

HEXFET® Power MOSFET

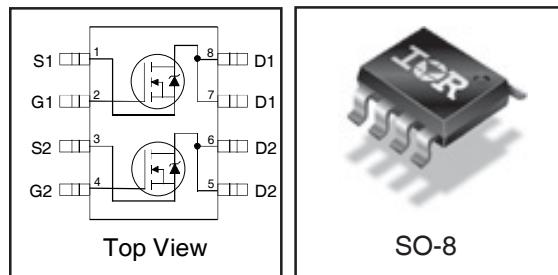
Applications

- High frequency DC-DC converters
- Lead-Free

V_{DSS}	R_{DS(on)} max	I_D
80V	73mΩ@V_{GS} = 10V	3.6A

Benefits

- Low Gate to Drain Charge to Reduce Switching Losses
- Fully Characterized Capacitance Including Effective Coss to Simplify Design, (See App. Note AN1001)
- Fully Characterized Avalanche Voltage and Current



Absolute Maximum Ratings

	Parameter	Max.	Units
V _{DS}	Drain-to-Source Voltage	80	V
V _{GS}	Gate-to-Source Voltage	± 20	
I _D @ T _A = 25°C	Continuous Drain Current, V _{GS} @ 10V	3.6	
I _D @ T _A = 100°C	Continuous Drain Current, V _{GS} @ 10V	2.9	A
I _{DM}	Pulsed Drain Current ①	29	
P _D @ T _A = 25°C	Maximum Power Dissipation	2.0	W
	Linear Derating Factor	0.02	W/°C
dv/dt	Peak Diode Recovery dv/dt ⑥	2.3	V/ns
T _J	Operating Junction and	-55 to + 150	°C
T _{STG}	Storage Temperature Range		

Thermal Resistance

	Parameter	Typ.	Max.	Units
R _{0JL}	Junction-to-Drain Lead	—	42	°C/W
R _{0JA}	Junction-to-Ambient (PCB Mount) ④	—	62.5	

Notes ① through ⑥ are on page 8

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

	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(\text{BR})\text{DSS}}$	Drain-to-Source Breakdown Voltage	80	—	—	V	$V_{\text{GS}} = 0\text{V}, I_D = 250\mu\text{A}$
$\Delta V_{(\text{BR})\text{DSS}}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	0.09	—	V/ $^\circ\text{C}$	Reference to $25^\circ\text{C}, I_D = 1\text{mA}$
$R_{\text{DS}(\text{on})}$	Static Drain-to-Source On-Resistance	—	61	73	m Ω	$V_{\text{GS}} = 10\text{V}, I_D = 2.2\text{A}$ ③
$V_{\text{GS}(\text{th})}$	Gate Threshold Voltage	2.0	—	4.0	V	$V_{\text{DS}} = V_{\text{GS}}, I_D = 250\mu\text{A}$
I_{DSS}	Drain-to-Source Leakage Current	—	—	20	μA	$V_{\text{DS}} = 80\text{V}, V_{\text{GS}} = 0\text{V}$
		—	—	250	—	$V_{\text{DS}} = 64\text{V}, V_{\text{GS}} = 0\text{V}, T_J = 125^\circ\text{C}$
I_{GSS}	Gate-to-Source Forward Leakage	—	—	200	nA	$V_{\text{GS}} = 20\text{V}$
	Gate-to-Source Reverse Leakage	—	—	-200	—	$V_{\text{GS}} = -20\text{V}$

