

# 120LQ100

PD-94396A

## 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 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

### Product Summary

- $V_{RRM}$ : 100V
- $I_{F(AV)}$ : 120A
- $V_F @ 120A_{pk}, T_J = 125^\circ C$ : 0.74V
- $I_{FSM} @ t_p = 8.3ms \text{ half-sine}$ : 1000A

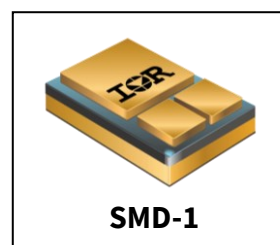


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**Absolute Maximum Ratings**
**1 Absolute Maximum Ratings**
**Table 2 Absolute Maximum Ratings**

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 <sup>1</sup>	120	A
$I_{FSM}$	Max. peak one cycle non-repetitive surge current <sup>2</sup>	1000	A
$T_J$ $T_{STG}$	Operating Junction and Storage Temperature Range	-55 to 150	°C
	Weight	2.6 (Typical)	g

<sup>1</sup> 50% duty cycle @  $T_c = 58^\circ\text{C}$ , square waveform

<sup>2</sup>  $t_p = 8.3$  ms half-sine

## Device Characteristics

## 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 <sup>1</sup>	0.64	V	@ 30A	$T_J = -55^\circ\text{C}^2$		
		0.74	V	@ 60A			
		0.92	V	@ 120A			
				0.67	V	@ 30A	$T_J = 25^\circ\text{C}^2$
				0.75	V	@ 60A	
				0.94	V	@ 120A	
				0.56	V	@ 30A	$T_J = 125^\circ\text{C}^2$
				0.62	V	@ 60A	
				0.74	V	@ 120A	
$I_R$	Reverse Leakage Current (See Fig. 2 <sup>1</sup> )	60	$\mu\text{A}$	$T_J = 25^\circ\text{C}$	$V_R = \text{rated } V_R^2$		
		15	mA	$T_J = 100^\circ\text{C}$			
		60	mA	$T_J = 125^\circ\text{C}$			
$C_J$	Junction Capacitance	2616	pF	$V_R = 5V_{DC}$ (1MHz, $25^\circ\text{C}$ ) <sup>2</sup>			
$L_S$	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	$^\circ\text{C}/\text{W}$	DC operation See Fig. 4
	Die Size (Typical)	275 x 275	mils	

<sup>1</sup> Pulse Width < 300 $\mu\text{s}$ , Duty Cycle < 2%<sup>2</sup> Pins 2 and 3 externally tied together

