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[International Rectifier \(Infineon Technologies Americas Corp.\)
IRF7343QTRPBF](#)

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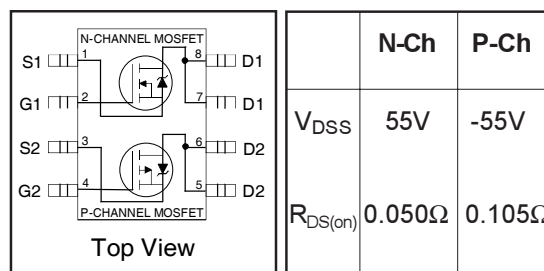
International IR Rectifier

PD - 96110A

IRF7343QPBF

HEXFET® Power MOSFET

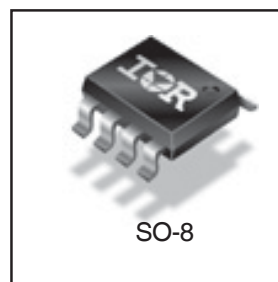
- Advanced Process Technology
- Ultra Low On-Resistance
- Dual N and P Channel MOSFET
- Surface Mount
- Available in Tape & Reel
- 150°C Operating Temperature
- Lead-Free



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 | Parameter | 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 | ± 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 | Parameter | 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 | Description | | Min. | Typ. | Max. | Units | Conditions |
|--|--------------------------------------|------|------|-------|-------|-------|---|
| | | | N-Ch | P-Ch | | | |
| 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 |
| | | P-Ch | — | 3.0 | 4.5 | | |
| Q _{gd} | Gate-to-Drain ("Miller") Charge | N-Ch | — | 7.0 | 10 | nC | |
| | | P-Ch | — | 8.4 | 13 | | |
| t _{d(on)} | Turn-On Delay Time | N-Ch | — | 8.3 | 12 | ns | N-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 | |
| | | 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 | |
| | | 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 | |
| | | P-Ch | — | 86 | — | | |

Source-Drain Ratings and Characteristics

| Parameter | Description | | 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 |
| | | 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.

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N-Channel

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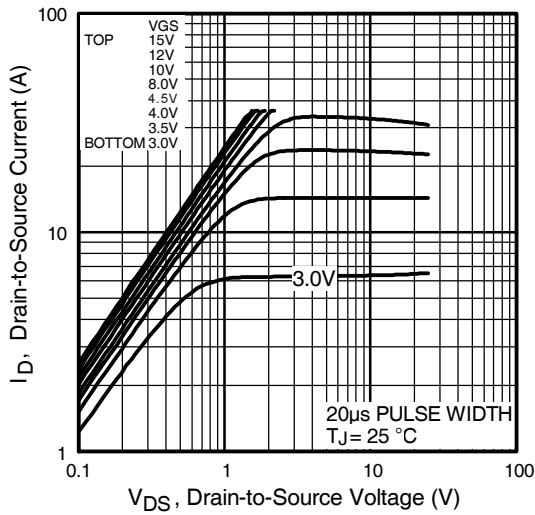


