90CLQ100

PD-93953D

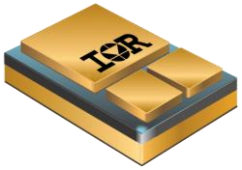
Schottky Rectifier High Efficiency Series
Surface Mount (SMD-1)
100V, 90A

Features

- Hermetically sealed
- Center Tap
- Low forward voltage drops
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Surface Mount
- Light weight

Product Summary

- **V_{RRM}:** 100V
- **$I_{F(AV)}$:** 90A
- **V_F @ 30Apk, T_J =125°C:** 0.73V
- **I_{FSM} @ t_p = 8.3ms half-sine:** 250A



SMD-1

Potential Applications

- DC-DC converter
- Protection circuits
- Motor drives

Product Validation

Fully qualified according to MIL-PRF-19500 for space applications

Description

The 90CLQ100 center tap Schottky rectifier has been expressly designed to meet the rigorous requirements of IR HiRel environments. It is packaged in the hermetic surface mount SMD-1 ceramic package. The device's forward voltage drop and reverse leakage current are optimized for the lowest power loss and the highest circuit efficiency for typical high frequency switching power supplies and resonant power converters. Full MIL-PRF-19500 quality conformance testing is available on source control drawings to TX, TXV and S quality levels.

Ordering Information

Table 1 Ordering options

Part number	Package	Screening Level
90CLQ100	SMD-1	COTS
90CLQ100SCS	SMD-1	JANS
90CLQ100SCV	SMD-1	JANTXV

Table of contents

1 Absolute Maximum Ratings

Table 2 Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V_R	DC reverse voltage	100	V
V_{RWM}	Working peak reverse voltage	100	V
$I_{F(AV)}$	Max. average forward current - Refer to Fig. 5 [1]	90	A
I_{FSM}	Max. peak one cycle non–repetitive surge current [2]	250	A
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to 150	°C
	Weight	2.6 (Typical)	g

[1] 50% duty cycle @ T_C = 69°C, square waveform

[2] t_p = 8.3 ms half-sine

2 Device Characteristics

2.1 Electrical Characteristics

Table 3 Electrical Characteristics

Symbol	Parameter	Max.	Unit	Test Conditions	
V_F	Forward Voltage Drop (Per Leg) See Fig. 1[1]	0.86	V	@ 15A	T_J = -55°C
		0.96	V	@ 30A	
		1.03	V	@ 40A	
		0.76	V	@ 15A	T_J = 25°C
		0.89	V	@ 30A	
		0.98	V	@ 40A	
		0.61	V	@ 15A	T_J = 125°C
		0.73	V	@ 30A	
		0.81	V	@ 40A	
I_R	Reverse Leakage Current (Per Leg) See Fig. 2[1]	0.05	mA	T_J = 25°C	V_R = rated V_R
		7.4	mA	T_J = 100°C	
		15	mA	T_J = 125°C	
C_J	Junction Capacitance (Per Leg)	1000	pF	V_R = 5V_{DC} (1MHz, 25°C)	
L_S	Series Inductance (Per Leg)	5.9 (Typical)	nH	Measured from center of cathode pad to center of anode pad	

2.2 Thermal-Mechanical Specifications

Table 4 Thermal-Mechanical Specifications

Symbol	Parameter	Max.	Unit	Test Conditions
$R_{\theta JC}$	Max. Thermal Resistance, Junction to Case (Per Leg)	1.25	°C/W	DC operation See Fig. 4
$R_{\theta JC}$	Max. Thermal Resistance, Junction to Case (Per Package)	0.63	°C/W	DC operation
	Die Size (Typical)	158 x 158	mils	

