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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



IRF7389PbF

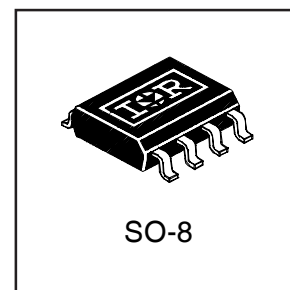
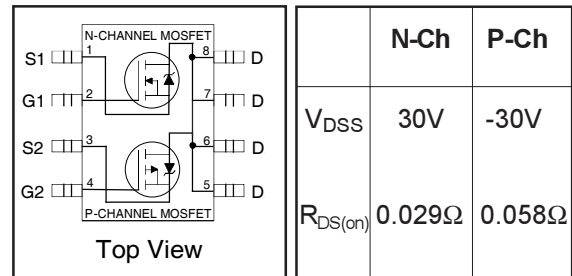
HEXFET® Power MOSFET

- Generation V Technology
- Ultra Low On-Resistance
- Complimentary Half Bridge
- Surface Mount
- Fully Avalanche Rated
- Lead-Free

Description

Fifth Generation HEXFETs from International Rectifier utilize advanced processing techniques to achieve extremely low on-resistance per silicon area. This benefit, combined with the fast switching speed and ruggedized device design that HEXFET Power MOSFETs are well known for, provides the designer with an extremely efficient and reliable device for use in a wide variety of applications.

The SO-8 has been modified through a customized leadframe for enhanced thermal characteristics and multiple-die capability making it ideal in a variety of power applications. With these improvements, multiple devices can be used in an application with dramatically reduced board space. The package is designed for vapor phase, infra red, or wave soldering techniques.



Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

| | Symbol | Maximum | | Units | |
|--|----------------|--------------------------|-----------|-------|---|
| | | N-Channel | P-Channel | | |
| Drain-Source Voltage | V_{DS} | 30 | -30 | V | |
| Gate-Source Voltage | V_{GS} | ± 20 | | | |
| Continuous Drain Current [Ⓒ] | I_D | $T_A = 25^\circ\text{C}$ | 7.3 | -5.3 | A |
| | | $T_A = 70^\circ\text{C}$ | 5.9 | -4.2 | |
| Pulsed Drain Current | I_{DM} | 30 | -30 | | |
| Continuous Source Current (Diode Conduction) | I_S | 2.5 | -2.5 | | |
| Maximum Power Dissipation [Ⓒ] | P_D | $T_A = 25^\circ\text{C}$ | 2.5 | | W |
| | | $T_A = 70^\circ\text{C}$ | 1.6 | | |
| Single Pulse Avalanche Energy | E_{AS} | 82 | 140 | mJ | |
| Avalanche Current | I_{AR} | 4.0 | -2.8 | A | |
| Repetitive Avalanche Energy | E_{AR} | 0.20 | | mJ | |
| Peak Diode Recovery dv/dt [Ⓓ] | dv/dt | 3.8 | -2.2 | V/ ns | |
| Junction and Storage Temperature Range | T_J, T_{STG} | -55 to + 150 °C | | | |

Thermal Resistance Ratings

| Parameter | Symbol | Limit | Units |
|--|-----------------|-------|--------------------|
| Maximum Junction-to-Ambient [Ⓒ] | $R_{\theta JA}$ | 50 | $^\circ\text{C/W}$ |

