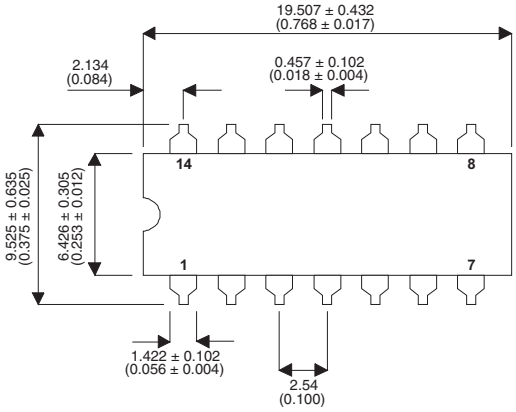
2N7336
IRFG6110

MECHANICAL DATA
Dimensions in mm (inches)



N-CHANNEL	P-CHANNEL	N-CHANNEL	P-CHANNEL
1—Drain 1	5—Gate 2	8—Drain 3	12—Gate 4
2—Source 1	6—Source 2	9—Source3	13—Source 4
3—Gate 1	7—Drain 2	10—Gate 3	14—Drain 4

14 LEAD DUAL IN LINE QUAD N & P CHANNEL POWER MOSFETS

BV_{DSS}	±100V	
	N-CHANNEL	P-CHANNEL
$I_{D(cont)}$	1A	-0.75A
$R_{DS(on)}$	0.7Ω	1.4Ω

FEATURES
- AVALANCHE ENERGY RATED
- HERMETICALLY SEALED
- DYNAMIC dv/dt RATING
- SIMPLE DRIVE REQUIREMENTS
- FOR AUTOMATIC INSERTION
- SIMPLE DRIVE REQUIREMENTS
- EASE OF PARALLELING
- 2 N-CHANNEL/2 P-CHANNEL CO-PACKAGED HEXFETS

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

			N-CHANNEL	P-CHANNEL
V_{GS}	Gate – Source Voltage		±20V	±20V
I_D	Continuous Drain Current	(V_{GS} = 10V , T_{case} = 25°C)	1.A	-0.75A
I_D	Continuous Drain Current	(V_{GS} = 10V , T_{case} = 100°C)	0.6A	-0.5A
I_{DM}	Pulsed Drain Current		4A	-3A
P_D	Power Dissipation @ T_{case} = 25°C		1.4W	1.4W
	Linear Derating Factor		0.011W/°C	0.011W/°C
E_{AS}	Single Pulse Avalanche Energy [2]		75mJ	75mJ
dv/dt	Peak Diode Recovery [3]		5.5V/ns	-5.5V/ns
T_J , T_{stg}	Operating and Storage Temperature Range		–55 to 150°C	–55 to 150°C
$R_{\theta JC}$	Thermal Resistance Junction to Case		6.25°C/W	
$R_{\theta JCA}$	Thermal Resistance Junction-to-Ambient		175°C/W	

Notes
1) Pulse Test: Pulse Width ≤ 300µs, δ ≤ 2%
2) @ V_{DD} = 25V , L ≥ 112mH , R_G = 25Ω , Peak I_L = 1A , Starting T_J = 25°C
3) @ I_{SD} ≤ 1A , di/dt ≤ 75A/µs , V_{DD} ≤ BV_{DSS} , T_J ≤ 150°C , Suggested R_G = 24Ω

Semelab plc. Telephone +44(0)1455 556565. Fax +44(0)1455 552612.
E-mail: sales@semelab.co.uk Website: http://www.semelab.co.uk

