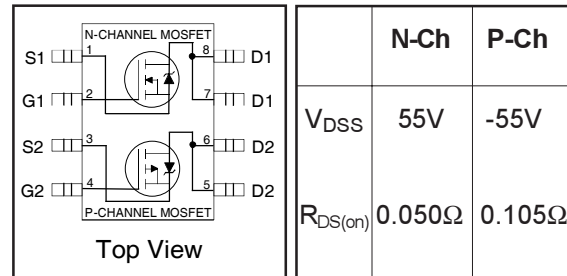


# IRF7343QPBF

HEXFET® Power MOSFET

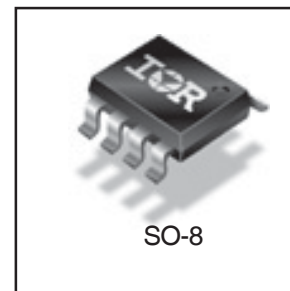
- Advanced Process Technology
- Ultra Low On-Resistance
- Dual N and P Channel MOSFET
- Surface Mount
- Available in Tape & Reel
- 150°C Operating Temperature
- Automotive [Q101] Qualified
- Lead-Free



## 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	Description	Max.		Units
		N-Channel	P-Channel	
$V_{DS}$	Drain-Source Voltage	55	-55	V
$I_D @ T_A = 25^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10\text{V}$	4.7	-3.4	A
$I_D @ T_A = 70^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10\text{V}$	3.8	-2.7	
$I_{DM}$	Pulsed Drain Current ①	38	-27	
$P_D @ T_A = 25^\circ\text{C}$	Maximum Power Dissipation ⑤	2.0		W
$P_D @ T_A = 70^\circ\text{C}$	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	$\pm 20$		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

