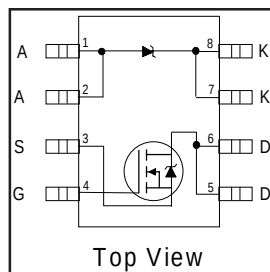


IRF7353D2

FETKY™ MOSFET / Schottky Diode

- Co-Pack HEXFET® Power MOSFET and Schottky Diode
- Ideal For Buck Regulator Applications
- N-Channel HEXFET power MOSFET
- Low V_F Schottky Rectifier
- Generation 5 Technology
- SO-8 Footprint

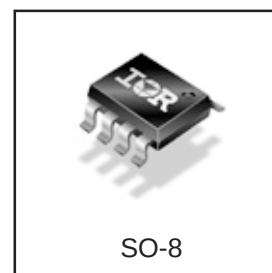


$V_{DS} = 30V$
$R_{DS(on)} = 0.029\Omega$
Schottky $V_F = 0.52V$

Description

The **FETKY™** family of Co-Pack HEXFET® Power MOSFETs and Schottky diodes offers the designer an innovative, board space saving solution for switching regulator and power management applications. Generation 5 HEXFET power MOSFETs utilize advanced processing techniques to achieve extremely low on-resistance per silicon area. Combining this technology with International Rectifier's low forward drop Schottky rectifiers results in an extremely efficient device suitable for use in a wide variety of portable electronics applications.

The SO-8 has been modified through a customized leadframe for enhanced thermal characteristics. The SO-8 package is designed for vapor phase, infrared or wave soldering techniques.



Absolute Maximum Ratings ($T_A = 25^\circ C$ unless otherwise noted)

Parameter		Maximum	Units
$I_D @ T_A = 25^\circ C$	Continuous Drain Current ④	6.5	A
$I_D @ T_A = 70^\circ C$		5.2	
I_{DM}	Pulsed Drain Current ①	52	
$P_D @ T_A = 25^\circ C$	Power Dissipation ④	2.0	W
$P_D @ T_A = 70^\circ C$		1.3	
	Linear Derating Factor	16	mW/°C
V_{GS}	Gate-to-Source Voltage	± 20	V
dv/dt	Peak Diode Recovery dv/dt ②	-5.0	V/ns
T_J, T_{STG}	Junction and Storage Temperature Range	-55 to +150	°C

Thermal Resistance Ratings

Parameter		Maximum	Units
$R_{\theta JA}$	Junction-to-Ambient ⑤	62.5	°C/W

Notes:

① Repetitive rating; pulse width limited by maximum junction temperature (see figure 9)

② Starting $T_J = 25^\circ C$, $L = 10mH$, $R_G = 25\Omega$, $I_{AS} = 4.0A$

③ $I_{SD} \leq 4.0A$, $di/dt \leq 74A/\mu s$, $V_{DD} \leq V_{(BR)DSS}$, $T_J \leq 150^\circ C$

④ Pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$

⑤ Surface mounted on FR-4 board, $t \leq 10sec$.

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MOSFET Electrical Characteristics @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

