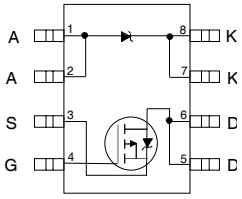
PD - 95298

International
IOR Rectifier

IRF7322D1PbF

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
- Lead-Free

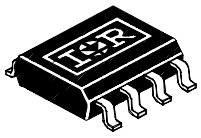


Top View

V_{DSS} = -20V

$R_{DS(on)}$ = 0.058Ω

Schottky Vf = 0.39V


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, V_{GS} @ -4.5V	-5.3	A
I_D @ T_A = 70°C		-4.3	
I_{DM}	Pulsed Drain Current ①	-43	
P_D @T_A = 25°C	Power Dissipation	2.0	W
P_D @T_A = 70°C		1.3	
	Linear Derating Factor	16	mW/°C
V_{GS}	Gate-to-Source Voltage	± 12	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} ≤ -2.9A, di/dt ≤ -77A/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	-20	—	—	V	V_{GS} = 0V, I_D = -250µA
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	0.049	0.062	Ω	V_{GS} = -4.5V, I_D = -2.9A ③
		—	0.082	0.098		V_{GS} = -2.7V, I_D = -1.5A ③
$V_{GS(th)}$	Gate Threshold Voltage	-0.70	—	—	V	V_{DS} = V_{GS}, I_D = -250µA
g_{fs}	Forward Transconductance	—	5.9	—	S	V_{DS} = -10V, I_D = -1.5A
I_{DSS}	Drain-to-Source Leakage Current	—	—	-1.0	µA	V_{DS} = -16V, V_{GS} = 0V
		—	—	-25		V_{DS} = -16V, V_{GS} = 0V, T_J = 55°C
I_{GSS}	Gate-to-Source Forward Leakage	—	—	100	nA	V_{GS} = -12.0V
	Gate-to-Source Reverse Leakage	—	—	-100		V_{GS} = 12.0V
Q_g	Total Gate Charge	—	19	29	nC	I_D = -2.9A
Q_{gs}	Gate-to-Source Charge	—	4.0	6.1		V_{DS} = -16V
Q_{gd}	Gate-to-Drain ("Miller") Charge	—	7.7	12		V_{GS} = -4.5V (see figure 6) ③
$t_{d(on)}$	Turn-On Delay Time	—	15	22	ns	V_{DD} = -10V
t_r	Rise Time	—	40	60		I_D = -2.9A
$t_{d(off)}$	Turn-Off Delay Time	—	42	63		R_G = 6.0Ω
t_f	Fall Time	—	49	73		R_D = 3.4Ω ③
C_{iss}	Input Capacitance	—	780	—	pF	V_{GS} = 0V
C_{oss}	Output Capacitance	—	470	—		V_{DS} = -15V
C_{rss}	Reverse Transfer Capacitance	—	240	—		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)	—	—	-21		
V_{SD}	Body Diode Forward Voltage	—	—	-1.2	V	T_J = 25°C, I_S = -2.9A, V_{GS} = 0V
t_{rr}	Reverse Recovery Time (Body Diode)	—	47	71	ns	T_J = 25°C, I_F = -2.9A
Q_{rr}	Reverse Recovery Charge	—	49	73	nC	di/dt = 100A/µs ③

Schottky Diode Maximum Ratings

	Parameter	Max.	Units.	Conditions	
$I_{F(av)}$	Max. Average Forward Current	2.7	A	50% Duty Cycle. Rectangular Wave, T_A = 25°C	
		2		See Fig. 14	T_A = 70°C
I_{SM}	Max. peak one cycle Non-repetitive	120		5µs sine or 3µs Rect. pulse	Following any rated
	Surge current	11	A	10ms sine or 6ms Rect. pulse	load condition & with V_{RRM} applied

