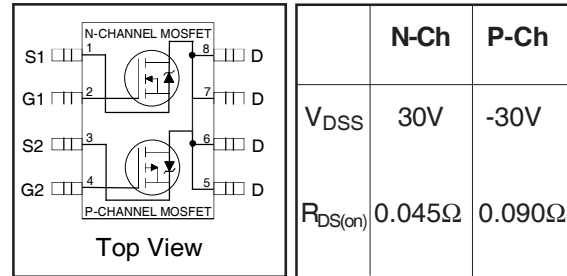


# IRF7379QPbF

HEXFET® Power MOSFET

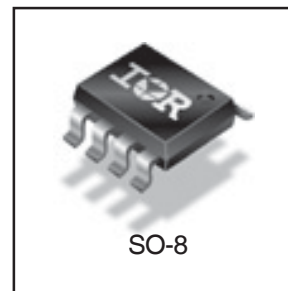
- Advanced Process Technology
- Ultra Low On-Resistance
- Dual N and P Channel MOSFET
- Surface Mount
- Available in Tape & Reel
- 150°C Operating Temperature
- Automotive [Q101] Qualified
- Lead-Free



## Description

Specifically designed for Automotive applications, 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 Automotive qualified 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 Automotive applications and a wide variety of other 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	Max.		Units
		N-Channel	P-Channel	
$V_{SD}$	Drain-to-Source Voltage	30	-30	
$I_D @ T_A = 25^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10\text{V}$	5.8	-4.3	A
$I_D @ T_A = 70^\circ\text{C}$	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-Ambient ③	50	°C/W

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## Electrical Characteristics @ T<sub>J</sub> = 25°C (unless otherwise specified)

Parameter	Description	N-Ch	P-Ch	Min.	Typ.	Max.	Units	Conditions
				—	—	—		
V <sub>(BR)DSS</sub>	Drain-to-Source Breakdown Voltage	N-Ch	P-Ch	30	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA
ΔV <sub>(BR)DSS</sub> /ΔT <sub>J</sub>	Breakdown Voltage Temp. Coefficient	N-Ch	P-Ch	—	0.032	—	V/°C	Reference to 25°C, I <sub>D</sub> = 1mA Reference to 25°C, I <sub>D</sub> = -1mA
R <sub>DS(ON)</sub>	Static Drain-to-Source On-Resistance	N-Ch	P-Ch	—	0.038	0.045	Ω	V <sub>GS</sub> = 10V, I <sub>D</sub> = 5.8A ③ V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 4.9A ③ V <sub>GS</sub> = -10V, I <sub>D</sub> = -4.3A ③ V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -3.7A ③
V <sub>GS(th)</sub>	Gate Threshold Voltage	N-Ch	P-Ch	1.0	—	—	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA
g <sub>fs</sub>	Forward Transconductance	N-Ch	P-Ch	5.2	—	—	S	V <sub>DS</sub> = 15V, I <sub>D</sub> = 2.4A ③ V <sub>DS</sub> = -24V, I <sub>D</sub> = -1.8A ③
I <sub>DSS</sub>	Drain-to-Source Leakage Current	N-Ch	P-Ch	—	—	1.0	μA	V <sub>DS</sub> = 24V, V <sub>GS</sub> = 0V V <sub>DS</sub> = -24V, V <sub>GS</sub> = 0V V <sub>DS</sub> = 24V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 125°C V <sub>DS</sub> = -24V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 125°C
I <sub>GSS</sub>	Gate-to-Source Forward Leakage	N-P	—	—	—	±100	—	V <sub>GS</sub> = ±20V
Q <sub>g</sub>	Total Gate Charge	N-Ch	P-Ch	—	—	25	—	—
Q <sub>gs</sub>	Gate-to-Source Charge	N-Ch	P-Ch	—	—	2.9	nC	N-Channel I <sub>D</sub> = 2.4A, V <sub>DS</sub> = 24V, V <sub>GS</sub> = 10V ③
Q <sub>gd</sub>	Gate-to-Drain ("Miller") Charge	N-Ch	P-Ch	—	—	7.9	nC	P-Channel I <sub>D</sub> = -1.8A, V <sub>DS</sub> = -24V, V <sub>GS</sub> = -10V
t <sub>d(on)</sub>	Turn-On Delay Time	N-Ch	P-Ch	—	6.8	—	ns	—
t <sub>r</sub>	Rise Time	N-Ch	P-Ch	—	21	—	ns	N-Channel V <sub>DD</sub> = 15V, I <sub>D</sub> = 2.4A, R <sub>G</sub> = 6.0Ω, R <sub>D</sub> = 6.2Ω ③
t <sub>d(off)</sub>	Turn-Off Delay Time	N-Ch	P-Ch	—	22	—	ns	—
t <sub>f</sub>	Fall Time	N-Ch	P-Ch	—	7.7	—	ns	P-Channel V <sub>DD</sub> = -15V, I <sub>D</sub> = -1.8A, R <sub>G</sub> = 6.0Ω, R <sub>D</sub> = 8.2Ω ③
L <sub>D</sub>	Internal Drain Inductance	N-P	—	—	4.0	—	nH	—
L <sub>S</sub>	Internal Source Inductance	N-P	—	—	6.0	—	nH	Between lead, 6mm (0.25in.) from package and center of die contact
C <sub>iss</sub>	Input Capacitance	N-Ch	P-Ch	—	520	—	—	—
C <sub>oss</sub>	Output Capacitance	N-Ch	P-Ch	—	180	—	pF	N-Channel V <sub>GS</sub> = 0V, V <sub>DS</sub> = 25V, f = 1.0MHz ③
C <sub>rss</sub>	Reverse Transfer Capacitance	N-Ch	P-Ch	—	72	—	pF	P-Channel V <sub>GS</sub> = 0V, V <sub>DS</sub> = -25V, f = 1.0MHz