Parameter		Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	30	—	—	V	$V_{GS} = 0V, I_D = 250\mu A$
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	0.023	0.029	Ω	$V_{GS} = 10V, I_D = 5.8A$ ④
		—	0.032	0.046		$V_{GS} = 4.5V, I_D = 4.7A$ ④
$V_{GS(th)}$	Gate Threshold Voltage	1.0	—	—	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
g_{fs}	Forward Transconductance	—	14	—	S	$V_{DS} = 24V, I_D = 5.8A$
I_{DSS}	Drain-to-Source Leakage Current	—	—	1.0	μA	$V_{DS} = 24V, V_{GS} = 0V$
		—	—	25		$V_{DS} = 24V, V_{GS} = 0V, T_J = 55^\circ\text{C}$
I_{GSS}	Gate-to-Source Forward Leakage	—	—	100	nA	$V_{GS} = 20V$
	Gate-to-Source Reverse Leakage	—	—	-100		$V_{GS} = -20V$
Q_g	Total Gate Charge	—	22	33	nC	$I_D = 5.8A$
Q_{gs}	Gate-to-Source Charge	—	2.6	3.9		$V_{DS} = 24V$
Q_{gd}	Gate-to-Drain ("Miller") Charge	—	6.4	9.6		$V_{GS} = 10V$ (see figure 8) ④
$t_{d(on)}$	Turn-On Delay Time	—	8.1	12	ns	$V_{DD} = -5V$
t_r	Rise Time	—	8.9	13		$I_D = 1.0A$
$t_{d(off)}$	Turn-Off Delay Time	—	26	39		$R_G = 6.0\Omega$
t_f	Fall Time	—	18	26		$R_D = 15\Omega$ ④
C_{iss}	Input Capacitance	—	650	—	pF	$V_{GS} = 0V$
C_{oss}	Output Capacitance	—	320	—		$V_{DS} = 25V$
C_{rss}	Reverse Transfer Capacitance	—	130	—		$f = 1.0\text{MHz}$ (see figure 7)

MOSFET Source-Drain Ratings and Characteristics

Parameter		Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	2.5	A	
I_{SM}	Pulsed Source Current (Body Diode)	—	—	30		
V_{SD}	Body Diode Forward Voltage	—	0.78	1.0	V	$T_J = 25^\circ\text{C}, I_S = 1.7A, V_{GS} = 0V$
t_{rr}	Reverse Recovery Time (Body Diode)	—	45	68	ns	$T_J = 25^\circ\text{C}, I_F = 1.7A$
Q_{rr}	Reverse Recovery Charge	—	58	87	nC	$di/dt = 100A/\mu s$ ③

Schottky Diode Maximum Ratings

	Parameter	Max.	Units	Conditions
$I_F(av)$	Max. Average Forward Current	3.2	A	50% Duty Cycle. Rectangular Wave, $T_c = 25^\circ\text{C}$
		2.0		50% Duty Cycle. Rectangular Wave, $T_c = 70^\circ\text{C}$
I_{SM}	Max. peak one cycle Non-repetitive Surge current	200	A	5 μs sine or 3 μs Rect. pulse
		20		10ms sine or 6ms Rect. pulse

