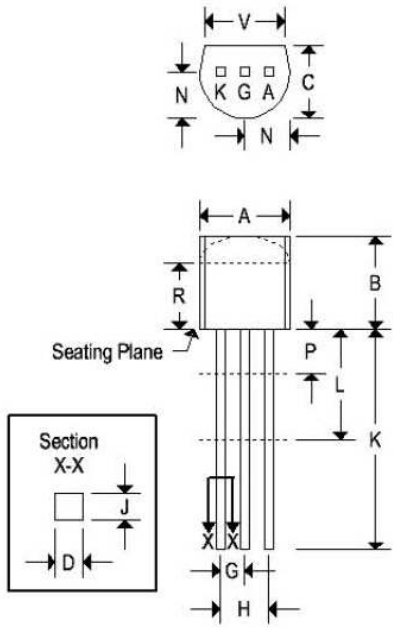
Note 1: V_{DRM} and V_{RRM} for all types can be applied on a continuous dc basis without incurring damage. Ratings apply for zero or negative gate voltage but positive gate voltage shall not be applied concurrently with a negative potential on the anode. When checking forward or reverse blocking capability, thyristor devices should not be tested with a constant current source in a manner that the voltage applied exceeds the rated blocking voltage.
Note 2: Forward current applied for 1.0 ms maximum duration, duty cycle ≤ 1.0%.
Note 3: R_{GK} current is not included in measurement.

MECHANICAL CHARACTERISTICS

Case:	TO-92
Marking:	Body painted, alpha-numeric
Pin out:	See below



	TO-92			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.175	0.205	4.450	5.200
B	0.170	0.210	4.320	5.330
C	0.125	0.165	3.180	4.190
D	0.016	0.022	0.410	0.550
F	0.016	0.019	0.410	0.480
G	0.045	0.055	1.150	1.390
H	0.095	0.105	2.420	2.660
J	0.015	0.020	0.390	0.500
K	0.500	-	12.700	-
L	0.250	-	6.350	-
N	0.080	0.105	2.040	2.660
P	-	0.100	-	2.540
R	0.115	-	2.930	-
V	0.135	-	3.430	-

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FIGURE 1 – CURRENT DERATING
(REFERENCE: CASE TEMPERATURE)

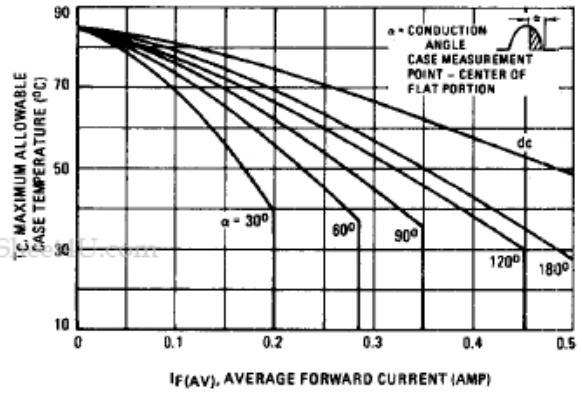

FIGURE 2 – CURRENT DERATING
(REFERENCE: AMBIENT TEMPERATURE)