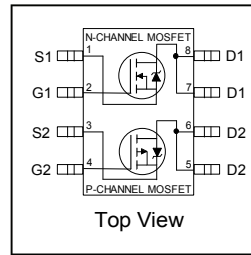
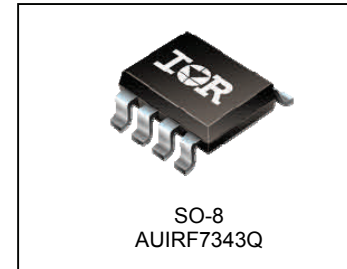


Features

- Advanced Planar Technology
- Ultra Low On-Resistance
- Logic Level Gate Drive
- Dual N and P Channel MOSFET
- Surface Mount
- Available in Tape & Reel
- 150°C Operating Temperature
- Lead-Free, RoHS Compliant
- Automotive Qualified *



| | N-CH | P-CH |
|--------------------------|--------|--------|
| V_{DSS} | 55V | -55V |
| $R_{DS(on)}$ typ. | 0.043Ω | 0.095Ω |
| max. | 0.050Ω | 0.105Ω |
| I_D | 4.7A | -3.4A |



| G | D | S |
|------|-------|--------|
| Gate | Drain | Source |

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.

| Base part number | Package Type | Standard Pack | | Orderable Part Number |
|------------------|--------------|---------------|----------|-----------------------|
| | | Form | Quantity | |
| AUIRF7343Q | SO-8 | Tape and Reel | 4000 | AUIRF7343QTR |

Absolute Maximum Ratings

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only; and functional operation of the device at these or any other condition beyond those indicated in the specifications is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability. The thermal resistance and power dissipation ratings are measured under board mounted and still air conditions. Ambient temperature (TA) is 25°C, unless otherwise specified.

| Symbol | Parameter | Max. | | Units |
|--------------------------|---|--------------|-----------|-------|
| | | N-Channel | P-Channel | |
| V_{DS} | Drain-Source Voltage | 55 | -55 | V |
| $I_D @ T_A = 25^\circ C$ | Continuous Drain Current, $V_{GS} @ 10V$ | 4.7 | -3.4 | A |
| $I_D @ T_A = 70^\circ C$ | Continuous Drain Current, $V_{GS} @ 10V$ | 3.8 | -2.7 | |
| I_{DM} | Pulsed Drain Current ① | 38 | -27 | |
| $P_D @ T_A = 25^\circ C$ | Maximum Power Dissipation ⑤ | 2.0 | | W |
| $P_D @ T_A = 70^\circ C$ | Maximum Power Dissipation ⑤ | 1.3 | | |
| E_{AS} | Single Pulse Avalanche Energy (Thermally Limited) 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} | Operating Junction and Storage Temperature Range | -55 to + 150 | | °C |

Thermal Resistance

| Symbol | Parameter | Typ. | Max. | Units |
|-----------------|--|------|------|-------|
| $R_{\theta JA}$ | Junction-to-Ambient (PCB Mount, steady state) ⑤ | — | 62.5 | °C/W |

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*Qualification standards can be found at www.infineon.com

Static @ T_J = 25°C (unless otherwise specified)

| | Parameter | | Min. | Typ. | Max. | Units | Conditions |
|--|--------------------------------------|------|------|-------|-------|-------|---|
| 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 ⑤ |
| | | | — | 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 Trans conductance | N-Ch | 7.9 | — | — | S | V _{DS} = 10V, I _D = 4.5A④ |
| | | P-Ch | 3.3 | — | — | | V _{DS} = -10V, I _D = -3.1A④ |
| 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 |
| | Gate-to-Source Reverse Leakage | N-P | — | — | ± 100 | | V _{GS} = ± 20V |

