

IRF7526D1

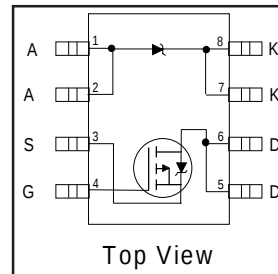
FETKY™ MOSFET & Schottky Diode

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

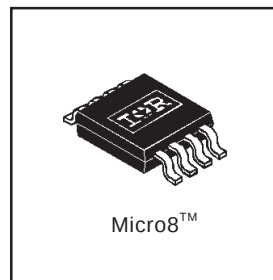
Description

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.



$V_{DSS} = -30V$
$R_{DS(on)} = 0.20\Omega$
Schottky $V_f = 0.39V$



Absolute Maximum Ratings

Parameter	Maximum	Units
I_D @ $T_A = 25^\circ C$	-2.0	A
I_D @ $T_A = 70^\circ C$	-1.6	
I_{DM}	-16	
P_D @ $T_A = 25^\circ C$	1.25	W
P_D @ $T_A = 70^\circ C$	0.8	
	10	mW/°C
V_{GS}	± 20	V
dv/dt	-5.0	V/ns
T_J, T_{STG}	-55 to +150	°C

Thermal Resistance Ratings

Parameter	Maximum	Units
$R_{\theta JA}$	100	°C/W

Notes:

- ① Repetitive rating – pulse width limited by max. junction temperature (see Fig. 9)
- ② $I_{SD} \leq -1.2A$, $di/dt \leq 160A/\mu s$, $V_{DD} \leq V_{(BR)DSS}$, $T_J \leq 150^\circ C$
- 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

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	—	0.17	0.20	Ω	$V_{GS} = -10V, I_D = -1.2A$ ③
		—	0.30	0.40		$V_{GS} = -4.5V, I_D = -0.60A$ ③
$V_{GS(th)}$	Gate Threshold Voltage	-1.0	—	—	V	$V_{DS} = V_{GS}, I_D = -250\mu A$
g_{fs}	Forward Transconductance	0.94	—	—	S	$V_{DS} = -10V, I_D = -0.60A$
I_{DSS}	Drain-to-Source Leakage Current	—	—	-1.0	μA	$V_{DS} = -24V, V_{GS} = 0V$
		—	—	-25		$V_{DS} = -24V, V_{GS} = 0V, T_J = 125^\circ\text{C}$
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	—	7.5	11	nC	$I_D = -1.2A$
Q_{gs}	Gate-to-Source Charge	—	1.3	1.9		$V_{DS} = -24V$
Q_{gd}	Gate-to-Drain ("Miller") Charge	—	2.5	3.7		$V_{GS} = -10V$, See Fig. 6 ③
$t_{d(on)}$	Turn-On Delay Time	—	9.7	—	ns	$V_{DD} = -15V$
t_r	Rise Time	—	12	—		$I_D = -1.2A$
$t_{d(off)}$	Turn-Off Delay Time	—	19	—		$R_G = 6.2\Omega$
t_f	Fall Time	—	9.3	—		$R_D = 12\Omega$, ③
C_{iss}	Input Capacitance	—	180	—	pF	$V_{GS} = 0V$
C_{oss}	Output Capacitance	—	87	—		$V_{DS} = -25V$
C_{rss}	Reverse Transfer Capacitance	—	42	—		$f = 1.0\text{MHz}$, 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)	—	30	45	ns	$T_J = 25^\circ\text{C}, I_F = -1.2A$
Q_{rr}	Reverse Recovery Charge	—	37	55	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 $T_A = 70^\circ\text{C}$
		1.3		
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