## Source-Drain Ratings and Characteristics

Parameter	Description	N-Ch	P-Ch	Min.	Typ.	Max.	Units	Conditions
I <sub>S</sub>	Continuous Source Current (Body Diode)	N-Ch	P-Ch	—	—	3.1	A	—
I <sub>SM</sub>	Pulsed Source Current (Body Diode) ①	N-Ch	P-Ch	—	—	46	A	—
V <sub>SD</sub>	Diode Forward Voltage	N-Ch	P-Ch	—	—	1.0	V	T <sub>J</sub> = 25°C, I <sub>S</sub> = 1.8A, V <sub>GS</sub> = 0V ③ T <sub>J</sub> = 25°C, I <sub>S</sub> = -1.8A, V <sub>GS</sub> = 0V ③
t <sub>rr</sub>	Reverse Recovery Time	N-Ch	P-Ch	—	47	71	ns	N-Channel T <sub>J</sub> = 25°C, I <sub>F</sub> = 2.4A, di/dt = 100A/μs
Q <sub>rr</sub>	Reverse Recovery Charge	N-Ch	P-Ch	—	56	84	nC	P-Channel T <sub>J</sub> = 25°C, I <sub>F</sub> = -1.8A, di/dt = -100A/μs ③

### Notes:

- ① Repetitive rating; pulse width limited by max. junction temperature. ( See fig. 10 )
- ② N-Channel I<sub>SD</sub> ≤ 2.4A, di/dt ≤ 73A/μs, V<sub>DD</sub> ≤ V<sub>(BR)DSS</sub>, T<sub>J</sub> ≤ 150°C  
P-Channel I<sub>SD</sub> ≤ -1.8A, di/dt ≤ 90A/μs, V<sub>DD</sub> ≤ V<sub>(BR)DSS</sub>, T<sub>J</sub> ≤ 150°C
- ③ Pulse width ≤ 300μs; duty cycle ≤ 2%.
- ④ Surface mounted on FR-4 board, t ≤ 10sec.

