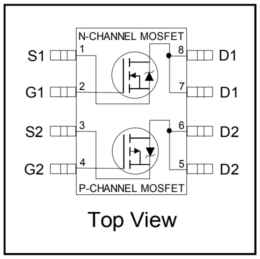
AUTOMOTIVE GRADE

AUIRF7379Q

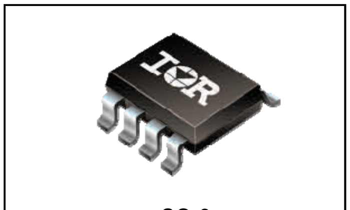
Features

- Advanced Planar Technology
- 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 *



Top View

	N-CH	P-CH
V_{DSS}	30V	-30V
$R_{DS(on)}$ typ.	0.038Ω	0.070Ω
max.	0.045Ω	0.090Ω
I_D	5.8A	-4.3A



SO-8
AUIRF7379Q

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 lastest 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	
AUIRF7379Q	SO-8	Tape and Reel	4000	AUIRF7379QTR

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	30	-30	V
I_D @ T_A = 25°C	Continuous Drain Current, V_{GS} @ 10V	5.8	-4.3	A
I_D @ T_A = 70°C	Continuous Drain Current, V_{GS} @ 10V	4.6	-3.4	
I_{DM}	Pulsed Drain Current ①	46	-34	
P_D @T_A = 25°C	Maximum 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}	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) ④	——	50	°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	30	——	——	V	V_{GS} = 0V, I_D = 250µA
		P-Ch	-30	——	——		V_{GS} = 0V, I_D = -250µA
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	N-Ch	——	0.032	——	V/°C	Reference to 25°C, I_D = 1mA
		P-Ch	——	-0.037	——		Reference to 25°C, I_D = -1mA
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	N-Ch	——	0.038	0.045	Ω	V_{GS} = 10V, I_D = 5.8A ③
			——	0.055	0.075		V_{GS} = 4.5V, I_D = 4.9A ③
		P-Ch	——	0.070	0.090		V_{GS} = -10V, I_D = -4.3A ③
			——	0.130	0.180		V_{GS} = -4.5V, I_D = -3.7A ③
$V_{GS(th)}$	Gate Threshold Voltage	N-Ch	1.0	——	3.0	V	V_{DS} = V_{GS}, I_D = 250µA
		P-Ch	-1.0	——	-3.0		V_{DS} = V_{GS}, I_D = -250µA
gfs	Forward Trans conductance	N-Ch	5.2	——	——	S	V_{DS} = 15V, I_D = 2.4A③
		P-Ch	2.5	——	——		V_{DS} = -24V, I_D = -1.8A③
I_{DSS}	Drain-to-Source Leakage Current	N-Ch	——	——	1.0	µA	V_{DS} =24V, V_{GS} = 0V
		P-Ch	——	——	-1.0		V_{DS} = -24V,V_{GS} = 0V
		N-Ch	——	——	25		V_{DS} =24V, V_{GS} = 0V ,T_J = 125°C
		P-Ch	——	——	-25		V_{DS} = -24V,V_{GS} = 0V,T_J = 125°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	——	——	25	nC	N-Channel I_D = 2.4A, V_{DS} = 24V,V_{GS} = 10V ③ P-Channel I_D = -1.8A,V_{DS} = -24V,V_{GS} = -10V
		P-Ch	——	——	25		
Q_{gs}	Gate-to-Source Charge	N-Ch	——	——	2.9		
		P-Ch	——	——	2.9		
Q_{gd}	Gate-to-Drain Charge	N-Ch	——	——	7.9		
		P-Ch	——		9.0		
$t_{d(on)}$	Turn-On Delay Time	N-Ch	——	6.8	——	ns	N-Channel V_{DD} = 15V,I_D = 2.4A,R_G = 6.0Ω, R_D = 6.2Ω ③ P-Channel V_{DD} = -15V,I_D = -1.8A,R_G = 6.0Ω, R_D = 8.2Ω
		P-Ch	——	11	——		
t_r	Rise Time	N-Ch	——	21	——		
		P-Ch	——	17	——		
$t_{d(off)}$	Turn-Off Delay Time	N-Ch	——	22	——		
		P-Ch	——	25	——		
t_f	Fall Time	N-Ch	——	7.7	——		
		P-Ch	——	18			
L_D	Internal Drain Inductance	N-P	——	4.0	——	nH	Between lead,6mm (0.25in.)from Package and center of die contact
L_S	Internal Source Inductance	N-P	——	6.0	——		
C_{iss}	Input Capacitance	N-Ch	——	520	——	pF	N-Channel V_{GS} = 0V,V_{DS} = 25V,f = 1.0MHz P-Channel V_{GS} = 0V,V_{DS} = -25V,f = 1.0MHz
		P-Ch	——	440	——		
C_{oss}	Output Capacitance	N-Ch	——	180	——		
		P-Ch	——	200	——		
C_{rss}	Reverse Transfer Capacitance	N-Ch	——	72	——		
		P-Ch	——	93	——		

