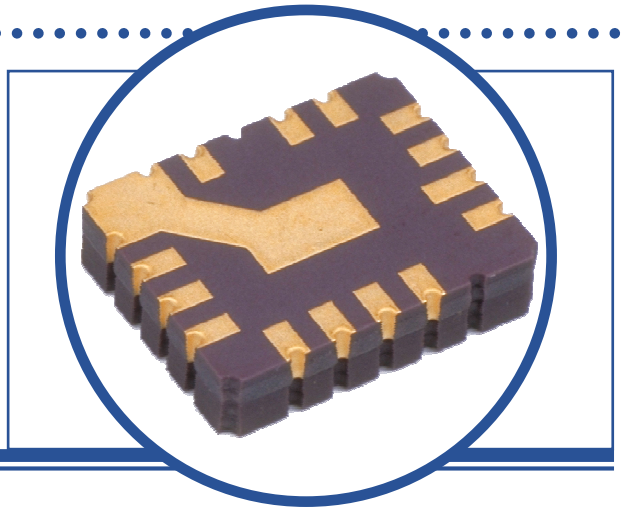
N-CHANNEL POWER MOSFET

TT electronics
Semelab Limited

IRFE230



- Hermetically Sealed, Light Weight, Small Footprint Surface Mount Package
- Dynamic dv/dt Rating
- Avalanche Energy Rating
- Simple Drive Requirements
- Screening Options Available

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

V_{DS}	Drain – Source Voltage	200V
V_{GS}	Gate – Source Voltage	±20V
I_D	Continuous Drain Current @ T_{case} = 25°C	4.8A
I_D	Continuous Drain Current @ T_{case} = 100°C	3.1A
I_{DM}	Pulsed Drain Current[1]	19A
P_D	Total Power Dissipation @ T_{case} = 25°C	22W
	Linear De-rating Factor @ T_{case} ≥ 25°C	0.17W/°C
E_{AS}	Single Pulse Avalanche Energy[2]	54mJ
dv/dt	Peak Diode Recovery dv/dt [3]	4.5V/ns
T_J, T_{stg}	Operating and Storage Temperature Range	-55°C to +150°C
	Package Mounting Surface Temperature	300°C (for 5 sec.)

THERMAL CHARACTERISTICS

Symbol	Parameters	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction To Case	5.8	°C/W
$R_{\theta JPCB}$	Thermal Resistance, Junction To PCB	19	°C/W

Notes:

1) Repetitive Rating; Pulse width limited by maximum junction temperature
2) V_{DD} = 50V, starting T_J = 25°C, Peak I_L = 4.8A
3) I_{SD} ≤ 4.8A, di/dt ≤ 99A/µs, V_{DD} ≤ 200V, T_J ≤ 150°C, Suggested R_G =7.5Ω
4) Pulse width ≤ 300 µs; Duty Cycle ≤ 2%

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ELECTRICAL CHARACTERISTICS (T_{case} = 25°C unless otherwise stated)

Symbol	Parameters	Test Conditions		Min	Typ	Max	Units
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0	I_D = 1.0mA	200			V
$\frac{\Delta B_{VDSS}}{\Delta T_j}$	Temperature Coefficent of Breakdown Voltage	Reference to 25°C	I_D = 1.0mA		0.25		V/°C
$R_{DS(on)}$ [4]	Static Drain-Source On-State Resistance	V_{GS} = 10V	I_D = 3.1A			0.40	Ω
		V_{GS} = 10V	I_D = 4.8A			0.46	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}	I_D = 250µA	2		4	V
g_{fs} [4]	Forward Transconductance	V_{DS} ≥ 15V	I_{DS} = 3.1A	2.5			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 V_{DS} = 25V f = 1.0MHz		600		pF
C_{oss}	Output Capacitance			250		
C_{rss}	Reverse Transfer Capacitance			80		
Q_g	Total Gate Charge	V_{GS} = 10V I_D = 4.8A V_{DS} = 0.5BV_{DSS}	7.4		42.1	nC
Q_{gs}	Gate-Source Charge		2.5		5.3	
Q_{gd}	Gate-Drain Charge		6.0		28.1	
$t_{d(on)}$	Turn-On Delay Time	V_{DD} = 100V I_D = 4.8A R_G = 7.5Ω			30	ns
t_r	Rise Time				50	
$t_{d(off)}$	Turn-Off Delay Time				50	
t_f	Fall Time				40	

