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[International Rectifier \(Infineon Technologies Americas Corp.\)
IRF7524D1GTRPBF](#)

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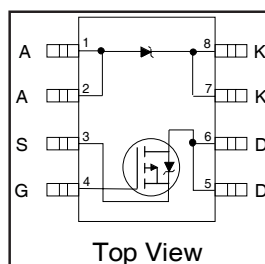
International
IR Rectifier

PD-96176

IRF7524D1GPbF

FETKY™ MOSFET & Schottky Diode

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

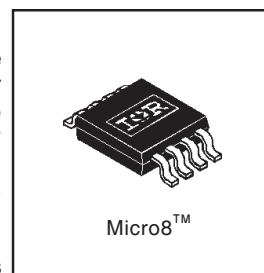


$V_{DSS} = -20V$
$R_{DS(on)} = 0.27\Omega$
Schottky $V_f = 0.39V$

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 (<1.1 mm) of the Micro8™ will allow it to fit easily into extremely thin application environments such as portable electronics and PCMCIA cards.



Absolute Maximum Ratings

Parameter	Maximum	Units
I_D @ $T_A = 25^\circ C$	-1.7	A
I_D @ $T_A = 70^\circ C$	-1.4	
I_{DM}	-14	
P_D @ $T_A = 25^\circ C$	1.25	W
P_D @ $T_A = 70^\circ C$	0.8	
	Linear Derating Factor	10
V_{GS}	Gate-to-Source Voltage	± 12
dv/dt	Peak Diode Recovery dv/dt ②	-5.0
T_J, T_{STG}	Junction and Storage Temperature Range	-55 to +150

Thermal Resistance Ratings

Parameter	Maximum	Units
$R_{\theta JA}$	Junction-to-Ambient ④	100

Notes:

- ① Repetitive rating – pulse width limited by max. junction temperature (see Fig. 9)
- ② $I_{SD} \leq -1.2A$, $di/dt \leq 100A/\mu s$, $V_{DD} \leq V_{(BR)DSS}$, $T_J \leq 150^\circ C$
- 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 @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	-20	—	—	V	$V_{GS} = 0V, I_D = -250\mu A$
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	0.17	0.27	Ω	$V_{GS} = -4.5V, I_D = -1.2A$ ③
		—	0.28	0.40		$V_{GS} = -2.7V, I_D = -0.60A$ ③
$V_{GS(th)}$	Gate Threshold Voltage	-0.70	—	—	V	$V_{DS} = V_{GS}, I_D = -250\mu A$
g_{fs}	Forward Transconductance	1.3	—	—	S	$V_{DS} = -10V, I_D = -0.60A$
I_{DSS}	Drain-to-Source Leakage Current	—	—	-1.0	μA	$V_{DS} = -16V, V_{GS} = 0V$
		—	—	-25		$V_{DS} = -16V, V_{GS} = 0V, T_J = 125^\circ\text{C}$
I_{GSS}	Gate-to-Source Forward Leakage	—	—	-100	nA	$V_{GS} = -12V$
	Gate-to-Source Reverse Leakage	—	—	100		$V_{GS} = 12V$
Q_g	Total Gate Charge	—	5.4	8.2	nC	$I_D = -1.2A$
Q_{gs}	Gate-to-Source Charge	—	0.96	1.4		$V_{DS} = -16V$
Q_{gd}	Gate-to-Drain ("Miller") Charge	—	2.4	3.6		$V_{GS} = -4.5V$, See Fig. 6 ③
$t_{d(on)}$	Turn-On Delay Time	—	9.1	—	ns	$V_{DD} = -10V$
t_r	Rise Time	—	35	—		$I_D = -1.2A$
$t_{d(off)}$	Turn-Off Delay Time	—	38	—		$R_G = 6.0\Omega$
t_f	Fall Time	—	43	—		$R_D = 8.3\Omega$, ③
C_{iss}	Input Capacitance	—	240	—	pF	$V_{GS} = 0V$
C_{oss}	Output Capacitance	—	130	—		$V_{DS} = -15V$
C_{rss}	Reverse Transfer Capacitance	—	64	—		$f = 1.0\text{MHz}$, See Fig. 5

MOSFET Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	-1.25	A	
I_{SM}	Pulsed Source Current (Body Diode)	—	—	-9.6		
V_{SD}	Body Diode Forward Voltage	—	—	-1.2	V	$T_J = 25^\circ\text{C}, I_S = -1.2A, V_{GS} = 0V$
t_{rr}	Reverse Recovery Time (Body Diode)	—	52	78	ns	$T_J = 25^\circ\text{C}, I_F = -1.2A$
Q_{rr}	Reverse Recovery Charge	—	63	95	nC	$di/dt = 100A/\mu s$ ③

