

International IR Rectifier

PD - 96226

IRF8734PbF

HEXFET® Power MOSFET

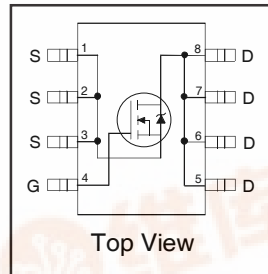
Applications

- Synchronous MOSFET for Notebook Processor Power
- Synchronous Rectifier MOSFET for Isolated DC-DC Converters in Networking Systems

V _{DSS}	R _{DS(on)} max	Qg (typ.)
30V	3.5mΩ @ V _{GS} = 10V	20nC

Benefits

- Very Low R_{DS(on)} at 4.5V V_{GS}
- Low Gate Charge
- Fully Characterized Avalanche Voltage and Current
- 100% Tested for R_G
- Lead-Free



Absolute Maximum Ratings

	Parameter	Max.	Units
V _{DS}	Drain-to-Source Voltage	30	V
V _{GS}	Gate-to-Source Voltage	± 20	
I _D @ T _A = 25°C	Continuous Drain Current, V _{GS} @ 10V	21	A
I _D @ T _A = 70°C	Continuous Drain Current, V _{GS} @ 10V	17	
I _{DM}	Pulsed Drain Current ①	168	
P _D @ T _A = 25°C	Power Dissipation ④	2.5	W
P _D @ T _A = 70°C	Power Dissipation ④	1.6	
	Linear Derating Factor	0.02	W/°C
T _J	Operating Junction and	-55 to + 150	°C
T _{STG}	Storage Temperature Range		

Thermal Resistance

	Parameter	Typ.	Max.	Units
R _{θJL}	Junction-to-Drain Lead ⑤	—	20	°C/W
R _{θJA}	Junction-to-Ambient ④	—	50	

Notes ① through ⑤ are on page 10

ORDERING INFORMATION:

See detailed ordering and shipping information on the last page of this data sheet.

www.irf.com

1
2/12/09

IRF8734PbF

International
 Rectifier

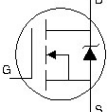
Static @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
BV_{DSS}	Drain-to-Source Breakdown Voltage	30	—	—	V	$V_{GS} = 0V, I_D = 250\mu A$
$\Delta BV_{DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	0.023	—	V/ $^\circ\text{C}$	Reference to $25^\circ\text{C}, I_D = 1\text{mA}$
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	2.9	3.5	m Ω	$V_{GS} = 10V, I_D = 21A$ ③
		—	4.2	5.1		$V_{GS} = 4.5V, I_D = 17A$ ③
$V_{GS(th)}$	Gate Threshold Voltage	1.35	1.80	2.35	V	$V_{DS} = V_{GS}, I_D = 50\mu A$
$\Delta V_{GS(th)}$	Gate Threshold Voltage Coefficient	—	-6.5	—	mV/ $^\circ\text{C}$	
I_{DSS}	Drain-to-Source Leakage Current	—	—	1.0	μA	$V_{DS} = 24V, V_{GS} = 0V$
		—	—	150		$V_{DS} = 24V, V_{GS} = 0V, T_J = 125^\circ\text{C}$
I_{GSS}	Gate-to-Source Forward Leakage	—	—	100	nA	$V_{GS} = 20V$
	Gate-to-Source Reverse Leakage	—	—	-100		$V_{GS} = -20V$
g_{fs}	Forward Transconductance	85	—	—	S	$V_{DS} = 15V, I_D = 17A$
Q_g	Total Gate Charge	—	20	30	nC	$V_{DS} = 15V$ $V_{GS} = 4.5V$ $I_D = 17A$ See Figs. 16a & 16b
Q_{gs1}	Pre-V _{th} Gate-to-Source Charge	—	5.2	—		
Q_{gs2}	Post-V _{th} Gate-to-Source Charge	—	2.3	—		
Q_{gd}	Gate-to-Drain Charge	—	6.9	—		
Q_{godr}	Gate Charge Overdrive	—	5.4	—		
Q_{sw}	Switch Charge ($Q_{gs2} + Q_{gd}$)	—	9.2	—		
Q_{oss}	Output Charge	—	15	—	nC	$V_{DS} = 16V, V_{GS} = 0V$
R_G	Gate Resistance	—	1.7	3.1	Ω	
$t_{d(on)}$	Turn-On Delay Time	—	13	—	ns	$V_{DD} = 15V, V_{GS} = 4.5V$ ③ $I_D = 17A$ $R_G = 1.8\Omega$ See Figs. 15a & 15b
t_r	Rise Time	—	16	—		
$t_{d(off)}$	Turn-Off Delay Time	—	15	—		
t_f	Fall Time	—	8.0	—		
C_{iss}	Input Capacitance	—	3175	—	pF	$V_{GS} = 0V$ $V_{DS} = 15V$ $f = 1.0\text{MHz}$
C_{oss}	Output Capacitance	—	627	—		
C_{rss}	Reverse Transfer Capacitance	—	241	—		

