

IRF7534D1PbF

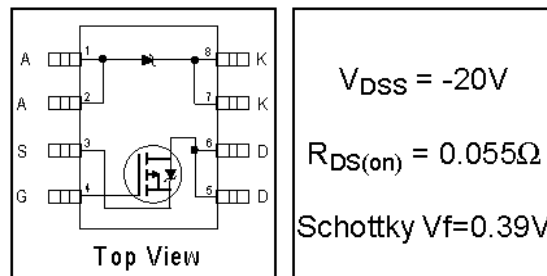
- Lead-Free
- Co-packaged HEXFET[®] power MOSFET and Schottky diode
- Ultra Low On-Resistance MOSFET
- Trench technology
- Micro8[™] Footprint
- Available in Tape & Reel

Description

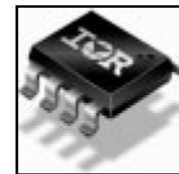
The FETKY family of co-packaged MOSFETs and Schottky diodes offers the designer an innovative, board space saving solution for switching regulator and power management applications. International Rectifier utilizes advanced processing techniques to achieve extremely low on-resistance per silicon area. 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, such as cell phones, PDAs, etc.

The Micro8[™] package makes 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

FETKY MOSFET & Schottky Diode



$V_{DS} = -20V$
 $R_{DS(on)} = 0.055\Omega$
 Schottky $V_f = 0.39V$



Micro8[™]

Absolute Maximum Ratings

	Parameter	Max.	Units
V_{DS}	Drain-Source Voltage	-20	V
$I_D @ T_A = 25^\circ C$	Continuous Drain Current, $V_{GS} @ -4.5V$	-4.3	A
$I_D @ T_A = 70^\circ C$	Continuous Drain Current, $V_{GS} @ -4.5V$	-3.4	
I_{DM}	Pulsed Drain Current ^①	-34	
$P_D @ T_A = 25^\circ C$	Maximum Power Dissipation ^④	1.25	W
$P_D @ T_A = 70^\circ C$	Maximum Power Dissipation ^④	0.8	W
	Linear Derating Factor	10	mW/°C
V_{GS}	Gate-to-Source Voltage	± 12	V
dv/dt	Peak Diode Recovery dv/dt ^②	1.1	V/ns
T_J, T_{STG}	Junction and Storage Temperature Range	-55 to + 150	°C

Thermal Resistance

	Parameter	Max.	Units
$R_{\theta JA}$	Maximum Junction-to-Ambient ^④	100	°C/W

Notes:

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

IRF7534D1PbF

International
IR Rectifier

MOSFET Electrical Characteristics @ T_J = 25°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 = -250μA
R _{DS(on)}	Static Drain-to-Source On-Resistance	—	—	0.055	Ω	V _{GS} = -4.5V, I _D = -4.3A ③
		—	—	0.105		V _{GS} = -2.5V, I _D = -3.4A ③
V _{GS(th)}	Gate Threshold Voltage	-0.6	—	-1.2	V	V _{DS} = V _{GS} , I _D = -250μA
g _{fs}	Forward Transconductance	2.5	—	—	S	V _{DS} = -10V, I _D = -0.8A
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°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	—	10	15	nC	I _D = -3A
Q _{gs}	Gate-to-Source Charge	—	2.1	3.1		V _{DS} = -10V
Q _{gd}	Gate-to-Drain ("Miller") Charge	—	2.5	3.7		V _{GS} = -5V
t _{d(on)}	Turn-On Delay Time	—	10	—	ns	V _{DD} = -10V
t _r	Rise Time	—	46	—		I _D = -2A
t _{d(off)}	Turn-Off Delay Time	—	60	—		R _G = 6.0Ω
t _f	Fall Time	—	64	—		R _D = 5Ω, ③
C _{iss}	Input Capacitance	—	1066	—	pF	V _{GS} = 0V
C _{oss}	Output Capacitance	—	402	—		V _{DS} = -10V
C _{rss}	Reverse Transfer Capacitance	—	125	—		f = 1.0MHz

