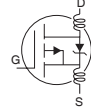
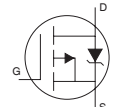


Electrical Characteristics @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	-20	—	—	V	$V_{GS} = 0V$, $I_D = -250\mu A$
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	-0.012	—	V/ $^\circ\text{C}$	Reference to 25°C , $I_D = -1mA$
$R_{DS(ON)}$	Static Drain-to-Source On-Resistance	—	—	0.040	Ω	$V_{GS} = -4.5V$, $I_D = -3.2A$ ③
		—	—	0.060		$V_{GS} = -2.7V$, $I_D = -2.7A$ ③
$V_{GS(th)}$	Gate Threshold Voltage	-0.70	—	—	V	$V_{DS} = V_{GS}$, $I_D = -250\mu A$
g_{fs}	Forward Transconductance	6.8	—	—	S	$V_{DS} = -15V$, $I_D = -3.2A$
I_{DSS}	Drain-to-Source Leakage Current	—	—	-1.0	μA	$V_{DS} = -16V$, $V_{GS} = 0V$
		—	—	-25		$V_{DS} = -16V$, $V_{GS} = 0V$, $T_J = 125^\circ\text{C}$
I_{GSS}	Gate-to-Source Forward Leakage	—	—	-100	nA	$V_{GS} = -12V$
	Gate-to-Source Reverse Leakage	—	—	100		$V_{GS} = 12V$
Q_g	Total Gate Charge	—	—	50	nC	$I_D = -3.2A$
Q_{gs}	Gate-to-Source Charge	—	—	5.5		$V_{DS} = -16V$
Q_{gd}	Gate-to-Drain ("Miller") Charge	—	—	21		$V_{GS} = -4.5V$, See Fig. 6 and 12 ③
$t_{d(on)}$	Turn-On Delay Time	—	14	—	ns	$V_{DD} = -10V$
t_r	Rise Time	—	32	—		$I_D = -3.2A$
$t_{d(off)}$	Turn-Off Delay Time	—	100	—		$R_G = 6.0\Omega$
t_f	Fall Time	—	65	—		$R_D = 3.1\Omega$, See Fig. 10 ③
L_D	Internal Drain Inductance	—	2.5	—	nH	Between lead tip and center of die contact 
L_S	Internal Source Inductance	—	4.0	—		
C_{iss}	Input Capacitance	—	1500	—	pF	$V_{GS} = 0V$
C_{oss}	Output Capacitance	—	730	—		$V_{DS} = -15V$
C_{rss}	Reverse Transfer Capacitance	—	340	—		$f = 1.0MHz$, See Fig. 5

Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	-3.1	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	-27		
V_{SD}	Diode Forward Voltage	—	—	-1.0	V	$T_J = 25^\circ\text{C}$, $I_S = -2.0A$, $V_{GS} = 0V$ ③
t_{rr}	Reverse Recovery Time	—	69	100	ns	$T_J = 25^\circ\text{C}$, $I_F = -3.2A$
Q_{rr}	Reverse Recovery Charge	—	71	110	μC	$di/dt = 100A/\mu s$ ③
t_{on}	Forward Turn-On Time	Intrinsic turn-on time is negligible (turn-on is dominated by $L_S + L_D$)				

Notes:

① Repetitive rating; pulse width limited by max. junction temperature. (See fig. 11)

③ Pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$.

② $I_{SD} \leq -3.2A$, $di/dt \leq -65A/\mu s$, $V_{DD} \leq V_{(BR)DSS}$, $T_J \leq 150^\circ\text{C}$

④ Surface mounted on FR-4 board, $t \leq 10sec$.