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

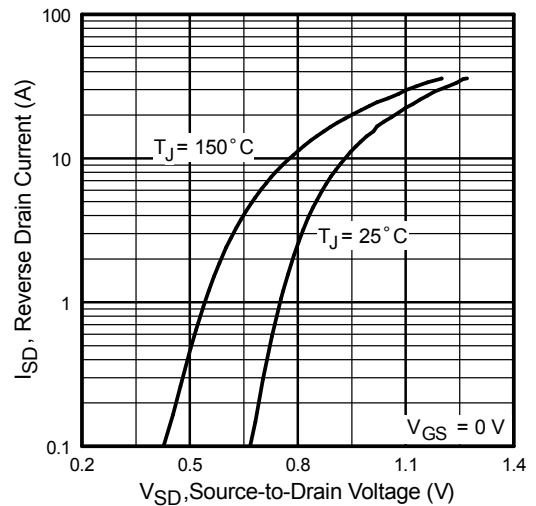
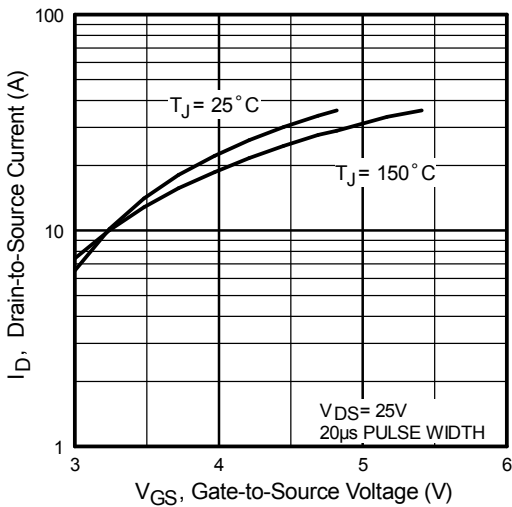
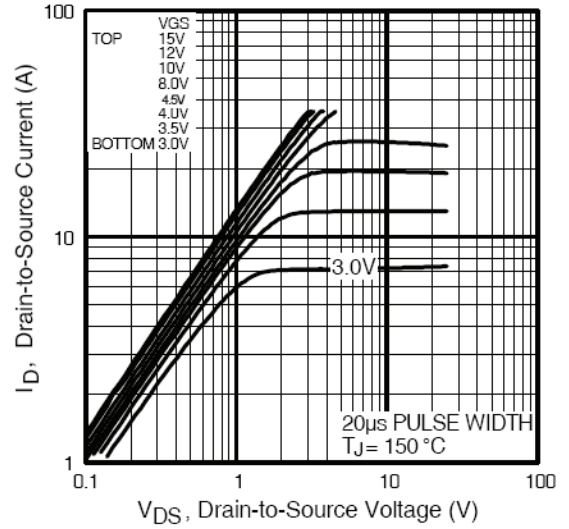
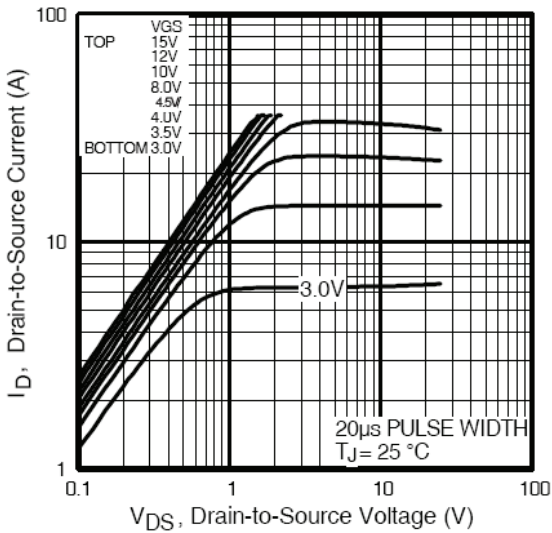
| | | | | | | | |
|---------------------|------------------------------|------|---|-----|-----|----|---|
| Q _g | Total Gate Charge | N-Ch | — | 24 | 36 | nC | N-Channel I _D = 4.5A, V _{DS} = 44V, V _{GS} = 10V ④ |
| | | P-Ch | — | 26 | 38 | | |
| Q _{gs} | Gate-to-Source Charge | N-Ch | — | 2.3 | 3.4 | nC | P-Channel I _D = -3.1A, V _{DS} = -44V, V _{GS} = -10V |
| | | P-Ch | — | 3.0 | 4.5 | | |
| Q _{gd} | Gate-to-Drain Charge | N-Ch | — | 7.0 | 10 | nC | P-Channel I _D = -3.1A, V _{DS} = -44V, V _{GS} = -10V |
| | | 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-Channel V _{DD} = -28V, I _D = -1.0A, R _G = 6.0Ω, R _D = 28Ω ④ |
| | | 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-Channel V _{DD} = -28V, I _D = -1.0A, R _G = 6.0Ω, R _D = 28Ω ④ |
| | | 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-Channel V _{GS} = 0V, V _{DS} = -25V, f = 1.0MHz |
| | | P-Ch | — | 86 | — | | |

Diode Characteristics

| | Parameter | | 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 ④ |
| | | P-Ch | — | -0.80 | -1.2 | | T _J = 25°C, I _S = -2.0A, V _{GS} = 0V ④ |
| 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.



