RoHS
Available on commercial versions

High Reliability Silicon Power Rectifier

Qualified per MIL-PRF-19500/297

Qualified Levels:
JAN, JANTX, and JANTXV

DESCRIPTION

This series of silicon power rectifier part numbers are qualified up to the JANTXV level for high reliability applications. They are constructed with glass passivated die and feature glass to metal seal construction. They have a 500 amp surge rating and provide a V_{RWM} up to 1000 volts.

DO-5 (DO-203AB) Package

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

FEATURES

- High continuous current rating.
- Very low forward voltage.
- Low thermal resistance.
- JAN, JANTX and JANTXV qualifications are available per MIL-PRF-19500/297.
- RoHS compliant devices available (commercial grade only).

APPLICATIONS / BENEFITS

- High frequency switching circuits.
- Mechanically rugged DO-5 package.

MAXIMUM RATINGS @ T_A = +25 ºC unless otherwise stated

Parameters/Test Conditions		Symbol	Value	Unit
Junction and Storage Temperature		T_J and T_{STG}	-65 to +175	^oC
Thermal Resistance Junction-to-Case		$R_{\Theta JC}$	0.8	$^oC/W$
Working Peak Reverse Voltage	1N1184(R)	V_{RWM}	100	V
	1N1186(R)		200	
	1N1188(R)		400	
	1N1190(R)		600	
	1N3766(R)		800	
	1N3768(R)		1000	
Maximum Average DC Output Current @ T_C = 150 ^oC (1)		I_O	35	A
Non-Repetitive Sinusoidal Surge Current @ 1/120 s, T_C = 150 ºC		I_{FSM}	500	A

NOTE: 1. Derate linearly 1.4 A ºC between T_C = 150 ºC to T_C = 175 ºC.

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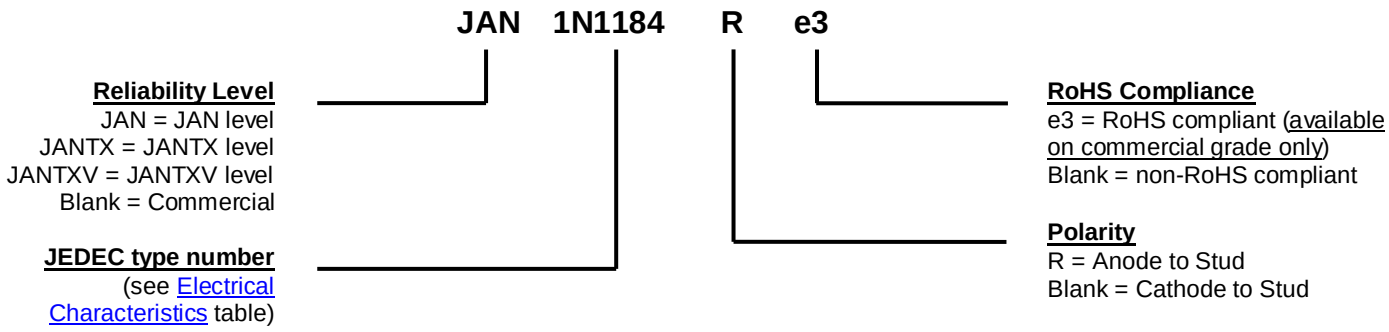
MECHANICAL and PACKAGING

- CASE: Hermetically sealed metal and glass case body.
- TERMINALS: Hot solder dip (Sn63/Pb37) on standard commercial, JAN, JANTX, and JANTXV levels. RoHS compliant matte-tin on nickel is available on commercial grade only.
- MARKING: Polarity symbol and part number.
- POLARITY: Standard polarity devices are cathode to stud. Reverse polarity devices are anode to stud.
- WEIGHT: Approximately 14 grams.
- See Package Dimensions on last page.

