

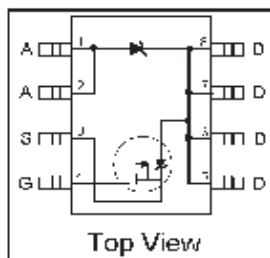
IRF7422D2PbF

FETKY™ MOSFET & Schottky Diode

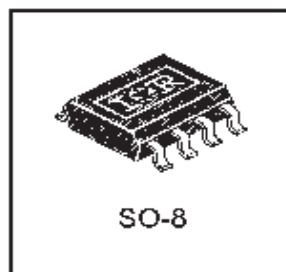
- Co-packaged HEXFET® Power MOSFET and Schottky Diode
 - Ideal For Buck Regulator Applications
 - P-Channel HEXFET
 - Low V_F Schottky Rectifier
 - Generation 5 Technology
 - SO-8 Footprint
 - Lead-Free
- Description**

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.



$V_{DS} = -20V$
$R_{DS(on)} = 0.09\Omega$
Schottky $V_f = 0.52V$



Absolute Maximum Ratings

Parameter	Maximum	Units
I_D @ $T_A = 25^\circ C$	-4.3	A
I_D @ $T_A = 70^\circ C$	-3.4	A
I_{DM}	-33	A
P_D @ $T_A = 25^\circ C$	2.0	W
P_D @ $T_A = 70^\circ C$	1.3	W
V_{GS}	16	mV/°C
dV/dt	± 12	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 $I_{DL} \leq -2.2A$, $dI/dt \leq -50A/\mu s$, $V_{DS} \leq V_{BSS}$, $T_J \leq 150^\circ C$
- ③ Pulse width $\leq 300\mu s$ – duty cycle $\leq 2\%$
- ④ Surface mounted on FR-4 board, $t \leq 10sec$.

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

Parameter	Min.	Typ.	Max.	Units	Conditions
V _{DS(BR)}	-20	—	—	V	V _{GS} = 0V, I _F = -250μA
R _{DS(on)}	—	0.07	0.09	Ω	V _{GS} = -4.5V, I _F = -2.2A ③
	—	0.115	0.14	Ω	V _{GS} = -2.7V, I _F = -1.8A ③
V _{GS(th)}	-0.70	—	—	V	V _{DS} = V _{GS} , I _F = -250μA
g _{fs}	4.0	—	—	S	V _{DS} = -16V, I _L = -2.2A
I _{DSS}	—	—	-1.0	μA	V _{GS} = -16V, V _{DS} = 0V
	—	—	-25	μA	V _{GS} = -16V, V _{DS} = 0V, T _J = 125°C
I _{SS}	—	—	-100	nA	V _{GS} = -12V
	—	—	100	nA	V _{GS} = 12V
Q _g	—	15	22	nC	I _D = -2.2A
Q _{gs}	—	2.2	3.3	nC	V _{DS} = -16V
Q _{gd}	—	6.0	9.0	nC	V _{GS} = -4.5V. See Fig. 8 and 9 ④
t _{d(on)}	—	8.4	—	ns	V _{LL} = -10V
t _r	—	26	—	ns	I _D = -2.2A
t _{d(off)}	—	51	—	ns	R _{DS} = 6.0Ω
t _f	—	33	—	ns	R _{DS} = 4.5Ω. See Fig. 10 ④
C _{iss}	—	610	—	pF	V _{DS} = 0V
C _{oss}	—	310	—	pF	V _{GS} = -15V
C _{rss}	—	170	—	pF	f = 1.0MHz, See Fig. 5

MOSFET Source-Drain Ratings and Characteristics

Parameter	Min.	Typ.	Max.	Units	Conditions
I _S	—	—	-2.5	A	
I _{AS}	—	—	-17	A	
V _{SD}	—	—	-1.0	V	T _J = 25°C, I _S = -1.8A, V _{GS} = 0V
t _{rr}	—	56	84	ns	T _J = 25°C, I _S = -2.2A
Q _{rr}	—	71	110	nC	dV/dt = -100A/μs ⑤