MOSFET Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I _S	Continuous Source Current (Body Diode)	—	—	-1.3	A	
I _{SM}	Pulsed Source Current (Body Diode)	—	—	-34		
V _{SD}	Body Diode Forward Voltage	—	—	-1.2	V	T _J = 25°C, I _S = -1.6A, V _{GS} = 0V
t _{rr}	Reverse Recovery Time (Body Diode)	—	54	82	ns	T _J = 25°C, I _F = -2.5A
Q _{rr}	Reverse Recovery Charge	—	41	61	nC	di/dt = 100A/μs 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°C See Fig.13
		1.4		
I _{SM}	Max. peak one cycle Non-repetitive Surge current	120	A	Following any rated load condition & with V _{RRM} applied
		11		

Schottky Diode Electrical Specifications

	Parameter	Max.	Units	Conditions
V _{FM}	Max. Forward voltage drop	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}	Max. Reverse Leakage current	0.02	mA	V _R = 20V, T _J = 25°C
		8		T _J = 125°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

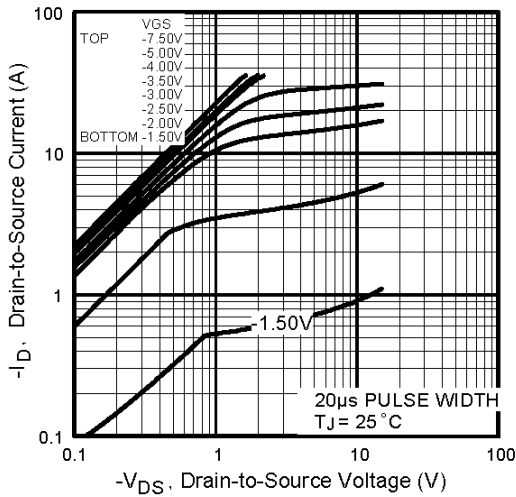


Fig 1. Typical Output Characteristics

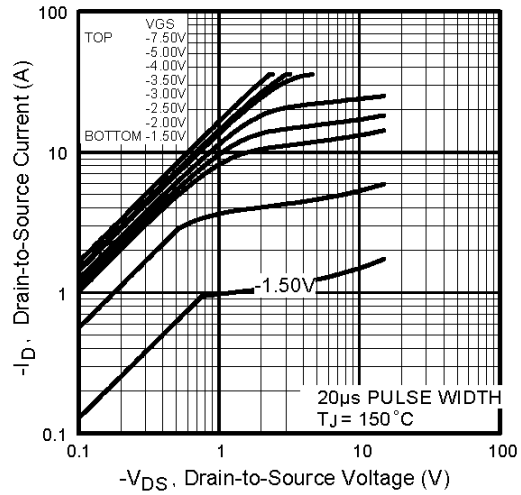


Fig 2. Typical Output Characteristics

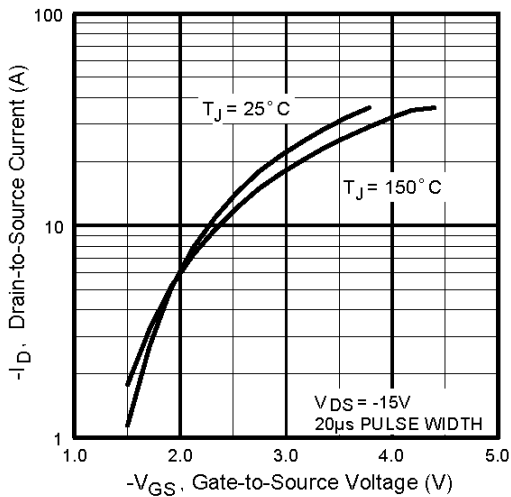


Fig 3. Typical Transfer Characteristics

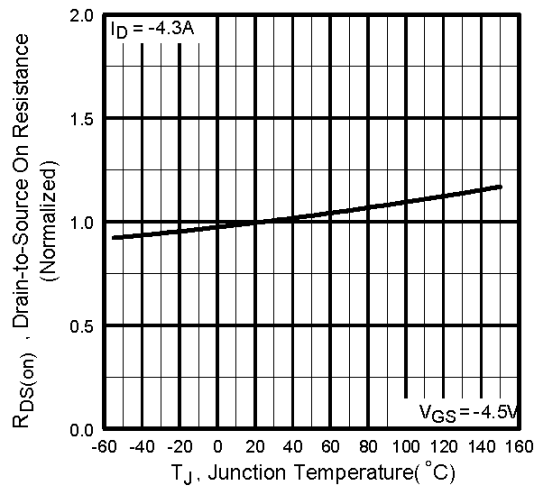


Fig 4. Normalized On-Resistance Vs. Temperature