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

| Parameter | Min. | Typ. | Max. | Units | Conditions |
|--|-----------------------|----------------|----------------|-------|--|
| | | | | | |
| V _{(BR)DSS} | N-Ch 30 P-Ch -30 | — | — | V | V _{GS} = 0V, I _D = 250μA V _{GS} = 0V, I _D = -250μA |
| ΔV _{(BR)DSS} /ΔT _J | N-Ch — P-Ch — | 0.022 | — | V/°C | Reference to 25°C, I _D = 1mA Reference to 25°C, I _D = -1mA |
| R _{DS(ON)} | N-Ch — P-Ch — | 0.023 0.032 | 0.029 0.046 | Ω | V _{GS} = 10V, I _D = 5.8A ④ V _{GS} = 4.5V, I _D = 4.7A ④ V _{GS} = -10V, I _D = -4.9A ④ V _{GS} = -4.5V, I _D = -3.6A ④ |
| V _{GS(th)} | N-Ch 1.0 P-Ch -1.0 | — | — | V | V _{DS} = V _{GS} , I _D = 250μA V _{DS} = V _{GS} , I _D = -250μA |
| g _{fs} | N-Ch — P-Ch — | 14 | — | S | V _{DS} = 15V, I _D = 5.8A ④ V _{DS} = -15V, I _D = -4.9A ④ |
| I _{DSS} | N-Ch — P-Ch — | — | 1.0 -1.0 | μA | V _{DS} = 24V, V _{GS} = 0V V _{DS} = -24V, V _{GS} = 0V |
| I _{GSS} | N-P — | — | ±100 | nA | V _{DS} = 24V, V _{GS} = 0V, T _J = 55°C V _{DS} = -24V, V _{GS} = 0V, T _J = 55°C |
| Q _g | N-Ch — P-Ch — | 22 | 33 | nC | V _{GS} = ±20V |
| Q _{gs} | N-Ch — P-Ch — | 2.6 | 3.9 | nC | N-Channel I _D = 5.8A, V _{DS} = 15V, V _{GS} = 10V ④ |
| Q _{gd} | N-Ch — P-Ch — | 6.4 | 9.6 | nC | P-Channel I _D = -4.9A, V _{DS} = -15V, V _{GS} = -10V |
| t _{d(on)} | N-Ch — P-Ch — | 8.1 | 12 | ns | N-Channel V _{DD} = 15V, I _D = 1.0A, R _G = 6.0Ω, R _D = 15Ω ④ |
| t _r | N-Ch — P-Ch — | 8.9 | 13 | ns | P-Channel V _{DD} = -15V, I _D = -1.0A, R _G = 6.0Ω, R _D = 15Ω |
| t _{d(off)} | N-Ch — P-Ch — | 26 | 39 | ns | |
| t _f | N-Ch — P-Ch — | 17 | 26 | ns | |
| C _{iss} | N-Ch — P-Ch — | 650 | — | pF | N-Channel V _{GS} = 0V, V _{DS} = 25V, f = 1.0MHz |
| C _{oss} | N-Ch — P-Ch — | 320 | — | pF | P-Channel V _{GS} = 0V, V _{DS} = -25V, f = 1.0MHz |
| C _{rss} | N-Ch — P-Ch — | 130 | — | pF | |

Source-Drain Ratings and Characteristics

| Parameter | Min. | Typ. | Max. | Units | Conditions |
|-----------------|------------------|---------------|-------------|-------|---|
| I _S | N-Ch — P-Ch — | — | 2.5 -2.5 | A | |
| I _{SM} | N-Ch — P-Ch — | — | 30 -30 | A | |
| V _{SD} | N-Ch — P-Ch — | 0.78 -0.78 | 1.0 -1.0 | V | T _J = 25°C, I _S = 1.7A, V _{GS} = 0V ③ T _J = 25°C, I _S = -1.7A, V _{GS} = 0V ③ |
| t _{rr} | N-Ch — P-Ch — | 45 44 | 68 66 | ns | N-Channel T _J = 25°C, I _F = 1.7A, di/dt = 100A/μs ④ |
| Q _{rr} | N-Ch — P-Ch — | 58 42 | 87 63 | nC | P-Channel T _J = 25°C, I _F = -1.7A, di/dt = 100A/μs ④ |

Notes:

- ① Repetitive rating; pulse width limited by max. junction temperature. (See fig. 22)
- ② N-Channel I_{SD} ≤ 4.0A, di/dt ≤ 74A/μs, V_{DD} ≤ V_{(BR)DSS}, T_J ≤ 150°C
P-Channel I_{SD} ≤ -2.8A, di/dt ≤ 150A/μs, V_{DD} ≤ V_{(BR)DSS}, T_J ≤ 150°C
- ③ N-Channel Starting T_J = 25°C, L = 10mH R_G = 25Ω, I_{AS} = 4.0A. (See Figure 12)
P-Channel Starting T_J = 25°C, L = 35mH R_G = 25Ω, I_{AS} = -2.8A.
- ④ Pulse width ≤ 300μs; duty cycle ≤ 2%.
- ⑤ Surface mounted on FR-4 board, t ≤ 10sec.

