



Silicon Carbide Dual Schottky Power Rectifier 30A, 1200V

DESCRIPTION

These dual SiC Schottky rectifiers are in a hermetically sealed package with options for common cathode, common anode, and doubler configurations. They offer very fast switching capabilities providing greater efficiency at higher operating temperatures than existing ultrafast silicon rectifiers.

Important: For the latest information, visit our website <http://www.microsemi.com>.

FEATURES

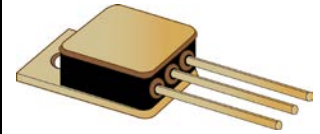
- Lightweight.
- Hermetically sealed package.
- Internal metallurgical bonds.
- High temperature – rated for T_J up to +175 °C.
- Zero reverse recovery current.
- Temperature independent switching behavior.
- Very fast switching compared to fast or ultrafast silicon rectifiers.
- Positive V_F temperature coefficient, better enabling the use of parallel devices for higher currents.
- RoHS compliant versions are available.

APPLICATIONS / BENEFITS

- Military, space and other high reliability applications.
- Switching power supplies or other applications requiring extremely fast switching speed and the lowest possible switching losses.
- High forward surge capability.
- High reverse voltage capability with very fast switching.
- Inherently radiation hard (>100 krad) as described in Microsemi [MicroNote 050](#).


MAXIMUM RATINGS @ $T_C = +25\text{ °C}$ unless otherwise noted


Parameters/Test Conditions	Symbol	Value	Unit
Junction and Storage Temperature	T_J and T_{STG}	-65 to +175	°C
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.0	°C/W
Working Peak Reverse Voltage	V_{RWM}	1200	V
Non-Repetitive Peak Inverse Voltage	V_{RSM}	1200	V
DC Blocking Voltage	V_{DC}	1200	V
Average DC Output Current @ 25 °C	I_O	30	A
Non-Repetitive Sinusoidal Surge Current @ $t_p = 8.3\text{ ms}$, half sinewave, $I_O = 0$; $V_{RM} = 0$	I_{FSM}	150	A




TO-258 Package

Also available in:

TO-254 package
(leaded)
 [MSiCSF30120](#)

U1 package
(surface mount)
 [MSiCSS30120](#)

TO-204AD (TO-3) package
(leaded)
 [MSiCST30120](#)

MSC – Lawrence

6 Lake Street,
Lawrence, MA 01841
1-800-446-1158
(978) 620-2600
Fax: (978) 689-0803

MSC – Ireland

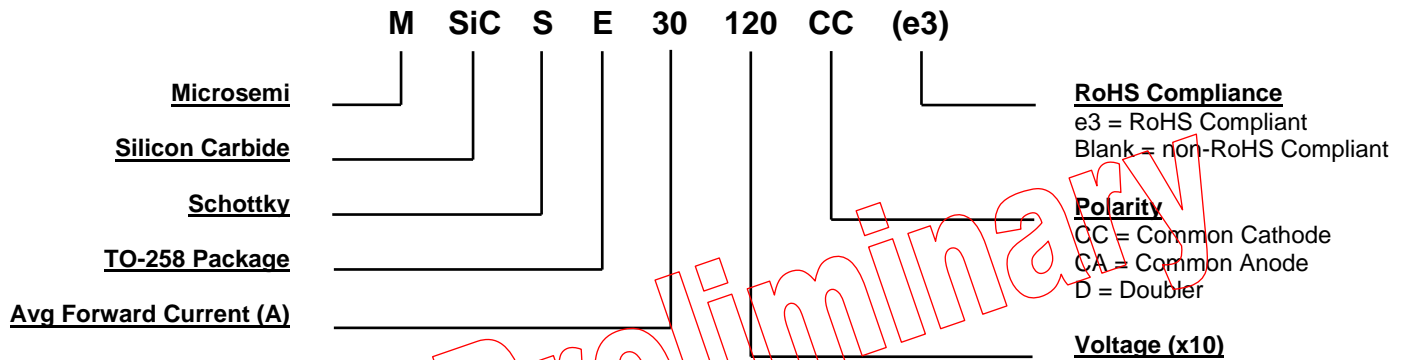
Gort Road Business Park,
Ennis, Co. Clare, Ireland
Tel: +353 (0) 65 6840044
Fax: +353 (0) 65 6822298

Website:

www.microsemi.com

MECHANICAL and PACKAGING

- CASE: Nickel plated copper base & 1020 steel frame.
- TERMINALS: Solder dipped copper cored 52 alloy or RoHS compliant matte/tin plating.
- MARKING: Alpha numeric.
- POLARITY: See [schematic](#) on last page.
- See [package dimensions](#) on last page.