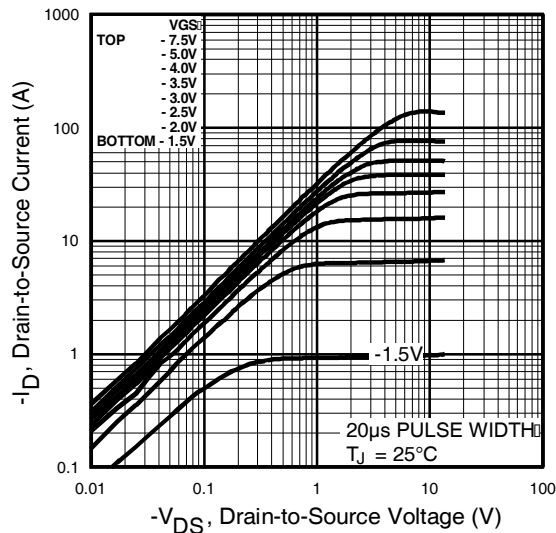


Fig 1. Typical Output Characteristics

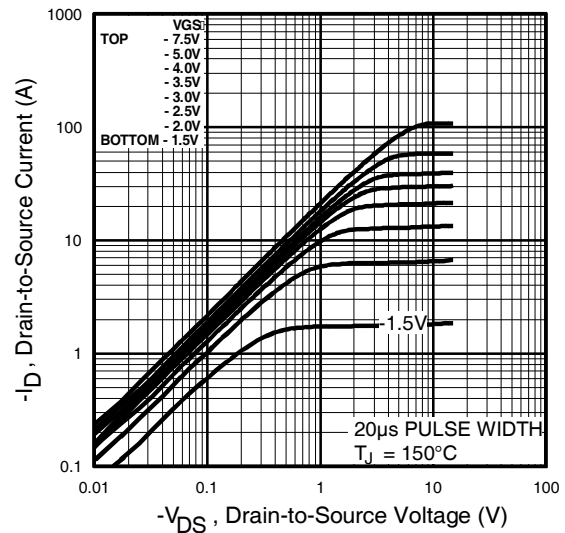


Fig 2. Typical Output Characteristics

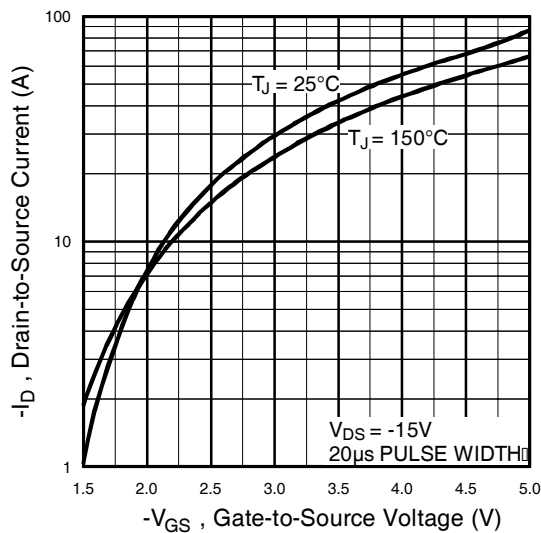


Fig 3. Typical Transfer Characteristics

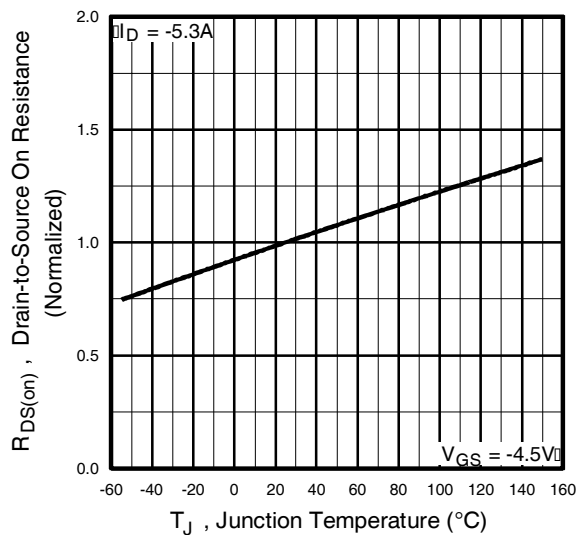


Fig 4. Normalized On-Resistance
Vs. Temperature

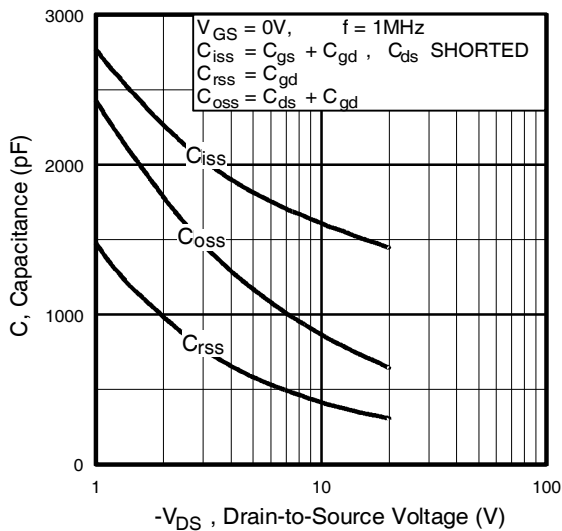


