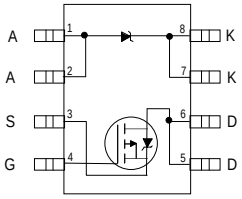
International
IOR Rectifier

PD - 93763

IRF7326D2

FETKY™ MOSFET / Schottky Diode

- Co-packaged HEXFET® Power MOSFET and Schottky Diode
- Ideal For Buck Regulator Applications
- P-Channel HEXFET
- Low V_F Schottky Rectifier
- Generation 5 Technology
- SO-8 Footprint

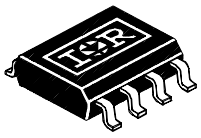


Top View

V_{DSS} = -30V

$R_{DS(on)}$ = 0.10Ω

Schottky Vf = 0.52V


SO-8

Description

The **FETKY** family of co-packaged MOSFETs and Schottky diodes offers the designer an innovative, board space saving solution for switching regulator and power management applications. Generation 5 HEXFET Power MOSFETs utilize advanced processing techniques to achieve extremely low on-resistance per silicon area. Combinining this technology with International Rectifier's low forward drop Schottky rectifiers results in an extremely efficient device suitable for use in a wide variety of portable electronics applications.

The SO-8 has been modified through a customized leadframe for enhanced thermal characteristics. The SO-8 package is designed for vapor phase, infrared or wave soldering techniques.

Absolute Maximum Ratings (T_A = 25°C unless otherwise noted)

Parameter		Maximum	Units
I_D @ T_A = 25°C	Continuous Drain Current ④	-3.6	A
I_D @ T_A = 70°C		-2.9	
I_{DM}	Pulsed Drain Current ①	-29	
P_D @T_A = 25°C	Power Dissipation ④	2.0	W
P_D @T_A = 70°C		1.3	
	Linear Derating Factor	16	mW/°C
V_{GS}	Gate-to-Source Voltage	± 20	V
dv/dt	Peak Diode Recovery dv/dt ②	-5.0	V/ns
T_J, T_{STG}	Junction and Storage Temperature Range	-55 to +150	°C

Thermal Resistance Ratings

Parameter		Maximum	Units
$R_{\theta JA}$	Junction-to-Ambient ④	62.5	°C/W

Notes:

① Repetitive rating; pulse width limited by maximum junction temperature (see figure 9)

② I_{SD} ≤ -1.8A, di/dt ≤ -90A/µs, V_{DD} ≤ $V_{(BR)DSS}$, T_J ≤ 150°C

③ Pulse width ≤ 300µs; duty cycle ≤ 2%

④ Surface mounted on FR-4 board, t ≤ 10sec.

MOSFET Electrical Characteristics @ T_J = 25°C (unless otherwise specified)

Parameter		Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	-30	—	—	V	V_{GS} = 0V, I_D = -250µA
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	0.073	0.10	Ω	V_{GS} = -10V, I_D = -1.8A ③
		—	0.13	0.16		V_{GS} = -4.5V, I_D = -1.5A ③
$V_{GS(th)}$	Gate Threshold Voltage	-1.0	—	—	V	V_{DS} = V_{GS}, I_D = -250µA
g_{fs}	Forward Transconductance	2.5	—	—	S	V_{DS} = -24V, I_D = -1.8A
I_{DSS}	Drain-to-Source Leakage Current	—	—	-1.0	µA	V_{DS} = -24V, V_{GS} = 0V
		—	—	-25		V_{DS} = -24V, V_{GS} = 0V, T_J = 55°C
I_{GSS}	Gate-to-Source Forward Leakage	—	—	100	nA	V_{GS} = -20V
	Gate-to-Source Reverse Leakage	—	—	-100		V_{GS} = 20V
Q_g	Total Gate Charge	—	—	25	nC	I_D = -1.8A
Q_{gs}	Gate-to-Source Charge	—	—	2.9		V_{DS} = -24V
Q_{gd}	Gate-to-Drain ("Miller") Charge	—	—	9.0		V_{GS} = -10V (see figure 6) ③
$t_{d(on)}$	Turn-On Delay Time	—	11	—	ns	V_{DD} = -15V
t_r	Rise Time	—	17	—		I_D = -1.8A
$t_{d(off)}$	Turn-Off Delay Time	—	25	—		R_G = 6.0Ω
t_f	Fall Time	—	18	—		R_D = 8.2Ω ③
C_{iss}	Input Capacitance	—	440	—	pF	V_{GS} = 0V
C_{oss}	Output Capacitance	—	200	—		V_{DS} = -25V
C_{rss}	Reverse Transfer Capacitance	—	93	—		f = 1.0MHz (see figure 5)