PART NOMENCLATURE

SYMBOLS & DEFINITIONS

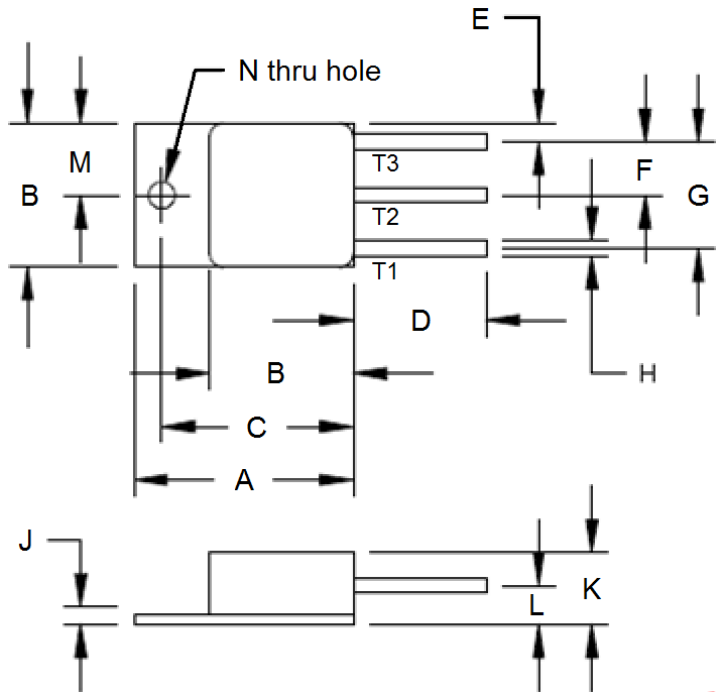
Symbol	Definition
C_J	Junction Capacitance: The junction capacitance in pF at a specified frequency (typically 1 MHz) and specified voltage.
I_F	Forward Current: The forward current dc value, no alternating component.
I_R	Reverse Current: The maximum reverse (leakage) current that will flow at the specified voltage and temperature.
T_J	Junction Temperature: The temperature of a semiconductor junction.
V_F	Forward Voltage: The forward voltage the device will exhibit at a specified current (typically shown as maximum value).
V_R	Reverse Voltage: The reverse voltage dc value, no alternating component.

ELECTRICAL CHARACTERISTICS @ $T_A = +25\text{ }^\circ\text{C}$ unless otherwise noted

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Forward Voltage* $I_F = 10\text{ A}, T_J = 25\text{ }^\circ\text{C}$ $I_F = 25\text{ A}, T_J = 25\text{ }^\circ\text{C}$ $I_F = 50\text{ A}, T_J = 25\text{ }^\circ\text{C}$	V_F		1.2 1.5 1.8	V
Reverse Current $V_R = 1200\text{ V}, T_J = 25\text{ }^\circ\text{C}$ $V_R = 1200\text{ V}, T_J = 175\text{ }^\circ\text{C}$	I_R		200 500	μA

* Pulse test: Pulse width 300 μsec , duty cycle 2%.

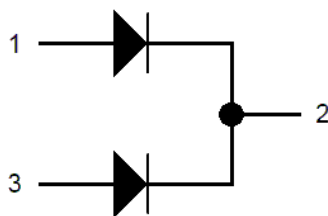
Preliminary

PACKAGE DIMENSIONS


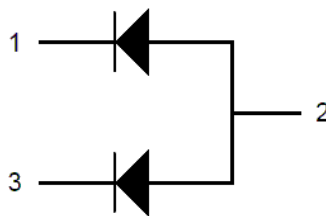
Ltr	Dimensions			
	Inch		Millimeters	
	Min	Min	Min	Max
A	0.815	0.835	20.70	21.21
B	0.530	0.550	13.46	13.97
C	0.715	0.725	18.16	18.42
D	0.500 min		12.7 min	
E	0.145 ref		3.68 ref	
F	0.195	0.205	4.95	5.21
G	0.395	0.405	10.03	10.29
H	∅ 0.055	∅ 0.065	∅ 1.40	∅ 1.65
J	0.033	0.047	0.84	1.19
K	0.270 max		6.86 max	
L	0.135	0.155	3.43	3.94
M	0.340	0.350	8.64	8.89
N	∅ 0.155	∅ 0.165	∅ 3.94	∅ 4.19
P	0.685	0.695	17.40	17.65
TERM 1	SEE SCHEMATIC			
TERM 2	SEE SCHEMATIC			
TERM 3	SEE SCHEMATIC			

NOTES:

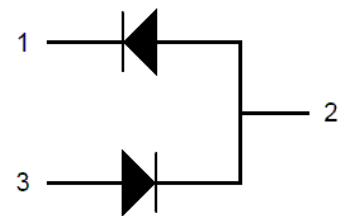
- Dimensions are in inches. Millimeters are given for information only.
- Glass meniscus included in dimension A and B.

SCHEMATIC
CC - COMMON CATHODE


TERM 1 = ANODE
 TERM 2 = CATHODE
 TERM 3 = ANODE

CA - COMMON ANODE


TERM 1 = CATHODE
 TERM 2 = ANODE
 TERM 3 = CATHODE

D - DOUBLER


TERM 1 = CATHODE
 TERM 2 = CENTER TAP
 TERM 3 = ANODE