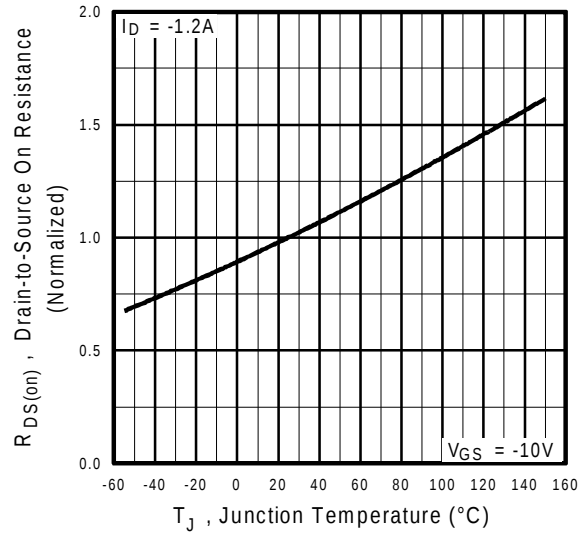
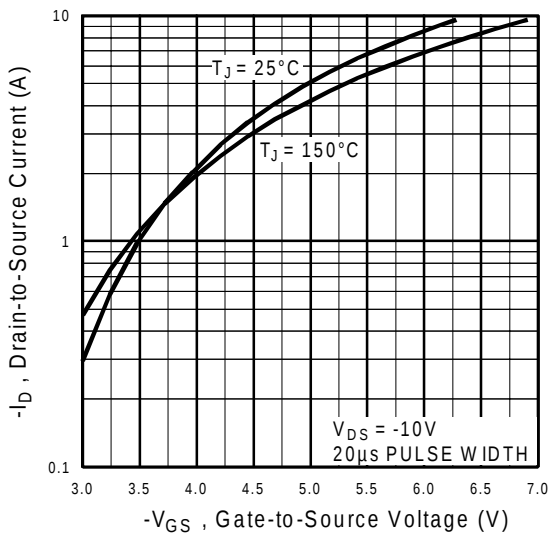
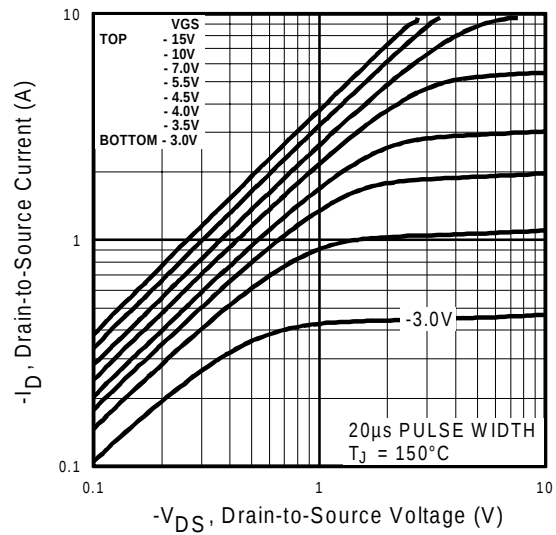
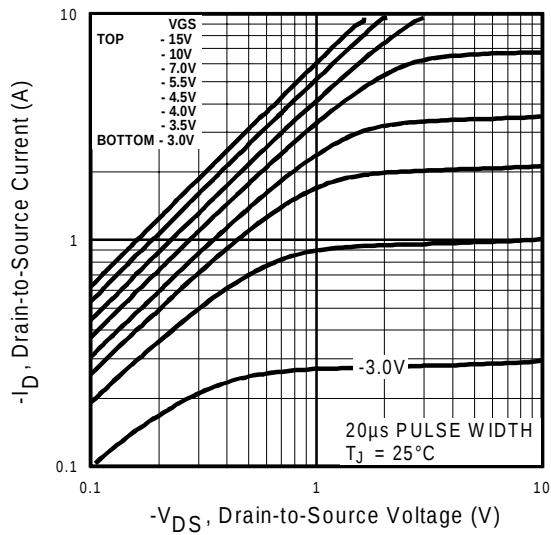
Following any rated load condition & with V_{RRM} applied

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	0.06	mA	$V_R = 30V, T_J = 25^\circ\text{C}$
		16		$T_J = 125^\circ\text{C}$
C_t	Max. Junction Capacitance	92	pF	$V_R = 5Vdc$ (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)