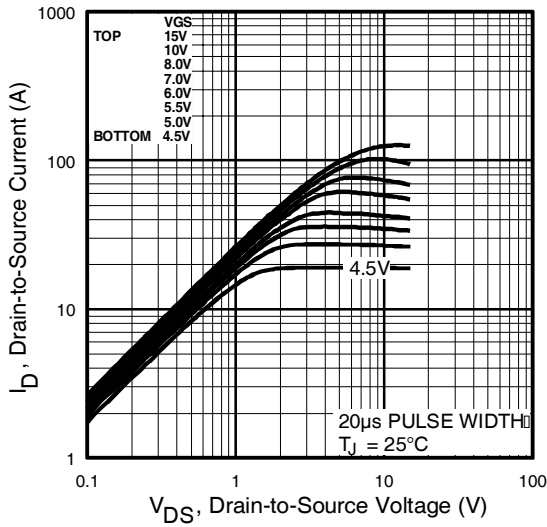


Fig 1. Typical Output Characteristics

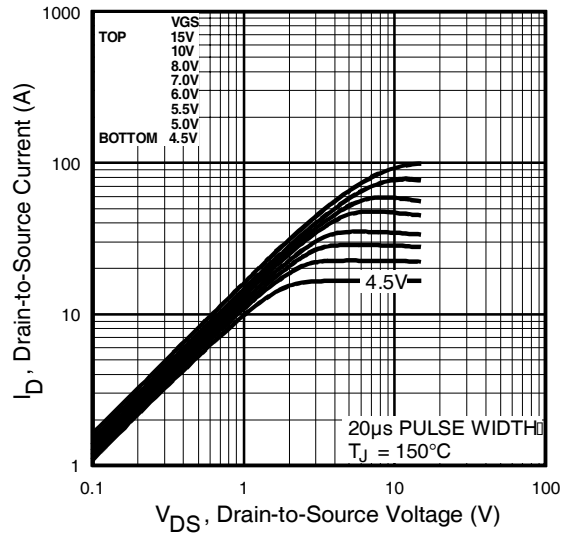


Fig 2. Typical Output Characteristics

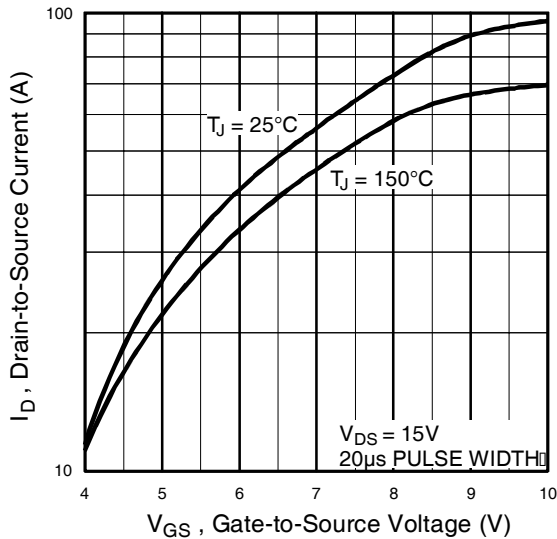


Fig 3. Typical Transfer Characteristics

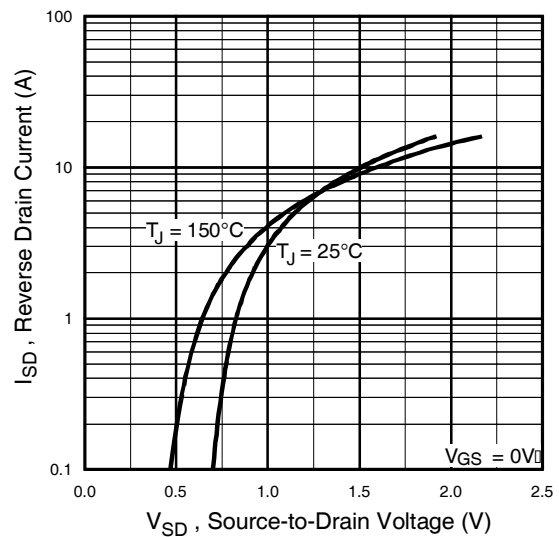
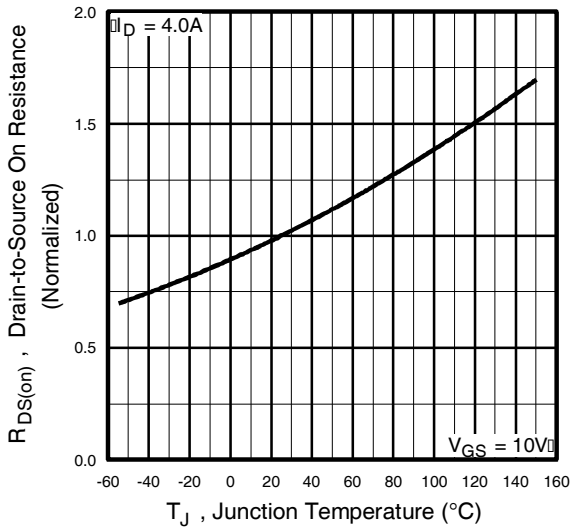
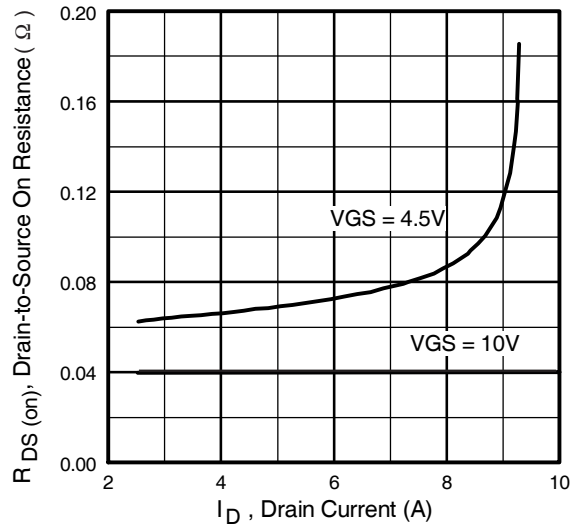


