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[International Rectifier \(Infineon Technologies Americas Corp.\)
IRF7321D2TRPBF](#)

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sales@integrated-circuit.com

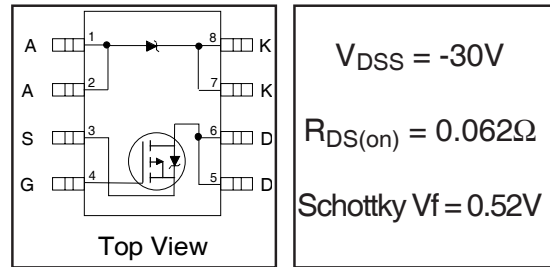
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International IOR Rectifier

IRF7321D2PbF

FETKY™ MOSFET & Schottky Diode

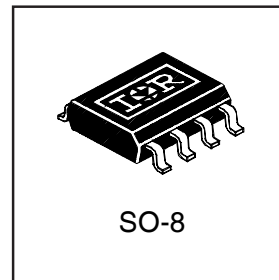
- Co-packaged HEXFET® Power MOSFET and Schottky Diode
- Ideal For Buck Regulator Applications
- P-Channel HEXFET®
- Low V_F Schottky Rectifier
- Generation 5 Technology
- SO-8 Footprint
- Lead-Free



Description

The FETKY™ family of Co-packaged HEXFETs and Schottky diodes offer the designer an innovative board space saving solution for switching regulator and power management applications. Generation 5 HEXFETs utilize advanced processing techniques to achieve extremely low on-resistance per silicon area. Combining 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 ($T_A = 25^\circ C$ Unless Otherwise Noted)

Parameter	Maximum	Units
$I_D @ T_A = 25^\circ C$	-4.7	A
$I_D @ T_A = 70^\circ C$	-3.8	
I_{DM}	-38	
$P_D @ T_A = 25^\circ C$	2.0	W
$P_D @ T_A = 70^\circ C$	1.3	
	16	mW/°C
V_{GS}	± 20	V
dv/dt	-5.0	V/ns
T_J, T_{STG}	-55 to +150	°C

Thermal Resistance Ratings

Parameter	Maximum	Units
$R_{\theta JA}$	62.5	°C/W

Notes:

- ① Repetitive rating – pulse width limited by max. junction temperature (see fig. 11)
- ② $I_{SD} \leq -2.9A$, $di/dt \leq -77A/\mu s$, $V_{DD} \leq V_{(BR)DSS}$, $T_J \leq 150^\circ C$
- ③ Pulse width $\leq 300\mu s$ – duty cycle $\leq 2\%$
- ④ Surface mounted on FR-4 board, $t \leq 10sec$.

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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	—	0.042	0.062	Ω	V _{GS} = -10V, I _D = -4.9A ③
		—	0.076	0.098		V _{GS} = -4.5V, I _D = -3.6A ③
V _{GS(th)}	Gate Threshold Voltage	-1.0	—	—	V	V _{DS} = V _{GS} , I _D = -250μA
g _{fs}	Forward Transconductance	—	7.7	—	S	V _{DS} = -15V, I _D = -4.9A
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	—	23	34	nC	I _D = -4.9A
Q _{gs}	Gate-to-Source Charge	—	3.8	5.7		V _{DS} = -15V
Q _{gd}	Gate-to-Drain ("Miller") Charge	—	5.9	8.9		V _{GS} = -10V, See Fig. 6 ③
t _{d(on)}	Turn-On Delay Time	—	13	19	ns	V _{DD} = -15V
t _r	Rise Time	—	13	20		I _D = -1.0A
t _{d(off)}	Turn-Off Delay Time	—	34	51		R _G = 6.0Ω
t _f	Fall Time	—	32	48		R _D = 15Ω, ③
C _{iss}	Input Capacitance	—	710	—	pF	V _{GS} = 0V
C _{oss}	Output Capacitance	—	380	—		V _{DS} = -25V
C _{rss}	Reverse Transfer Capacitance	—	180	—		f = 1.0MHz, See Fig. 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)	—	—	-30		
V _{SD}	Body Diode Forward Voltage	—	-0.78	-1.0	V	T _J = 25°C, I _S = -1.7A, V _{GS} = 0V
t _{rr}	Reverse Recovery Time (Body Diode)	—	44	66	ns	T _J = 25°C, I _F = -1.7A
Q _{rr}	Reverse Recovery Charge	—	42	63	nC	di/dt = 100A/μs ③

