

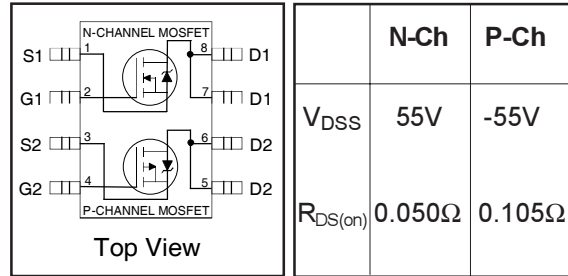


**THE DATASHEET OF
IRF7343QTRPBF**

IRF7343QPBF

HEXFET® Power MOSFET

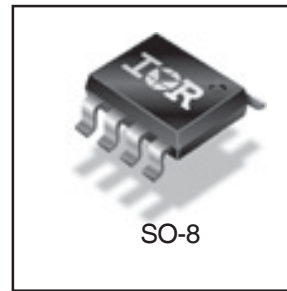
- Advanced Process Technology
- Ultra Low On-Resistance
- Dual N and P Channel MOSFET
- Surface Mount
- Available in Tape & Reel
- 150°C Operating Temperature
- Lead-Free



Description

These HEXFET® Power MOSFET's in a Dual SO-8 package utilize the latest processing techniques to achieve extremely low on-resistance per silicon area. Additional features of these HEXFET Power MOSFET's are a 150°C junction operating temperature, fast switching speed and improved repetitive avalanche rating. These benefits combine to make this design an extremely efficient and reliable device for use in a wide variety of applications.

The efficient SO-8 package provides enhanced thermal characteristics and dual MOSFET die capability making it ideal in a variety of power applications. This dual, surface mount SO-8 can dramatically reduce board space and is also available in Tape & Reel.



Absolute Maximum Ratings

Parameter	Description	Max.		Units
		N-Channel	P-Channel	
V_{DS}	Drain-Source Voltage	55	-55	V
$I_D @ T_A = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	4.7	-3.4	A
$I_D @ T_A = 70^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	3.8	-2.7	
I_{DM}	Pulsed Drain Current ①	38	-27	
$P_D @ T_A = 25^\circ C$	Maximum Power Dissipation ⑤	2.0		W
$P_D @ T_A = 70^\circ C$	Maximum Power Dissipation ⑤	1.3		W
E_{AS}	Single Pulse Avalanche Energy ③	72	114	mJ
I_{AR}	Avalanche Current	4.7	-3.4	A
E_{AR}	Repetitive Avalanche Energy	0.20		mJ
V_{GS}	Gate-to-Source Voltage	± 20		V
dv/dt	Peak Diode Recovery dv/dt ②	5.0	-5.0	V/ns
T_J, T_{STG}	Junction and Storage Temperature Range	-55 to + 150		°C

Thermal Resistance

Parameter	Description	Typ.	Max.	Units
$R_{\theta JA}$	Maximum Junction-to-Ambient ⑤	—	62.5	°C/W

