

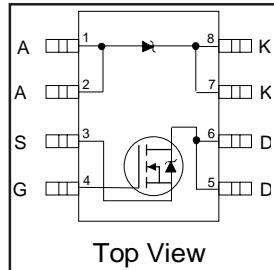
International **IR** Rectifier

PD- 95215A

IRF7353D2PbF

FETKY™ MOSFET / Schottky Diode

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

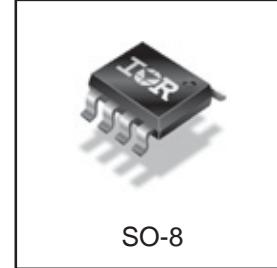


$$V_{DSS} = 30V$$

Description

The **FETKY™** family of Co-Pack HEXFET® Power 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. 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 ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter		Maximum	Units
$I_D @ T_A = 25^\circ\text{C}$	Continuous Drain Current ④	6.5	A
$I_D @ T_A = 70^\circ\text{C}$		5.2	
$ I_{DM} $	Pulsed Drain Current ①	52	
$P_D @ T_A = 25^\circ\text{C}$	Power Dissipation ④	2.0	W
$P_D @ T_A = 70^\circ\text{C}$		1.3	
	Linear Derating Factor	16	$\text{mW}/^\circ\text{C}$
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	$^\circ\text{C}$

Thermal Resistance Ratings

Parameter		Maximum	Units
R _{θJA}	Junction-to-Ambient ⑤	62.5	°C/W

Notes:

- ① Repetitive rating; pulse width limited by maximum junction temperature (see figure 9)
 - ② Starting $T_J = 25^\circ\text{C}$, $L = 10\text{mH}$, $R_G = 25\Omega$, $I_{AS} = 4.0\text{A}$
 - ③ $I_{SD} \leq 4.0\text{A}$, $dI/dt \leq 74\text{A}/\mu\text{s}$, $V_{DD} \leq V_{(\text{BR})DSS}$, $T_J \leq 150^\circ\text{C}$
 - ④ Pulse width $\leq 300\mu\text{s}$; duty cycle $\leq 2\%$
 - ⑤ Surface mounted on FR-4 board, $t \leq 10\text{sec}$.

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MOSFET Electrical Characteristics @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

Parameter		Min.	Typ.	Max.	Units	Conditions
$V_{(\text{BR})\text{DSS}}$	Drain-to-Source Breakdown Voltage	30	—	—	V	$V_{\text{GS}} = 0\text{V}$, $I_D = 250\mu\text{A}$
$R_{\text{DS}(\text{on})}$	Static Drain-to-Source On-Resistance	—	0.023	0.029	Ω	$V_{\text{GS}} = 10\text{V}$, $I_D = 5.8\text{A}$ ④
		—	0.032	0.046		$V_{\text{GS}} = 4.5\text{V}$, $I_D = 4.7\text{A}$ ④
$V_{\text{GS}(\text{th})}$	Gate Threshold Voltage	1.0	—	—	V	$V_{\text{DS}} = V_{\text{GS}}$, $I_D = 250\mu\text{A}$
g_f	Forward Transconductance	—	14	—	S	$V_{\text{DS}} = 24\text{V}$, $I_D = 5.8\text{A}$
I_{DSS}	Drain-to-Source Leakage Current	—	—	1.0	μA	$V_{\text{DS}} = 24\text{V}$, $V_{\text{GS}} = 0\text{V}$
		—	—	25		$V_{\text{DS}} = 24\text{V}$, $V_{\text{GS}} = 0\text{V}$, $T_J = 55^\circ\text{C}$
I_{GSS}	Gate-to-Source Forward Leakage	—	—	100	nA	$V_{\text{GS}} = 20\text{V}$
	Gate-to-Source Reverse Leakage	—	—	-100		$V_{\text{GS}} = -20\text{V}$
Q_g	Total Gate Charge	—	22	33	nC	$I_D = 5.8\text{A}$
Q_{gs}	Gate-to-Source Charge	—	2.6	3.9		$V_{\text{DS}} = 24\text{V}$
Q_{gd}	Gate-to-Drain ("Miller") Charge	—	6.4	9.6		$V_{\text{GS}} = 10\text{V}$ (see figure 8) ④
$t_{\text{d}(\text{on})}$	Turn-On Delay Time	—	8.1	12	ns	$V_{\text{DD}} = -5\text{V}$
t_r	Rise Time	—	8.9	13		$I_D = 1.0\text{A}$
$t_{\text{d}(\text{off})}$	Turn-Off Delay Time	—	26	39		$R_G = 6.0\Omega$
t_f	Fall Time	—	18	26		$R_D = 15\Omega$ ④
C_{iss}	Input Capacitance	—	650	—	pF	$V_{\text{GS}} = 0\text{V}$
C_{oss}	Output Capacitance	—	320	—		$V_{\text{DS}} = 25\text{V}$
C_{rss}	Reverse Transfer Capacitance	—	130	—		$f = 1.0\text{MHz}$ (see figure 7)

