

35CGQ045

PD-94298C

Schottky Rectifier High Efficiency Series Thru-Hole (TO-254AA) 100V, 30A

Features

- Hermetically sealed
- Center tap
- Low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability

Product Summary

- **Part number:** 35CGQ045
- **$I_{F(AV)}$:** 35A
- **V_{RRM} (per leg):** 45V
- **V_F @ 35Apk, $T_J = 125^\circ\text{C}$ (per leg):** 0.94V
- **I_{FSM} @ $t_p = 8.3\text{ms}$ half-sine (per leg):** 200A

Potential Applications

- DC-DC converter
- Protection circuits
- Motor drives



Product Validation

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

Description

The 35CGQ045 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
35CGQ045	TO-254AA	COTS
35CGQ045SCV	TO-254AA	JANTXV-equivalent
35CGQ045SCX	TO-254AA	JANTX-equivalent
35CGQ045SCS	TO-254AA	S-level

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Absolute Maximum Ratings

1 Absolute Maximum Ratings

Table 2 Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V_R	DC reverse voltage (per leg)	45	V
V_{RWM}	Working peak reverse voltage (per leg)	45	V
$I_{F(AV)}$	Max. average forward current (per package) ¹ - Refer to Fig. 5	35	A
I_{FSM}	Max. peak one cycle non-repetitive surge current (per leg) ²	200	A
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to 150	°C
	Weight	9.3 (Typical)	g

¹ 50% duty cycle @ $T_c = 114^\circ\text{C}$, square waveform

² $t_p = 8.3$ 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 (Per Leg) See Fig. 1 ¹	0.71	V	@ 17.5A	$T_J = -55^\circ\text{C}$
		0.88	V	@ 35A	
		0.68	V	@ 17.5A	$T_J = 25^\circ\text{C}$
		0.92	V	@ 35A	
		0.65	V	@ 17.5A	$T_J = 125^\circ\text{C}$
		0.94	V	@ 35A	
I_R	Reverse Leakage Current (Per Leg) See Fig. 2 ³	0.1	mA	$T_J = 25^\circ\text{C}$	$V_R = \text{rated } V_R$
		7.0	mA	$T_J = 100^\circ\text{C}$	
		26	mA	$T_J = 125^\circ\text{C}$	
C_J	Junction Capacitance (Per Leg)	1320	pF	$V_R = 5V_{DC}$ (1MHz, 25°C)	
L_S	Series Inductance (Per Leg)	7.8 (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)	1.4	$^\circ\text{C}/\text{W}$	DC operation See Fig. 4
$R_{\theta JC}$	Thermal Resistance, Junction to Case (Per Package)	0.7	$^\circ\text{C}/\text{W}$	DC operation
	Die Size (Typical)	170 x 115	mils	

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

Electrical Characteristics Curves

3 Electrical Characteristics Curves

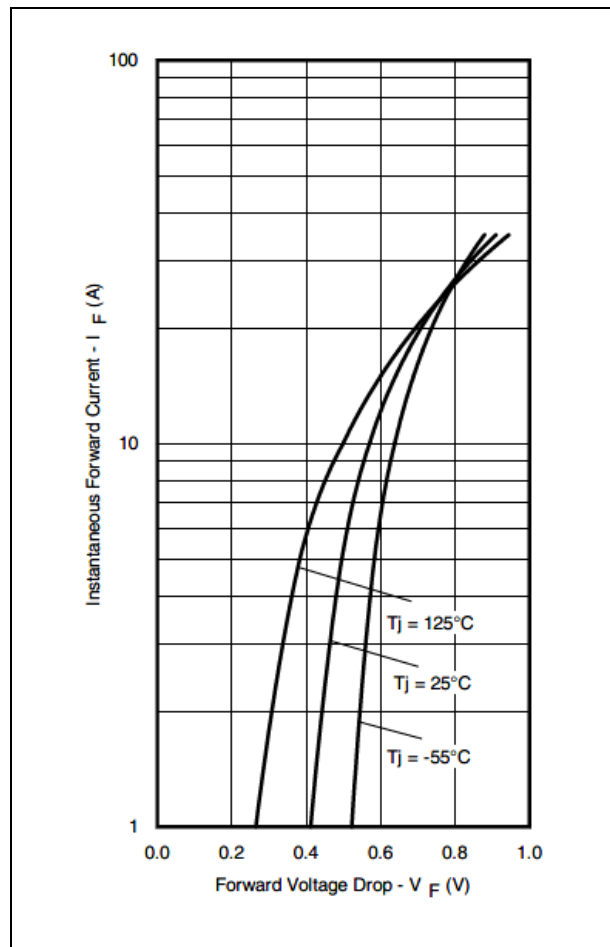


Figure 1 Maximum Forward Voltage Drop Characteristics (Per Leg)