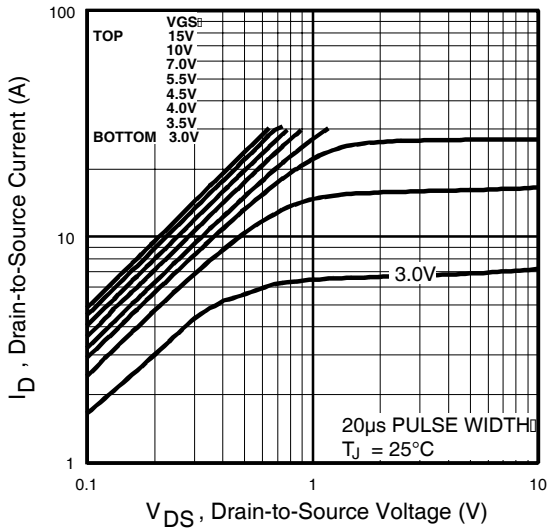


Fig 1. Typical Output Characteristics

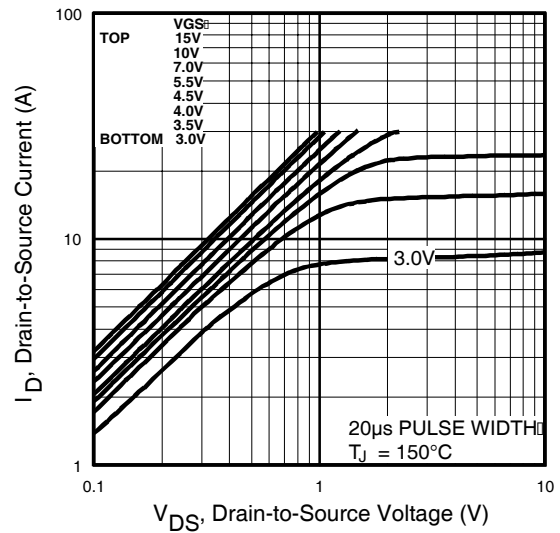


Fig 2. Typical Output Characteristics

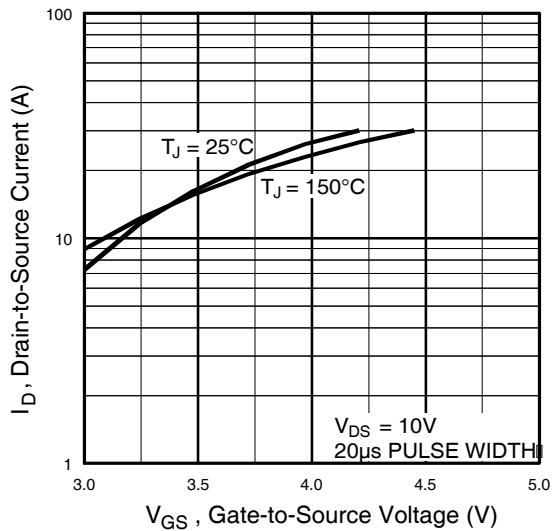


Fig 3. Typical Transfer Characteristics

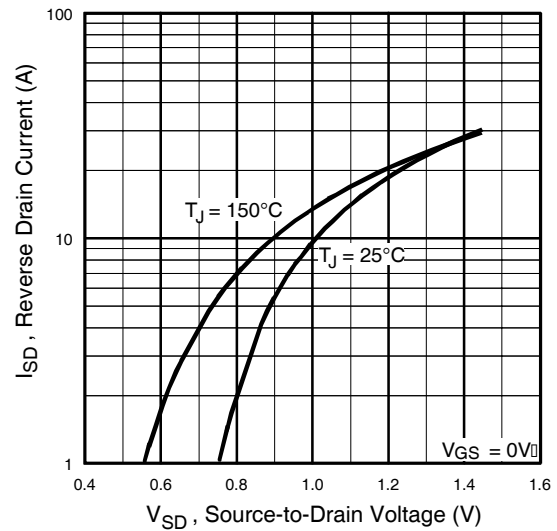


Fig 4. Typical Source-Drain Diode Forward Voltage

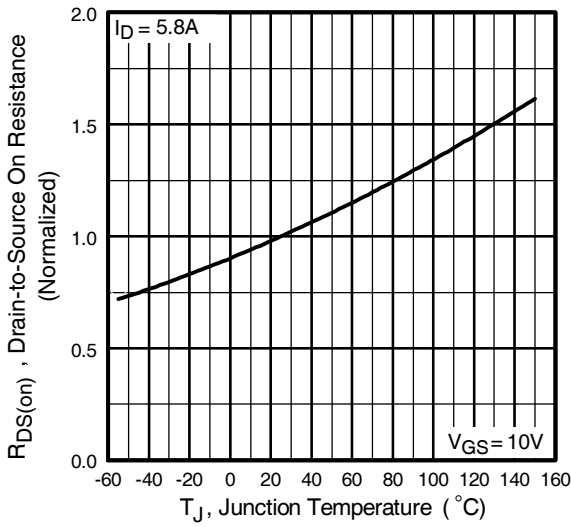


Fig 5. Normalized On-Resistance Vs. Temperature

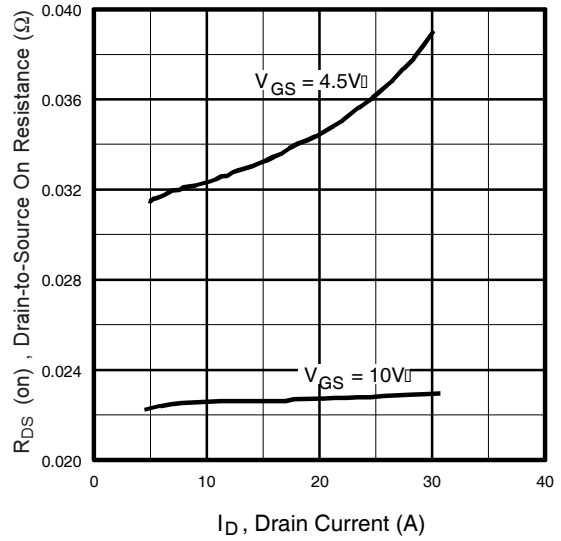


Fig 6. Typical On-Resistance Vs. Drain Current

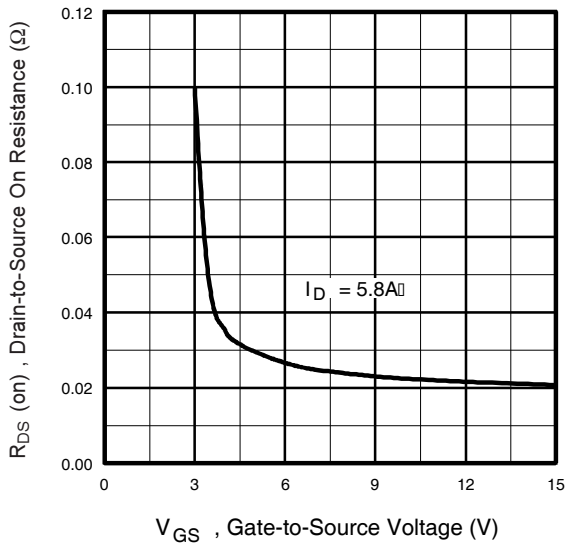


