



## Solid State Devices, Inc.

14701 Firestone Blvd \* La Mirada, Ca 90638

Phone: (562) 404-4474 \* Fax: (562) 404-1773

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### DESIGNER'S DATA SHEET

#### Part Number / Ordering Information <sup>1/</sup>

SDR1

L Screening <sup>2/</sup> = None

TX = TX Level

TXV = TXV Level

S = S Level

L Package

\_\_\_ = Axial

SMS = Surface Mount Square Tab

L Voltage

A = 50 V

K = 800 V

B = 100 V

M = 1000 V

D = 200 V

N = 1200 V

G = 400 V

J = 600 V

**1N6686-1N6687  
and  
1N6686US-1N6687US**

**20 AMP  
100-200 Volts  
40 nsec  
HYPER FAST RECTIFIER**

#### Features:

- Replaces DO-4 and DO-5 (1N5816, 1N6306)
- High Current Version of 1N5811
- Hyper Fast Recovery
- PIV to 200 Volts
- Low Reverse Leakage Current
- Hermetically Sealed Void-Free Construction <sup>3/</sup>
- Monolithic Single Chip Construction
- High Surge Rating
- Low Thermal Resistance
- Available in Surface Mount Versions (-US Suffix)
- TX, TXV, and S-Level Screening Available <sup>2/</sup>

Maximum Ratings		Symbol	Value	Units
Peak Repetitive Reverse and DC Blocking Voltage	1N6686 & 1N6686US 1N6687 & 1N6687US	$V_{RRM}$ $V_{RWM}$ $V_R$	100 200	Volts
Average Rectified Forward Current (Resistive Load, 60 Hz Sine Wave, $T_A = 25^\circ\text{C}$ )		$I_o$	20	Amps
Repetitive Peak Surge Current (8.3 ms Pulse, Half Sine Wave Superimposed on $I_o$ , Allow Junction to Reach Equilibrium Between Pulses, $T_A = 25^\circ\text{C}$ )		$I_{FSM}$	375	Amps
Operating & Storage Temperature		Top & Tstg	-65 to +175	$^\circ\text{C}$
Maximum Thermal Resistance Junction to Leads, $L = 3/8$ " (1N6686 – 1N6687) Junction to End Tab (1N6686US – 1N6687US)		$R_{\theta JL}$ $R_{\theta JE}$	4 3.5	$^\circ\text{C/W}$

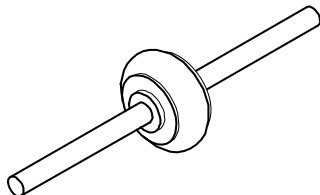
#### Notes:

<sup>1/</sup> For Ordering Information, Price, Operating Curves, and Availability – Contact Factory.

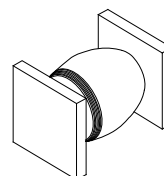
<sup>2/</sup> Screening Based on MIL-PRF-19500. Screening Flows Available on Request.

<sup>3/</sup> PIND Testing not Required on Void Free Devices per MIL-PRF-19500.

**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 #: RH0177B**

**DOC**



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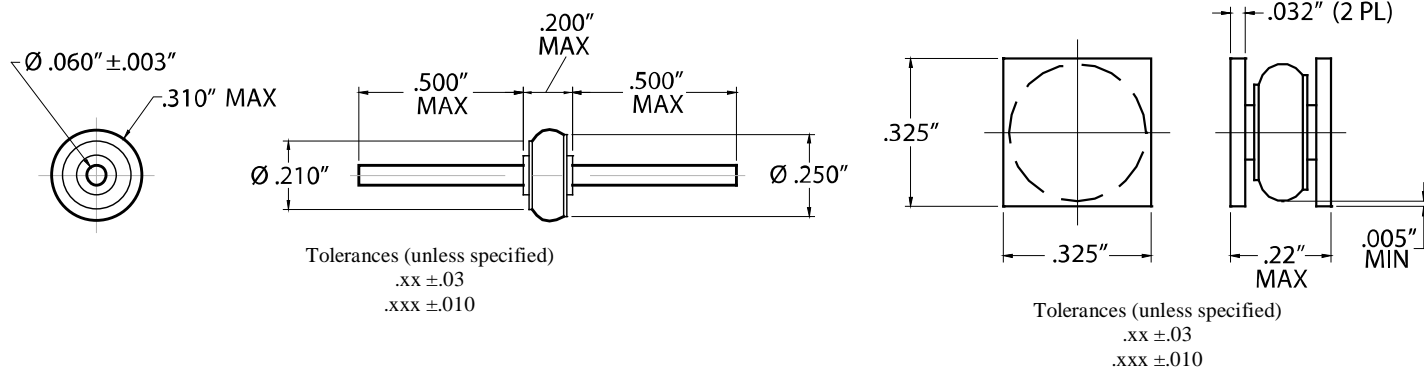
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1N6686US-1N6687US**