Schottky Diode Maximum Ratings

Parameter	Max.	Units	Conditions
I _{F(av)}	2.8	A	50% Duty Cycle, Rectangular Wave, T _C = 25°C
	1.8	A	50% Duty Cycle, Rectangular Wave, T _C = 70°C
I _{AS}	200	A	5μs sine or 3μs Rect. pulse
	20	A	10ms sine or 6ms Rect. pulse
			Following any rated load condition & with V _{RM} applied

Schottky Diode Electrical Specifications

Parameter	Max.	Units	Conditions
V _{fM}	0.57	V	I _F = 3.0, T _J = 25°C
	0.77	V	I _F = 6.0, T _J = 25°C
	0.52	V	I _F = 3.0, T _J = 125°C
	0.79	V	I _F = 6.0, T _J = 125°C
I _{RM}	0.13	mA	V _R = 20V, T _J = 25°C
	18	mA	T _J = 125°C
C _T	310	pF	V _R = 5Vdc (100kHz to 1 MHz) 25°C
dv/dt	4900	V/μs	Rated V _R

① I_S = -2.2A is the avg. V_{GS} for international rectifier under V_{DS} = -15V

Power Mosfet Characteristics

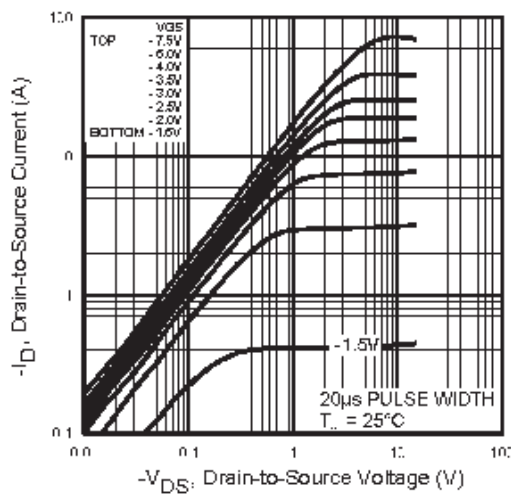


Fig 1. Typical Output Characteristics

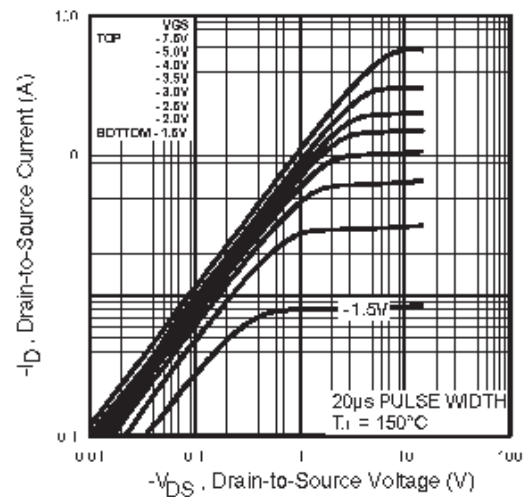


Fig 2. Typical Output Characteristics

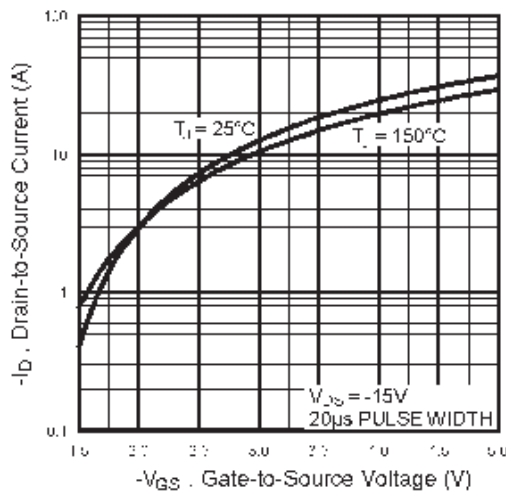


Fig 3. Typical Transfer Characteristics

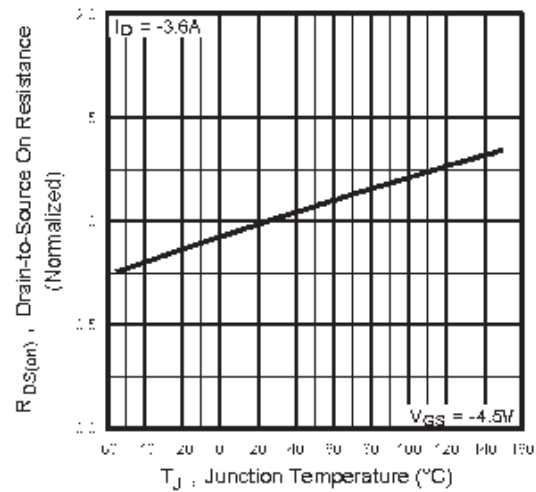


Fig 4. Normalized On-Resistance