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

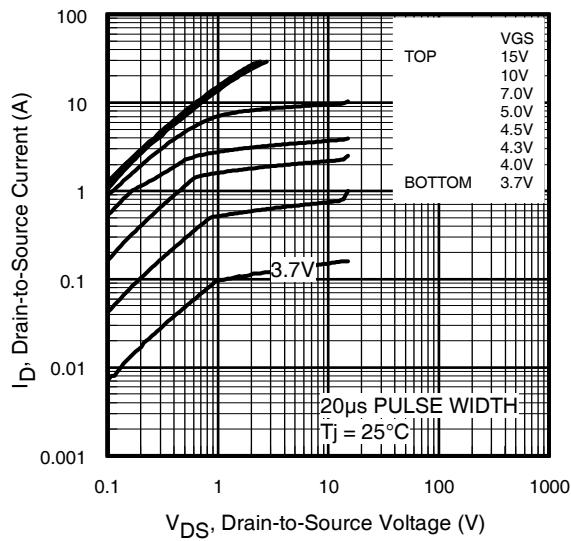
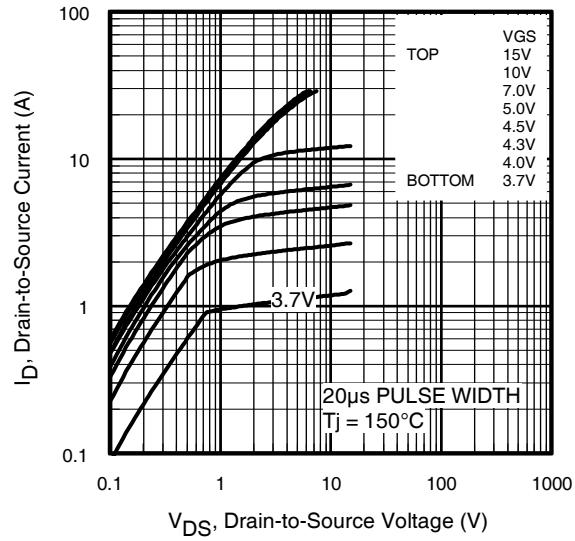
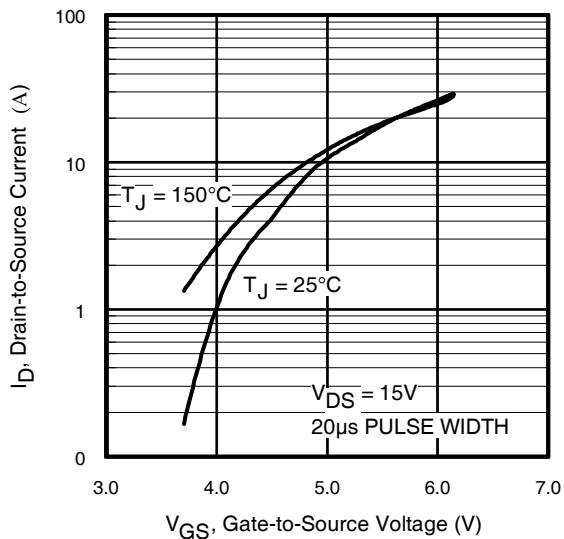
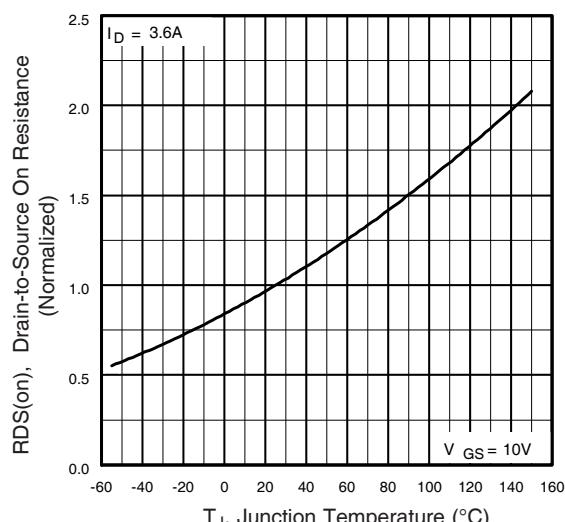
	Parameter	Min.	Typ.	Max.	Units	Conditions
g_{fs}	Forward Transconductance	4.3	—	—	S	$V_{\text{DS}} = 25\text{V}, I_D = 2.2\text{A}$
Q_g	Total Gate Charge	—	15	23		$I_D = 2.2\text{A}$
Q_{gs}	Gate-to-Source Charge	—	2.9	—	nC	$V_{\text{DS}} = 40\text{V}$
Q_{gd}	Gate-to-Drain ("Miller") Charge	—	4.5	—		$V_{\text{GS}} = 10\text{V}$ ③
$t_{d(\text{on})}$	Turn-On Delay Time	—	9.0	—		$V_{\text{DD}} = 40\text{V}$
t_r	Rise Time	—	10	—		$I_D = 2.2\text{A}$
$t_{d(\text{off})}$	Turn-Off Delay Time	—	41	—	ns	$R_G = 24\Omega$
t_f	Fall Time	—	17	—		$V_{\text{GS}} = 10\text{V}$ ③
C_{iss}	Input Capacitance	—	660	—		$V_{\text{GS}} = 0\text{V}$
C_{oss}	Output Capacitance	—	110	—	pF	$V_{\text{DS}} = 25\text{V}$
C_{rss}	Reverse Transfer Capacitance	—	15	—		$f = 1.0\text{MHz}$
C_{oss}	Output Capacitance	—	710	—		$V_{\text{GS}} = 0\text{V}, V_{\text{DS}} = 1.0\text{V}, f = 1.0\text{MHz}$
C_{oss}	Output Capacitance	—	72	—		$V_{\text{GS}} = 0\text{V}, V_{\text{DS}} = 64\text{V}, f = 1.0\text{MHz}$
C_{oss} eff.	Effective Output Capacitance	—	140	—		$V_{\text{GS}} = 0\text{V}, V_{\text{DS}} = 0\text{V to } 64\text{V}$ ③