# IRF7343QPbF

International  
IR Rectifier

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

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

## Source-Drain Ratings and Characteristics

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

### Notes:

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

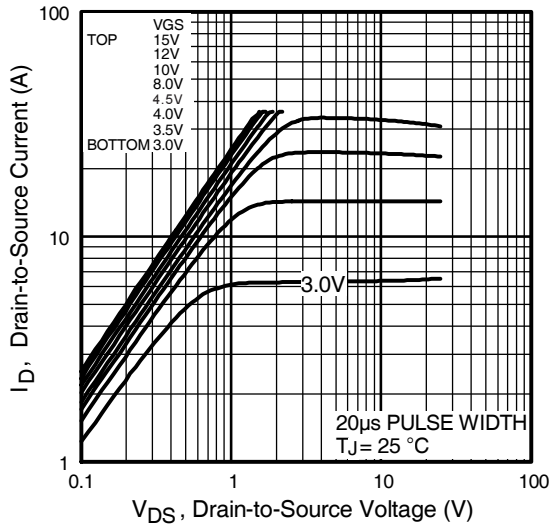


Fig 1. Typical Output Characteristics

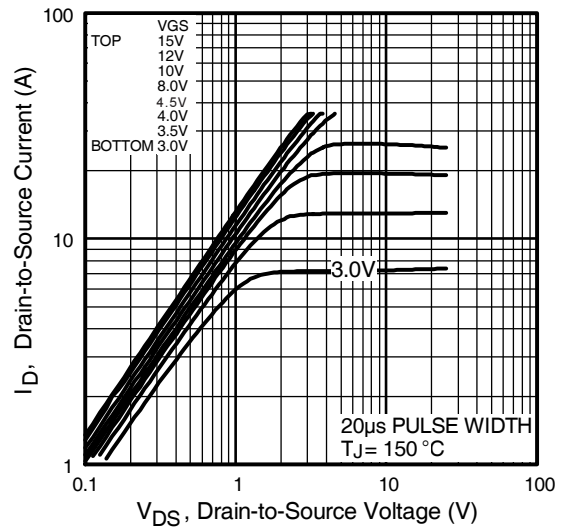


Fig 2. Typical Output Characteristics

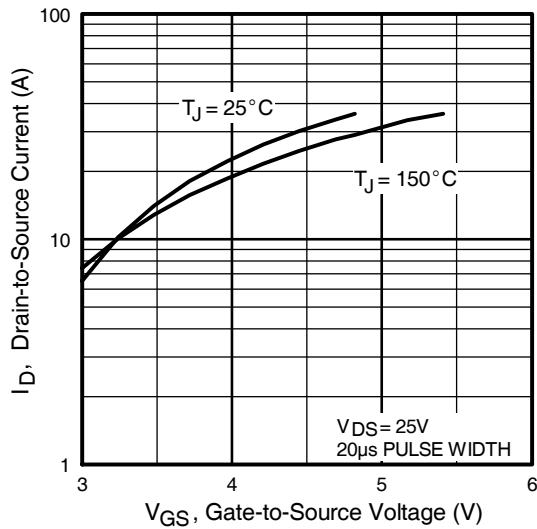


Fig 3. Typical Transfer Characteristics

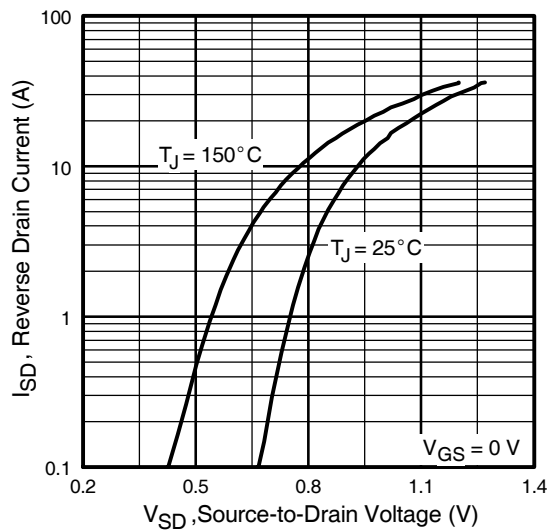
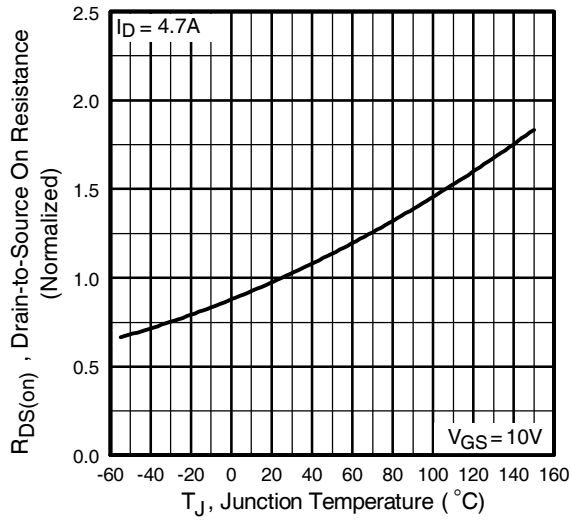
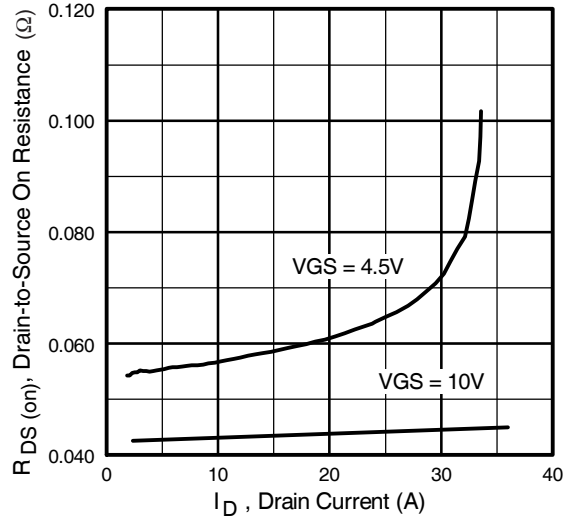


