

### 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
<b>Peak repetitive off-state voltage<sup>(1)</sup></b> <b>Peak repetitive reverse voltage</b> (T <sub>J</sub> = -40 to +125°C) MCR12D MCR12M MCR12N	V <sub>DRM</sub> V <sub>RRM</sub>	400 600 800	V
<b>On-state RMS current</b> (all conduction angles)	I <sub>T(RMS)</sub>	12	A
<b>Peak non-repetitive surge current</b> (one half-cycle, sine wave, 60Hz, T <sub>J</sub> = 125°C)	I <sub>TSM</sub>	100	A
<b>Circuit fusing consideration</b> (t = 8.3ms)	I <sup>2</sup> t	41	A <sup>2</sup> s
<b>Peak gate power</b> (pulse width ≤ 1.0μs, T <sub>C</sub> = 80°C)	P <sub>GM</sub>	5	W
<b>Average gate power</b> (t = 8.3ms, T <sub>C</sub> = 80°C)	P <sub>G(AV)</sub>	0.5	W
<b>Peak gate current</b> (pulse width ≤ 1.0μs, T <sub>C</sub> = 80°C)	I <sub>GM</sub>	2	A
<b>Operating temperature range</b>	T <sub>J</sub>	-40 to +125	°C
<b>Storage temperature range</b>	T <sub>stg</sub>	-40 to +150	°C

Note 1: V<sub>DRM</sub> and V<sub>RRM</sub> for all types can be applied on a continuous basis. Ratings apply for zero or negative gate voltage; 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.

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Maximum	Unit
<b>Thermal resistance, junction to case</b>	R <sub>θJC</sub>	2.0	°C/W
<b>Thermal resistance, junction to ambient</b>	R <sub>θJA</sub>	62.5	°C/W
<b>Maximum lead temperature for soldering purposes</b> 1/8" from case for 10s	T <sub>L</sub>	260	°C

### ELECTRICAL CHARACTERISTICS (T<sub>J</sub> = 25°C unless otherwise specified)

Characteristic	Symbol	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>					
<b>Peak forward blocking current</b> <b>Peak reverse blocking current</b> (V <sub>AK</sub> = Rated V <sub>DRM</sub> or V <sub>RRM</sub> , gate open) T <sub>J</sub> = 25°C T <sub>J</sub> = 125°C	I <sub>DRM</sub> I <sub>RRM</sub>	- -	- -	0.01 2.0	mA
<b>ON CHARACTERISTICS</b>					
<b>Peak on-state voltage</b> (I <sub>TM</sub> = 24A)	V <sub>TM</sub>	-	-	2.2	V
<b>Gate trigger current</b> (continuous dc) (V <sub>D</sub> = 12V, R <sub>L</sub> = 100Ω)	I <sub>GT</sub>	2.0	7.0	20	mA

# MCR12D, MCR12M, MCR12N

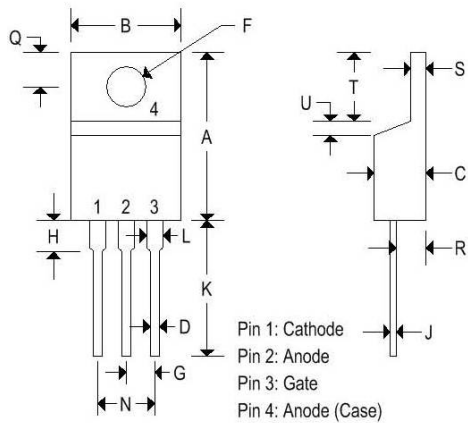
## SILICON CONTROLLED RECTIFIERS

Characteristic	Symbol	Min	Typ	Max	Unit
<b>Gate trigger voltage</b> (continuous dc) ( $V_D = 12V, R_L = 100\Omega$ )	$V_{GT}$	0.5	0.65	1.0	V
<b>Holding current</b> ( $V_D = 12V$ )	$I_H$	4.0	25	40	mA
<b>DYNAMIC CHARACTERISTICS</b>					
<b>Critical rate of rise of off-state voltage</b> ( $V_D = \text{rated } V_{DRM}, \text{ exponential waveform, gate open, } T_J = 25^\circ C$ )	$dv/dt$	50	200	-	V/ $\mu s$

\* Pulse width  $\leq 2.0ms$ , duty cycle  $\leq 2\%$ .

### MECHANICAL CHARACTERISTICS

<b>Case:</b>	TO-220AB
<b>Marking:</b>	Body painted, alpha-numeric
<b>Pin out:</b>	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