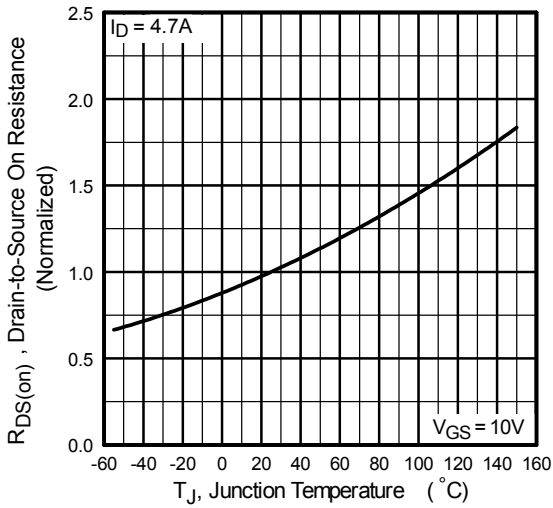


Fig 5. Normalized On-Resistance Vs. Temperature

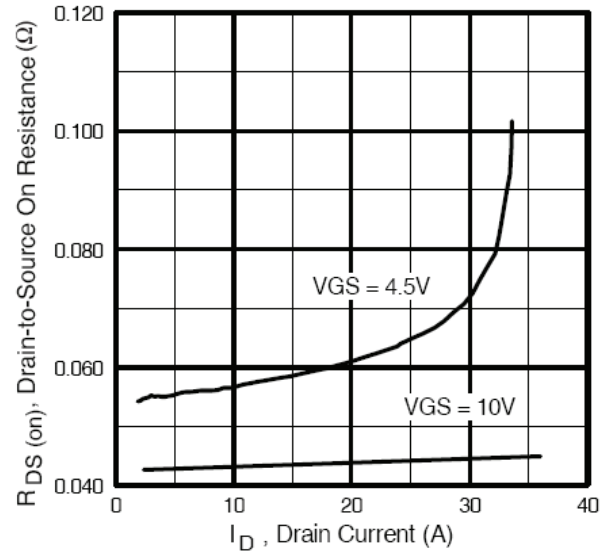


Fig 6. Typical On-Resistance Vs. Drain Current

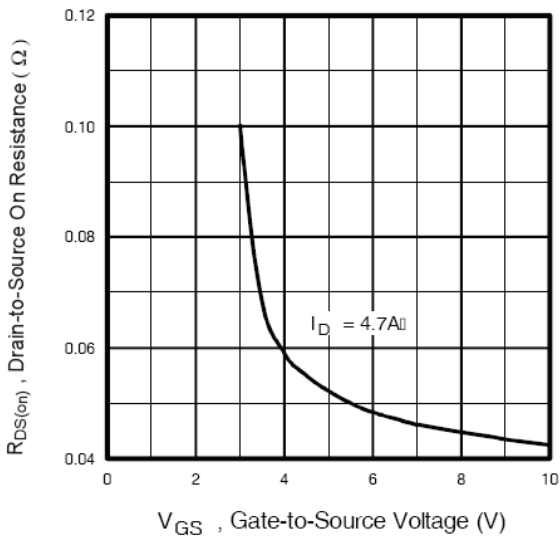


Fig 7 Typical On-Resistance Vs. Gate Voltage

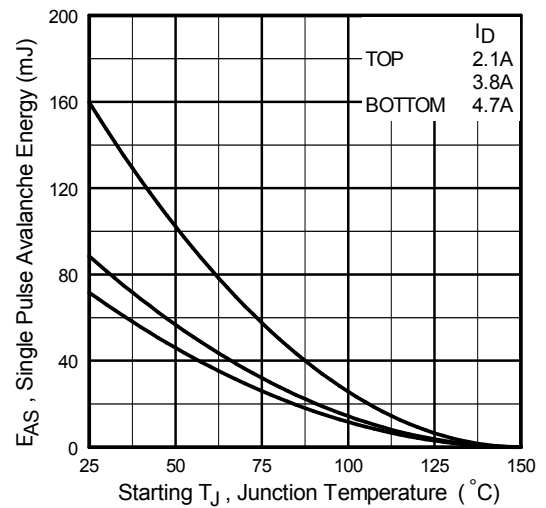


Fig 8. Maximum Avalanche Energy Vs. Drain Current