Power Mosfet Characteristics



Power Mosfet Characteristics

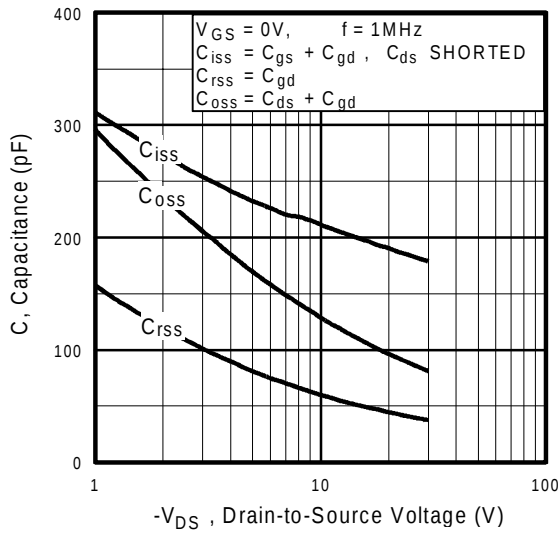


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

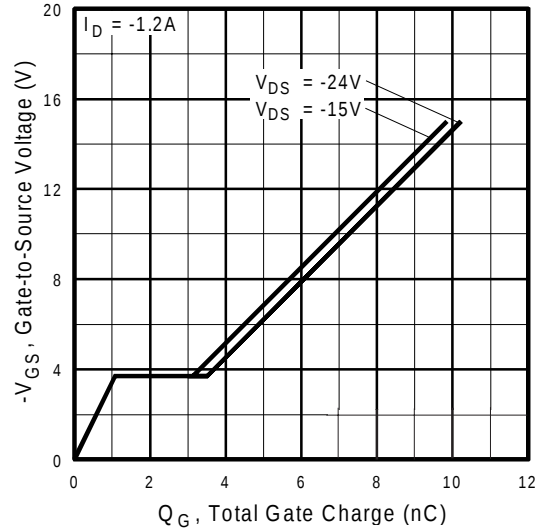


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

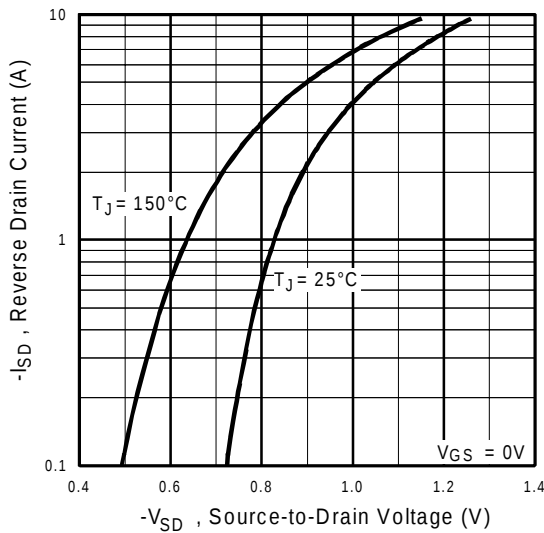


Fig 7. Typical Source-Drain Diode Forward Voltage