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

Parameter	Min.	Typ.	Max.	Units	Conditions			
						Parameter		
V _{(BR)DSS}	Drain-to-Source Breakdown Voltage		N-Ch	55	—	V	V _{GS} = 0V, I _D = 250μA	
	P-Ch	-55	—	—	—	—	V _{GS} = 0V, I _D = -250μA	
ΔV _{(BR)DSS} /ΔT _J	Breakdown Voltage Temp. Coefficient		N-Ch	—	0.059	—	V/°C	Reference to 25°C, I _D = 1mA
	P-Ch	—	0.054	—	—	—	—	Reference to 25°C, I _D = -1mA
R _{DS(ON)}	Static Drain-to-Source On-Resistance		N-Ch	—	0.043	0.050	Ω	V _{GS} = 10V, I _D = 4.7A ④
	—	0.056		0.065	V _{GS} = 4.5V, I _D = 3.8A ④			
	P-Ch	—	0.095	0.105	V _{GS} = -10V, I _D = -3.4A ④			
		—	0.150	0.170	V _{GS} = -4.5V, I _D = -2.7A ④			
V _{GS(th)}	Gate Threshold Voltage		N-Ch	1.0	—	—	V	V _{DS} = V _{GS} , I _D = 250μA
	P-Ch	-1.0	—	—	—	—	—	V _{DS} = V _{GS} , I _D = -250μA
g _{fs}	Forward Transconductance		N-Ch	7.9	—	—	S	V _{DS} = 10V, I _D = 4.5A ④
	P-Ch	3.3	—	—	—	—	—	V _{DS} = -10V, I _D = -3.1A ④
I _{DSS}	Drain-to-Source Leakage Current		N-Ch	—	—	2.0	μA	V _{DS} = 55V, V _{GS} = 0V
	P-Ch	—	—	-2.0	—	—		V _{DS} = -55V, V _{GS} = 0V
	N-Ch	—	—	25	—	—		V _{DS} = 55V, V _{GS} = 0V, T _J = 55°C
	P-Ch	—	—	-25	—	—		V _{DS} = -55V, V _{GS} = 0V, T _J = 55°C
I _{GSS}	Gate-to-Source Forward Leakage		N-P	—	—	±100	nA	V _{GS} = ±20V
Q _g	Total Gate Charge		N-Ch	—	24	36	nC	N-Channel I _D = 4.5A, V _{DS} = 44V, V _{GS} = 10V ④
	P-Ch	—	26	38	—	—		
Q _{gs}	Gate-to-Source Charge		N-Ch	—	2.3	3.4	nC	P-Channel I _D = -3.1A, V _{DS} = -44V, V _{GS} = -10V ④
	P-Ch	—	3.0	4.5	—	—		
Q _{gd}	Gate-to-Drain ("Miller") Charge		N-Ch	—	7.0	10	nC	N-Channel V _{DD} = 28V, I _D = 1.0A, R _G = 6.0Ω, R _D = 28Ω ④
	P-Ch	—	8.4	13	—	—		
t _{d(on)}	Turn-On Delay Time		N-Ch	—	8.3	12	ns	P-Channel V _{DD} = -28V, I _D = -1.0A, R _G = 6.0Ω, R _D = 28Ω ④
	P-Ch	—	14	22	—	—		
t _r	Rise Time		N-Ch	—	3.2	4.8	ns	N-Channel V _{DD} = 28V, I _D = 1.0A, R _G = 6.0Ω, R _D = 28Ω ④
	P-Ch	—	10	15	—	—		
t _{d(off)}	Turn-Off Delay Time		N-Ch	—	32	48	ns	P-Channel V _{DD} = -28V, I _D = -1.0A, R _G = 6.0Ω, R _D = 28Ω ④
	P-Ch	—	43	64	—	—		
t _f	Fall Time		N-Ch	—	13	20	ns	N-Channel V _{DD} = 28V, I _D = 1.0A, R _G = 6.0Ω, R _D = 28Ω ④
	P-Ch	—	22	32	—	—		
C _{iss}	Input Capacitance		N-Ch	—	740	—	pF	N-Channel V _{GS} = 0V, V _{DS} = 25V, f = 1.0MHz
	P-Ch	—	690	—	—	—		
C _{oss}	Output Capacitance		N-Ch	—	190	—	pF	P-Channel V _{GS} = 0V, V _{DS} = -25V, f = 1.0MHz
	P-Ch	—	210	—	—	—		
C _{rss}	Reverse Transfer Capacitance		N-Ch	—	71	—	pF	N-Channel V _{GS} = 0V, V _{DS} = 25V, f = 1.0MHz
	P-Ch	—	86	—	—	—		

Source-Drain Ratings and Characteristics

Parameter	Min.	Typ.	Max.	Units	Conditions			
I _S	Continuous Source Current (Body Diode)		N-Ch	—	2.0	A		
	P-Ch	—	-2.0	—	—			
I _{SM}	Pulsed Source Current (Body Diode) ①		N-Ch	—	38	A		
	P-Ch	—	-27	—	—			
V _{SD}	Diode Forward Voltage		N-Ch	—	0.70	1.2	V	T _J = 25°C, I _S = 2.0A, V _{GS} = 0V ③
	P-Ch	—	-0.80	-1.2	—	—		T _J = 25°C, I _S = -2.0A, V _{GS} = 0V ③
t _{rr}	Reverse Recovery Time		N-Ch	—	60	90	ns	N-Channel T _J = 25°C, I _F = 2.0A, di/dt = 100A/μs ④
	P-Ch	—	54	80	—	—		
Q _{rr}	Reverse Recovery Charge		N-Ch	—	120	170	nC	P-Channel T _J = 25°C, I _F = -2.0A, di/dt = 100A/μs ④
	P-Ch	—	85	130	—	—		

Notes:

- ① Repetitive rating; pulse width limited by max. junction temperature. (See fig. 22)
- ② N-Channel I_{SD} ≤ 4.7A, di/dt ≤ 220A/μs, V_{DD} ≤ V_{(BR)DSS}, T_J ≤ 150°C
P-Channel I_{SD} ≤ -3.4A, di/dt ≤ -150A/μs, V_{DD} ≤ V_{(BR)DSS}, T_J ≤ 150°C
- ③ N-Channel Starting T_J = 25°C, L = 6.5mH R_G = 25Ω, I_{AS} = 4.7A.
P-Channel Starting T_J = 25°C, L = 20mH R_G = 25Ω, I_{AS} = -3.4A.
- ④ Pulse width ≤ 300μs; duty cycle ≤ 2%.
- ⑤ Surface mounted on FR-4 board, t ≤ 10sec.