Fig 1. Typical Output Characteristics

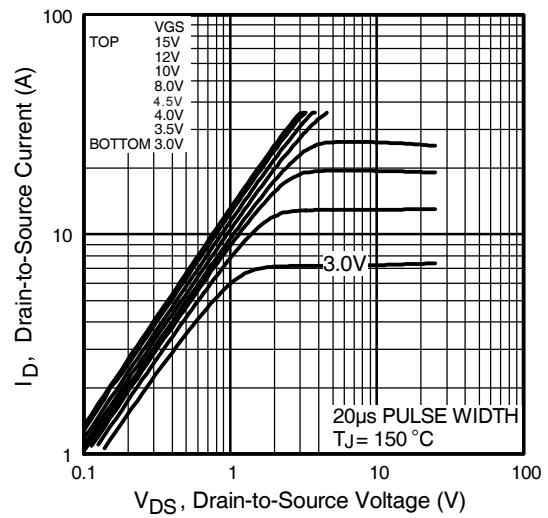


Fig 2. Typical Output Characteristics

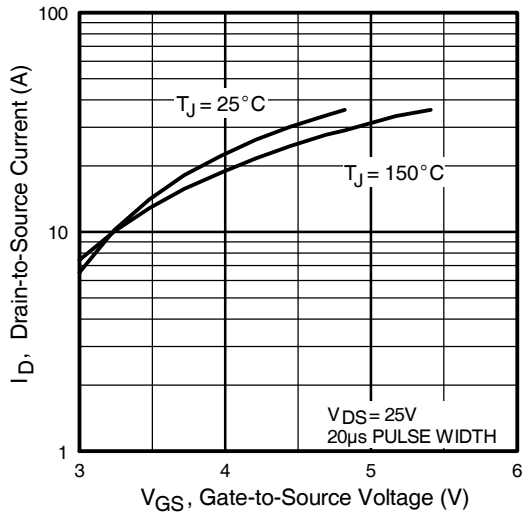


Fig 3. Typical Transfer Characteristics

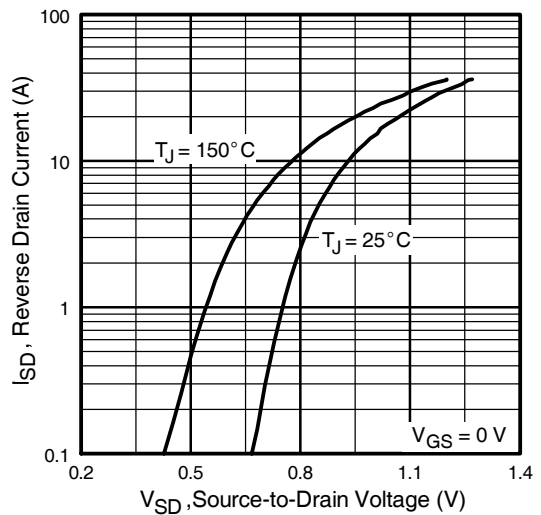


Fig 4. Typical Source-Drain Diode Forward Voltage

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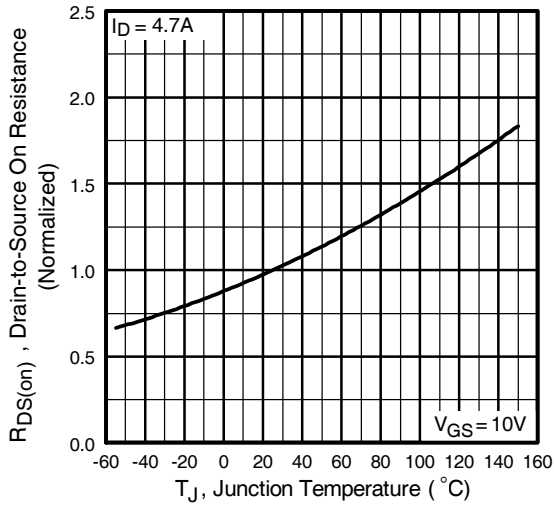