Schottky Diode Maximum Ratings

	Parameter	Max.	Units	Conditions
I _f (av)	Max. Average Forward Current	3.2	A	50% Duty Cycle. Rectangular Wave, T _c = 25°C See Fig.14 T _c = 70°C
		2.0		
I _{SM}	Max. peak one cycle Non-repetitive Surge current	200	A	Following any rated load condition & with V _{rrm} applied
		20		

Schottky Diode Electrical Specifications

	Parameter	Max.	Units	Conditions
V _{fm}	Max. Forward voltage drop	0.57	V	I _f = 3.0, T _j = 25°C
		0.77		I _f = 6.0, T _j = 25°C
		0.52		I _f = 3.0, T _j = 125°C
		0.79		I _f = 6.0, T _j = 125°C
I _{rm}	Max. Reverse Leakage current	0.30	mA	V _r = 30V, T _j = 25°C
		37		T _j = 125°C
C _t	Max. Junction Capacitance	310	pF	V _r = 5Vdc (100kHz to 1 MHz) 25°C
dv/dt	Max. Voltage Rate of Charge	4900	V/μs	Rated V _r

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

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Power Mosfet Characteristics

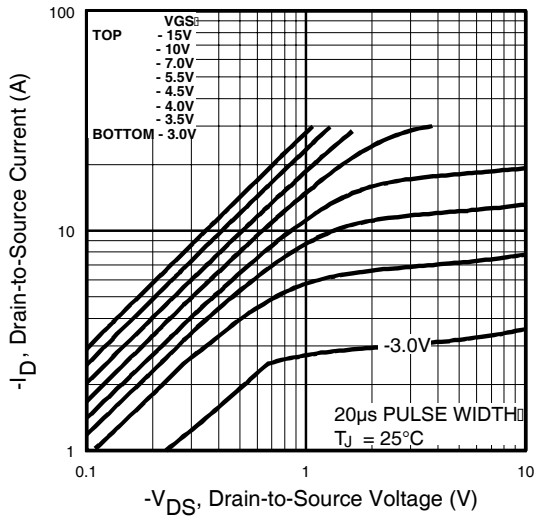


Fig 1. Typical Output Characteristics

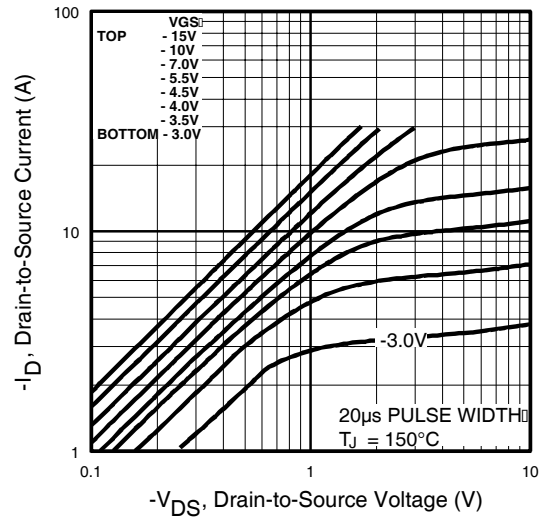


Fig 2. Typical Output Characteristics

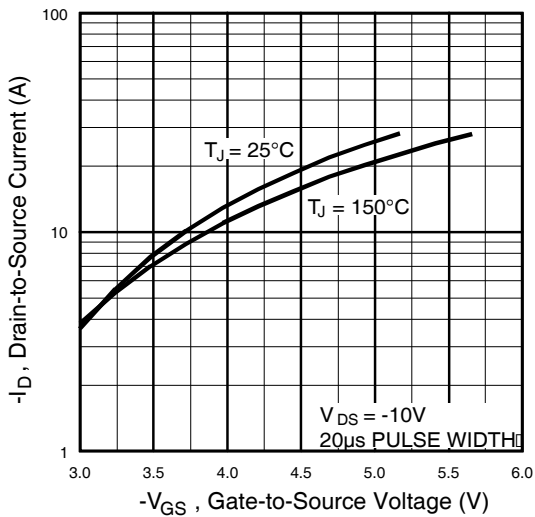


Fig 3. Typical Transfer Characteristics

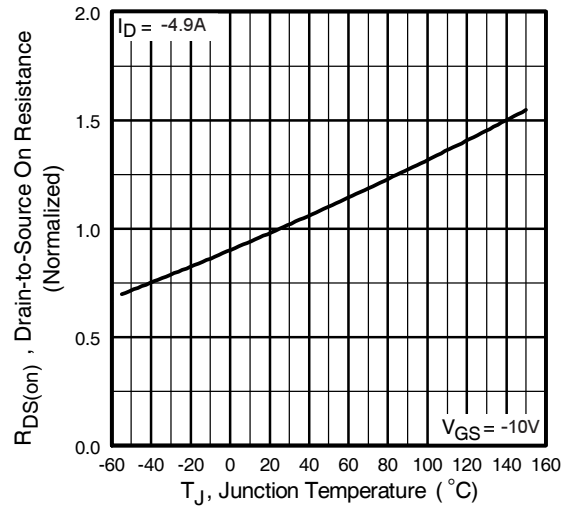


Fig 4. Normalized On-Resistance Vs. Temperature

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Power Mosfet Characteristics