Vs. Temperature

Power Mosfet Characteristics

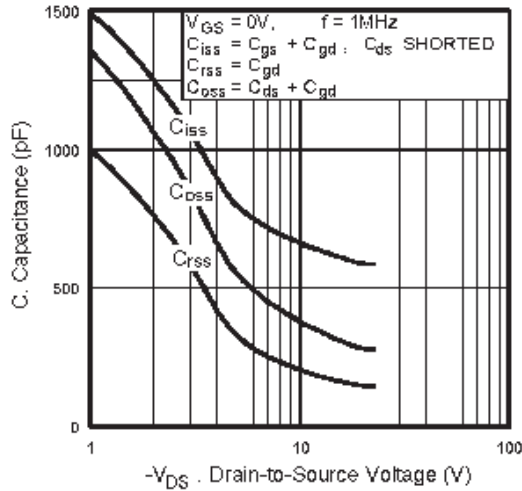


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

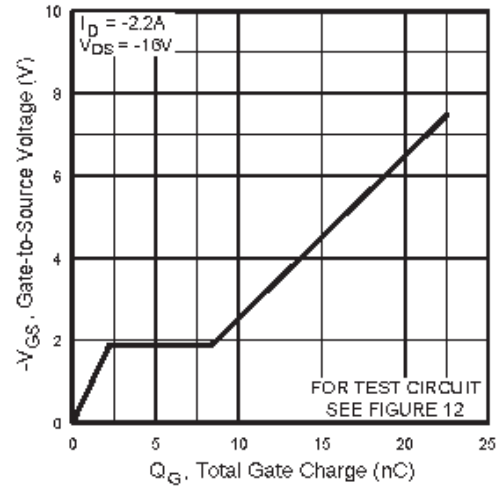


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

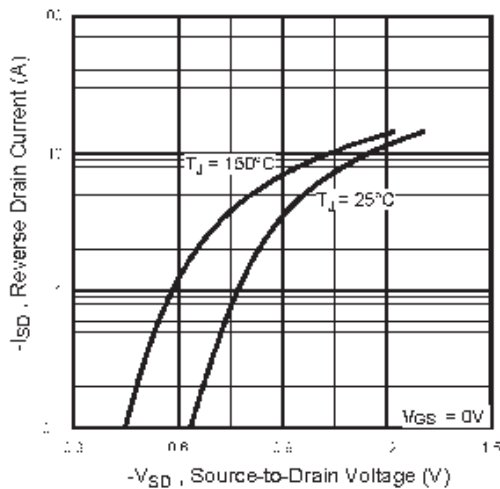


Fig 7. Typical Source-Drain Diode Forward Voltage

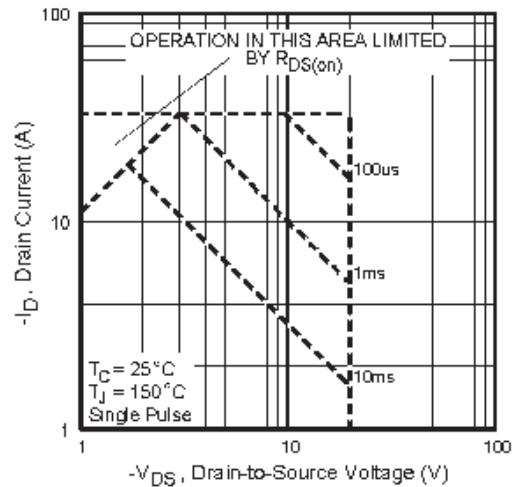


Fig 8. Maximum Safe Operating Area

Power Mosfet Characteristics

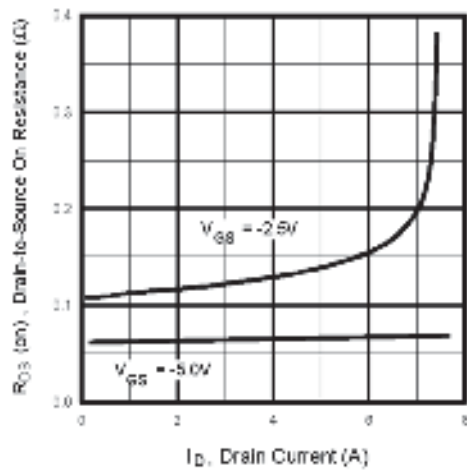
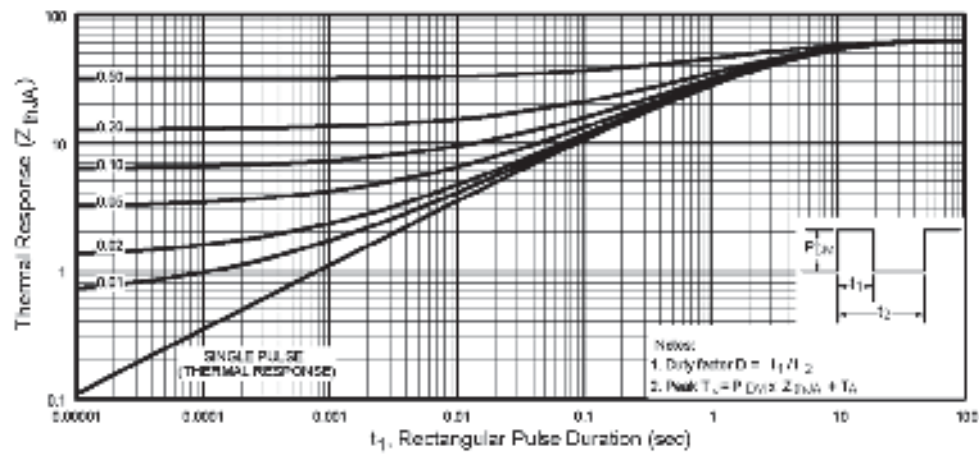