Diode Characteristics

	Parameter		Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	N-Ch	——	——	3.1	A	
		P-Ch	——	——	-3.1		
I_{SM}	Pulsed Source Current (Body Diode) ①	N-Ch	——	——	46		
		P-Ch	——	——	-34		
V_{SD}	Diode Forward Voltage	N-Ch	——	——	1.0	V	T_J = 25°C,I_S = 1.8A,V_{GS} = 0V ③
		P-Ch	——	——	-1.0		T_J = 25°C,I_S = -1.8A,V_{GS} = 0V ③
t_{rr}	Reverse Recovery Time	N-Ch	——	47	71	ns	N-Channel T_J = 25°C ,I_F = 2.4A, di/dt = 100A/µs P-Channel ③ T_J = 25°C,I_F = -1.8A, di/dt = 100A/µs
		P-Ch	——	53	80		
Q_{rr}	Reverse Recovery Charge	N-Ch	——	56	84	nC	
		P-Ch		66	99		

Notes:

① Repetitive rating; pulse width limited by max. junction temperature.

② N-Channel $I_{SD} \le 2.4A$, di/dt ≤ 73A/µs, $V_{DD} \le V_{(BR)DSS}$, $T_J \le 150°C$.
P-Channel $I_{SD} \le -1.8A$, di/dt ≤ 90A/µs, $V_{DD} \le V_{(BR)DSS}$, $T_J \le 150°C$.

③ Pulse width ≤ 300µs; duty cycle ≤ 2%.

④ Surface mounted on FR-4 board , t ≤ 10sec.