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

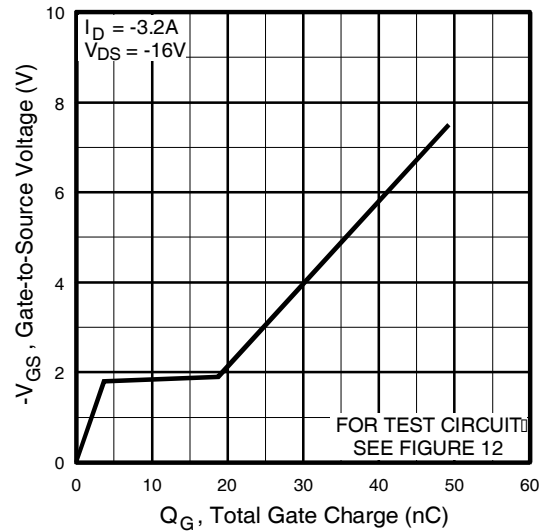


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

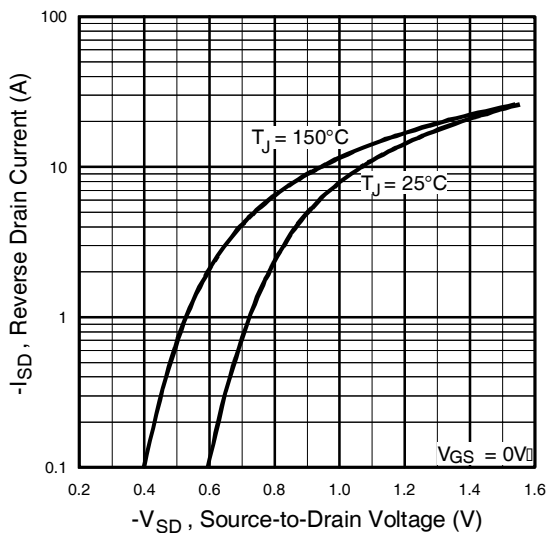


Fig 7. Typical Source-Drain Diode Forward Voltage

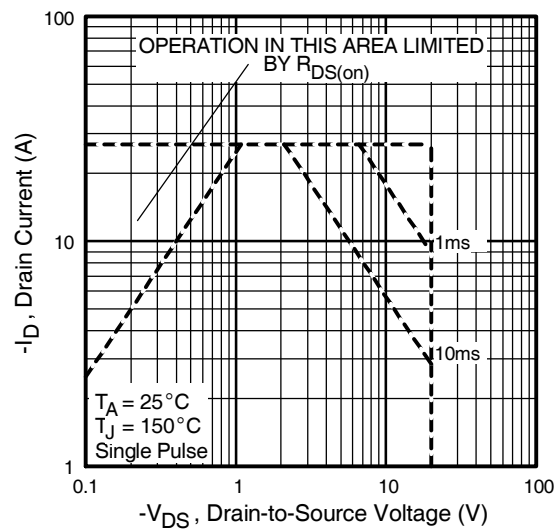


Fig 8. Maximum Safe Operating Area

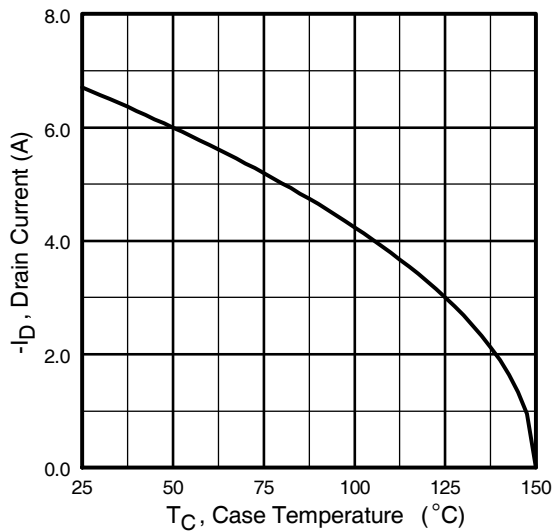


Fig 9. Maximum Drain Current Vs. Ambient Temperature

