

IRF7379QPbF

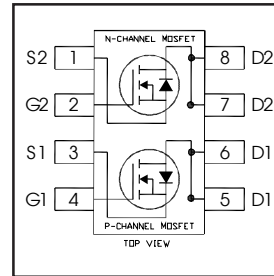
HEXFET® Power MOSFET

- 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

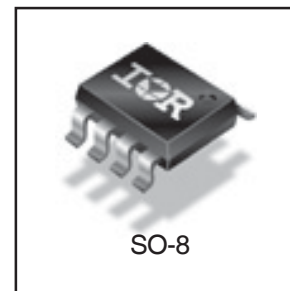
Description

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.



	N-Ch	P-Ch
V_{DS}	30V	-30V
$R_{DS(on)}$	0.045Ω	0.090Ω



Absolute Maximum Ratings

	Parameter	Max.		Units
		N-Channel	P-Channel	
V_{SD}	Drain-to-Source Voltage	30	-30	A
$I_D @ T_A = 25^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10\text{V}$	5.8	-4.3	
$I_D @ T_A = 70^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10\text{V}$	4.6	-3.4	
I_{DM}	Pulsed Drain Current ①	46	-34	
$P_D @ T_A = 25^\circ\text{C}$	Power Dissipation	2.5		W
	Linear Derating Factor	0.02		W/°C
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 Ratings

	Parameter	Max.	Units
$R_{\theta JA}$	Maximum Junction-to-Ambient③	50	°C/W

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

	Parameter		Min.	Typ.	Max.	Units	Conditions
V _{(BR)DSS}	Drain-to-Source Breakdown Voltage	N-Ch	30	—	—	V	V _{GS} = 0V, I _D = 250μA
		P-Ch	-30	—	—		V _{GS} = 0V, I _D = -250μA
ΔV _{(BR)DSS} /ΔT _J	Breakdown Voltage Temp. Coefficient	N-Ch	—	0.032	—	V/°C	Reference to 25°C, I _D = 1mA
		P-Ch	—	-0.037	—		Reference to 25°C, I _D = -1mA
R _{DS(ON)}	Static Drain-to-Source On-Resistance	N-Ch	—	0.038	0.045	Ω	V _{GS} = 10V, I _D = 5.8A ③
			—	0.055	0.075		V _{GS} = 4.5V, I _D = 4.9A ③
		P-Ch	—	0.070	0.090		V _{GS} = -10V, I _D = -4.3A ③
			—	0.130	0.180		V _{GS} = -4.5V, I _D = -3.7A ③
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	5.2	—	—	S	V _{DS} = 15V, I _D = 2.4A ③
		P-Ch	2.5	—	—		V _{DS} = -24V, I _D = -1.8A ③
I _{DSS}	Drain-to-Source Leakage Current	N-Ch	—	—	1.0	μA	V _{DS} = 24V, V _{GS} = 0V
		P-Ch	—	—	-1.0		V _{DS} = -24V, V _{GS} = 0V
		N-Ch	—	—	25		V _{DS} = 24V, V _{GS} = 0V, T _J = 125°C
		P-Ch	—	—	-25		V _{DS} = -24V, V _{GS} = 0V, T _J = 125°C
I _{GSS}	Gate-to-Source Forward Leakage	N-P	—	—	±100		V _{GS} = ±20V
Q _g	Total Gate Charge	N-Ch	—	—	25	nC	N-Channel
		P-Ch	—	—	25		I _D = 2.4A, V _{DS} = 24V, V _{GS} = 10V ③
Q _{gs}	Gate-to-Source Charge	N-Ch	—	—	2.9		
		P-Ch	—	—	2.9		
Q _{gd}	Gate-to-Drain ("Miller") Charge	N-Ch	—	—	7.9		P-Channel
		P-Ch	—	—	9.0		I _D = -1.8A, V _{DS} = -24V, V _{GS} = -10V
t _{d(on)}	Turn-On Delay Time	N-Ch	—	6.8	—	ns	N-Channel
		P-Ch	—	11	—		V _{DD} = 15V, I _D = 2.4A, R _G = 6.0Ω, R _D = 6.2Ω ③
t _r	Rise Time	N-Ch	—	21	—		
		P-Ch	—	17	—		
t _{d(off)}	Turn-Off Delay Time	N-Ch	—	22	—		P-Channel
		P-Ch	—	25	—		V _{DD} = -15V, I _D = -1.8A, R _G = 6.0Ω, R _D = 8.2Ω ③
t _f	Fall Time	N-Ch	—	7.7	—		
		P-Ch	—	18	—		
L _D	Internal Drain Inductance	N-P	—	4.0	—	nH	Between lead, 6mm (0.25in.) from package and center of die contact
L _S	Internal Source Inductance	N-P	—	6.0	—		
C _{iss}	Input Capacitance	N-Ch	—	520	—	pF	N-Channel
		P-Ch	—	440	—		V _{GS} = 0V, V _{DS} = 25V, f = 1.0MHz ③
C _{oss}	Output Capacitance	N-Ch	—	180	—		
		P-Ch	—	200	—		
C _{rss}	Reverse Transfer Capacitance	N-Ch	—	72	—		P-Channel
		P-Ch	—	93	—		V _{GS} = 0V, V _{DS} = -25V, f = 1.0MHz