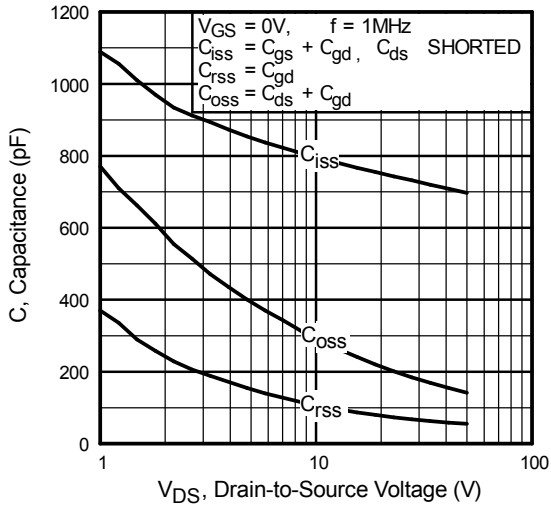


Fig 9. Typical Capacitance Vs. Drain-to-Source Voltage

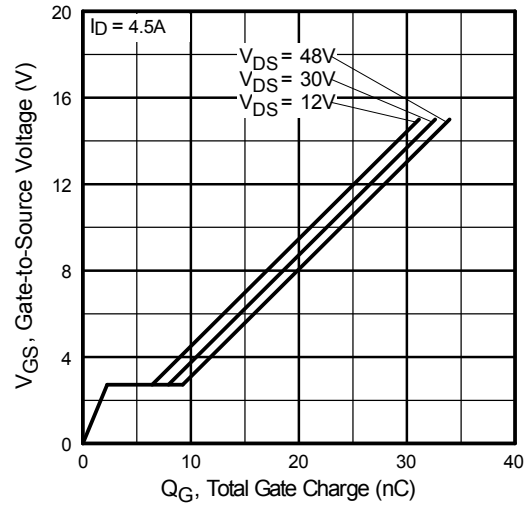


Fig 10. Typical Gate Charge Vs. Gate-to-Source Voltage

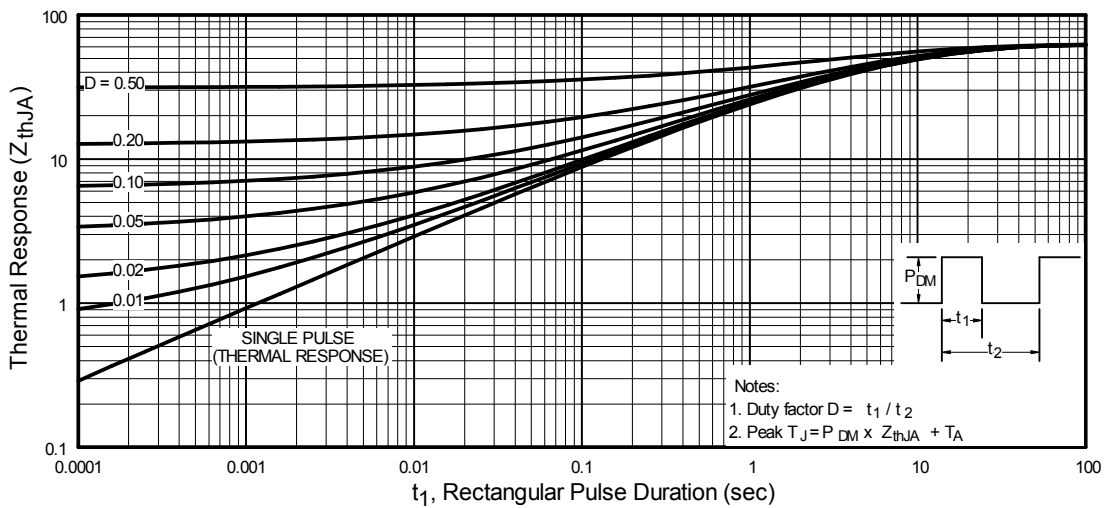


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

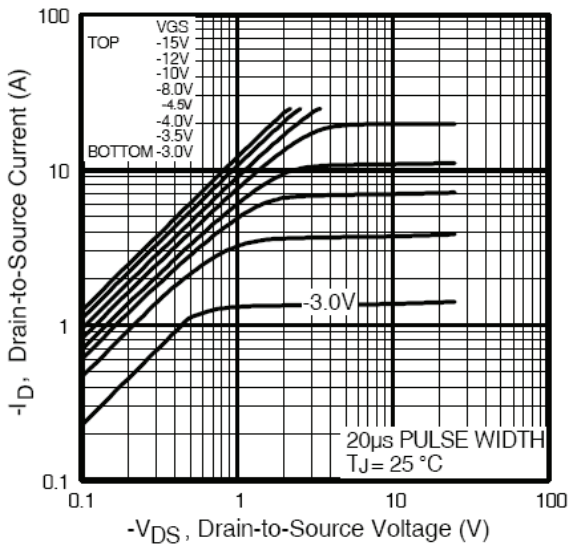


Fig. 12 Typical Output Characteristics