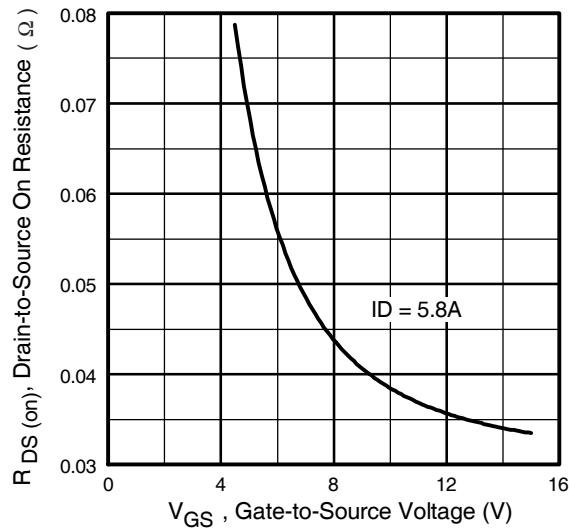
Fig 4. Typical Source-Drain Diode Forward Voltage



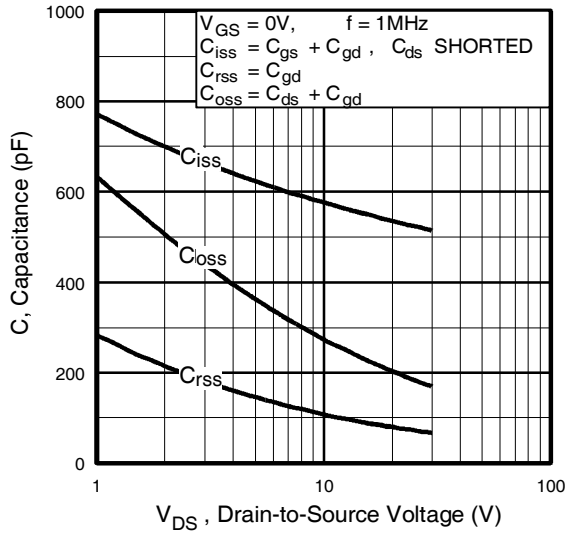
**Fig 5.** Normalized On-Resistance Vs. Temperature



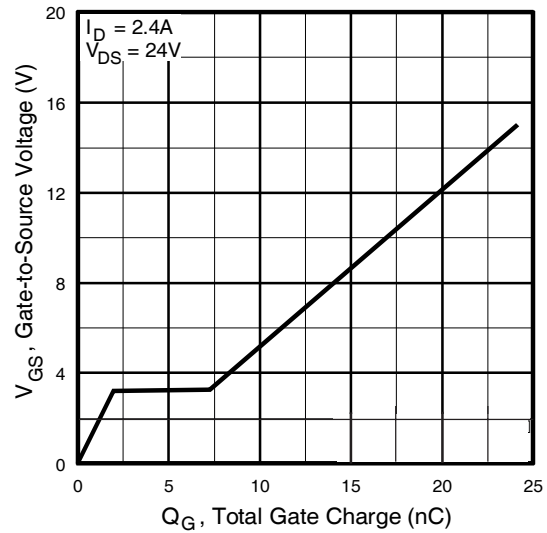
**Fig 6.** Typical On-Resistance Vs. Drain Current



