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International
IOR Rectifier

PD- 95559

IRF7473PbF

HEXFET® Power MOSFET

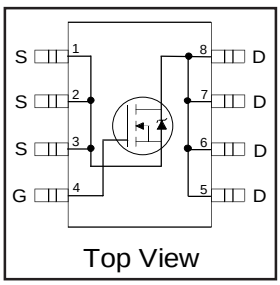
Applications

- Telecom and Data-Com 24 and 48V input DC-DC converters
- Motor Control
- Uninterrutible Power Supply
- Lead-Free

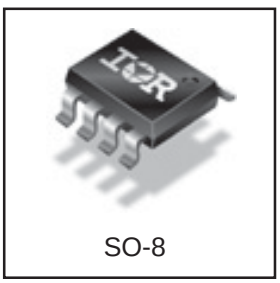
V_{DSS}	$R_{DS(on)}$ max	I_D
100V	26mΩ@V_{GS} = 10V	6.9A

Benefits

- Ultra Low On-Resistance
- High Speed Switching
- Low Gate Drive Current Due to Improved Gate Charge Characteristic
- Improved Avalanche Ruggedness and Dynamic dv/dt
- Fully Characterized Avalanche Voltage and Current



Top View


SO-8

Typical SMPS Topologies

- Full and Half Bridge 48V input Circuit
- Forward 24V input Circuit

Absolute Maximum Ratings

	Parameter	Max.	Units
I_D @ T_A = 25°C	Continuous Drain Current, V_{GS} @ 10V	6.9	A
I_D @ T_A = 70°C	Continuous Drain Current, V_{GS} @ 10V	5.5	
I_{DM}	Pulsed Drain Current ①	55	
P_D @T_A = 25°C	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 ⑥	5.8	V/ns
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to + 150	°C
	Soldering Temperature, for 10 seconds	300 (1.6mm from case)	

Thermal Resistance

Symbol	Parameter	Typ.	Max.	Units
$R_{\theta JL}$	Junction-to-Drain Lead	——	20	°C/W
$R_{\theta JA}$	Junction-to-Ambient ④	——	50	

Notes ① through ⑥ are on page 8

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

	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	100	—	—	V	V_{GS} = 0V, I_D = 250µA
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	0.11	—	V/°C	Reference to 25°C, I_D = 1mA ③
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	22	26	mΩ	V_{GS} = 10V, I_D = 4.1A ③
$V_{GS(th)}$	Gate Threshold Voltage	3.5	—	5.5	V	V_{DS} = V_{GS}, I_D = 250µA
I_{DSS}	Drain-to-Source Leakage Current	—	—	1.0	µA	V_{DS} = 95V, V_{GS} = 0V
		—	—	250		V_{DS} = 80V, V_{GS} = 0V, T_J = 150°C
I_{GSS}	Gate-to-Source Forward Leakage	—	—	100	nA	V_{GS} = 20V
	Gate-to-Source Reverse Leakage	—	—	-100		V_{GS} = -20V

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

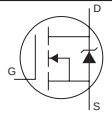
	Parameter	Min.	Typ.	Max.	Units	Conditions
g_{fs}	Forward Transconductance	10	—	—	S	V_{DS} = 50V, I_D = 4.1A
Q_g	Total Gate Charge	—	61	—	nC	I_D = 4.1A
Q_{gs}	Gate-to-Source Charge	—	21	—		V_{DS} = 50V
Q_{gd}	Gate-to-Drain ("Miller") Charge	—	19	—		V_{GS} = 10V,
$t_{d(on)}$	Turn-On Delay Time	—	24	—	ns	V_{DD} = 50V
t_r	Rise Time	—	20	—		I_D = 4.1A
$t_{d(off)}$	Turn-Off Delay Time	—	29	—		R_G = 6.0Ω
t_f	Fall Time	—	11	—		V_{GS} = 10V ③
C_{iss}	Input Capacitance	—	3180	—	pF	V_{GS} = 0V
C_{oss}	Output Capacitance	—	230	—		V_{DS} = 25V
C_{rss}	Reverse Transfer Capacitance	—	120	—		f = 1.0MHz
C_{oss}	Output Capacitance	—	830	—		V_{GS} = 0V, V_{DS} = 1.0V, f = 1.0MHz
C_{oss}	Output Capacitance	—	150	—		V_{GS} = 0V, V_{DS} = 80V, f = 1.0MHz
C_{oss} eff.	Effective Output Capacitance	—	230	—		V_{GS} = 0V, V_{DS} = 0V to 80V ⑤