PART NOMENCLATURE



SYMBOLS & DEFINITIONS

Symbol	Definition
I_F	Forward Current: The forward current dc value, no alternating component.
I_{FSM}	Maximum Forward Surge Current: The forward current, surge peak or rated forward surge current.
I_O	Average Rectified Output Current: The output current averaged over a full cycle with a 50 Hz or 60 Hz sine-wave input and a 180 degree conduction angle.
I_R	Reverse Current: The maximum reverse (leakage) current that will flow at the specified voltage and temperature.
V_F	Maximum Forward Voltage: The maximum forward voltage the device will exhibit at a specified current.
V_{RWM}	Working Peak Reverse Voltage: The maximum peak voltage that can be applied over the operating temperature range excluding all transient voltages (ref JESD282-B). Also sometimes known as PIV.

ELECTRICAL CHARACTERISTICS

Parameters / Test Conditions		Symbol	Min.	Max.	Unit
Forward Voltage I_F = 110 A, T_C = 25 °C (1)		V_F		1.4	V
Forward Voltage I_F = 500 A, T_C = 150 °C (2)		V_F		2.3	V
Reverse Current V_{RWM} = 100 V, T_J = 25 °C V_{RWM} = 200 V, T_J = 25 °C V_{RWM} = 400 V, T_J = 25 °C V_{RWM} = 600 V, T_J = 25 °C V_{RWM} = 800 V, T_J = 25 °C V_{RWM} = 1000 V, T_J = 25 °C	 1N1184(R) 1N1186(R) 1N1188(R) 1N1190(R) 1N3766(R) 1N3768(R)	I_R		10	µA
Reverse Current V_{RWM} = 100 V, T_J = 150 °C V_{RWM} = 200 V, T_J = 150 °C V_{RWM} = 400 V, T_J = 150 °C V_{RWM} = 600 V, T_J = 150 °C V_{RWM} = 800 V, T_{Jj} = 150 °C V_{RWM} = 1000 V, T_J = 150 °C	 1N1184(R) 1N1186(R) 1N1188(R) 1N1190(R) 1N3766(R) 1N3768(R)	I_R		1	mA

NOTES:

1. tp < 8.3 ms, duty cycle ≤ 2 percent pulse.
2. VF1 shall be performed with either tp = 800 µs or tp = 8.3 ms.