MOSFET Source-Drain Ratings and Characteristics

Parameter		Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	-2.5	A	
I_{SM}	Pulsed Source Current (Body Diode)	—	—	-29		
V_{SD}	Body Diode Forward Voltage	—	—	-1.0	V	T_J = 25°C, I_S = -1.8A, V_{GS} = 0V
t_{rr}	Reverse Recovery Time (Body Diode)	—	53	80	ns	T_J = 25°C, I_F = -1.8A
Q_{rr}	Reverse Recovery Charge	—	66	99	nC	di/dt = 100A/µs ③

Schottky Diode Maximum Ratings

	Parameter	Max.	Units	Conditions	
If (av)	Max. Average Forward Current	2.8	A	50% Duty Cycle. Rectangular Wave, Tc = 25°C	
		1.8		50% Duty Cycle. Rectangular Wave, Tc = 70°C	
I_{SM}	Max. peak one cycle Non-repetitive	200	A	5µs sine or 3µs Rect. pulse	Following any rated load condition & with Vrrm applied
	Surge current	20		10ms sine or 6ms Rect. pulse	

Schottky Diode Electrical Specifications

	Parameter	Max.	Units	Conditions	
Vfm	Max. Forward voltage drop	0.57	V	If = 3.0, Tj = 25°C	
		0.77		If = 6.0, Tj = 25°C	
		0.52		If = 3.0, Tj = 125°C	
		0.79		If = 6.0, Tj = 125°C .	
Irm	Max. Reverse Leakage current	0.30	mA	Vr = 30V	Tj = 25°C
		37			Tj = 125°C
Ct	Max. Junction Capacitance	310	pF	Vr = 5Vdc (100kHz to 1 MHz) 25°C	
dv/dt	Max. Voltage Rate of Charge	4900	V/µs	Rated Vr	

(HEXFET is the reg. TM for International Rectifier Power MOSFET's)