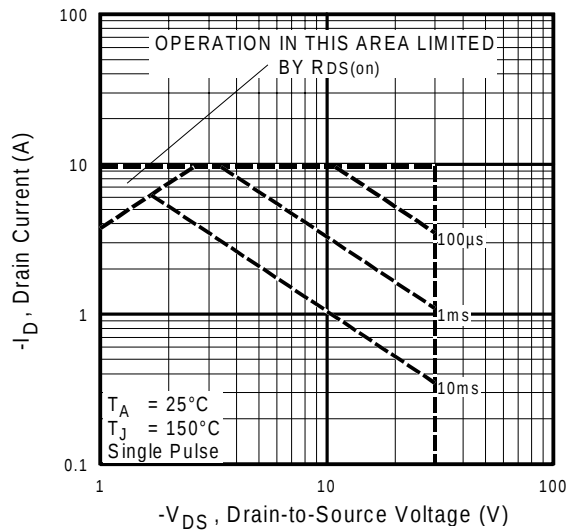


Fig 8. Maximum Safe Operating Area

Power Mosfet Characteristics

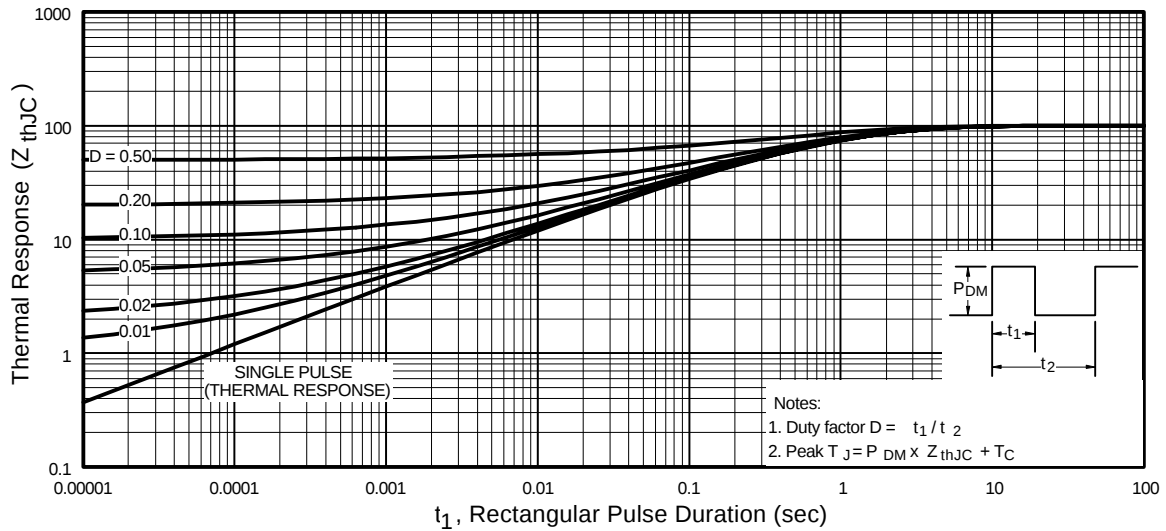


Fig 9. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

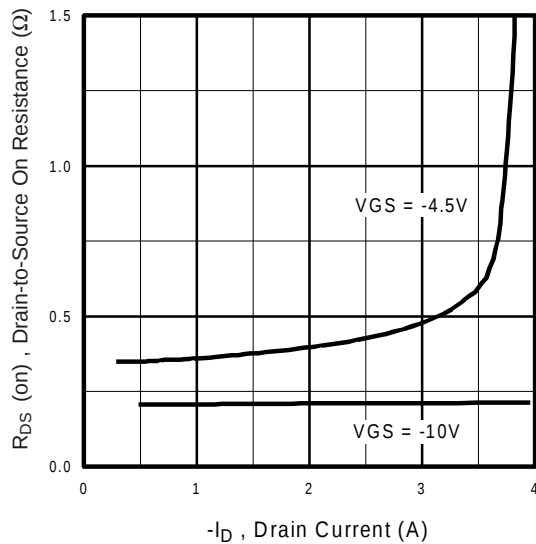


Fig 10. Typical On-Resistance Vs. Drain Current

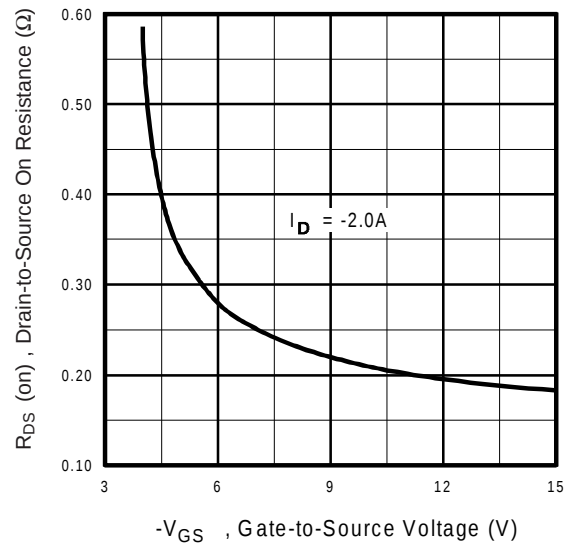