Fig 5. Normalized On-Resistance Vs. Temperature

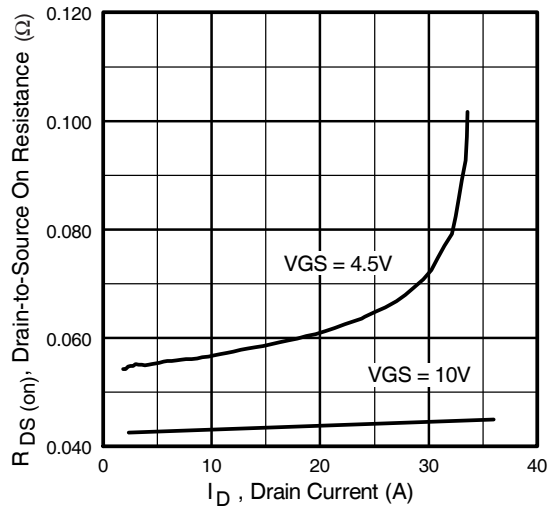


Fig 6. Typical On-Resistance Vs. Drain Current

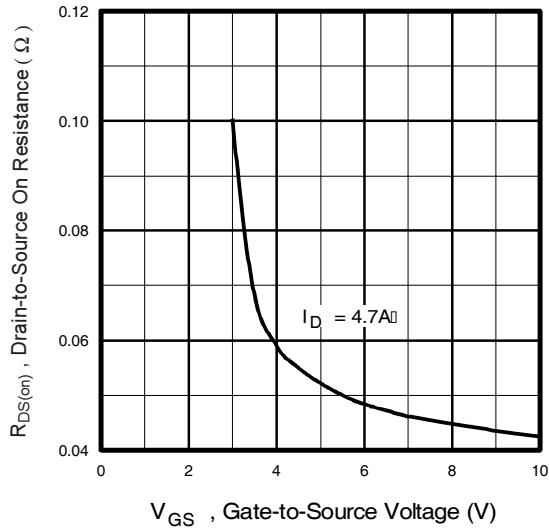


Fig 7. Typical On-Resistance Vs. Gate Voltage

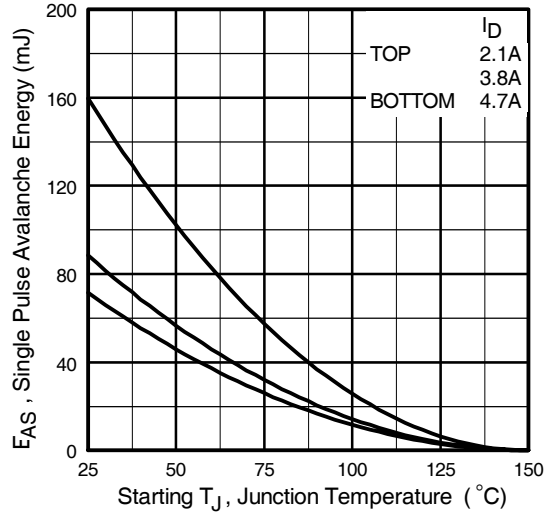


Fig 8. Maximum Avalanche Energy Vs. Drain Current

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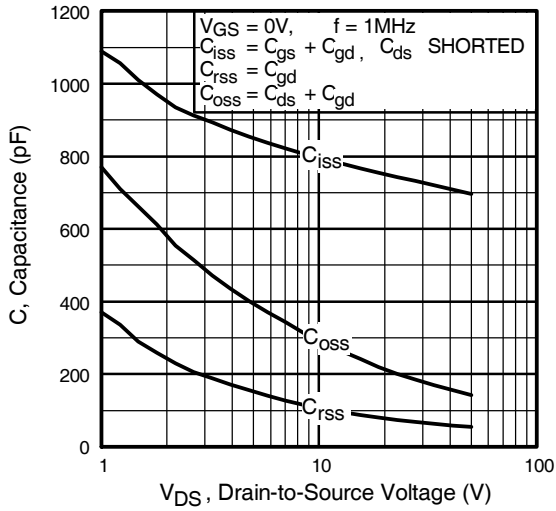