Power Mosfet Characteristics

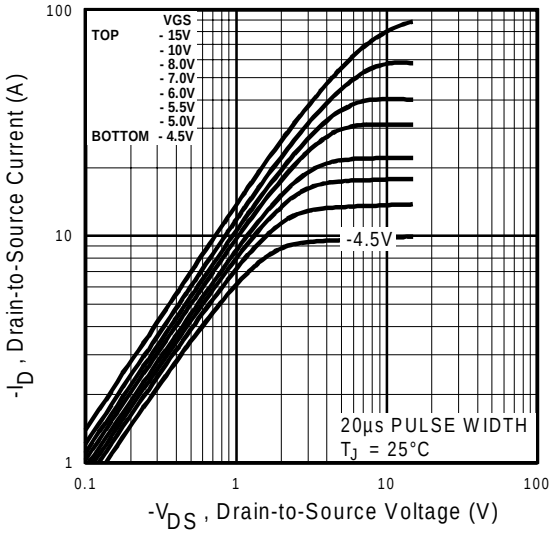


Fig 1. Typical Output Characteristics

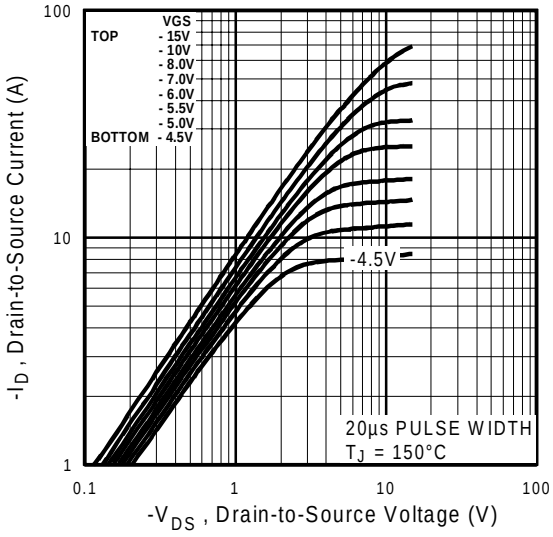


Fig 2. Typical Output Characteristics

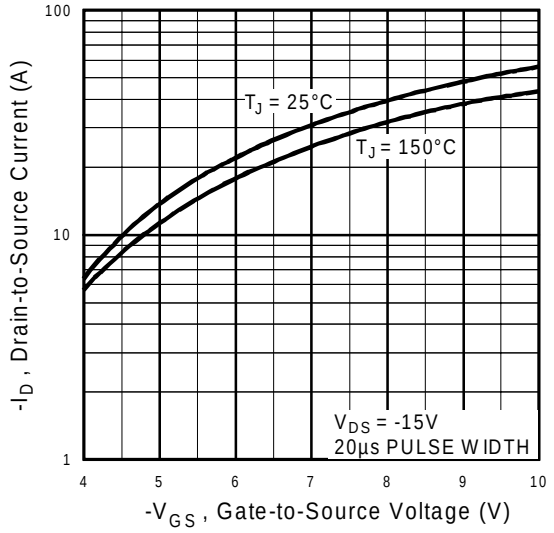


Fig 3. Typical Transfer Characteristics

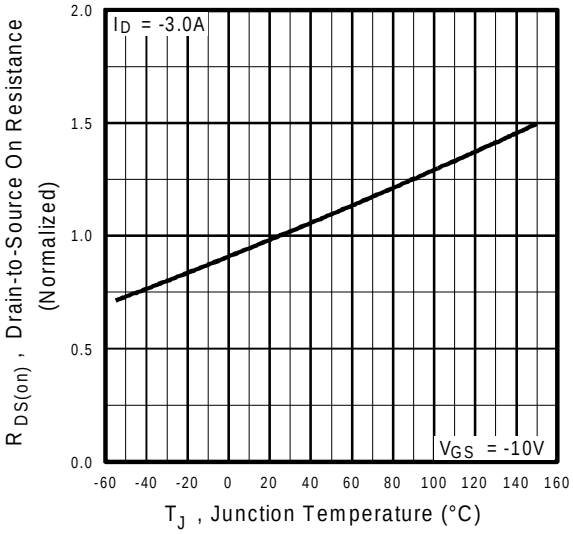


Fig 4. Normalized On-Resistance Vs. Temperature

Power Mosfet Characteristics

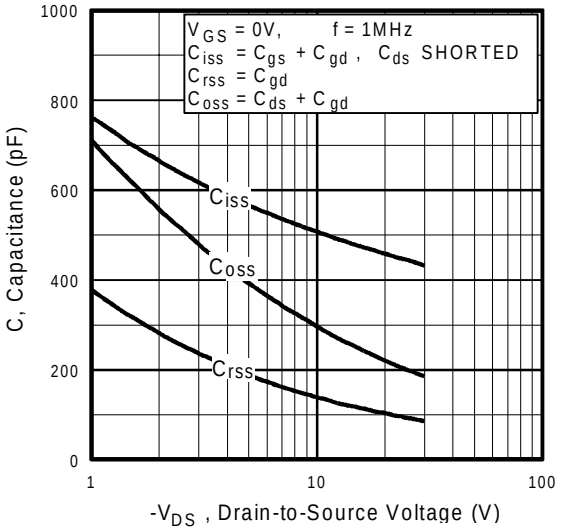


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

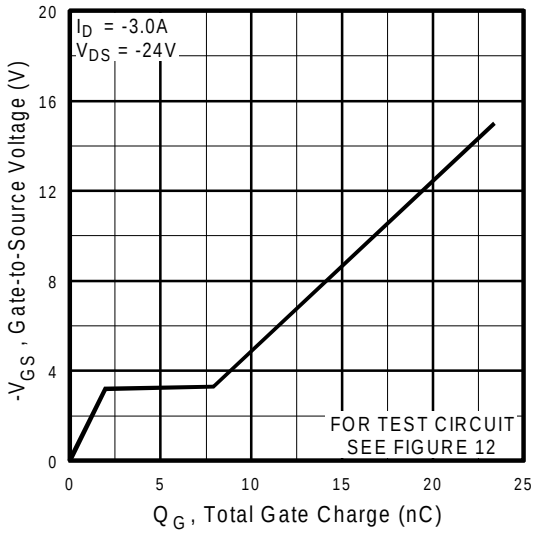


