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[International Rectifier \(Infineon Technologies Americas Corp.\)
IRF7523D1TRPBF](#)

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sales@integrated-circuit.com

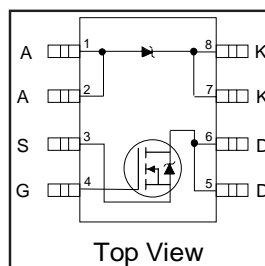
International IR Rectifier

PD- 95434

IRF7523D1PbF

FETKY™ MOSFET / Schottky Diode

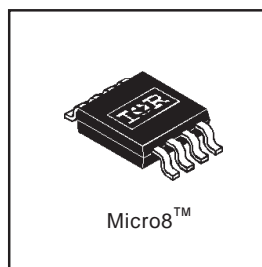
- Co-packaged HEXFET® Power MOSFET and Schottky Diode
- N-Channel HEXFET
- Low V_F Schottky Rectifier
- Generation 5 Technology
- Micro8™ Footprint
- Lead-Free



$V_{DSS} = 30V$
$R_{DS(on)} = 0.11\Omega$
Schottky $V_f = 0.39V$

Description

The FETKY™ family of co-packaged HEXFETs and Schottky diodes offer the designer an innovative board space saving solution for switching regulator applications. Generation 5 HEXFETs 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 like cell phone, PDA, etc.



The new Micro8™ package, with half the footprint area of the standard SO-8, provides the smallest footprint available in an SOIC outline. This makes the Micro8™ an ideal device for applications where printed circuit board space is at a premium. The low profile (<1.1mm) of the Micro8™ will allow it to fit easily into extremely thin application environments such as portable electronics and PCMCIA cards.

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

Parameter		Maximum	Units
$I_D @ T_A = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^{(4)}$	2.7	A
$I_D @ T_A = 70^\circ C$		2.1	
I_{DM}	Pulsed Drain Current ⁽¹⁾	21	
$P_D @ T_A = 25^\circ C$	Power Dissipation ⁽⁴⁾	1.25	W
$P_D @ T_A = 70^\circ C$		0.8	
	Linear Derating Factor	10	W/°C
V_{GS}	Gate-to-Source Voltage	± 20	V
dv/dt	Peak Diode Recovery dv/dt ⁽²⁾	6.2	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 ⁽⁴⁾	100	°C/W

Notes:

- ① Repetitive rating; pulse width limited by maximum junction temperature (see figure 11)
- ② $I_{SD} \leq 1.7A$, $di/dt \leq 120A/\mu s$, $V_{DD} \leq V_{(BR)DSS}$, $T_J \leq 150^\circ C$
- ③ Pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$
- ④ When mounted on 1 inch square copper board to approximate typical multi-layer PCB thermal resistance

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

Parameter	Min.	Typ.	Max.	Units	Conditions
V _{(BR)DSS}	30	—	—	V	V _{GS} = 0V, I _D = 250μA
R _{DS(on)}	—	0.090	0.130	Ω	V _{GS} = 10V, I _D = 1.7A ③
	—	0.140	0.190		V _{GS} = 4.5V, I _D = 0.85A ③
V _{GS(th)}	1.0	—	—	V	V _{DS} = V _{GS} , I _D = 250μA
g _{fs}	1.9	—	—	S	V _{DS} = 10V, I _D = 0.85A
I _{DSS}	—	—	1.0	μA	V _{DS} = 24V, V _{GS} = 0V
	—	—	25		V _{DS} = 24V, V _{GS} = 0V, T _J = 125°C
I _{GSS}	—	—	-100	nA	V _{GS} = -20V
	—	—	100		V _{GS} = 20V
Q _g	—	7.8	12	nC	I _D = 1.7A
Q _{gs}	—	1.2	1.8		V _{DS} = 24V
Q _{gd}	—	2.5	3.8		V _{GS} = 10V (see figure 10) ③
t _{d(on)}	—	4.7	—	ns	V _{DD} = 15V
t _r	—	10	—		I _D = 1.7A
t _{d(off)}	—	12	—		R _G = 6.1Ω
t _f	—	5.3	—		R _D = 8.7Ω ③
C _{iss}	—	210	—	pF	V _{GS} = 0V
C _{oss}	—	80	—		V _{DS} = 25V
C _{rss}	—	32	—		f = 1.0MHz (see figure 9)