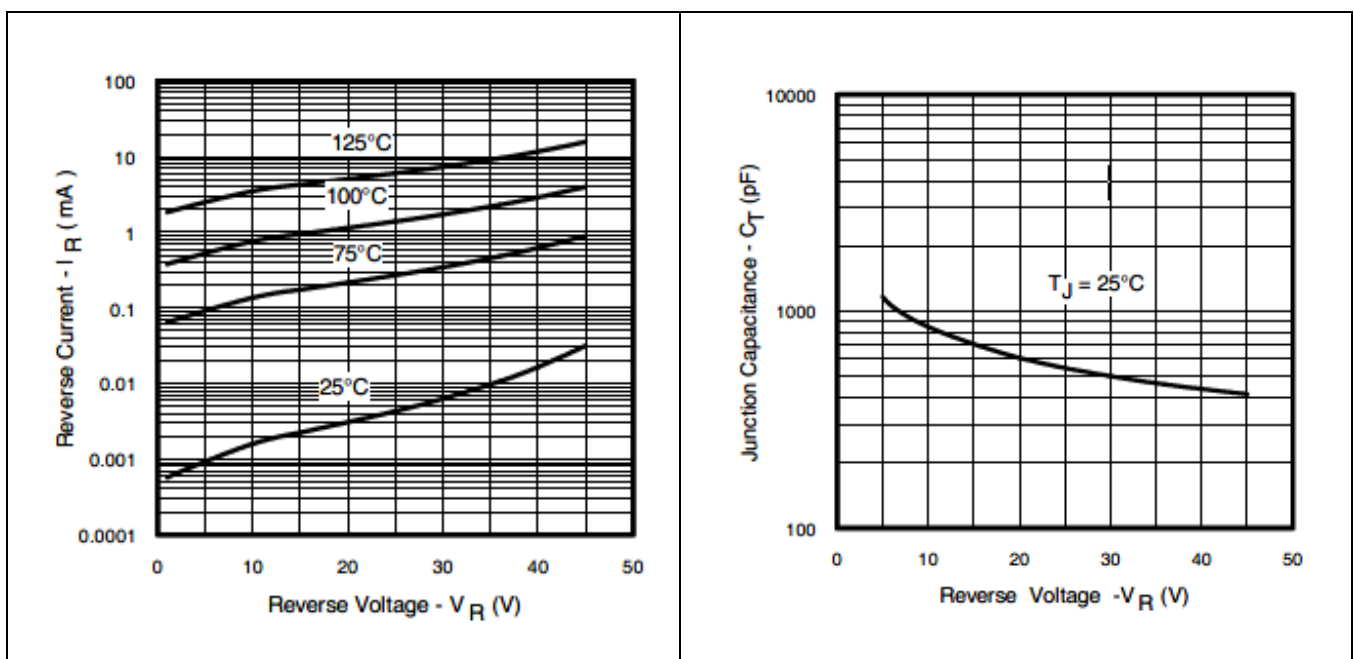


Figure 2 Typical Values of Reverse Current Vs. Reverse Voltage (Per Leg)