Avalanche Characteristics

	Parameter	Typ.	Max.	Units
E_{AS}	Single Pulse Avalanche Energy②	—	140	mJ
I_{AR}	Avalanche Current①	—	4.1	A

Diode Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	2.3	A	MOSFET symbol showing the integral reverse p-n junction diode.
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	55		
V_{SD}	Diode Forward Voltage	—	—	1.3	V	T_J = 25°C, I_S = 4.1A, V_{GS} = 0V ③
t_{rr}	Reverse Recovery Time	—	55	—	ns	T_J = 25°C, I_F = 4.1A
Q_{rr}	Reverse RecoveryCharge	—	140	—	nC	di/dt = 100A/µs ③



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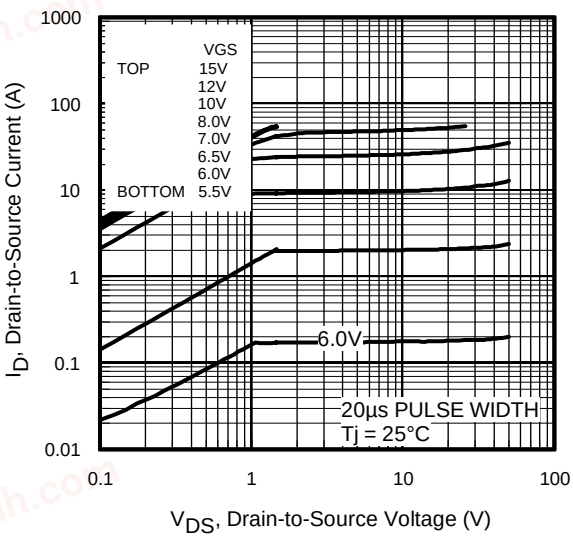