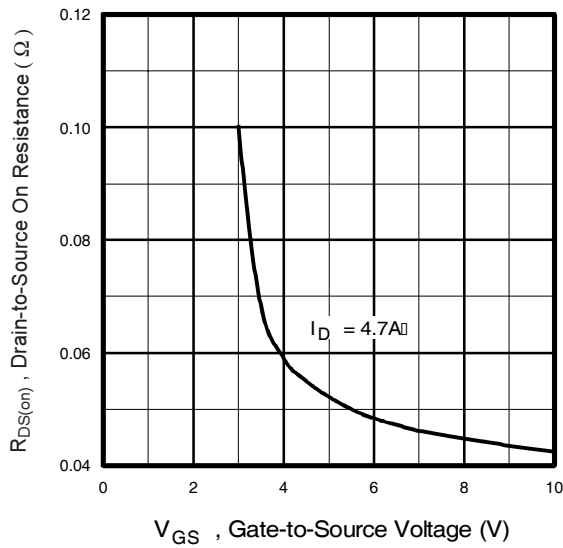
Fig 4. Typical Source-Drain Diode Forward Voltage



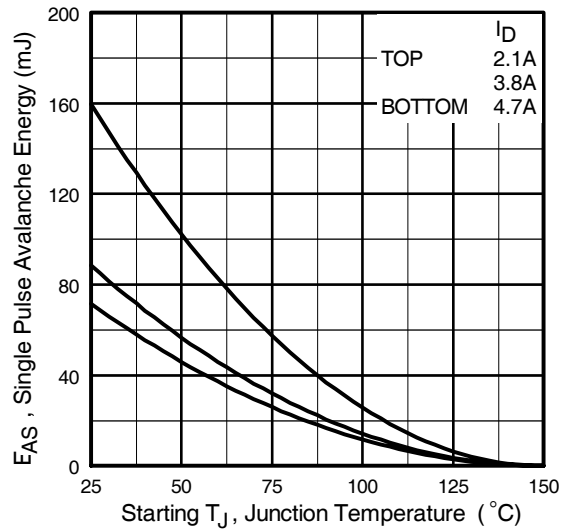
**Fig 5.** Normalized On-Resistance Vs. Temperature