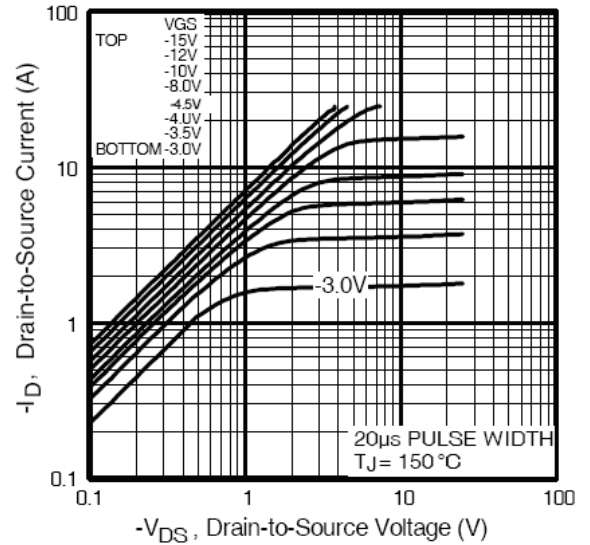


Fig. 13 Typical Output Characteristics

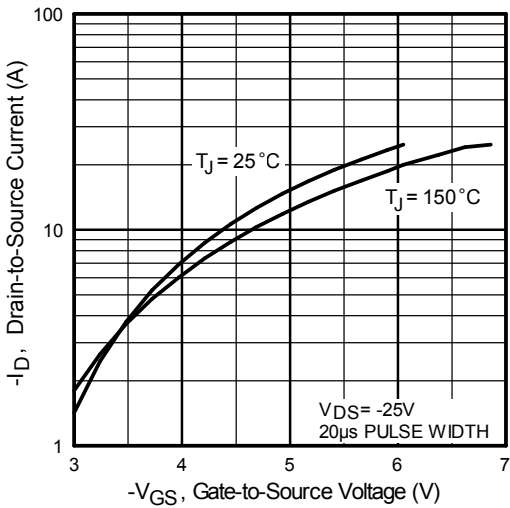


Fig. 14 Typical Transfer Characteristics

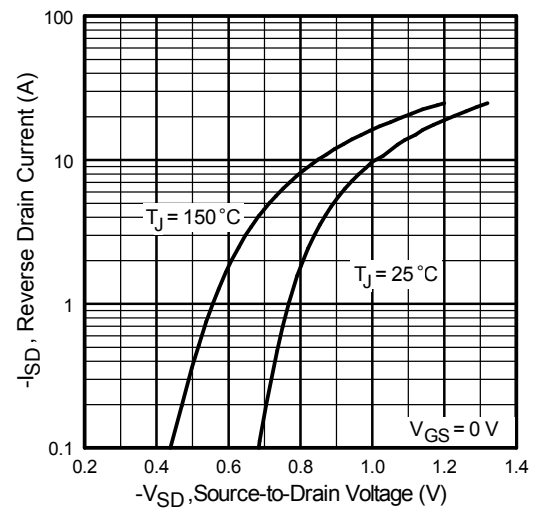


Fig. 15 Typical Source-Drain Diode Forward Voltage

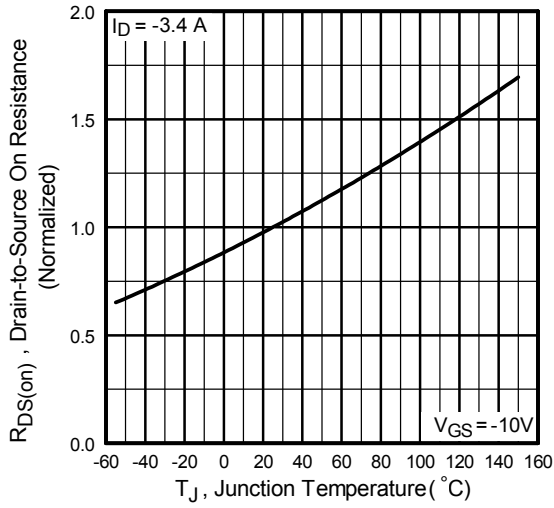


Fig 16. Normalized On-Resistance Vs. Temperature

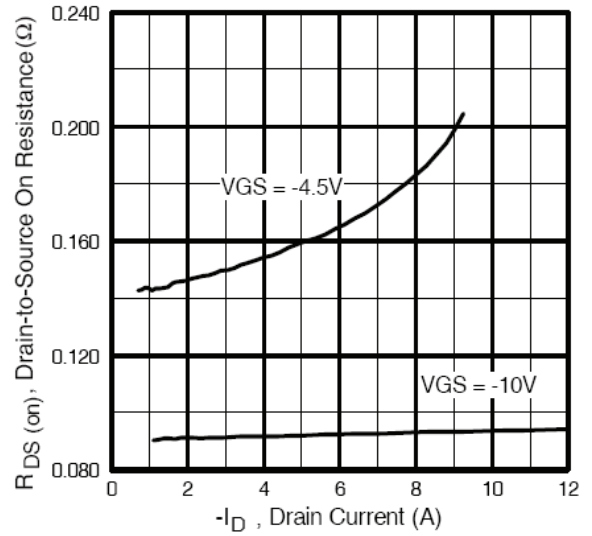