MOSFET Source-Drain Ratings and Characteristics

Parameter	Min.	Typ.	Max.	Units	Conditions
I _S	—	—	1.25	A	
I _{SM}	—	—	21		
V _{SD}	—	—	1.2	V	T _J = 25°C, I _S = 1.7A, V _{GS} = 0V
t _{rr}	—	40	60	ns	T _J = 25°C, I _F = 1.7A
Q _{rr}	—	48	72	nC	di/dt = 100A/μs ③

Schottky Diode Maximum Ratings

Parameter	Max.	Units	Conditions
I _{F(av)}	1.9	A	50% Duty Cycle. Rectangular Wave, T _A = 25°C See Fig.14 T _A = 70°C
	1.3		
I _{SM}	120	A	5μs sine or 3μs Rect. pulse 10ms sine or 6ms Rect. pulse Following any rated load condition & with V _{RRM} applied
	11		

Schottky Diode Electrical Specifications

Parameter	Max.	Units	Conditions
V _{FM}	0.50	V	I _F = 1.0A, T _J = 25°C
	0.62		I _F = 2.0A, T _J = 25°C
	0.39		I _F = 1.0A, T _J = 125°C
	0.57		I _F = 2.0A, T _J = 125°C
I _{RM}	0.06	mA	V _R = 30V T _J = 25°C
	16		T _J = 125°C
C _t	92	pF	V _R = 5Vdc (100kHz to 1 MHz) 25°C
dv/dt	3600	V/ μs	Rated V _R

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Power Mosfet Characteristics