Schottky Diode Electrical Specifications

	Parameter	Max.	Units	Conditions	
V_{FM}	Max. Forward voltage drop	0.50	V	I_F = 1.0A, T_J = 25°C	
		0.62		I_F = 2.0A, T_J = 25°C	
		0.39		I_F = 1.0A, T_J = 125°C	
		0.57		I_F = 2.0A, T_J = 125°C .	
I_{RM}	Max. Reverse Leakage current	0.02	mA	V_R = 20V	T_J = 25°C
		8			T_J = 125°C
C_t	Max. Junction Capacitance	92	pF	V_R = 5Vdc (100kHz to 1 MHz) 25°C	
dv/dt	Max. Voltage Rate of Charge	3600	V/ µs	Rated V_R	

Power Mosfet Characteristics

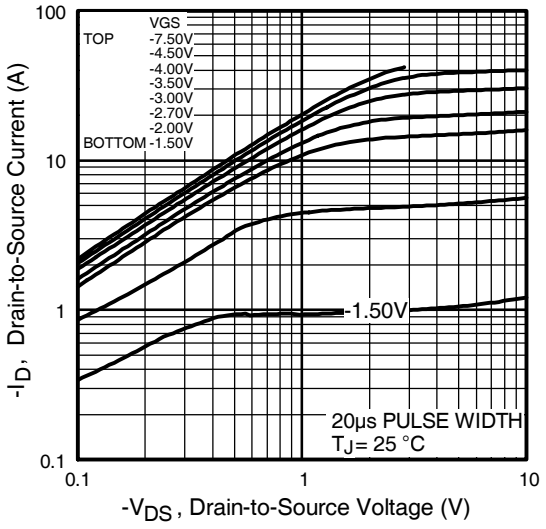


Fig 1. Typical Output Characteristics

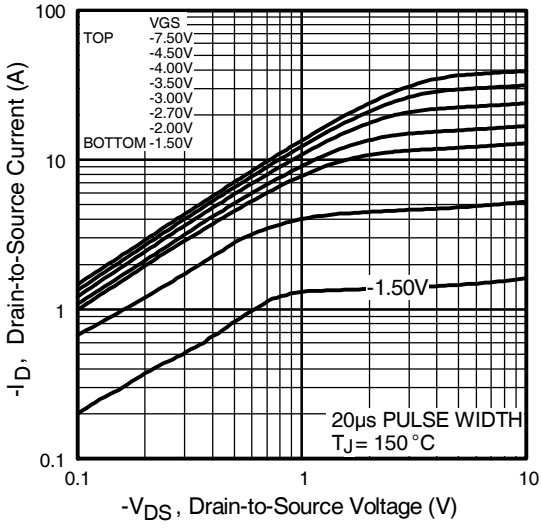


Fig 2. Typical Output Characteristics

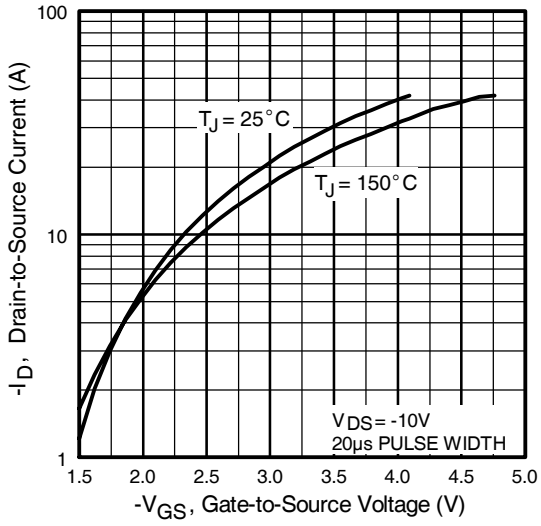


Fig 3. Typical Transfer Characteristics

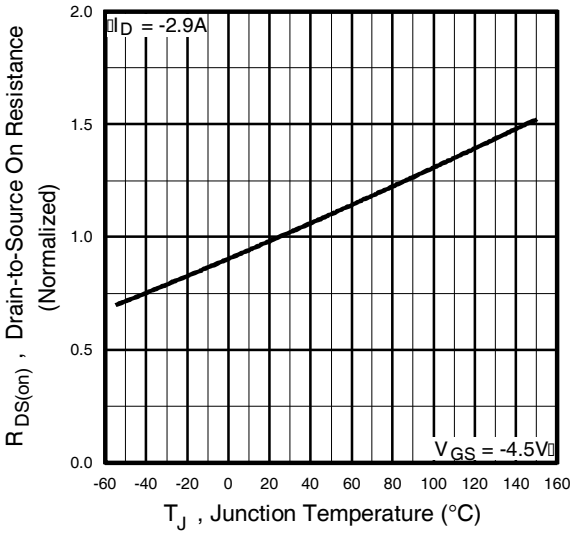


Fig 4. Normalized On-Resistance Vs. Temperature

Power Mosfet Characteristics

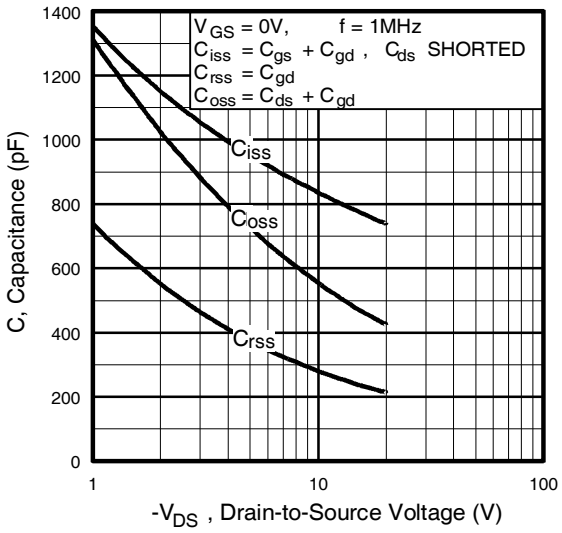


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