Fig 7. Typical On-Resistance Vs. Gate Voltage

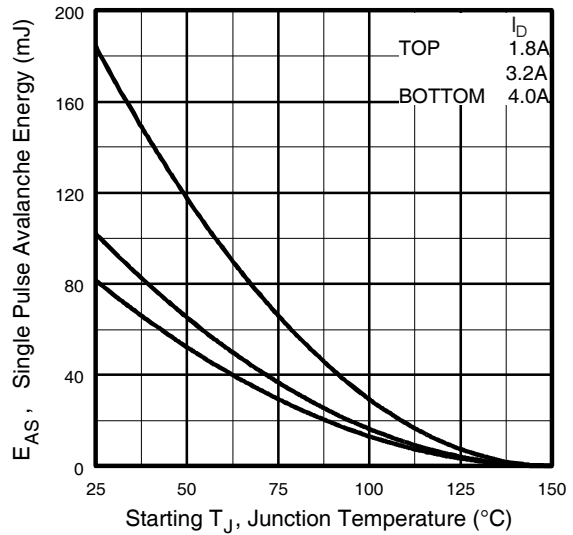


Fig 8. Maximum Avalanche Energy Vs. Drain Current

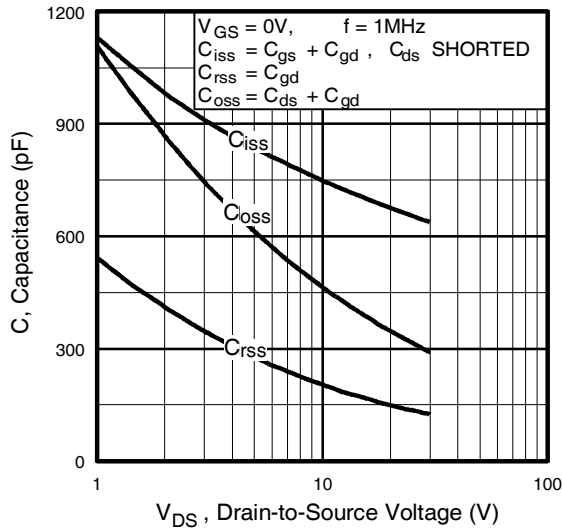


Fig 9. Typical Capacitance Vs. Drain-to-Source Voltage

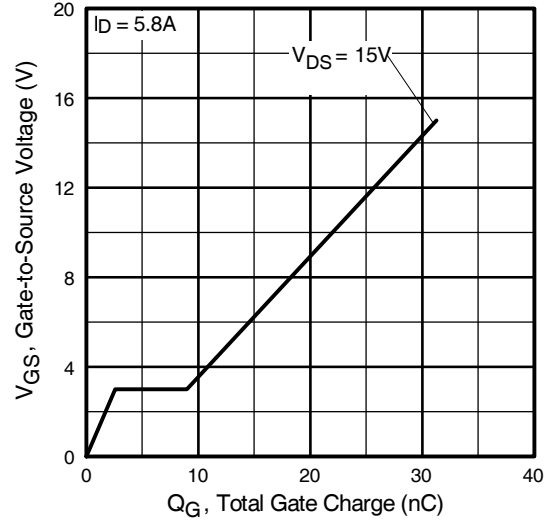


Fig 10. Typical Gate Charge Vs. Gate-to-Source Voltage

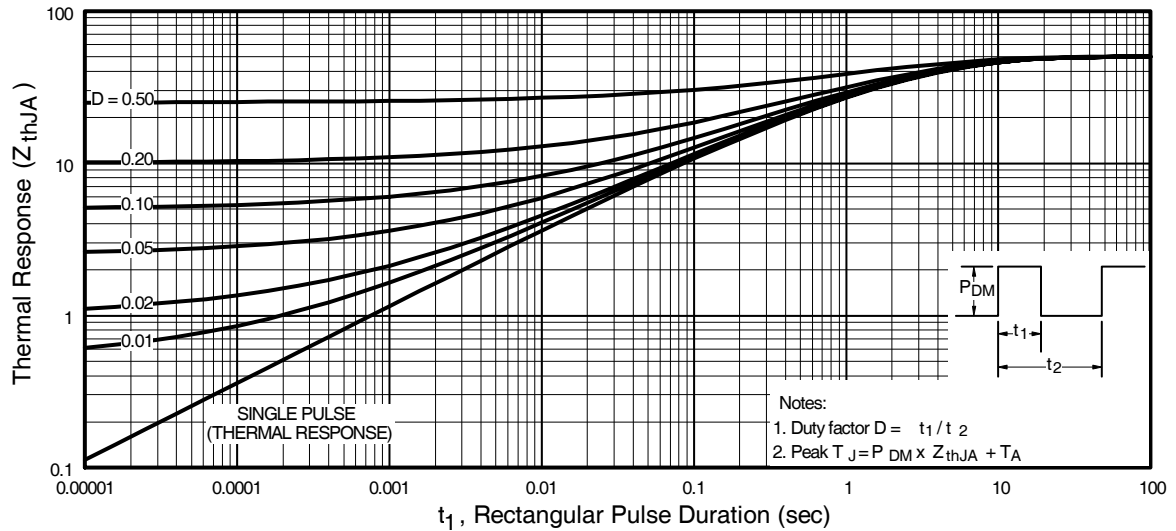


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

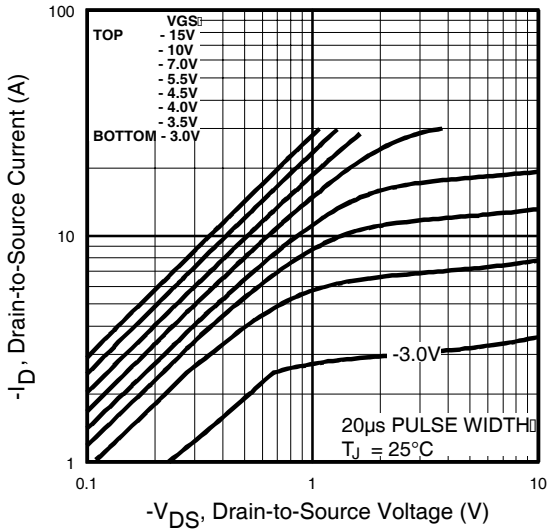


Fig 12. Typical Output Characteristics

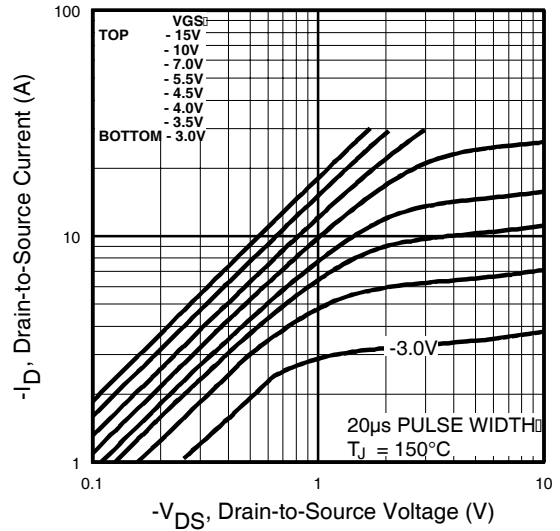