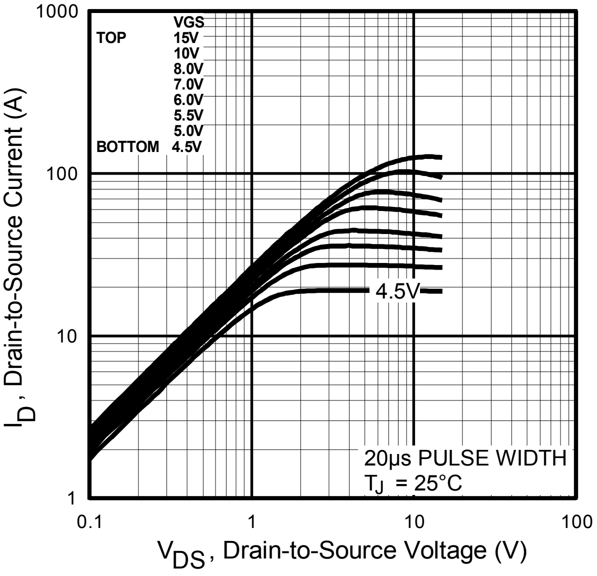


Fig. 1 Typical Output Characteristics

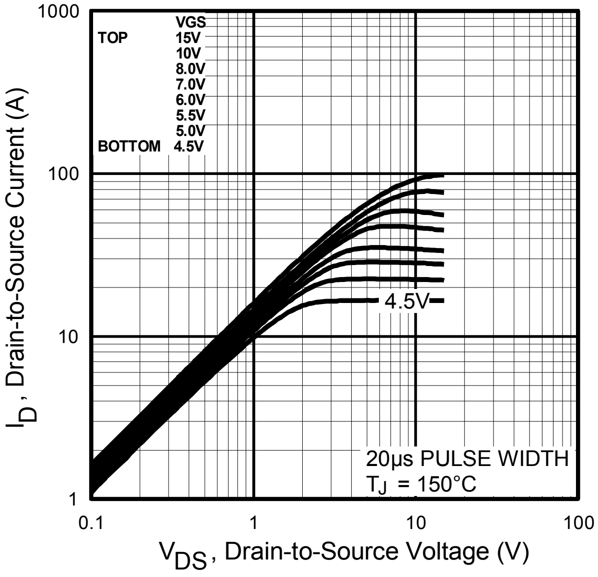


Fig. 2 Typical Output Characteristics

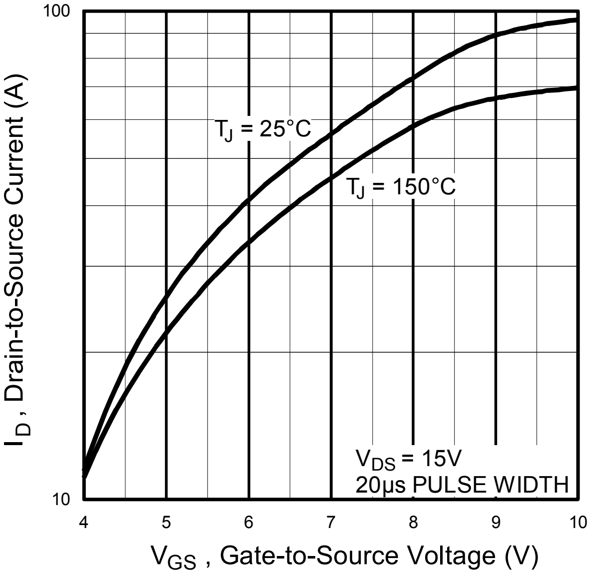


Fig. 3 Typical Transfer Characteristics

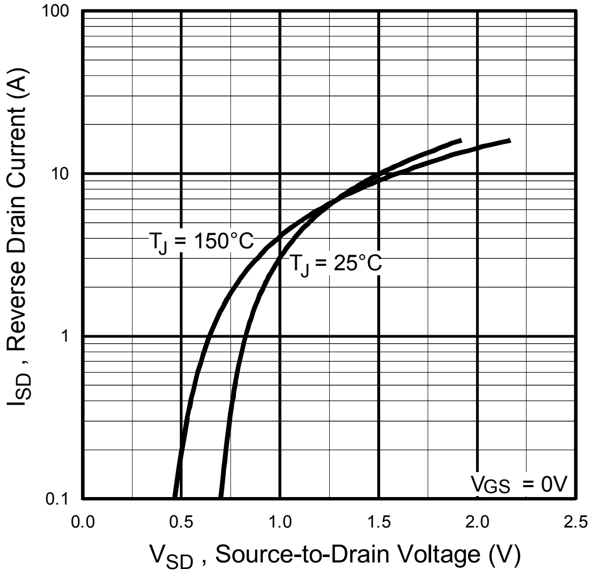


Fig. 4 Typical Source-Drain Diode Forward Voltage

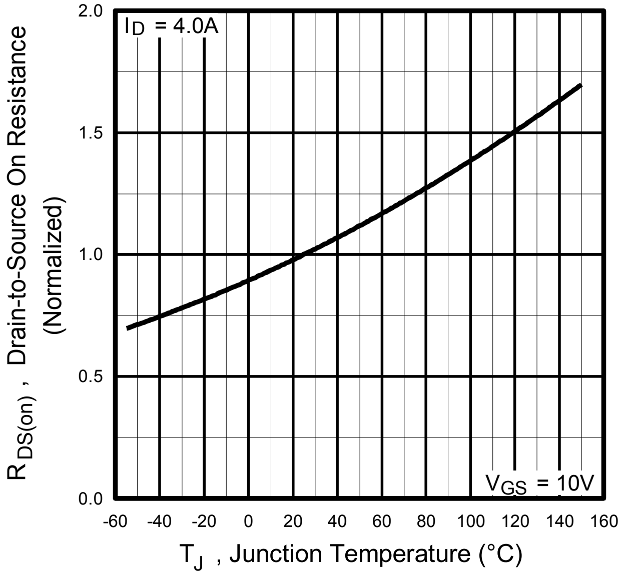