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

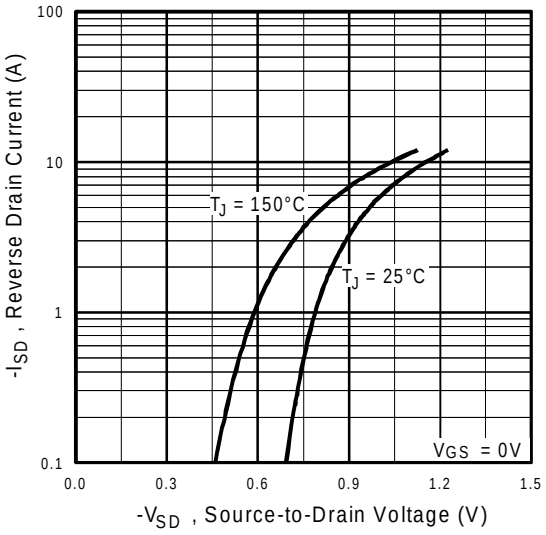


Fig 7. Typical Source-Drain Diode Forward Voltage

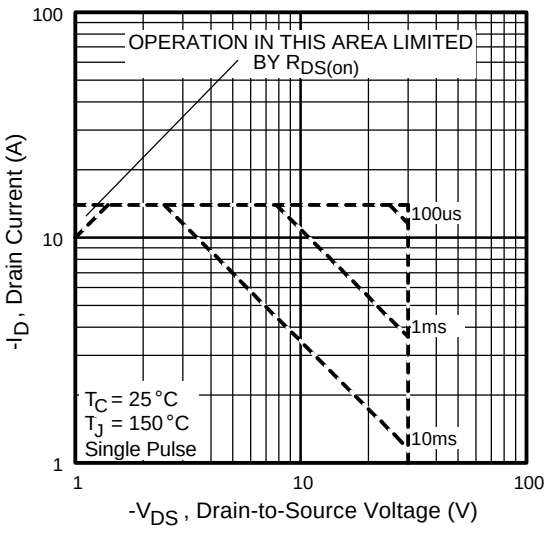


Fig 8. Maximum Safe Operating Area

Power Mosfet Characteristics

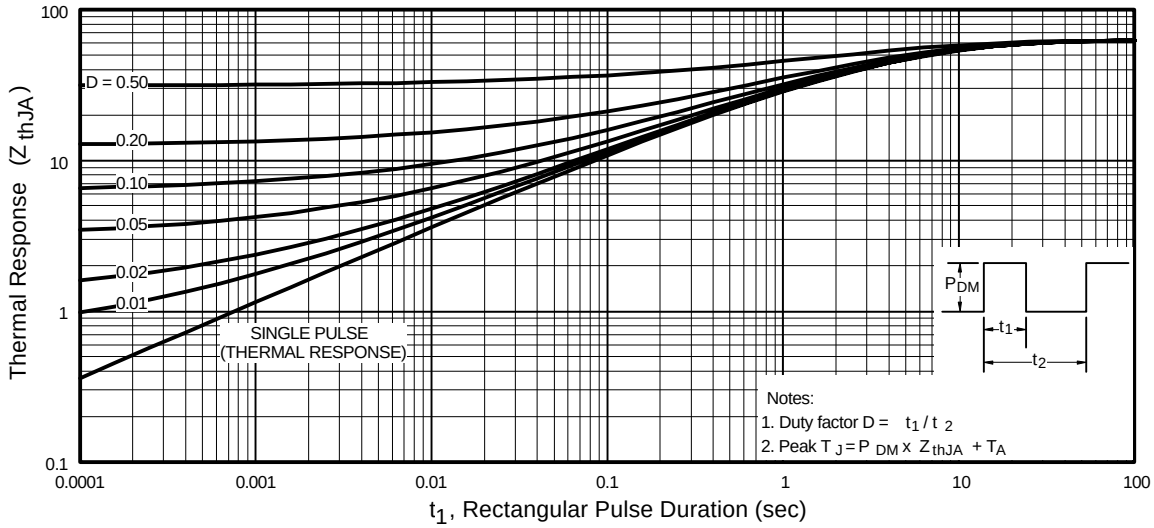


Fig 9. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

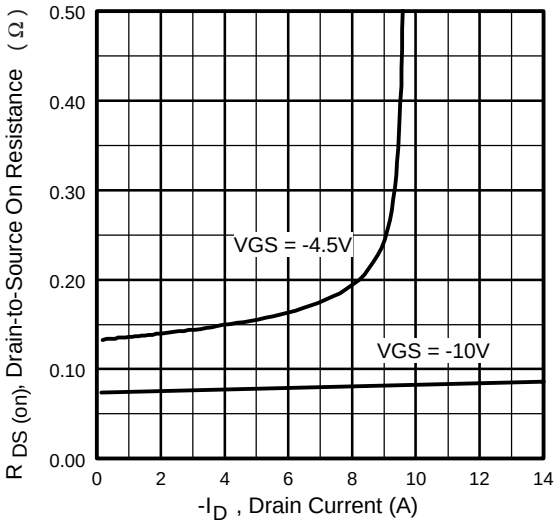


Fig 10. Typical On-Resistance Vs. Drain Current

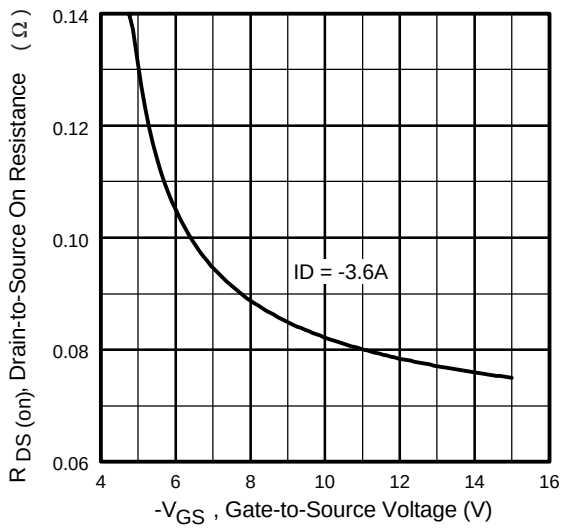


Fig 11. Typical On-Resistance Vs. Gate Voltage

