120LQ100

PD-94396B

Schottky Rectifier High Efficiency Series
Surface Mount (SMD-1)
100V, 120A

Features

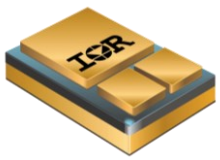
- Hermetically sealed
- Low forward voltage drops
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Surface Mount
- Light weight

Potential Applications

- DC-DC converter
- Protection circuits
- Motor drives

Product Summary

- **V_{RRM}:** 100V
- **$I_{F(AV)}$:** 120A
- **V_F @ 120Apk, T_J =125°C:** 0.74V
- **I_{FSM} @ t_p = 8.3ms half-sine:** 1000A



SMD-1

Product Validation

Adhered to JANS screening flow according to MIL-PRF-19500 for space applications

Description

The 120LQ100 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
120LQ100	SMD-1	COTS
120LQ100SCS	SMD-1	S-Level
120LQ100SCX	SMD-1	TX-Level
120LQ100SCV	SMD-1	TXV-Level

Table of contents

1 Absolute Maximum Ratings

Table 2 Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V_R	Max. DC reverse voltage	100	V
V_{RWM}	Max. Working peak reverse voltage	100	V
$I_{F(AV)}$	Max. average forward current - Refer to Fig. 5 [1]	120	A
I_{FSM}	Max. peak one cycle non–repetitive surge current [2]	1000	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 = 58°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 See Fig. 1[1]	0.68	V	@ 30A	T_J = -55°C [2]
		0.78	V	@ 60A	
		0.99	V	@ 120A	
		0.67	V	@ 30A	T_J = 25°C [2]
		0.75	V	@ 60A	
		0.94	V	@ 120A	
		0.56	V	@ 30A	T_J = 125°C [2]
		0.62	V	@ 60A	
		0.74	V	@ 120A	
I_R	Reverse Leakage Current (See Fig. 2[1]	60	µA	T_J = 25°C	V_R = rated V_R [2]
		15	mA	T_J = 100°C	
		60	mA	T_J = 125°C	
C_J	Junction Capacitance	2616	pF	V_R = 5V_{DC} (1MHz, 25°C) [2]	
L_S	Series Inductance	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	0.8	°C/W	DC operation See Fig. 4
	Die Size (Typical)	275 x 275	mils	