Avalanche Characteristics

	Parameter	Typ.	Max.	Units
E_{AS}	Single Pulse Avalanche Energy ①②	—	75	mJ
I_{AR}	Avalanche Current ①	—	2.2	A

Diode Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	3.6	A	MOSFET symbol showing the integral reverse p-n junction diode.
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	29	A	
V_{SD}	Diode Forward Voltage	—	—	1.3	V	$T_J = 25^\circ\text{C}, I_S = 2.2\text{A}, V_{\text{GS}} = 0\text{V}$ ③
t_{rr}	Reverse Recovery Time	—	50	—	ns	$T_J = 25^\circ\text{C}, I_F = 2.2\text{A}, V_{\text{DD}} = 40\text{V}$
Q_{rr}	Reverse Recovery Charge	—	110	—	nC	$dI/dt = 100\text{A}/\mu\text{s}$ ③

**Fig 1.** Typical Output Characteristics**Fig 2.** Typical Output Characteristics**Fig 3.** Typical Transfer Characteristics**Fig 4.** Normalized On-Resistance Vs. Temperature

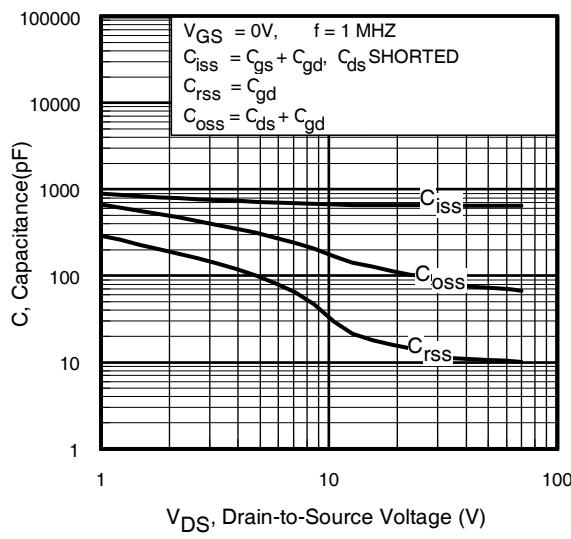


Fig 5. Typical Capacitance Vs.
Drain-to-Source Voltage

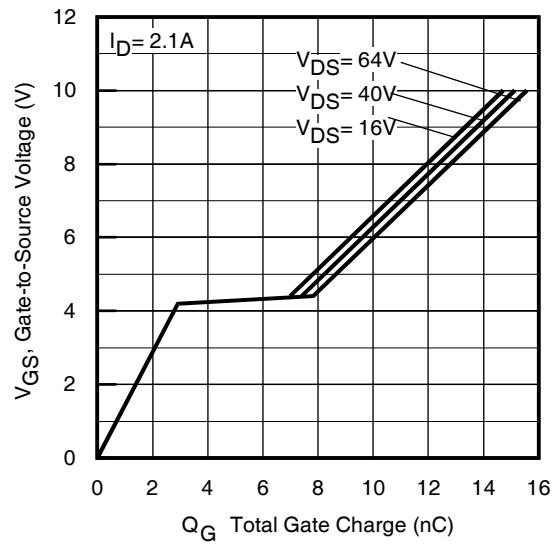


Fig 6. Typical Gate Charge Vs.
Gate-to-Source Voltage

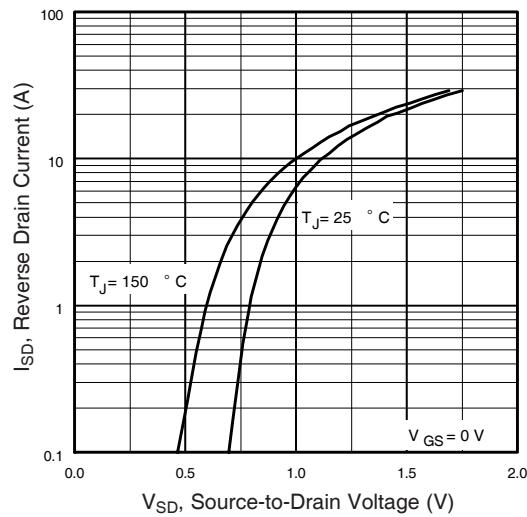


Fig 7. Typical Source-Drain Diode
