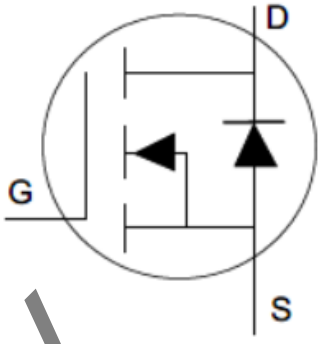
Technical documents

N-Channel Power Mosfet

RPD-98036

Features

- Improved gate, avalanche and dynamic dV/dt ruggedness
- Enhanced body diode dV/dt and di/dt capabilities
- $T_{junction}$ = -55°C to 175°C



Potential applications

- Switched mode power supply
- Motor drive
- Battery powered circuits

Product validation

JESD-22 Qualification

Description

IR HiRel technology provides high performance power MOSFETs. The combination of low $R_{DS(on)}$ and low gate charge reduces the power losses in switching applications such as DC-DC converters and motor controllers. This device has all the advantages of voltage control, fast switching and temperature stability of electrical parameters.

Ordering Information

Table 1 Ordering Options

Part Number	Package	Screening Level	Operating Temperature [1]
IRFC7446CDV	Die	Visual Inspection	-55°C to 175°C

Note (1): Characterized in a PG-TO252AA package

Table of contents

1 Electrical Characteristics

1.1 Absolute Maximum Ratings [1]

Symbol	Parameter	Max.	Units
I_D @ T_C=25°C	Continuous Drain Current, V_{GS}@ 10V	120	A
V_{GS}	Gate to Source Voltage	±20	V
T_J	Junction Temperature	-55 to +175	°C

1.2 Static Characteristics (tested on wafer)

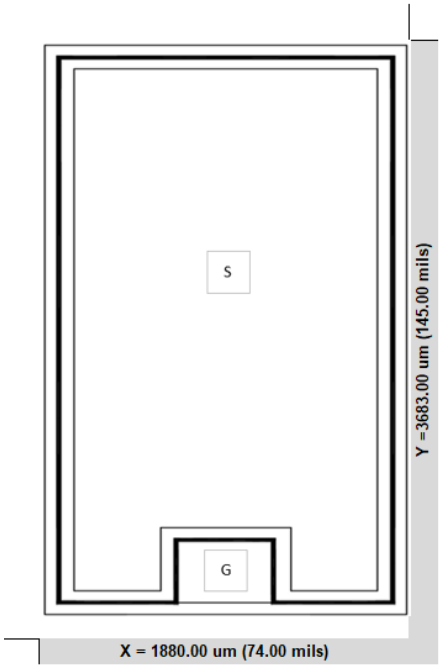
Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
$V_{(BR)DSS}$	Drain to Source Breakdown Voltage	40	-	-	V	V_{GS} = 0V, I_D = 250µA
$R_{DS(on)}$	Static Drain to Source On-Resistance	-	-	2.0	Ω	V_{GS} = 10V, I_D = 2.0A
$V_{GS(th)}$	Gate Threshold Voltage	2.3	-	3.6	V	V_{DS} = V_{GS}, I_D = 50mA
I_{DSS}	Drain to Source Leakage Current	-	-	10	µA	V_{DS} = 40V, V_{GS} = 0V
I_{GSS}	Gate to Source Leakage Current	-	-	100	nA	V_{GS} = 20V
		-	-	-100		V_{GS} = -20V
V_{SD}	Body Diode Forward Voltage	-	-	3.0	V	I_S = 2A, V_{GS} = 0V

[1] IRXFR7446TR characterization in TO-252AA

2 Mechanical Parameters

Die Dimension	3.68 x 1.88	mm^2
Total area	6.92	
Die thickness	195	µm
Wafer size	200	mm
Passivation front side	None	
Front metallization	AlSiCu	
Front metallization thickness	8.0	µm
Back metallization	Ti/NiV/Ag	
Back metallization thickness	0.55	µm
Die Attach	Conductive Epoxy or Solder	
Wire bonding	Aluminum	

3 Die Drawing



Key	Pad	Micrometers		mils		TCL
		X	Y	X	Y	
G	**Gate**	488.00	386.60	**19.21**	**15.22**	+/- 5um
S	**Source**	1648.90	3438.90	**64.92**	**135.39**	+/- 5um

	X	Y	X	Y	TCL
Die Size	**1880.0**	**3683.0**	74.0	145.0	+/- 200um

Notes:

1 ALL DIMENSIONS ARE SHOW IN MICROMETERS & MILS
2 CONTROLLING DIMENSION: MICROMETER
3 DIE GENERATION: G12.7
4 FRONT METAL - ALSICU/ALCU / 8.0um
5 BACK METAL - TI/NIV/AG/0.55um
6 DIE THICKNESS: 195 um
7 FOR SAWN DIE, OUTLINE DIMENSIONS (X & Y) WILL BE REDUCED BY 25um DUE TO SAW KERF

Revision history

Document version	Date of release	Description of changes
	03/17/2026	Die datasheet with RPD number (RPD-98036)

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