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



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



**Fig 8.** Maximum Avalanche Energy Vs. Drain Current

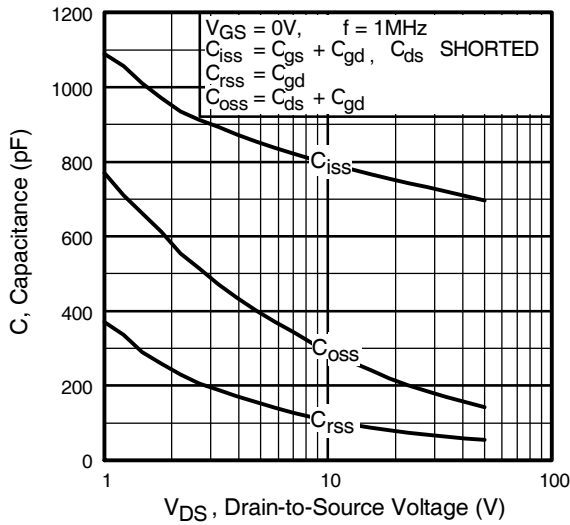


Fig 9. Typical Capacitance Vs. Drain-to-Source Voltage

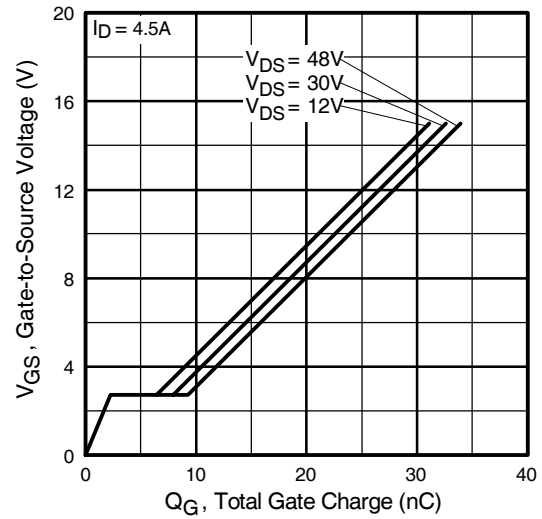


Fig 10. Typical Gate Charge Vs. Gate-to-Source Voltage

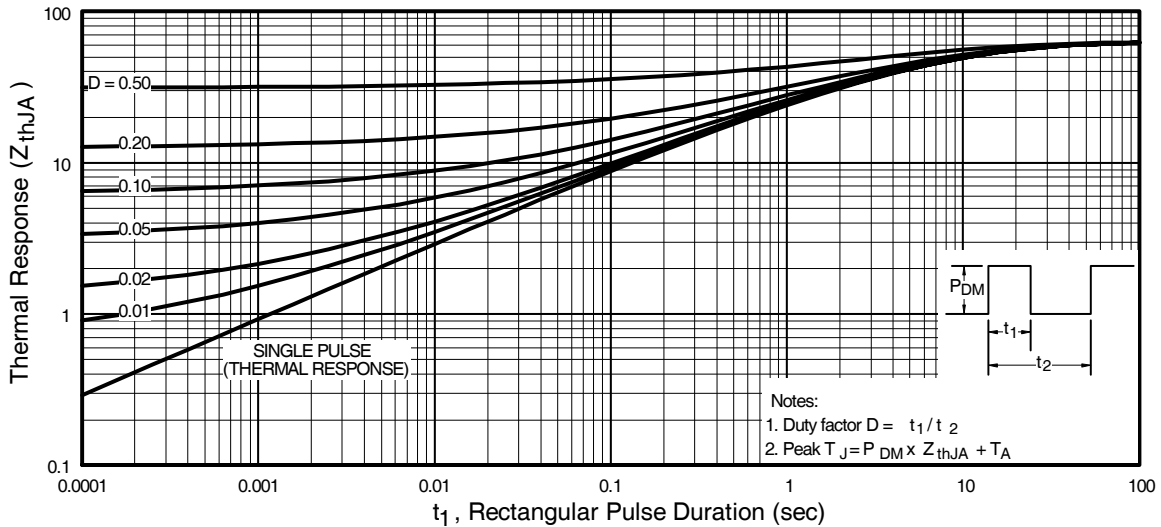
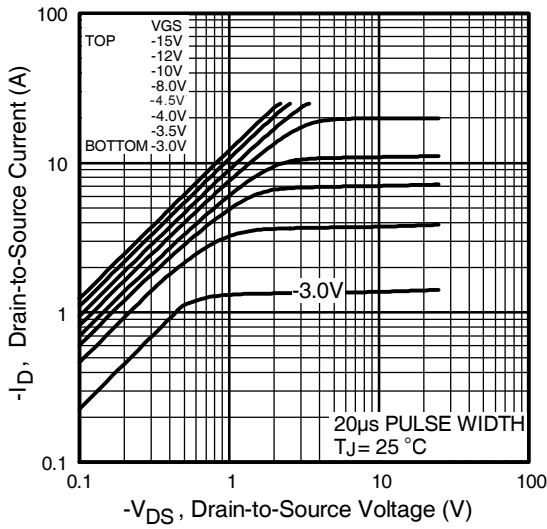