Forward Voltage

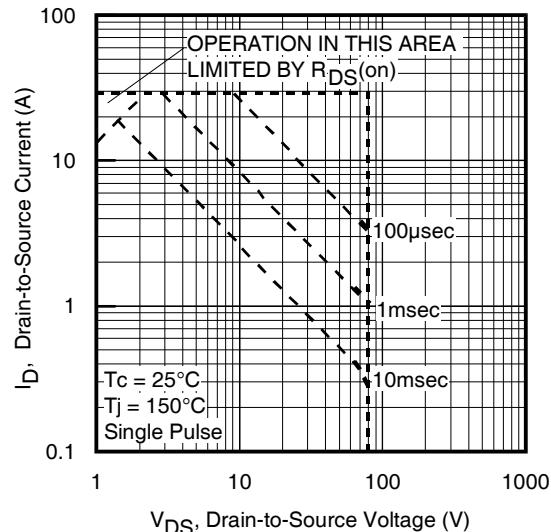


Fig 8. Maximum Safe Operating Area
 $R_{DS(on)}$

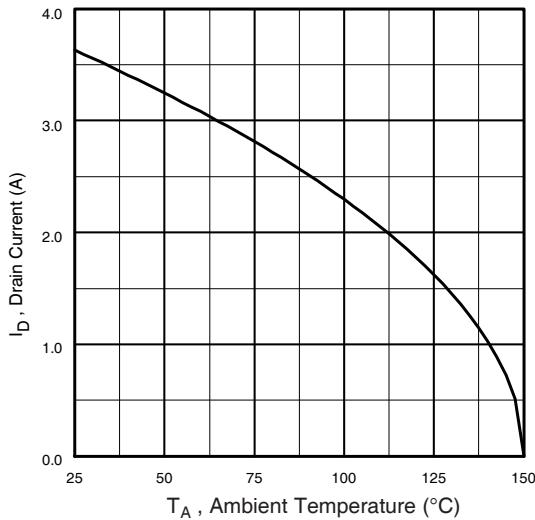


Fig 9. Maximum Drain Current Vs.
Ambient Temperature

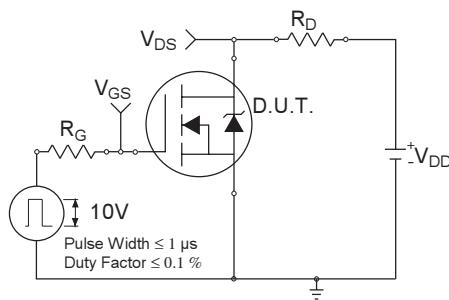


Fig 10a. Switching Time Test Circuit

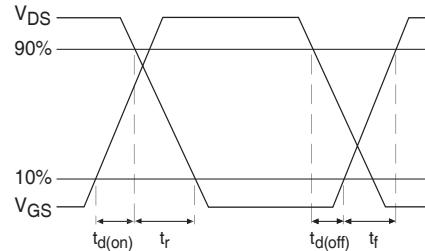


Fig 10b. Switching Time Waveforms

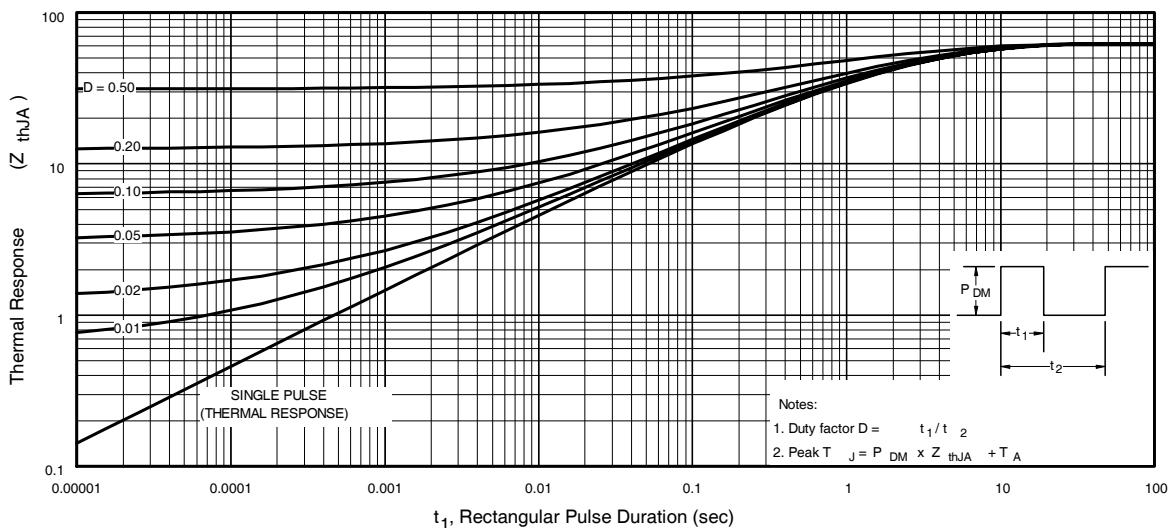


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Case

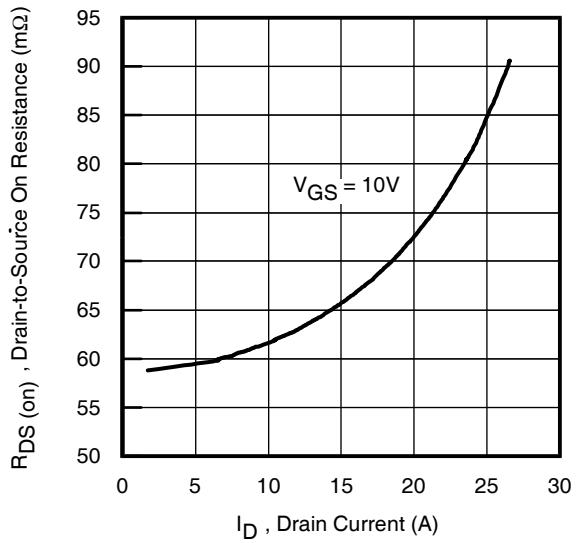