Avalanche Characteristics

	Parameter	Typ.	Max.	Units
E_{AS}	Single Pulse Avalanche Energy ②	—	216	mJ
I_{AR}	Avalanche Current ①	—	17	A

Diode Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	3.1	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	168		
V_{SD}	Diode Forward Voltage	—	—	1.0	V	$T_J = 25^\circ\text{C}, I_S = 17A, V_{GS} = 0V$ ③
t_{rr}	Reverse Recovery Time	—	20	30	ns	$T_J = 25^\circ\text{C}, I_F = 17A, V_{DD} = 15V$
Q_{rr}	Reverse Recovery Charge	—	25	38	nC	$di/dt = 345A/\mu s$ ③

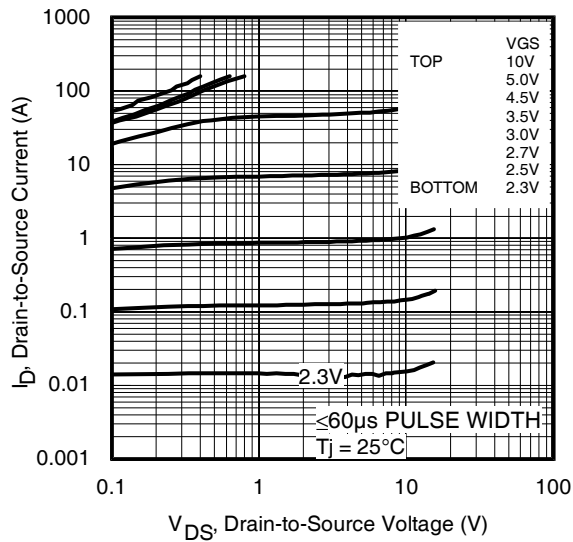


Fig 1. Typical Output Characteristics

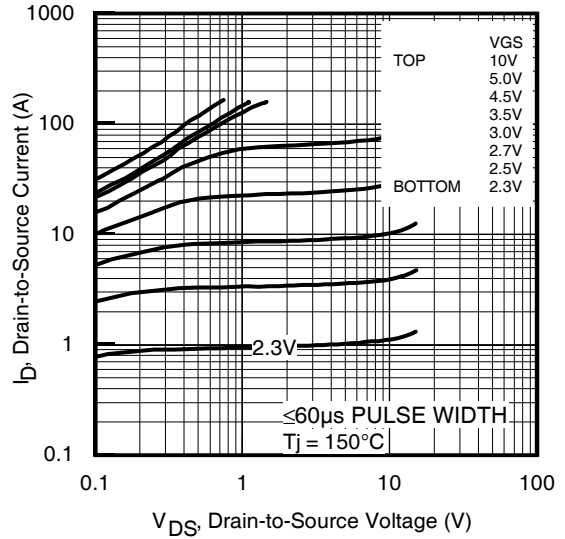


Fig 2. Typical Output Characteristics

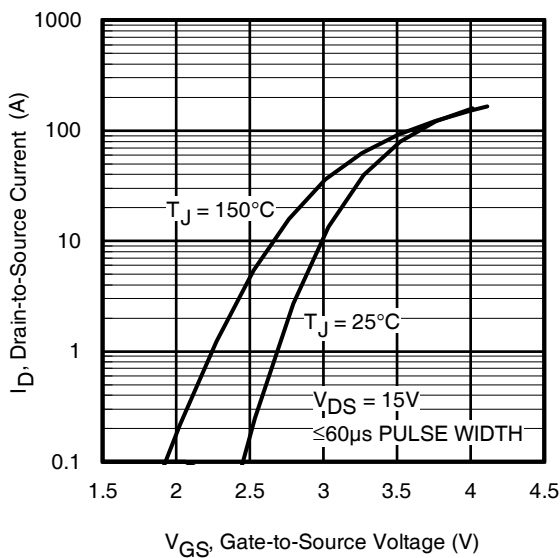


Fig 3. Typical Transfer Characteristics

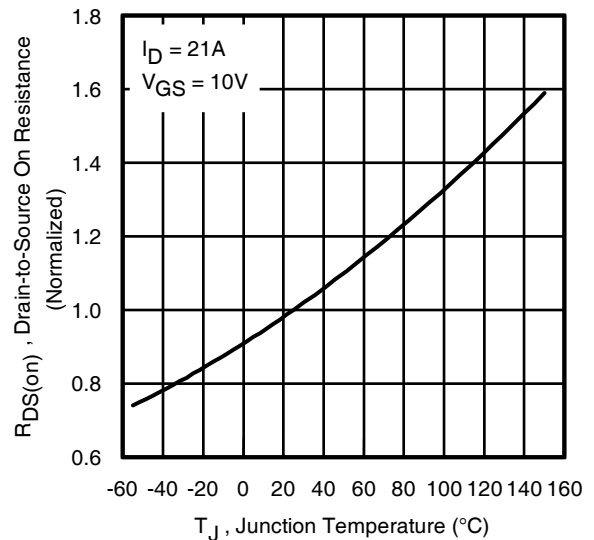


Fig 4. Normalized On-Resistance Vs. Temperature

IRF8734PbF

International
IR Rectifier

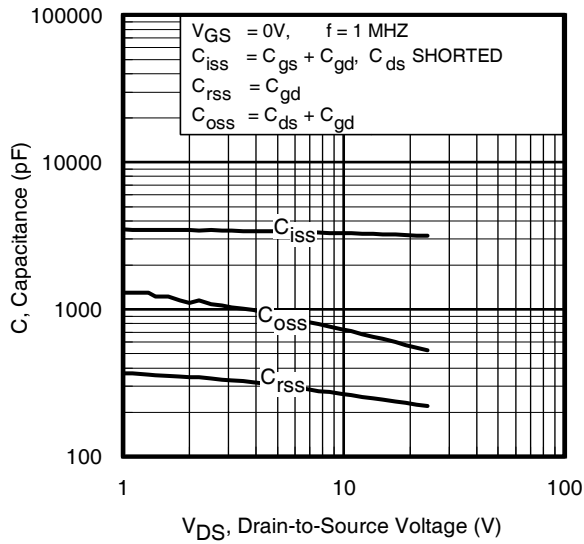


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

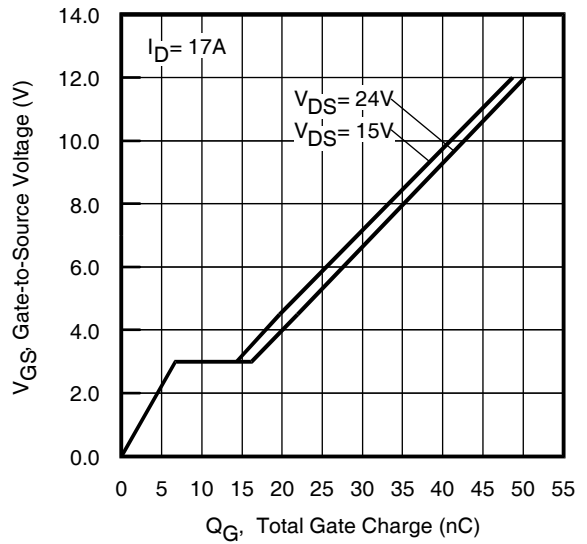