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

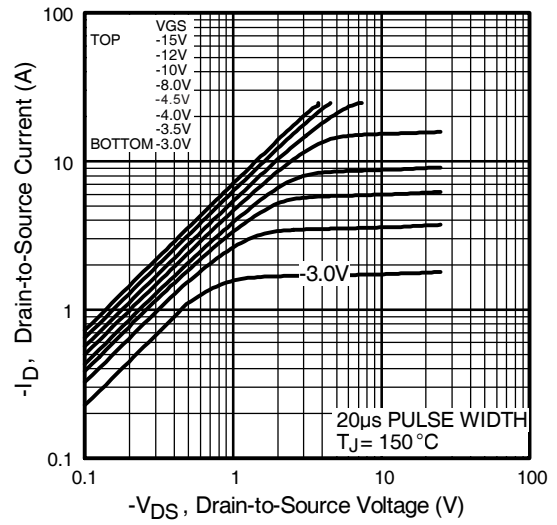
# IRF7343QPbF

P-Channel

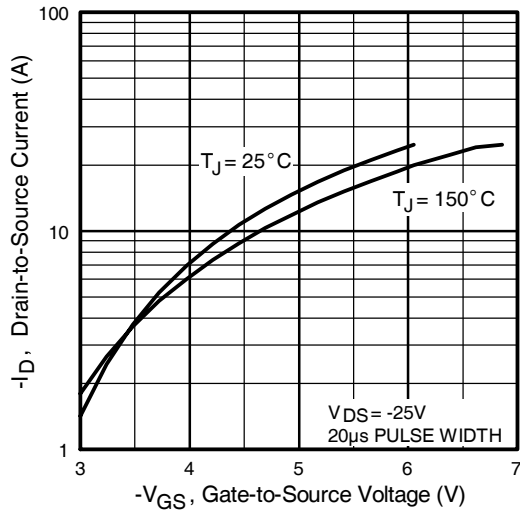
International  
**IR** Rectifier



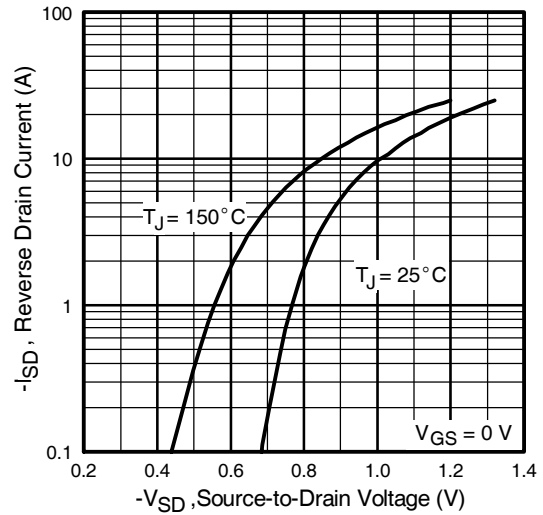
**Fig 12.** Typical Output Characteristics