Fig 13. Typical Output Characteristics

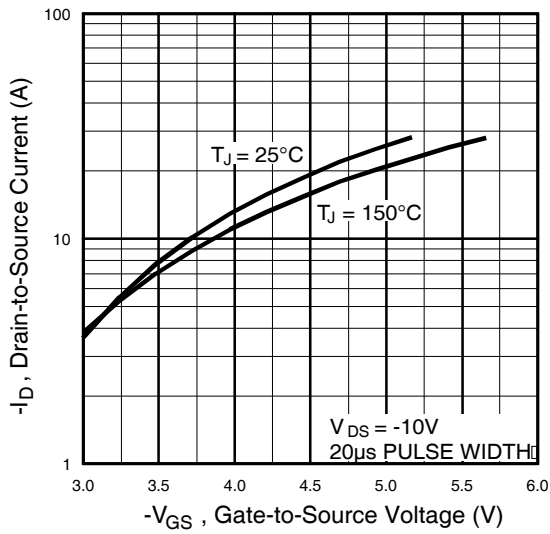


Fig 14. Typical Transfer Characteristics

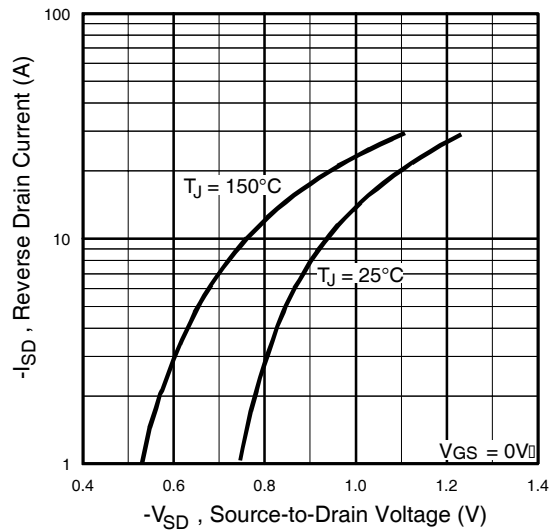


Fig 15. Typical Source-Drain Diode Forward Voltage

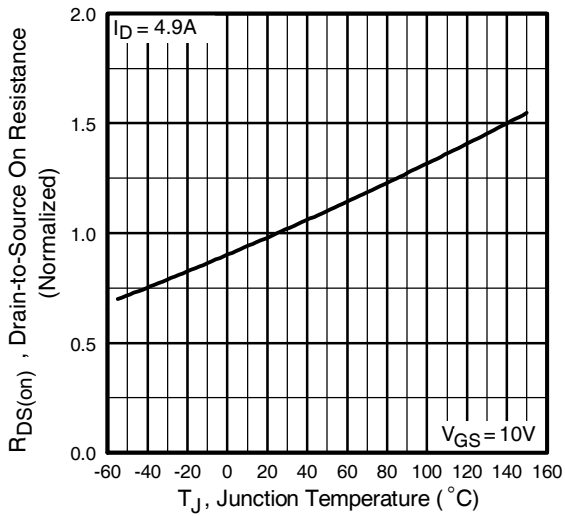


Fig 16. Normalized On-Resistance Vs. Temperature

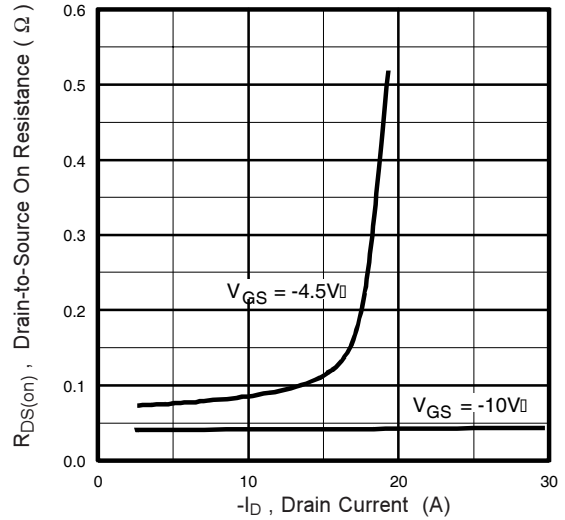


Fig 17. Typical On-Resistance Vs. Drain Current

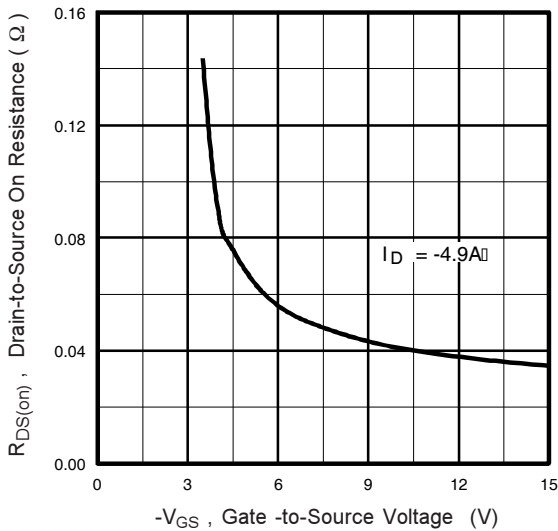


Fig 18. Typical On-Resistance Vs. Gate Voltage

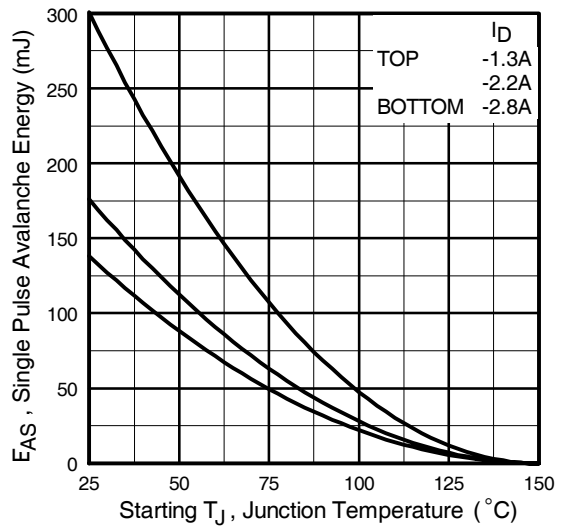


Fig 19. Maximum Avalanche Energy Vs. Drain Current