Fig 5. Normalized On-Resistance Vs. Temperature

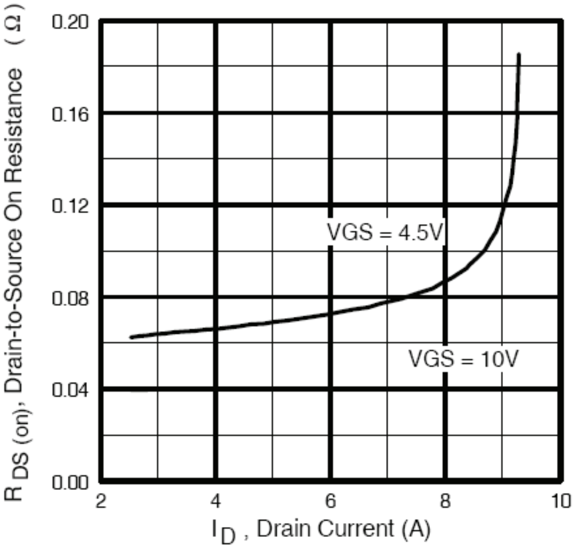


Fig 6. Typical On-Resistance Vs. Drain Current

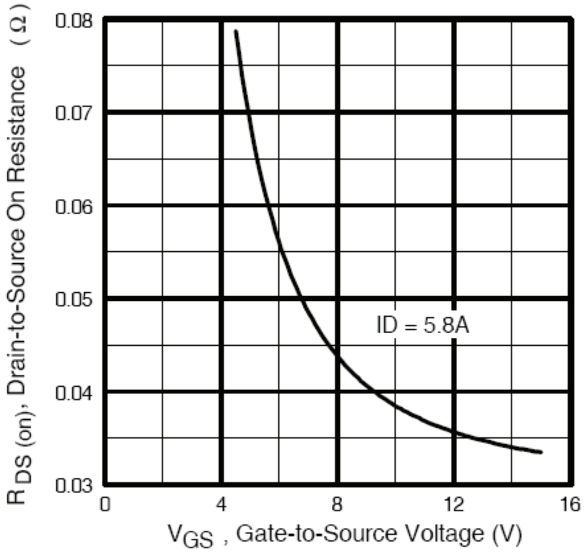


Fig. 7 Typical On-Resistance Vs. Gate Voltage

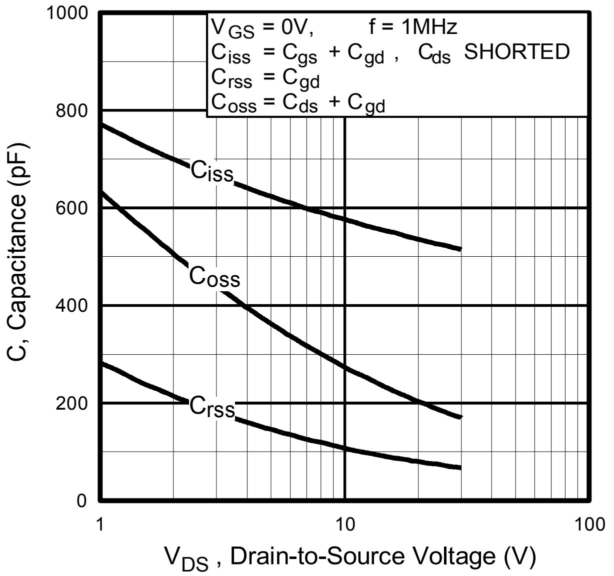


Fig 8. Typical Capacitance Vs. Drain-to-Source Voltage

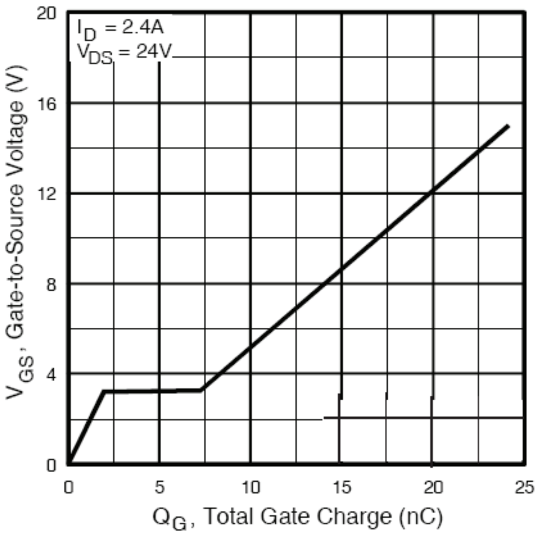