Fig 17. Typical On-Resistance Vs. Drain Current

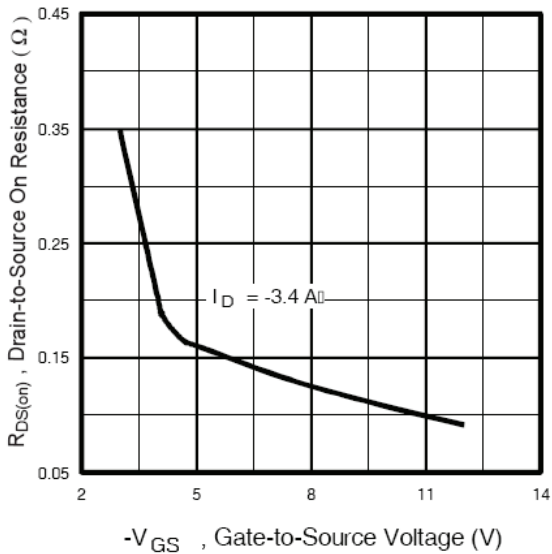


Fig. 18 Typical On-Resistance Vs. Gate Voltage

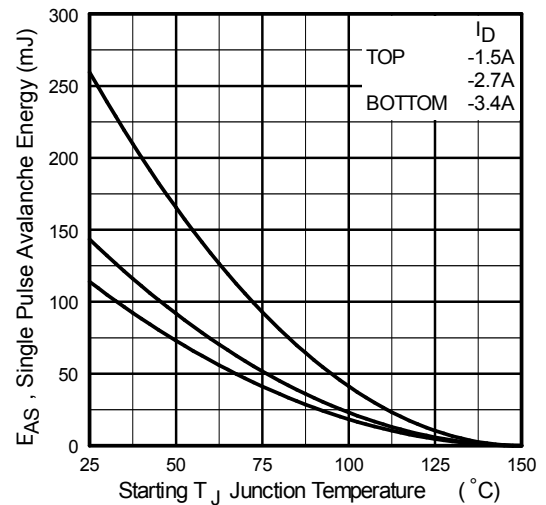


Fig 19. Maximum Avalanche Energy Vs. Drain Current

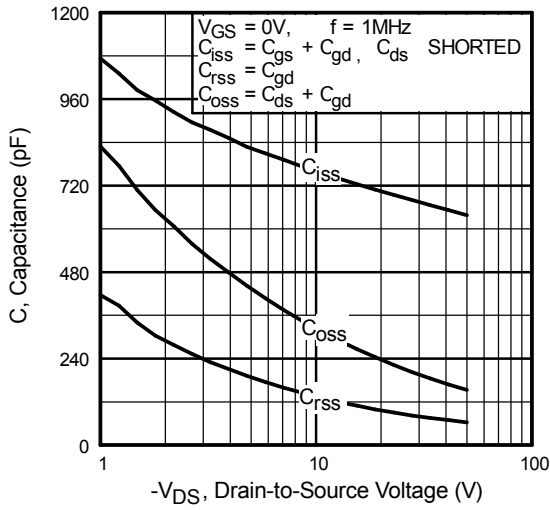


Fig 20. Typical Capacitance Vs. Drain-to-Source Voltage

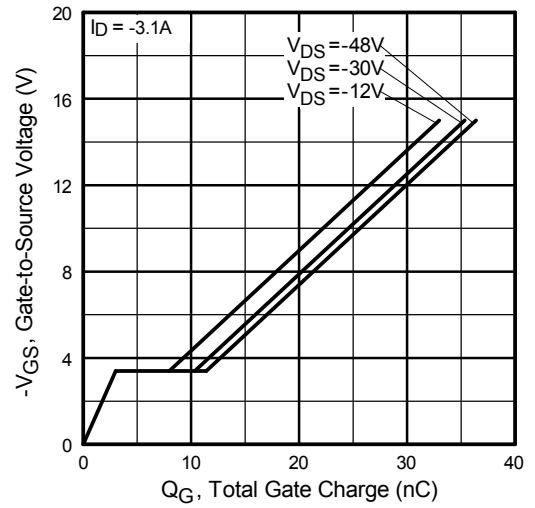


