# SURFACE MOUNT SCHOTTKY BARRIER DIODES

VOLTAGE RANGE: 20 V
CURRENT: 1.0 A

Features

- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- Low power loss,high efficiency
- For use in low voltage high frequency inverters, free wheeling,and polarity protection applications
- Guardring for over voltage protection
- High temperature soldering guaranteed: 260 C/10 seconds at terminals

Mechanical Data

- Case: SOD-123FL plastic body over passivated junction
- Terminals : Plated axial leads,
- solderable per MIL-STD-750,Method 2026
- Polarity : Color band denotes cathode end
- Marking : E20
- Weight:0.0007 ounce, 0.02 grams

RoHS COMPLIANT
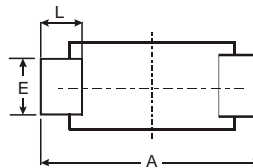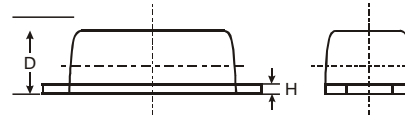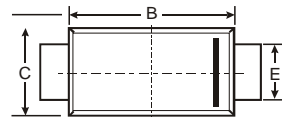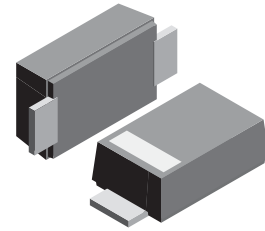
SOD-123FL			
Dim	Min	Max	Typ
A	3.50	3.80	3.65
B	2.60	2.90	2.75
C	1.70	1.90	1.80
D	0.09	1.10	1.00
E	0.08	1.10	0.095
H	0.12	0.20	0.16
L	0.07	0.09	0.08
All Dimensions in mm			

Maximum Ratings and Electrical Characteristics $T_A = 25°C$ unless otherwise specified

Single phase, half wave, 60Hz, resistive or inductive load. For capacitive load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	20	V
Average Rectified Forward Current (At Rated V_R, $T_L = 115°C$)	I_O	1.0	A
Peak Repetitive Forward Current (At Rated V_R, Square Wave, 100 kHz, $T_L = 110°C$)	I_{FRM}	2.0	A
Non−Repetitive Peak Surge Current (Non−Repetitive peak surge current, halfwave, single phase, 60 Hz)	I_{FSM}	5.5	A
Storage Temperature	T_{stg}	−55 to 150	°C
Operating Junction Temperature	T_J	−55 to 125	°C
Voltage Rate of Change (Rated V_R, $T_J = 25°C$)	dv/dt	10,000	V/µs

THERMAL CHARACTERISTICS

Rating	Symbol	Value	Unit
Thermal Resistance – Junction–to–Lead (Note 1)	R_{tjl}	26	°C/W
Thermal Resistance – Junction–to–Lead (Note 2)	R_{tjl}	21	
Thermal Resistance – Junction–to–Ambient (Note 1)	R_{tja}	325	
Thermal Resistance – Junction–to–Ambient (Note 2)	R_{tja}	82	

1. Mounted with minimum recommended pad size, PC Board FR4.
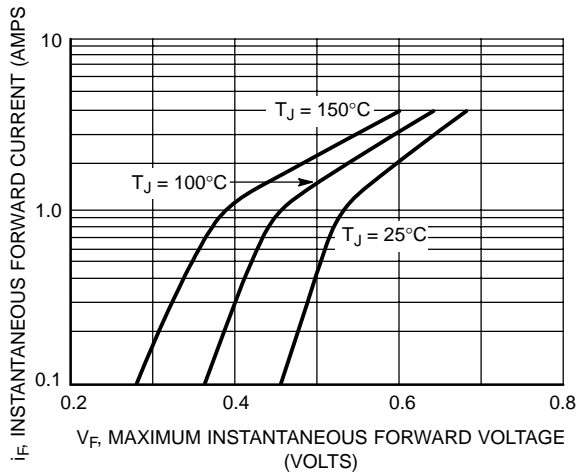2. Mounted with 1 in. copper pad (Cu area 700 mm^2).

ELECTRICAL CHARACTERISTICS

	Symbol	$T_J = 25°C$	$T_J = 100°C$	Unit
Maximum Instantaneous Forward Voltage (Note 3), See Figure 2	V_F			V
(I_F = 0.1 A)		0.455	0.360	
(I_F = 1.0 A)		0.550	0.485	
(I_F = 2.0 A)		0.650	0.590	
Maximum Instantaneous Reverse Current (Note 3), See Figure 4	I_R	$T_J = 25°C$	$T_J = 100°C$	μA
(V_R = 20 V)		10	1600	
(V_R = 10 V)		1.0	500	
(V_R = 5.0 V)		0.5	300	

