Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

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

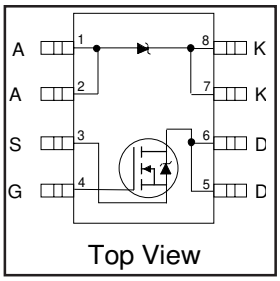
International
IOR Rectifier

PD- 93809A

# 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



Top View

$V_{DSS}$ = 30V

$R_{DS(on)}$ = 0.029Ω

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. Combinining 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.


SO-8

## Absolute Maximum Ratings ($T_A$ = 25°C unless otherwise noted)

| Parameter | | Maximum | Units |
|---|---|---|---|
| $I_D$ @ $T_A$ = 25°C | Continuous Drain Current ④ | 6.5 | A |
| $I_D$ @ $T_A$ = 70°C | | 5.2 | |
| $I_{DM}$ | Pulsed Drain Current ① | 52 | |
| $P_D$ @$T_A$ = 25°C | Power Dissipation ④ | 2.0 | W |
| $P_D$ @$T_A$ = 70°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°C, L = 10mH, $R_G$ = 25Ω, $I_{AS}$ = 4.0A

③ $I_{SD}$ ≤ 4.0A, di/dt ≤ 74A/µs, $V_{DD}$ ≤ $V_{(BR)DSS}$, $T_J$ ≤ 150°C

④ Pulse width ≤ 300µs; duty cycle ≤ 2%

⑤ Surface mounted on FR-4 board, t ≤ 10sec.

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

| Parameter | | Min. | Typ. | Max. | Units | Conditions |
|---|---|---|---|---|---|---|
| $V_{(BR)DSS}$ | Drain-to-Source Breakdown Voltage | 30 | — | — | V | $V_{GS}$ = 0V, $I_D$ = 250µA |
| $R_{DS(on)}$ | 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 | $V_{DS}$ = $V_{GS}$, $I_D$ = 250µA |
| $g_{fs}$ | 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°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 | | $R_G$ = 6.0Ω |
| $t_f$ | Fall Time | — | 18 | 26 | | $R_D$ = 15Ω ④ |
| $C_{iss}$ | Input Capacitance | — | 650 | — | pF | $V_{GS}$ = 0V |
| $C_{oss}$ | Output Capacitance | — | 320 | — | | $V_{DS}$ = 25V |
| $C_{rss}$ | Reverse Transfer Capacitance | — | 130 | — | | $f$ = 1.0MHz (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°C, $I_S$ = 1.7A, $V_{GS}$ = 0V |
| $t_{rr}$ | Reverse Recovery Time (Body Diode) | — | 45 | 68 | ns | $T_J$ = 25°C, $I_F$ = 1.7A |
| $Q_{rr}$ | Reverse Recovery Charge | — | 58 | 87 | nC | di/dt = 100A/µs ③ |

## Schottky Diode Maximum Ratings

| | Parameter | Max. | Units | Conditions | |
|---|---|---|---|---|---|
| $I_{F\ (av)}$ | Max. Average Forward Current | 3.2 | A | 50% Duty Cycle. Rectangular Wave, Tc = 25°C | |
| | | 2.0 | | 50% Duty Cycle. Rectangular Wave, Tc = 70°C | |
| $I_{SM}$ | Max. peak one cycle Non-repetitive Surge current | 200 | A | 5µs sine or 3µs Rect. pulse | Following any rated load condition & with Vrrm applied |
| | | 20 | | 10ms sine or 6ms Rect. pulse | |