GRAPHS

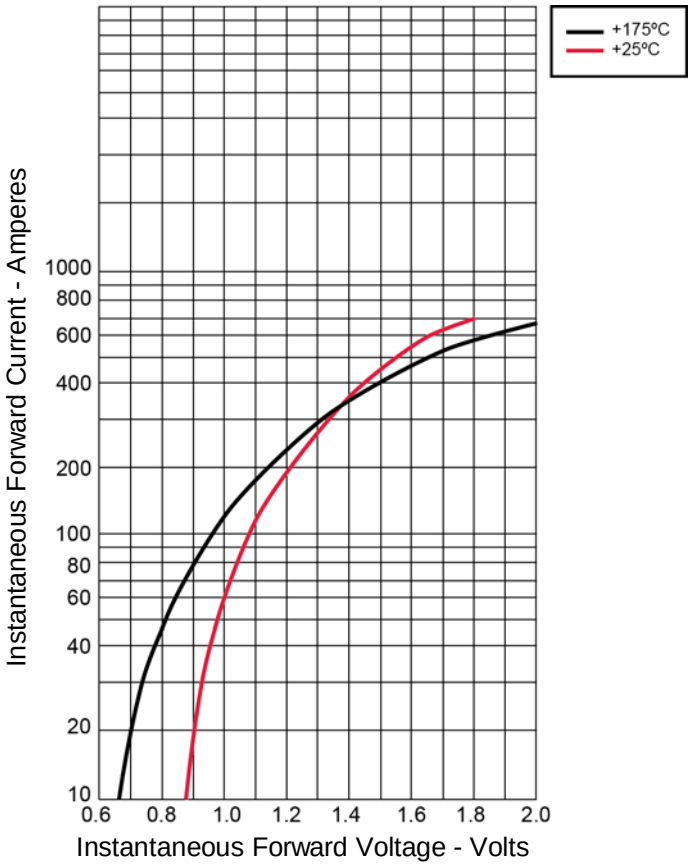


FIGURE 1

Typical Forward Characteristics

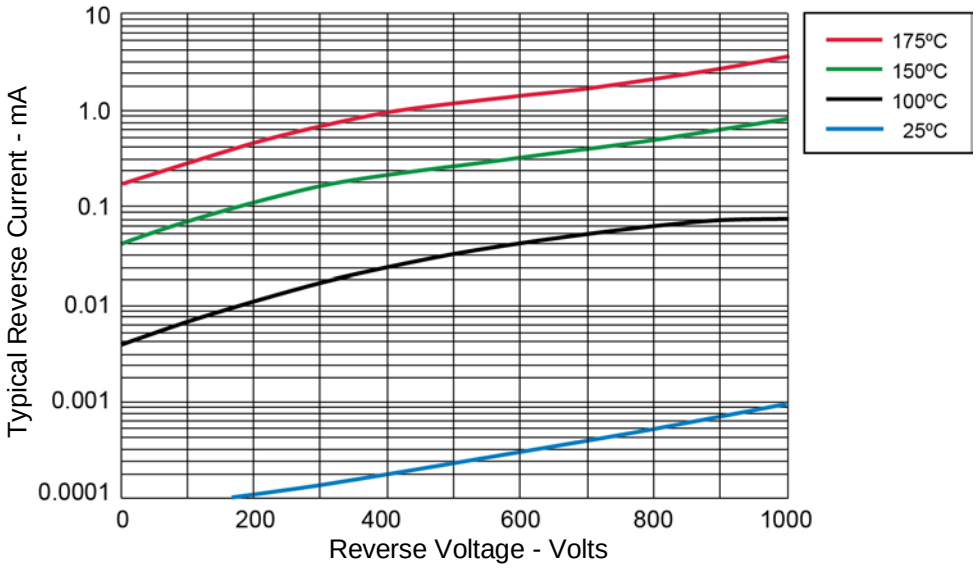


FIGURE 2

Typical Reverse Characteristics

GRAPHS (continued)