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

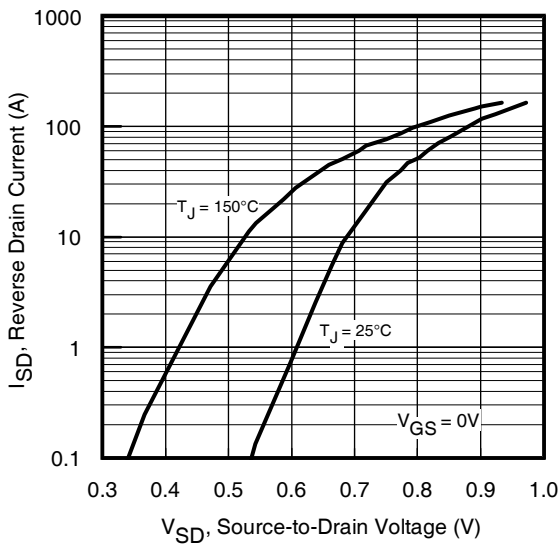


Fig 7. Typical Source-Drain Diode Forward Voltage

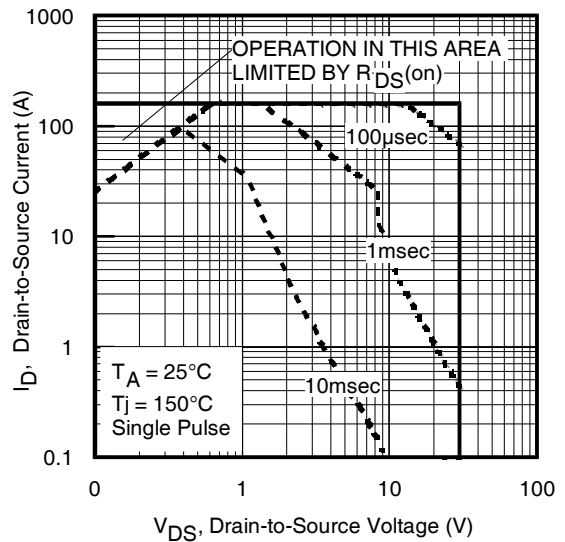


Fig 8. Maximum Safe Operating Area

International
 Rectifier

IRF8734PbF

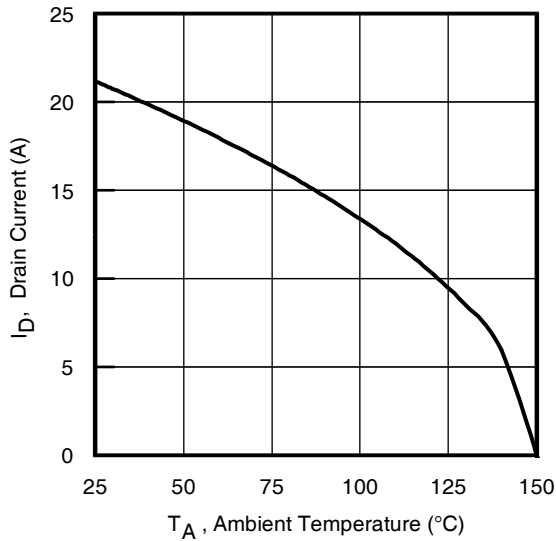


Fig 9. Maximum Drain Current Vs. Ambient Temperature

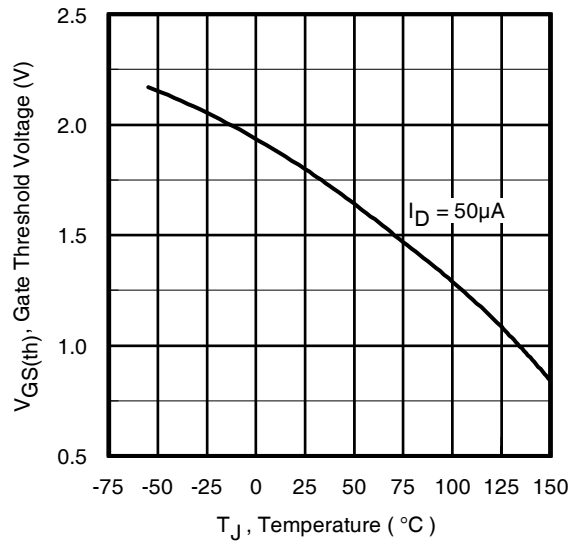


Fig 10. Threshold Voltage Vs. Temperature

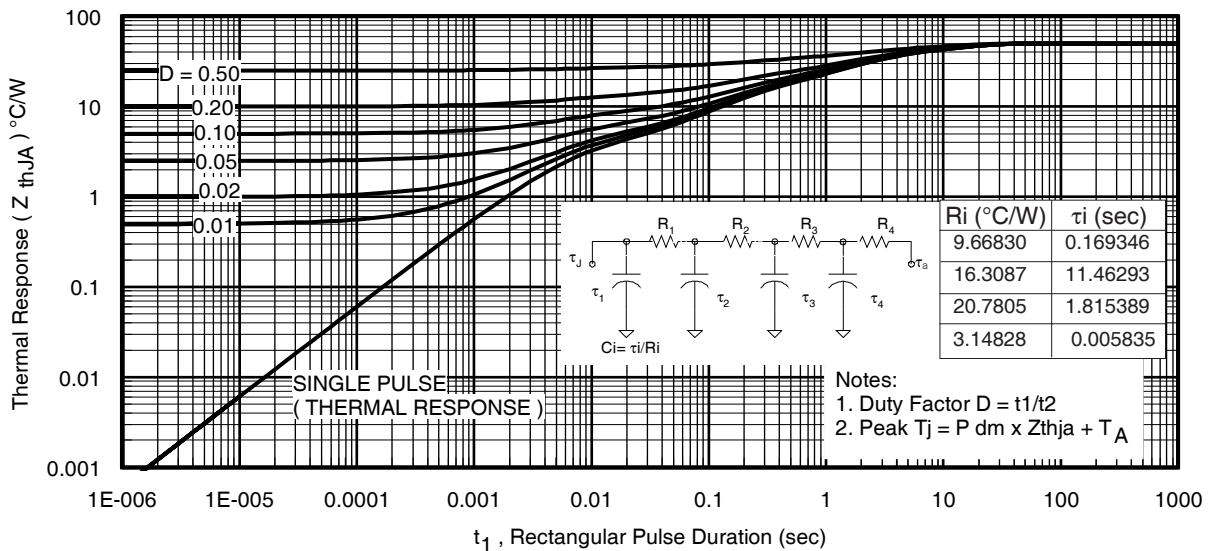