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

[2] Pins 2 and 3 externally tied together

3 Electrical Characteristics Curves

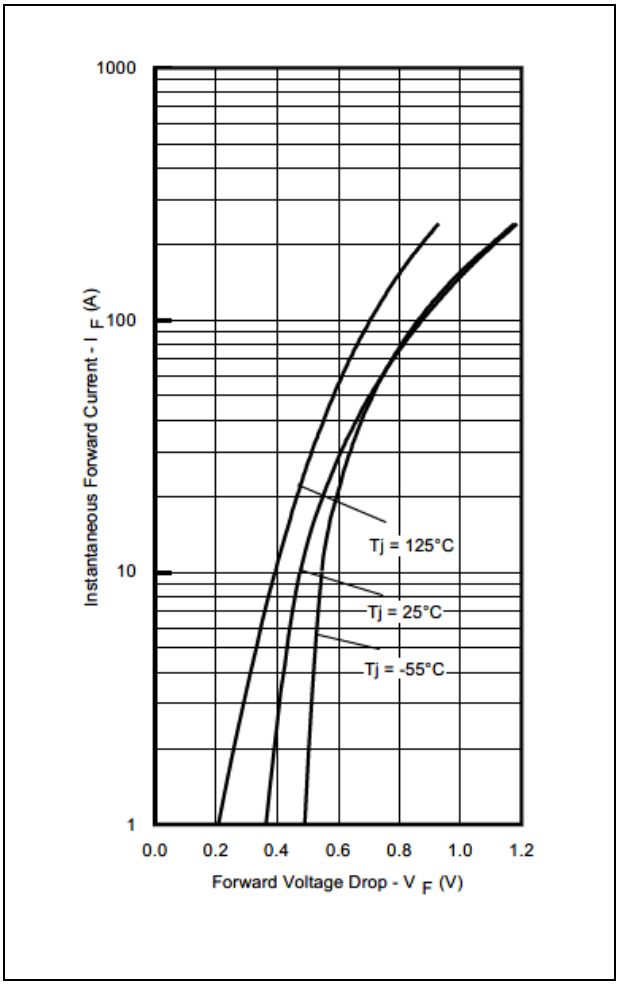


Figure 1 Maximum Forward Voltage Drop Characteristics

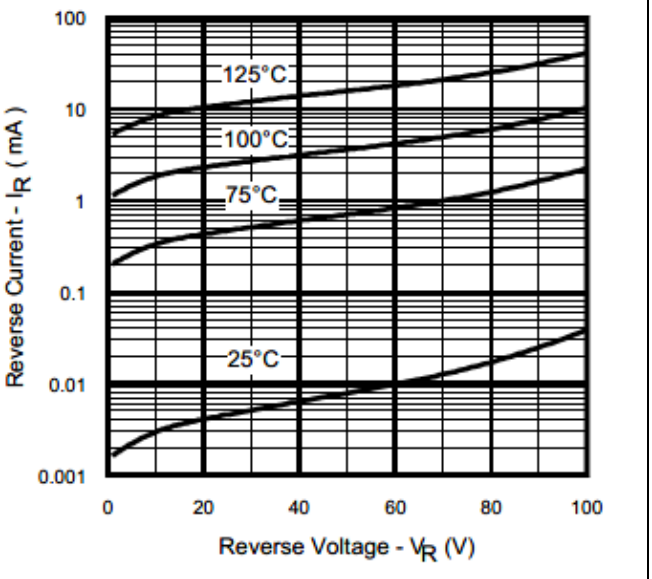


Figure 2 Typical Values of Reverse Current Vs. Reverse Voltage

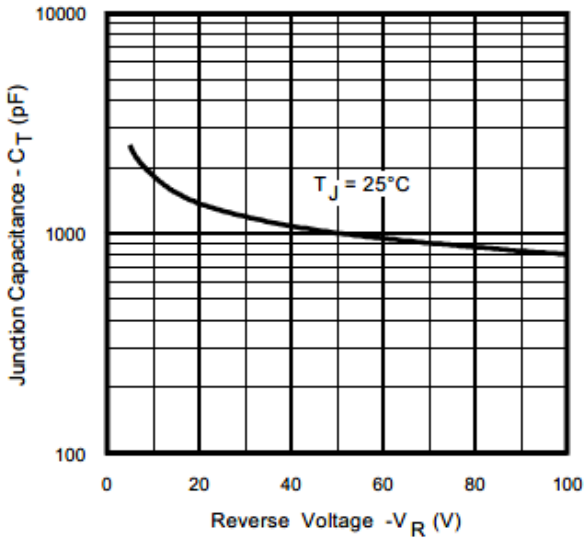