[1] Pulse Width < 300µs, Duty Cycle < 2%

3 Electrical Characteristics Curves

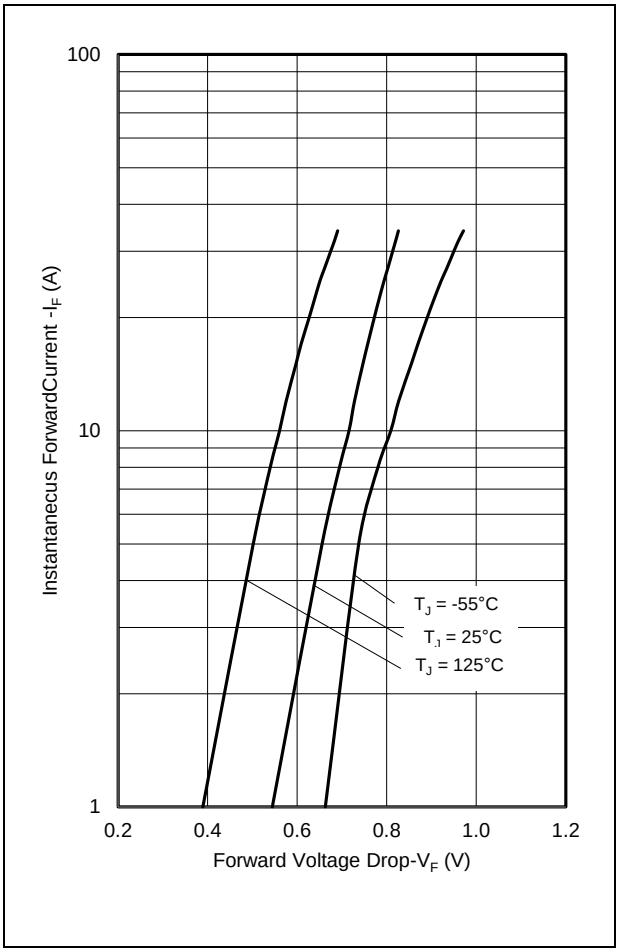


Figure 1 Maximum Forward Voltage Drop Characteristics (Per Leg)

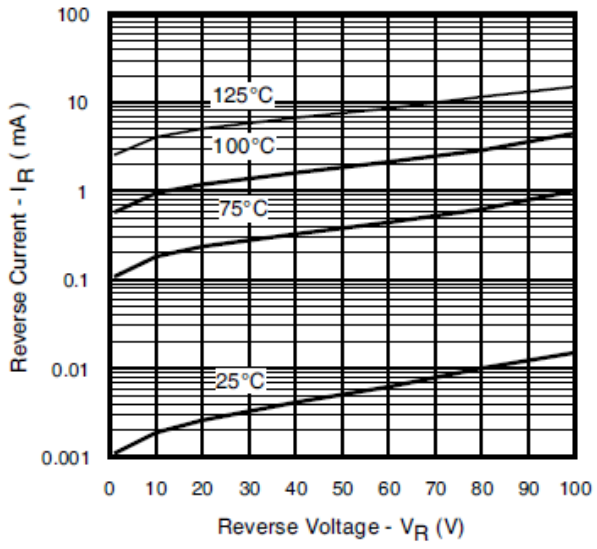


Figure 2 Typical Values of Reverse Current Vs. Reverse Voltage (Per Leg)