**Fig 13.** Typical Output Characteristics



**Fig 14.** Typical Transfer Characteristics



**Fig 15.** Typical Source-Drain Diode Forward Voltage

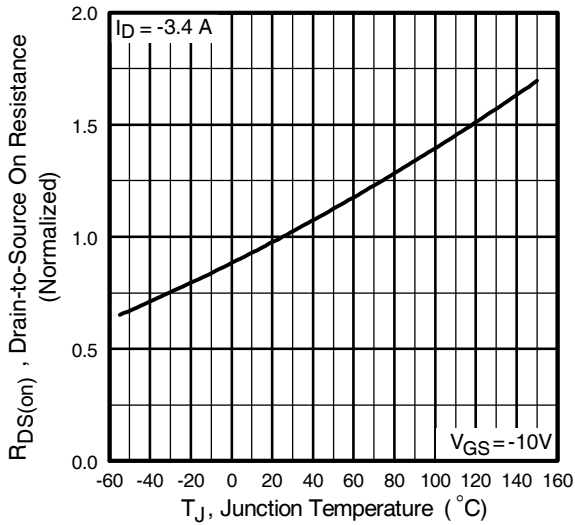


Fig 16. Normalized On-Resistance Vs. Temperature

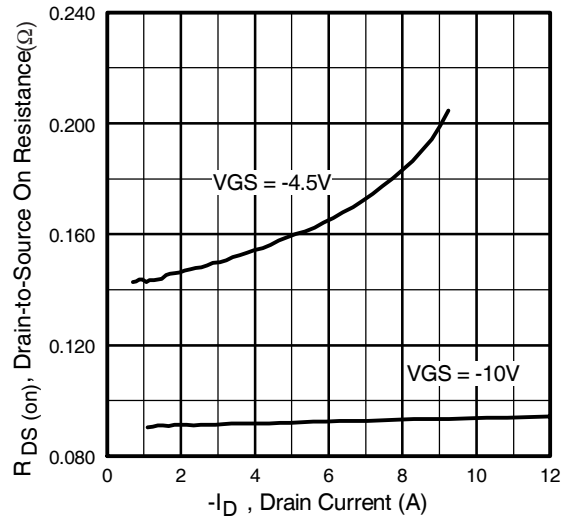


Fig 17. Typical On-Resistance Vs. Drain Current

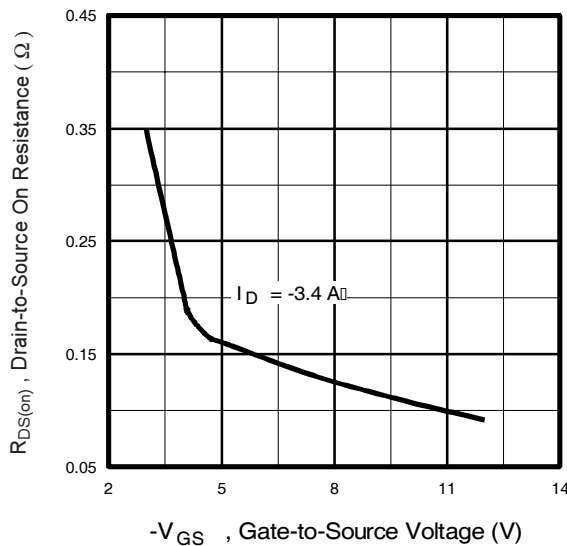


Fig 18. Typical On-Resistance Vs. Gate Voltage

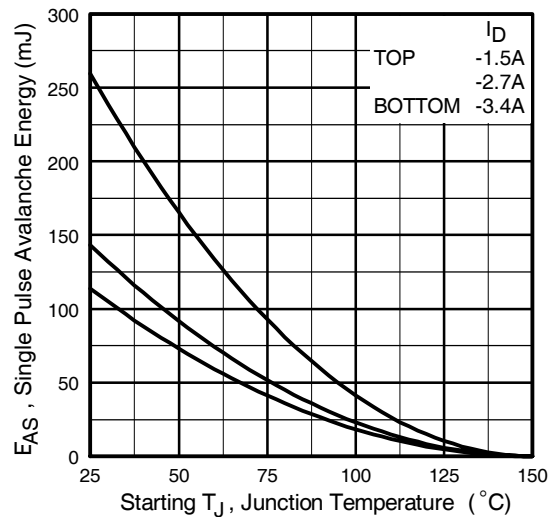
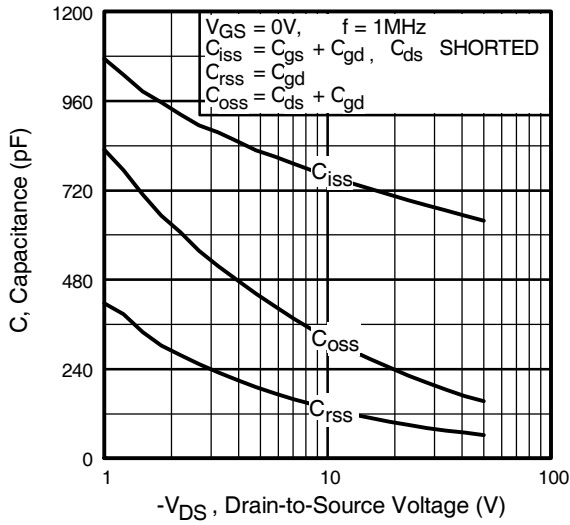