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P-Channel

International
IR Rectifier

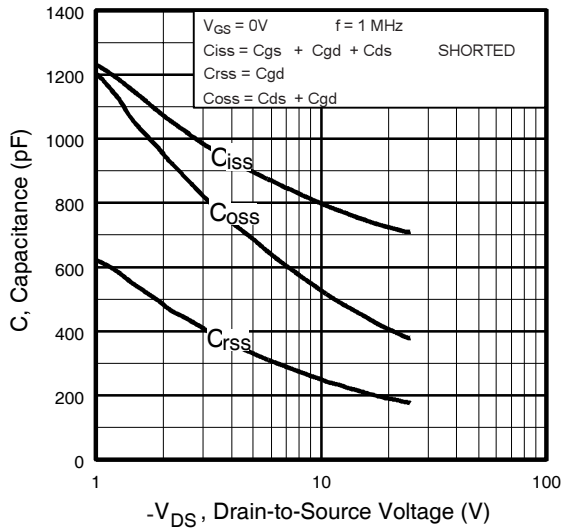


Fig 20. Typical Capacitance Vs. Drain-to-Source Voltage

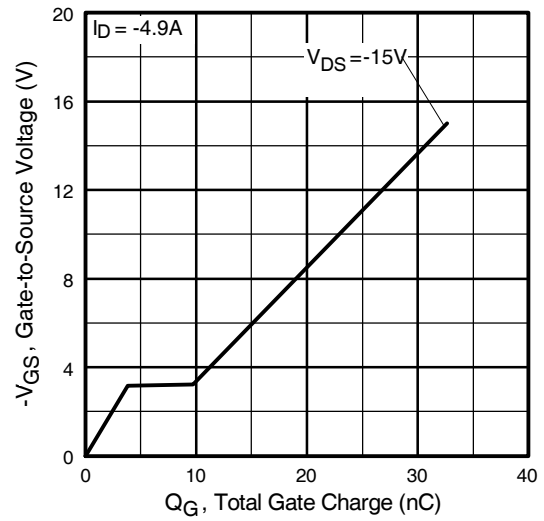


Fig 21. Typical Gate Charge Vs. Gate-to-Source Voltage

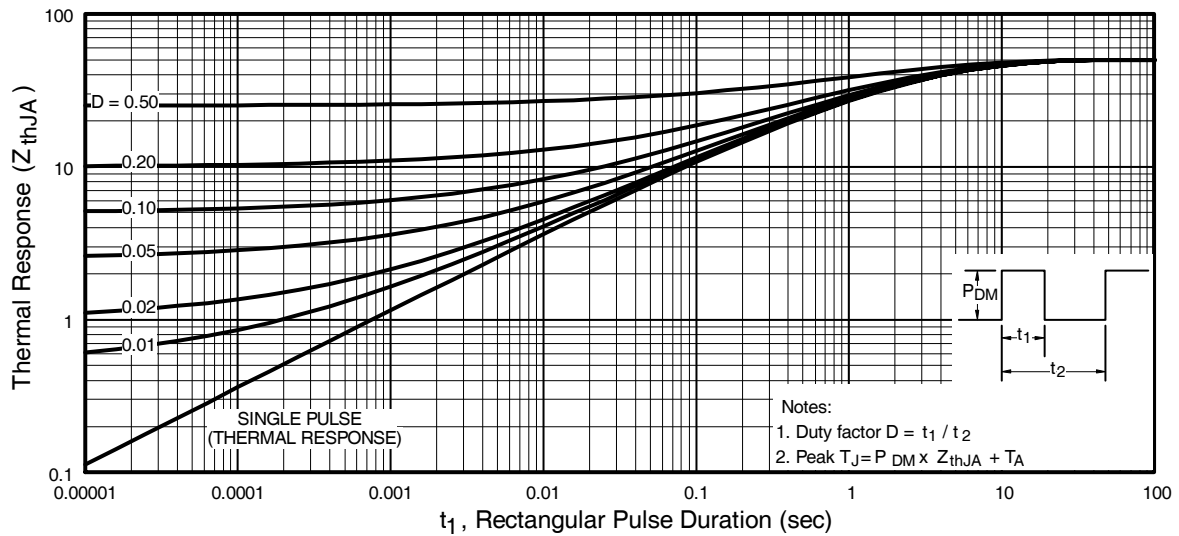
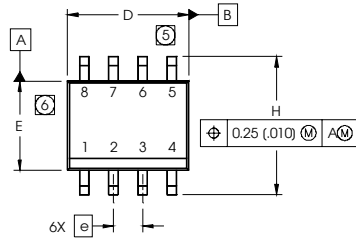


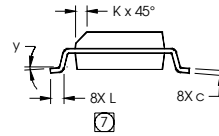
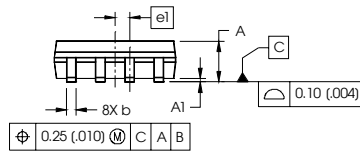
Fig 22. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

SO-8 Package Outline

Dimensions are shown in millimeters (inches)