Fig 10. Typical On-Resistance Vs. Drain Current

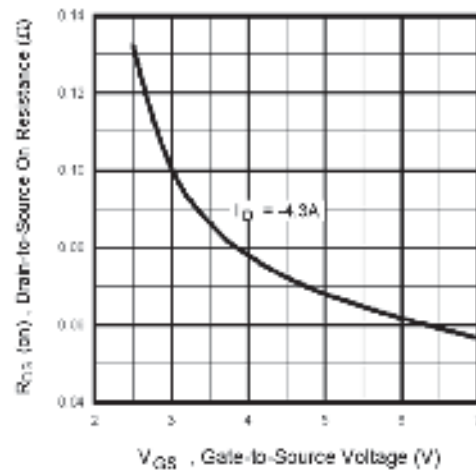


Fig 11. Typical On-Resistance Vs. Gate Voltage

Schottky Diode Characteristics

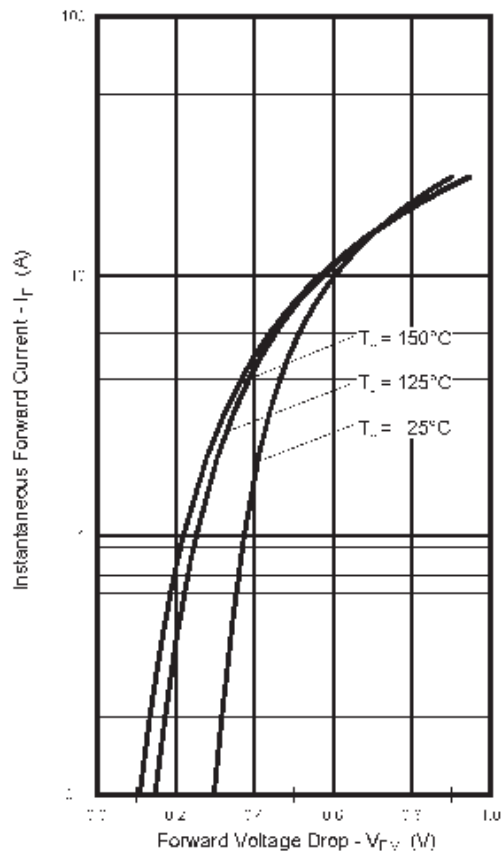


Fig. 12 - Typical Forward Voltage Drop Characteristics

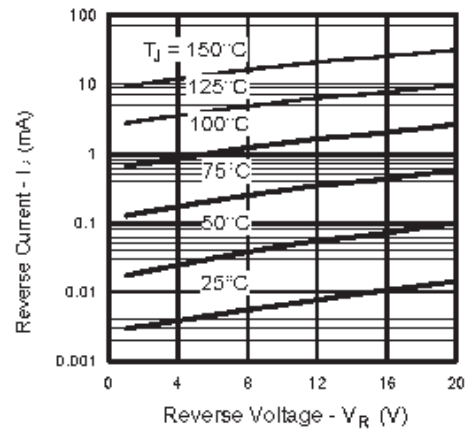


Fig. 13 - Typical Values of Reverse Current Vs. Reverse Voltage

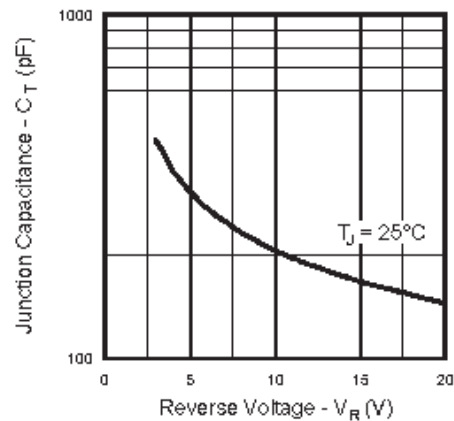
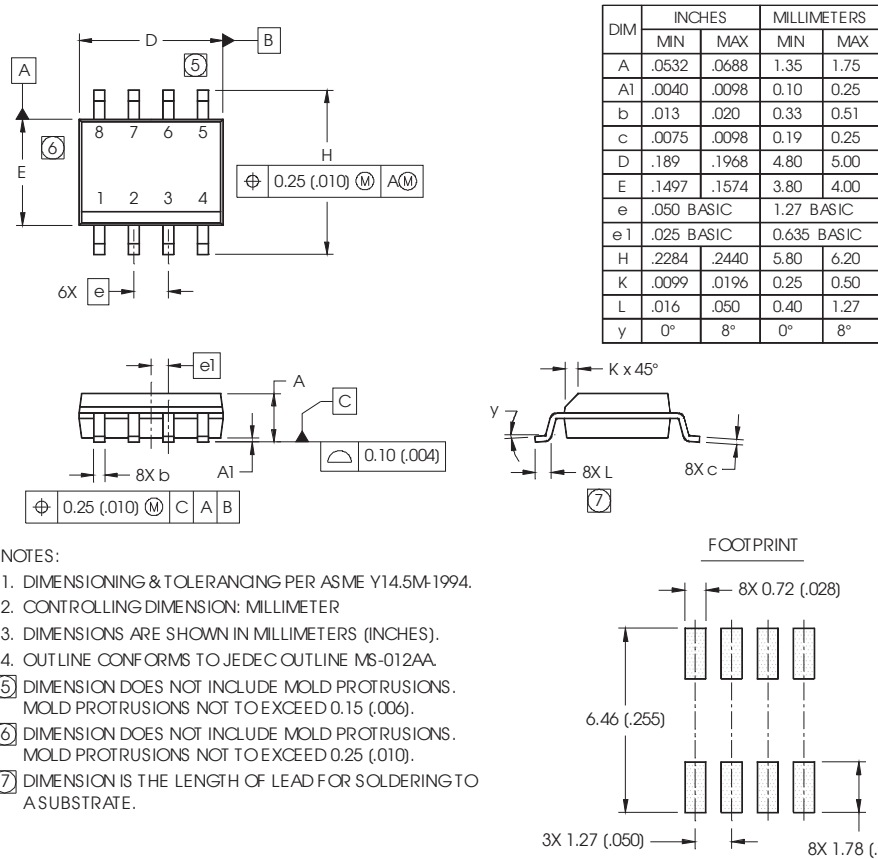


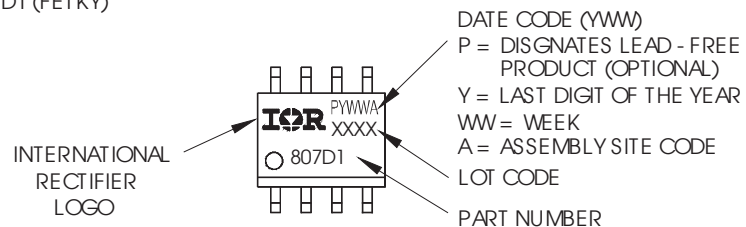
Fig. 14 - Typical Junction Capacitance Vs. Reverse Voltage

SO-8 (Fetky) Package Outline



SO-8 (Fetky) Part Marking Information