Fig 19. Maximum Avalanche Energy Vs. Drain Current

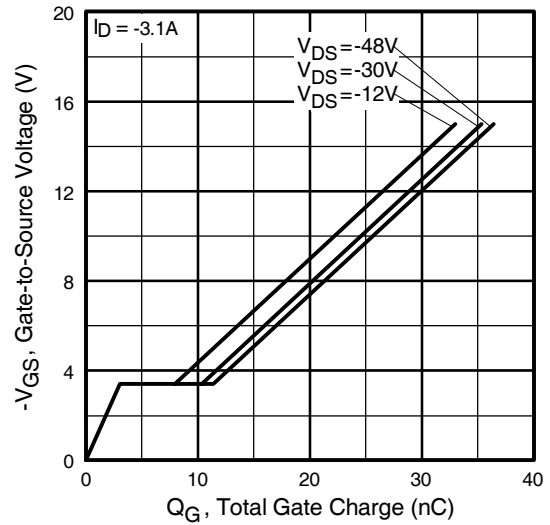
# IRF7343QPbF

P-Channel

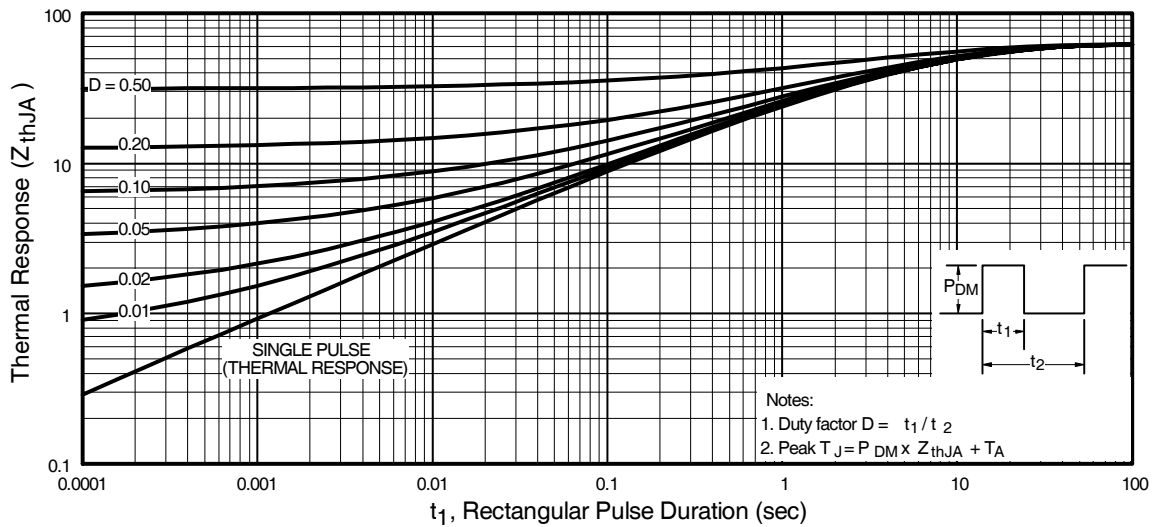
International  
**IR** Rectifier



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



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

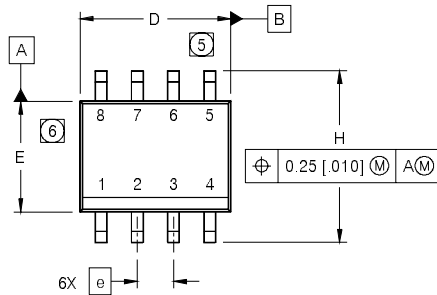


**Fig 22.** Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

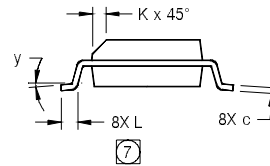
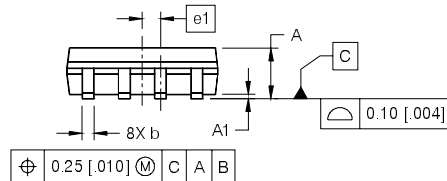


## SO-8 Package Outline

Dimensions are shown in millimeters (inches)



