SEMELAB

IRFE024

MECHANICAL DATA
Dimensions in mm (inches)
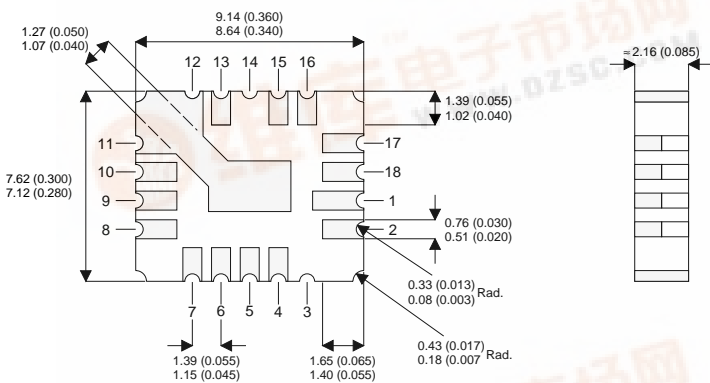
LCC4

MOSFET	PADS
GATE	4,5
DRAIN	1,2,15,16,17,18
SOURCE	6,7,8,9,10,11,12,13

N–CHANNEL POWER MOSFET

V_{DSS}	**60V**
$I_{D(cont)}$	**6.7A**
$R_{DS(on)}$	**0.15Ω**

FEATURES

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

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

V_{GS}	Gate – Source Voltage		±20V
I_D	Continuous Drain Current	(V_{GS} = 10V , T_{case} = 25°C)	6.7A
I_D	Continuous Drain Current	(V_{GS} = 10V , T_{case} = 100°C)	4.2A
I_{DM}	Pulsed Drain Current [1]		27A
P_D	Power Dissipation @ T_{case} = 25°C		14W
	Linear Derating Factor		0.11W/°C
E_{AS}	Single Pulse Avalanche Energy [2]		110mJ
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

Notes

1) Pulse Test Pulse Width ≤ 300µs, δ ≤ 2%
2) @ V_{DD} = 50V , L ≥ 570µH , R_G = 25Ω , Peak I_L = 14A , Starting T_J = 25°C
3) @ I_{SD} ≤ 14A , di/dt ≤ 140A/µs , V_{DD} ≤ BV_{DSS} , T_J ≤ 150°C , Suggested R_G = 7.5Ω

ELECTRICAL CHARACTERISTICS (T$_{case}$ = 25°C unless otherwise stated)

Parameter		Test Conditions		Min.	Typ.	Max.	Unit
STATIC ELECTRICAL RATINGS							
BV$_{DSS}$	Drain – Source Breakdown Voltage	V$_{GS}$ = 0	I$_D$ = 1mA	60			V
$\dfrac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	Reference to 25°C I$_D$ = 1mA			0.068		V/°C
R$_{DS(on)}$	Static Drain – Source On–State Resistance [1]	V$_{GS}$ = 10V	I$_D$ = 4.2A			0.15	Ω
		V$_{GS}$ = 10V	I$_D$ = 6.7A			0.17	
V$_{GS(th)}$	Gate Threshold Voltage	V$_{DS}$ = V$_{GS}$	I$_D$ = 250µA	2		4	V
g$_{fs}$	Forward Transconductance [1]	V$_{DS}$ ≥ 15V	I$_{DS}$ = 4.2A	4.3			S (℧)
I$_{DSS}$	Zero Gate Voltage Drain Current	V$_{GS}$ = 0	V$_{DS}$ = 0.8BV$_{DSS}$			25	µA
			T$_J$ = 125°C			250	
I$_{GSS}$	Forward Gate – Source Leakage	V$_{GS}$ = 20V				100	nA
I$_{GSS}$	Reverse Gate – Source Leakage	V$_{GS}$ = –20V				–100	
DYNAMIC CHARACTERISTICS							
C$_{iss}$	Input Capacitance	V$_{GS}$ = 0			640		pF
C$_{oss}$	Output Capacitance	V$_{DS}$ = 25V			340		
C$_{rss}$	Reverse Transfer Capacitance	f = 1MHz			69		
Q$_g$	Total Gate Charge	V$_{GS}$ = 10V		9.0		26	nC
Q$_{gs}$	Gate – Source Charge	I$_D$ = 6.7A		2.0		5.0	
Q$_{gd}$	Gate – Drain ("Miller") Charge	V$_{DS}$ = 0.5BV$_{DSS}$		6.0		13	
t$_{d(on)}$	Turn–On Delay Time	V$_{DD}$ = 30V I$_D$ = 6.7A R$_G$ = 7.5Ω				14	ns
t$_r$	Rise Time					70	
t$_{d(off)}$	Turn–Off Delay Time					37	
t$_f$	Fall Time					45	
SOURCE – DRAIN DIODE CHARACTERISTICS							
I$_S$	Continuous Source Current					6.7	A
I$_{SM}$	Pulse Source Current [2]					27	
V$_{SD}$	Diode Forward Voltage [1]	I$_S$ = 6.7A T$_J$ = 25°C V$_{GS}$ = 0				2.3	V
t$_{rr}$	Reverse Recovery Time	I$_F$ = 6.7A T$_J$ = 25°C				200	ns
Q$_{rr}$	Reverse Recovery Charge [1]	d$_i$ / d$_t$ ≤ 100A/µs V$_{DD}$ ≤ 50V				1.9	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$_{\theta JC}$	Thermal Resistance Junction – Case					9.1	°C/W
R$_{\theta JPC}$	Thermal Resistance Junction – PC Board					26	

Notes
1) Pulse Test: Pulse Width ≤ 300ms, δ ≤ 2%
2) Repetitive Rating – Pulse width limited by maximum junction temperature.