Source-Drain Ratings and Characteristics

	Parameter		Min.	Typ.	Max.	Units	Conditions
I _S	Continuous Source Current (Body Diode)	N-Ch	—	—	3.1	A	
		P-Ch	—	—	-3.1		
I _{SM}	Pulsed Source Current (Body Diode) ①	N-Ch	—	—	46		
		P-Ch	—	—	-34		
V _{SD}	Diode Forward Voltage	N-Ch	—	—	1.0	V	T _J = 25°C, I _S = 1.8A, V _{GS} = 0V ③
		P-Ch	—	—	-1.0		T _J = 25°C, I _S = -1.8A, V _{GS} = 0V ③
t _{rr}	Reverse Recovery Time	N-Ch	—	47	71	ns	N-Channel
		P-Ch	—	53	80		T _J = 25°C, I _F = 2.4A, di/dt = 100A/μs ③
Q _{rr}	Reverse Recovery Charge	N-Ch	—	56	84	nC	P-Channel
		P-Ch	—	66	99		T _J = 25°C, I _F = -1.8A, di/dt = -100A/μs ③

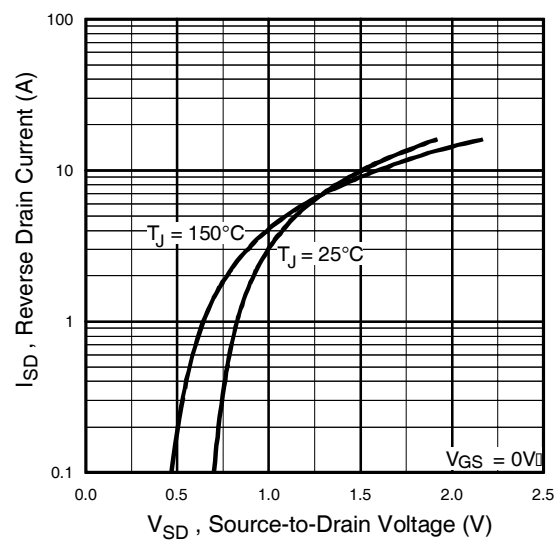
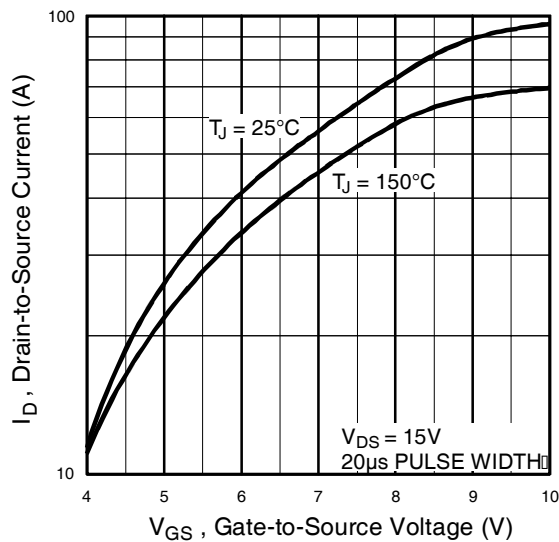
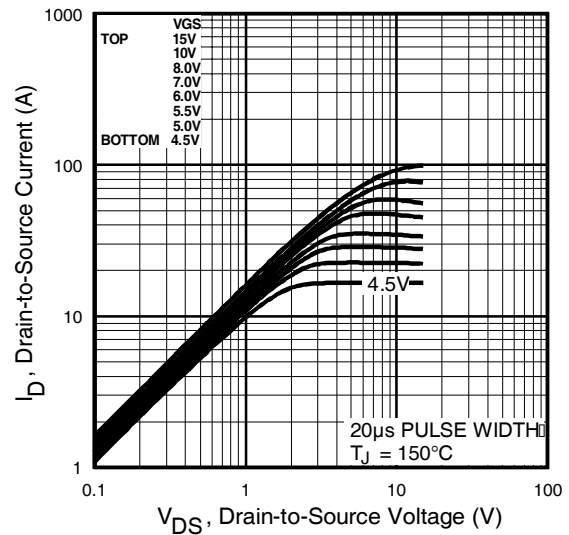
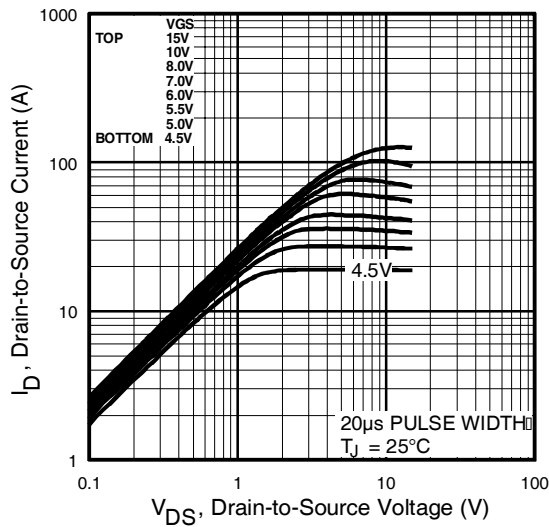
Notes:

① Repetitive rating; pulse width limited by max. junction temperature. (See fig. 10)

③ Pulse width ≤ 300μs; duty cycle ≤ 2%.

② N-Channel I_{SD} ≤ 2.4A, di/dt ≤ 73A/μs, V_{DD} ≤ V_{(BR)DSS}, T_J ≤ 150°C
P-Channel I_{SD} ≤ -1.8A, di/dt ≤ 90A/μs, V_{DD} ≤ V_{(BR)DSS}, T_J ≤ 150°C

④ Surface mounted on FR-4 board, t ≤ 10sec.



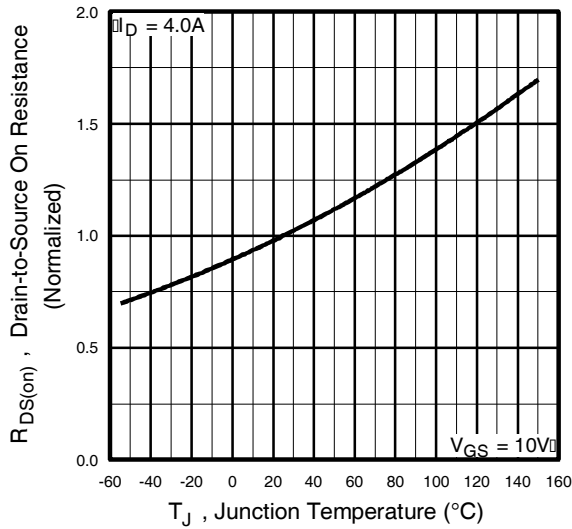


Fig 5. Normalized On-Resistance Vs. Temperature

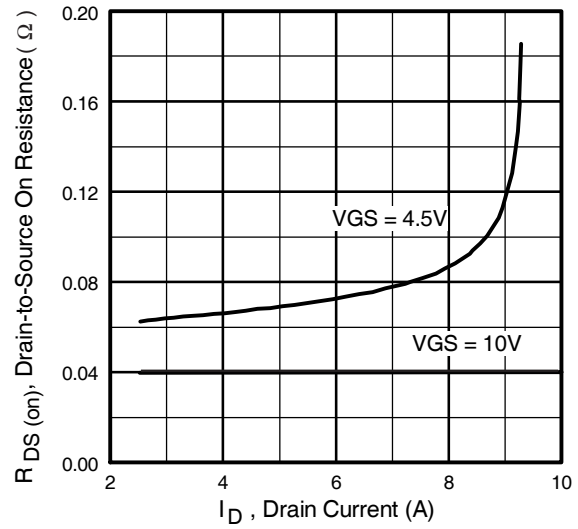


Fig 6. Typical On-Resistance Vs. Drain Current

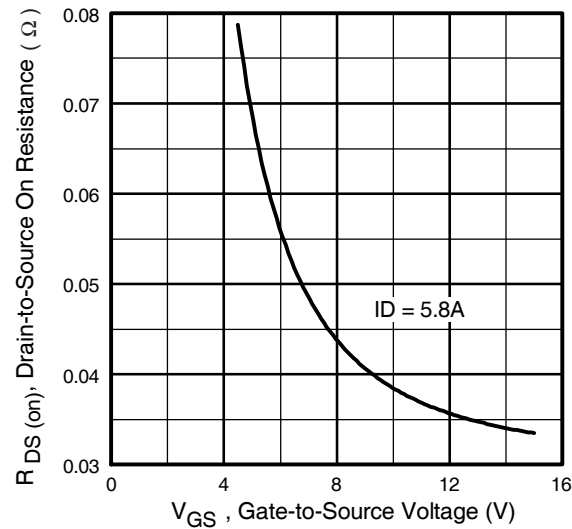
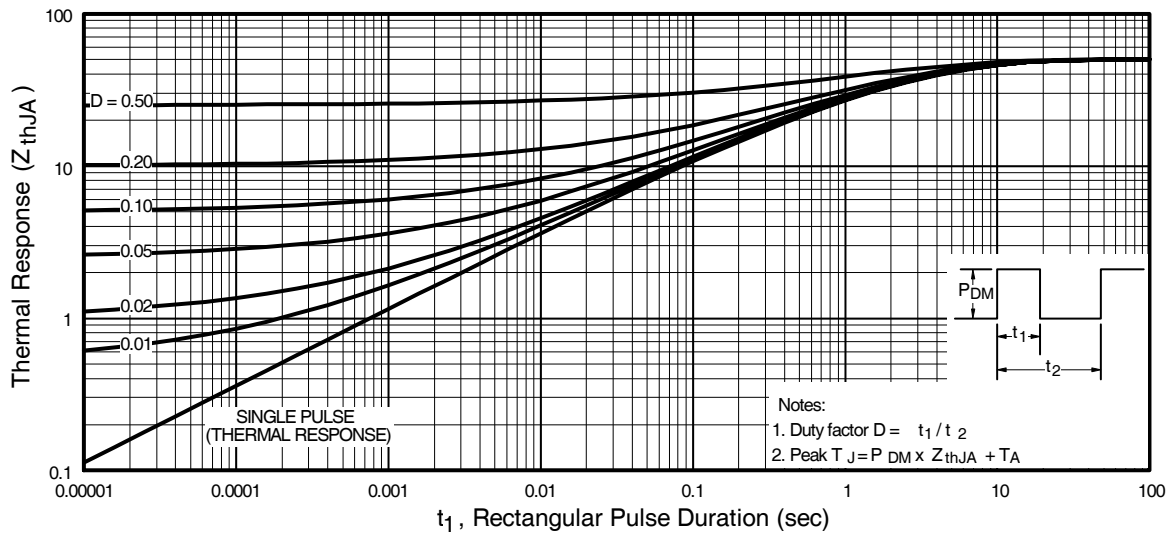
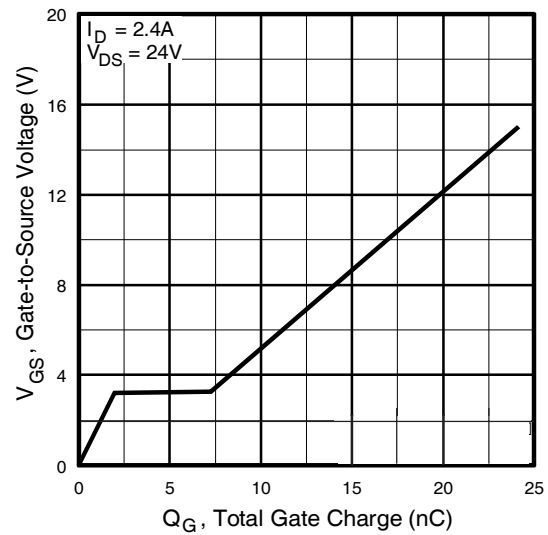
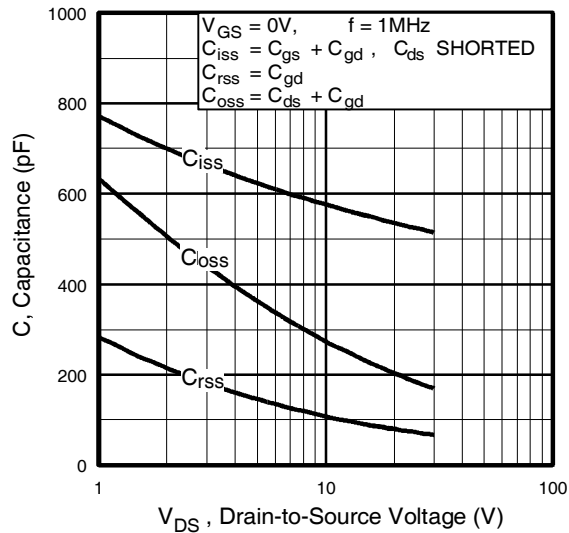