EXAMPLE: THIS IS AN IRF7807D1 (FETKY)

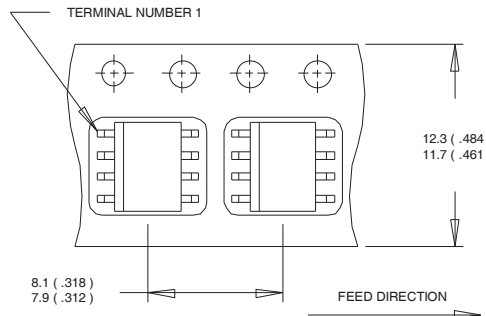


IRF7422D2PbF

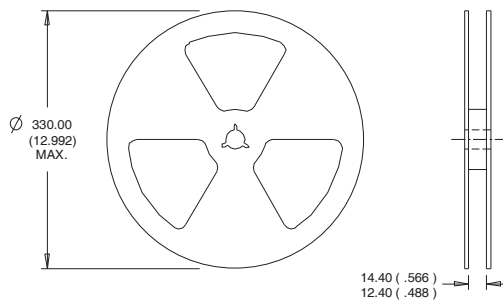
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SO-8 Tape and Reel

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.



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1. CONTROLLING DIMENSION : MILLIMETER.
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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.

International
IR Rectifier

IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105

TAC Fax: (310) 252-7903

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