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	$T_J = 25^\circ\text{C}$, $I_S = 1.7\text{A}$, $V_{\text{GS}} = 0\text{V}$
t_{rr}	Reverse Recovery Time (Body Diode)	—	45	68	ns	$T_J = 25^\circ\text{C}$, $I_F = 1.7\text{A}$
Q_{rr}	Reverse Recovery Charge	—	58	87	nC	$dI/dt = 100\text{A}/\mu\text{s}$ ③

Schottky Diode Maximum Ratings

	Parameter	Max.	Units	Conditions	
$I_{\text{F}(\text{av})}$	Max. Average Forward Current	3.2	A	50% Duty Cycle. Rectangular Wave, $T_c = 25^\circ\text{C}$	
		2.0		50% Duty Cycle. Rectangular Wave, $T_c = 70^\circ\text{C}$	
I_{SM}	Max. peak one cycle Non-repetitive Surge current	200	A	5μs sine or 3μs Rect. pulse	Following any rated load condition & with V_{rrm} applied
		20		10ms sine or 6ms Rect. pulse	

Schottky Diode Electrical Specifications

	Parameter	Max.	Units	Conditions	
V_{FM}	Max. Forward voltage drop	0.57	V	$I_f = 3.0$, $T_J = 25^\circ\text{C}$	
		0.77		$I_f = 6.0$, $T_J = 25^\circ\text{C}$	
		0.52		$I_f = 3.0$, $T_J = 125^\circ\text{C}$	
		0.79		$I_f = 6.0$, $T_J = 125^\circ\text{C}$	
I_{rm}	Max. Reverse Leakage current	0.30	mA	$V_r = 30\text{V}$	$T_J = 25^\circ\text{C}$
		37		$T_J = 125^\circ\text{C}$	
C_t	Max. Junction Capacitance	310	pF	$V_r = 5\text{Vdc}$ (100kHz to 1 MHz) 25°C	
dv/dt	Max. Voltage Rate of Change	4900	V/μs	Rated V_r	

