12CGQ150 (JANS1N7039CCT1)

PD-20359J

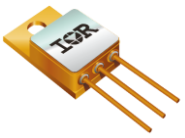
Schottky Rectifier High Efficiency Series
Thru-Hole (TO-254AA)
150V, 35A

Features

- Hermetically sealed
- Center Tap
- Low forward voltage drops
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Light weight
- ESD rating: Class 1B per MIL-STD-750, Method 1020

Product Summary

- **V_{RRM}:** 150V
- **$I_{F(AV)}$:** 35A
- **V_F @ 15Apk, T_J =125°C:** 0.88V
- **I_{FSM} @ t_p = 8.3ms half-sine:** 180A
- **REF:** MIL-PRF-19500/737



TO-254AA

Potential Applications

- DC-DC converter
- Protection circuits
- Motor drives

Product Validation

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

Description

The 12CGQ150 (1N7039CCT1) center tap Schottky rectifier has been expressly designed to meet the rigorous requirements of IR HiRel environments. It is packaged in the hermetic isolated TO-254AA 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
12CGQ150	TO-254AA	COTS
12CGQ150SCS	TO-254AA	S-Level
12CGQ150SCX	TO-254AA	TX-Level
12CGQ150SCV	TO-254AA	TXV-Level
JANS1N7039CCT1	TO-254AA	JANS
JANTX1N7039CCT1	TO-254AA	JANTX
JANTXV1N7039CCT1	TO-254AA	JANTXV

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1 Absolute Maximum Ratings

Table 2 Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V_R	Max. DC reverse voltage (Per Leg)	150	V
V_{RWM}	Max. Working peak reverse voltage (Per Leg)	150	V
$I_{F(AV)}$	Max. average forward current - Refer to Fig. 5 [1]	35	A
I_{FSM}	Max. peak one cycle non–repetitive surge current (Per Leg) [2]	180	A
T_J T_{STG}	Operating Junction and Storage Temperature Range	-65 to 150	°C
	Weight	9.3 (Typical)	g

[1] 50% duty cycle @ TC = 74°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]	1.35	V	@ 15A	T_J = -55°C
		1.13	V	@ 15A	T_J = 25°C
		1.60	V	@ 35A	
		0.86	V	@ 15A	T_J = 125°C
		1.20	V	@ 35A	
I_R	Reverse Leakage Current (Per Leg) See Fig. 2[1]	0.5	mA	T_J = 25°C	V_R = rated V_R
		15	mA	T_J = 125°C	
C_J	Junction Capacitance (Per Leg)	405	pF	V_R = 5V_{DC} (1MHz, 25°C)	
L_S	Series Inductance (Per Leg)	6.7 (Typical)	nH	Measured from anode lead to cathode lead 6mm (0.25 in) from package	

2.2 Thermal-Mechanical Specifications

Table 4 Thermal-Mechanical Specifications

Symbol	Parameter	Max.	Unit	Test Conditions
$R_{\theta JC}$	Thermal Resistance, Junction to Case (Per Leg)	1.9	°C/W	DC operation See Fig. 4
$R_{\theta JC}$	Thermal Resistance, Junction to Case (Per Package)	0.95	°C/W	DC operation
	Die Size (Typical)	125 x 125	mils	