3. Pulse Test: Pulse Width ≤ 250 μs, Duty Cycle ≤ 2%.
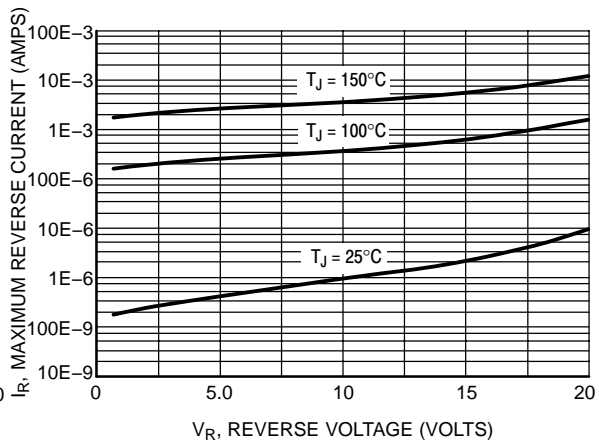
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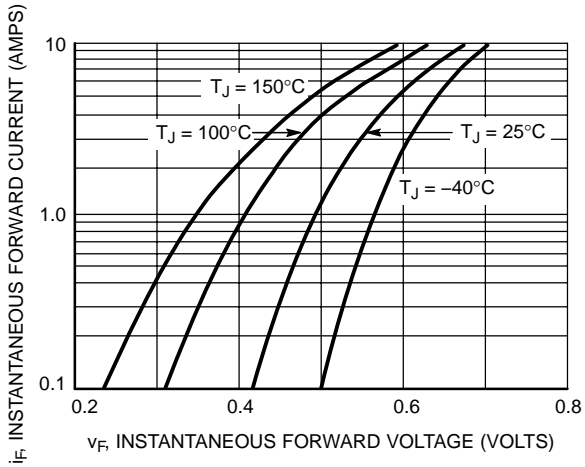
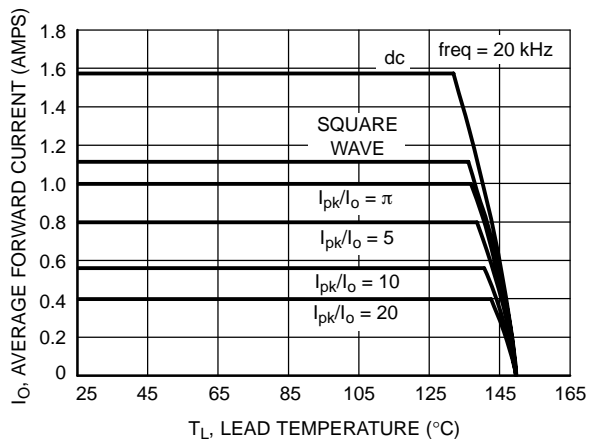**Figure 1. Typical Forward Voltage**
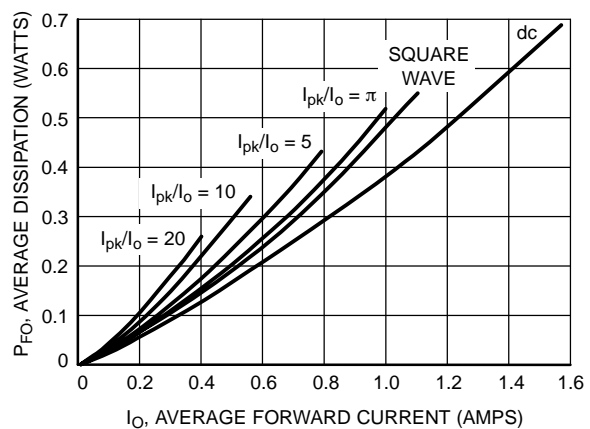

Figure 2. Maximum Forward Voltage
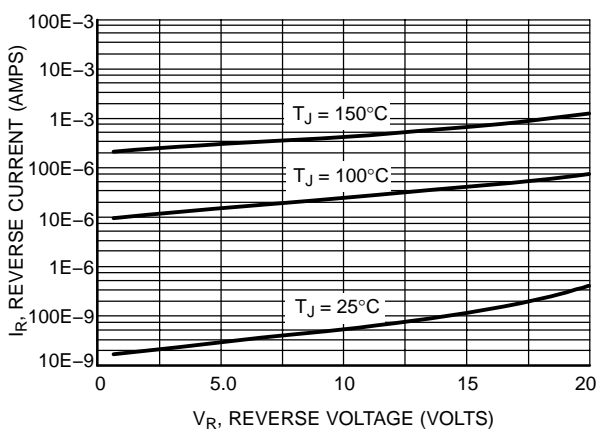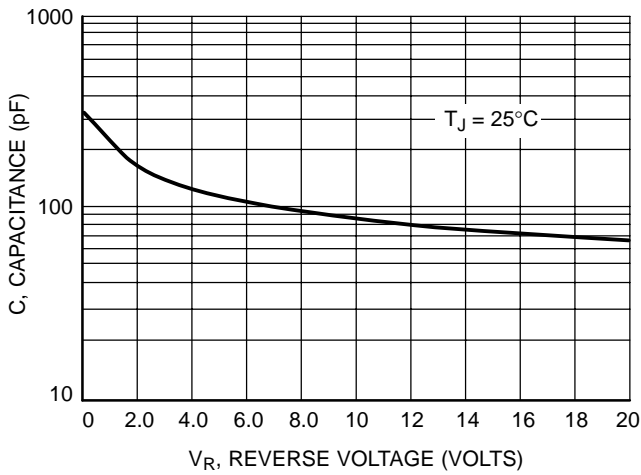