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

Power MOSFET Characteristics

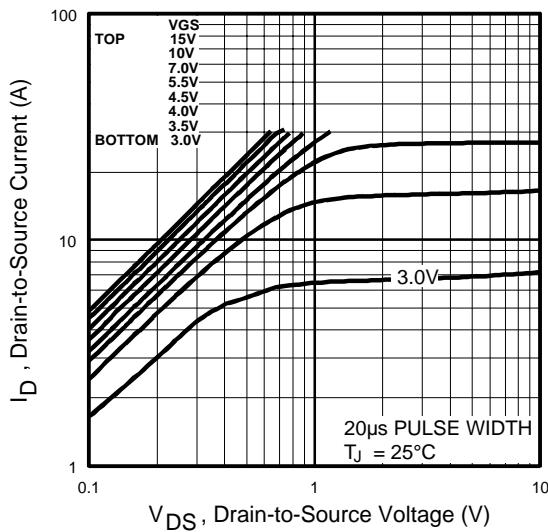


Fig 1. Typical Output Characteristics

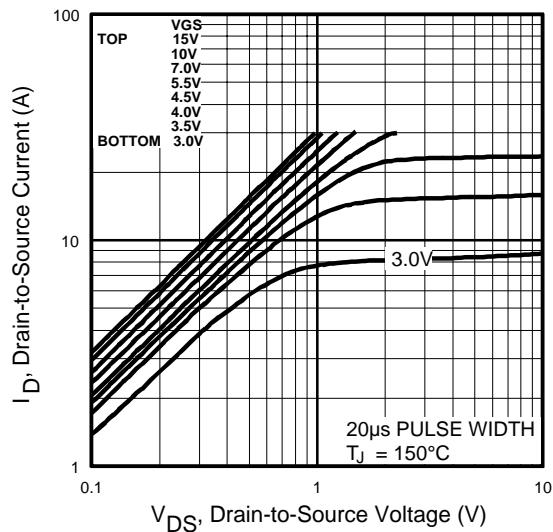


Fig 2. Typical Output Characteristics

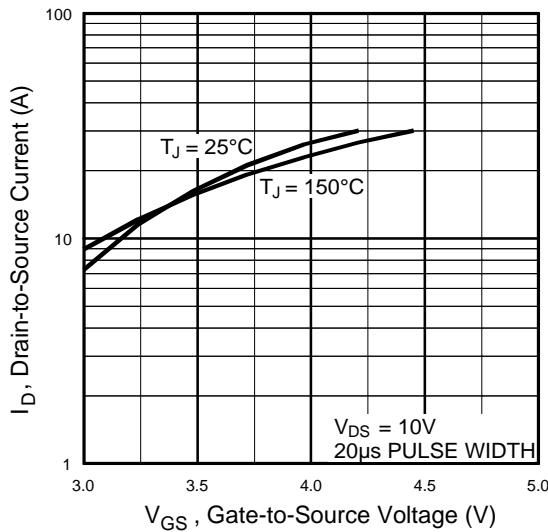


Fig 3. Typical Transfer Characteristics

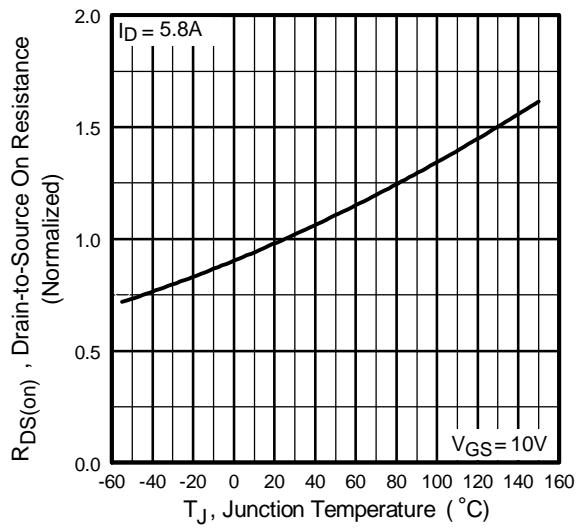


Fig 4. Normalized On-Resistance
Vs. Temperature

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Power MOSFET Characteristics