Schottky Diode Characteristics

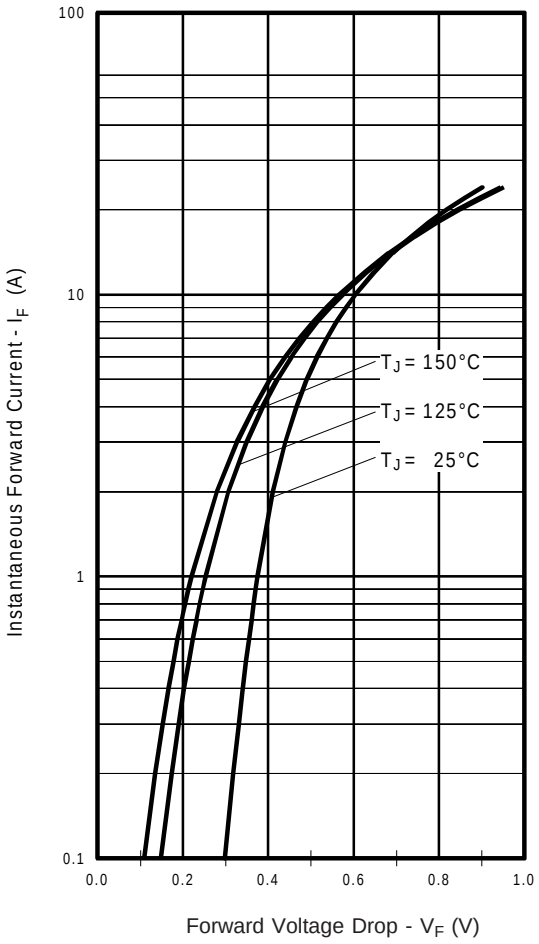


Fig. 12 - Typical Forward Voltage Drop Characteristics

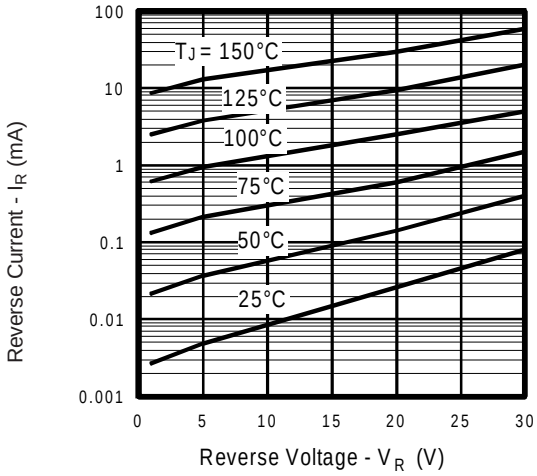


Fig. 13 - Typical Values of Reverse Current Vs. Reverse Voltage

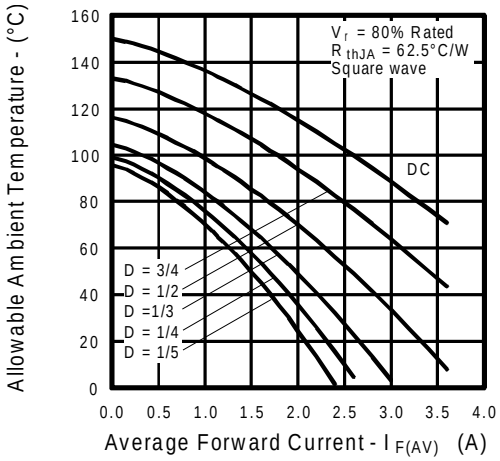
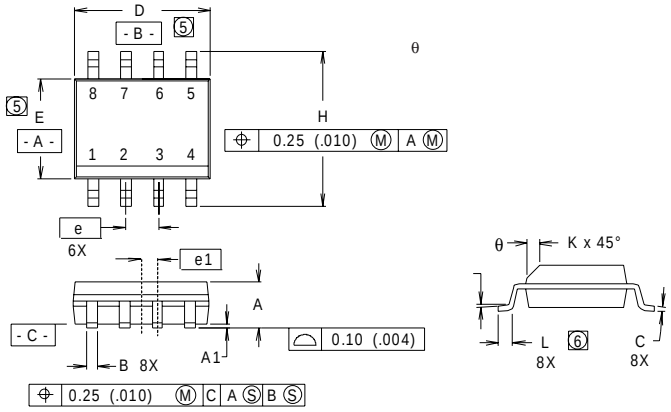


Fig.14 - Maximum Allowable Ambient Temp. Vs. Forward Current

SO-8 Package Details

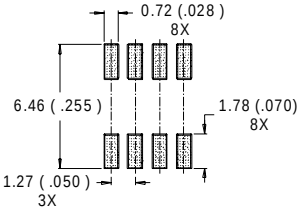


DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
B	.014	.018	0.36	0.46
C	.0075	.0098	0.19	0.25