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

3 Electrical Characteristics Curves

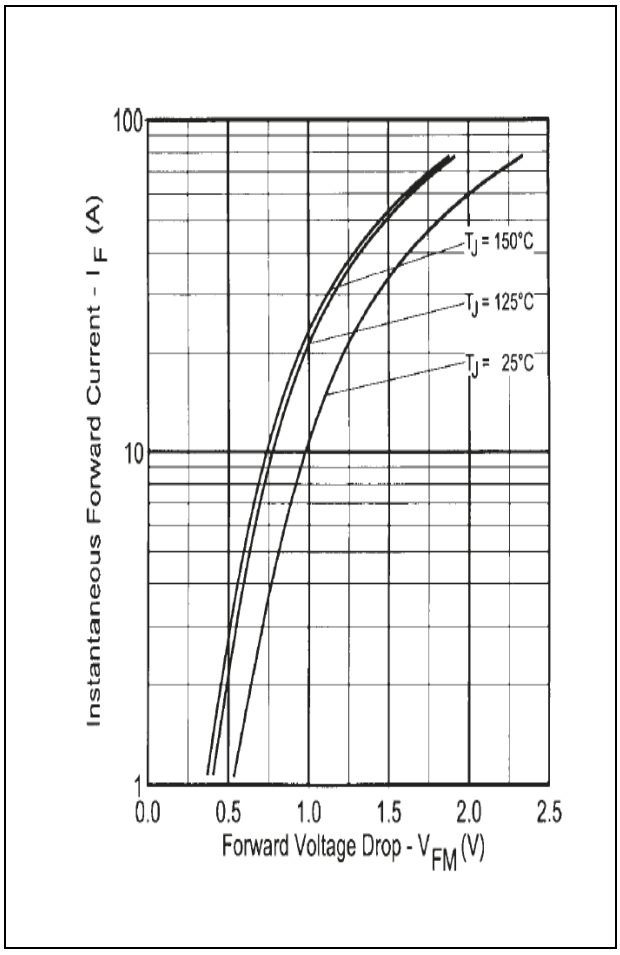


Figure 1 Maximum Forward Voltage Drop Characteristics (Per Leg)

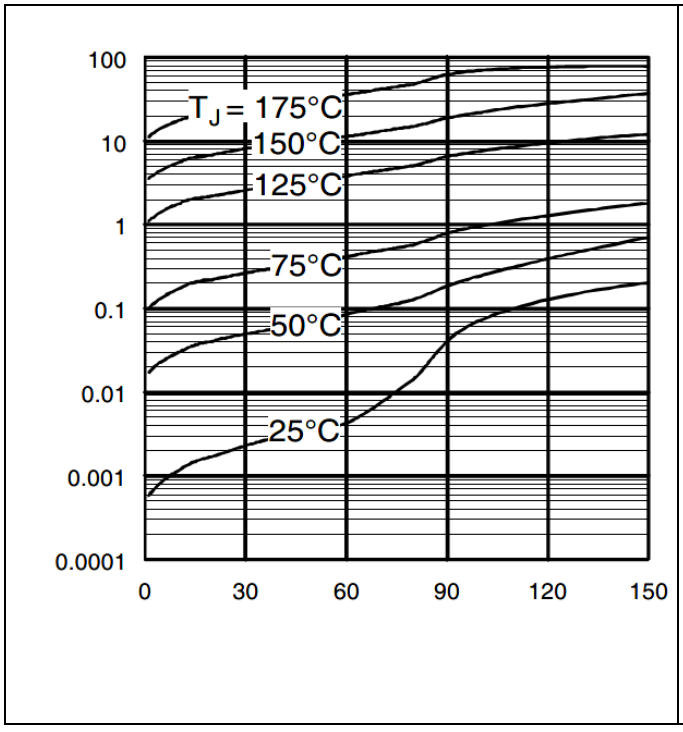


Figure 2 Typical Values of Reverse Current Vs. Reverse Voltage (Per Leg)