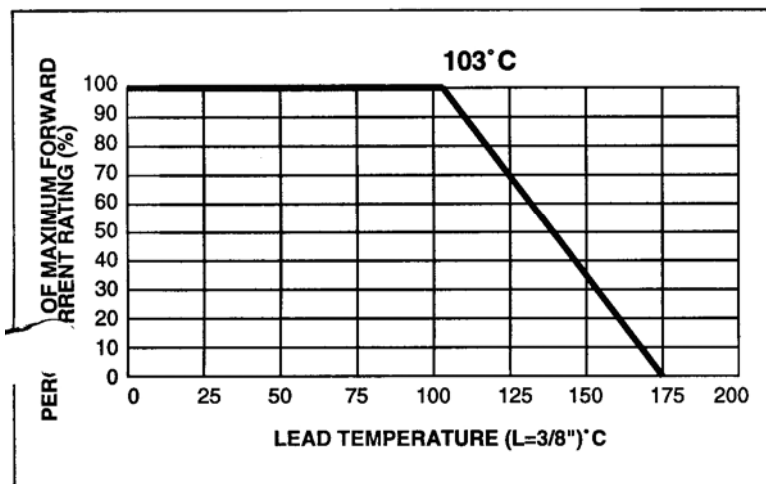
Electrical Characteristics	Symbol	Max	Units
<b>Instantaneous Forward Voltage Drop</b> ( $I_F = 5 \text{ Adc}$ , $T_A = 25^\circ\text{C}$ , 300 $\mu\text{s}$ pulse) ( $I_F = 20 \text{ Adc}$ , $T_A = 25^\circ\text{C}$ , 300 $\mu\text{s}$ pulse) ( $I_F = 70 \text{ Adc}$ , $T_A = 25^\circ\text{C}$ , 300 $\mu\text{s}$ pulse)	$V_F$	0.78 0.875 1.0	Vdc
<b>Instantaneous Forward Voltage Drop</b> ( $I_F = 5 \text{ Adc}$ , $T_A = -65^\circ\text{C}$ , 300 $\mu\text{s}$ pulse)	$V_F$	1.0	Vdc
<b>Reverse Leakage Current</b> (Rated $V_R$ , $T_A = 25^\circ\text{C}$ , 300 $\mu\text{s}$ pulse minimum)	$I_R$	50	$\mu\text{A}$
<b>Reverse Leakage Current</b> (Rated $V_R$ , $T_A = 100^\circ\text{C}$ , 300 $\mu\text{s}$ pulse minimum)	$I_R$	10	mA
<b>Junction Capacitance</b> ( $V_R = 10 \text{ Vdc}$ , $T_A = 25^\circ\text{C}$ , $f = 1\text{MHz}$ )	$C_J$	350	pF
<b>Reverse Recovery Time</b> ( $I_F = 500 \text{ mA}$ , $I_R = 1\text{A}$ , $I_{RR} = 0.25\text{A}$ , $T_A = 25^\circ\text{C}$ )	$t_{rr}$	40	nsec

**Case Outline: Axial**



**TYPICAL OPERATING CURVES**

$T_A = 25^\circ\text{C}$  Unless otherwise specified



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