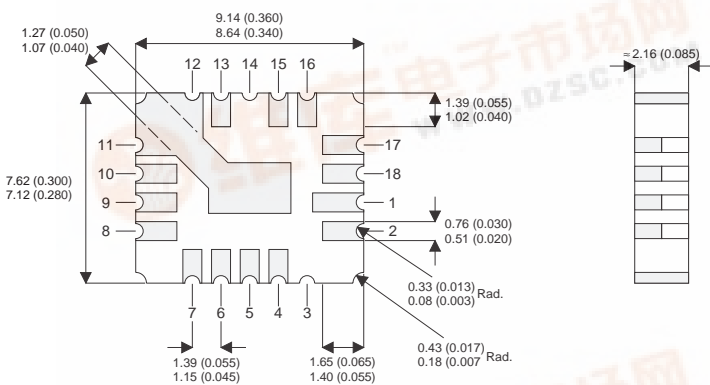


IRFE9130

MECHANICAL DATA

Dimensions in mm (inches)



LCC4

P-CHANNEL POWER MOSFET

V_{DSS} -100V
 $I_{D(cont)}$ -6.1A
 $R_{DS(on)}$ 0.345 Ω

FEATURES

- SURFACE MOUNT
- SMALL FOOTPRINT
- HERMETICALLY SEALED
- DYNAMIC dv/dt RATING
- AVALANCHE ENERGY RATING
- SIMPLE DRIVE REQUIREMENTS
- LIGHT WEIGHT

MOSFET	TRANSISTOR	PINS
GATE	BASE	4,5
DRAIN	COLLECTOR	1,2,15,16,17,18
SOURCE	EMITTER	6,7,8,9,10,11,12,13

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C unless otherwise stated)

V _{GS}	Gate – Source Voltage	±20V
I _D	Continuous Drain Current @ T _{case} = 25°C	- 6.1A
I _D	Continuous Drain Current @ T _{case} = 100°C	- 3.8A
I _{DM}	Pulsed Drain Current	- 24A
P _D	Power Dissipation @ T _{case} = 25°C	22W
	Linear Derating Factor	0.17W/°C
E _{AS}	Single Pulse Avalanche Energy ²	92mJ
dv/dt	Peak Diode Recovery ³	- 5.5V/ns
T _J , T _{stg}	Operating and Storage Temperature Range	- 55 to +150°C
	Surface Temperature (for 5 sec).	300°C



ELECTRICAL CHARACTERISTICS ($T_{\text{case}} = 25^{\circ}\text{C}$ unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit	
STATIC ELECTRICAL RATINGS						
BV_{DSS}	Drain – Source Breakdown Voltage	$V_{\text{GS}} = 0$	$I_{\text{D}} = -1\text{mA}$	-100	V	
$\frac{\Delta BV_{\text{DSS}}}{\Delta T_{\text{J}}}$	Temperature Coefficient of Breakdown Voltage	Reference to 25°C $I_{\text{D}} = -1\text{mA}$		-0.10	$\text{V}/^{\circ}\text{C}$	
$R_{\text{DS(on)}}$	Static Drain – Source On-State Resistance ¹	$V_{\text{GS}} = -10\text{V}$	$I_{\text{D}} = -3.8\text{A}$	0.30	Ω	
		$V_{\text{GS}} = -10\text{V}$	$I_{\text{D}} = -6.1\text{A}$	0.345		
$V_{\text{GS(th)}}$	Gate Threshold Voltage	$V_{\text{DS}} = V_{\text{GS}}$	$I_{\text{D}} = -250\text{mA}$	-2	-4	V
g_{fs}	Forward Transconductance ¹	$V_{\text{DS}} \geq -15\text{V}$	$I_{\text{DS}} = -3.8\text{A}$	2.5		S (Ω)
I_{DSS}	Zero Gate Voltage Drain Current	$V_{\text{GS}} = 0$	$V_{\text{DS}} = 0.8BV_{\text{DSS}}$ $T_{\text{J}} = 125^{\circ}\text{C}$	-25	μA	
				-250		
I_{GSS}	Forward Gate – Source Leakage	$V_{\text{GS}} = -20\text{V}$		-100	nA	
I_{GSS}	Reverse Gate – Source Leakage	$V_{\text{GS}} = 20\text{V}$		100	nA	
DYNAMIC CHARACTERISTICS						
C_{iss}	Input Capacitance	$V_{\text{GS}} = 0$		800	pF	
C_{oss}	Output Capacitance	$V_{\text{DS}} = -25\text{V}$		350		
C_{riss}	Reverse Transfer Capacitance	$f = 1\text{MHz}$		125		
Q_{g}	Total Gate Charge	$V_{\text{GS}} = -10\text{V}$		14.7	38.4	nC
Q_{gs}	Gate – Source Charge	$I_{\text{D}} = -6.1\text{A}$		1.0	7.1	
Q_{gd}	Gate – Drain (“Miller”) Charge	$V_{\text{DS}} = 0.5BV_{\text{DSS}}$		2.0	21	
$t_{\text{d(on)}}$	Turn-On Delay Time	$V_{\text{DD}} = -50\text{V}$ $I_{\text{D}} = -6.1\text{A}$ $R_{\text{G}} = 7.5\Omega$			60	ns
t_{r}	Rise Time				140	
$t_{\text{d(off)}}$	Turn-Off Delay Time				140	
t_{f}	Fall Time				140	
SOURCE – DRAIN DIODE CHARACTERISTICS						
I_{S}	Continuous Source Current			-1.6	A	
I_{SM}	Pulse Source Current ²			-24		
V_{SD}	Diode Forward Voltage ¹	$I_{\text{S}} = -1.6\text{A}$	$T_{\text{J}} = 25^{\circ}\text{C}$ $V_{\text{GS}} = 0$	-4.7	V	
t_{rr}	Reverse Recovery Time	$I_{\text{F}} = -6.1\text{A}$	$T_{\text{J}} = 25^{\circ}\text{C}$	250	ns	
Q_{rr}	Reverse Recovery Charge ¹	$d_{\text{i}} / d_{\text{t}} \leq -100\text{A}/\mu\text{s}$ $V_{\text{DD}} \leq -50\text{V}$		3.0	μC	
t_{on}	Forward Turn-On Time	Negligible				
PACKAGE CHARACTERISTICS						
L_{D}	Internal Drain Inductance (measured from 6mm down drain lead to centre of die)		1.8		nH	
L_{S}	Internal Source Inductance (from 6mm down source lead to source bond pad)		4.3			
THERMAL CHARACTERISTICS						
$R_{\theta\text{JC}}$	Thermal Resistance Junction – Case			5.8	$^{\circ}\text{C}/\text{W}$	
$R_{\theta\text{JPC}}$	Thermal Resistance Junction – PC Board			19		

Notes

- 1) Pulse Test: Pulse Width $\leq 300\text{ms}$, $\delta \leq 2\%$
- 2) Repetitive Rating – Pulse width limited by maximum junction temperature.