Electrical Characteristics Curves

3 Electrical Characteristics Curves

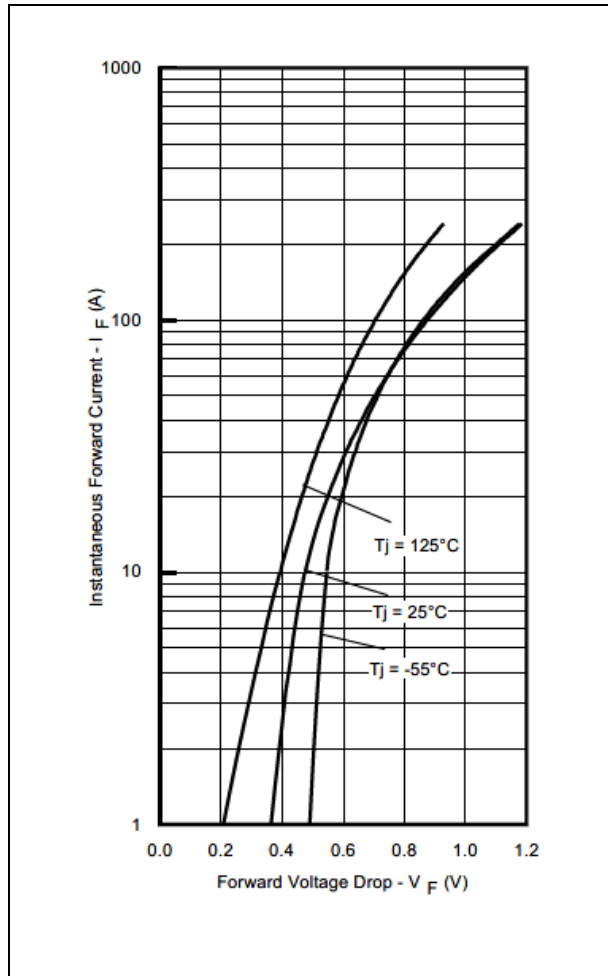


Figure 1 Maximum Forward Voltage Drop Characteristics