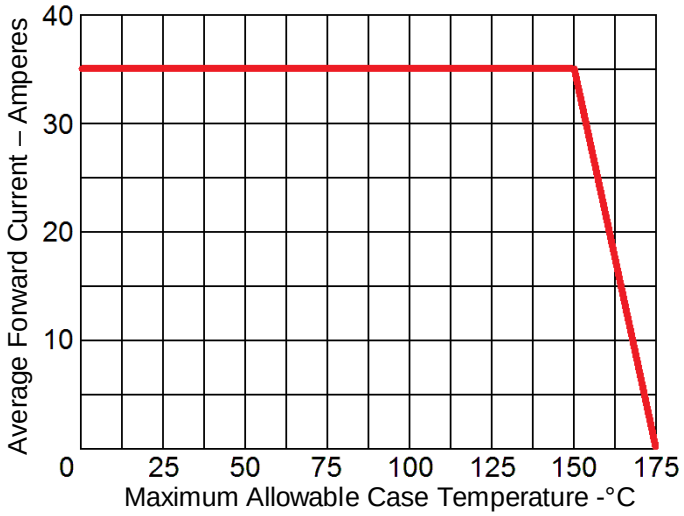


FIGURE 3
Forward Current Derating

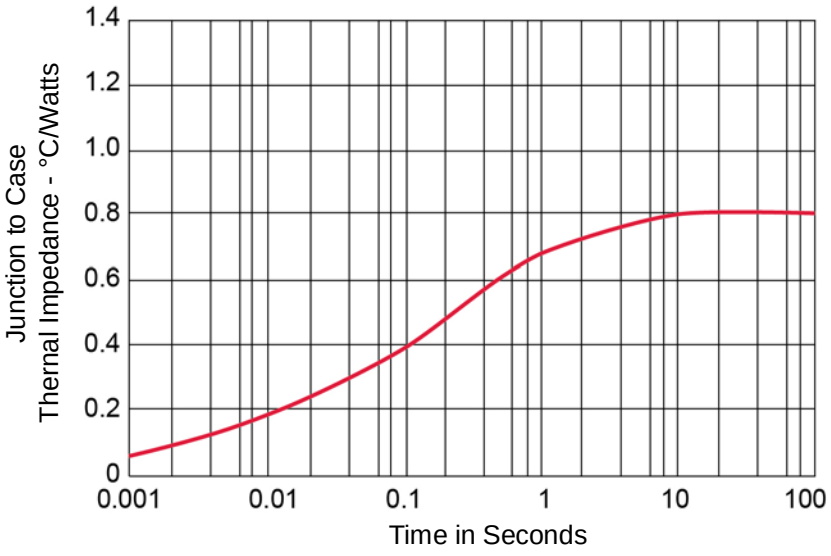
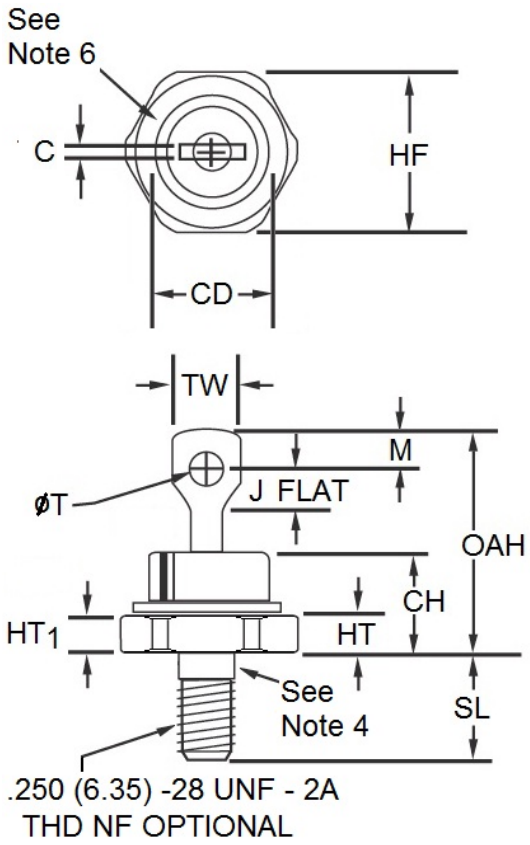


FIGURE 4
Transient Thermal Impedance

PACKAGE DIMENSIONS



Ltr	Dimensions			
	Inch		Millimeters	
	Min	Max	Min	Max
OAH	-	1.000	-	25.40
CH	-	0.450	-	11.43
HT	0.115	0.200	2.93	5.08
SL	0.422	0.453	10.72	11.50
HT1	0.060	-	1.53	-
B	0.250	0.375	6.35	9.52
CD	-	0.667	-	16.94
HF	0.667	0.687	16.95	17.44
J	0.156	-	3.97	-
ϕT	0.140	0.175	3.56	4.44
C	-	0.080	-	2.03
M	0.030	-	0.77	-

NOTES:

1. Dimensions are in inches.
2. Millimeters are given for general information only.
3. Units must not be damaged by torque of 30 inch-pounds applied to 0.250-28 UNF-28 nut assembled on thread.
4. Diameter of unthreaded portion 0.249 inch (6.32 mm) max and .220 inch (5.59 mm) min.
5. Complete threads to extend to within 2.5 threads of seating plane.
6. Angular orientation of this terminal is undefined.
7. Max pitch diameter of plated threads shall be basic pitch diameter 0.2268 inch (5.76 mm) reference FED-STD-H28.
8. A chamfer or undercut on one or both ends of the hex portion is optional; minimum base diameter at seating plane. 0.600 inch (15.24 mm).
9. In accordance with ASME Y14.5M, diameters are equivalent to Φx symbology.