Power MOSFET Characteristics

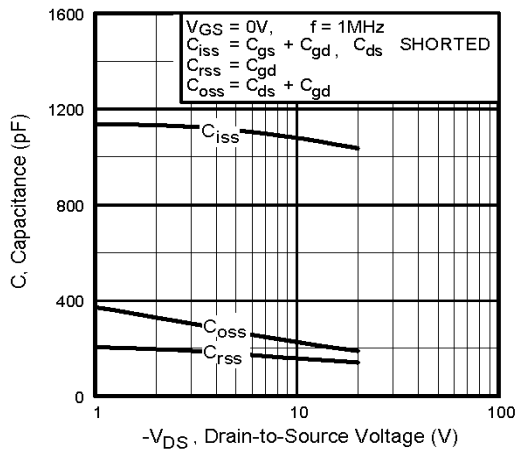


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

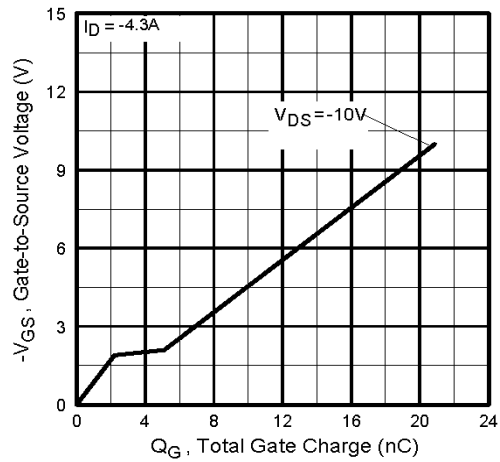


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

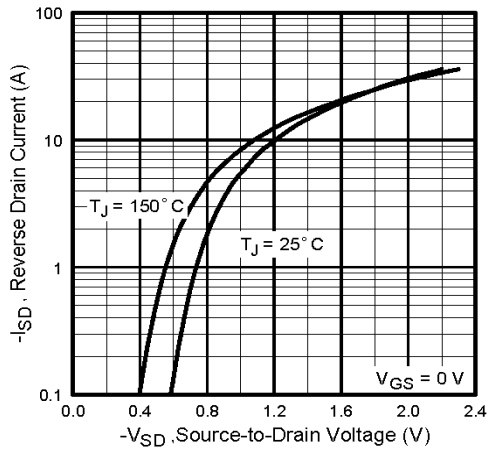


Fig 7. Typical Source-Drain Diode Forward Voltage

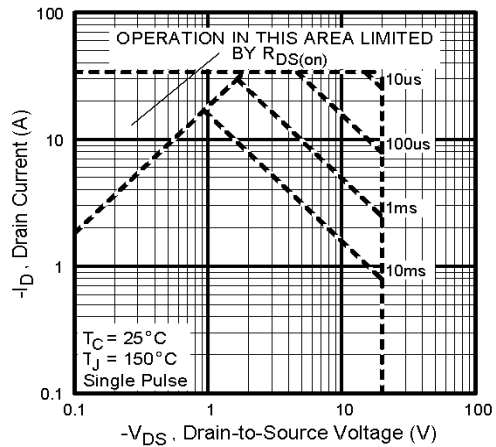


Fig 8. Maximum Safe Operating Area

Power MOSFET Characteristics

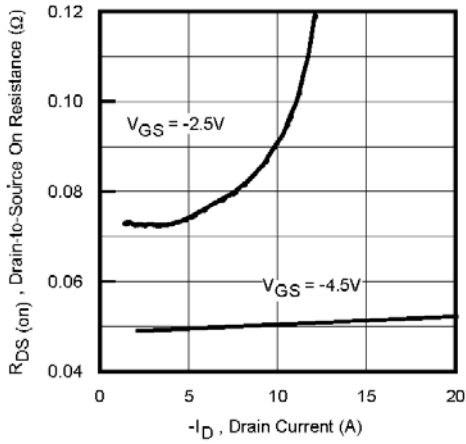


Fig 9. Typical On-Resistance Vs. Drain Current

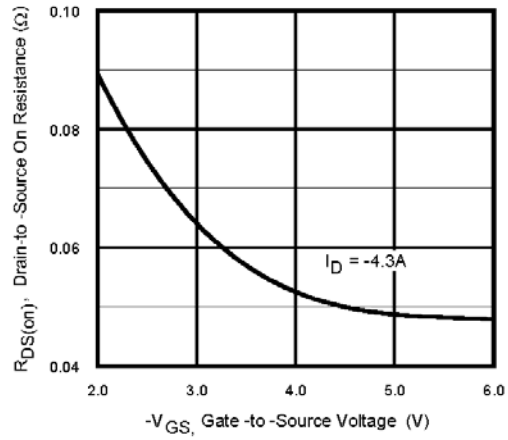


Fig 10. Typical On-Resistance Vs. Gate Voltage

