



Solid State Devices, Inc.

Technical Solutions for Your Total Program Needs

SHF1150

A Novel 1 amp Void Free Glass Ceramic Nanosize Package 9 nsec Hyper Fast Soft Recovery Nanospeed Rectifier

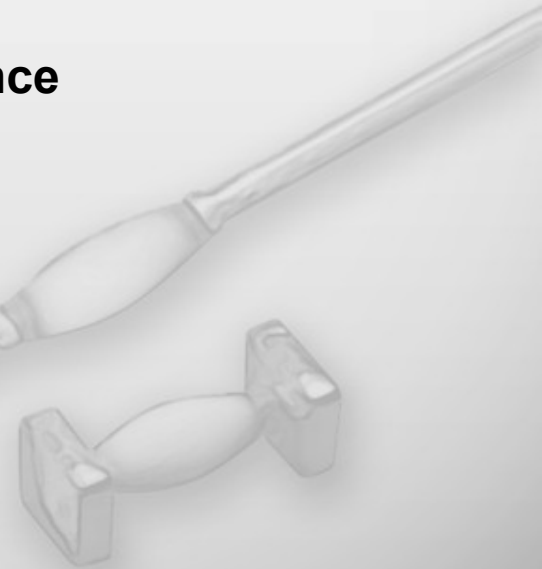
SSDI announces our latest technological advancement, the SHF1150. The SHF1150 is a void free glass ceramic encapsulated rectifier that provides a more rugged, high reliability replacement for a 1N6642 and a smaller, faster replacement for the 1N5806.



SHF1150

Features

- **Hyper fast recovery time (soft recovery / low EMI): 9 ns max**
- **Low reverse leakage current**
- **Hermetically sealed in a glass ceramic void free construction in a DO-35 package envelope**
- **High Temperature Metallurgical Category I bond**
- **Solid silver leads (copper leads also available)**
- **Excellent liquid-to-liquid thermal shock performance**
- **Designed for high efficiency applications**
- **Radiation tolerant**
- **Avalanche breakdown**
- **Replacement for 1N6638, 1N6642 and 1N5806**
- **Samples available upon request**



Electrical Characteristics

Comparison Data for 1N6642, SHF1150, & 1N5806



@ 25°C	1N6642	SHF1150	1N5806
I_o	0.3 A	1.0 A	2.5 A
I_{FSM} @ 8.3 mS	2.5 A	20 A	35 A
$R_{\theta JL}$ @ .375"	150 °C/W	80 °C/W	36 °C/W
$R_{\theta JE}$	40 °C/W	20 °C/W	13 °C/W

Electrical Characteristics

Comparison Data for 1N6642, SHF1150, & 1N5806



@ 25°C	1N6642	SHF1150	1N5806
B_{VR} @ 100 μA	100 V min	160 V min	160 V min
I_R @ 20 V	25 nA max	50 nA max	--
I_R @ 75 V	500 nA max	75 nA max	--
I_R @ 150 V	--	150 nA max	1.0 μA max
V_F @ 1 mA	--	0.575 V max	--
V_F @ 10 mA	0.8 V max	0.7 V max	--
V_F @ 100 mA	1.00 V max	0.8 V max	--
V_F @ 200 mA	--	0.85 V max	--
V_F @ 500 mA	--	0.90 V max	--
V_F @ 1.0 A	--	0.975 V max	0.875 V max

Electrical Characteristics

Comparison Data for 1N6642, SHF1150, & 1N5806



@ 150°C	1N6642	SHF1150	1N5806
$I_R @ 20\text{ V}$	50 μA max	50 μA max	--
$I_R @ 75\text{ V}$	100 μA max	75 μA max	--
$I_R @ 150\text{ V}$	--	150 μA max	175 μA @ 125°C
$V_F @ 10\text{ mA}$	0.8 V max	0.5 V max	--
$V_F @ 100\text{ mA}$	--	0.62 V max	--

@ -55°C	1N6642	SHF1150	1N5806
$V_F @ 10\text{ mA}$	--	0.81 V max	--
$V_F @ 100\text{ mA}$	1.2 V max	0.92 V max	--

Electrical Characteristics

Comparison Data for 1N6642, SHF1150, & 1N5806



Dynamic	1N6642	SHF1150	1N5806
$C_J @ 0\text{ V}$	5.0 pf max	14 pf max	--
$C_J @ 1.5\text{ V}$	2.8 pf max	10 pf max	--
$C_J @ 10\text{ V}$	--	6 pf max	25 pf max
t_{rr} 10mA-10mA – 1mA	5.0 nS max	--	--
t_{rr} 50mA-100mA – 25mA	--	9 nS max	--
t_{rr} 0.5A-0.5A – 0.05A	--	--	25 nS max
t_{fr} 50mA	--	18 nS max	--

Mechanical Dimensions

for 1N6642, SHF1150, & 1N5806



	1N6642	SHF1150	1N5806
Body Diameter	.056 - .075"	.056 - .075"	.065 - .085"
Body Length	.140 - .180"	.125 - .140"	.125 - .250"
Lead Diameter	.018 - .022"	.018 - .022"	.027 - .032"
US – End Tab	.070 - .085"	.070 - .085"	.091 - .103"
US – Body Length	.165 - .195"	.168 - .200"	.168 - .200"

SHF1150

Preliminary Reliability Data

Test	Conditions	Results
Life Test	240 hrs, 150°C, 100 V	$\wedge I_R < 20 \text{ nA}$ or 20% $\wedge V_F < 2 \text{ mV}$
Thermal Shock Liquid to Liquid	100 cycles -65°C to +175°C Perfluoropolyether Liquid	No Physical Damage $\wedge I_R < 2 \text{ nA}$ $\wedge V_F < 2 \text{ mV}$
Cryogenic Thermal Shock	100 cycles Liquid Nitrogen -180°C Perfluoropolyether Liquid +150°C	No Physical Damage $\wedge I_R < 2 \text{ nA}$ $\wedge V_F < 2 \text{ mV}$
Radiation Tolerance	Electron Irradiation 200 kgy	$\wedge I_R < 5 \text{ nA}$ $\wedge V_F < 10 \text{ mV}$ $\wedge t_{RR} < 1.8 \text{ nS}$
Qualification	Groups A, B, C, D & E	Due to complete in August 2011

Nanospeed Bridges & Arrays

The SHF1150 diode series will be available in single phase, three phase and diode array configurations.



Future Plans for Nanosize / Nanospeed Product Line

- Zeners, TVS, PIN Diodes, and Radiation Detectors
- Voltages up to 1000V
- Additional radiation characterization
- JEDEC / Slash Sheet Registration