Fig 11. Typical On-Resistance Vs. Gate Voltage

Schottky Diode Characteristics

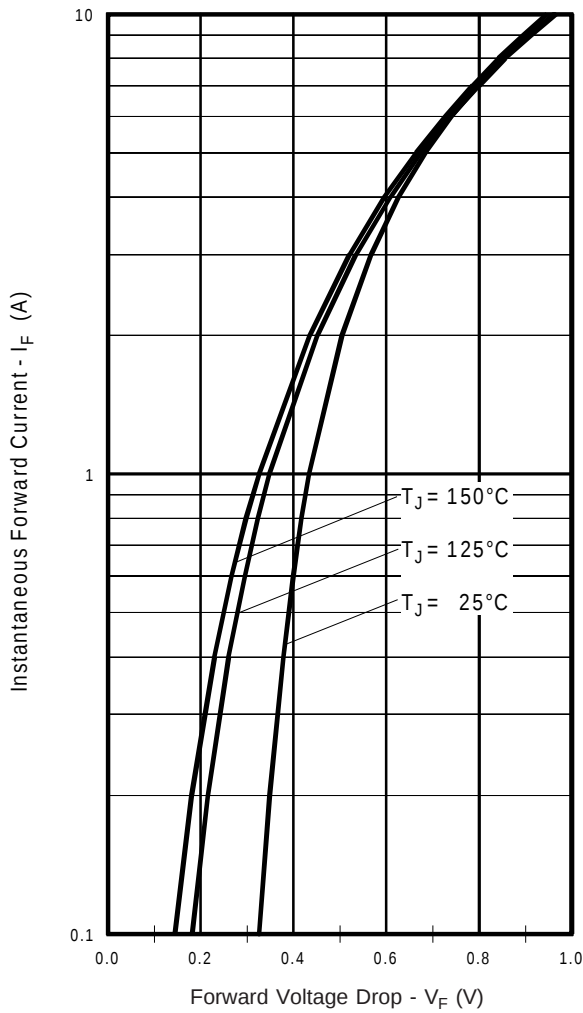


Fig. 12 -Typical Forward Voltage Drop Characteristics

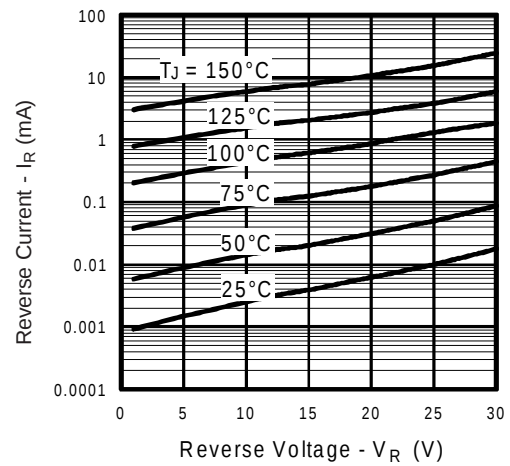


Fig. 13 - Typical Values of Reverse Current Vs. Reverse Voltage

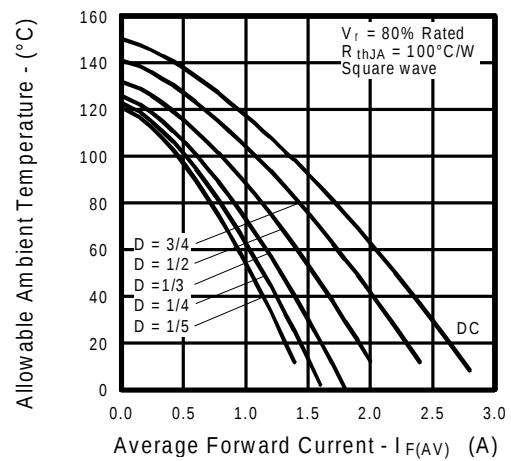
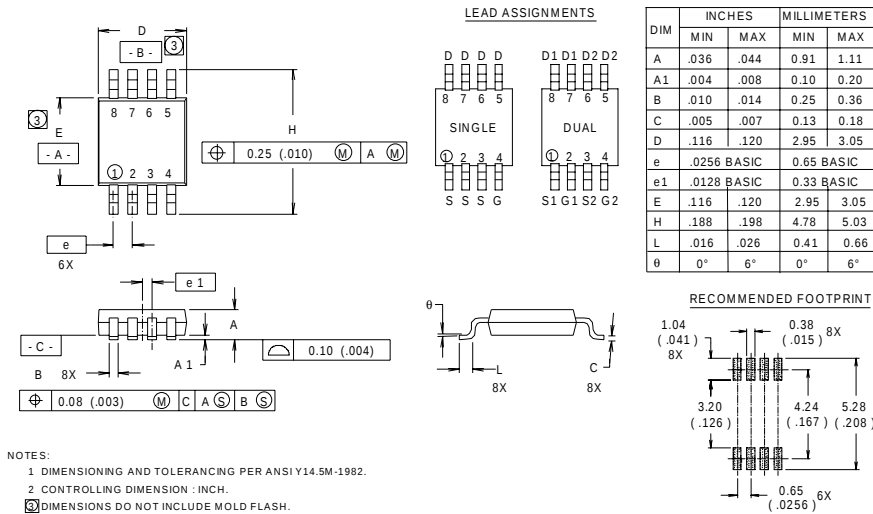