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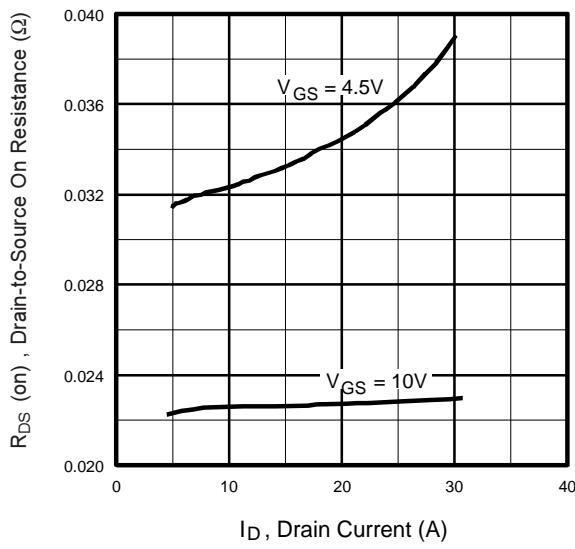


Fig 5. Typical On-Resistance Vs. Drain Current

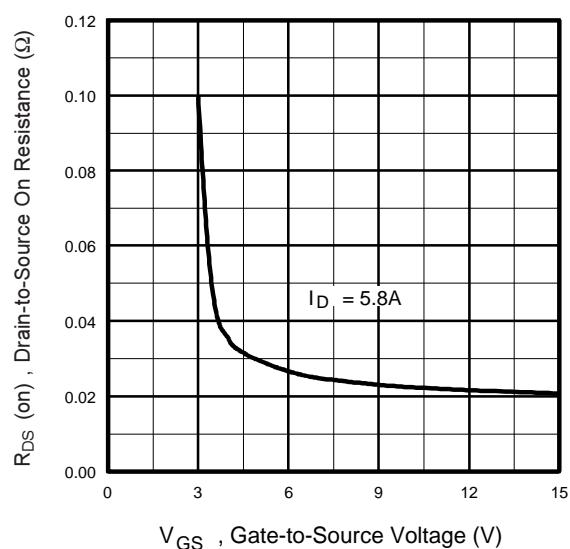


Fig 6. Typical On-Resistance Vs. Gate Voltage

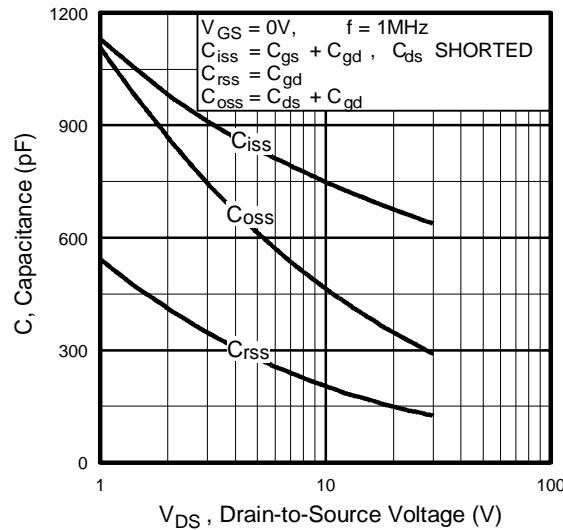


Fig 7. Typical Capacitance Vs. Drain-to-Source Voltage

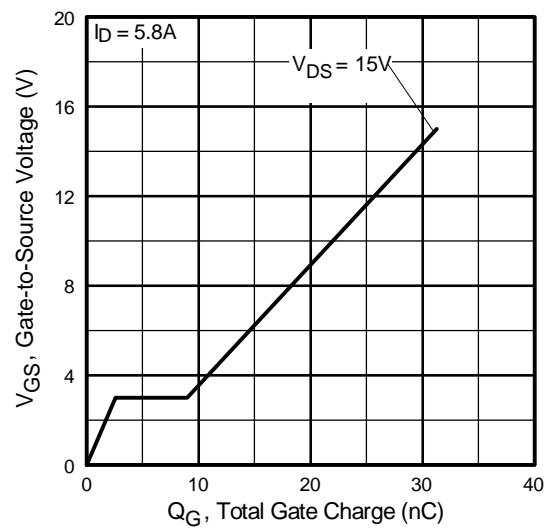