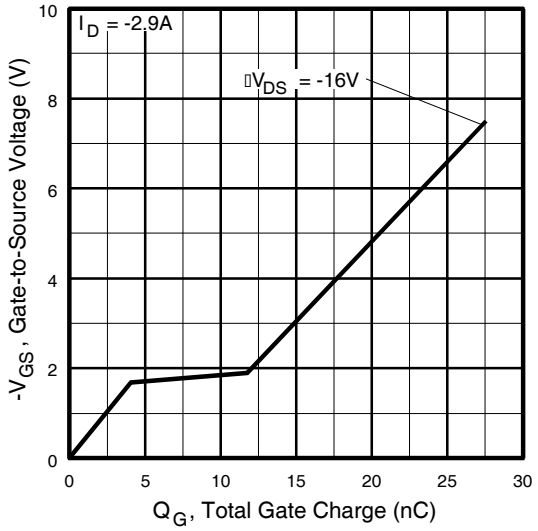


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

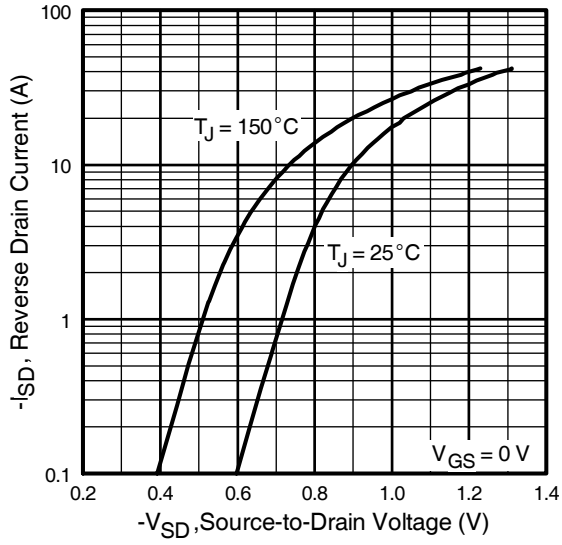


Fig 7. Typical Source-Drain Diode Forward Voltage

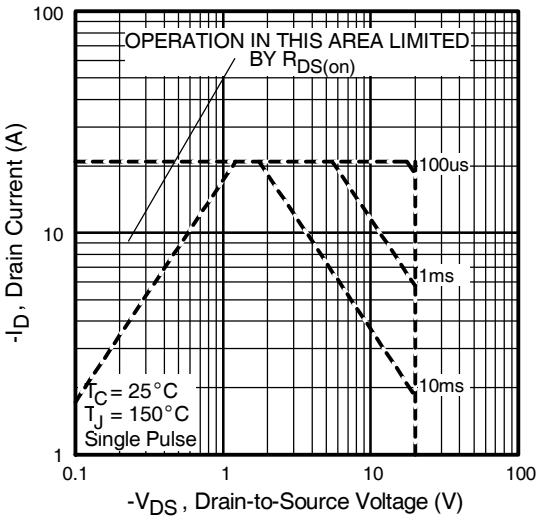


Fig 8. Maximum Safe Operating Area

Power Mosfet Characteristics

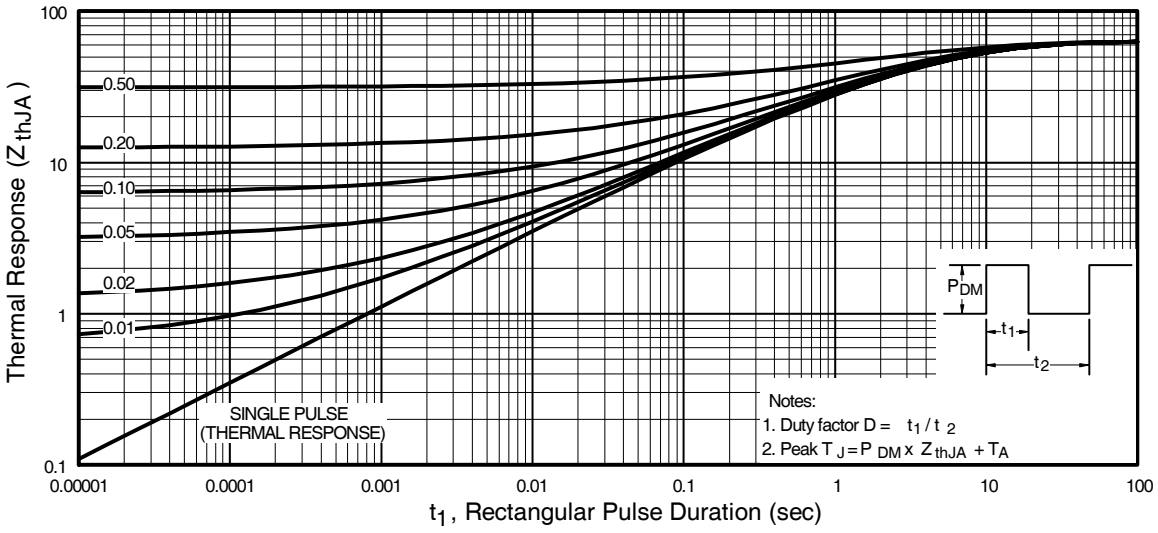


Fig 9. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

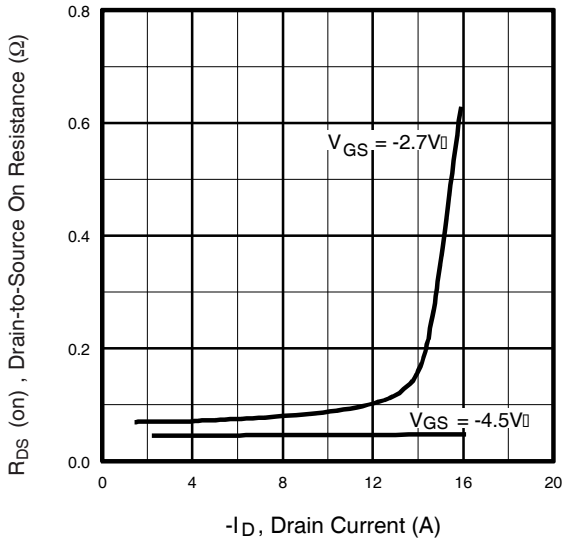


Fig 10. Typical On-Resistance Vs. Drain Current