Fig 7. Typical On-Resistance Vs. Gate Voltage



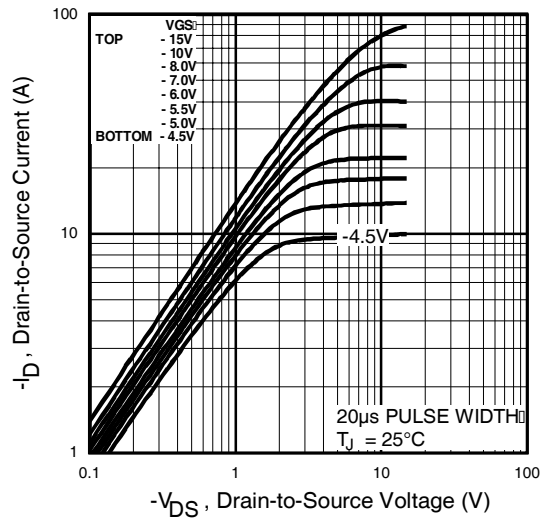


Fig 11. Typical Output Characteristics

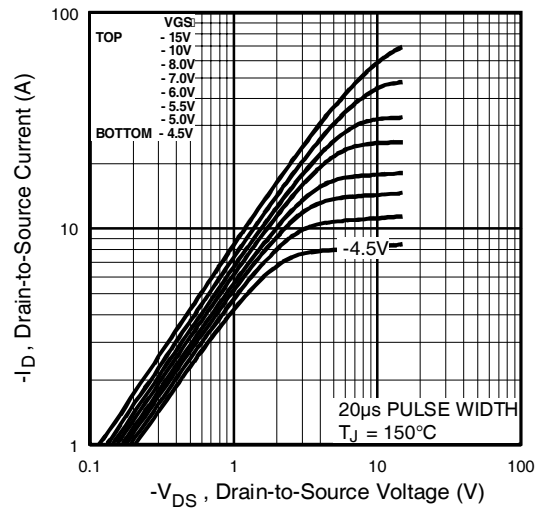


Fig 12. Typical Output Characteristics

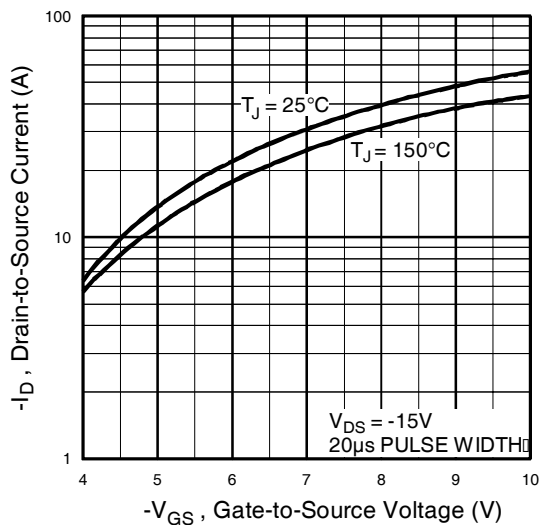


Fig 13. Typical Transfer Characteristics

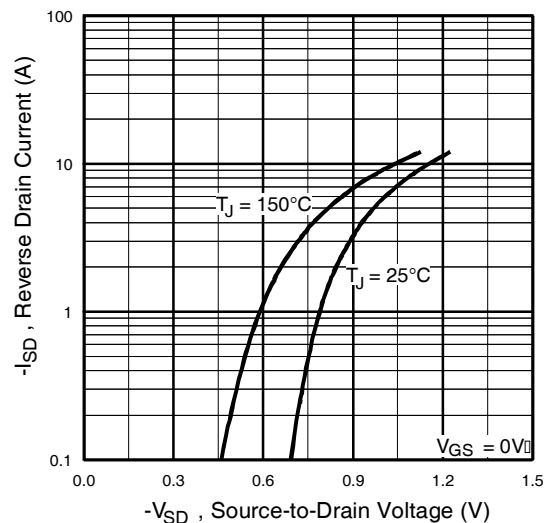