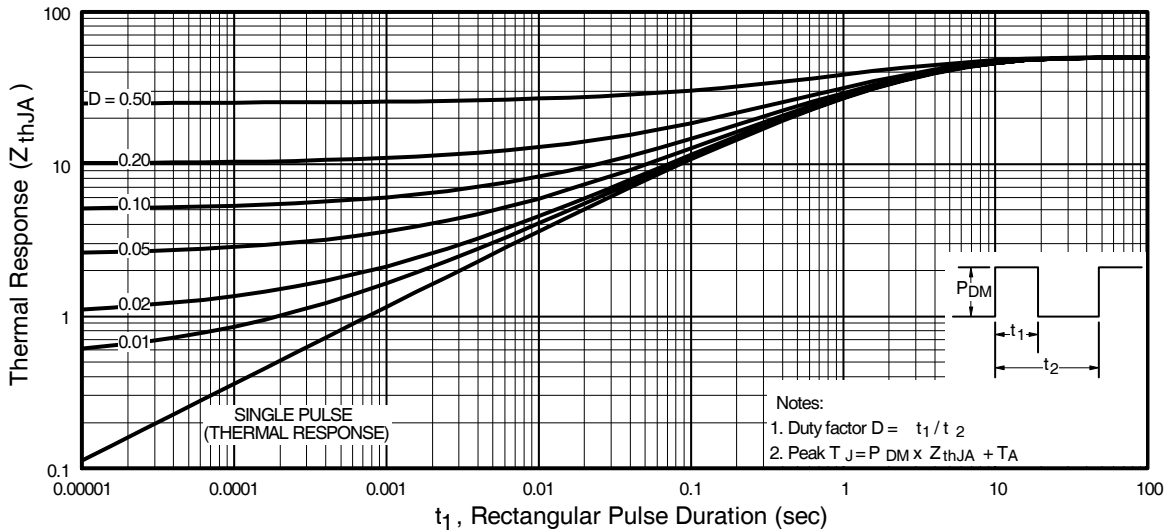
**Fig 7.** Typical On-Resistance Vs. Gate Voltage



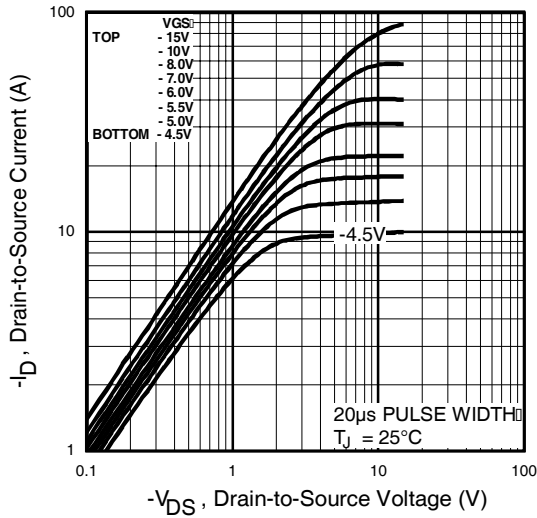
**Fig 8.** Typical Capacitance Vs. Drain-to-Source Voltage



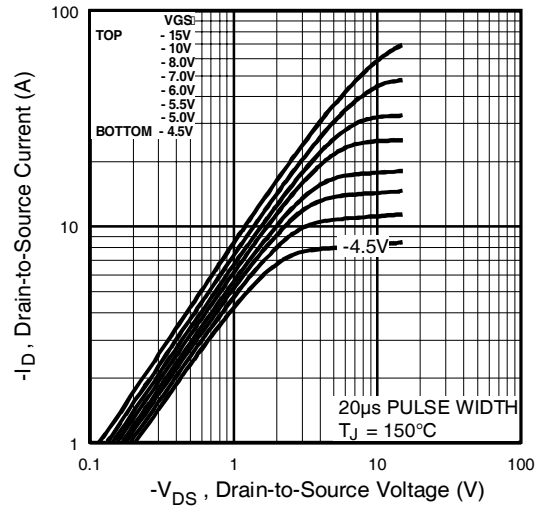
**Fig 9.** Typical Gate Charge Vs. Gate-to-Source Voltage



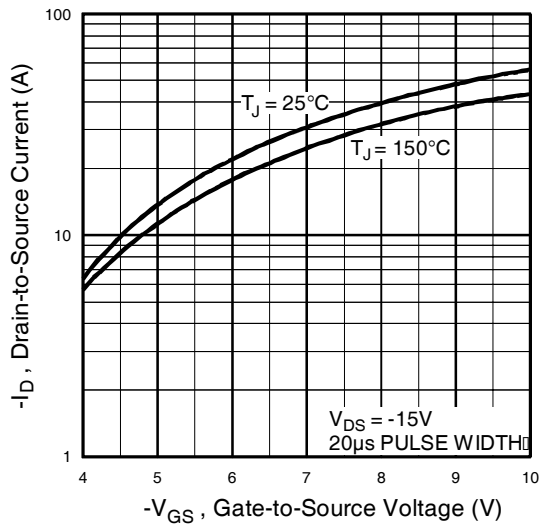
**Fig 10.** Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