Fig 9. Typical Gate Charge Vs. Gate-to-Source Voltage

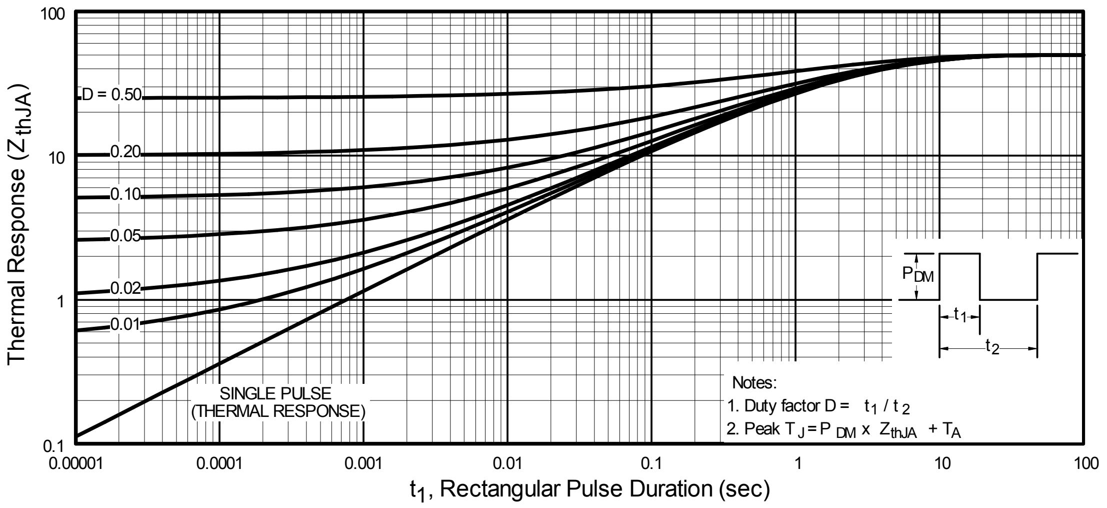


Fig 10. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

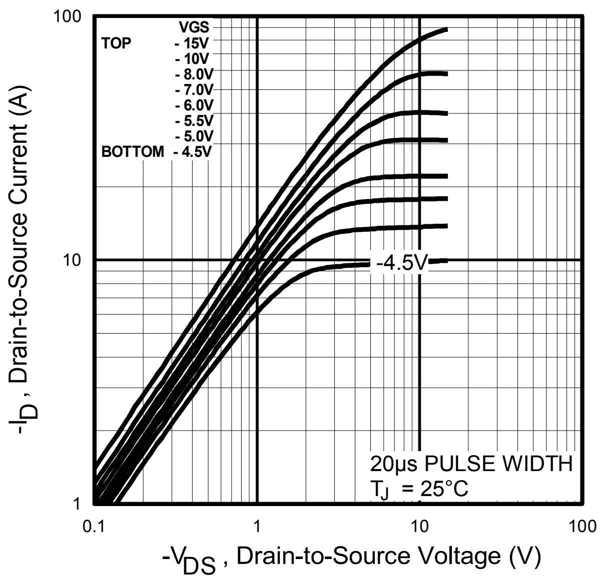


Fig. 11 Typical Output Characteristics

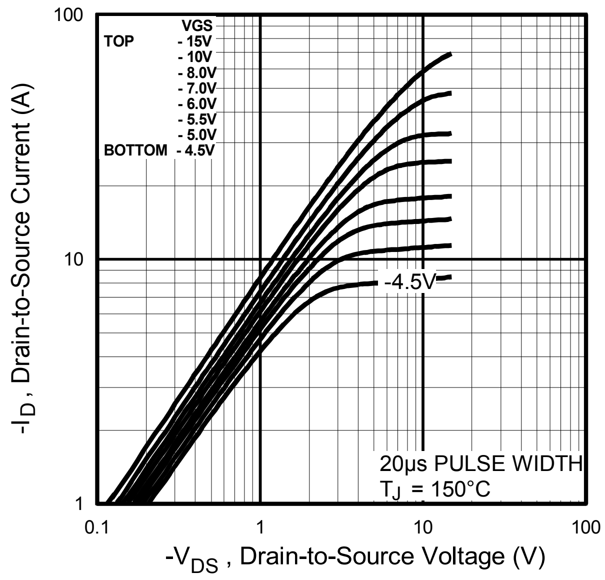


Fig. 12 Typical Output Characteristics

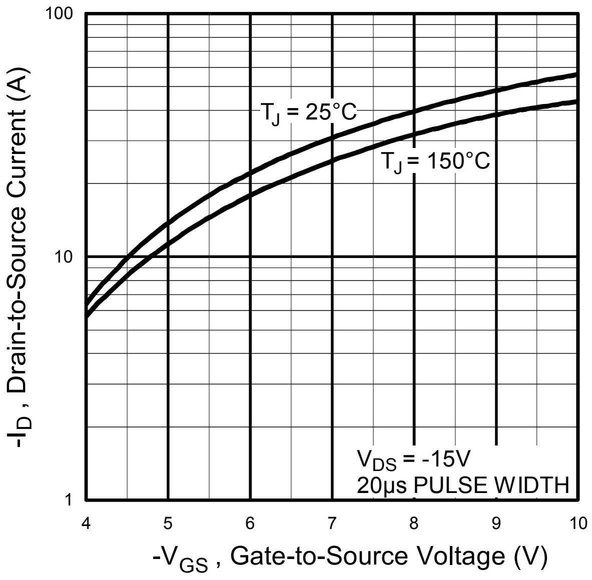


Fig. 13 Typical Transfer Characteristics

