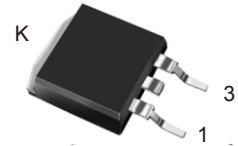


## Features

- Power pack
- Metal silicon junction, majority carrier conduction
- Guard ring for overvoltage protection
- Low power loss, high efficiency
- High current capability, low forward voltage drop
- High forward surge capability
- High frequency operation
- Meets MSL Level 1, per J-STD-020, LF max peak of 260°C
- Component in accordance to RoHS 2015/863/EU



TO-263



Schematic Diagram

## Mechanical Data

- Case: JEDEC TO-263
- Molding compound meets UL94V-0 flammability rating
- Terminals: Lead solderable per J-STD-002 and JESD22-B102
- Polarity: As marked
- Mounting torque: 10 in-lbs maximum

## Applications

For use in low voltage, high frequency inverters, DC/DC converters, free wheeling and polarity protection applications.

## Maximum Ratings (Ratings at 25°C ambient temperature unless otherwise specified )

Parameter	Symbol	Value	Unit
Maximum Repetitive Peak Reverse Voltage	$V_{RRM}$	300	V
Maximum Average Forward Rectified Current (see Fig.1)	Per leg	20.0	A
	Total device	40.0	
Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load (JEDEC Method at Rated $T_L$ )	$I_{FSM}$	350	A
Peak Repetitive Reverse Current Per Diode at $t_p=2\mu s$ 1KHz	$I_{RRM}$	0.5	A
Typical Thermal Resistance <sup>1</sup>	$R_{\theta JC}$	0.9	°C/W
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to +150	°C

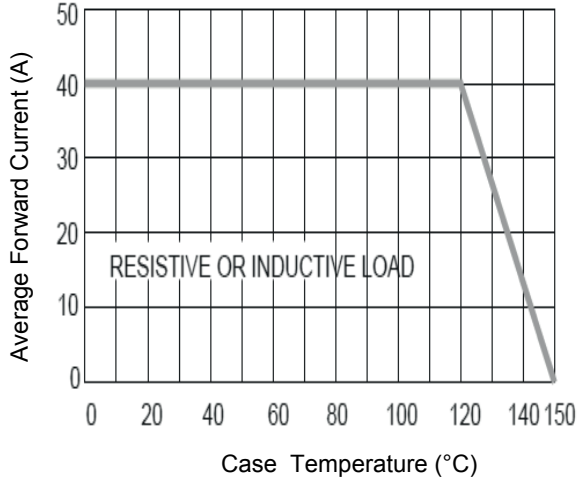
## **Electrical Characteristics** (Per Leg $T_A=25^\circ\text{C}$ unless otherwise note)

Parameter	Symbol	Test Conditions	Typ.	Max.	Unit	
Instaneous Forward Voltage <sup>2</sup>	$V_F$	$I_F=20.0\text{A}$	$T_A=25^\circ\text{C}$	0.90	0.975	V
			$T_A=100^\circ\text{C}$	0.79	-	
			$T_A=125^\circ\text{C}$	0.76	-	
		$I_F=5.0\text{A}$	$T_A=25^\circ\text{C}$	0.75	-	
			$T_A=100^\circ\text{C}$	0.65	-	
			$T_A=125^\circ\text{C}$	0.61	-	
Reverse Current <sup>3</sup>	$I_R$	$V_R=300\text{V}$	$T_A=25^\circ\text{C}$	0.2	5.0	$\mu\text{A}$
			$T_A=100^\circ\text{C}$	-	0.5	mA
			$T_A=125^\circ\text{C}$	-	1.5	
Typical Junction Capacitance	$C_J$	4V,1MHz	210		pF	

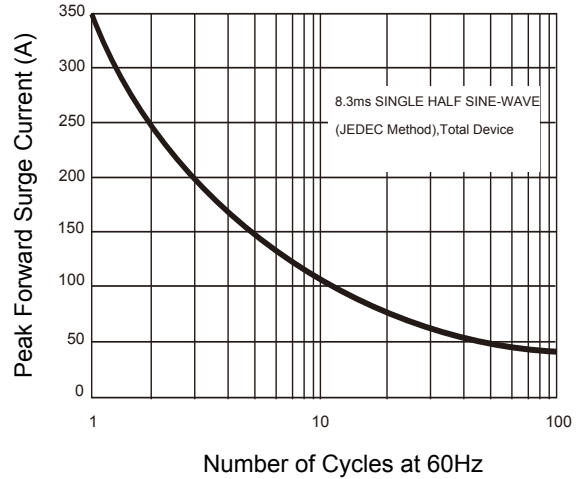
Notes:

1. Thermal resistance from junction to case, total device
2. Pulse test: 300 $\mu\text{s}$  pulse width, 1% duty cycle
3. Pulse test: pulse width  $\leq 40\text{ms}$