## Schottky Diode Electrical Specifications

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

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

## Power MOSFET Characteristics

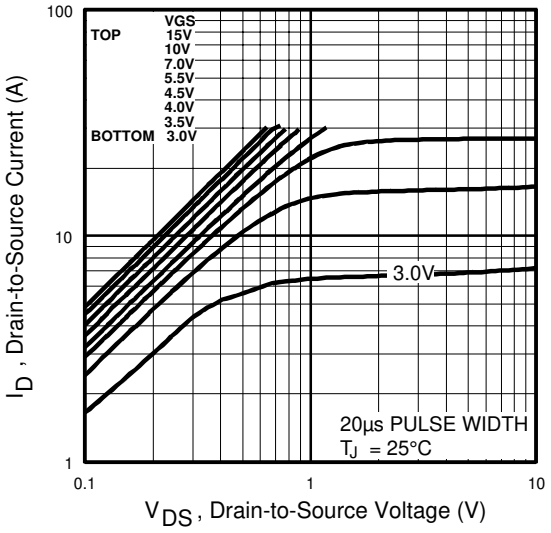



**Fig 1.** Typical Output Characteristics

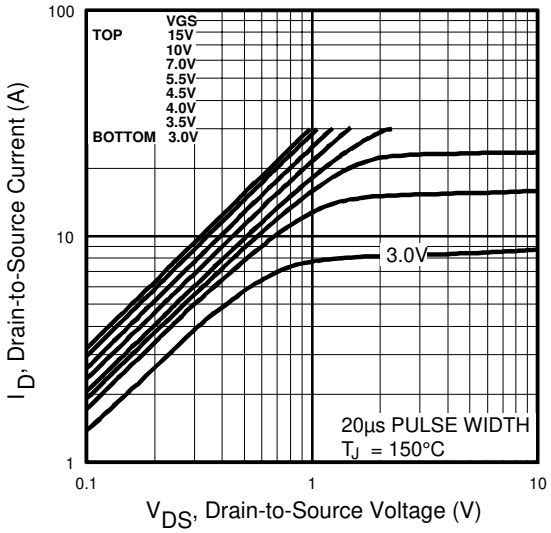



**Fig 2.** Typical Output Characteristics

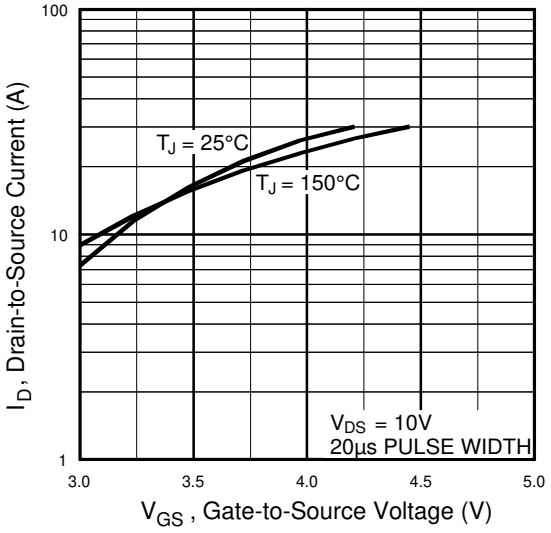