Schottky Diode Maximum Ratings

	Parameter	Max.	Units	Conditions
$I_{F(av)}$	Max. Average Forward Current	1.9	A	50% Duty Cycle. Rectangular Wave, $T_A = 25^\circ\text{C}$ See Fig.14 $T_A = 70^\circ\text{C}$
		1.4		
I_{SM}	Max. peak one cycle Non-repetitive Surge current	120	A	5 μs sine or 3 μs Rect. pulse
		11		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	0.50	V	$I_F = 1.0A, T_J = 25^\circ\text{C}$
		0.62		$I_F = 2.0A, T_J = 25^\circ\text{C}$
		0.39		$I_F = 1.0A, T_J = 125^\circ\text{C}$
		0.57		$I_F = 2.0A, T_J = 125^\circ\text{C}$
I_{RM}	Max. Reverse Leakage current	0.02	mA	$V_R = 20V, T_J = 25^\circ\text{C}$
		8		$T_J = 125^\circ\text{C}$
C_t	Max. Junction Capacitance	92	pF	$V_R = 5V_{dc}$ (100kHz to 1 MHz) 25°C
dv/dt	Max. Voltage Rate of Charge	3600	V/ μs	Rated V_R

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

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Power Mosfet Characteristics

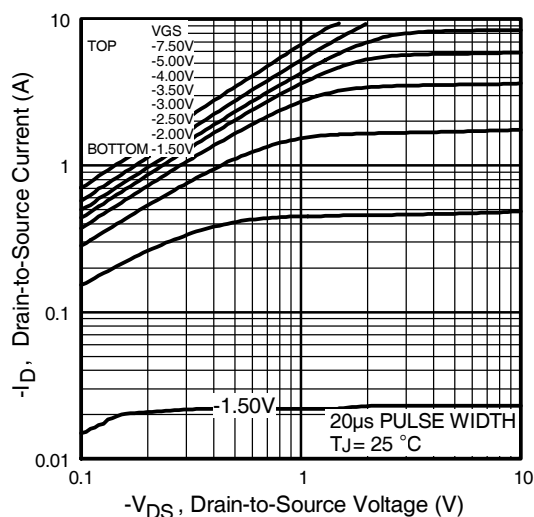


Fig 1. Typical Output Characteristics

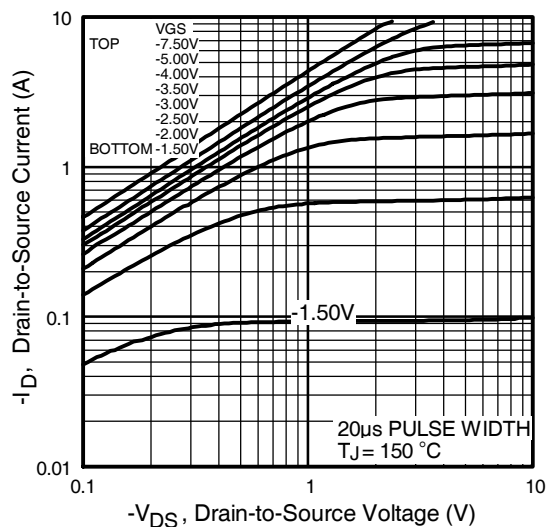


Fig 2. Typical Output Characteristics

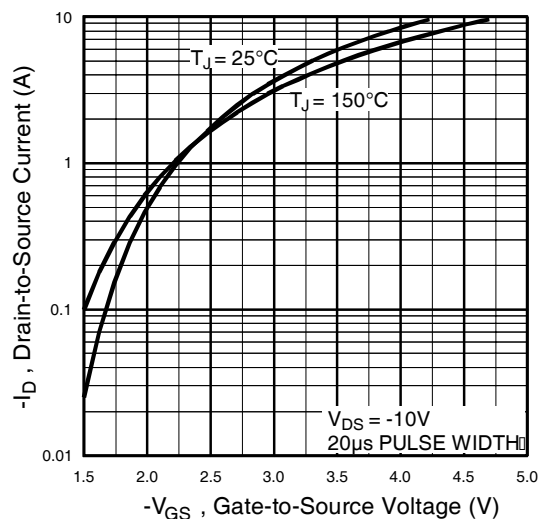


Fig 3. Typical Transfer Characteristics

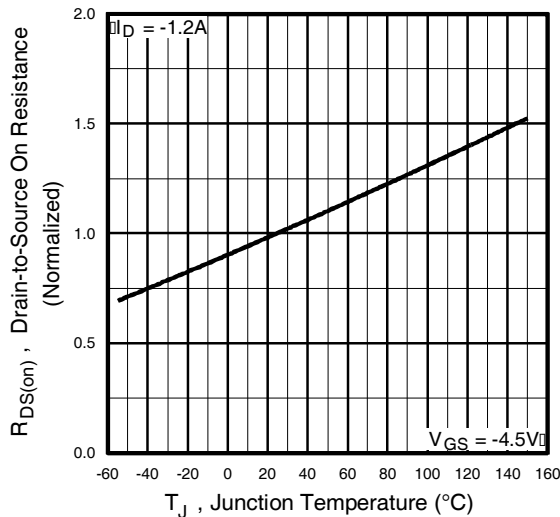


Fig 4. Normalized On-Resistance
Vs. Temperature

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Power Mosfet Characteristics

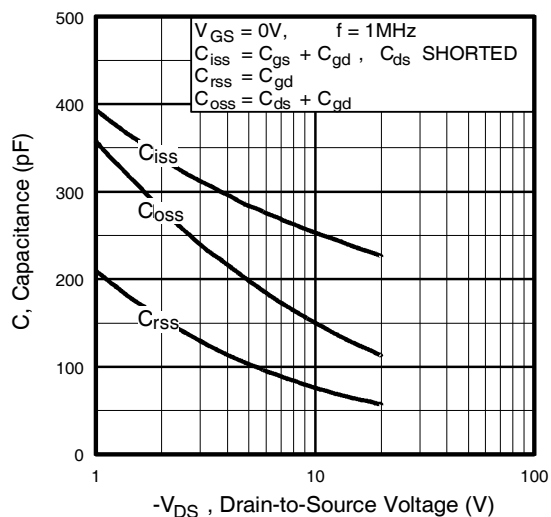


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

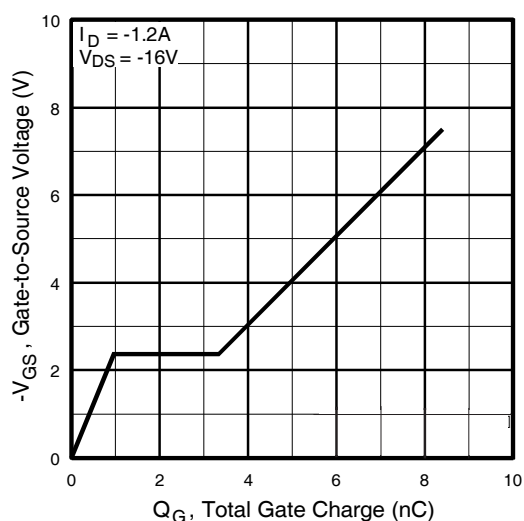


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

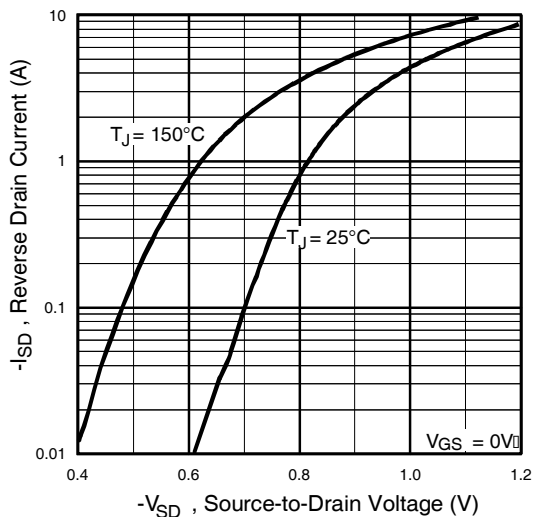


Fig 7. Typical Source-Drain Diode Forward Voltage

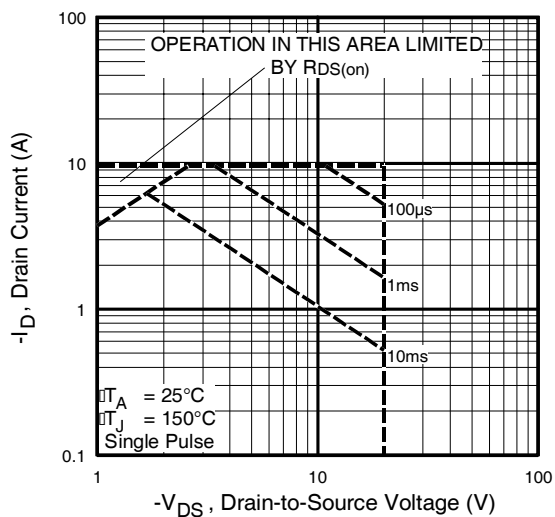


Fig 8. Maximum Safe Operating Area

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Power Mosfet Characteristics