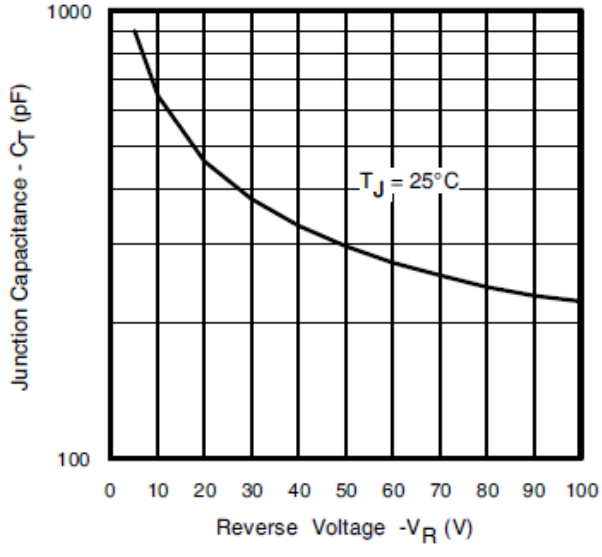


Figure 3 Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

Electrical Characteristics Curves

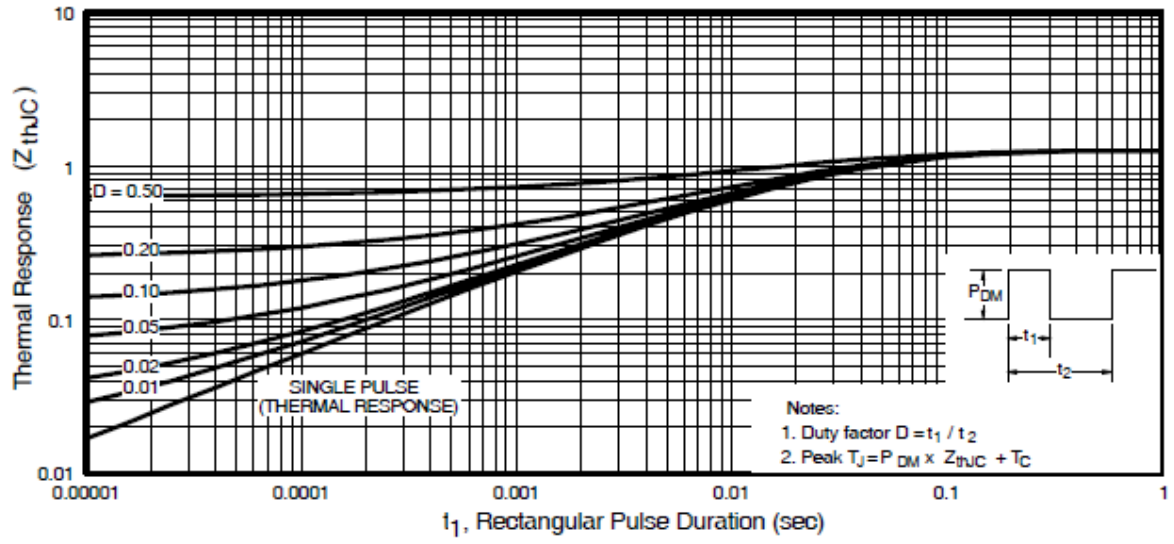


Figure 4 Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

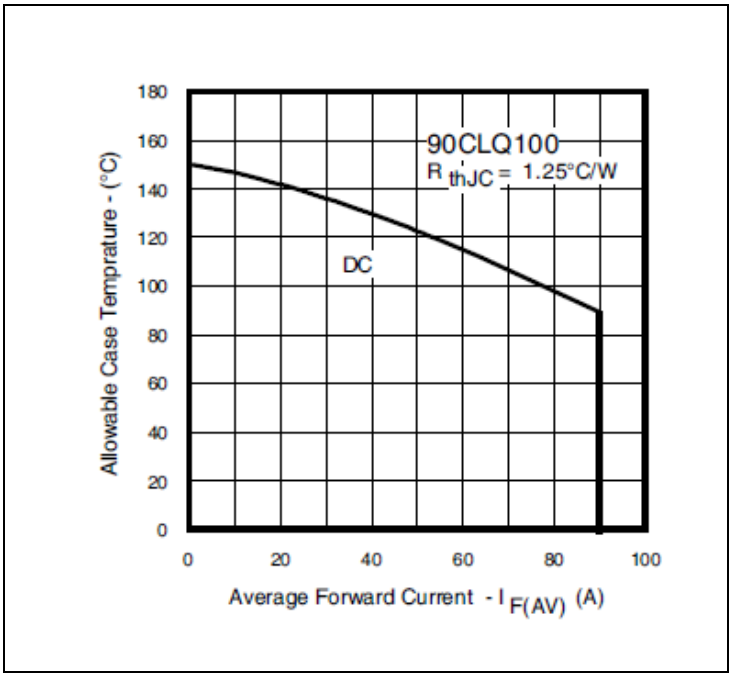
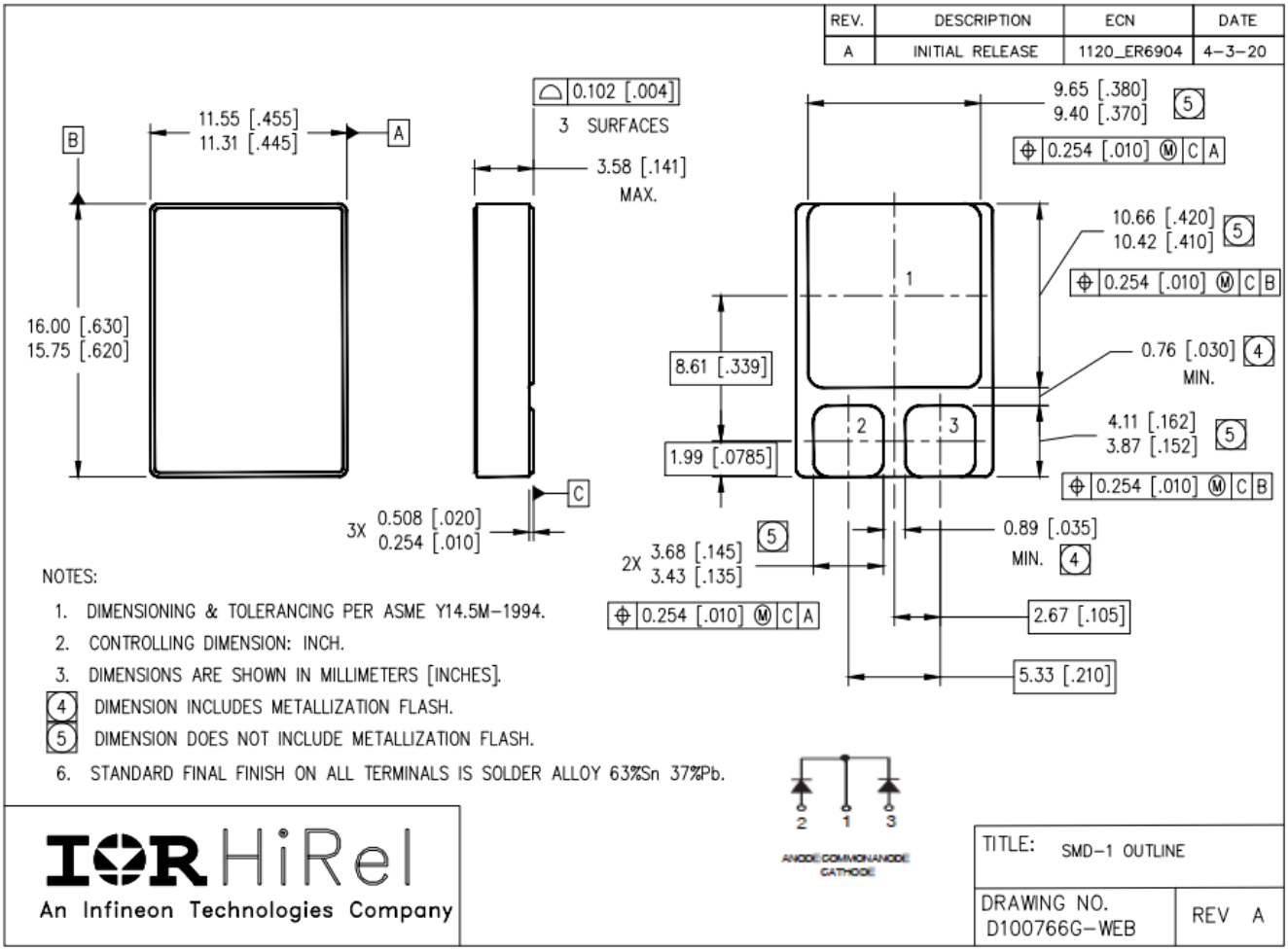


Figure 5 Maximum Allowable Case Temperature Vs. Average Forward Current (Per Leg)

4 Package Outline

Note: For the most updated package outline, please see the website: SMD-1



Revision history

Document version	Date of release	Description of changes
	10/16/2000	Final datasheet (PD-93953)
Rev A	10/23/2000	Updated typo from title page1
Rev B	08/07/2003	Updated per ECN-10620
Rev C	05/11/2020	Updated per ECN-1120-07878
Rev D	10/12/2023	Updated per ECN-1120_09715

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