**Fig 3.** Typical Transfer Characteristics

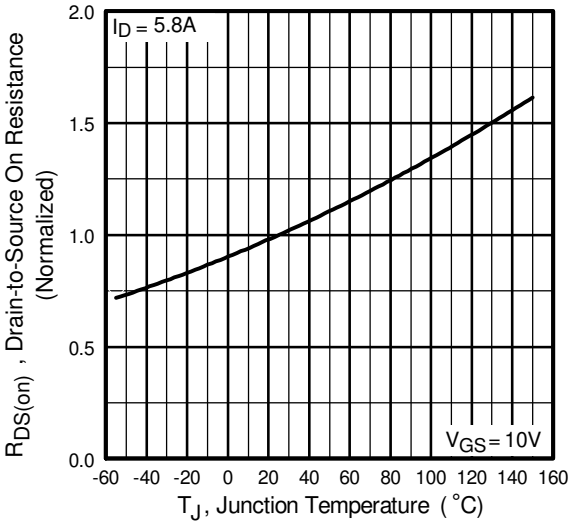



**Fig 4.** Normalized On-Resistance Vs. Temperature

## Power MOSFET Characteristics

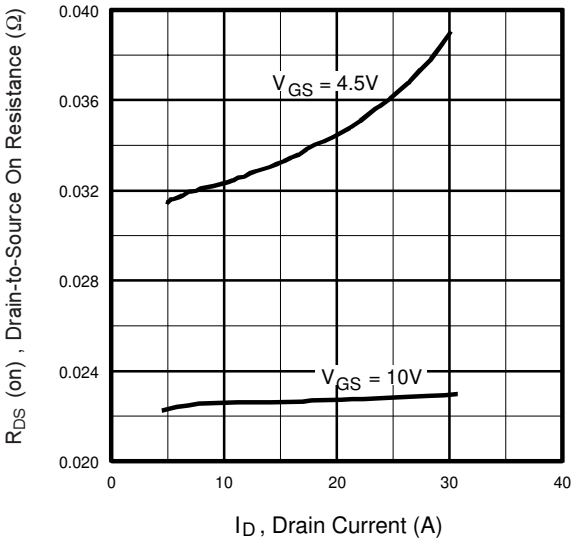



**Fig 5.** Typical On-Resistance Vs. Drain Current

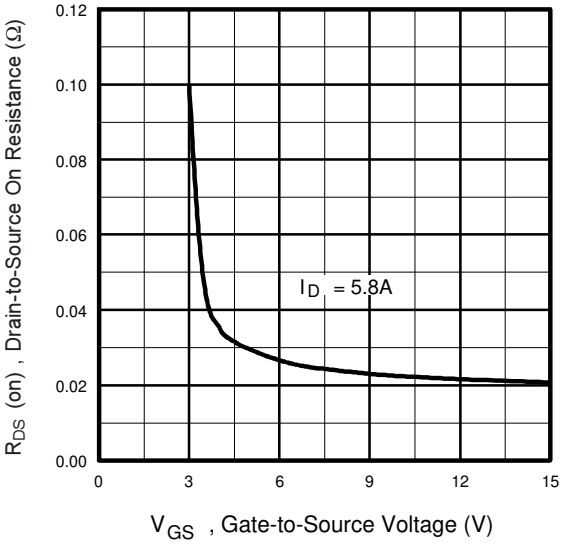



**Fig 6.** Typical On-Resistance Vs. Gate Voltage

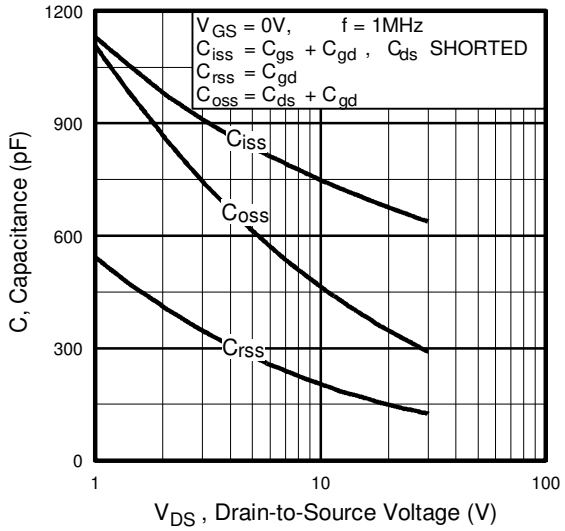



**Fig 7.** Typical Capacitance Vs. Drain-to-Source Voltage

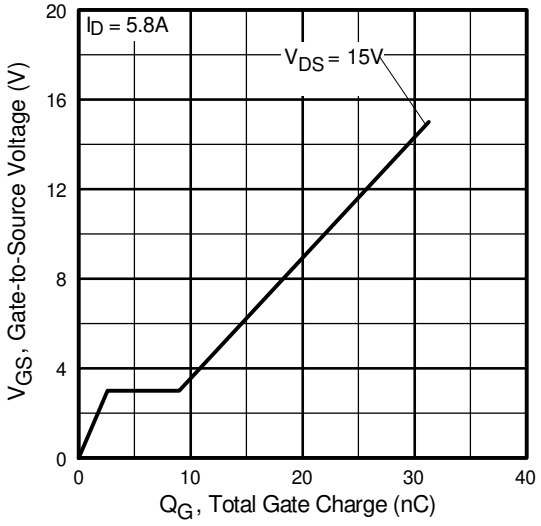