Fig 9. Typical Capacitance Vs. Drain-to-Source Voltage

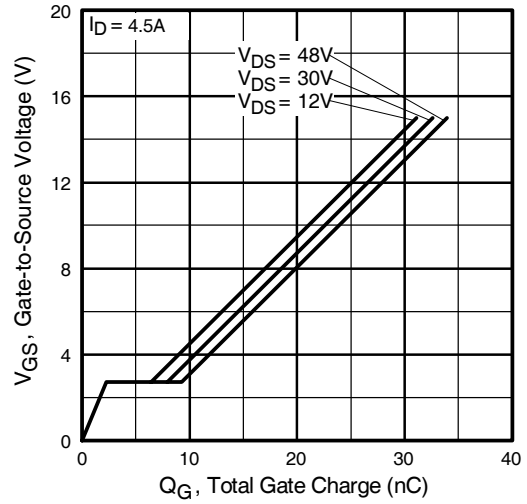


Fig 10. Typical Gate Charge Vs. Gate-to-Source Voltage

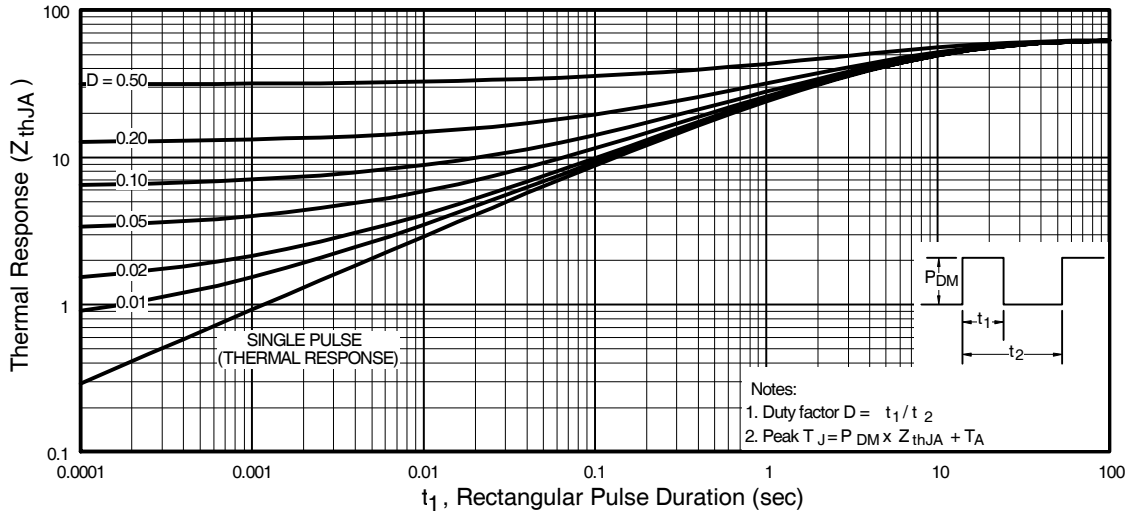


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

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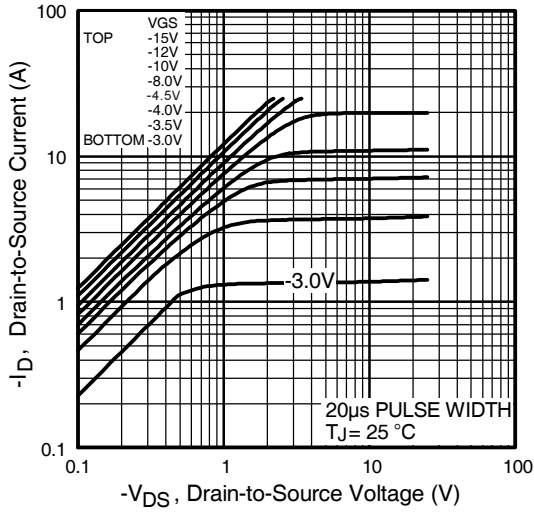