Fig 1. Typical Output Characteristics

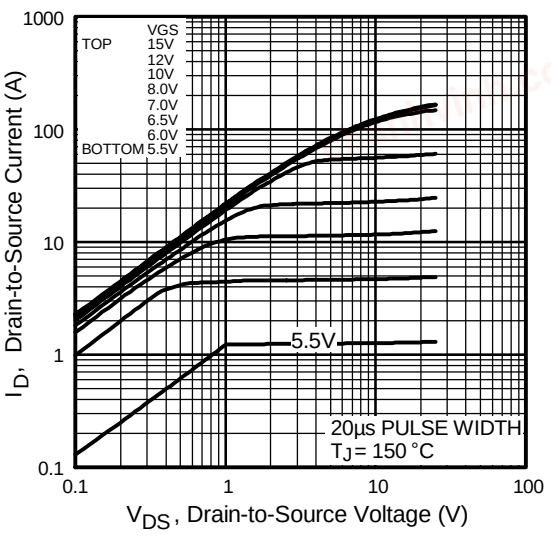


Fig 2. Typical Output Characteristics

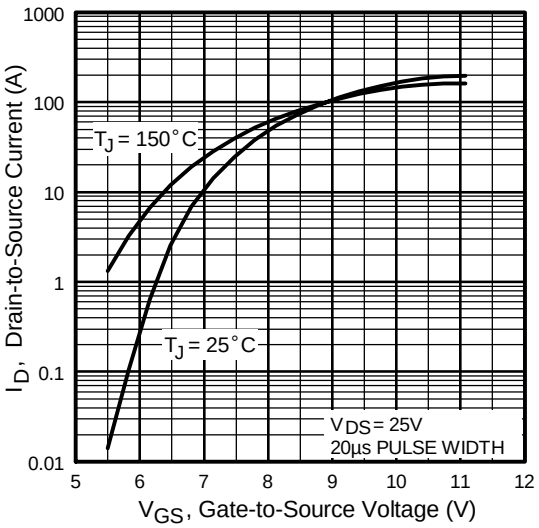


Fig 3. Typical Transfer Characteristics

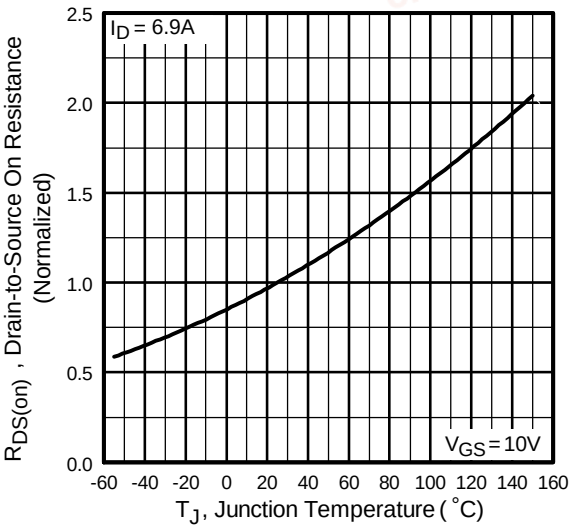


Fig 4. Normalized On-Resistance
Vs. Temperature

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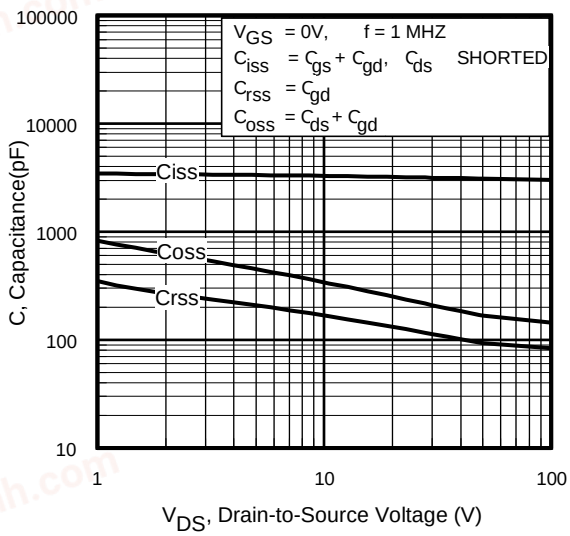