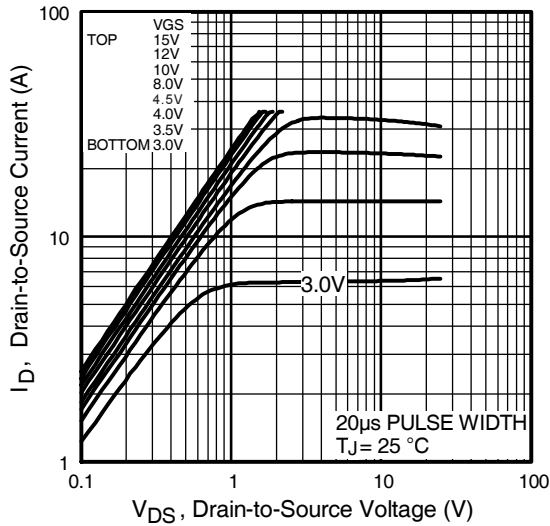


Fig 1. Typical Output Characteristics

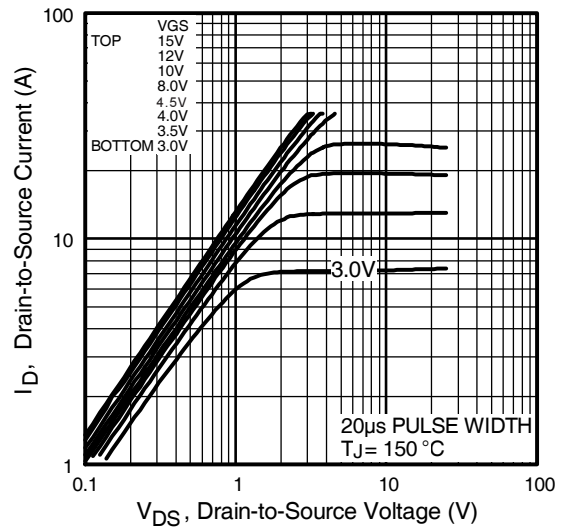


Fig 2. Typical Output Characteristics

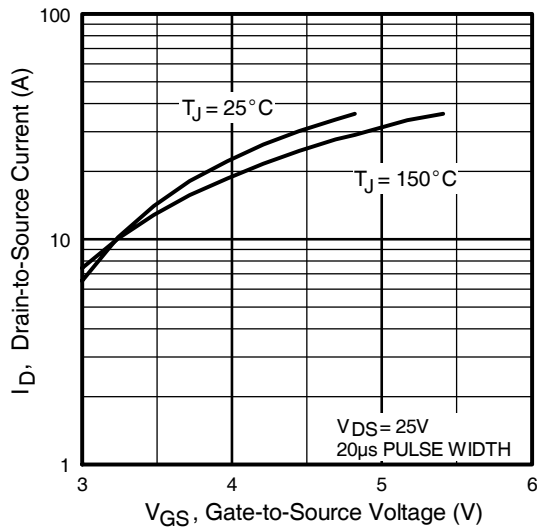


Fig 3. Typical Transfer Characteristics

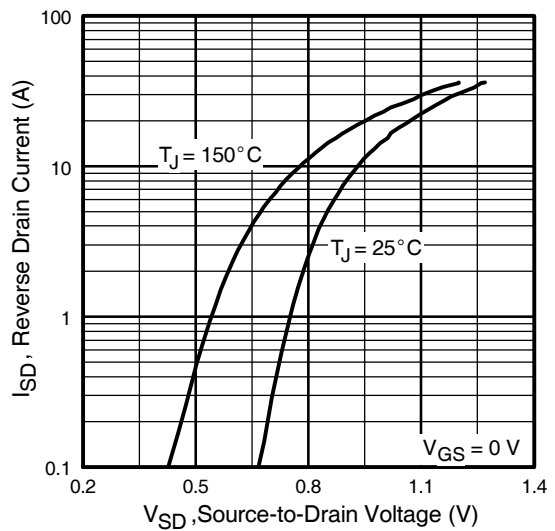


Fig 4. Typical Source-Drain Diode Forward Voltage

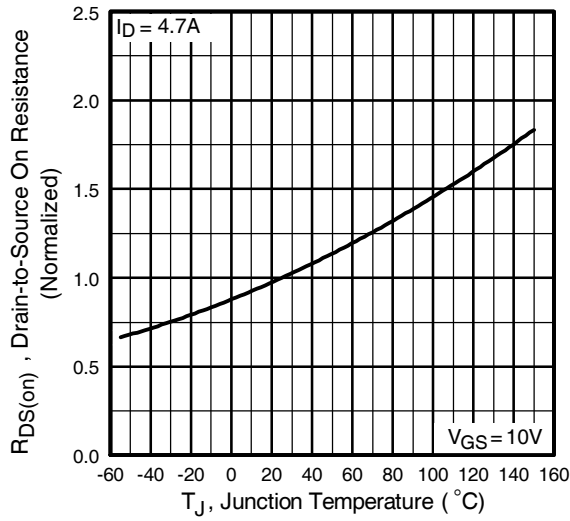


Fig 5. Normalized On-Resistance Vs. Temperature