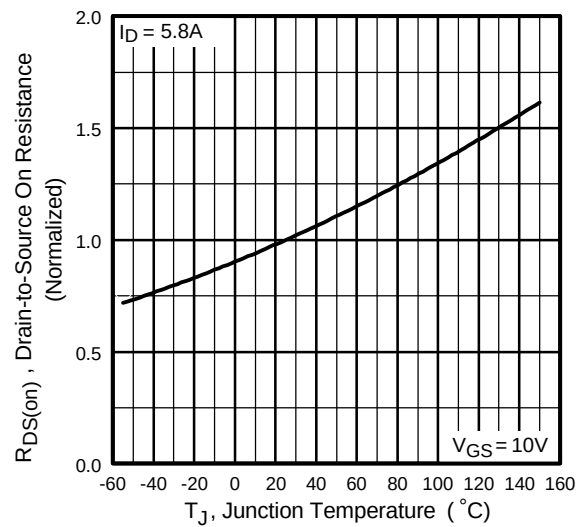
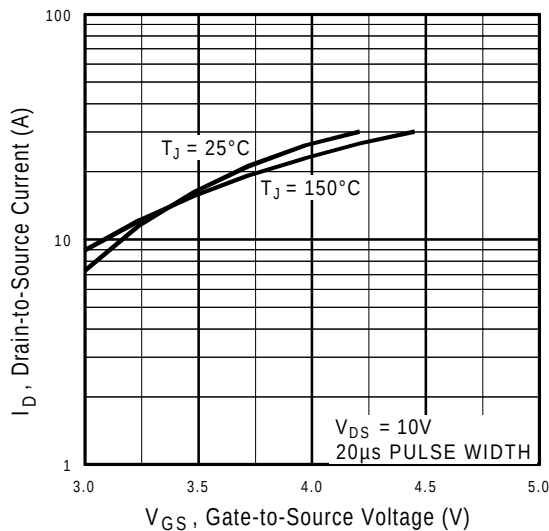
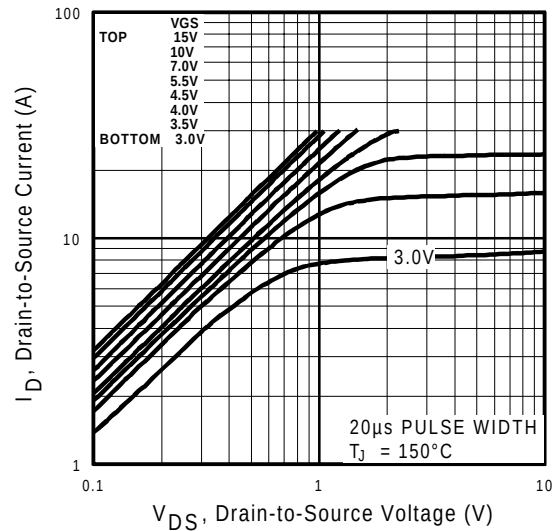
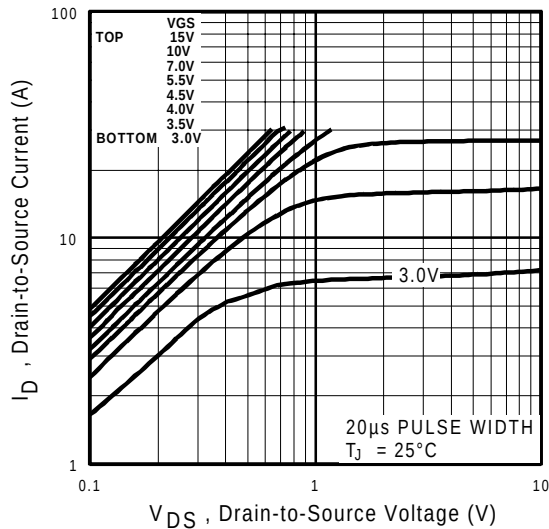
Following any rated load condition & with V_{rrm} applied

Schottky Diode Electrical Specifications

	Parameter	Max.	Units	Conditions
V_{FM}	Max. Forward voltage drop	0.57	V	$I_F = 3.0, T_J = 25^\circ\text{C}$
		0.77		$I_F = 6.0, T_J = 25^\circ\text{C}$
		0.52		$I_F = 3.0, T_J = 125^\circ\text{C}$
		0.79		$I_F = 6.0, T_J = 125^\circ\text{C}$
I_{rm}	Max. Reverse Leakage current	0.30	mA	$V_r = 30V, T_J = 25^\circ\text{C}$
		37		$T_J = 125^\circ\text{C}$
C_t	Max. Junction Capacitance	310	pF	$V_r = 5V_{dc}$ (100kHz to 1 MHz) 25°C
dv/dt	Max. Voltage Rate of Charge	4900	V/ μs	Rated V_r

(HEXFET is the reg. TM for International Rectifier Power MOSFET's)