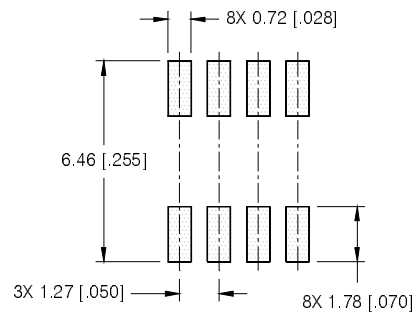
DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
b	.013	.020	0.33	0.51
c	.0075	.0098	0.19	0.25
D	.189	.1968	4.80	5.00
E	.1497	.1574	3.80	4.00
e	.050 BASIC		1.27 BASIC	
e1	.025 BASIC		0.635 BASIC	
H	.2284	.2440	5.80	6.20
K	.0099	.0196	0.25	0.50
L	.016	.050	0.40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



### NOTES:

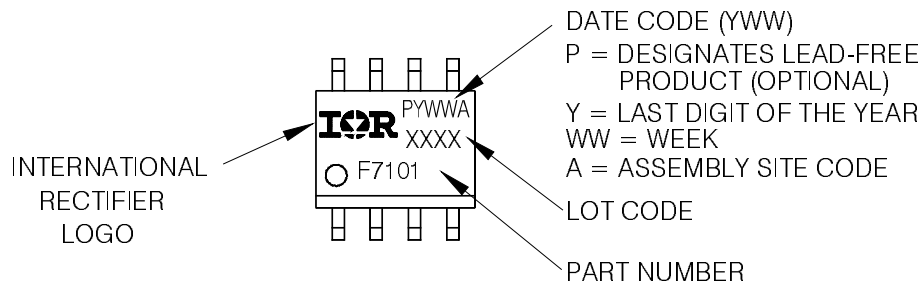
- DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
- CONTROLLING DIMENSION: MILLIMETER
- DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
- OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
- (5) DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 [0.006].
- (6) DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.25 [0.010].
- (7) DIMENSION IS THE LENGTH OF LEAD FOR SOLDERING TO A SUBSTRATE.

### FOOTPRINT



## SO-8 Part Marking

EXAMPLE: THIS IS AN IRF7101 (MOSFET)



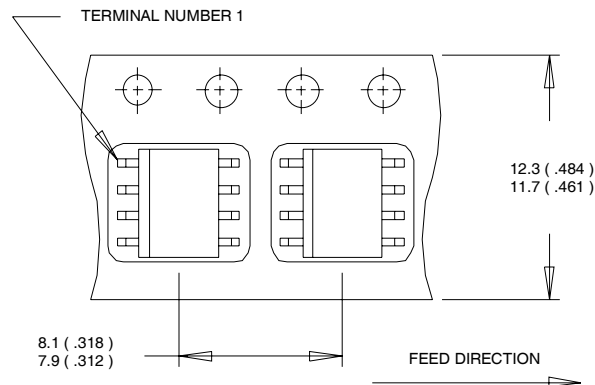
Note: For the most current drawing please refer to IR website at <http://www.irf.com/package/>

# IRF7343QPbF

International  
**IR** Rectifier

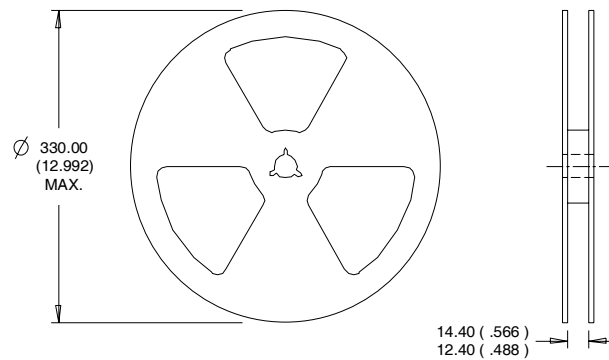
## SO-8 Tape and Reel

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.

International  
**IR** Rectifier

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TAC Fax: (310) 252-7903

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