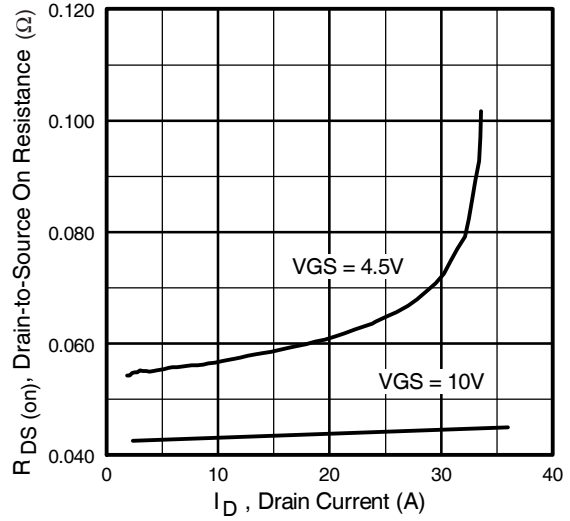


Fig 6. Typical On-Resistance Vs. Drain Current

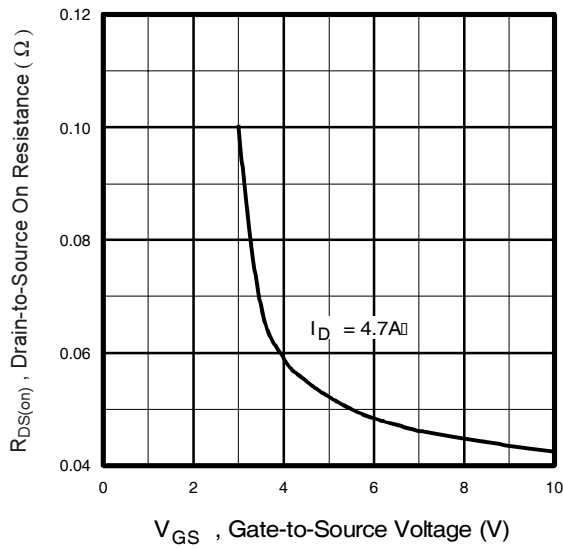


Fig 7. Typical On-Resistance Vs. Gate Voltage

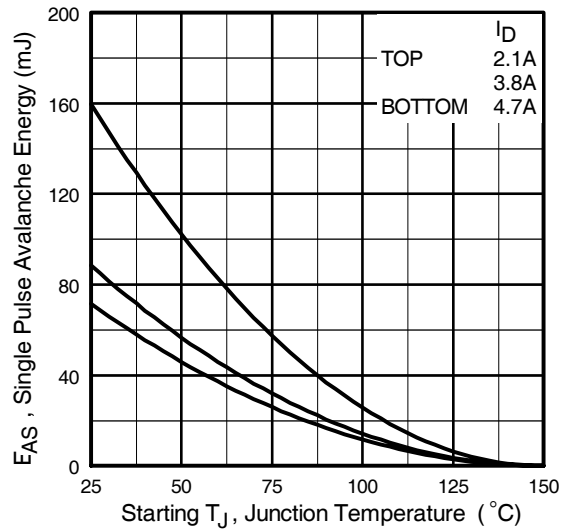


Fig 8. Maximum Avalanche Energy Vs. Drain Current

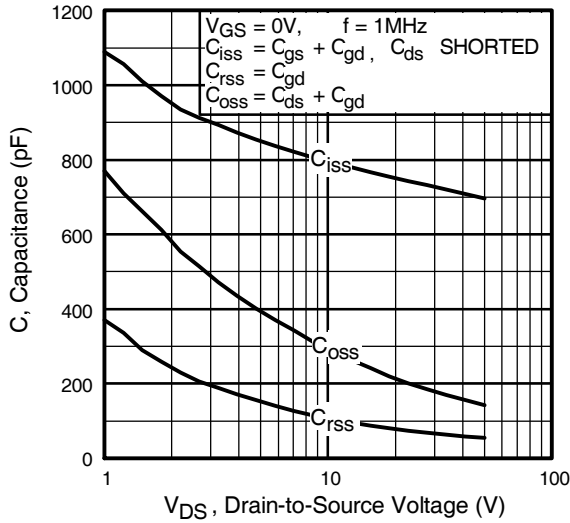


Fig 9. Typical Capacitance Vs. Drain-to-Source Voltage