**Fig 8.** Typical Gate Charge Vs. Gate-to-Source Voltage

## Power MOSFET Characteristics

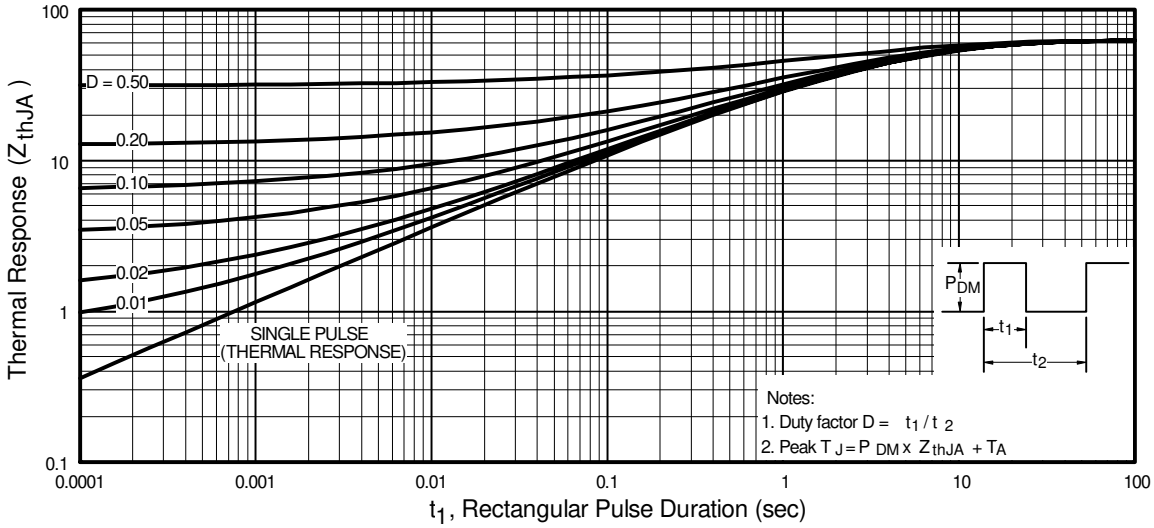



**Fig 9.** Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

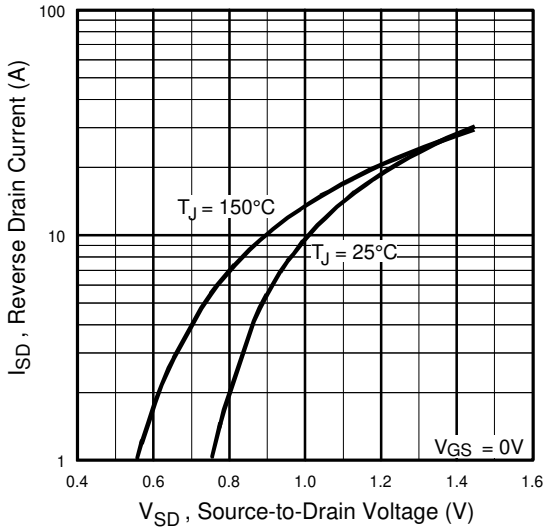



**Fig 10.** Typical Source-Drain Diode
Forward Voltage

## Schottky Diode Characteristics

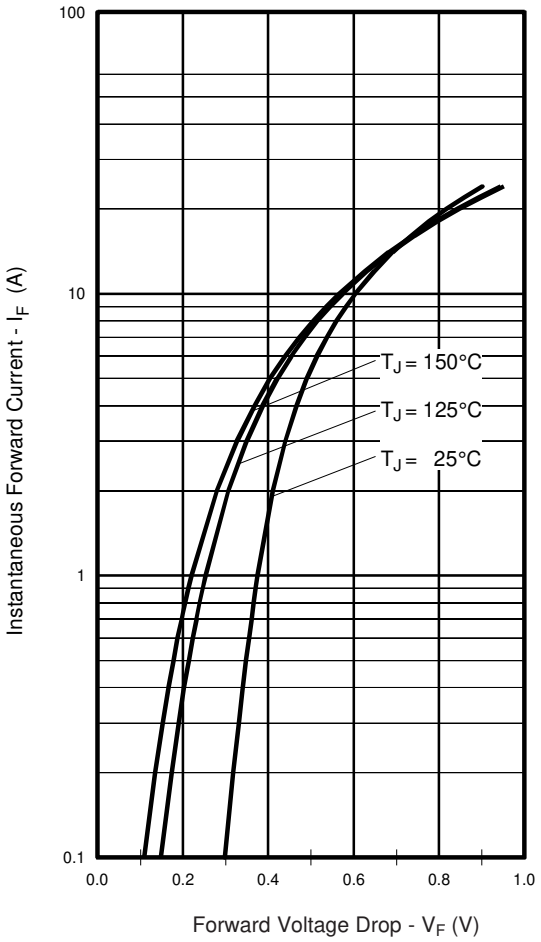