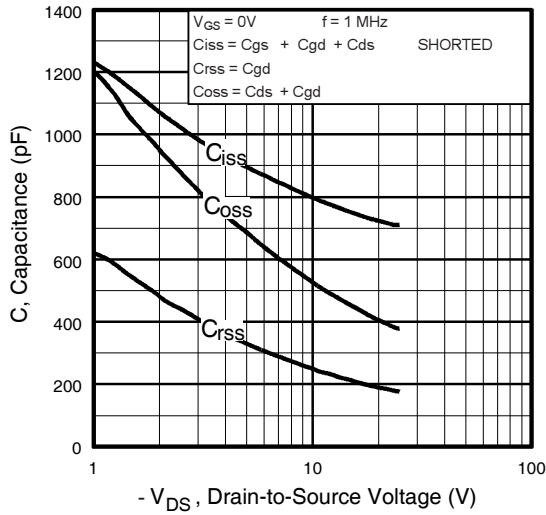


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

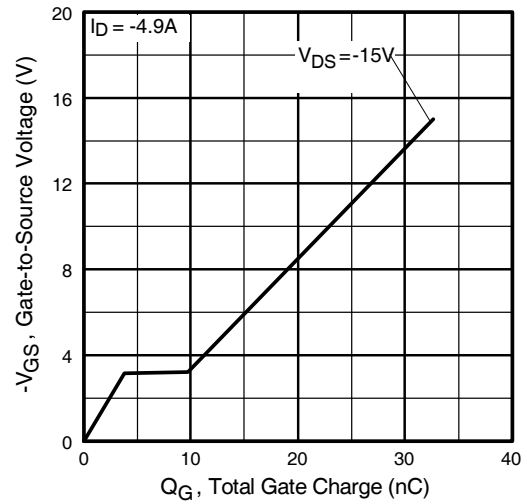


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

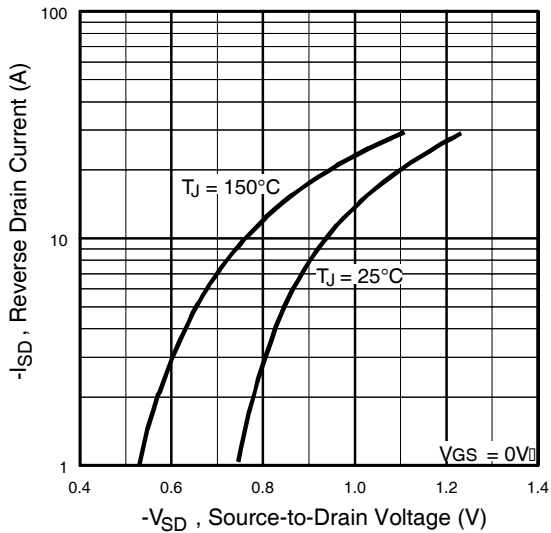


Fig 7. Typical Source-Drain Diode Forward Voltage

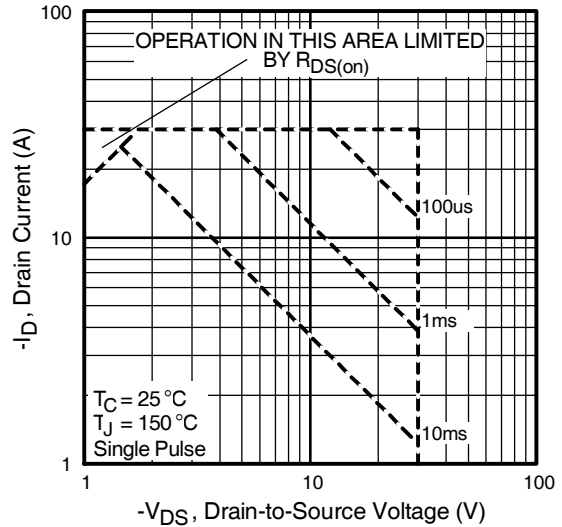


Fig 8. Maximum Safe Operating Area

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Power Mosfet Characteristics