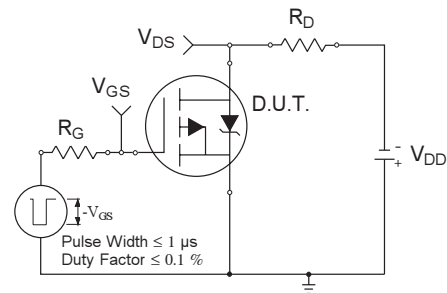


Fig 10a. Switching Time Test Circuit

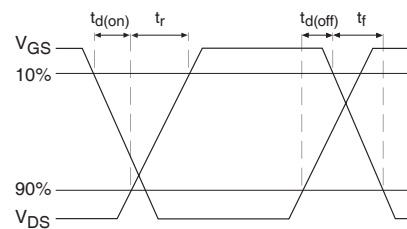


Fig 10b. Switching Time Waveforms

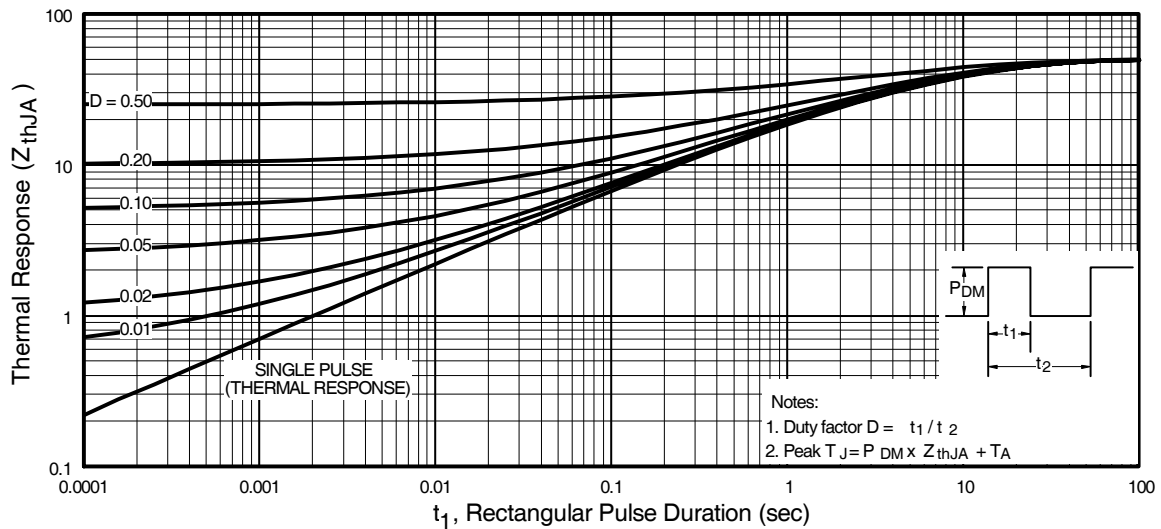


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

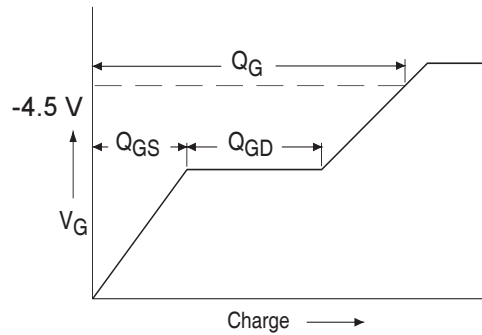


Fig 12a. Basic Gate Charge Waveform

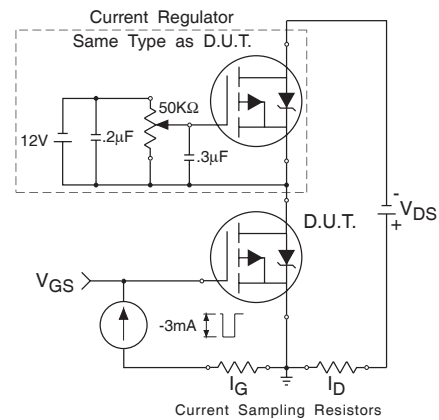
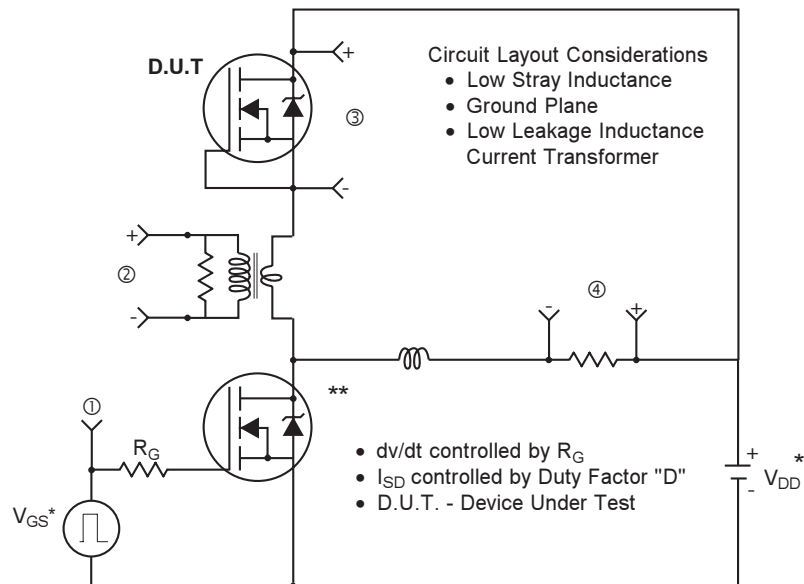