Fig 8. Typical Gate Charge Vs. Gate-to-Source Voltage

Power MOSFET Characteristics

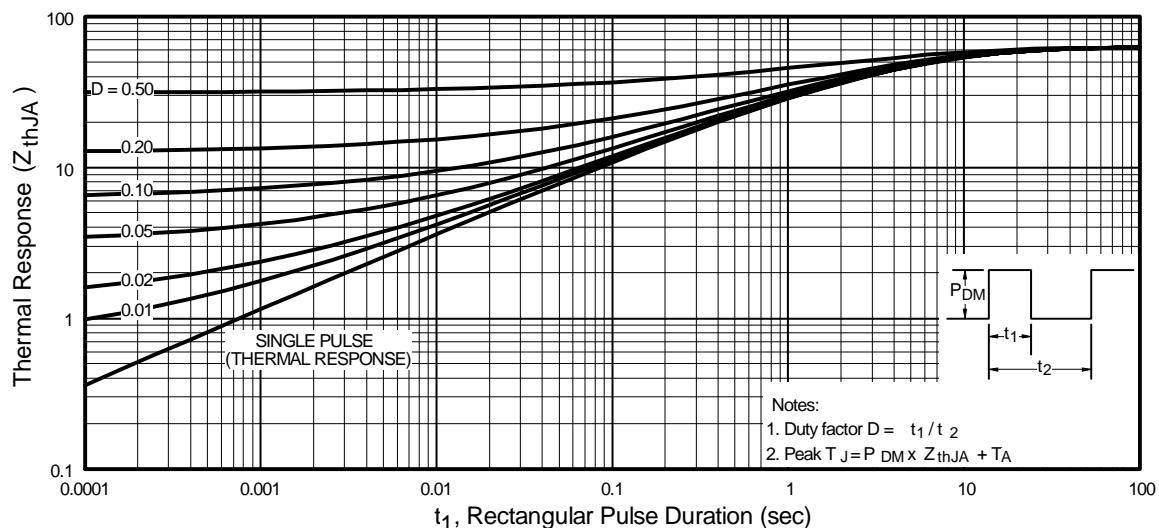


Fig 9. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

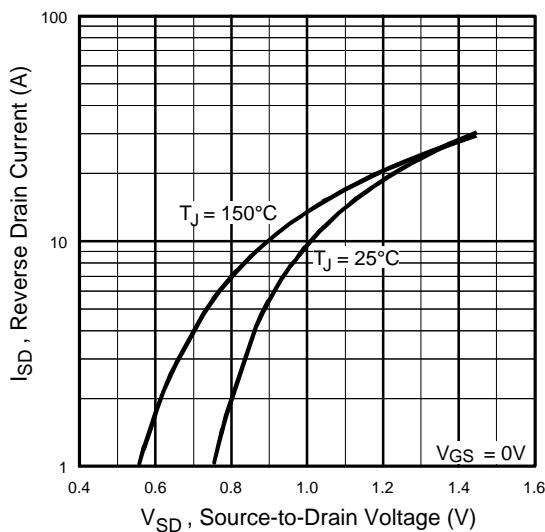


Fig 10. Typical Source-Drain Diode Forward Voltage

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Schottky Diode Characteristics