Power MOSFET Characteristics



Power MOSFET Characteristics

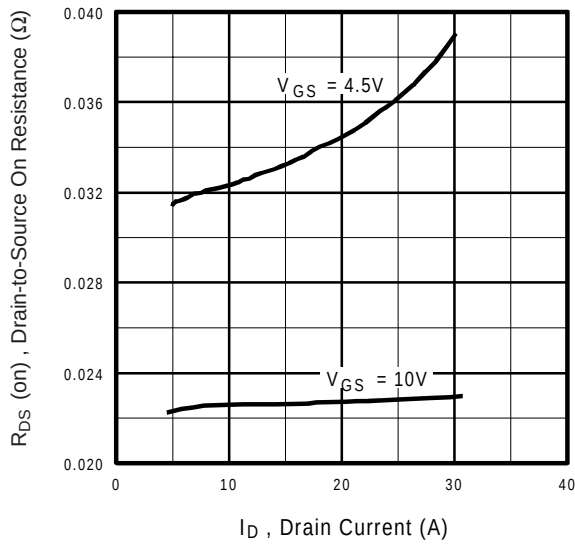


Fig 5. Typical On-Resistance Vs. Drain Current

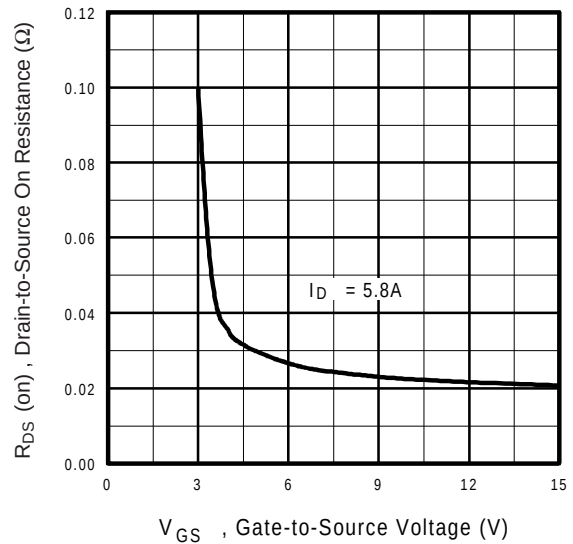


Fig 6. Typical On-Resistance Vs. Gate Voltage

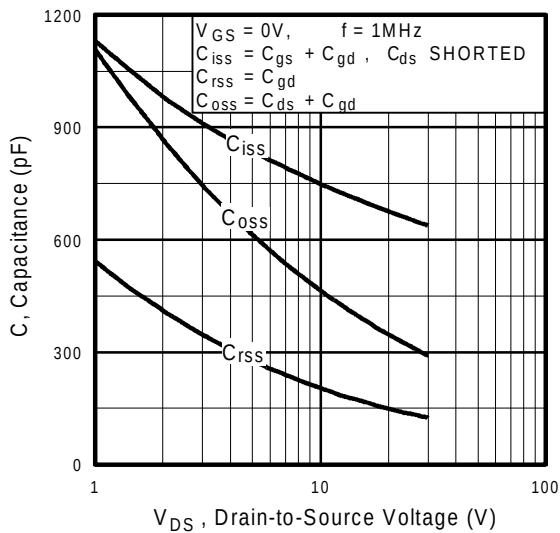


Fig 7. Typical Capacitance Vs. Drain-to-Source Voltage