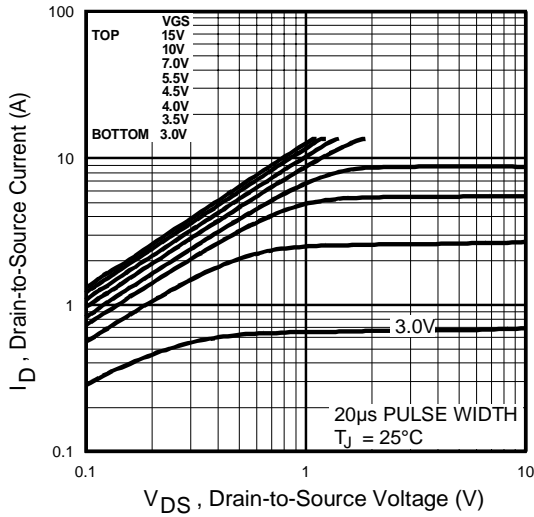


Fig 1. Typical Output Characteristics

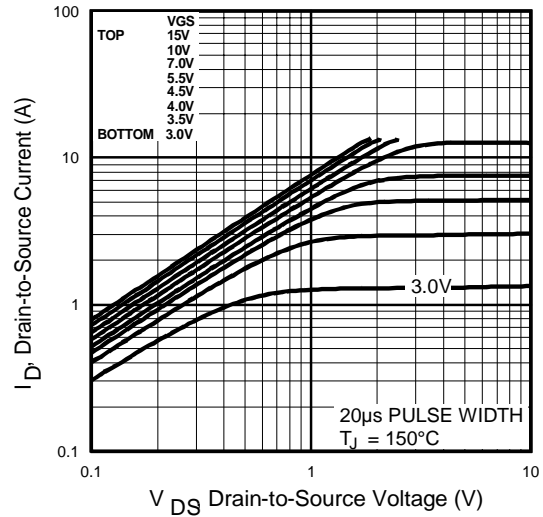


Fig 2. Typical Output Characteristics

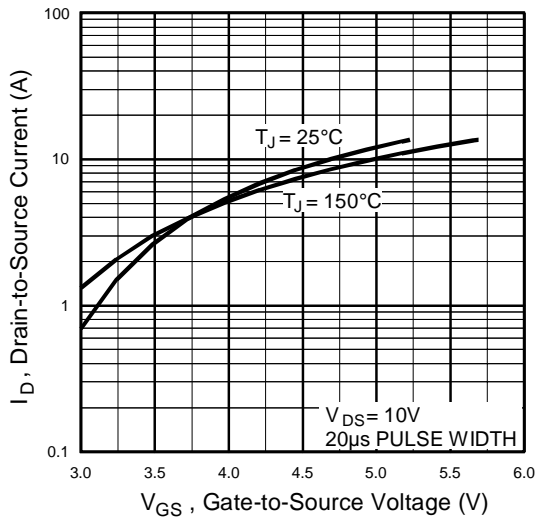


Fig 3. Typical Transfer Characteristics

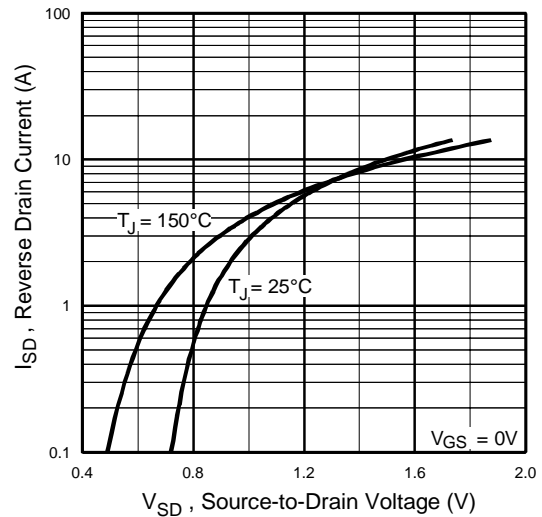


Fig 4. Typical Source-Drain Diode Forward Voltage

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Power Mosfet Characteristics