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

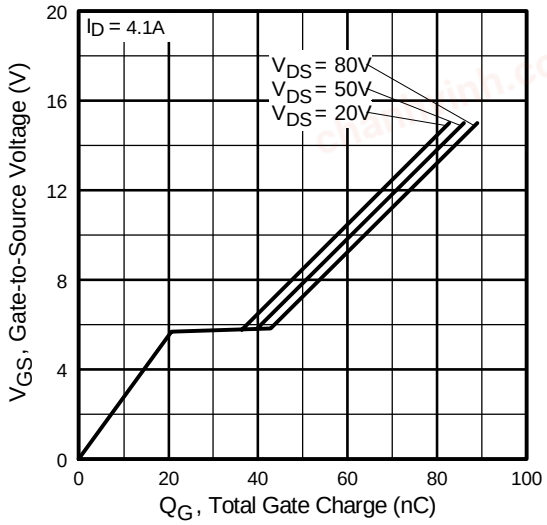


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

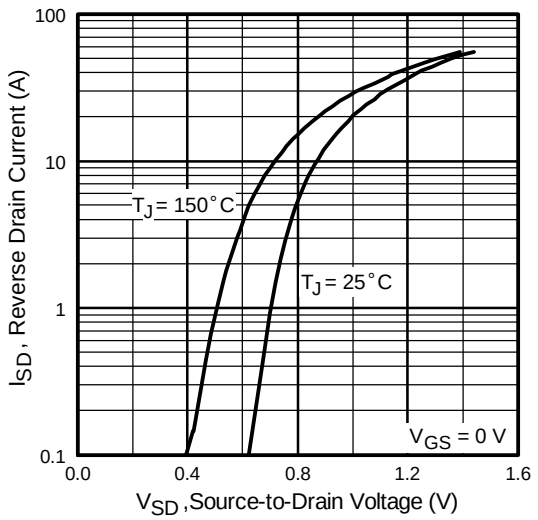


Fig 7. Typical Source-Drain Diode Forward Voltage

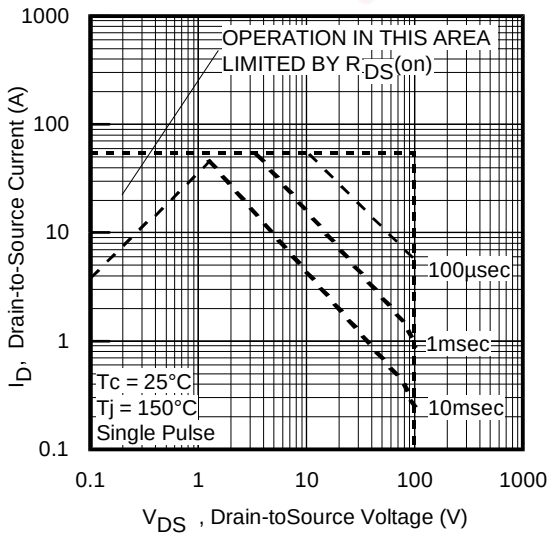


Fig 8. Maximum Safe Operating Area

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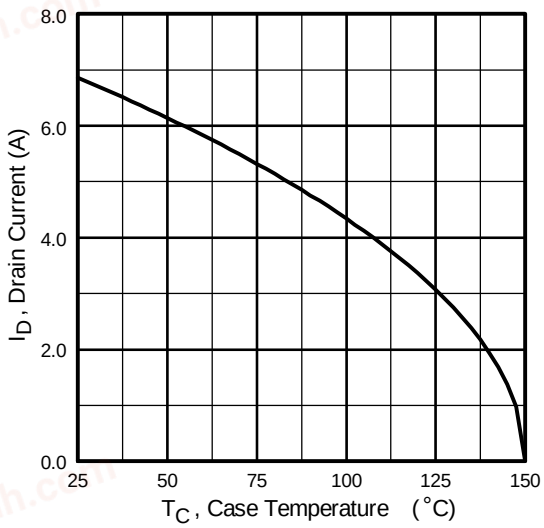