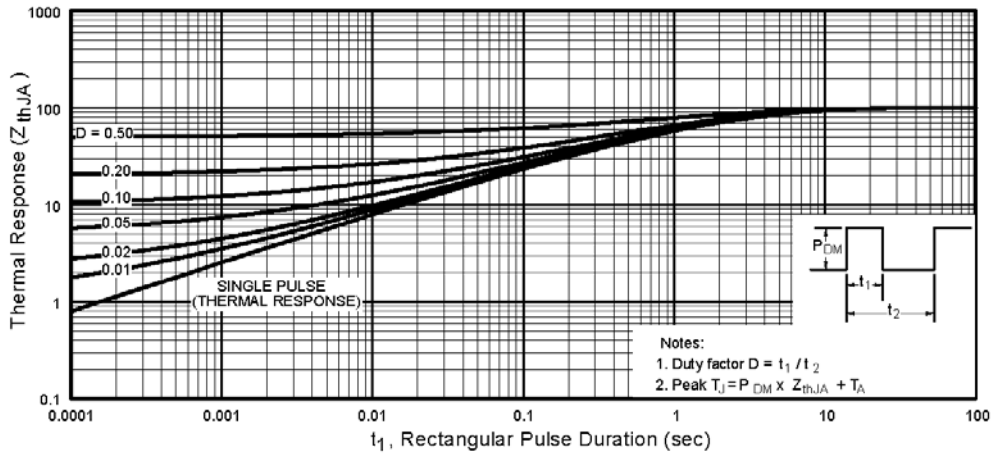


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

Schottky Diode Characteristics

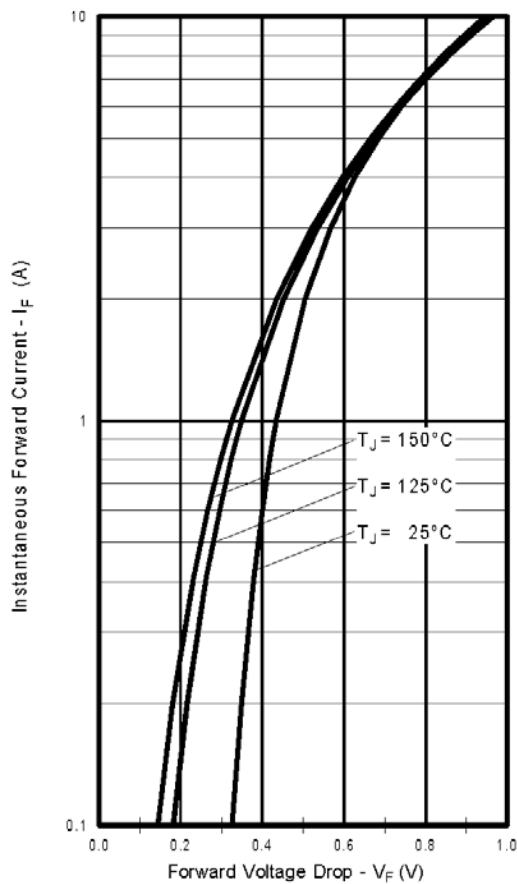


Fig. 12-Typical Forward Voltage Drop Characteristics

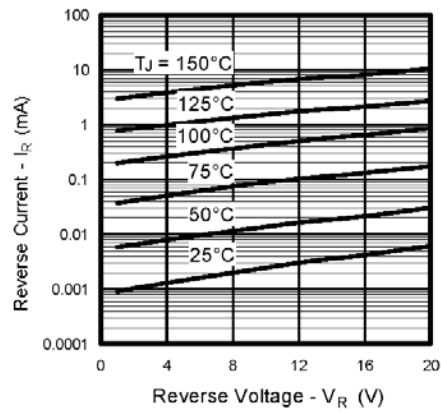


Fig. 13 - Typical Values of Reverse Current Vs. Reverse Voltage

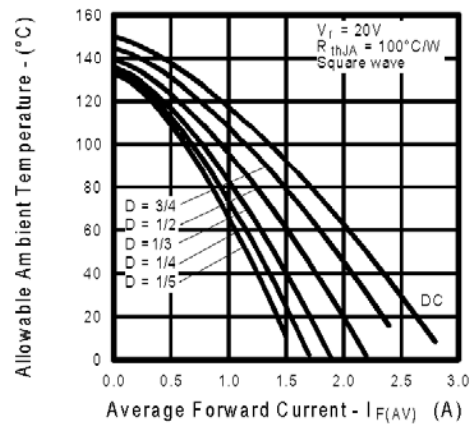
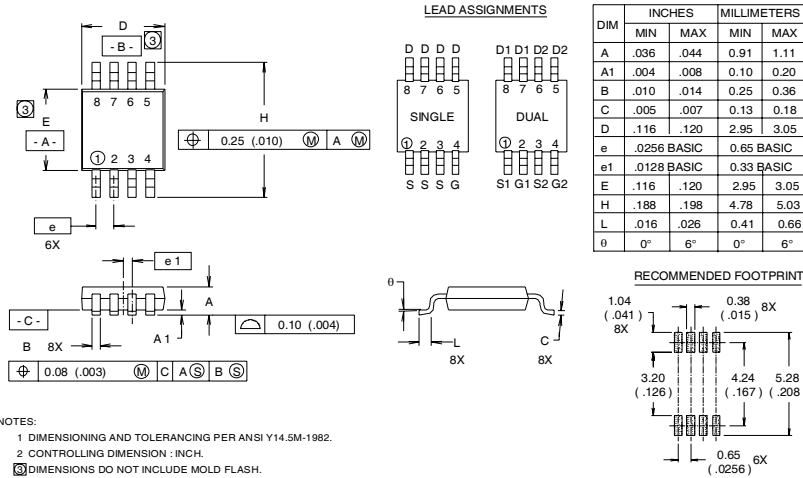


Fig.14 - Maximum Allowable Ambient Temp. Vs. Forward Current

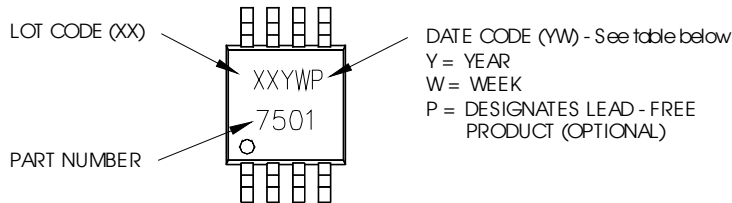
Micro8 Package Outline

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