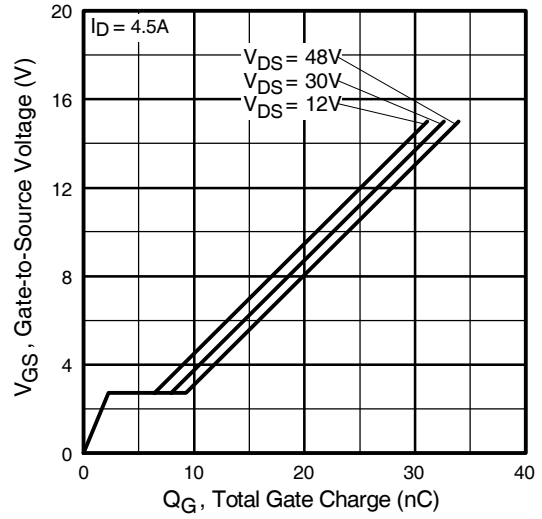


Fig 10. Typical Gate Charge Vs. Gate-to-Source Voltage

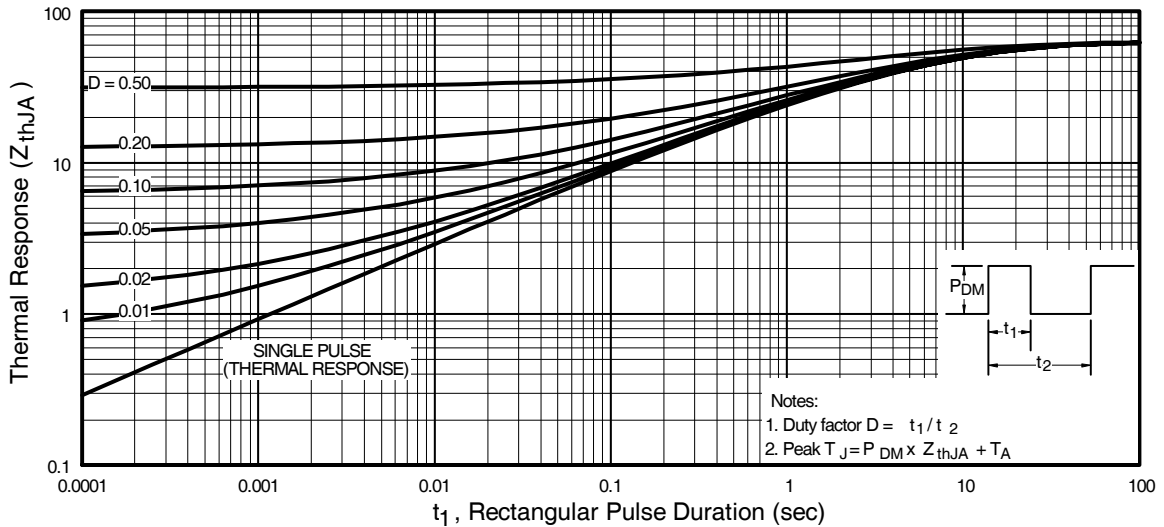


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

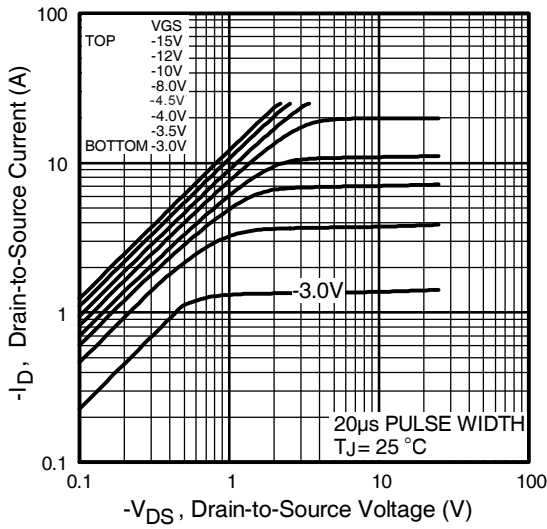


Fig 12. Typical Output Characteristics

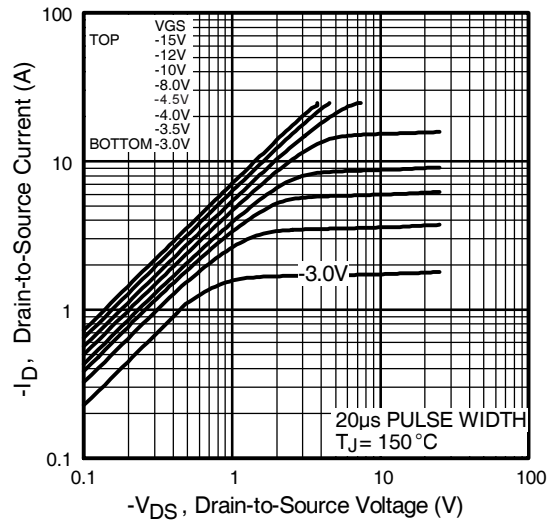


Fig 13. Typical Output Characteristics

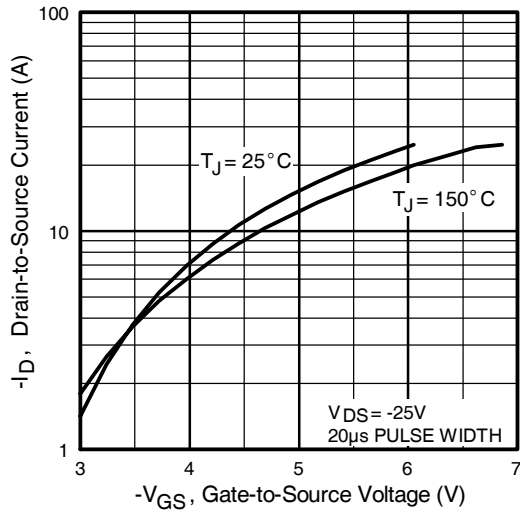


