



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

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

300 mA

50 - 125 VOLTS

4.5 - 6.0 nsec HYPER FAST RECOVERY
RECTIFIER

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

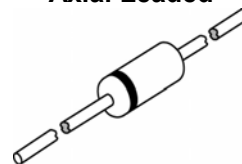
NOTES:

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

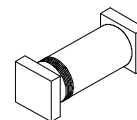
^{2/} Screening Based on MIL-PRF-19500. Screening Flows Available on Request.

^{3/} Unless Otherwise Specified, All Electrical Characteristics @25°C.

Axial Leaded



SMS



NOTE: All specifications are subject to change without notification.
SCD's for these devices should be reviewed by SSDI prior to release.

DATA SHEET #: RH0004E

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ELECTRICAL CHARACTERISTICS ^{3/}

CHARACTERISTICS		SYMBOL	VALUE	UNIT
Maximum Instantaneous Forward Voltage Drop (Pulsed, $T_A = 25^\circ\text{C}$)	SPD6638 @ $I_F = 10\text{mA}$ SPD6642 @ $I_F = 10\text{mA}$ SPD6643 @ $I_F = 10\text{mA}$	V_{F1}	0.8 0.8 1.0	Vdc
	SPD6638 @ $I_F = 200\text{mA}$ SPD6642 @ $I_F = 100\text{mA}$ SPD6643 @ $I_F = 100\text{mA}$	V_{F2}	1.1 1.2 1.2	Vdc
Maximum Instantaneous Forward Voltage Drop (Pulsed)	$I_F = 100\text{mA}$, $T_A = -55^\circ\text{C}$	V_{F3}	1.3	Vdc
Minimum Breakdown Voltage $I_r = 100\text{ }\mu\text{A}$	SPD6638 SPD6642 SPD6643	B_{VR}	125 100 75	Vdc
Maximum Reverse Leakage Current (300 μs Pulse Minimum, $T_A = 25^\circ\text{C}$)	SPD6638 @ $V_R = 20\text{V}$ SPD6642 @ $V_R = 20\text{V}$ SPD6643 @ $V_R = 20\text{V}$	I_{R1}	35 25 50	nA
Maximum Reverse Leakage Current (300 μs Pulse Minimum, $T_A = 25^\circ\text{C}$)	SPD6638 @ $V_R = 100\text{V}$ SPD6642 @ $V_R = 75\text{V}$ SPD6643 @ $V_R = 50\text{V}$	I_{R2}	500 500 500	nA
Maximum Reverse Leakage Current (300 μs Pulse Minimum, $T_A = 150^\circ\text{C}$)	SPD6638 @ $V_R = 20\text{V}$ SPD6642 @ $V_R = 20\text{V}$ SPD6643 @ $V_R = 20\text{V}$	I_{R3}	50 50 75	μA
Maximum Reverse Leakage Current (300 μs Pulse Minimum, $T_A = 150^\circ\text{C}$)	SPD6638 @ $V_R = 100\text{V}$ SPD6642 @ $V_R = 75\text{V}$ SPD6643 @ $V_R = 50\text{V}$	I_{R4}	100 100 160	μA
Maximum Junction Capacitance ($T_A = 25^\circ\text{C}$, $f = 1\text{MHz}$) $V_R = 0\text{V}$	SPD6638 SPD6642 SPD6643	C_{J1}	2.5 5.0 5.0	pf
Maximum Junction Capacitance ($T_A = 25^\circ\text{C}$, $f = 1\text{MHz}$) $V_R = 1.5\text{V}$	SPD6638 SPD6642 SPD6643	C_{J2}	2.0 2.8 2.8	pf
Maximum Reverse Recovery Time ($I_F = I_R = 10\text{ mA}$, $I_{RR} = 1\text{ mA}$)	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"
SMS	DIMENSIONS		
	DIM.	MIN.	MAX.
	A	.070"	.085"
	B	.180"	.210"
	C	.022"	.028"
	D	.001"	---

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