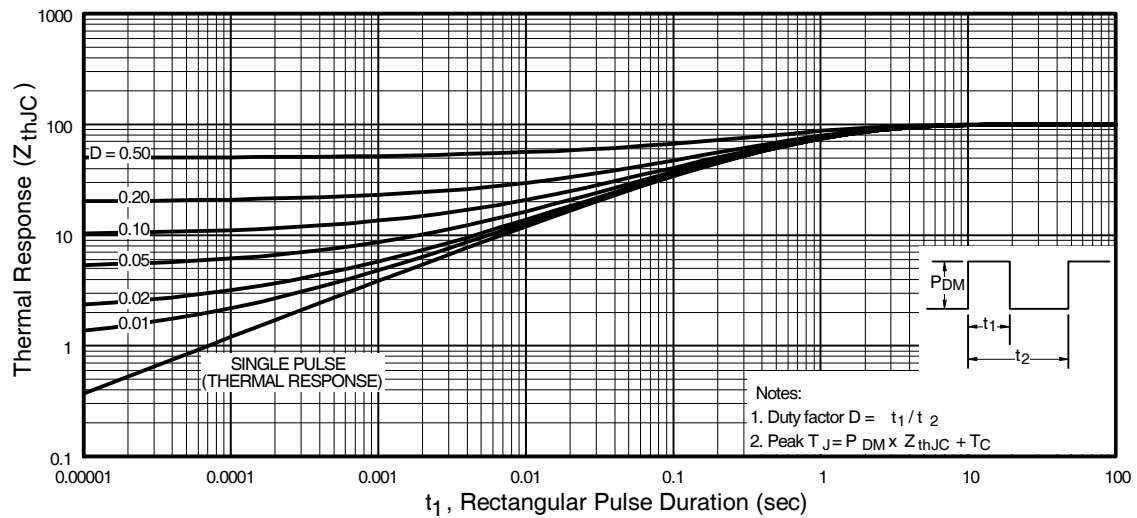


Fig 9. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

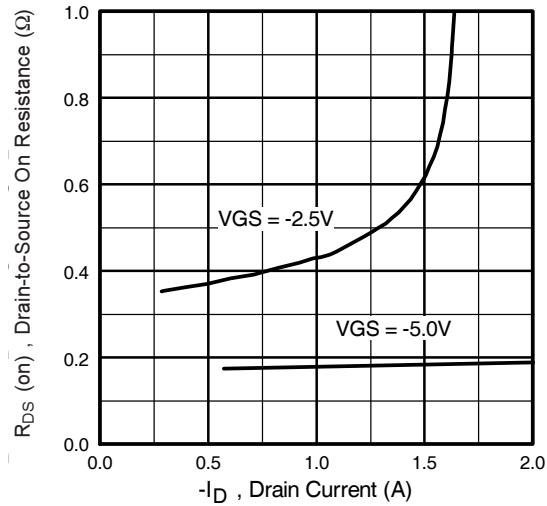


Fig 10. Typical On-Resistance Vs. Drain Current

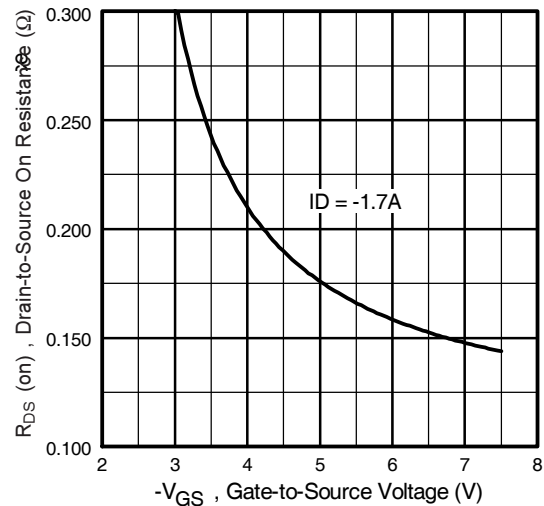


Fig 11. Typical On-Resistance Vs. Gate Voltage

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Schottky Diode Characteristics