D	.189	.196	4.80	4.98
E	.150	.157	3.81	3.99
e	.050 BASIC		1.27 BASIC	
e1	.025 BASIC		0.635 BASIC	
H	.2284	.2440	5.80	6.20
K	.011	.019	0.28	0.48
L	0.16	.050	0.41	1.27
θ	0°	8°	0°	8°

NOTES:

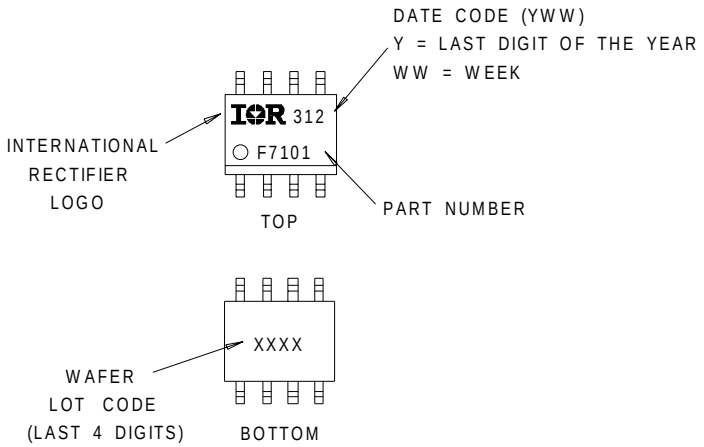
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1982.
2. CONTROLLING DIMENSION : INCH.
3. DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
5. DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS
   MOLD PROTRUSIONS NOT TO EXCEED 0.25 (.006).
6. DIMENSIONS IS THE LENGTH OF LEAD FOR SOLDERING TO A SUBSTRATE..