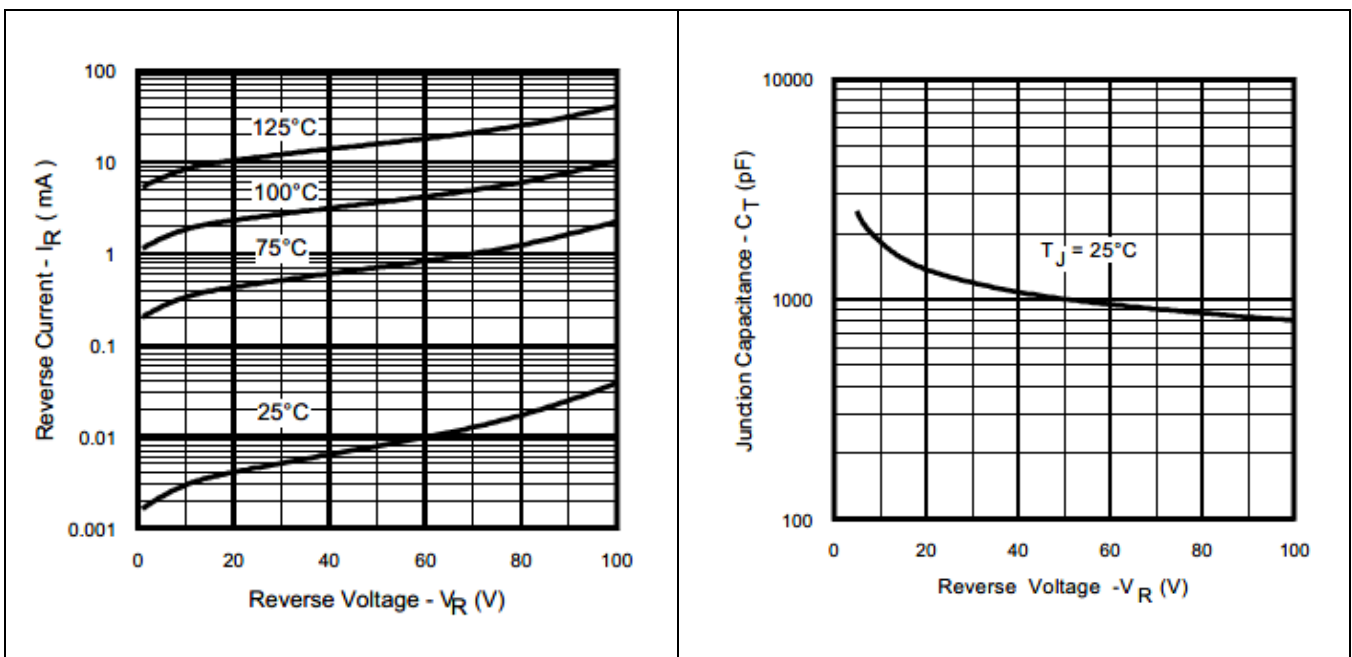


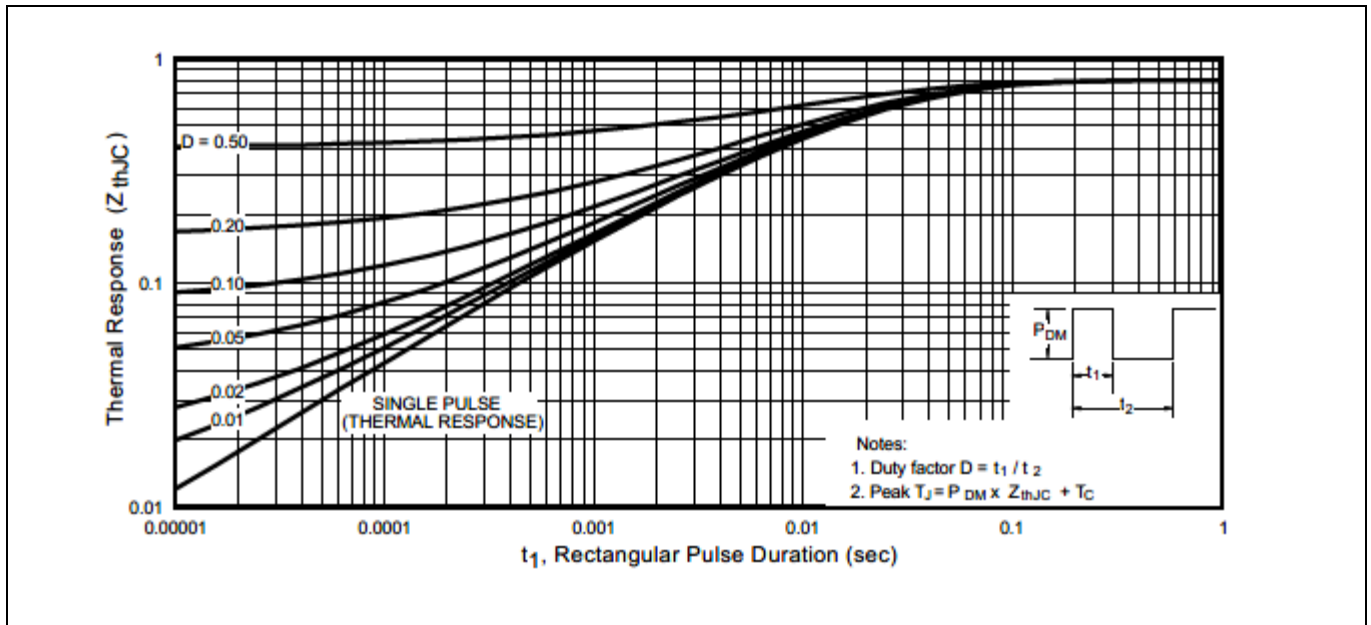
Figure 2 Typical Values of Reverse Current Vs. Reverse Voltage