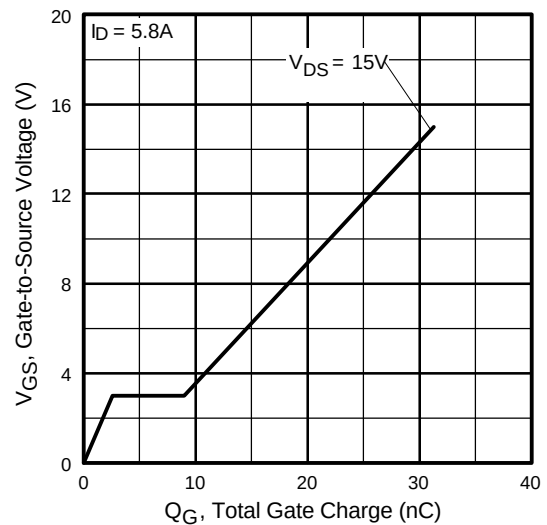


Fig 8. Typical Gate Charge Vs. Gate-to-Source Voltage

Power MOSFET Characteristics

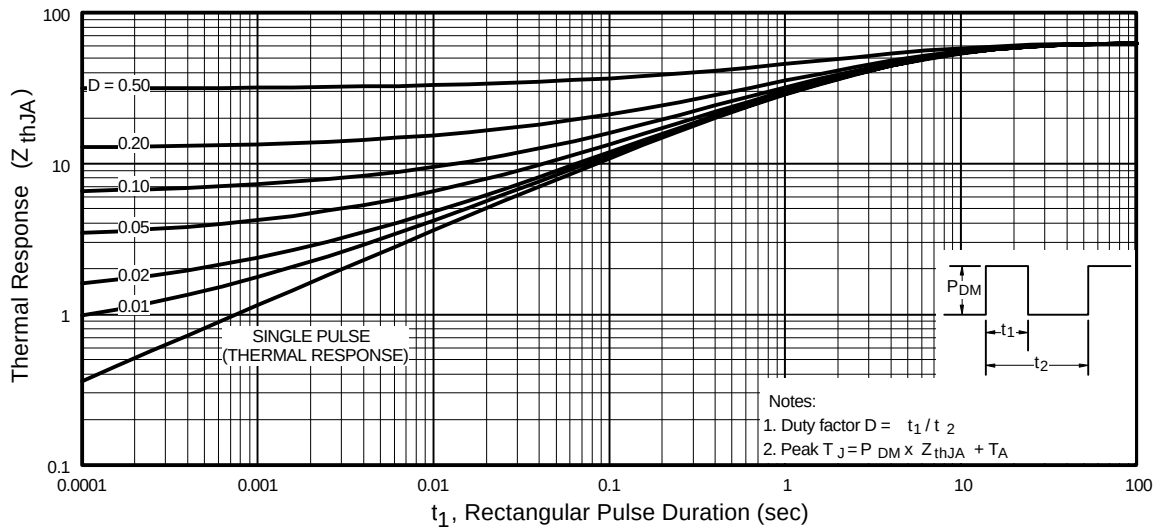


Fig 9. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

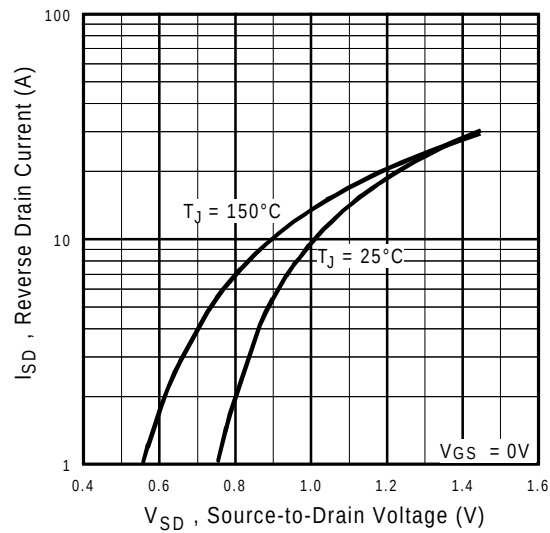


Fig 10. Typical Source-Drain Diode Forward Voltage