RECOMMENDED FOOTPRINT

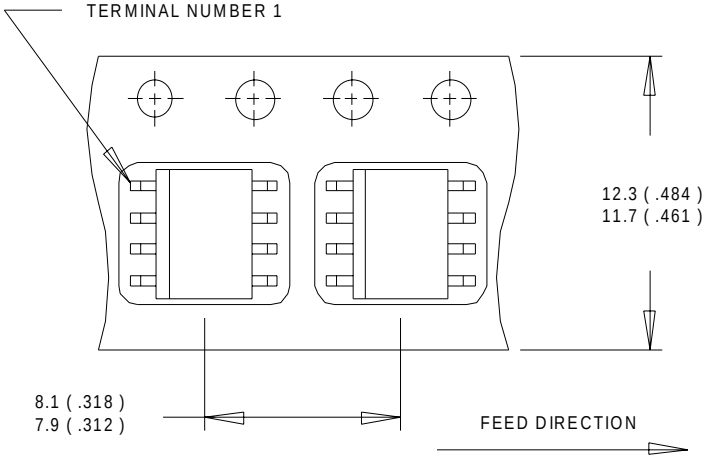


Part Marking

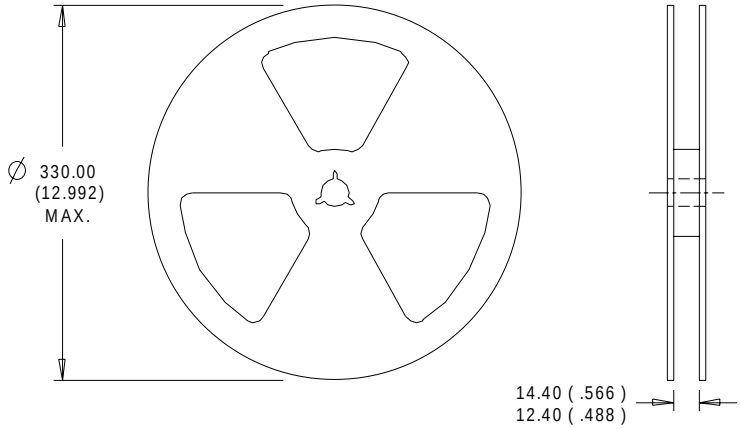
(IRF7101 example)



Tape and Reel



NOTES:
1. CONTROLLING DIMENSION : MILLIMETER.
2. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS(INCHES).
3. OUTLINE CONFORMS TO EIA-481 & EIA-541.



NOTES :
1. CONTROLLING DIMENSION : MILLIMETER.
2. OUTLINE CONFORMS TO EIA-481 & EIA-541.

International
IOR Rectifier

WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, Tel: (310) 322 3331
IR GREAT BRITAIN: Hurst Green, Oxted, Surrey RH8 9BB, UK Tel: ++ 44 1883 732020
IR CANADA: 15 Lincoln Court, Brampton, Ontario L6T3Z2, Tel: (905) 453 2200
IR GERMANY: Saalburgstrasse 157, 61350 Bad Homburg Tel: ++ 49 6172 96590
IR ITALY: Via Liguria 49, 10071 Borgaro, Torino Tel: ++ 39 11 451 0111
IR FAR EAST: K&H Bldg., 2F, 30-4 Nishi-Ikebukuro 3-Chome, Toshima-Ku, Tokyo Japan 171 Tel: 81 3 3983 0086
IR SOUTHEAST ASIA: 1 Kim Seng Promenade, Great World City West Tower, 13-11, Singapore 237994 Tel: ++ 65 838 4630
IR TAIWAN:16 Fl. Suite D. 207, Sec. 2, Tun Haw South Road, Taipei, 10673, Taiwan Tel: 886-2-2377-9936
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