ELECTRICAL CHARACTERISTICS FOR N-CHANNEL (T_{amb} = 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	100			V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	Reference to 25°C, I_D = 1mA		0.13		V/°C
$R_{DS(on)}$	Static Drain – Source On–State Resistance	V_{GS} = 10V I_D = 0.6A			0.70	Ω
		V_{GS} = 10V I_D = 1A			0.80	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS} I_D = 250µA	2		4	V
g_{fs}	Forward Transconductance	V_{DS} ≥ 15V I_{DS} = 0.60A	0.86			S(℧)
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS} = 0 V_{DS} = 0.8V_{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		180		pF
C_{oss}	Output Capacitance	V_{DS} = 25V		82		
C_{rss}	Reverse Transfer Capacitance	f = 1MHz		15		
Q_g	Total Gate Charge	V_{GS} = 10V I_D = 1A			15	nC
Q_{gs}	Gate – Source Charge	V_{DS} = 0.5V_{DS}			7.5	
Q_{gd}	Gate – Drain (“Miller”) Charge				7.5	
$t_{d(on)}$	Turn–On Delay Time	V_{DD} = 50V, I_D = 1A, R_G = 24Ω			20	ns
t_r	Rise Time				25	
$t_{d(off)}$	Turn–Off Delay Time				40	
t_f	Fall Time				40	
	SOURCE – DRAIN DIODE CHARACTERISTICS					
I_S	Continuous Source Current				1	A
I_{SM}	Pulse Source Current [2]				4	
V_{SD}	Diode Forward Voltage [1]	I_S = 1.0A T_J = 25°C, V_{GS} = 0			1.5	V
t_{rr}	Reverse Recovery Time	I_F = 1A T_J = 25°C			200	ns
Q_{rr}	Reverse Recovery Charge	d_i / d_t ≤ 100A/µs V_{DD} ≤ 50V			0.83	µC
t_{on}	Forward Turn–On Time			Negligible		
	PACKAGE CHARACTERISTICS					
L_D	Internal Drain Inductance (from centre of drain pad to die)			4.0		nH
L_S	Internal Source Inductance (from centre of source pad to end of source bond wire)			6.0		

Notes

1) Pulse Test: Pulse Width ≤ 300µs, δ ≤ 2%

2) Repetitive Rating – Pulse width limited by maximum junction temperature.

SEME LAB

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ELECTRICAL CHARACTERISTICS FOR P-CHANNEL (T_{amb} = 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	–100			V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	Reference to 25°C I_D = –1mA			0.098		V/°C
$R_{DS(on)}$	Static Drain – Source On–State Resistance [1]	V_{GS} = –10V	I_D = –0.50A			1.4	Ω
		V_{GS} = –10V	I_D = –0.75A			1.73	
$V_{GS(th)}$	Gate Threshold Voltage [1]	V_{DS} = V_{GS}	I_D = –250µA	–2		–4	V
g_{fs}	Forward Transconductance	V_{DS} ≥ –15V	I_{DS} = –0.50A	0.67			S(℧)
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS} = 0	V_{DS} = 0.8V_{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			200		pF
C_{oss}	Output Capacitance	V_{DS} = –25V			85		
C_{rss}	Reverse Transfer Capacitance	f = 1MHz			30		
Q_g	Total Gate Charge	V_{GS} = –10V	I_D = –0.75A			15	nC
Q_{gs}	Gate – Source Charge	V_{DS} = 0.5V_{DS}				7	
Q_{gd}	Gate – Drain (“Miller”) Charge					8	
$t_{d(on)}$	Turn–On Delay Time	V_{DD} = –50V I_D = –0.75A R_G = 24Ω				30	ns
t_r	Rise Time					60	
$t_{d(off)}$	Turn–Off Delay Time					40	
t_f	Fall Time					40	
	SOURCE – DRAIN DIODE CHARACTERISTICS						
I_S	Continuous Source Current					–0.75	A
I_{SM}	Pulse Source Current [2]					–3	
V_{SD}	Diode Forward Voltage	I_S = –0.75A V_{GS} = 0	T_J = 25°C			–5.5	V
t_{rr}	Reverse Recovery Time	I_F = –0.75A	T_J = 25°C			200	ns
Q_{rr}	Reverse Recovery Charge	d_i / d_t ≤ 100A/µs	V_{DD} ≤ –50V			90	µC
t_{on}	Forward Turn–On Time				Negligible		
	PACKAGE CHARACTERISTICS						
L_D	Internal Drain Inductance (from centre of drain pad to die)				4.0		nH
L_S	Internal Source Inductance (from centre of source pad to end of source bond wire)				6.0		

Notes

1) Pulse Test: Pulse Width ≤ 300µs, δ ≤ 2%

2) Repetitive Rating – Pulse width limited by maximum junction temperature.

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E-mail: sales@semelab.co.uk Website: http://www.semelab.co.uk