Figure 3 Typical Junction Capacitance Vs. Reverse Voltage

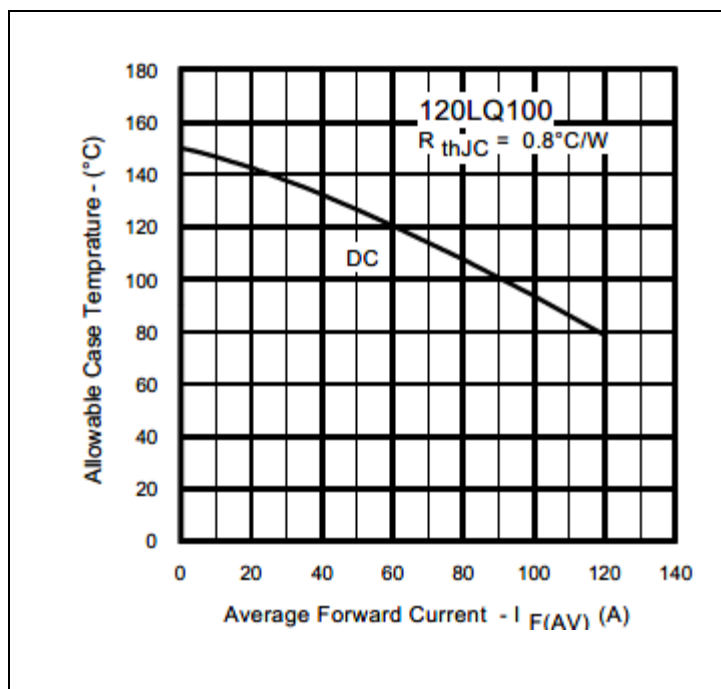
**120LQ100**

**Schottky Rectifier High Efficiency Series Surface Mount (SMD-1)**

**Electrical Characteristics Curves**



**Figure 4 Maximum Thermal Impedance  $Z_{thJC}$  Characteristics**



**Figure 5 Maximum Allowable Case Temperature Vs. Average Forward Current**

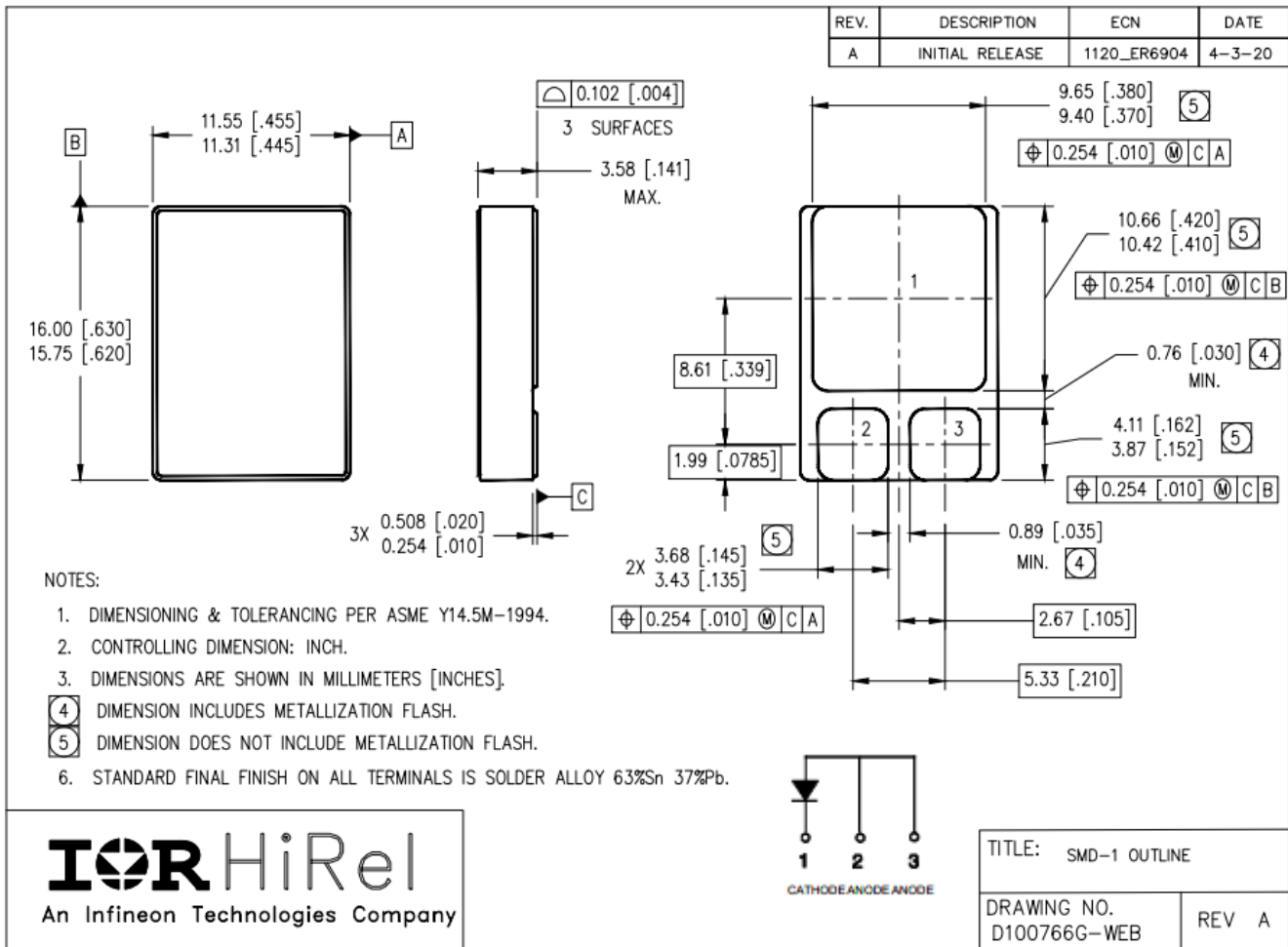
# 120LQ100

## Schottky Rectifier High Efficiency Series Surface Mount (SMD-1)

### Package Outline

## 4 Package Outline

Note: For the most updated package outline, please see the website: [SMD-1](#)



# 120LQ100

## Schottky Rectifier High Efficiency Series Surface Mount (SMD-1)

### Revision history

### 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



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