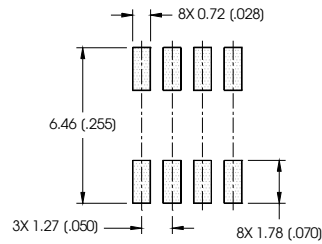
| DIM | INCHES | | MILLIMETERS | |
|-----|------------|-------|-------------|------|
| | MIN | MAX | MIN | MAX |
| A | .0532 | .0688 | 1.35 | 1.75 |
| AI | .0040 | .0098 | 0.10 | 0.25 |
| b | .013 | .020 | 0.33 | 0.51 |
| c | .0075 | .0098 | 0.19 | 0.25 |
| D | .189 | .1968 | 4.80 | 5.00 |
| E | .1497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

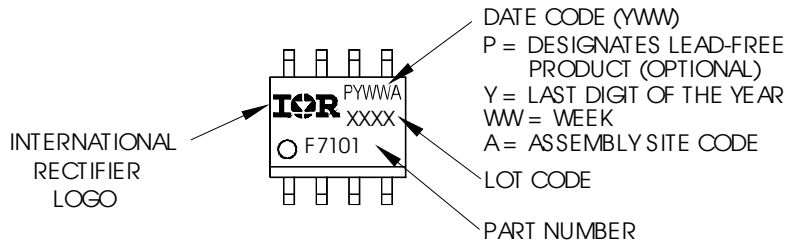
1. DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
2. CONTROLLING DIMENSION: MILLIMETER
3. DIMENSIONS ARE SHOWN IN MILLIMETERS (INCHES).