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

IRF8734PbF

International
IR Rectifier

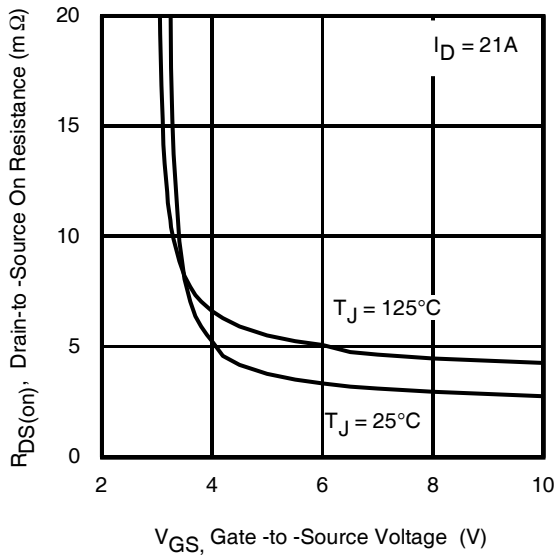


Fig 12. On-Resistance Vs. Gate Voltage

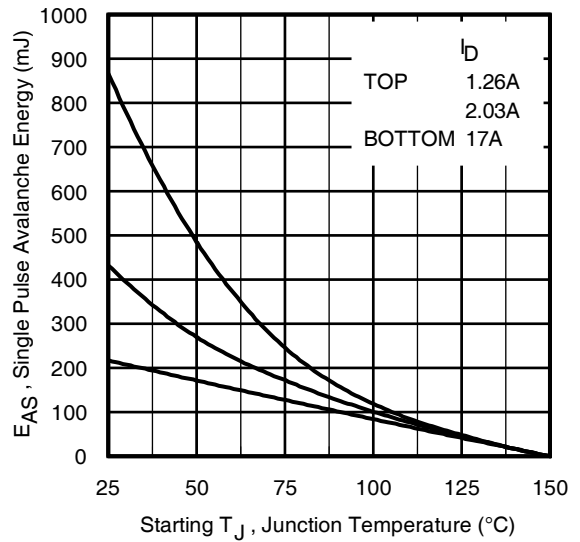


Fig 13c. Maximum Avalanche Energy Vs. Drain Current

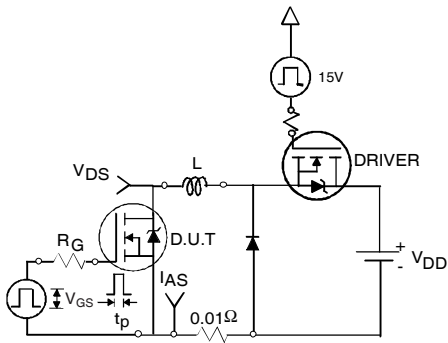


Fig 14a. Unclamped Inductive Test Circuit

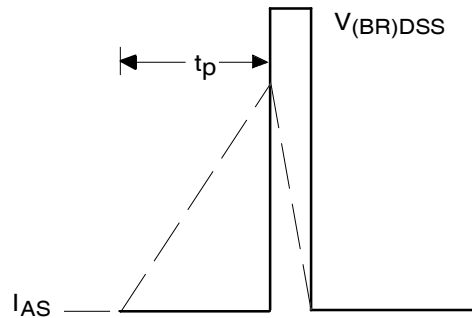


Fig 14b. Unclamped Inductive Waveforms

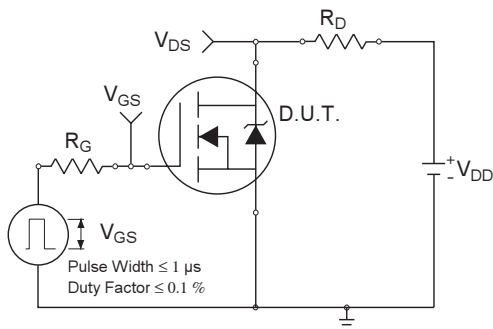


Fig 15a. Switching Time Test Circuit