Fig 12b. Gate Charge Test Circuit

Peak Diode Recovery dv/dt Test Circuit



* Reverse Polarity for P-Channel

** Use P-Channel Driver for P-Channel Measurements

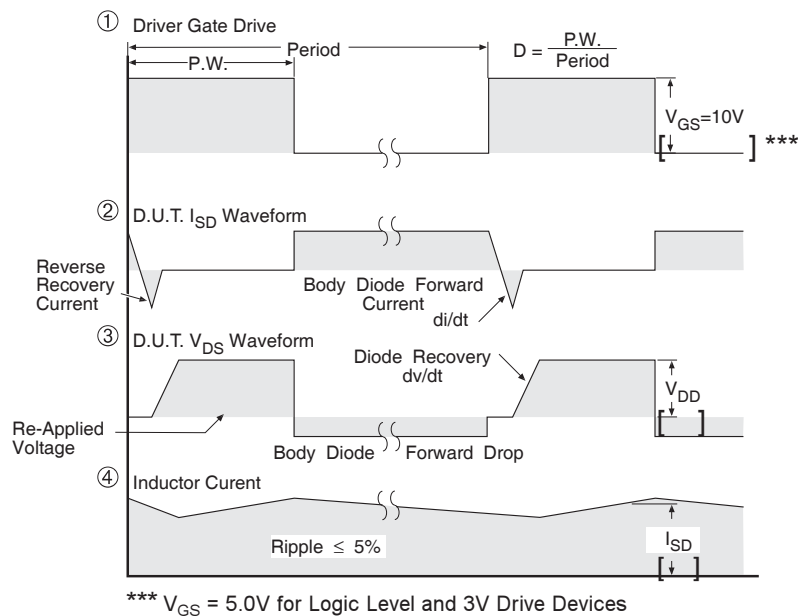
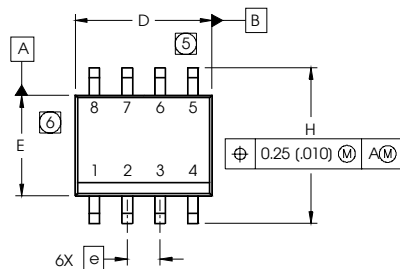


Fig 13. For P-Channel HEXFETS

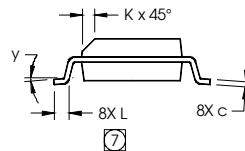
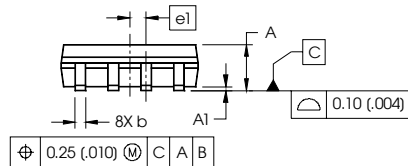
IRF7404

SO-8 Package Outline

International
IOR Rectifier



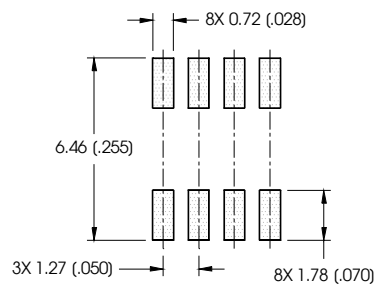
DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
b	.013	.020	0.33	0.51
c	.0075	.0098	0.19	0.25
D	.189	.1968	4.80	5.00
E	.1497	.1574	3.80	4.00
e	.050 BASIC		1.27 BASIC	
e1	.025 BASIC		0.635 BASIC	
H	.2284	.2440	5.80	6.20
K	.0099	.0196	0.25	0.50
L	.016	.050	0.40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



NOTES:

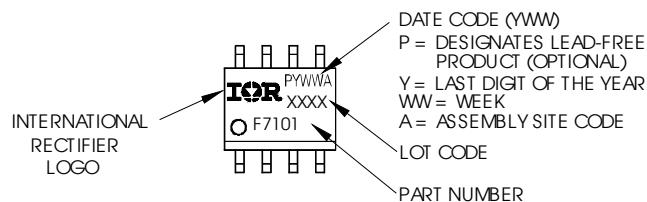
1. DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
2. CONTROLLING DIMENSION: MILLIMETER
3. DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
5. DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 (.006).
6. DIMENSION DOES NOT INCLUDE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

FOOTPRINT



SO-8 Part Marking

EXAMPLE: THIS IS AN IRF7101 (MOSFET)



International
IOR 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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