Fig 12. On-Resistance Vs. Drain Current

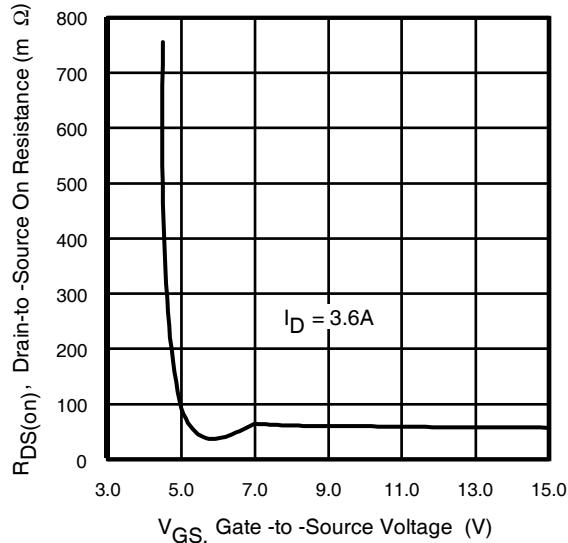


Fig 13. On-Resistance Vs. Gate Voltage

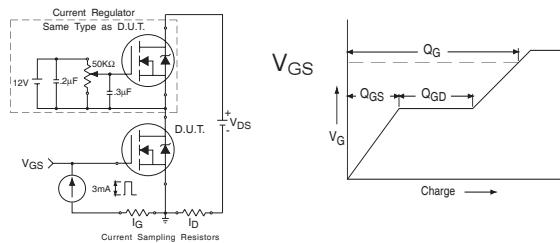


Fig 14a&b. Basic Gate Charge Test Circuit and Waveform

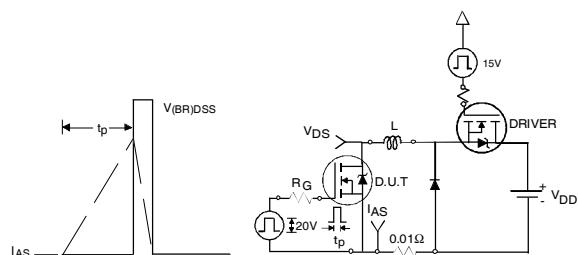


Fig 15a&b. Unclamped Inductive Test circuit and Waveforms

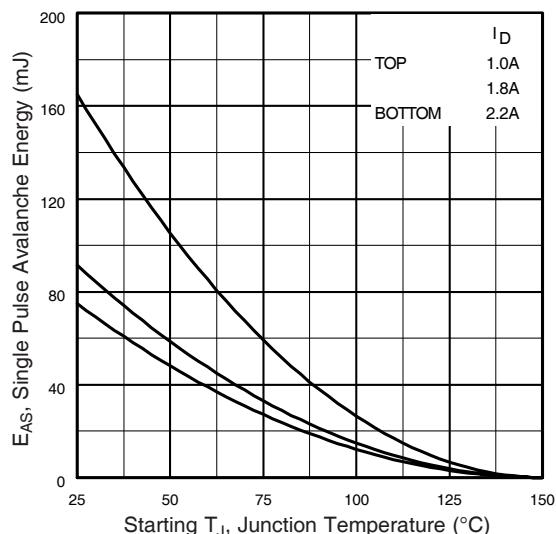
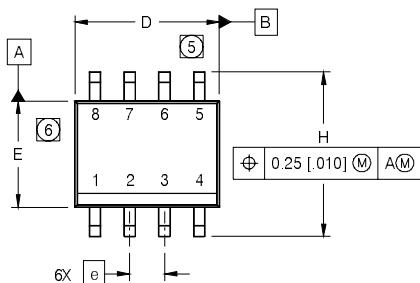


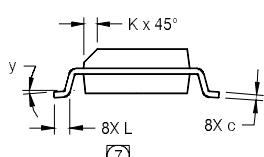
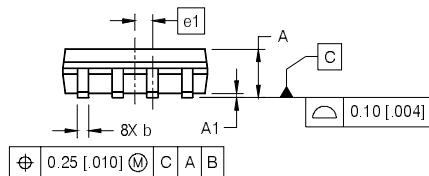
Fig 15c. Maximum Avalanche Energy Vs. Drain Current