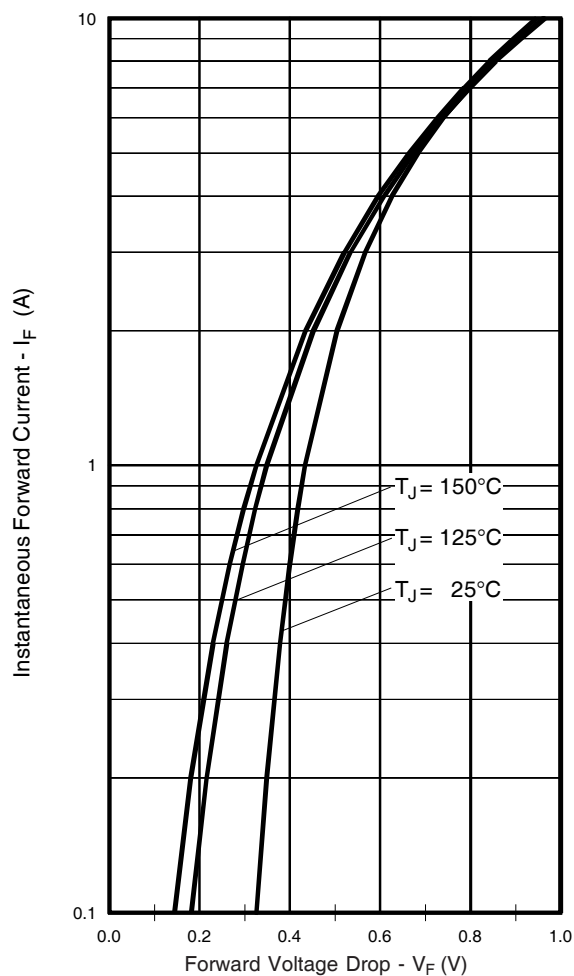


Fig. 12 -Typical Forward Voltage Drop Characteristics

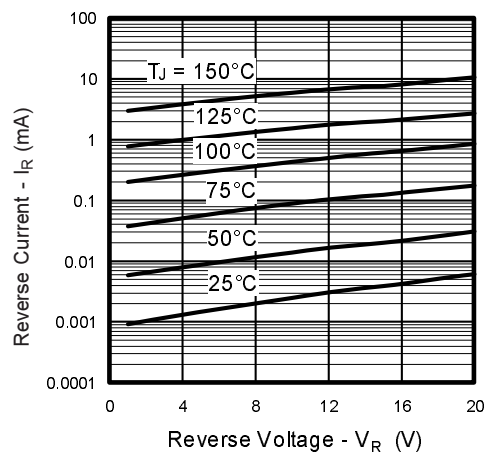


Fig. 13 - Typical Values of Reverse Current Vs. Reverse Voltage

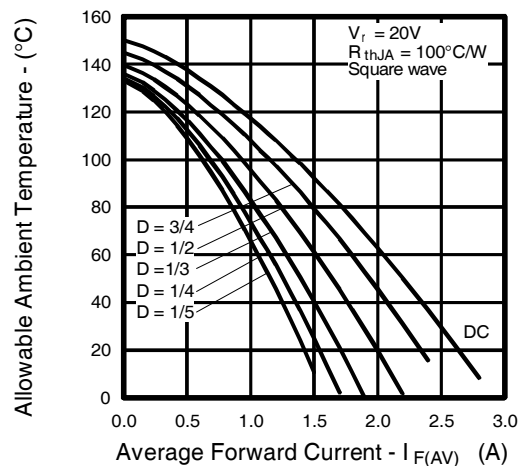
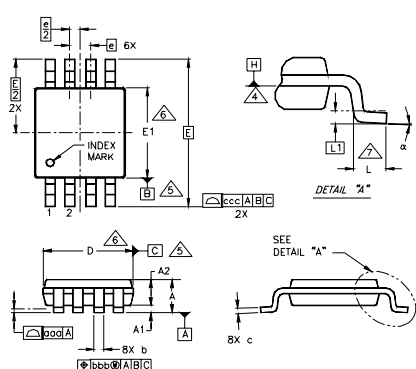