Fig 14. Typical Source-Drain Diode
Forward Voltage

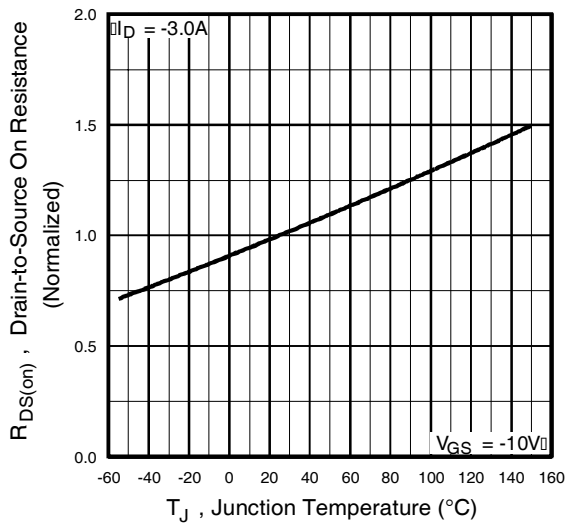


Fig 15. Normalized On-Resistance
Vs. Temperature

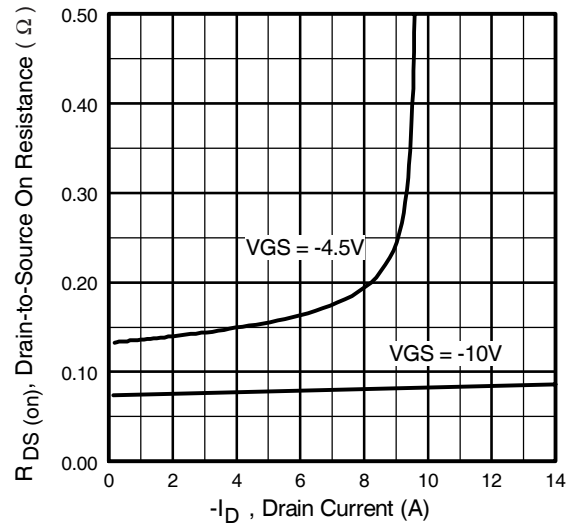


Fig 16. Typical On-Resistance Vs. Drain
Current

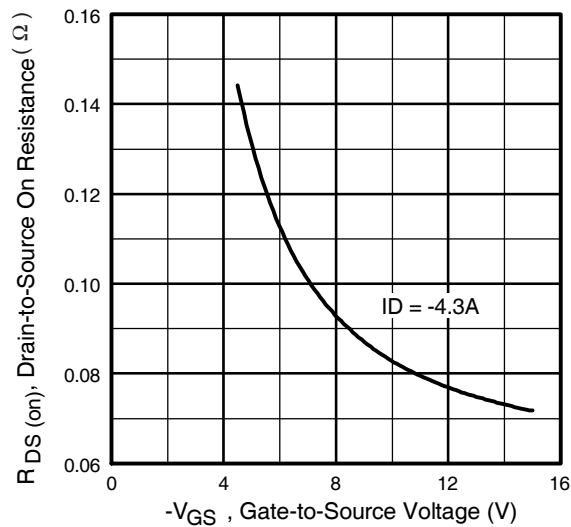


Fig 17. Typical On-Resistance Vs. Gate
Voltage