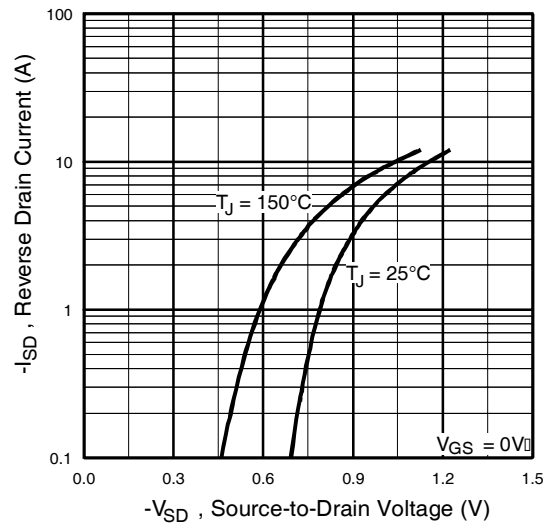
**Fig 11.** Typical Output Characteristics



**Fig 12.** Typical Output Characteristics



**Fig 13.** Typical Transfer Characteristics



**Fig 14.** Typical Source-Drain Diode Forward Voltage

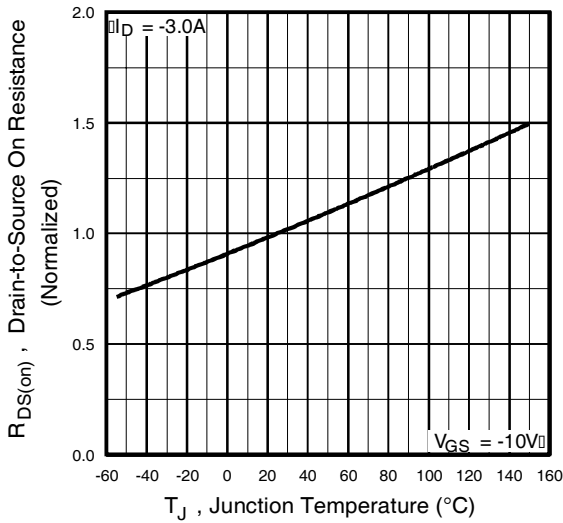


Fig 15. Normalized On-Resistance Vs. Temperature

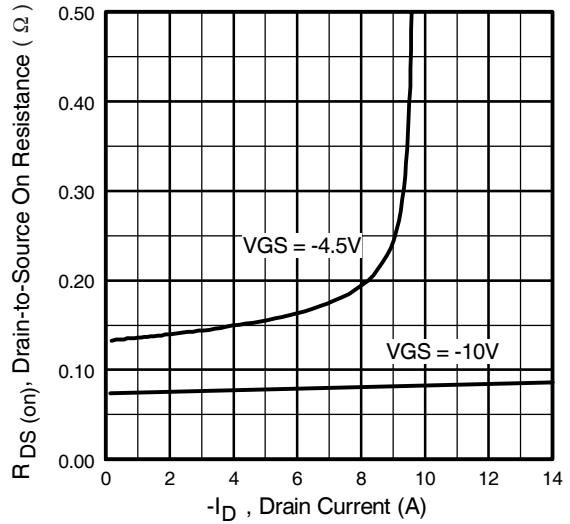


Fig 16. Typical On-Resistance Vs. Drain Current

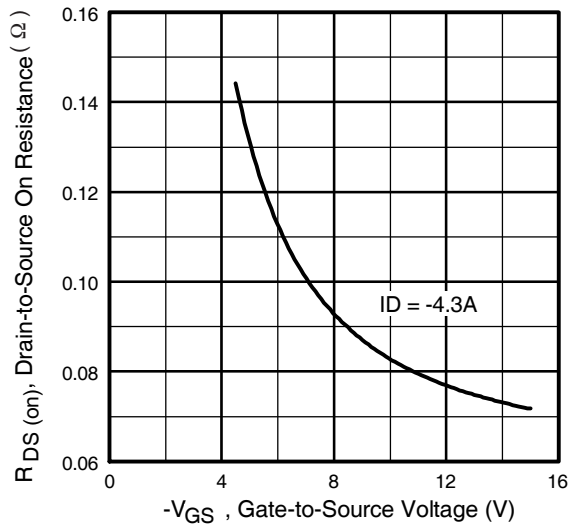
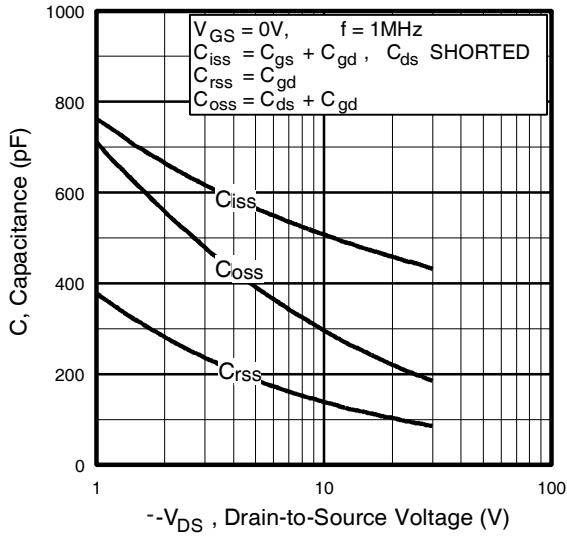