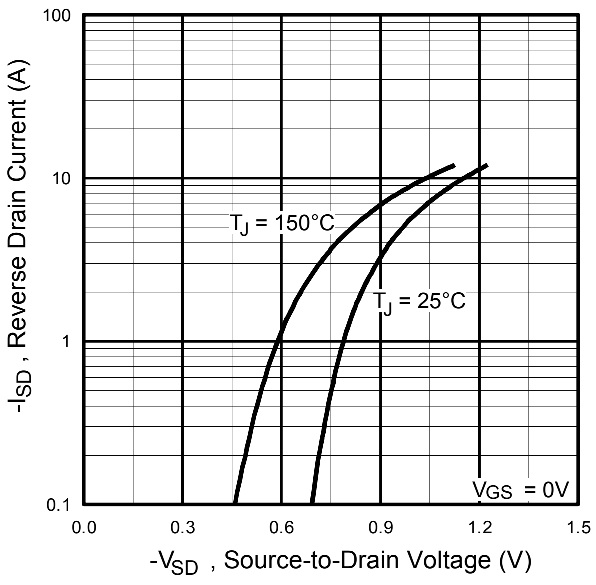


Fig. 14 Typical Source-Drain Diode Forward Voltage

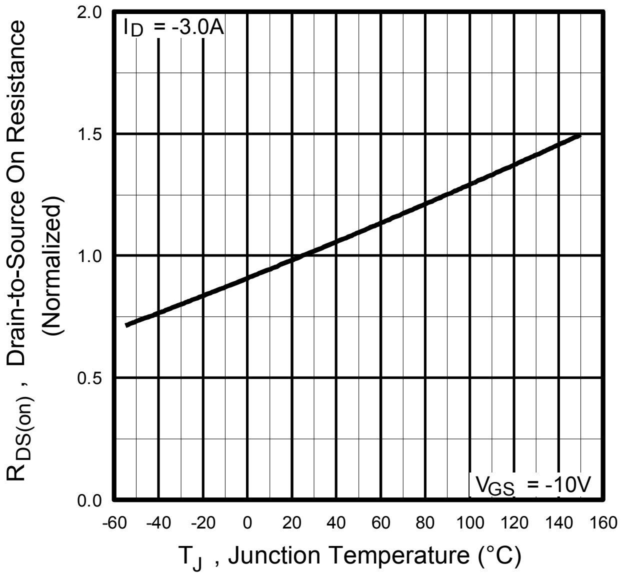


Fig 15. Normalized On-Resistance Vs. Temperature

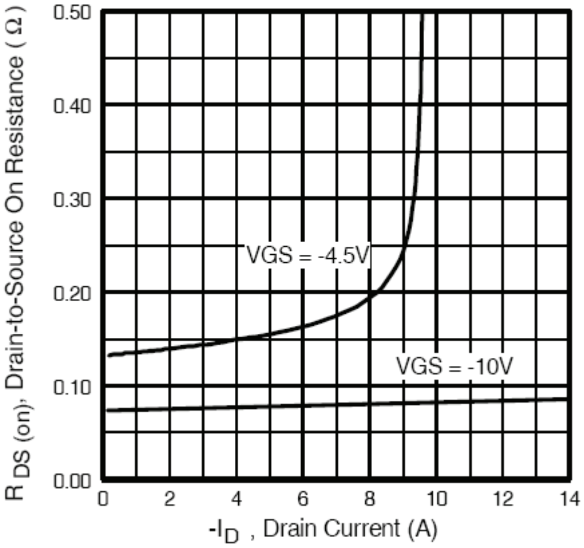


Fig 16. Typical On-Resistance Vs. Drain Current

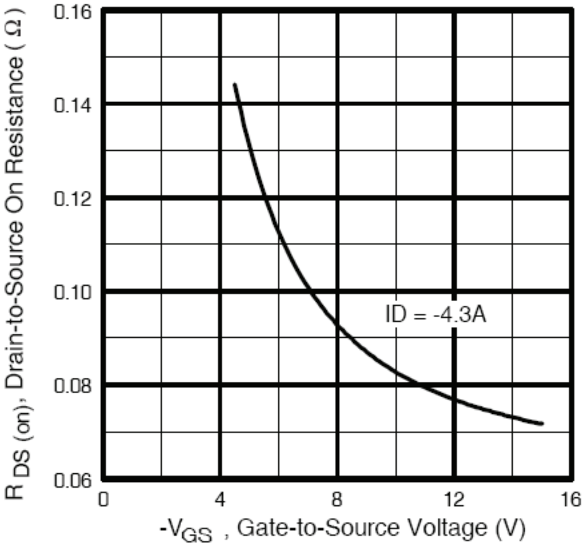
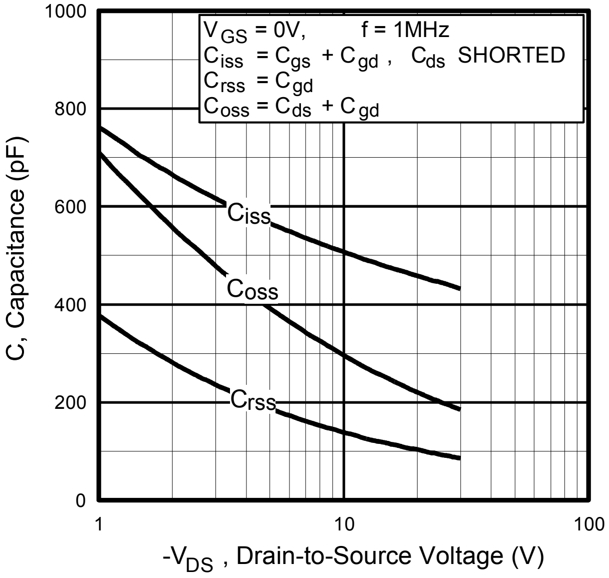