IRF7379QPbF

P-Channel

International
IR Rectifier

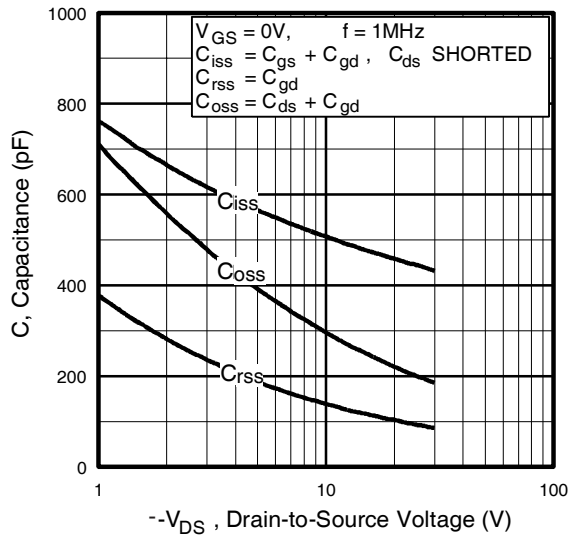


Fig 18. Typical Capacitance Vs. Drain-to-Source Voltage

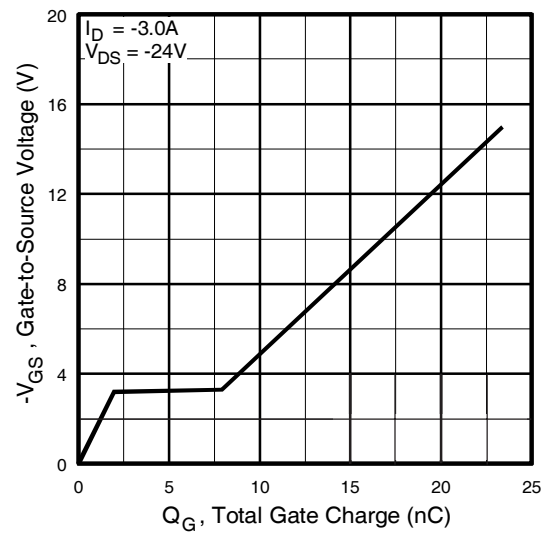


Fig 19. Typical Gate Charge Vs. Gate-to-Source Voltage

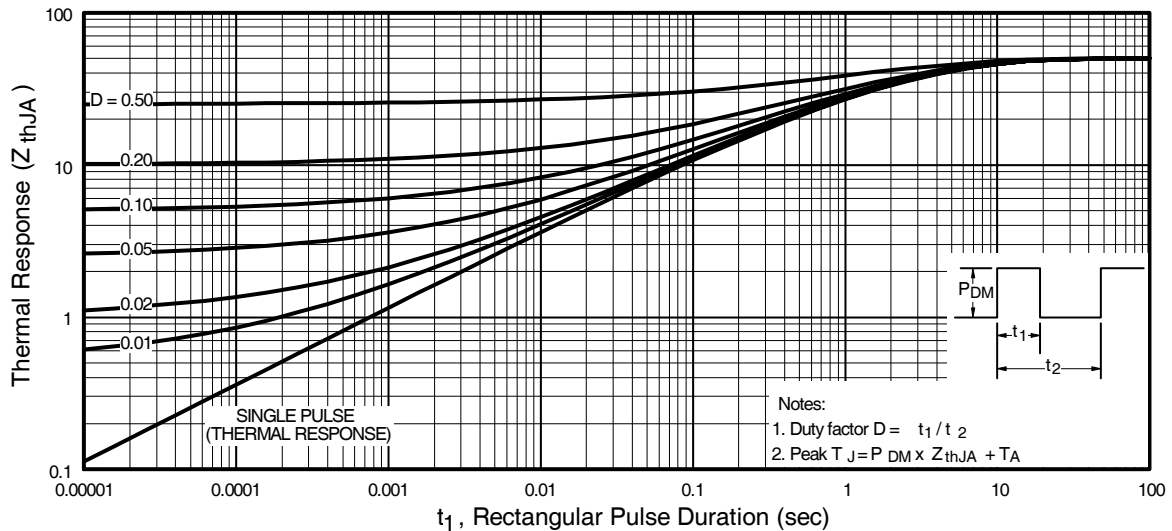
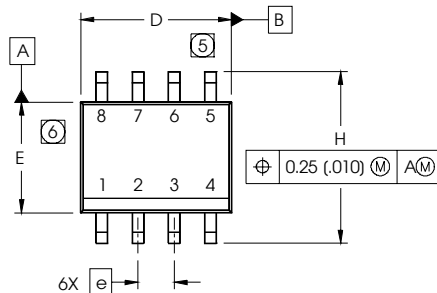