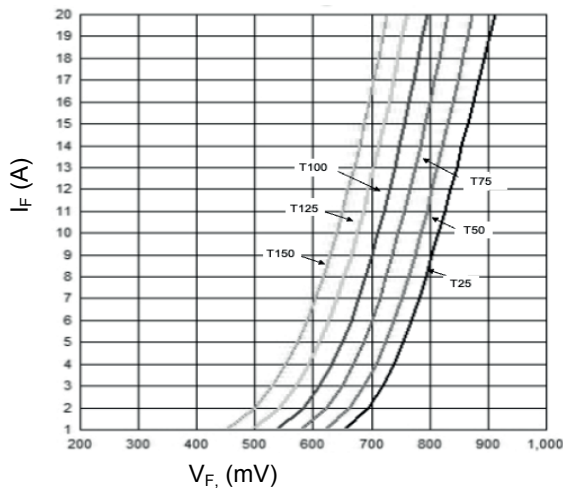
## Ratings and Characteristics Curves



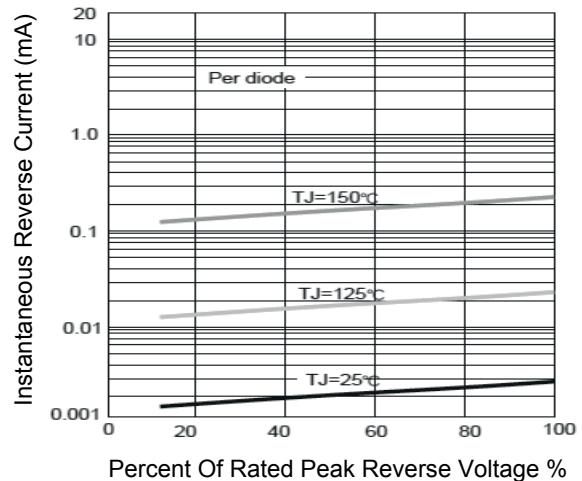
**Figure 1. Forward Current Derating Curve**



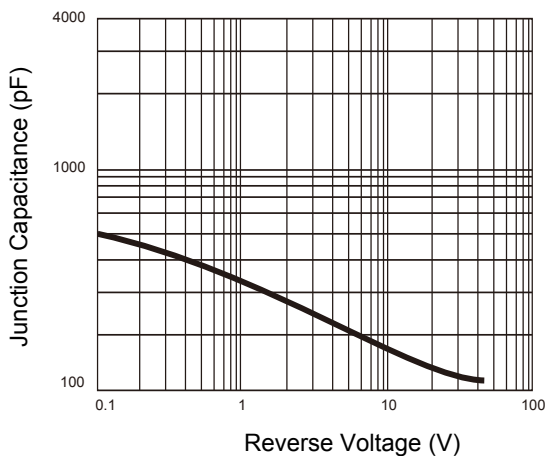
**Figure 2. Maximum Non-Repetitive Peak Forward Surge Current**



**Figure 3. Typical Instantaneous Forward Characteristics**

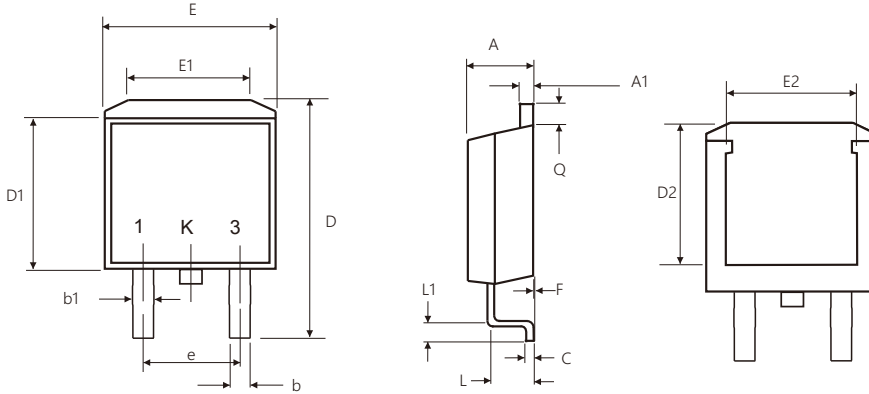


**Figure 4. Typical Reverse Characteristics**



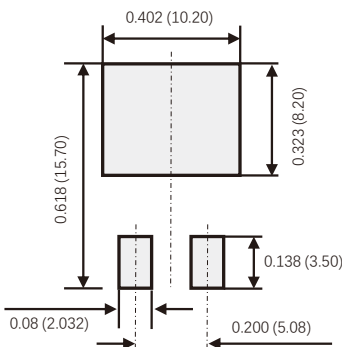
**Figure 5. Typical Junction Capacitance**

## Package Outline Dimensions (TO-263)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.06	4.83	0.160	0.190
A1	1.14	1.40	0.045	0.055
e	4.98	5.18	0.196	0.204
b	0.69	0.94	0.027	0.037
b1	1.20	1.34	0.047	0.053
C	0.35	0.46	0.014	0.018
D	14.22	16.22	0.560	0.639
D1	8.13	9.14	0.320	0.360
E	9.65	10.67	0.380	0.420
E1	6.22	-	0.245	-
L	2.67	3.40	0.105	0.134
L1	2.29	3.32	0.090	0.131
Q	0.92	1.68	0.036	0.066
F	0.02	0.30	0.001	0.012
D2	7.20	7.80	0.283	0.307
E2	7.60	8.20	0.299	0.323

## Recommended Pad Layout



- Note:
1. Pad dimensions for reference
  2. Unit in inches (millimeters)

## Order Information

Device	Package	Marking	Quantity	HSF Status
GSR40300D1	TO-263	SR40300D1	800pcs / Reel	RoHS Compliant