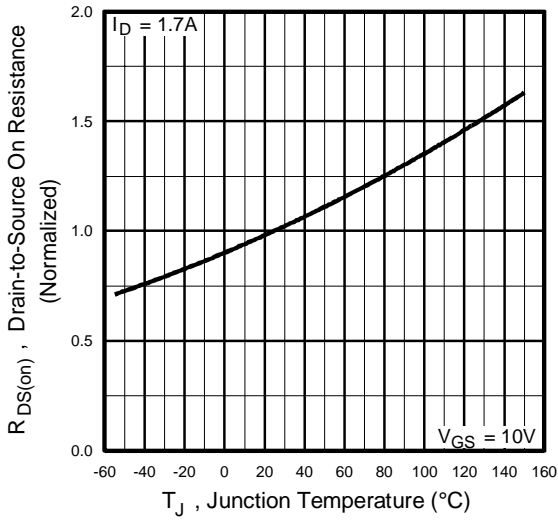


Fig 5. Normalized On-Resistance Vs. Temperature

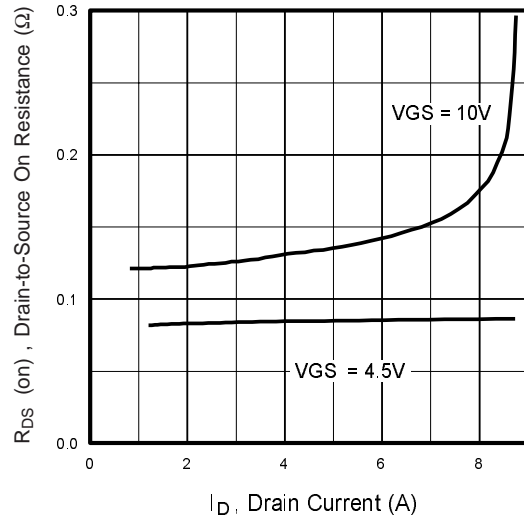


Fig 6. Typical On-Resistance Vs. Drain Current

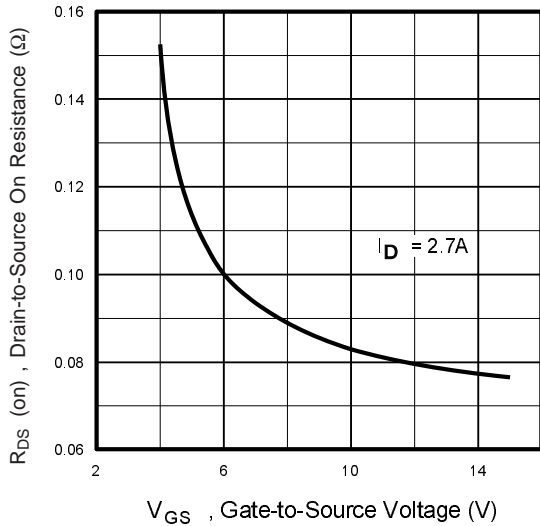


Fig 7. Typical On-Resistance Vs. Gate Voltage

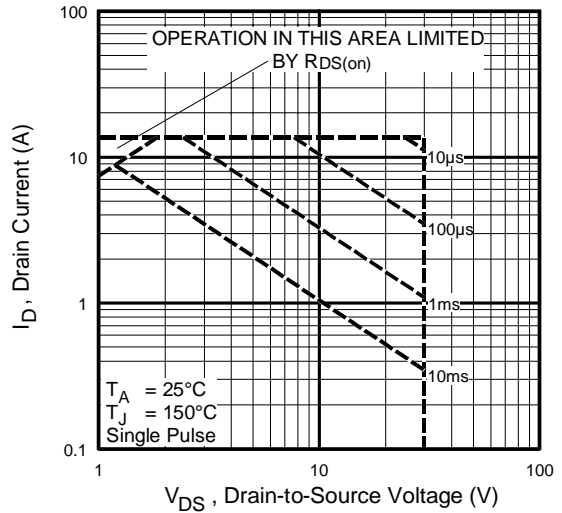


Fig 8. Maximum Safe Operating Area

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Power Mosfet Characteristics