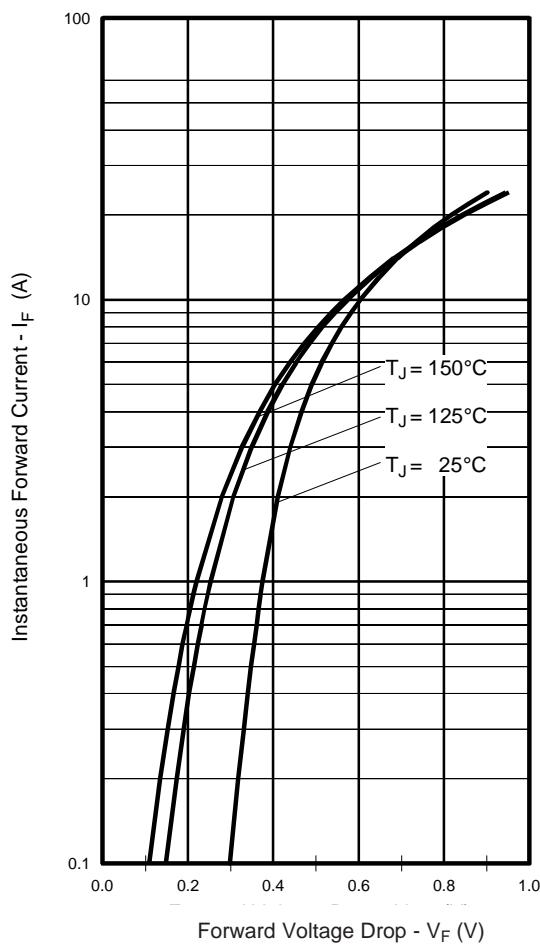


Fig. 12 - Typical Forward Voltage Drop Characteristics

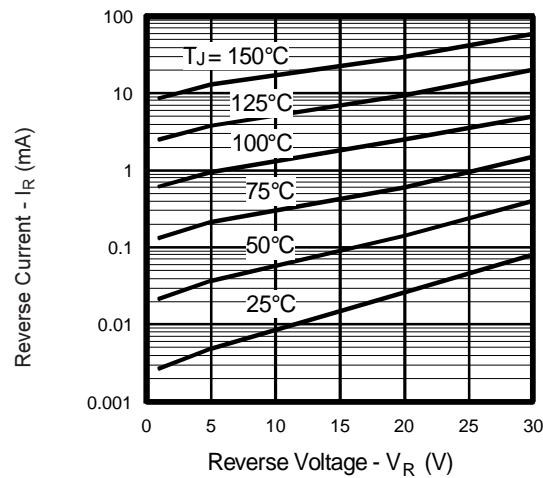


Fig. 13 - Typical Values of Reverse Current Vs. Reverse Voltage

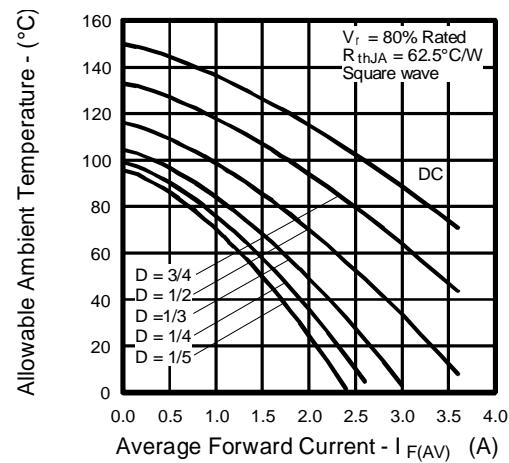
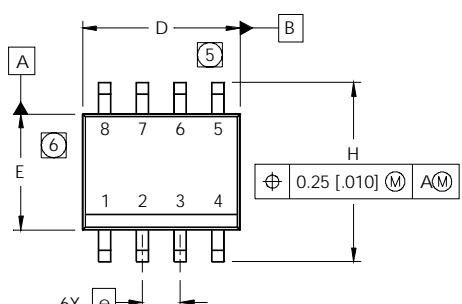