Fig 21. Typical Gate Charge Vs. Gate-to-Source Voltage

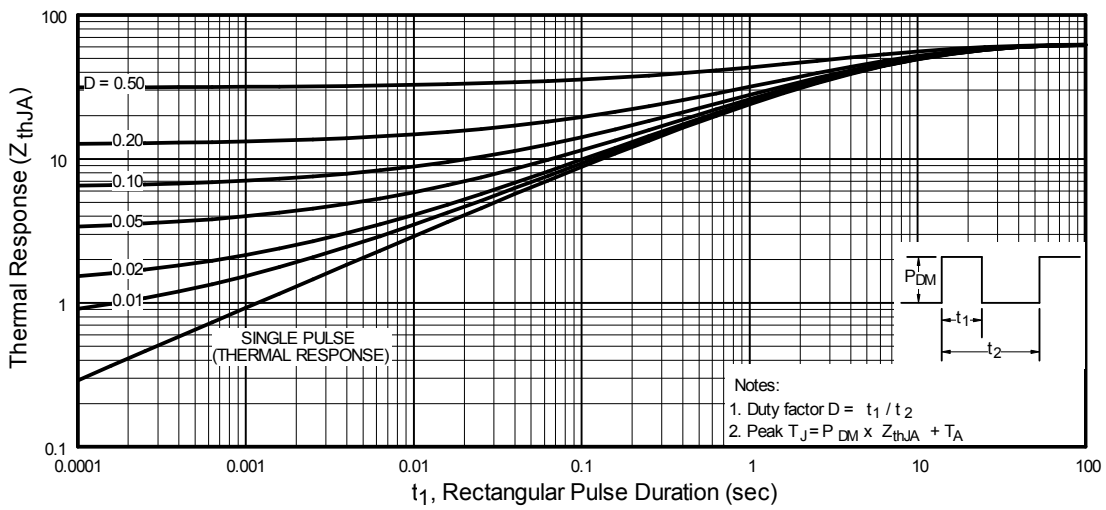
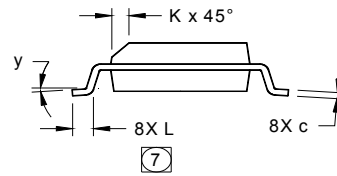
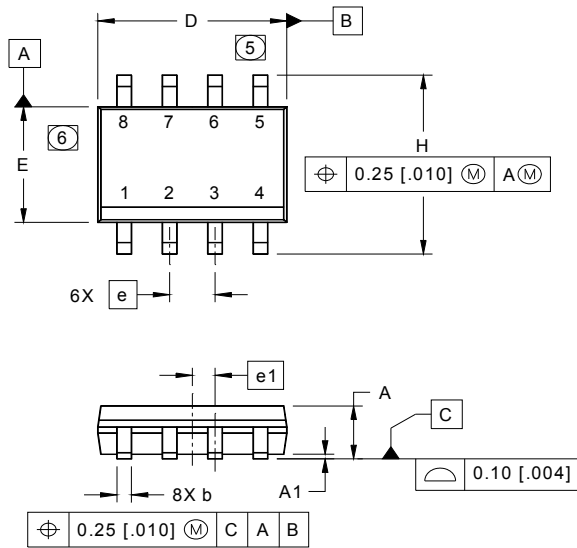
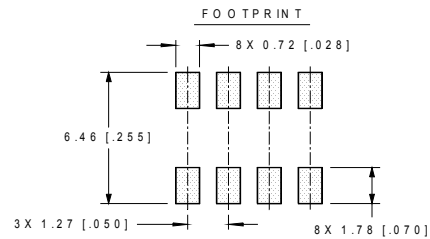


Fig 22. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

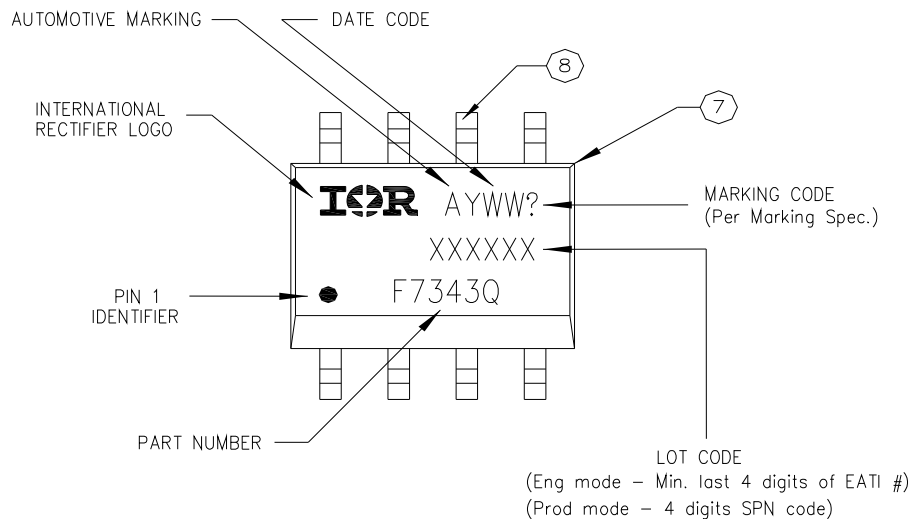
SO-8 Package Outline (Dimensions are shown in millimeters (inches))