Schottky Diode Characteristics

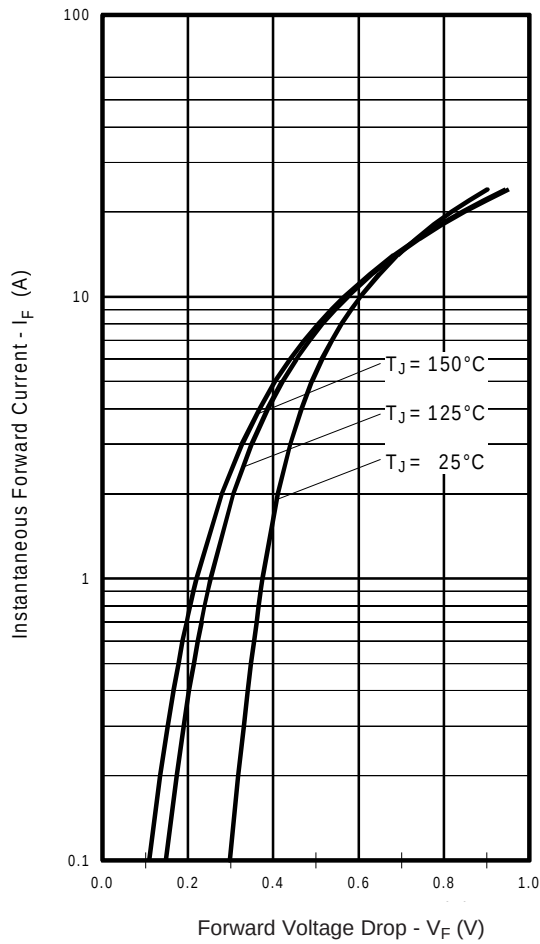


Fig. 12 - Typical Forward Voltage Drop Characteristics

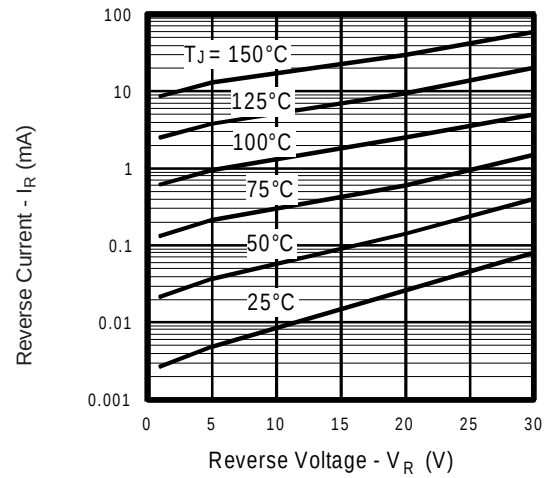


Fig. 13 - Typical Values of Reverse Current Vs. Reverse Voltage

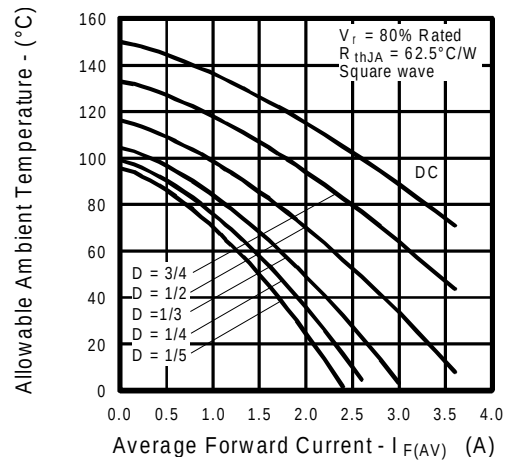
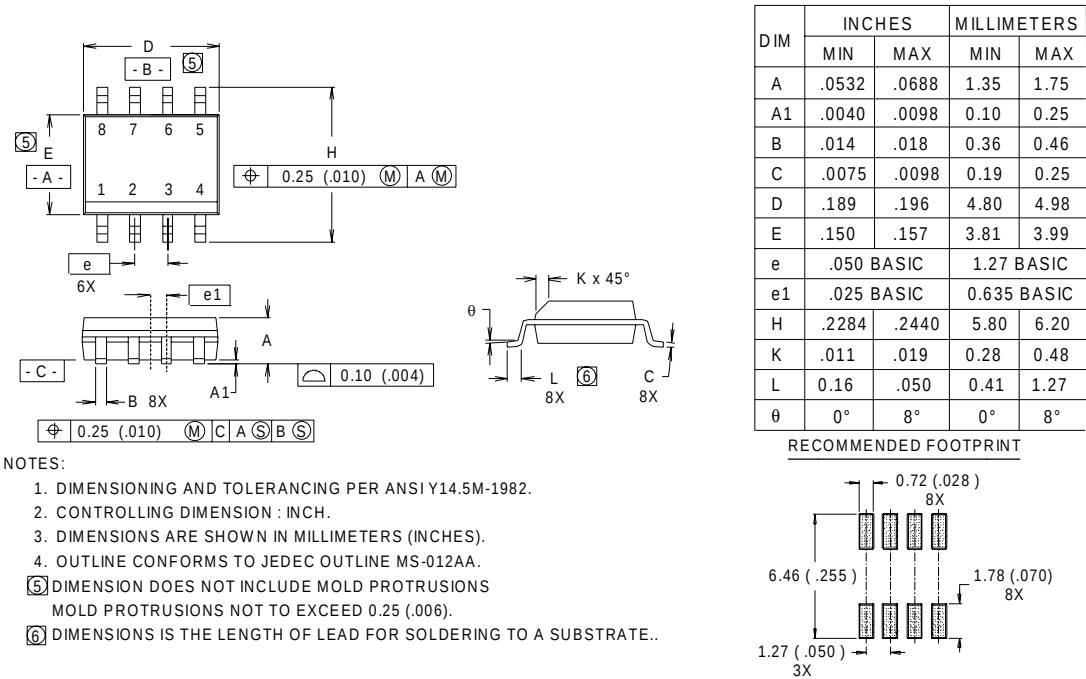