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

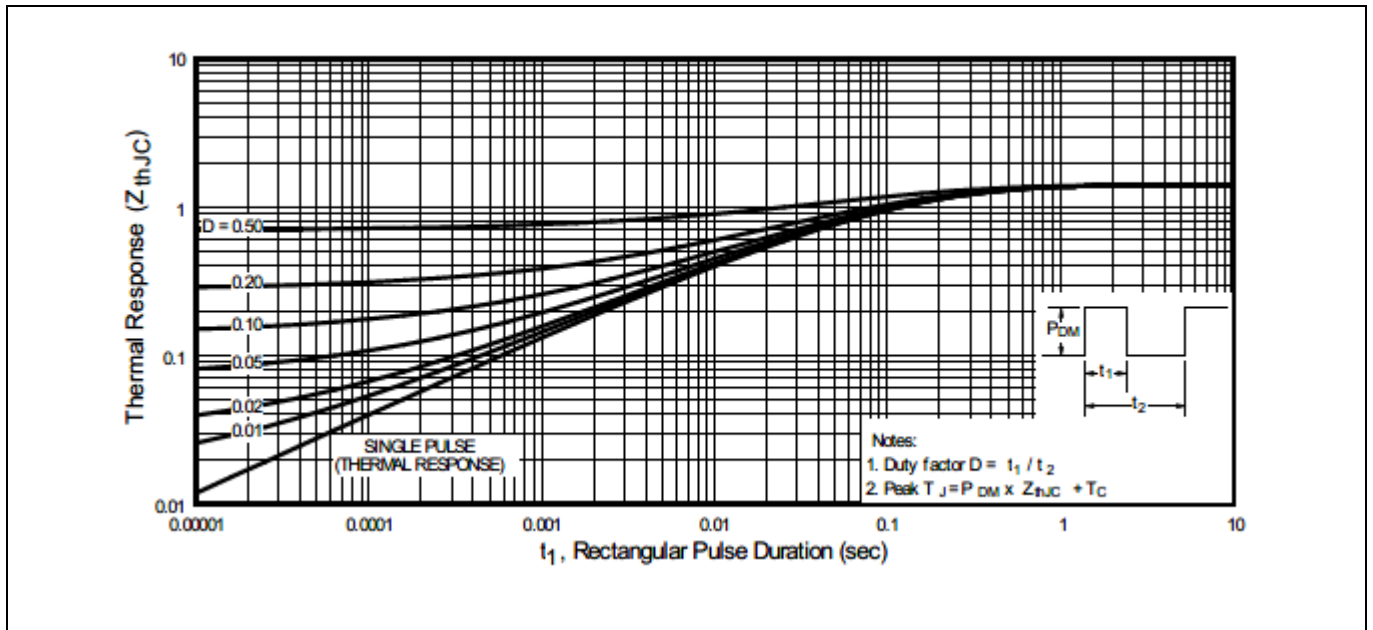


Figure 4 Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

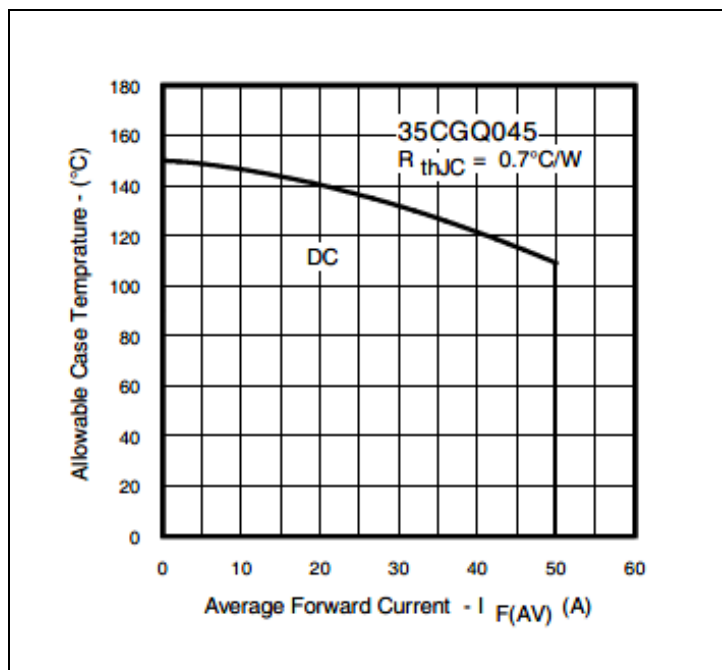
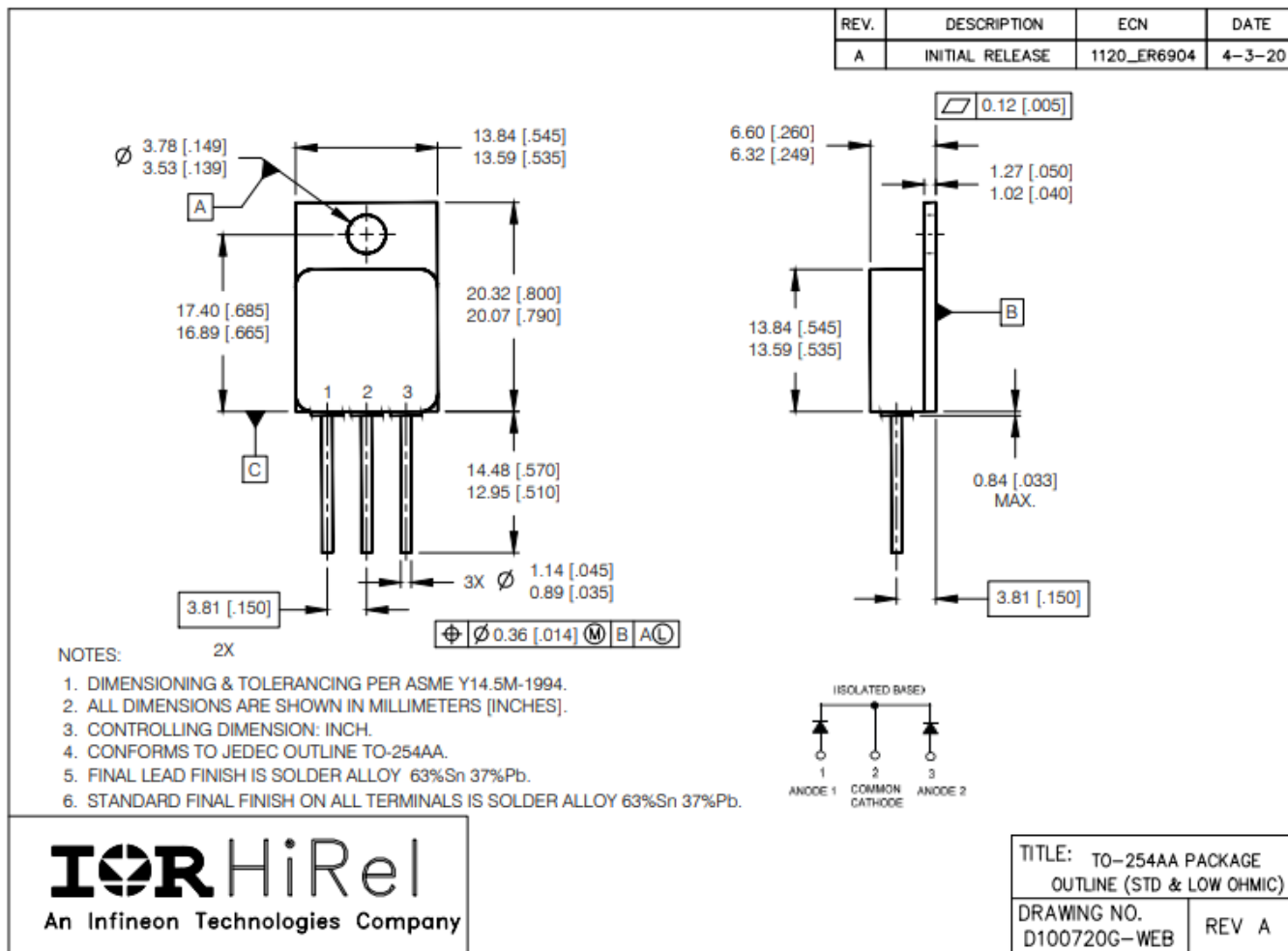


Figure 5 Maximum Allowable Case Temperature Vs. Average Forward Current (Per Package)

Package Outline

4 Package Outline

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



Revision history**Revision history**

Document version	Date of release	Description of changes
	09/07/2001	Final datasheet (PD-94298)
Rev A	10/04/2001	Updated Vf and Irm-page3
Rev B	09/21/2016	Updated per ECN-1120-04401
Rev C	05/23/2022	Updated per ECN-1120-09098

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