**Fig. 12** - Typical Forward Voltage Drop Characteristics

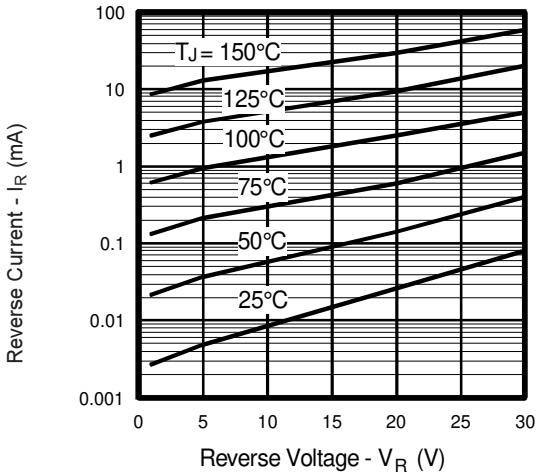



**Fig. 13** - Typical Values of Reverse Current Vs. Reverse Voltage

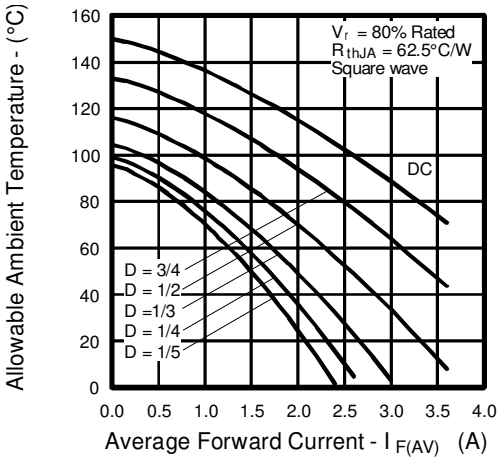
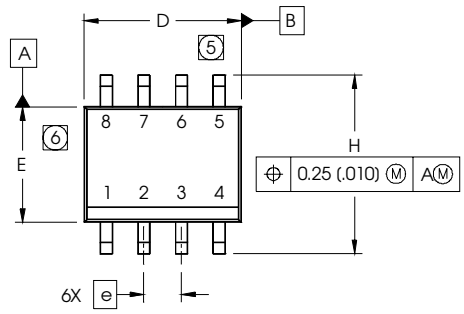


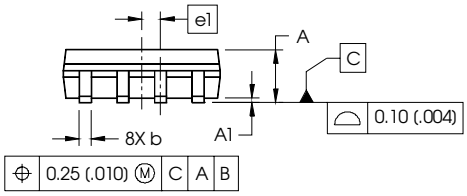

**Fig.14** - Maximum Allowable Ambient Temp. Vs. Forward Current

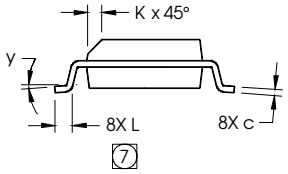
## SO-8 (Fetky) Package Outline

Dimensions are shown in millimeters (inches)