Fig.14 - Maximum Allowable Ambient Temp. Vs. Forward Current

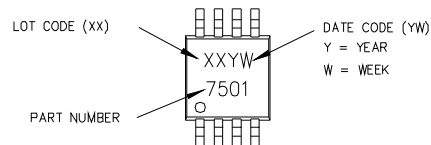
International
IRF Rectifier
Micro8™ Package Details

IRF7526D1



Part Marking

EXAMPLE: THIS IS AN IRF7501



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

DATE CODE EXAMPLES:

YWW = 9503 = 5C
 YWW = 9532 = EF

YEAR	Y	WORK WEEK	W
2001	1	01	A
2002	2	02	B
2003	3	03	C
1994	4	04	D
1995	5		
1996	6		
1997	7		
1998	8		
1999	9		
2000	D	24	X
		25	Y
		26	Z

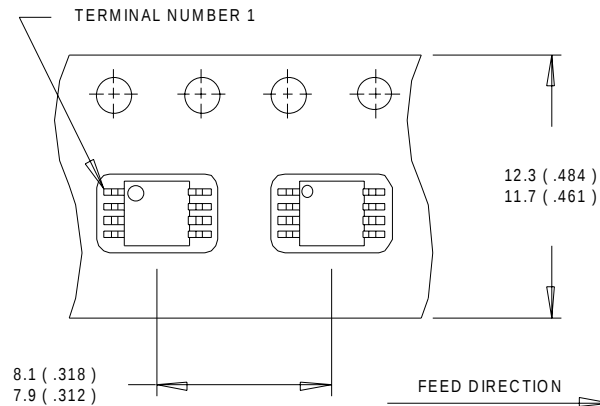
WW = (27-52) IF PRECEDED BY A LETTER

YEAR	Y	WORK WEEK	W
2001	A	27	A
2002	B	28	B
2003	C	29	C
1994	D	30	D
1995	E		
1996	F		
1997	G		
1998	H		
1999	J		
2000	K	50	X
		51	Y
		52	Z

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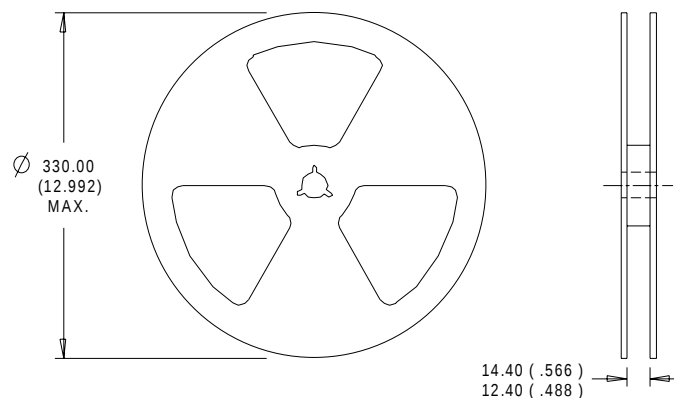
International
IR Rectifier

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.

International
IR Rectifier

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