



Silicon Carbide Schottky Power Rectifier 30A, 1200V

DESCRIPTION

This high current silicon carbide Schottky is rated up to 1200 V and offers very fast switching capabilities. It provides greater efficiency at higher temperatures than competing ultrafast silicon rectifiers.

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

FEATURES

- Internal solder bond construction.
- Hermetically sealed (welded).
- Standard polarity is anode to case.
- 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 version is 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 krads) 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-204AD (TO-3)
Package**

Also available in:

TO-254 package

(leaded)

 [MSiCSF30120](#)

U1 package

(surface mount)

 [MSiCSS30120](#)

Dual TO-258 package

(leaded)

 [MSiCSE30120CC, CA,
and D](#)

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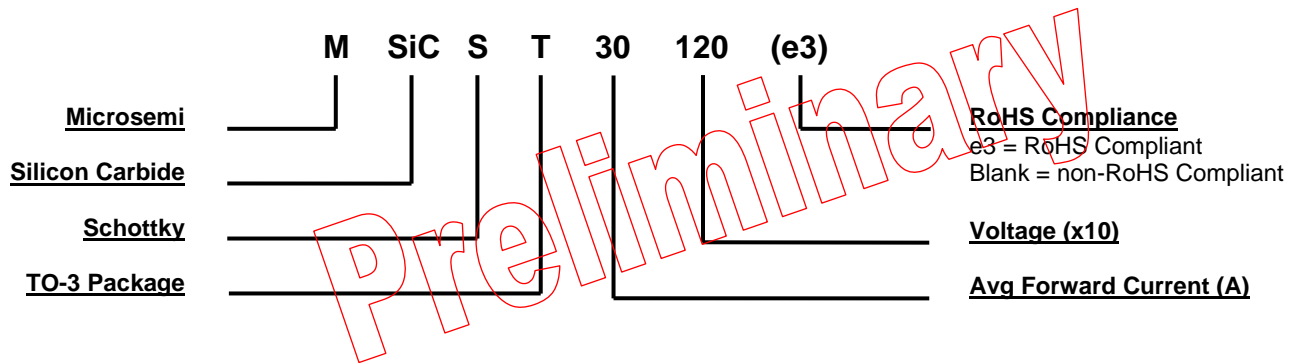
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MECHANICAL and PACKAGING

- CASE: Industry standard TO-3 (TO-204AD), hermetically sealed, 0.052 inch diameter pins.
- FINISH: Solder dipped tin-lead over nickel plated alloy 52 or RoHS compliant matte-tin plating. Solderable per MIL-STD-750 method 2026.
- POLARITY: Standard polarity units are connected cathode to case. Both pins are common with one another as anode (see [schematic](#)).
- WEIGHT: Approximately 15 grams.
- MOUNTING HARDWARE: Consult factory for optional insulator and sheet metal screws.
- 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.

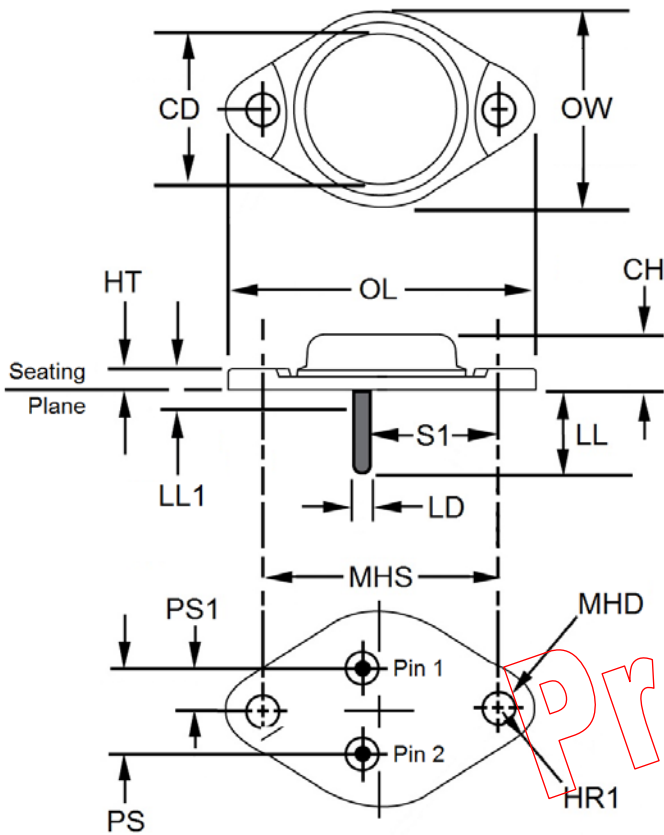
ELECTRICAL CHARACTERISTICS @ $T_A = +25\text{ }^\circ\text{C}$ unless otherwise noted

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				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
CD	-	0.875	-	22.23	
CH	0.270	0.380	6.86	9.65	
HR	0.495	0.525	12.57	13.34	
HR1	0.131	0.188	3.33	4.78	
HT	0.060	0.135	1.52	3.43	
LD	0.048	0.053	1.22	1.35	
LL	0.312	0.500	7.92	12.70	
LL1	-	0.050	-	1.27	
MHD	0.151	0.165	3.84	4.19	
MHS	1.177	1.197	29.90	30.40	
OL	1.520	1.540	38.81	39.12	
OW	0.900	1.100	22.86	27.94	
PS	0.420	0.440	10.67	11.18	2
PS1	0.205	0.225	5.21	5.72	2
S1	0.655	0.675	16.64	17.15	

NOTES:

1. Dimensions are in inches. Millimeters are given for information only.
2. For perpendicularity, these dimensions should be measured at points 0.050 inch (1.27 mm), +0.005 inch (+0.13 mm), and -0.000 inch (-0.00 mm) below seating plane.
3. The seating plane of the header shall be flat.
4. The case is connected to the cathode.
5. In accordance with ASME Y14.5M, diameters are equivalent to Φ x symbology.

SCHEMATIC