Fig 14. Typical Transfer Characteristics

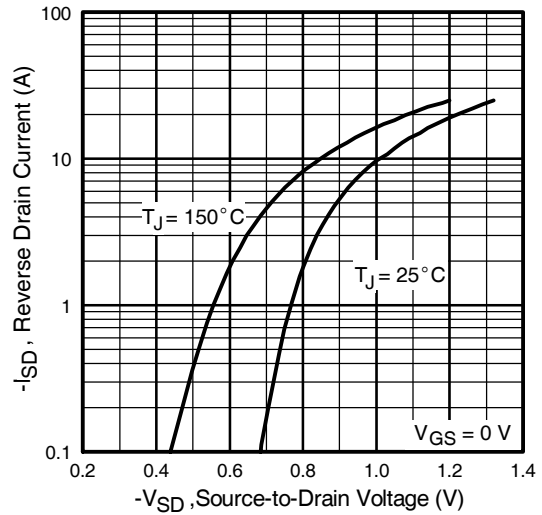


Fig 15. Typical Source-Drain Diode Forward Voltage

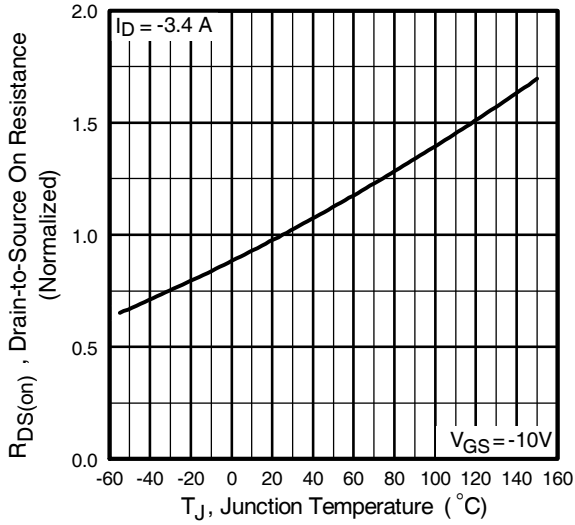


Fig 16. Normalized On-Resistance Vs. Temperature

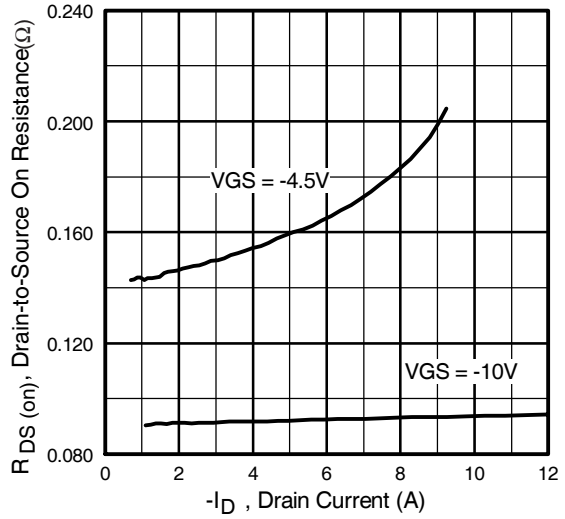


Fig 17. Typical On-Resistance Vs. Drain Current

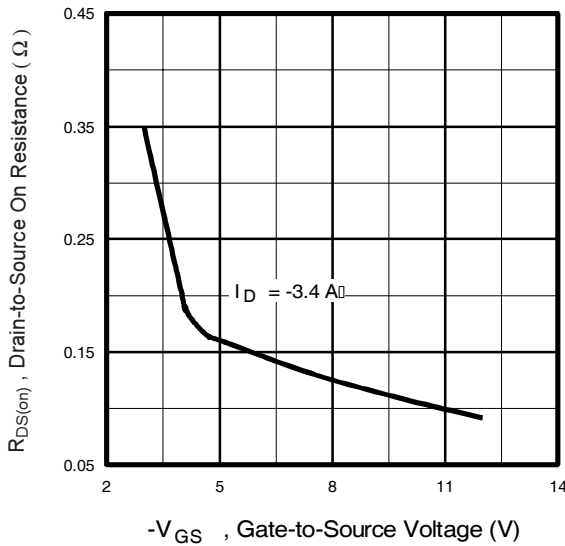


Fig 18. Typical On-Resistance Vs. Gate Voltage