Fig. 17 Typical On-Resistance Vs. Gate Voltage



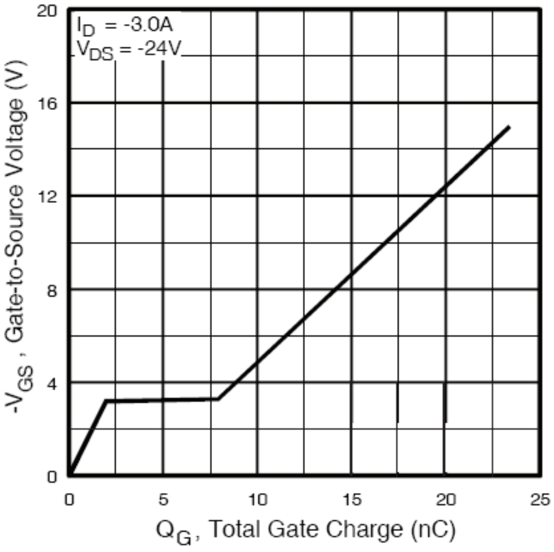


Fig 18. Typical Capacitance Vs. Drain-to-Source Voltage

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

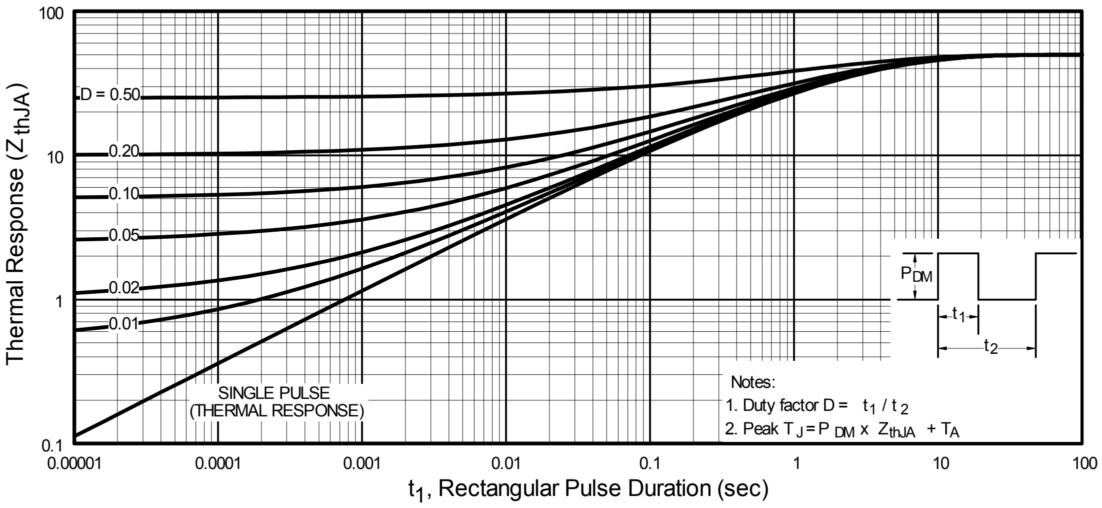
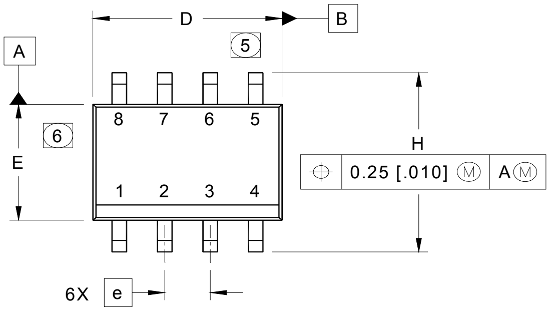
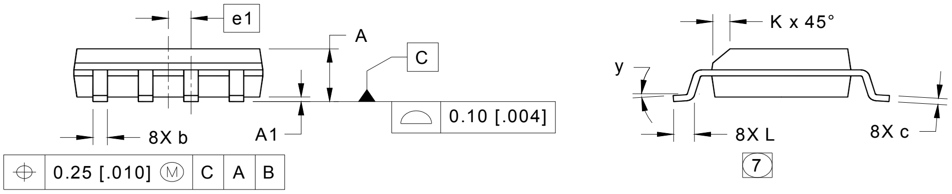


Fig 20. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

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

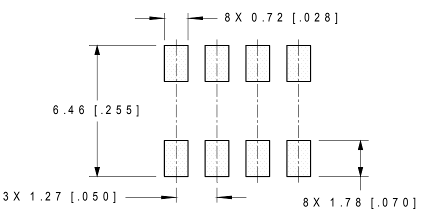


DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
b	.013	.020	0.33	0.51
c	.0075	.0098	0.19	0.25
D	.189	.1968	4.80	5.00
E	.1497	.1574	3.80	4.00
e	.050 BASIC		1.27 BASIC	
e 1	.025 BASIC		0.635 BASIC	
H	.2284	.2440	5.80	6.20
K	.0099	.0196	0.25	0.50
L	.016	.050	0.40	1.27
y	0°	8°	0°	8°