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
5. DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 (.006).
6. DIMENSION DOES NOT INCLUDE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

EXAMPLE: THIS IS AN IRF7101 (MOSFET)

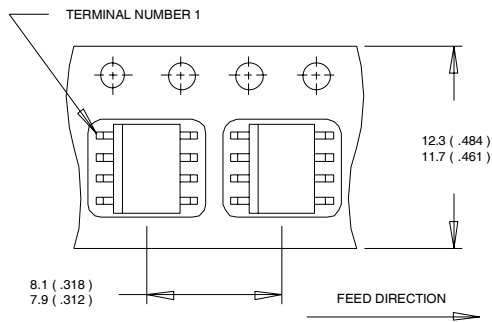


IRF7389PbF

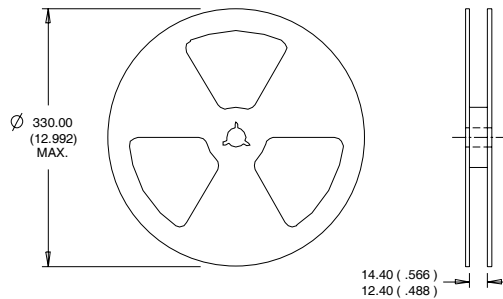
International
IR Rectifier

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.

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

International
IR Rectifier

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