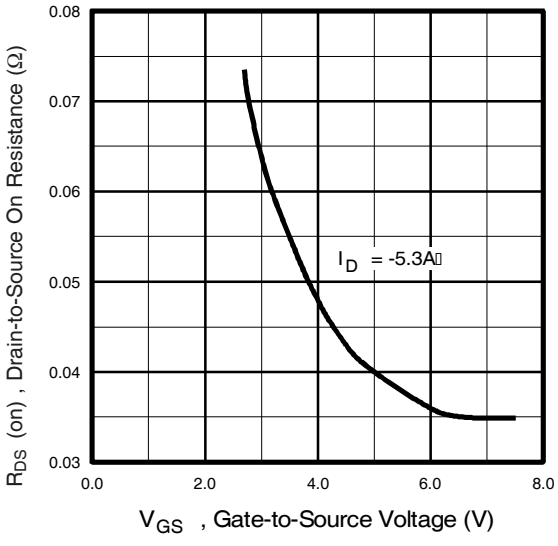


Fig 11. Typical On-Resistance Vs. Gate Voltage

Schottky Diode Characteristics

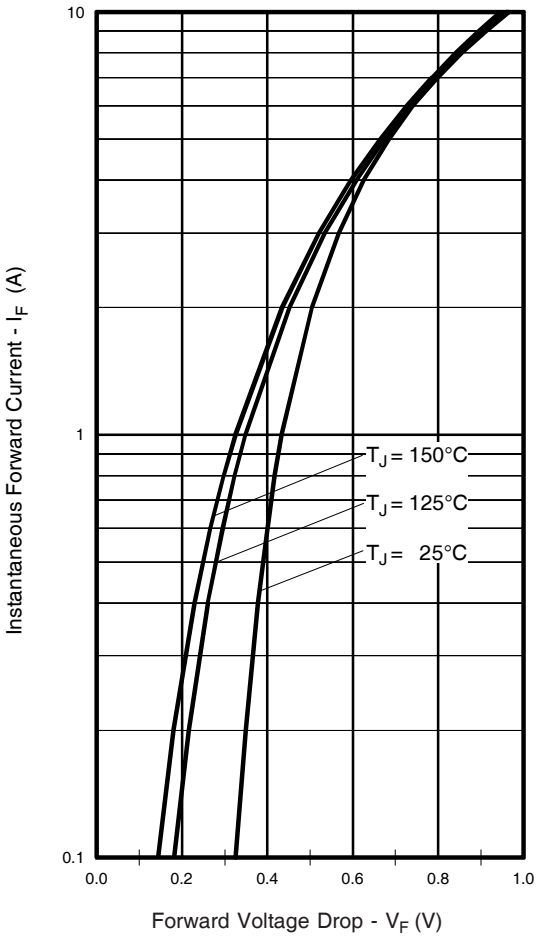


Fig. 12 - Typical Forward Voltage Drop Characteristics

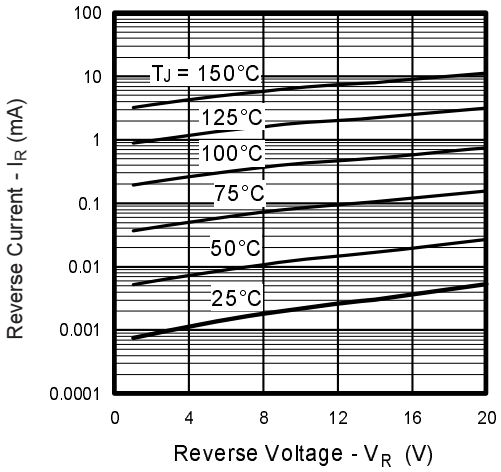


Fig. 13 - Typical Values of Reverse Current Vs. Reverse Voltage

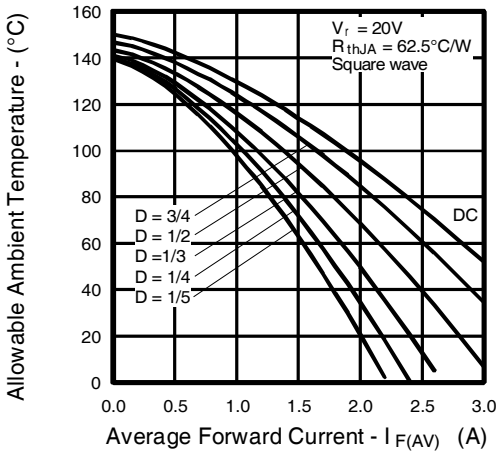
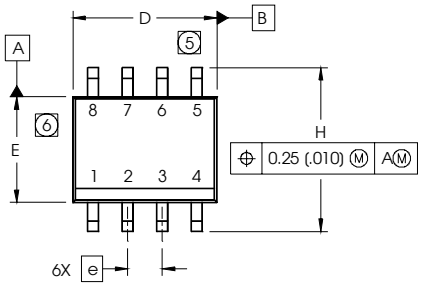
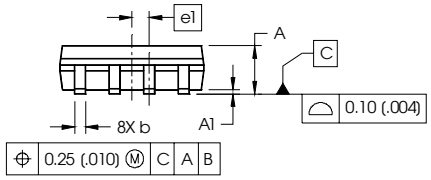