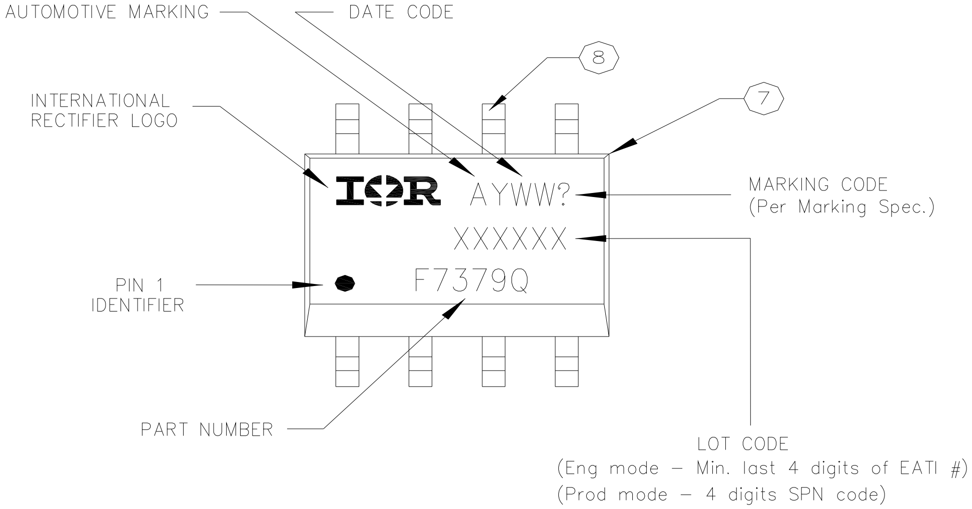


NOTES:
1. DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
2. CONTROLLING DIMENSION: MILLIMETER
3. DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
5. DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 [.006].
6. DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.25 [.010].
7. DIMENSION IS THE LENGTH OF LEAD FOR SOLDERING TO A SUBSTRATE.

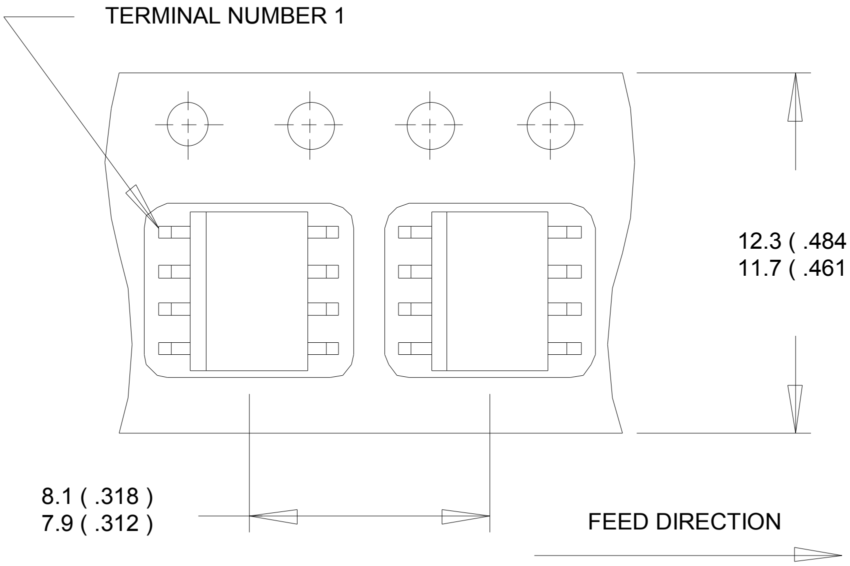
FOOTPRINT



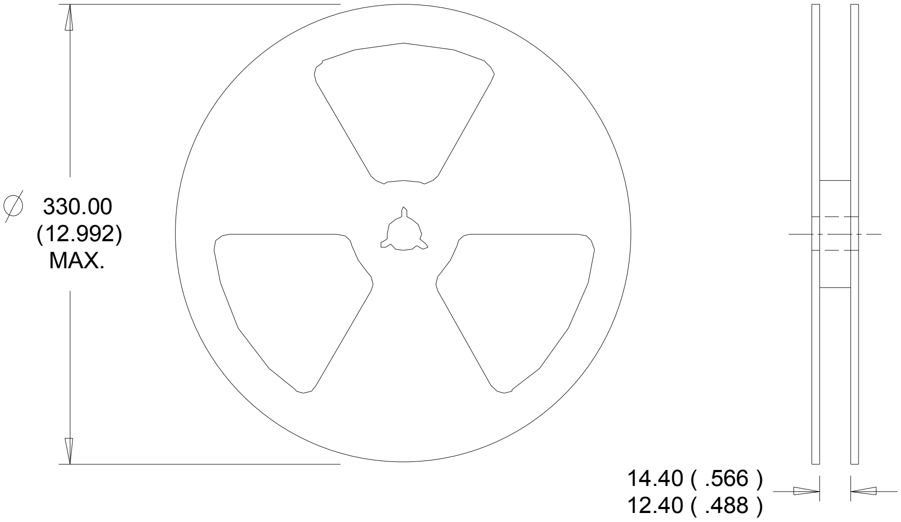
SO-8 Part Marking Information



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	N Ch: Class M2 (+/- 150V)[†] P Ch: Class M2 (+/- 150V)[†] AEC-Q101-002	
	Human Body Model	N Ch: Class H1A (+/- 500V)[†] P Ch: Class H0 (+/- 250V)[†] AEC-Q101-001	
	Charged Device Model	N Ch: Class C5 (+/- 2000V)[†] P Ch: Class C5 (+/- 2000V)[†] AEC-Q101-005	
RoHS Compliant		Yes	

[†] Highest passing voltage.

Revision History

Date	Comments
3/10/2014	• Added "Logic Level Gate Drive" bullet in the features section on page 1 • Updated data sheet with new IR corporate template
9/30/2015	• Updated datasheet with corporate template • Corrected ordering table on page 1.

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