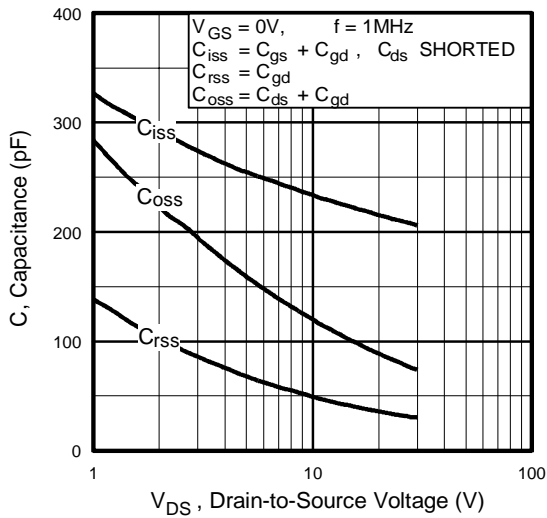


Fig 9. Typical Capacitance Vs. Drain-to-Source Voltage

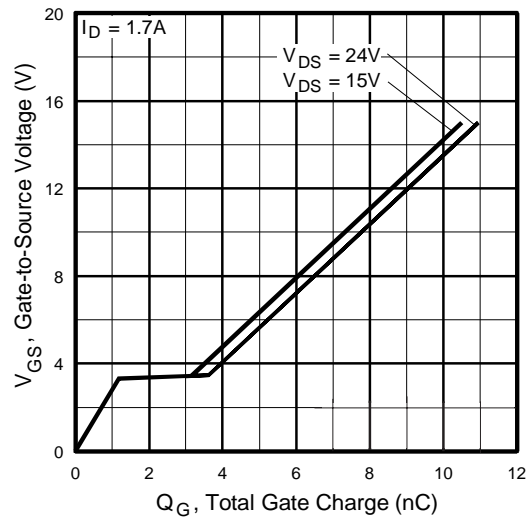


Fig 10. Typical Gate Charge Vs. Gate-to-Source Voltage

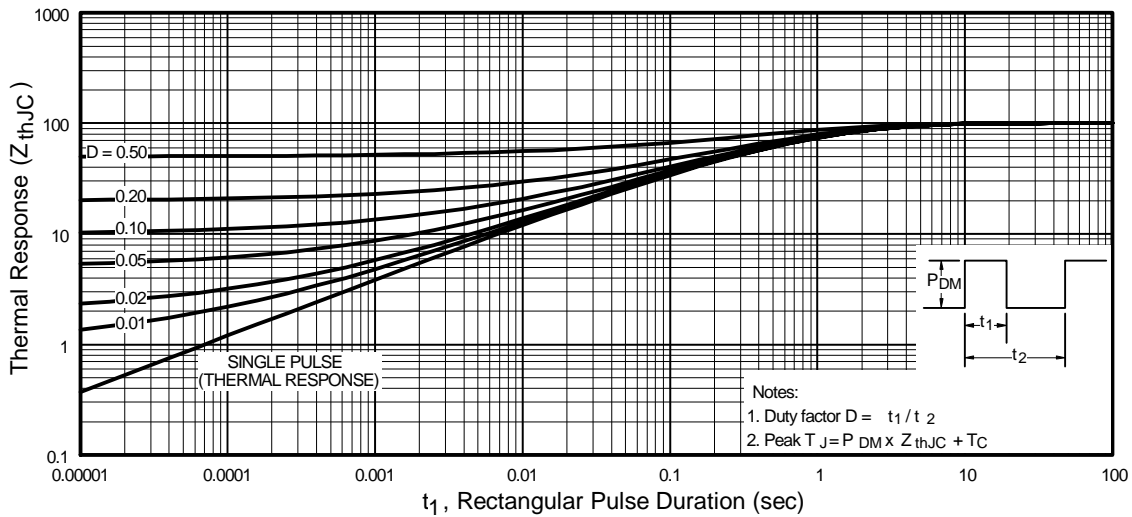


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

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Schottky Diode Characteristics