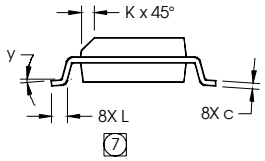
Fig.14 - Maximum Allowable Ambient Temp. Vs. Forward Current

SO-8 (Fetky) Package Outline



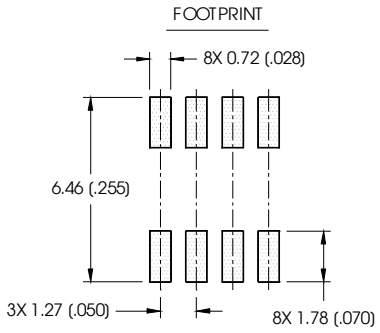
DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
b	.013	.020	0.33	0.51
c	.0075	.0098	0.19	0.25
D	.189	.1968	4.80	5.00
E	.1497	.1574	3.80	4.00
e	.050 BASIC		1.27 BASIC	
e1	.025 BASIC		0.635 BASIC	
H	.2284	.2440	5.80	6.20
K	.0099	.0196	0.25	0.50
L	.016	.050	0.40	1.27
y	0°	8°	0°	8°





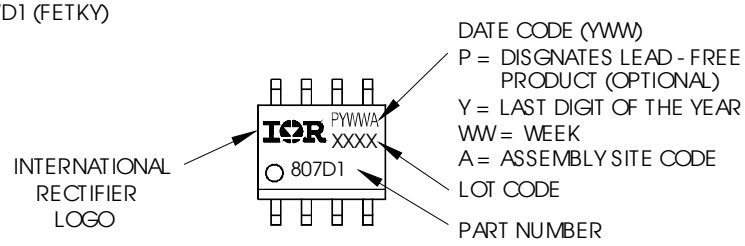
NOTES:

1. DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
2. CONTROLLING DIMENSION: MILLIMETER
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 0.15 (.006).
6. DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.25 (.010).
7. DIMENSION IS THE LENGTH OF LEAD FOR SOLDERING TO A SUBSTRATE.



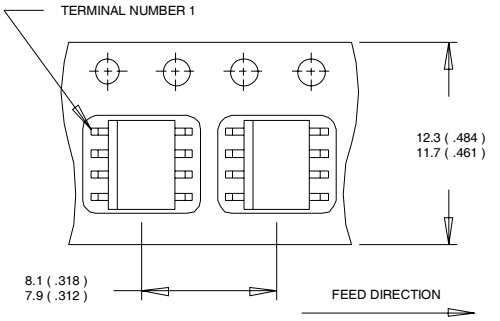
SO-8 (Fetky) Part Marking Information

EXAMPLE: THIS IS AN IRF7807D1 (FETKY)

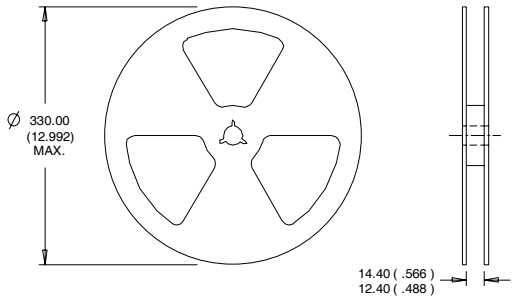


SO-8 Tape and Reel

Dimensions are shown in milimeters (inches)



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.

Data and specifications subject to change without notice.
This product has been designed and qualified for the Consumer market.
Qualifications Standards can be found on IR's Web site.

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