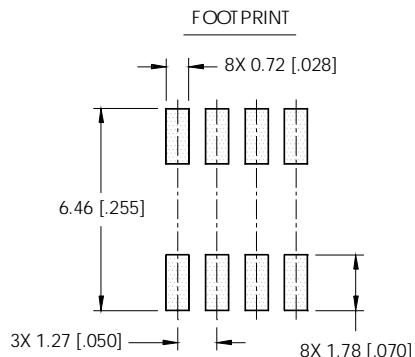
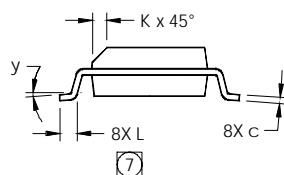
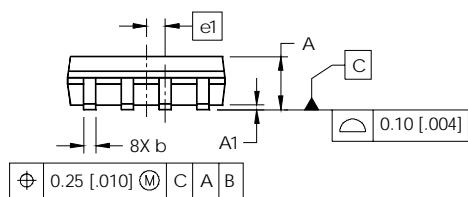
Fig.14 - Maximum Allowable Ambient Temp. Vs. Forward Current

SO-8 (Fetky) Package Outline

Dimensions are shown in millimeters (inches)

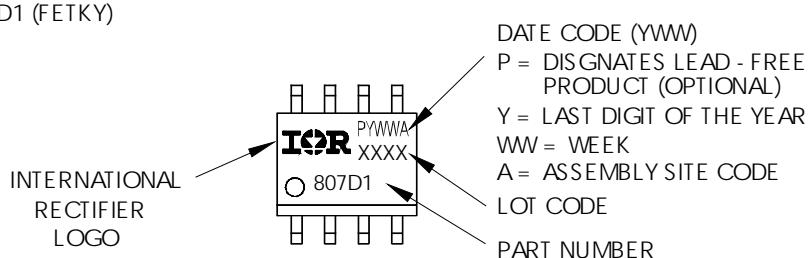


DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
b	.013	.020	0.33	0.51
c	.0075	.0098	0.19	0.25
D	.189	.1968	4.80	5.00
E	.1497	.1574	3.80	4.00
e	.050	BASIC	1.27	BASIC
e1	.025	BASIC	0.635	BASIC
H	.2284	.2440	5.80	6.20
K	.0099	.0196	0.25	0.50
L	.016	.050	0.40	1.27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



SO-8 (Fetky) Part Marking Information

EXAMPLE: THIS IS AN IRF7807D1 (FETKY)

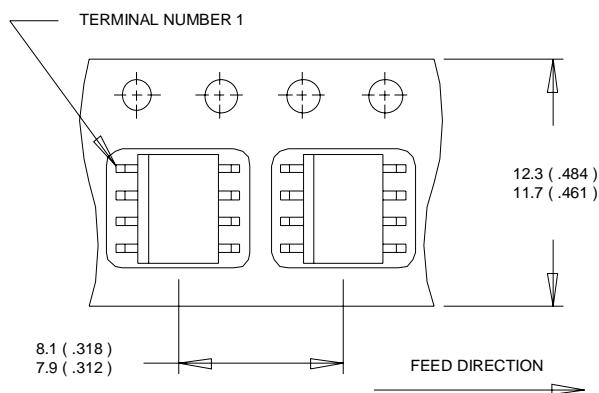


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SO-8 (Fetky) Tape and Reel

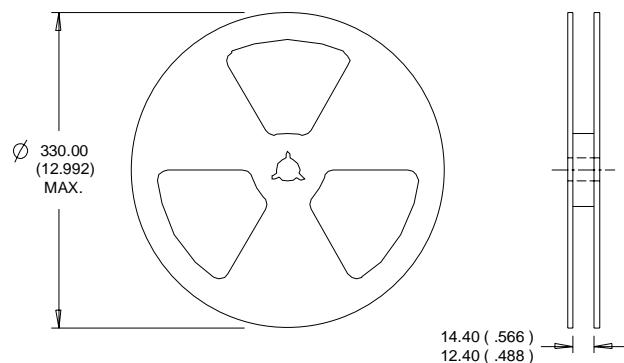
Dimensions are shown in millimeters (inches)

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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.
Qualification Standards can be found on IR's Web site.

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