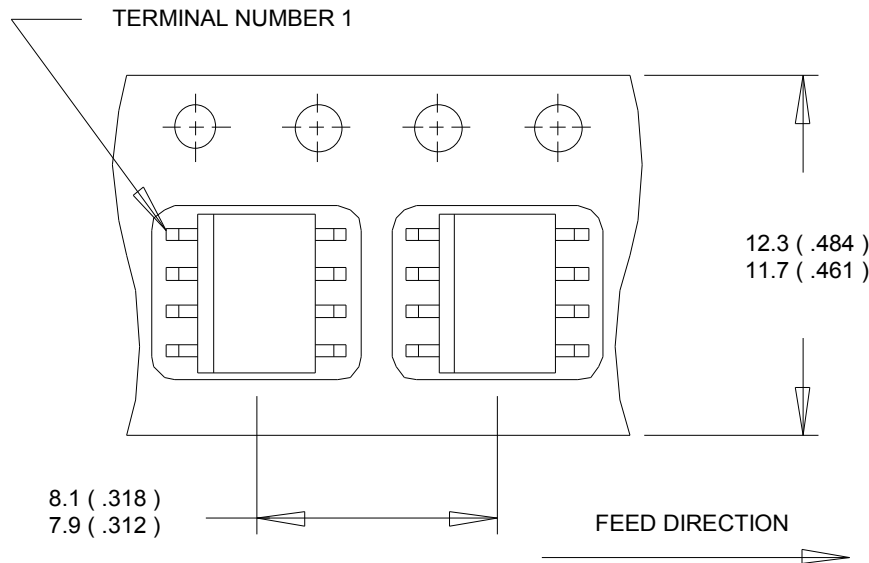


- NOTES:
1. DIMENSIONING & TOLERANCING PER ASME Y14.5M -1994.
 2. CONTROLLING DIMENSION: MILLIMETER
 3. DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
 4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
 5. DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 [0.006].
 6. DIMENSION 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.

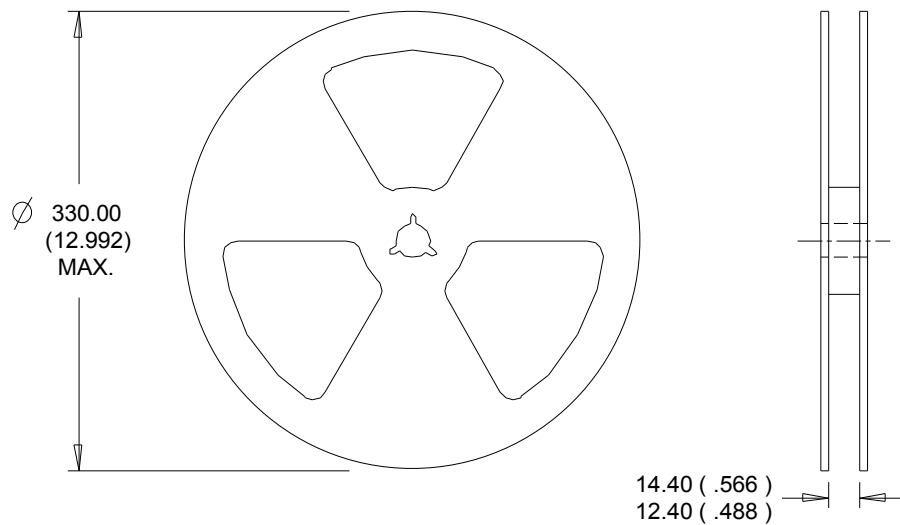


SO-8 Part Marking Information



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.

Qualification Information

| | | | |
|-----------------------------------|----------------------|---|------|
| Qualification Level | | Automotive (per AEC-Q101) | |
| | | Comments: This part number(s) passed Automotive qualification. Infineon's Industrial and Consumer qualification level is granted by extension of the higher Automotive level. | |
| Moisture Sensitivity Level | | SO-8 | MSL1 |
| ESD | Machine Model | Class M2 (+/- 200V) [†] AEC-Q101-002 | |
| | Human Body Model | Class H1A (+/- 500V) [†] AEC-Q101-001 | |
| | Charged Device Model | Class C5 (+/- 1125V) [†] AEC-Q101-005 | |
| RoHS Compliant | | Yes | |

† Highest passing voltage.

Revision History

| Date | Comments |
|-----------|--|
| 3/10/2014 | <ul style="list-style-type: none"> Added "Logic Level Gate Drive" bullet in the features section on page 1 Updated data sheet with new IR corporate template |
| 9/30/2015 | <ul style="list-style-type: none"> Updated datasheet with corporate template Corrected ordering table on page 1. |

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