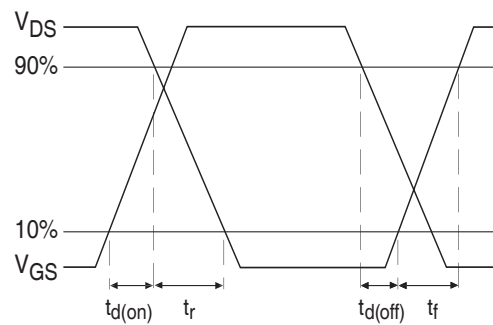


Fig 15b. Switching Time Waveforms

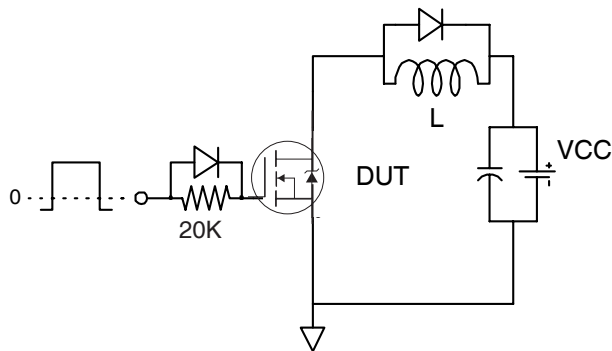


Fig 16a. Gate Charge Test Circuit

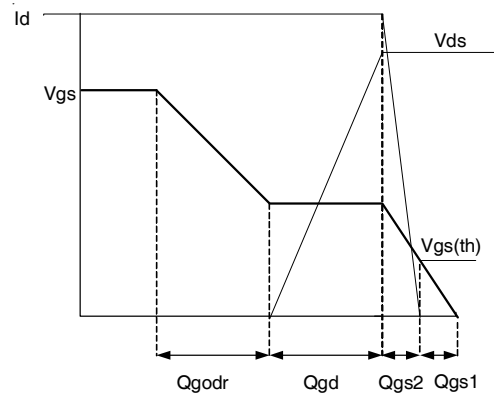


Fig 16b. Gate Charge Waveform

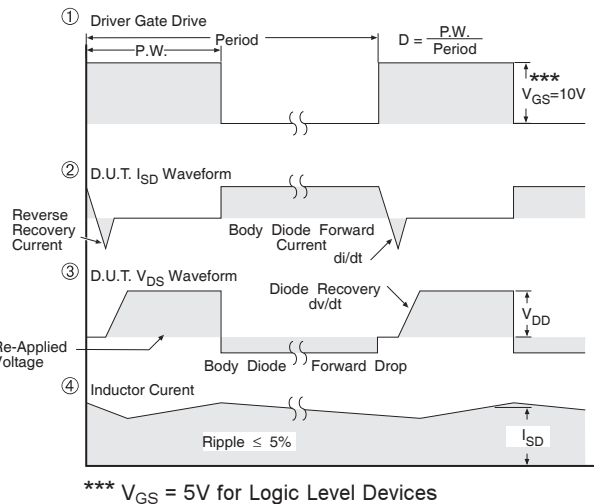
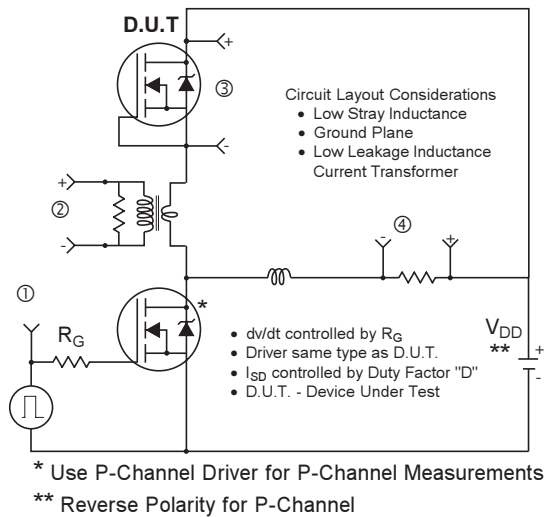


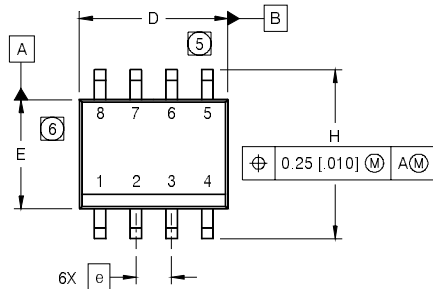
Fig 17. Diode Reverse Recovery Test Circuit for HEXFET® Power MOSFETs

IRF8734PbF

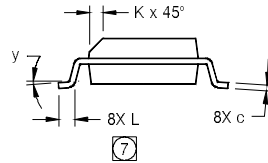
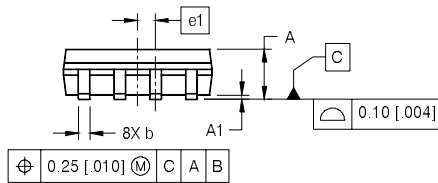