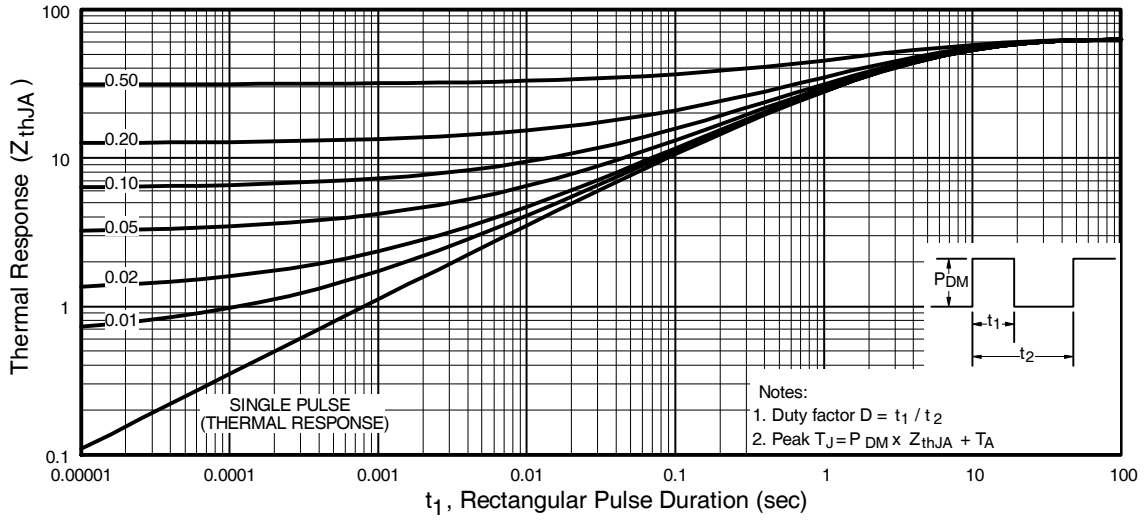


Fig 9. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

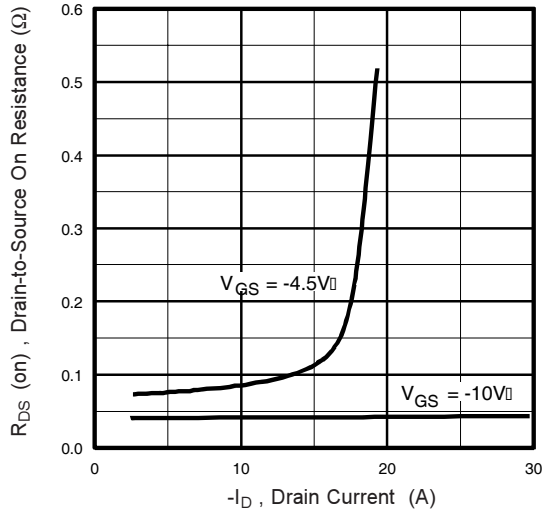


Fig 10. Typical On-Resistance Vs. Drain Current

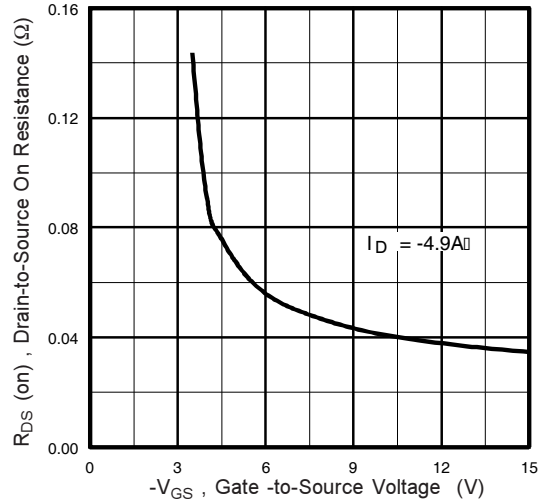


Fig 11. Typical On-Resistance Vs. Gate Voltage

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Schottky Diode Characteristics