Fig 17. Typical On-Resistance Vs. Gate Voltage

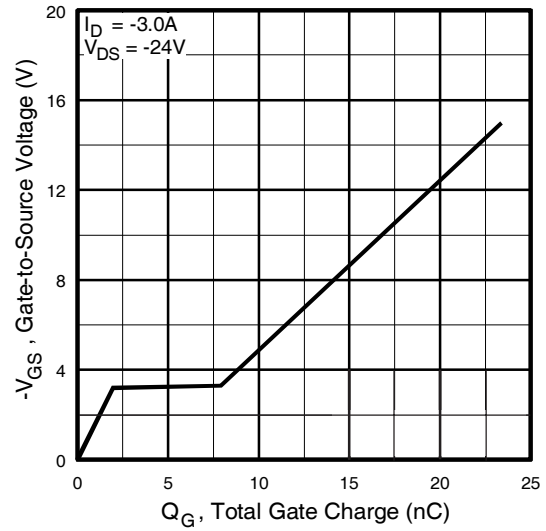
# IRF7379QPbF

P-Channel

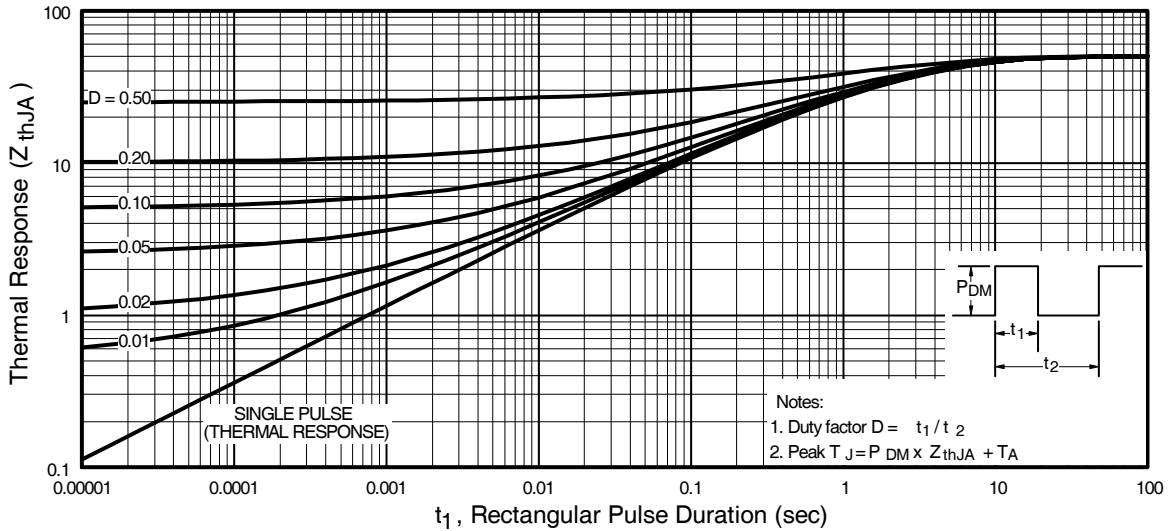
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**Fig 18.** Typical Capacitance Vs. Drain-to-Source Voltage