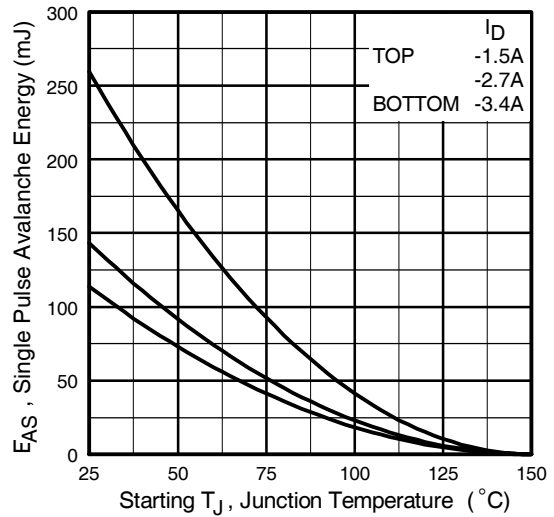


Fig 19. Maximum Avalanche Energy Vs. Drain Current

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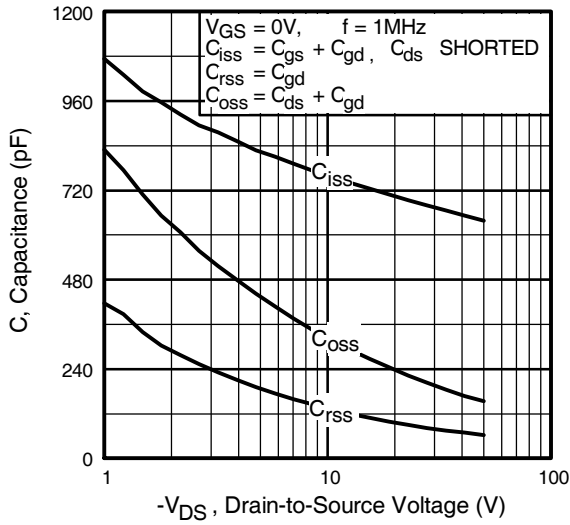


Fig 20. Typical Capacitance Vs. Drain-to-Source Voltage

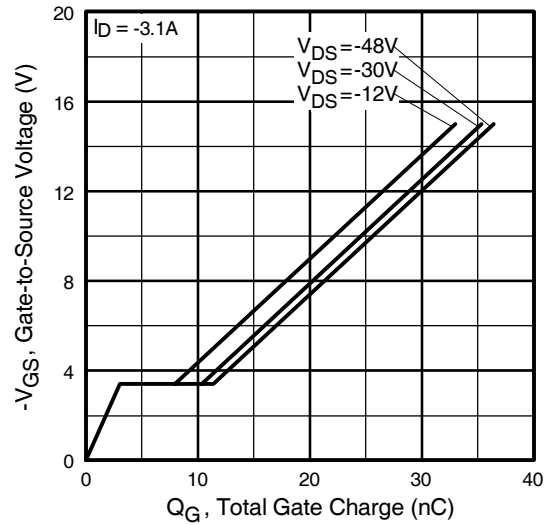


Fig 21. Typical Gate Charge Vs. Gate-to-Source Voltage

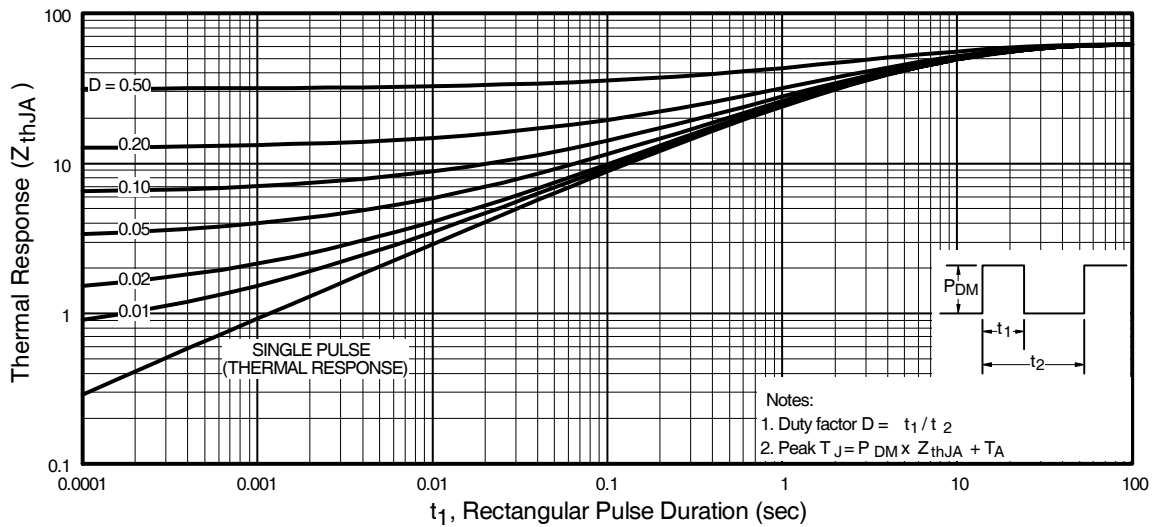
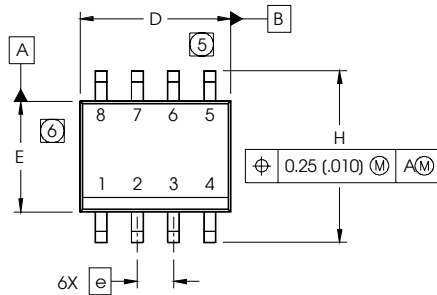


