

OBSOLETE

PD - 93943

# International IR Rectifier

# IRF6150

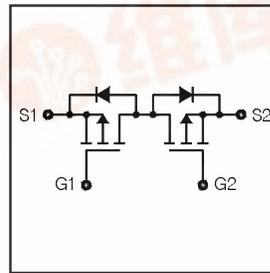
HEXFET® Power MOSFET

- Ultra Low  $R_{SS(on)}$  per Footprint Area
- Low Thermal Resistance
- Bi-Directional P-Channel Switch
- Super Low Profile (<.8mm)
- Available Tested on Tape & Reel

$V_{SS}$	$R_{SS(on)}$ max	$I_S$
-20V	0.036 $\Omega$ @ $V_{GS1,2} = -4.5V$	-7.9A
	0.052 $\Omega$ @ $V_{GS1,2} = -2.5V$	-6.3A

## Description

True chip-scale packaging is available from International Rectifier. Through the use of advanced processing techniques and a unique packaging concept, extremely low on-resistance and the highest power densities in the industry have been made available for battery and load management applications. These benefits, combined with the ruggedized device design that International Rectifier is well known for, provides the designer with an extremely efficient and reliable device.



The FlipFET™ package, is one-third the footprint of a comparable SO-8 package and has a profile of less than .8mm. Combined with the low thermal resistance of the die level device, this makes the FlipFET™ the best device for applications where printed circuit board space is at a premium and in extremely thin application environments such as battery packs, cell phones and PCMCIA cards.

## Absolute Maximum Ratings

	Parameter	Max.	Units
$V_{SS}$	Source- Source Voltage	-20	V
$I_S$ @ $T_C = 25^\circ C$	Continuous Current, $V_{GS1} = V_{GS2} = -4.5V$	$\pm 7.9$	A
$I_S$ @ $T_C = 70^\circ C$	Continuous Current, $V_{GS1} = V_{GS2} = -4.5V$	$\pm 6.3$	
$I_{SM}$	Pulsed Current $\text{\textcircled{D}}$	$\pm 40$	W
$P_D$ @ $T_C = 25^\circ C$	Power Dissipation	3.0	
$P_D$ @ $T_C = 70^\circ C$	Power Dissipation	1.9	
	Linear Derating Factor	24	
$V_{GS}$	Gate-to-Source Voltage	$\pm 12$	V
$T_J, T_{STG}$	Junction and Storage Temperature Range	-55 to + 150	$^\circ C$

## Thermal Resistance

Symbol	Parameter	Typ.	Max.	Units
$R_{\theta JA}$	Junction-to-Ambient $\text{\textcircled{C}}$		42	$^\circ C/W$
$R_{\theta J-PCB}$	Junction-to-PCB mounted	17	—	



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

	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)SSS}$	Source-to-Source Breakdown Voltage	-20	—	—	V	$V_{GS} = 0V, I_D = -250\mu A$
$\Delta V_{(BR)SSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	-TBD	—	V/°C	Reference to $25^\circ\text{C}$ , $I_D = -1\text{mA}$
$R_{SS(on)}$	Static Source-to-Source On-Resistance	—	—	0.036	$\Omega$	$V_{GS1} = V_{GS2} = -4.5V, I_S = -7.9A$ ②
		—	—	0.052		$V_{GS1} = V_{GS2} = -2.5V, I_S = -6.3A$ ②
$V_{GS(th)}$	Gate Threshold Voltage	-0.45	—	-1.2	V	$V_{SS} = V_{GS}, I_S = -250\mu A$
$g_{fs}$	Forward Transconductance	TBD	—	—	S	$V_{SS} = -10V, I_S = -7.9A$
$I_{SSS}$	Zero Gate Voltage Source Current	—	—	-1.0	$\mu A$	$V_{SS} = -20V, V_{GS} = 0V$
		—	—	-25		$V_{SS} = -16V, V_{GS} = 0V, T_J = 125^\circ\text{C}$
$I_{GSS}$	Gate-to-Source Forward Leakage	—	—	100	nA	$V_{GS} = 12V$
	Gate-to-Source Reverse Leakage	—	—	-100		$V_{GS} = -12V$
$Q_g$	Total Gate Charge	—	TBD	TBD	nC	$I_S = -TBDA$
$Q_{gs}$	Gate-to-Source Charge	—	TBD	TBD		$V_{SS} = -16V$
$Q_{G1-S2}$	Miller Charge	—	TBD	TBD		$V_{GS} = -5.0V$ ③
$t_{d(on)}$	Turn-On Delay Time	—	TBD	—	ns	$V_{SS} = -10V$
$t_r$	Rise Time	—	TBD	—		$I_S = -1.0A$
$t_{d(off)}$	Turn-Off Delay Time	—	TBD	—		$R_G = 6.0\Omega$
$t_f$	Fall Time	—	TBD	—		$V_{GS} = -5.0V$ ③
$C_{iss}$	Input Capacitance	—	TBD	—	pF	$V_{GS} = 0V$
$C_{oss}$	Output Capacitance	—	TBD	—		$V_{SS} = -15V$
$C_{rss}$	Reverse Transfer Capacitance	—	TBD	—		$f = 1.0\text{MHz}$

**Notes:**

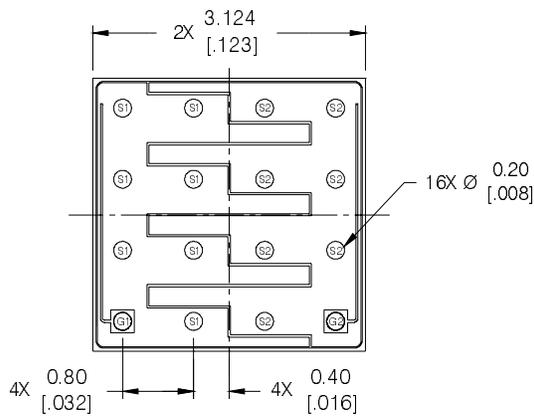
- ① Repetitive rating; pulse width limited by max. junction temperature.
- ② Pulse width  $\leq 400\mu s$ ; duty cycle  $\leq 2\%$ . Gate voltage applied to both gates.
- ③ When mounted on 1 inch square 2oz copper on FR-4

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## Bi-Directional MOSFET Outline Dimension



### NOTES:

1. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
2. CONTROLLING DIMENSION: [INCH].
3. LETTER DESIGNATION:  
S = SOURCE    SK = SOURCE KELVIN    E = EMITTER  
G = GATE      IS = CURRENT SENSE
4. DIMENSIONAL TOLERANCES:  
BONDING PADS: < 0.635 TOLERANCE = +/- 0.013  
WIDTH < [.0250] TOLERANCE = +/- [.0005]  
& > 0.635 TOLERANCE = +/- 0.025  
LENGTH > [.0250] TOLERANCE = +/- [.0010]  
OVERALL DIE: < 1.270 TOLERANCE = +/- 0.102  
WIDTH < [.050] TOLERANCE = +/- [.004]  
& > 1.270 TOLERANCE = +/- 0.203  
LENGTH > [.050] TOLERANCE = +/- [.008]
5. UNLESS OTHERWISE NOTED ALL DIE ARE GEN III

Data and specifications subject to change without notice.

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**IR** Rectifier

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