Fig 12. Typical Output Characteristics

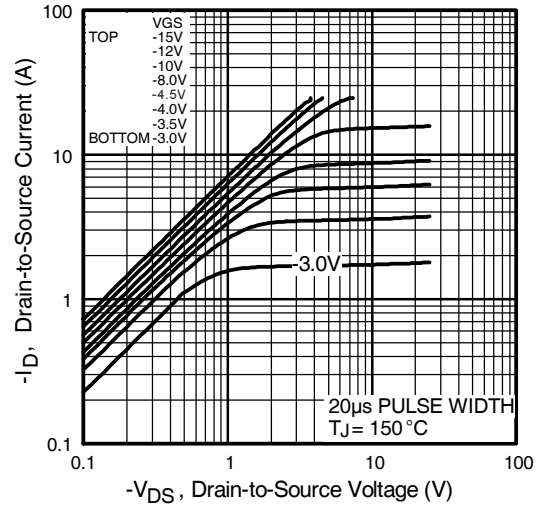


Fig 13. Typical Output Characteristics

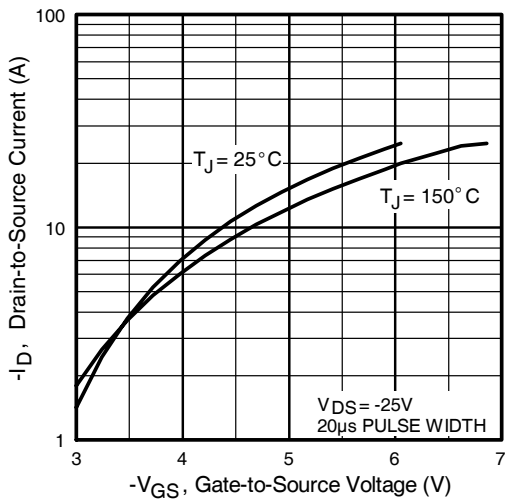


Fig 14. Typical Transfer Characteristics

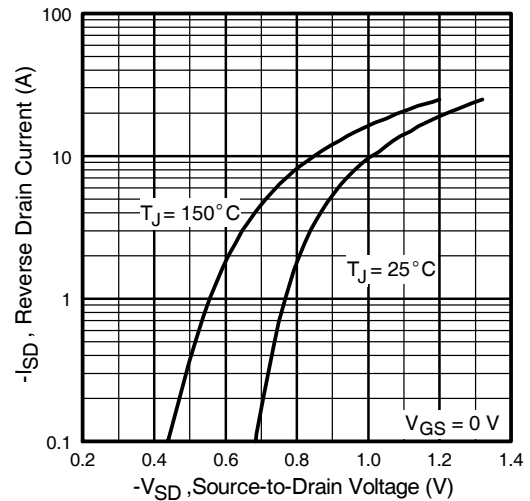


Fig 15. Typical Source-Drain Diode Forward Voltage

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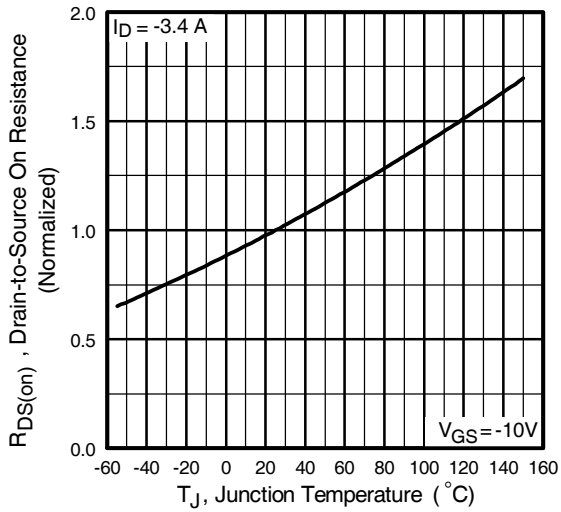