SO-8 Package Outline (Mosfet & Fetky)

Dimensions are shown in millimeters (inches)

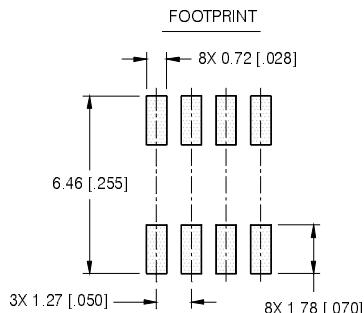


DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
b	.013	.020	0.33	0.51
c	.0075	.0098	0.19	0.25
D	.189	.1968	4.80	5.00
E	.1497	.1574	3.80	4.00
e	.050	BASIC	1.27	BASIC
e1	.025	BASIC	0.635	BASIC
H	.2284	.2440	5.80	6.20
K	.0099	.0196	0.25	0.50
L	.016	.050	0.40	1.27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



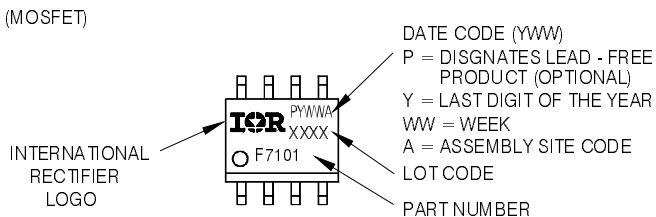
NOTES:

1. DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
2. CONTROLLING DIMENSION: MILLIMETER
3. DIMENSIONS ARE SHOWN IN MILLIMETER [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 Part Marking Information

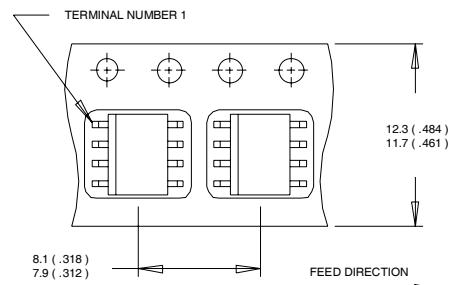
EXAMPLE: THIS IS AN IRF7101 (MOSFET)



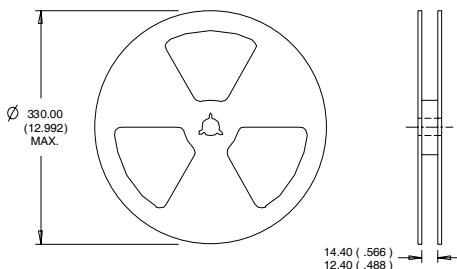
Note: For the most current drawing please refer to IR website at: <http://www.irf.com/package/>

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.

Note: For the most current drawing please refer to IR website at: <http://www.irf.com/package/>

Notes:

- ① Repetitive rating; pulse width limited by max. junction temperature.
- ② Starting $T_J = 25^\circ\text{C}$, $L = 31\text{mH}$
 $R_G = 25\Omega$, $I_{AS} = 2.2\text{A}$.
- ③ Pulse width $\leq 400\mu\text{s}$; duty cycle $\leq 2\%$.
- ④ When mounted on 1 inch square copper board.
- ⑤ C_{oss} eff. is a fixed capacitance that gives the same charging time as C_{oss} while V_{DS} is rising from 0 to 80% V_{DSS} .
- ⑥ $I_{SD} \leq 2.2\text{A}$, $di/dt \leq 220\text{A}/\mu\text{s}$, $V_{DD} \leq V_{(BR)DSS}$, $T_J \leq 150^\circ\text{C}$.

Revision History

Date	Comments
09/16/2013	<ul style="list-style-type: none"> • Updated the R_{thja} from $50^\circ\text{C}/\text{W}$ to $62.5^\circ\text{C}/\text{W}$, on page 1. • Converted the data sheet to IR Corporate Template.

International
 Rectifier

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 To contact International Rectifier, please visit <http://www.irf.com/whoto-call/>



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помошь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помошь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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