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

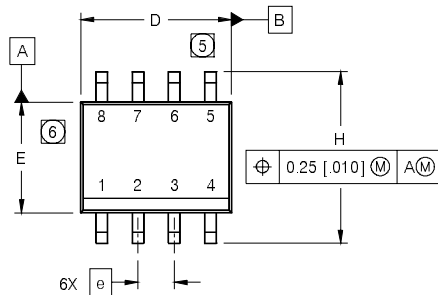


**Fig 20.** Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

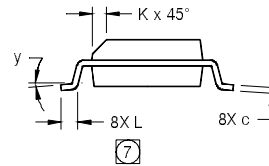
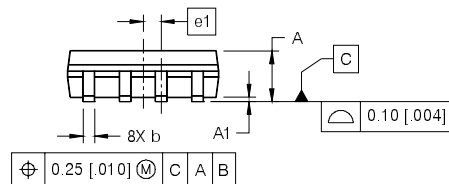


## SO-8 Package Outline

Dimensions are shown in millimeters (inches)



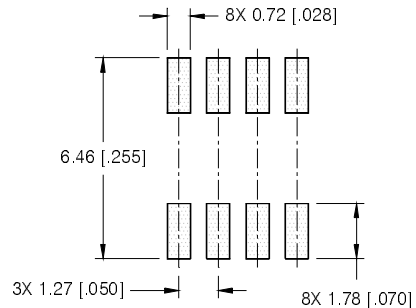
DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
b	.013	.020	0.33	0.51
c	.0075	.0098	0.19	0.25
D	.189	.1968	4.80	5.00
E	.1497	.1574	3.80	4.00
e	.050 BASIC		1.27 BASIC	
e1	.025 BASIC		0.635 BASIC	
H	.2284	.2440	5.80	6.20
K	.0099	.0196	0.25	0.50
L	.016	.050	0.40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



### NOTES:

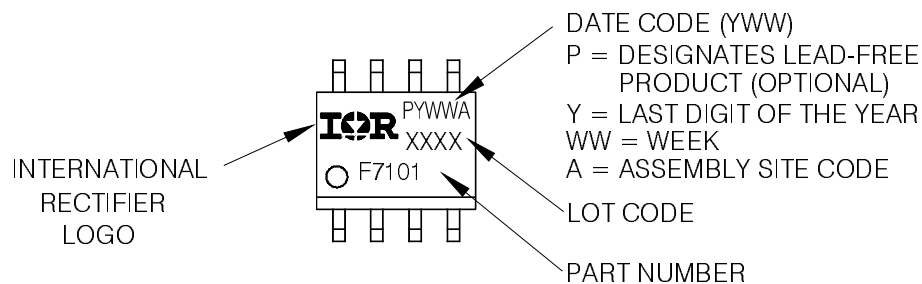
- DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
- CONTROLLING DIMENSION: MILLIMETER
- DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
- OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
- 5** DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 [.006].
- 6** DIMENSION DOES NOT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



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

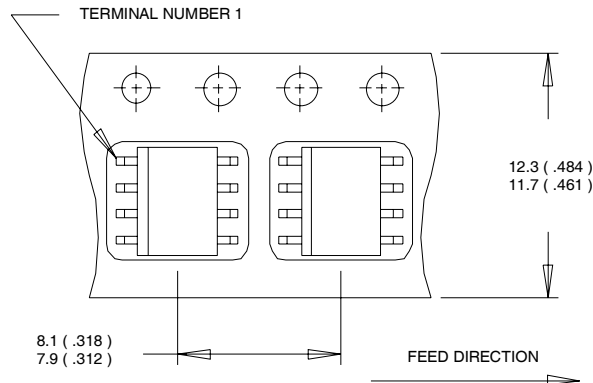
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# IRF7379QPbF

International  
**IR** Rectifier

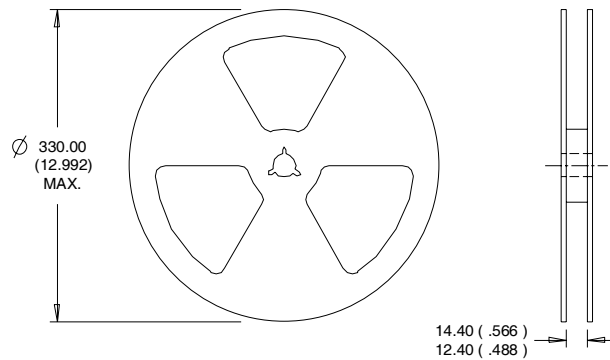
## SO-8 Tape and Reel

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/>

Data and specifications subject to change without notice.  
This product has been designed and qualified for the Automotive [Q101] market.  
Qualification Standards can be found on IR's Web site.

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**IR** Rectifier

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TAC Fax: (310) 252-7903

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