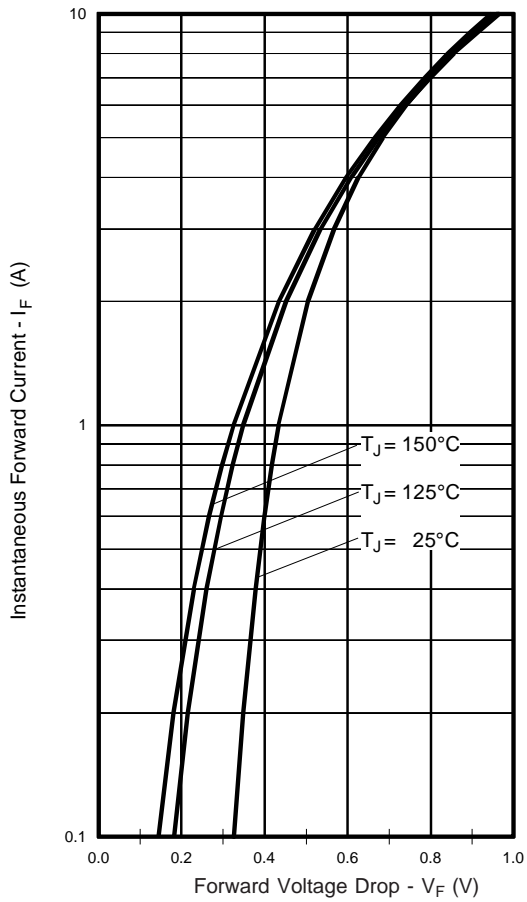


Fig. 12 -Typical Forward Voltage Drop Characteristics

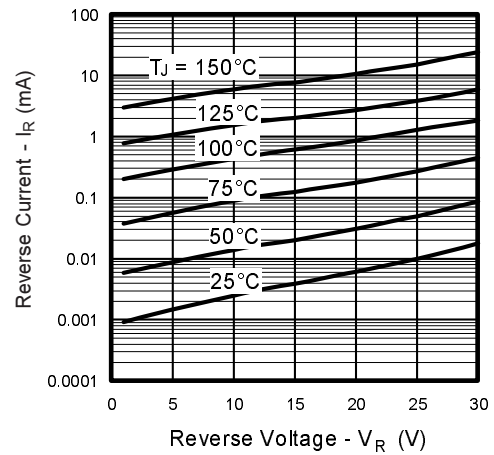


Fig. 13 - Typical Values of Reverse Current Vs. Reverse Voltage

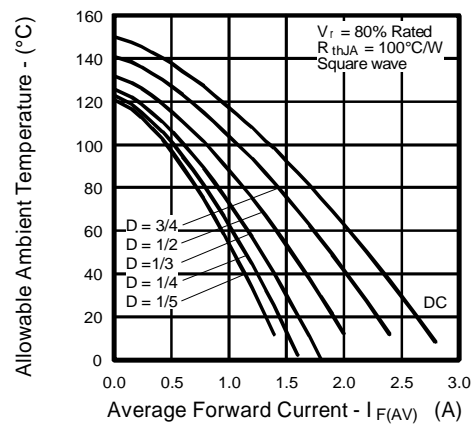


Fig.14 - Maximum Allowable Ambient Temp. Vs. Forward Current

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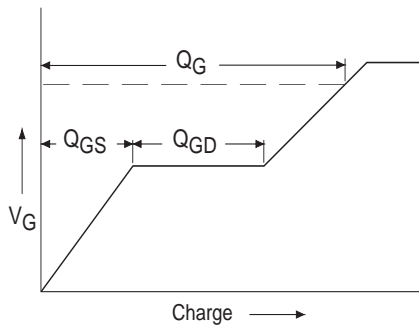