Fig.14 - Maximum Allowable Ambient Temp. Vs. Forward Current

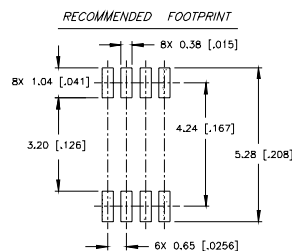
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Micro8 Package Outline Dimensions are shown in millimeters (inches)



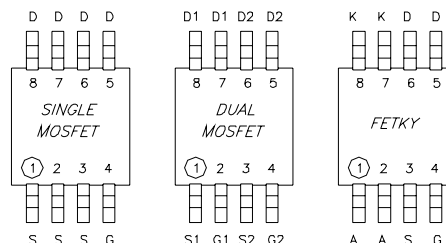
	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	---	---	1.10	---	---	.043
A1	0.05	0.10	0.15	.002	---	.005
A2	0.78	0.86	0.94	.031	.034	.037
b	0.25	0.33	0.40	.010	.013	.015
c	0.13	0.18	0.23	.006	---	.009
D	2.90	3.00	3.10	.115	.118	.122
E	4.90 BSC			.193 BSC		
E1	2.90	3.00	3.10	.115	.118	.122
e	0.65 BSC			.026 BSC		
L	0.40	0.55	0.70	.016	.022	.027
L1	0.25 BSC			.010 BSC		
a	0"	---	6"	0"	---	6"
aaa	0.10			.004		
bbb	0.08			.003		
ccc	0.25			.010		



NOTES

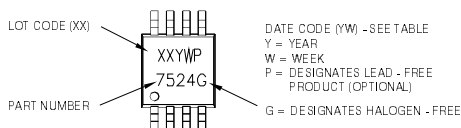
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994.
2. DIMENSIONS ARE SHOWN IN MILLIMETERS AND [INCHES].
3. CONTROLLING DIMENSION: MILLIMETER.
4. DATUM PLANE H IS LOCATED AT THE BOTTOM OF THE MOLD PARTING LINE COINCIDENT WITH WHERE THE LEAD EXITS THE BODY.
5. DATUMS B AND C TO BE DETERMINED AT DATUM PLANE H.
6. DIMENSIONS D AND E1 ARE DETERMINED AT DATUM PLANE H.
7. L IS THE LEAD LENGTH FOR SOLDERING TO A SUBSTRATE.
8. OUTLINE CONFORMS TO JEDEC OUTLINE MO-187AA.

LEAD ASSIGNMENTS



Micro8 Part Marking

EXAMPLE: THIS IS AN IRF7524D1GPbF



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

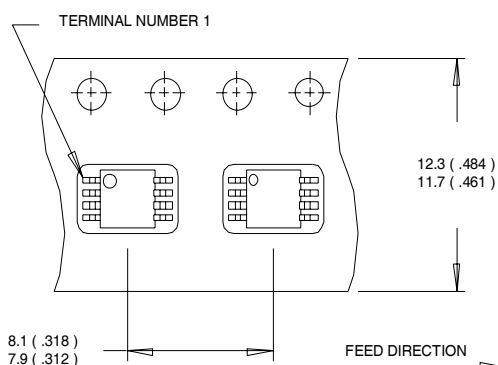
YEAR	Y	WORK WEEK	W
2001	A	27	A
2002	B	28	B
2003	C	29	C
2004	D	30	D
2005	E		
2006	F		
2007	G		
2008	H		
2009	J		
2010	K	50	X
		51	Y
		52	Z

Note: For the most current drawing please refer to IR website at: <http://www.irf.com/package/>
www.irf.com

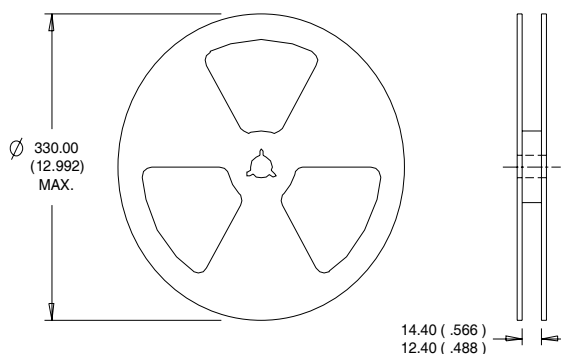
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Micro8™ Tape & Reel



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.

Note: For the most current drawing please refer to IR website at: <http://www.irf.com/package/>

Data and specifications subject to change without notice.
This product has been designed and qualified for the Consumer market.
Qualification Standards can be found on IR's Web site.

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