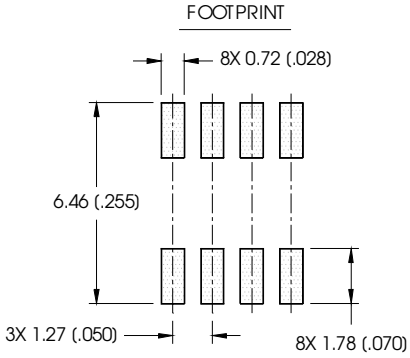

| DIM | INCHES | | MILLIMETERS | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| A | .0532 | .0688 | 1.35 | 1.75 |
| A1 | .0040 | .0098 | 0.10 | 0.25 |
| b | .013 | .020 | 0.33 | 0.51 |
| c | .0075 | .0098 | 0.19 | 0.25 |
| D | .189 | .1968 | 4.80 | 5.00 |
| E | .1497 | .1574 | 3.80 | 4.00 |
| e | .050 BASIC | | 1.27 BASIC | |
| 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° |



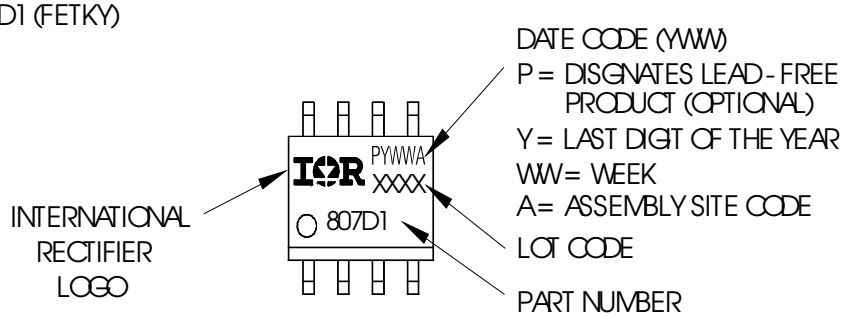

NOTES:

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.



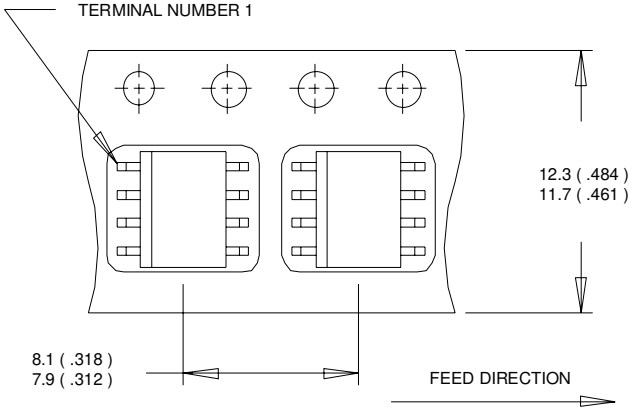

## SO-8 (Fetky) Part Marking Information

EXAMPLE: THIS IS AN IRF7807D1 (FETKY)

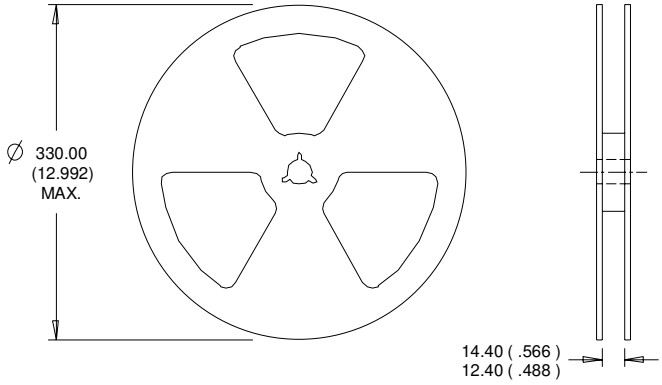


## SO-8 (Fetky) Tape and Reel

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.

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