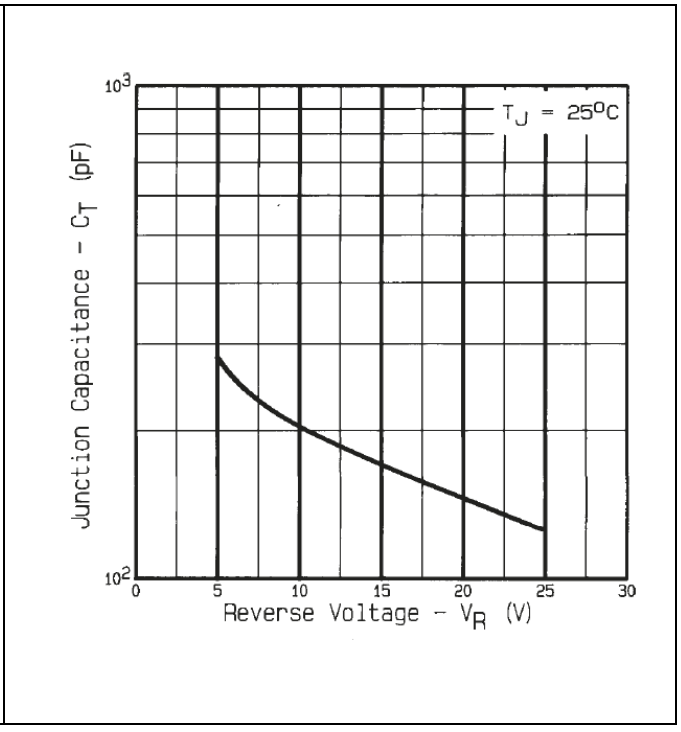


Figure 3 Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

Electrical Characteristics Curves

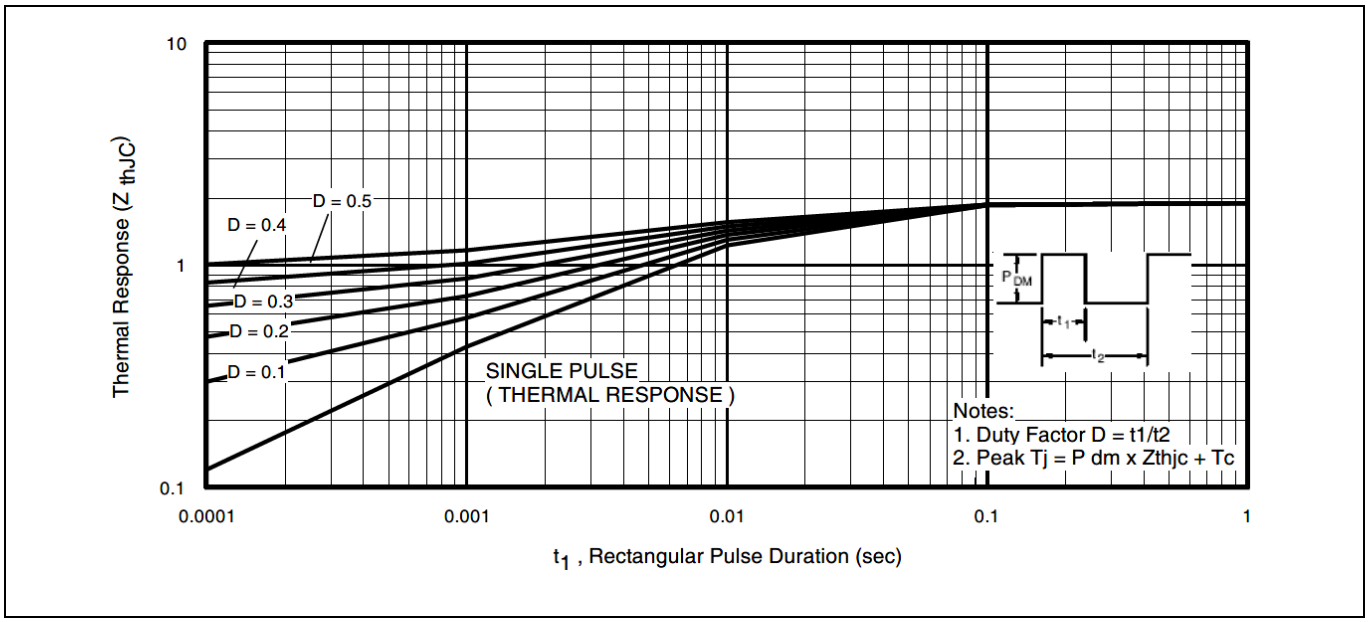


Figure 4 Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

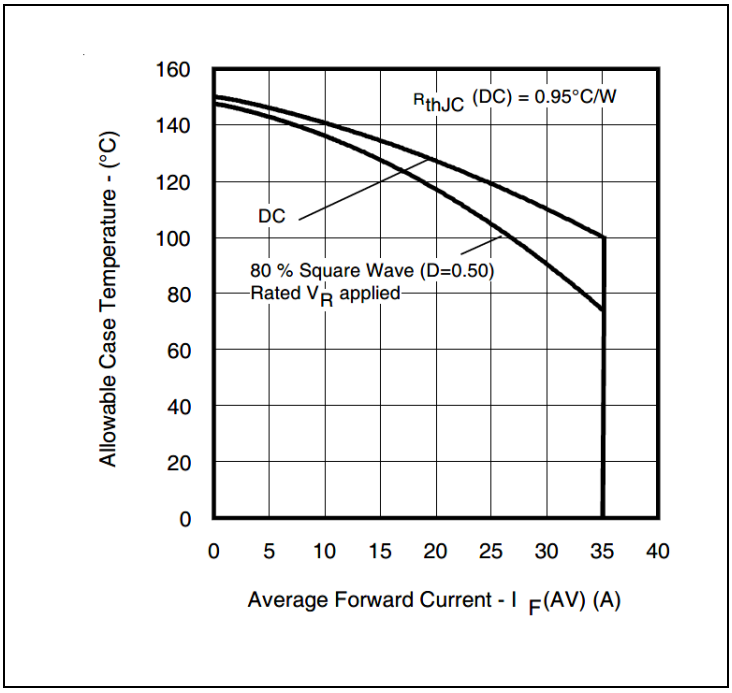
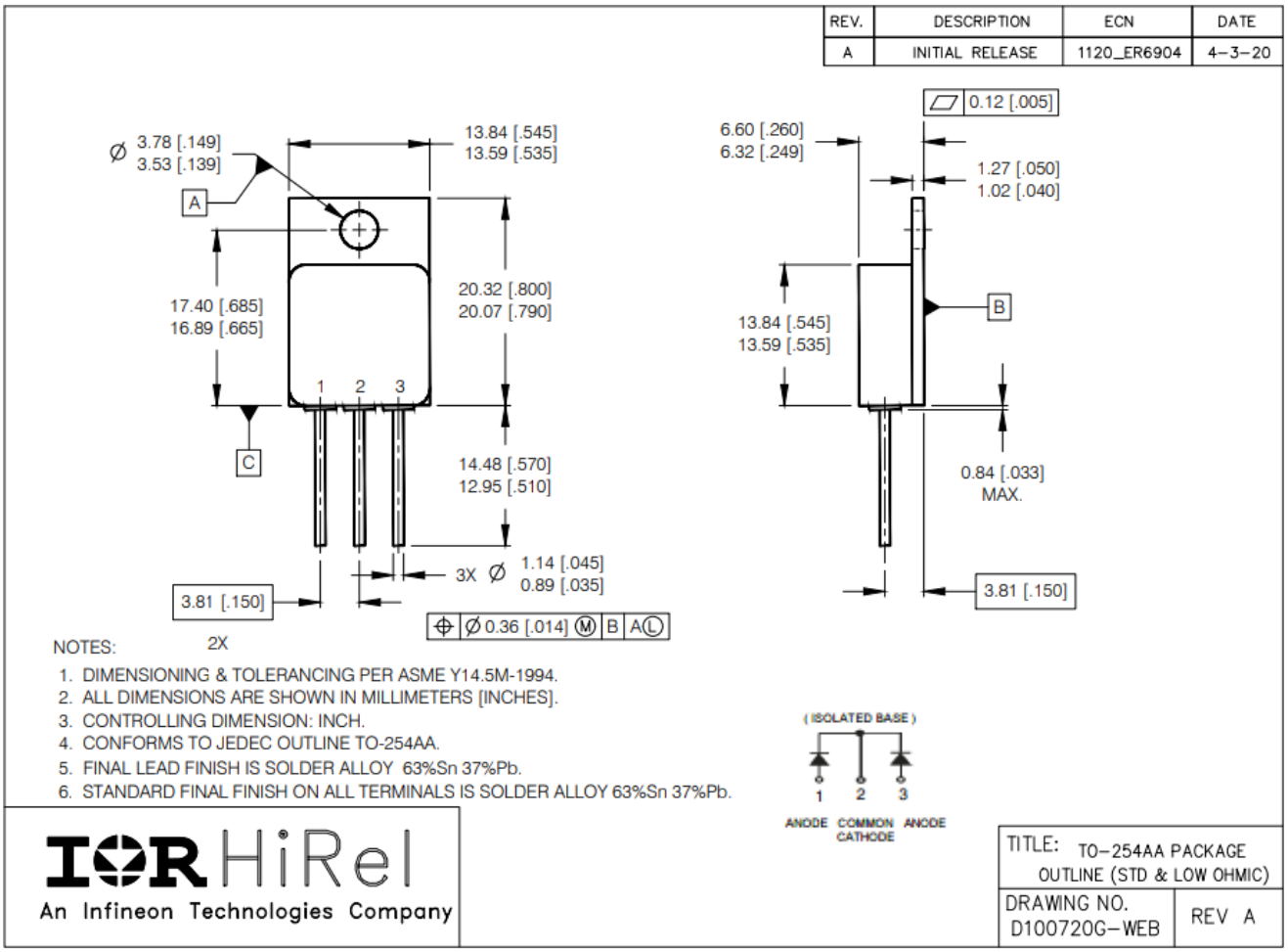


Figure 5 Maximum Allowable Case Temperature Vs. Average Forward Current (Per Leg)

4 Package Outline

Note: For the most updated package outline, please see the website: TO-254AA



Revision history

Document version	Date of release	Description of changes
	01/01/1997	Final datasheet (PD-20359B)
Rev C	02/26/1999	Updated VFM value
Rev D	02/25/2002	Updated new format
Rev E	02/20/2006	Updated per ECN-13821
Rev F	06/13/2008	Updated per ECN-16061
Rev G	06/26/2008	Updated schematic typo
Rev H	10/03/2012	Added ESD rating
Rev J	06/20/2024	Updated per ECN-1120-09965

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Edition 2024-06-20

Published by

International Rectifier HiRel Products, Inc.

An Infineon Technologies company

El Segundo, California 90245 USA

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Document reference

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