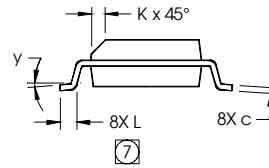
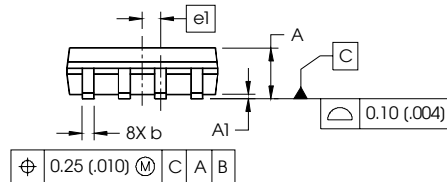
Fig 22. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

SO-8 Package Outline

Dimensions are shown in millimeters (inches)



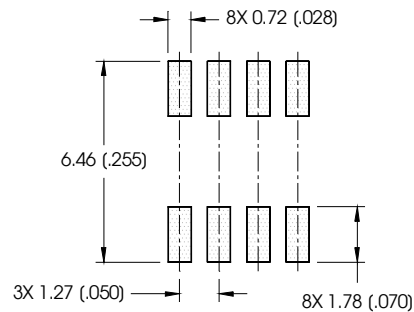
DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
b	.013	.020	0.33	0.51
c	.0075	.0098	0.19	0.25
D	.189	.1968	4.80	5.00
E	.1497	.1574	3.80	4.00
e	.050 BASIC		1.27 BASIC	
e1	.025 BASIC		0.635 BASIC	
H	.2284	.2440	5.80	6.20
K	.0099	.0196	0.25	0.50
L	.016	.050	0.40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



NOTES:

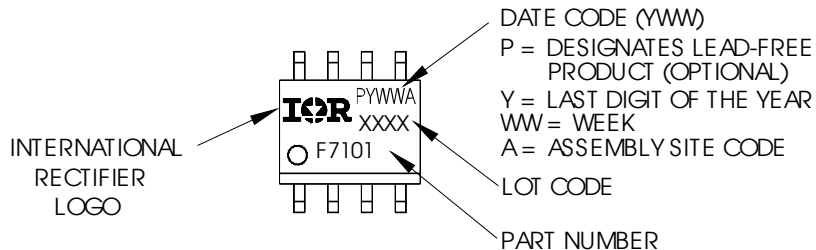
- DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
- CONTROLLING DIMENSION: MILLIMETER
- DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
- OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
- (5) DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 (.006).
- (6) DIMENSION DOES NOT 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)



Notes:

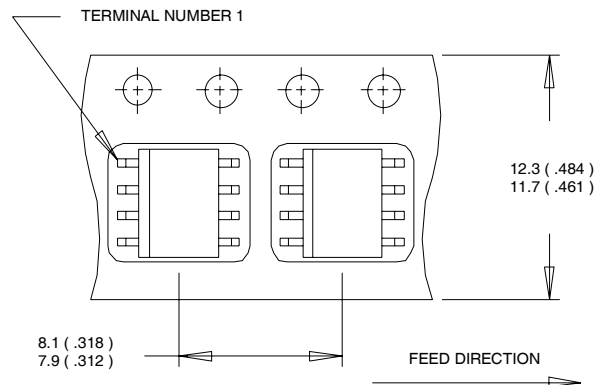
- For an Automotive Qualified version of this part please see <http://www.irf.com/product-info/auto/>
- For the most current drawing please refer to IR website at <http://www.irf.com/package/>

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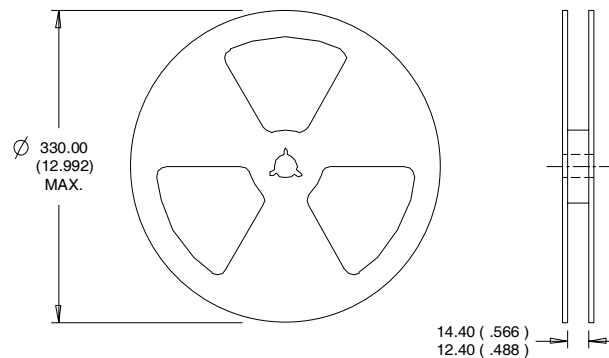
SO-8 Tape and Reel

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

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