Solid State Devices, Inc.
14701 Firestone Blvd * La Mirada, Ca 90638
Phone: (562) 404-4474 * Fax: (562) 404-1773
ssdi@ssdi-power.com * www.ssdi-power.com

SPD6638, SPD6642, SPD6643 SERIES

300 mA
50 - 125 VOLTS
4.5 - 6.0 nsec HYPER FAST RECOVERY RECTIFIER

Designer's Data Sheet

Part Number/Ordering Information [1/]

SPD____ __ __

- **Screening** [2/]
  - __ = Not Screened
  - TX = TX Level
  - TXV = TXV
  - S = S Level
- **Package Type**
  - __ = Axial Leaded
  - SMS = Surface Mount Square Tab
- **Device Type** (VRWM)
  - **6638** = 125 V
  - **6642** = 75 V
  - **6643** = 50 V

FEATURES:

- **Hyper Fast Reverse Recovery Time 4.5 - 6 ns Max**
- **Hermetically Sealed**
- **Planar Passivated Chip**
- **For High Efficiency Applications**
- **Available in Axial & Subminiature Square Tab Versions**
- **TX, TXV, and S-Level Screening Available** [2/]
- **Replacement for 1N6638, 1N6642, 1N6643**
- **Low Thermal Resistance**
- **Metallurgical Class 3 Bond**

MAXIMUM RATINGS [3/]

RATING		SYMBOL	VALUE	UNIT
Peak Repetitive Reverse Voltage DC Blocking Voltage	SPD6638 SPD6642 SPD6643	V_{RWM} V_R	125 75 50	Volts
Average Rectified Forward Current (Resistive Load, 60 Hz, Sine Wave, T_C = 25°C)		I_O	300	mAmps
Peak Surge Current (8.3 msec Pulse, Half Sine Wave Superimposed on Io, allow junction to reach equilibrium between pulses, T_C = 25°C)		I_{FSM}	2.5	Amps
Operating & Storage Temperature		T_{OP} and T_{STG}	-65 to +175	°C
Thermal Resistance	SMS- Junction to End Tab Axial- Junction to Lead @ .375"	$R_{\theta JE}$ $R_{\theta JL}$	65 220	°C/W

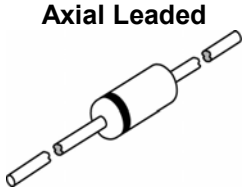
NOTES:

1/ For Ordering Information, Price, and Availability- Contact Factory.

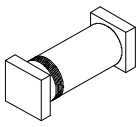
2/ Screening Based on MIL-PRF-19500. Screening Flows Available on Request.

3/ Unless Otherwise Specified, All Electrical Characteristics @25ºC.

Axial Leaded



SMS



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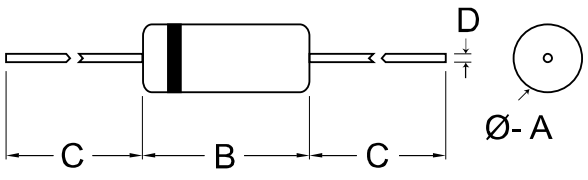
ELECTRICAL CHARACTERISTICS 3/

CHARACTERISTICS		SYMBOL	VALUE	UNIT
Maximum Instantaneous Forward Voltage Drop (Pulsed, T_A = 25°C)	SPD6638 @ I_F = 10mA SPD6642 @ I_F = 10mA SPD6643 @ I_F = 10mA	V_{F1}	0.8 0.8 1.0	Vdc
	SPD6638 @ I_F = 200mA SPD6642 @ I_F = 100mA SPD6643 @ I_F = 100mA	V_{F2}	1.1 1.2 1.2	Vdc
Maximum Instantaneous Forward Voltage Drop (Pulsed)	I_F = 100mA, T_A = -55°C	V_{F3}	1.3	Vdc
Minimum Breakdown Voltage Ir = 100 µA	SPD6638 SPD6642 SPD6643	B_{VR}	125 100 75	Vdc
Maximum Reverse Leakage Current (300 µs Pulse Minimum , T_A = 25°C)	SPD6638 @ V_R = 20V SPD6642 @ V_R = 20V SPD6643 @ V_R = 20V	I_{R1}	35 25 50	nA
Maximum Reverse Leakage Current (300 µs Pulse Minimum , T_A = 25°C)	SPD6638 @ V_R = 100V SPD6642 @ V_R = 75V SPD6643 @ V_R = 50V	I_{R2}	500 500 500	nA
Maximum Reverse Leakage Current (300 µs Pulse Minimum , T_A = 150°C)	SPD6638 @ V_R = 20V SPD6642 @ V_R = 20V SPD6643 @ V_R = 20V	I_{R3}	50 50 75	µA
Maximum Reverse Leakage Current (300 µs Pulse Minimum , T_A = 150°C)	SPD6638 @ V_R = 100V SPD6642 @ V_R = 75V SPD6643 @ V_R = 50V	I_{R4}	100 100 160	µA
Maximum Junction Capacitance (T_A = 25°C , f = 1MHz) V_R = 0V	SPD6638 SPD6642 SPD6643	C_{J1}	2.5 5.0 5.0	pf
Maximum Junction Capacitance (T_A = 25°C , f = 1MHz) V_R = 1.5V	SPD6638 SPD6642 SPD6643	C_{J2}	2.0 2.8 2.8	pf
Maximum Reverse Recovery Time (I_F = I_R = 10 mA, I_{RR} = 1 mA)	SPD6638 SPD6642 SPD6643	t_{rr}	4.5 5.0 6.0	nsec

AXIAL

DIMENSIONS		
DIM.	MIN.	MAX.
A	.056”	.080”
B	.130”	.180”
C	1.00”	1.50”
D	.018”	.022”



SMS

DIMENSIONS		
DIM.	MIN.	MAX.
A	.070”	.085”
B	.180”	.210”
C	.022”	.028”
D	.001”	---