Fig 9. Maximum Drain Current Vs. Ambient Temperature

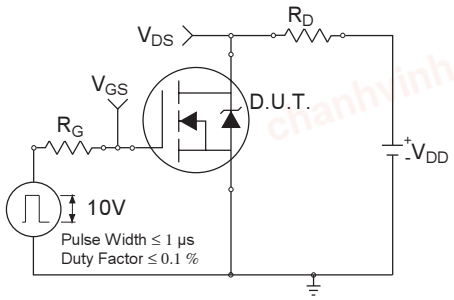


Fig 10a. Switching Time Test Circuit

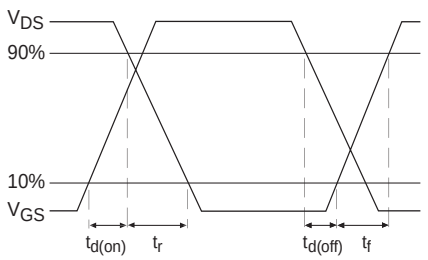


Fig 10b. Switching Time Waveforms

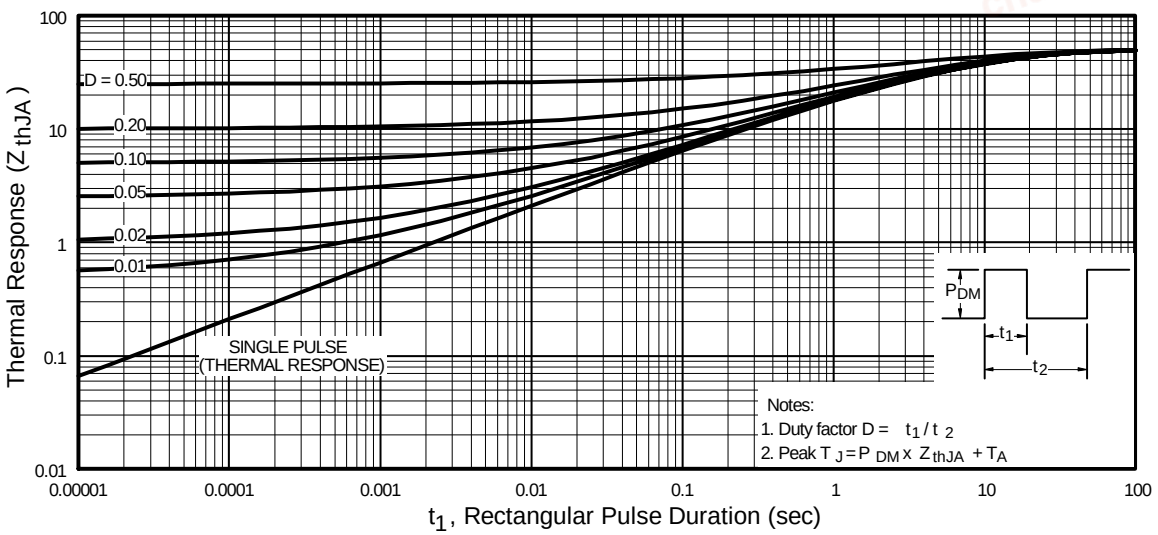


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

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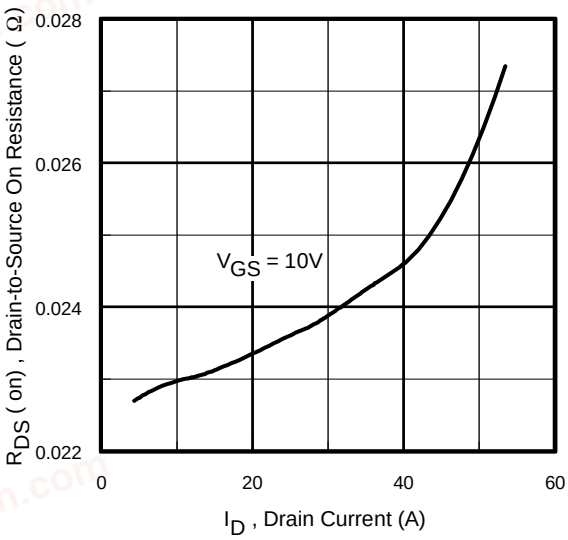


Fig 12. On-Resistance Vs. Drain Current

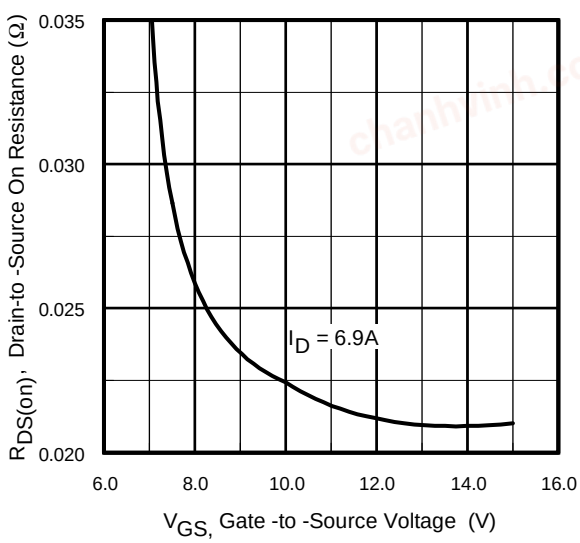


Fig 13. On-Resistance Vs. Gate Voltage

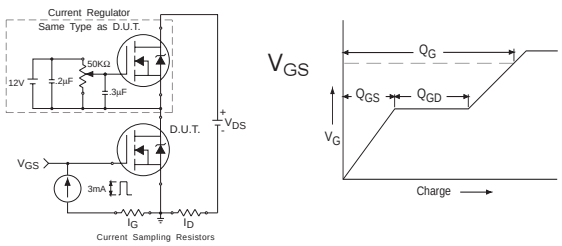


Fig 14a&b. Basic Gate Charge Test Circuit and Waveform

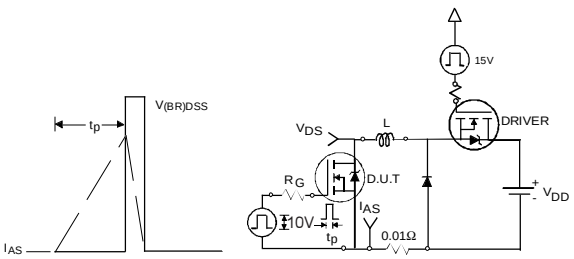


Fig 15a&b. Unclamped Inductive Test circuit and Waveforms

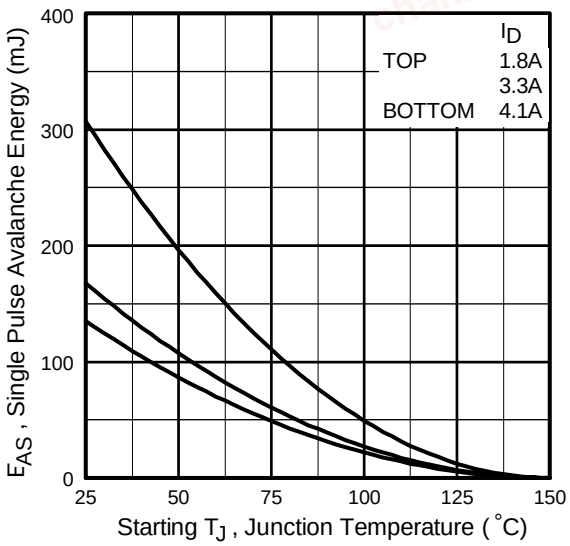
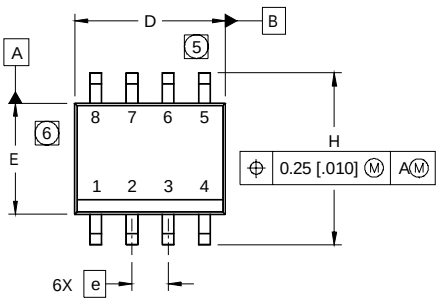