Fig 15a. Basic Gate Charge Waveform

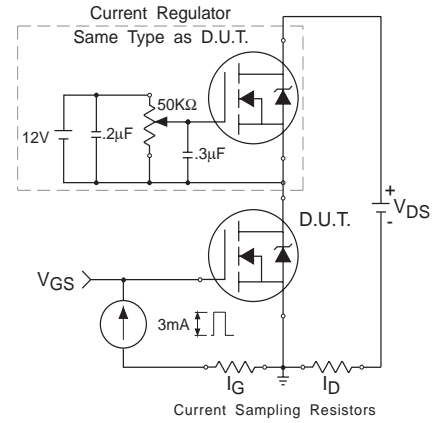


Fig 15b. Gate Charge Test Circuit

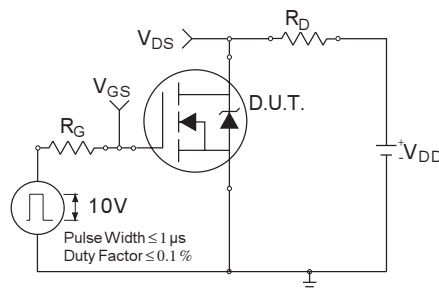


Fig 16a. Switching Time Test Circuit

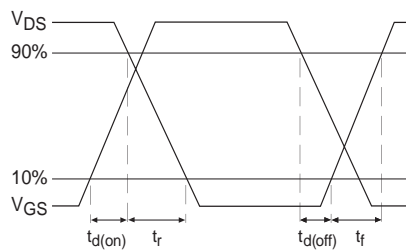
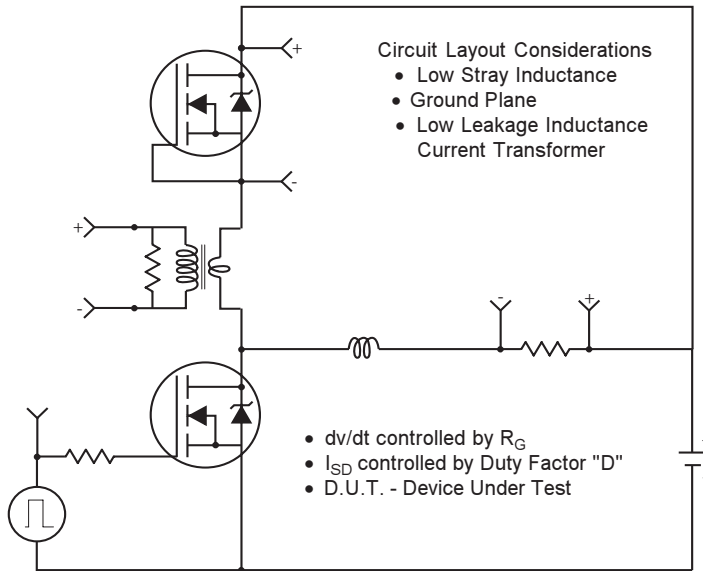


Fig 16b. Switching Time Waveforms

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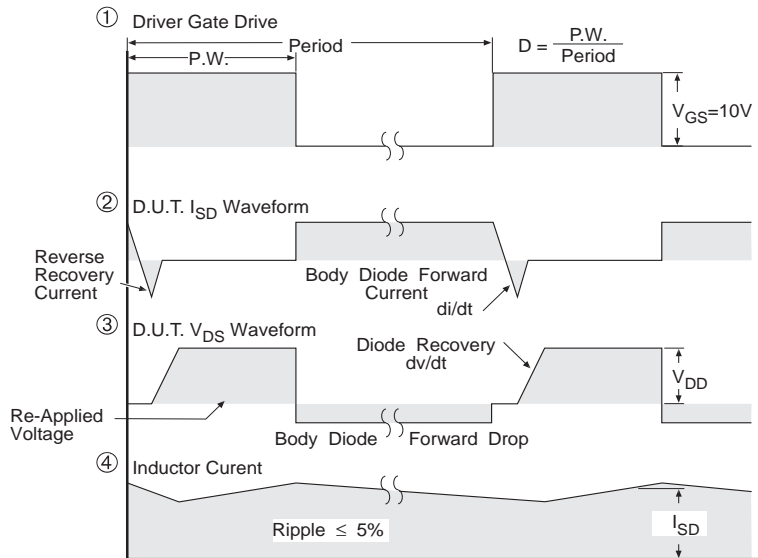
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Peak Diode Recovery dv/dt Test Circuit