Figure 3 Typical Junction Capacitance Vs. Reverse Voltage

Electrical Characteristics Curves

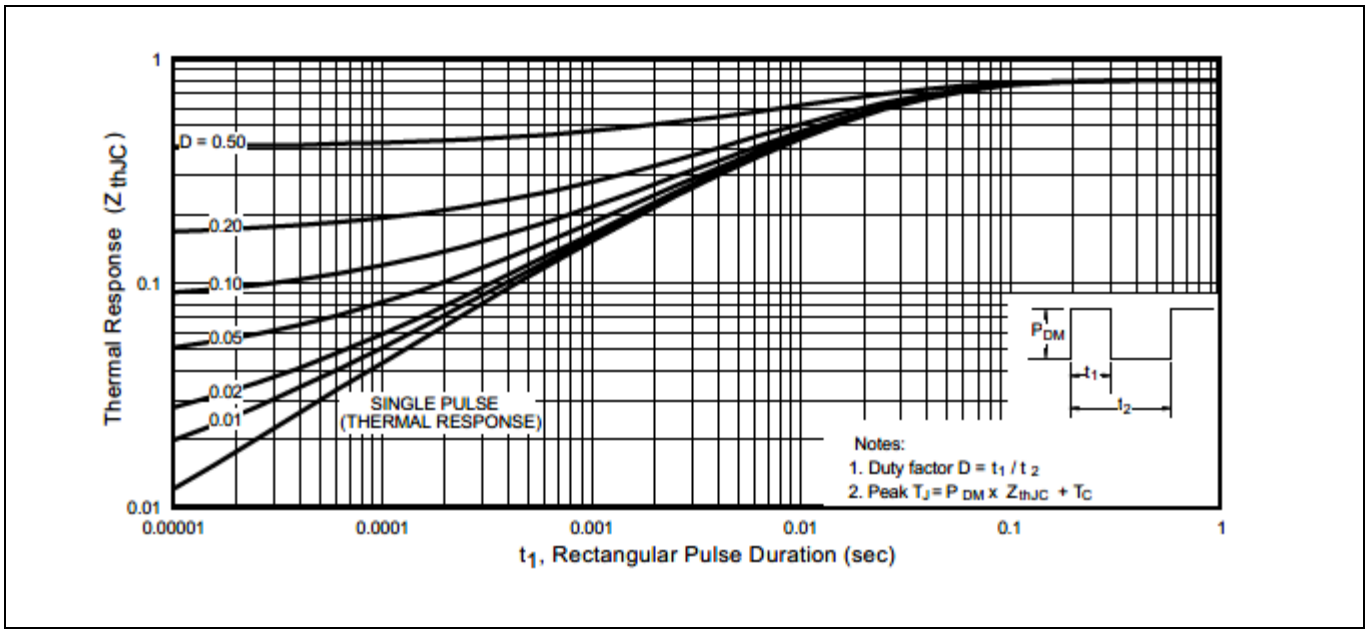


Figure 4 Maximum Thermal Impedance Z_{thJC} Characteristics

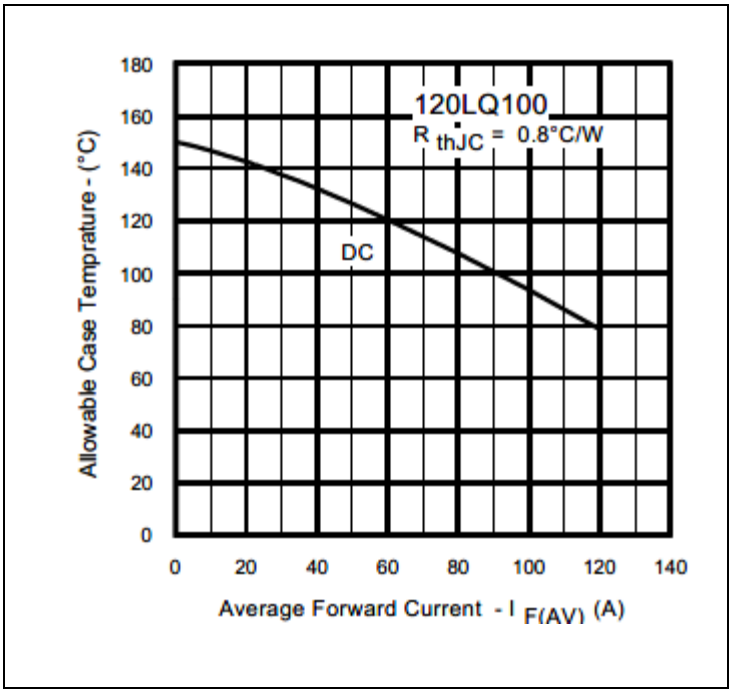
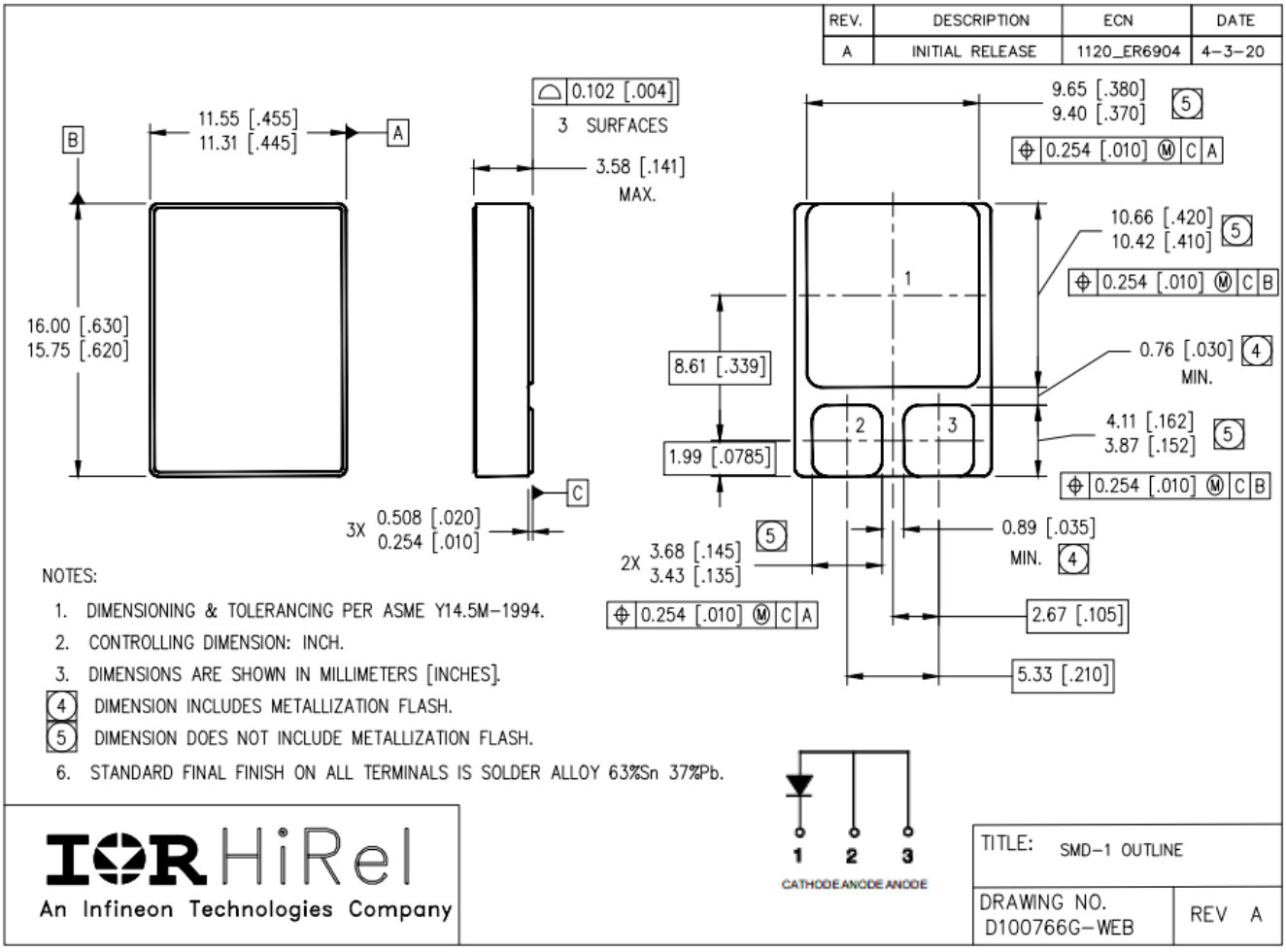


Figure 5 Maximum Allowable Case Temperature Vs. Average Forward Current

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
	03/15/2002	Final datasheet (PD-94396)
Rev A	08/01/2024	Updated per ECN-1120_10000
Rev B	12/16/2024	Updated per ECN-1120_10148

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Edition 2024-12-16

Published by

International Rectifier HiRel Products, Inc.

An Infineon Technologies company

El Segundo, California 90245 USA

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