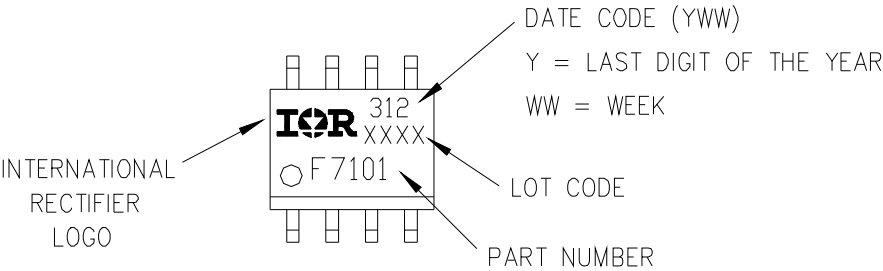
Fig.14 - Maximum Allowable Ambient Temp. Vs. Forward Current

SO-8 Package Details



SO-8 Part Marking

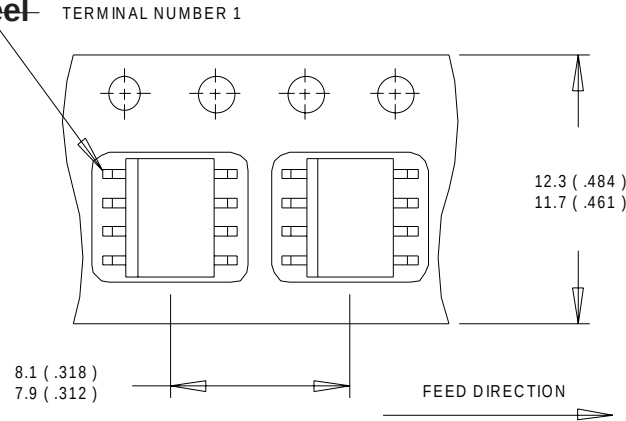
EXAMPLE: THIS IS AN IRF7101



IRF7353D2

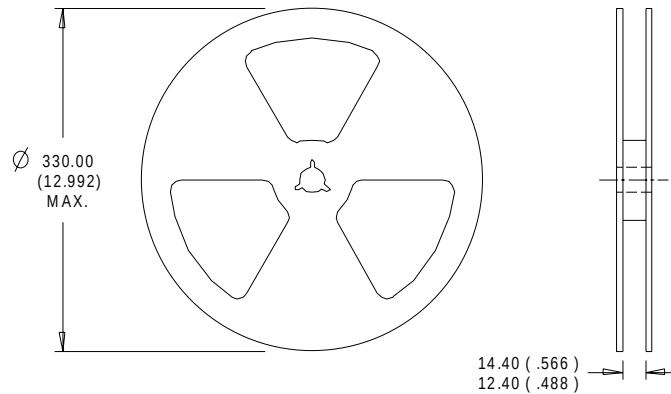
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SO-8 Tape and Reel



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.

International
IR Rectifier

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Data and specifications subject to change without notice. 11/99

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