* Reverse Polarity for P-Channel

** Use P-Channel Driver for P-Channel Measurements



*** $V_{GS} = 5.0V$ for Logic Level and 3V Drive Devices

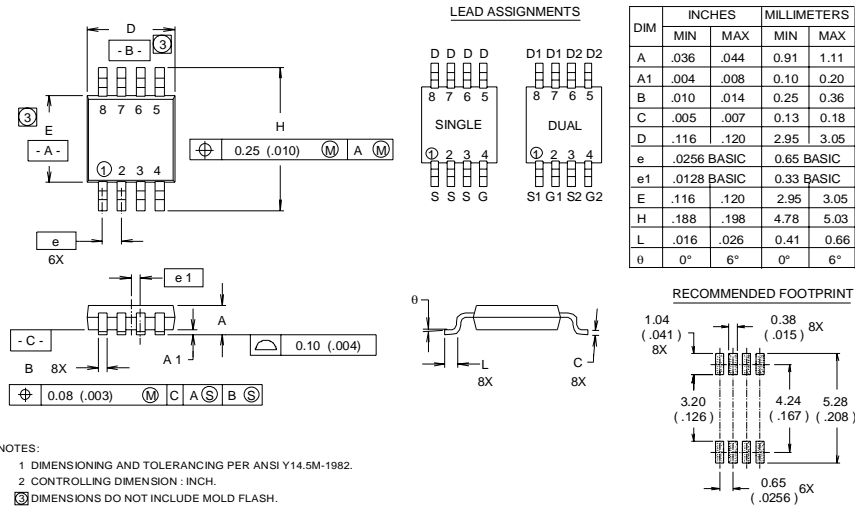
Fig 17 For N Channel HEXFETS

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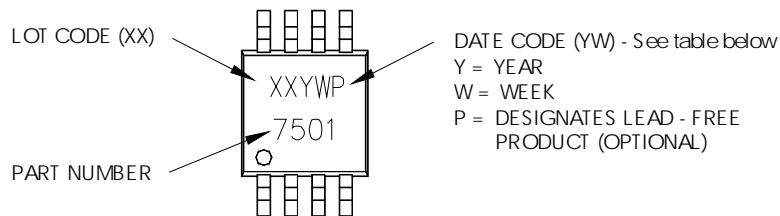
Micro8 Package Outline

Dimensions are shown in millimeters (inches)



Micro8 Part Marking Information

EXAMPLE: THIS IS AN IRF7501



WW = (1-26) IF PRECEDED BY LAST DIGIT OF CALENDAR YEAR

YEAR	Y	WORK WEEK	W
2001	1	01	A
2002	2	02	B
2003	3	03	C
2004	4	04	D
2005	5		
2006	6		
2007	7		
2008	8		
2009	9		
2010	0	24	X
		25	Y
		26	Z

WW = (27-52) IF PRECEDED BY A LETTER

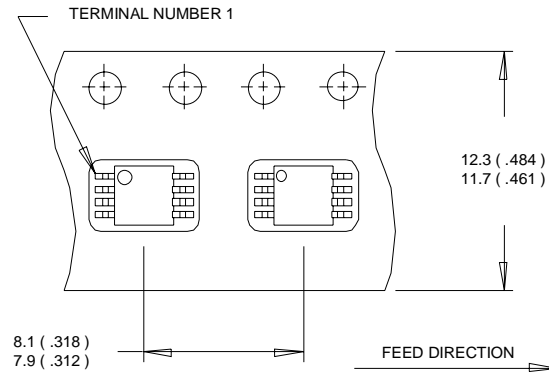
YEAR	Y	WORK WEEK	W
2001	A	27	A
2002	B	28	B
2003	C	29	C
2004	D	30	D
2005	E		
2006	F		
2007	G		
2008	H		
2009	J		
2010	K	50	X
		51	Y
		52	Z

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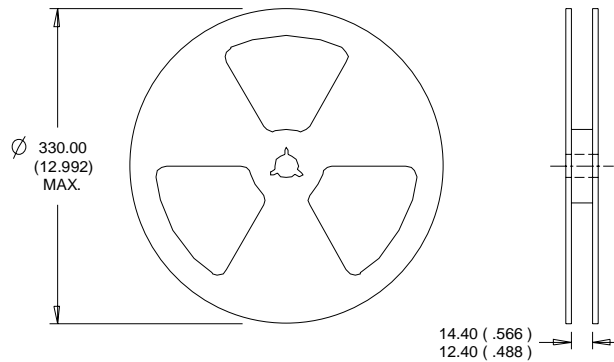
Micro8 Tape & Reel Information

Dimensions are shown in millimeters (inches)



NOTES:

1. OUTLINE CONFORMS TO EIA-481 & EIA-541.
2. CONTROLLING DIMENSION : MILLIMETER.



NOTES:

1. CONTROLLING DIMENSION : MILLIMETER.
2. OUTLINE CONFORMS TO EIA-481 & EIA-541.

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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