Figure 3. Typical Reverse Current

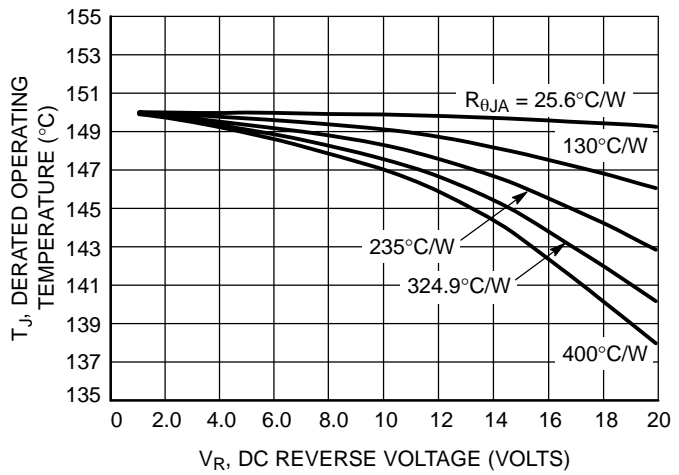**Figure 4. Maximum Reverse Current**

Figure 5. Current Derating

Figure 6. Forward Power Dissipation

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Figure 7. Capacitance

Figure 8. Typical Operating Temperature Derating*

* Reverse power dissipation and the possibility of thermal runaway must be considered when operating this device under any reverse voltage conditions. Calculations of T_J therefore must include forward and reverse power effects. The allowable operating T_J may be calculated from the equation: $T_J = T_{Jmax} - r(t)(Pf + Pr)$ where

r(t) = thermal impedance under given conditions,
Pf = forward power dissipation, and
Pr = reverse power dissipation

This graph displays the derated allowable T_J due to reverse bias under DC conditions only and is calculated as $T_J = T_{Jmax} - r(t)Pr$, where r(t) = Rthja. For other power applications further calculations must be performed.
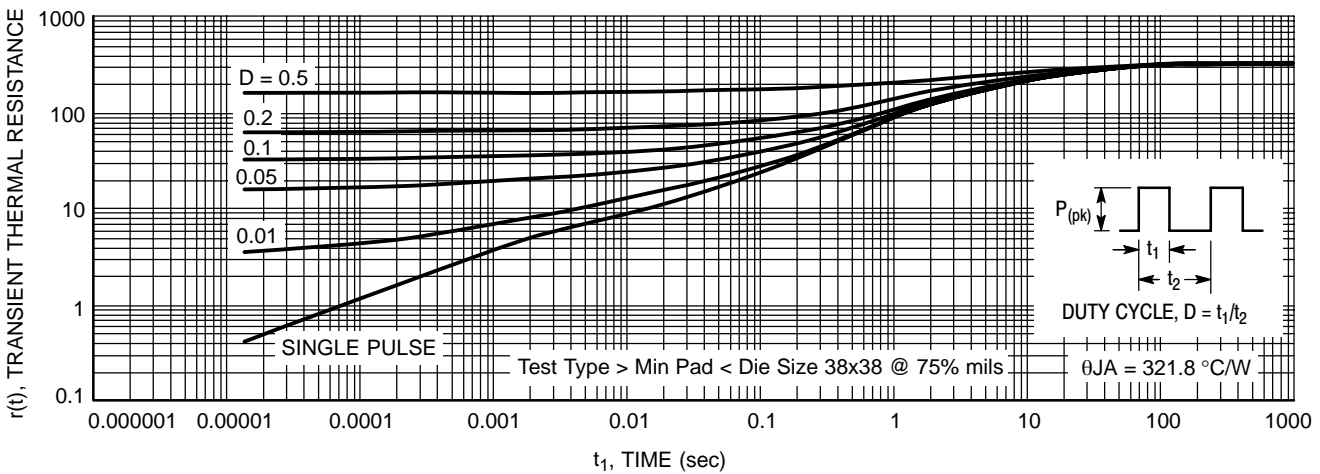
Figure 9. Thermal Response

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