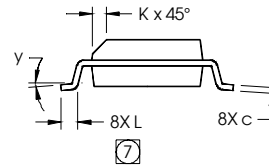
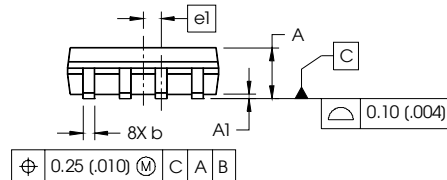
Fig 20. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

SO-8 Package Outline

Dimensions are shown in millimeters (inches)



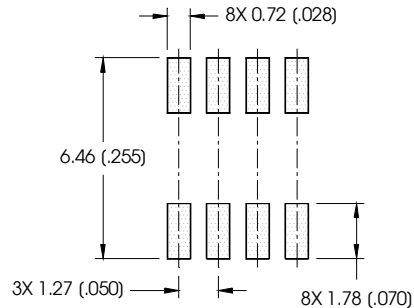
DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
b	.013	.020	0.33	0.51
c	.0075	.0098	0.19	0.25
D	.189	.1968	4.80	5.00
E	.1497	.1574	3.80	4.00
e	.050 BASIC		1.27 BASIC	
e1	.025 BASIC		0.635 BASIC	
H	.2284	.2440	5.80	6.20
K	.0099	.0196	0.25	0.50
L	.016	.050	0.40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



NOTES:

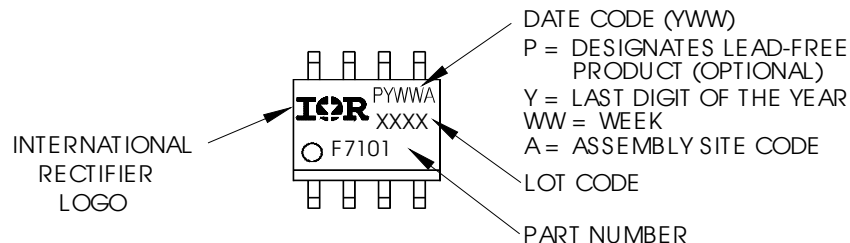
1. DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
2. CONTROLLING DIMENSION: MILLIMETER
3. DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
- ⑤ DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 (.006).
- ⑥ DIMENSION DOES NOT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



Notes:

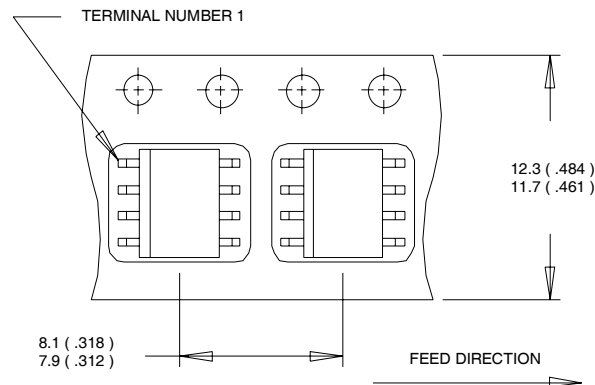
1. For an Automotive Qualified version of this part please see <http://www.irf.com/product-info/auto/>
2. For the most current drawing please refer to IR website at <http://www.irf.com/package/>

IRF7379QPbF

SO-8 Tape and Reel

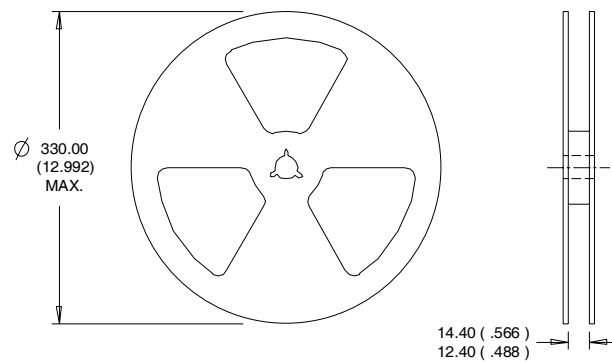
Dimensions are shown in millimeters (inches)

International
IOR Rectifier



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.

International
IOR Rectifier

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

TAC Fax: (310) 252-7903

Visit us at www.irf.com for sales contact information.08/2010

www.irf.com