Fig 16. Normalized On-Resistance Vs. Temperature

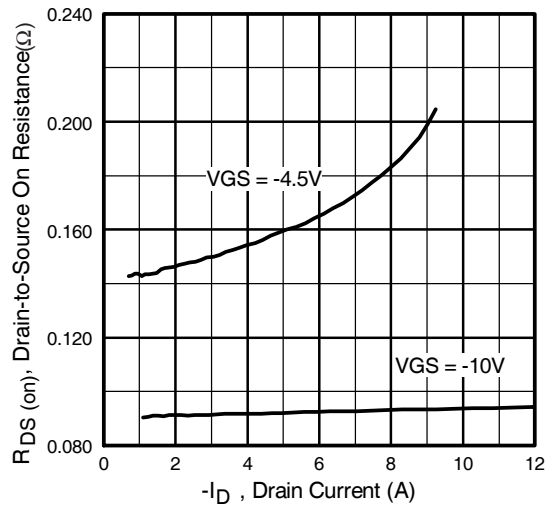


Fig 17. Typical On-Resistance Vs. Drain Current

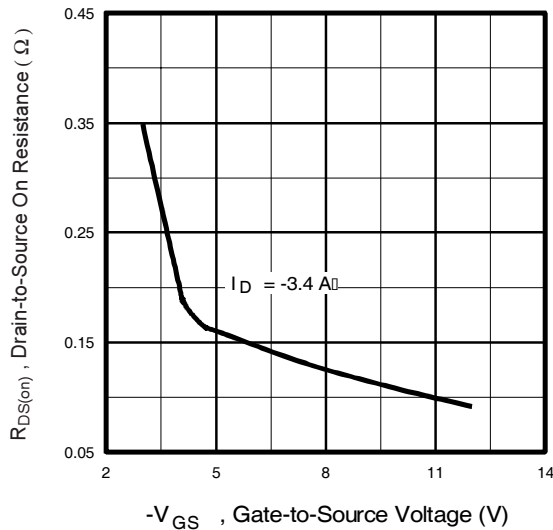


Fig 18. Typical On-Resistance Vs. Gate Voltage

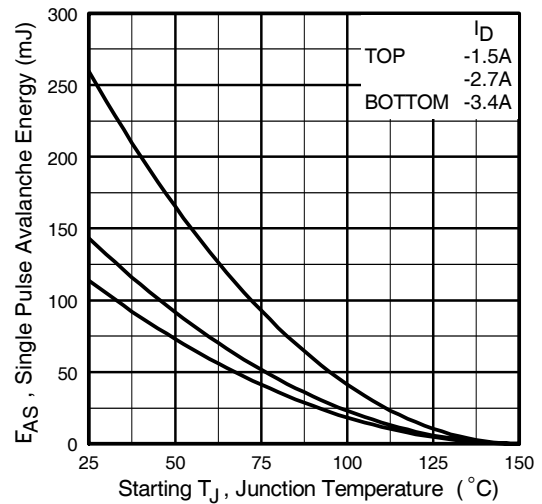


Fig 19. Maximum Avalanche Energy Vs. Drain Current

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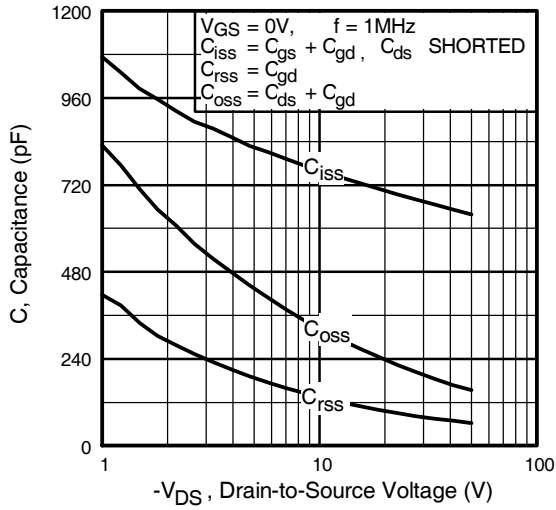


Fig 20. Typical Capacitance Vs. Drain-to-Source Voltage

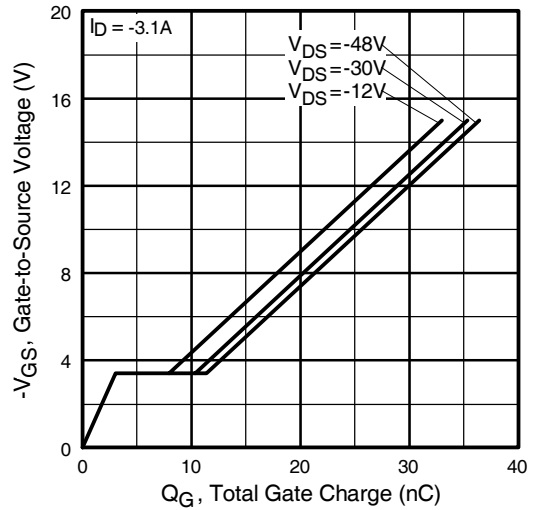


Fig 21. Typical Gate Charge Vs. Gate-to-Source Voltage

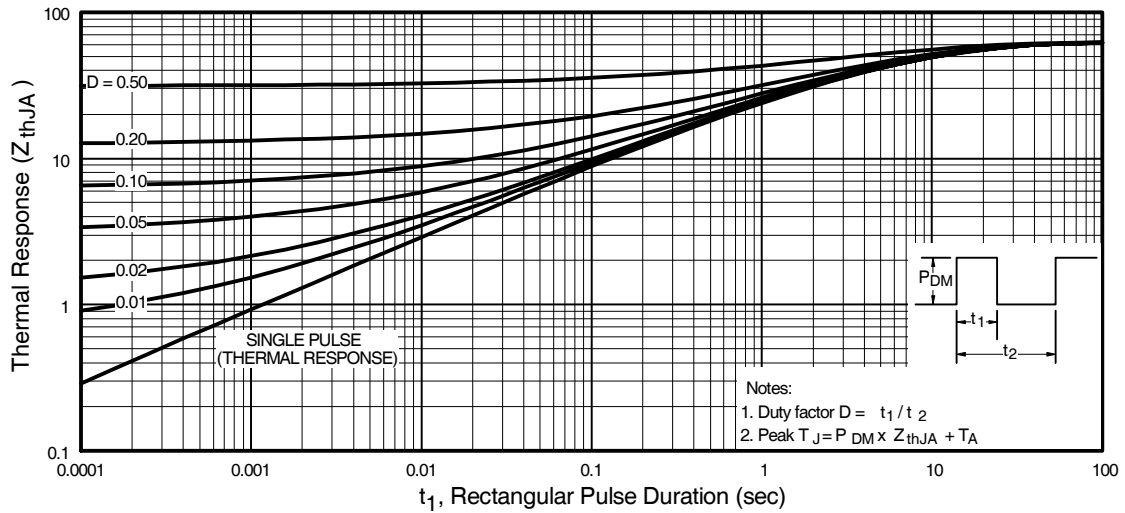


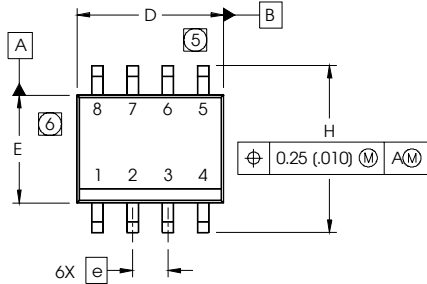
Fig 22. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