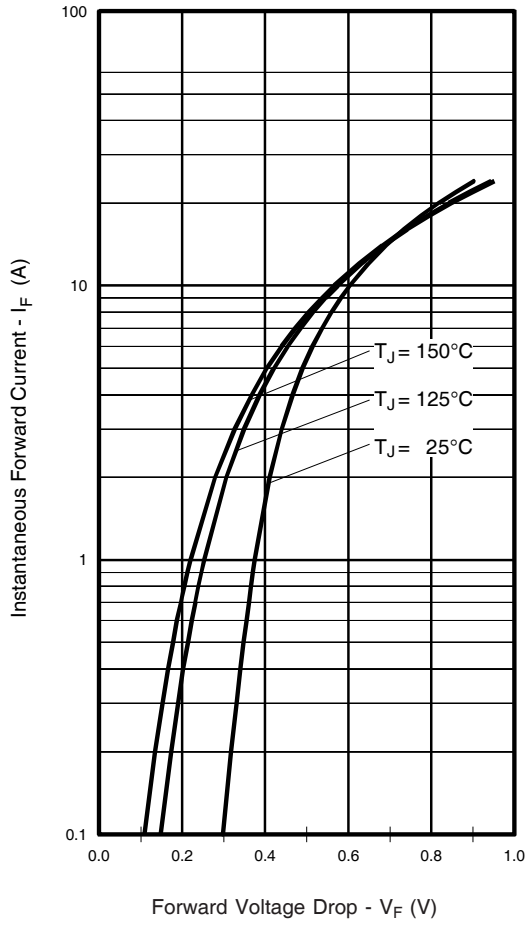


Fig. 12 - Typical Forward Voltage Drop Characteristics

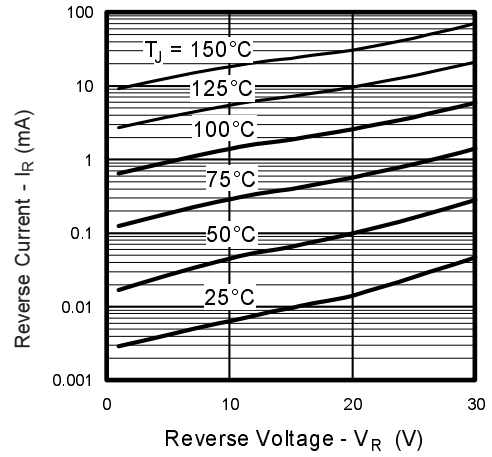


Fig. 13 - Typical Values of Reverse Current Vs. Reverse Voltage

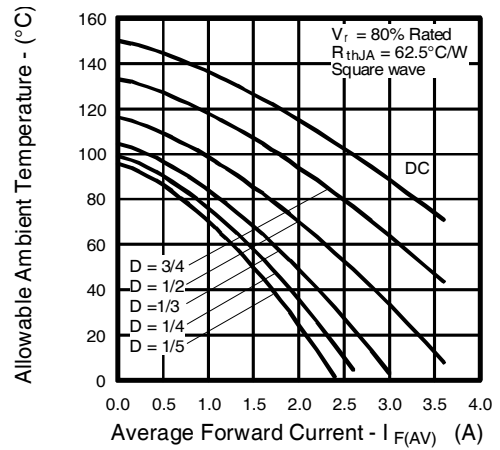
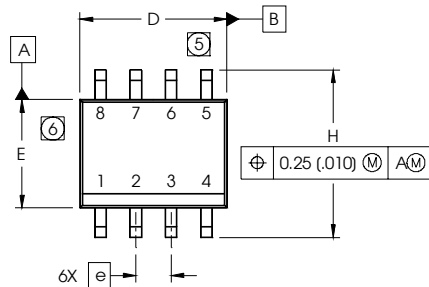


Fig.14 - Maximum Allowable Ambient Temp. Vs. Forward Current

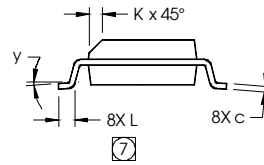
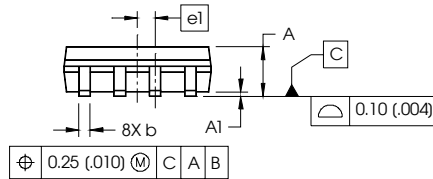
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SO-8 (Fetky) Package Outline



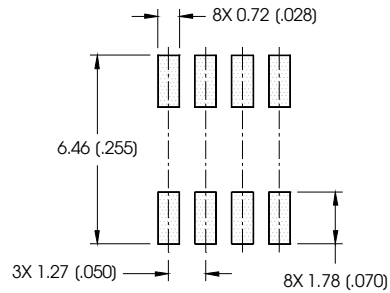
DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
b	.013	.020	0.33	0.51
c	.0075	.0098	0.19	0.25
D	.189	.1968	4.80	5.00
E	.1497	.1574	3.80	4.00
e	.050 BASIC		1.27 BASIC	
e1	.025 BASIC		0.635 BASIC	
H	.2284	.2440	5.80	6.20
K	.0099	.0196	0.25	0.50
L	.016	.050	0.40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



NOTES:

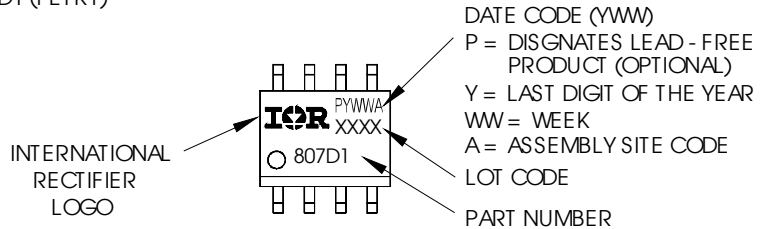
- DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
- CONTROLLING DIMENSION: MILLIMETER
- DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
- OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
- DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 (.006).
- DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.25 (.010).
- DIMENSION IS THE LENGTH OF LEAD FOR SOLDERING TO A SUBSTRATE.

FOOTPRINT



SO-8 (Fetky) Part Marking Information

EXAMPLE: THIS IS AN IRF7807D1 (FETKY)

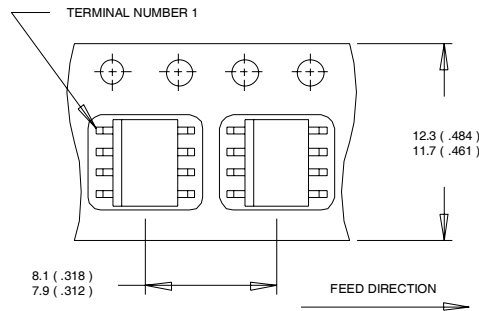


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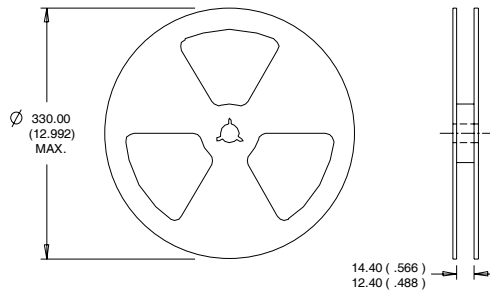
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SO-8 Tape and Reel

Dimensions are shown in millimeters (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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