SO-8 Package Outline (Mosfet & Fetky)

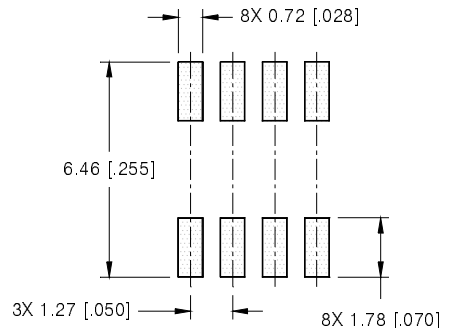
Dimensions are shown in millimeters (inches)



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	
e 1	.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°



FOOTPRINT

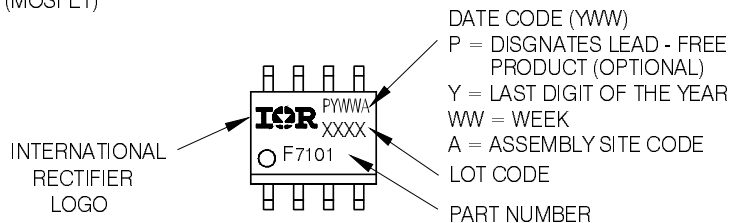


NOTES:

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 [0.006].
- ⑥ DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.25 [0.010].
- ⑦ DIMENSION IS THE LENGTH OF LEAD FOR SOLDERING TO A SUBSTRATE.