SOURCE – DRAIN DIODE CHARACTERISTICS

I_S	Continuous Source Current					4.8	A
I_{SM}	Pulse Source Current					19	
V_{SD} [4]	Diode Forward Voltage	I_S = 4.8A	V_{GS} = 0			1.4	V
t_{rr} [4]	Reverse Recovery Time	I_F = 4.8A	V_{DD} ≤ 50V			6.0	ns
Q_{rr} [4]	Reverse Recovery Charge	di/dt ≤ 100A/µs				3.0	µC
t_{on}	Forward Turn - on Time			Negligible			

PACKAGE CHARACTERISTICS

L_D	Internal Drain Inductance		1.8		nH
L_S	Internal Source Inductance		4.3		

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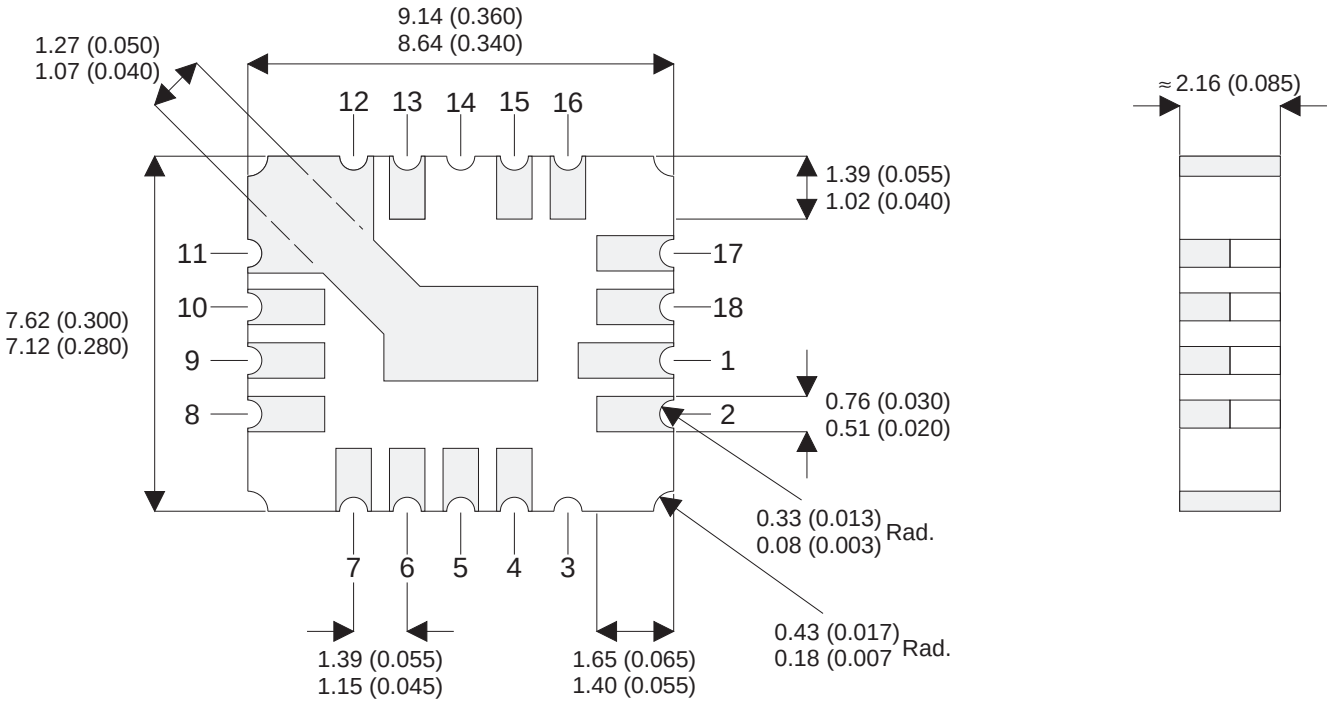
MECHANICAL DATA

Dimensions in mm (inches)



LCC4

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