Fig 15c. Maximum Avalanche Energy Vs. Drain Current

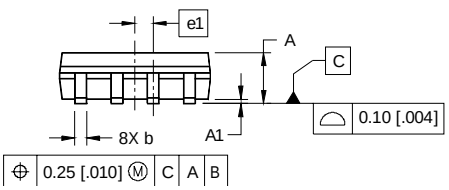
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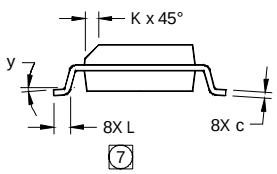
SO-8 Package Outline

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	
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:

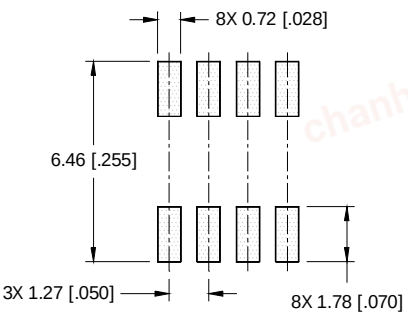
1. DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
2. CONTROLLING DIMENSION: MILLIMETER
3. DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.

[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].

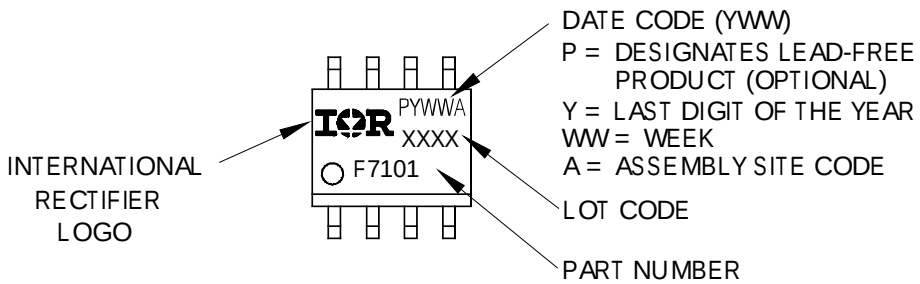
[7] DIMENSION IS THE LENGTH OF LEAD FOR SOLDERING TO A SUBSTRATE.

FOOTPRINT



SO-8 Part Marking

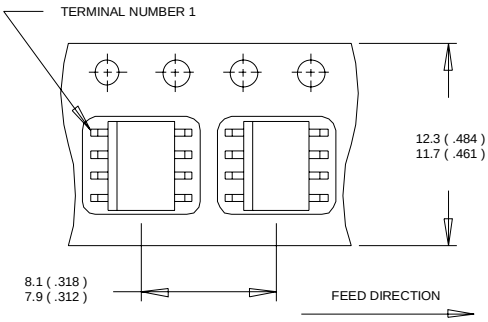
EXAMPLE: THIS IS AN IRF7101 (MOSFET)



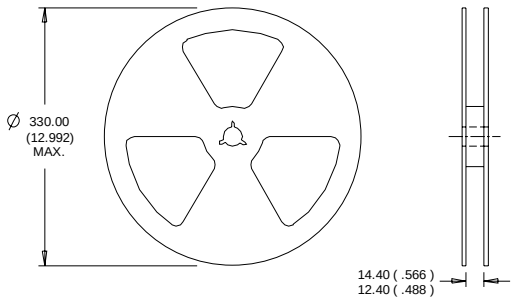
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SO-8 Tape and Reel

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.

Notes:

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

② Starting T_J = 25°C, L = 16mH R_G = 25Ω, I_{AS} = 4.1A.

③ Pulse width ≤ 400µs; duty cycle ≤ 2%.

④ When mounted on 1 inch square copper board

⑤ C_{oss} eff. is a fixed capacitance that gives the same charging time as C_{oss} while V_{DS} is rising from 0 to 80% V_{DSS}

⑥ I_{SD} ≤ 4.1A, di/dt ≤ 210A/µs, V_{DD} ≤ $V_{(BR)DSS}$, T_J ≤ 150°C

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.

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IOR Rectifier

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