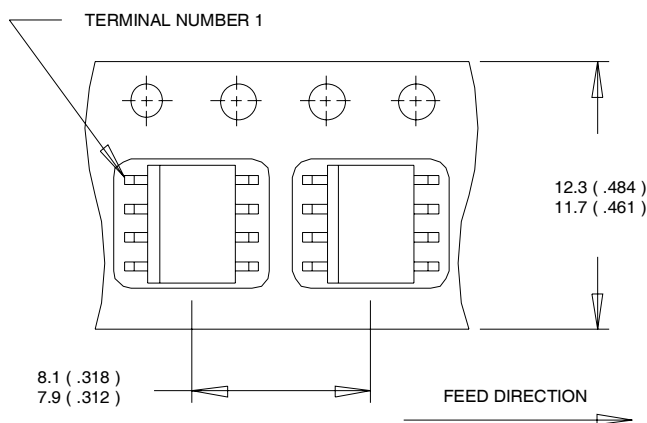
SO-8 Part Marking Information

EXAMPLE: THIS IS AN IRF7101 (MOSFET)

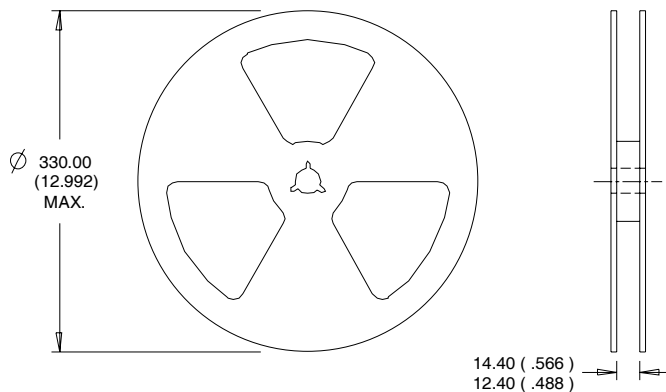


Note: For the most current drawing please refer to IR website at <http://www.irf.com/package/>

SO-8 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.

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

IRF8734PbF

International
IR Rectifier

Orderable part number	Package Type	Standard Pack		Note
		Form	Quantity	
IRF8734PbF	SO-8	Tube/Bulk	95	
IRF8734TRPbF	SO-8	Tape and Reel	4000	

Qualification Information[†]

Qualification level	Consumer ^{††}	
	(per JEDEC JESD47F ^{†††} guidelines)	
Moisture Sensitivity Level	SO-8	MSL1 (per JEDEC J-STD-020D ^{†††})
RoHS Compliant	Yes	

† Qualification standards can be found at International Rectifier's web site

<http://www.irf.com/product-info/reliability>

†† Higher qualification ratings may be available should the user have such requirements. Please contact your International Rectifier sales representative for further information:

<http://www.irf.com/whoto-call/salesrep/>

††† Applicable version of JEDEC standard at the time of product release.

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

Notes:

- ① Repetitive rating; pulse width limited by max. junction temperature.
- ② Starting $T_J = 25^\circ\text{C}$, $L = 1.69\text{mH}$
 $R_G = 25\Omega$, $I_{AS} = 16\text{A}$.
- ③ Pulse width $\leq 400\mu\text{s}$; duty cycle $\leq 2\%$.
- ④ When mounted on 1 inch square copper board
- ⑤ R_{θ} is measured at T_J of approximately 90°C .

Data and specifications subject to change without notice

International
IR Rectifier

IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
TAC Fax: (310) 252-7903

Visit us at www.irf.com for sales contact information.02/2009

This datasheet has been downloaded from:

www.EEworld.com.cn

Free Download

Daily Updated Database

100% Free Datasheet Search Site

100% Free IC Replacement Search Site

Convenient Electronic Dictionary

Fast Search System

www.EEworld.com.cn