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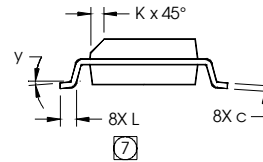
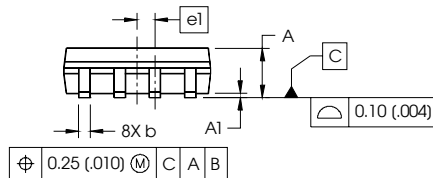
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SO-8 Package Outline

Dimensions are shown in millimeters (inches)



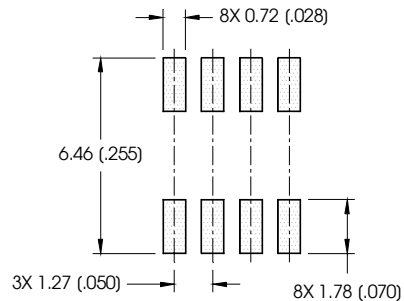
| DIM | INCHES | | MILLIMETERS | |
|-----|------------|-------|-------------|------|
| | MIN | MAX | MIN | MAX |
| A | .0532 | .0688 | 1.35 | 1.75 |
| A1 | .0040 | .0098 | 0.10 | 0.25 |
| b | .013 | .020 | 0.33 | 0.51 |
| c | .0075 | .0098 | 0.19 | 0.25 |
| D | .189 | .1968 | 4.80 | 5.00 |
| E | .1497 | .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:

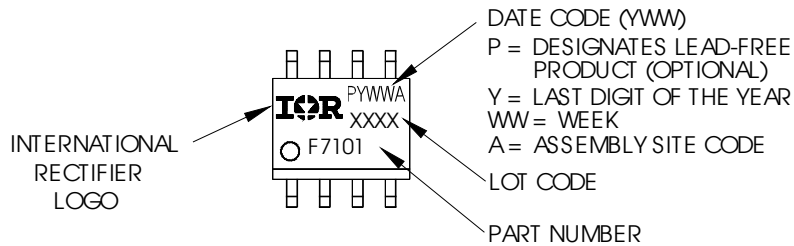
1. DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
2. CONTROLLING DIMENSION: MILLIMETER
3. DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
- ⑤ DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 (.006).
- ⑥ DIMENSION DOES NOT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

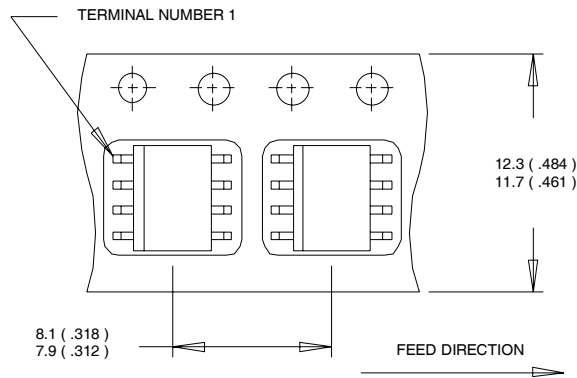
1. For an Automotive Qualified version of this part please see <http://www.irf.com/product-info/auto/>
2. For the most current drawing please refer to IR website at <http://www.irf.com/package/>

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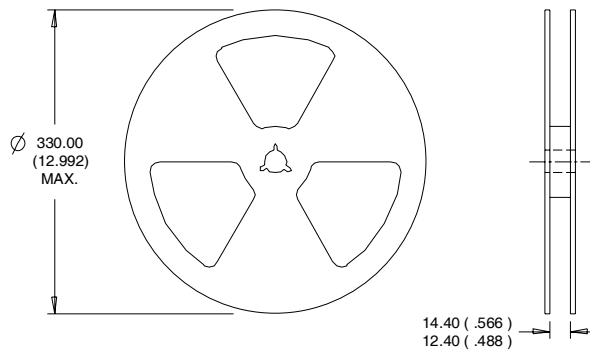
SO-8 Tape and Reel

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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IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
 TAC Fax: (310) 252-7903

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