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IRFZ34

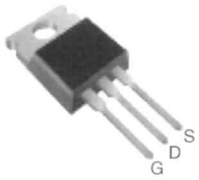
Power MOSFET

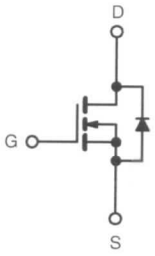
PRODUCT SUMMARY		
V_{DS} (V)	60	
$R_{DS(on)}$ (Ω)	V_{GS} = 10 V	0.050
Q_g (Max.) (nC)	46	
Q_{gs} (nC)	11	
Q_{gd} (nC)	22	
Configuration	Single	

FEATURES

- Dynamic dV/dt Rating
- 175 °C Operating Temperature
- Fast Switching
- Ease of Paralleling
- Simple Drive Requirements

TO-220AB





N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_C = 25 °C, unless otherwise noted)					
PARAMETER			SYMBOL	LIMIT	UNIT
Drain-Source Voltage			V_{DS}	60	V
Gate-Source Voltage			V_{GS}	± 20	
Continuous Drain Current	V_{GS} at 10 V	T_C = 25 °C	I_D	30	A
		T_C = 100 °C		21	
Pulsed Drain Current[a]			I_{DM}	120	
Linear Derating Factor				0.59	W/°C
Single Pulse Avalanche Energy[b]			E_{AS}	200	mJ
Maximum Power Dissipation	T_C = 25 °C		P_D	88	W
Peak Diode Recovery dV/dt[c]			dV/dt	4.5	V/ns
Operating Junction and Storage Temperature Range			T_J, T_{stg}	- 55 to + 175	°C
Soldering Recommendations (Peak Temperature)	for 10 s			300[d]	
Mounting Torque	6-32 or M3 screw			10	lbf · in
				1.1	N · m

Notes

a. Repetitive rating; pulse width limited by maximum junction temperature (see fig. 11).
b. V_{DD} = 25 V, starting T_J = 25 °C, L = 259 μH, R_g = 25 Ω, I_{AS} = 30 A (see fig. 12).
c. I_{SD} ≤ 30 A, dI/dt ≤ 200 A/μs, V_{DD} ≤ V_{DS}, T_J ≤ 175 °C.
d. 1.6 mm from case.

THERMAL RESISTANCE RATINGS				
PARAMETER	**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Maximum Junction-to-Ambient	R_{thJA}	-	62	°C/W
Case-to-Sink, Flat, Greased Surface	R_{thCS}	0.50	-	
Maximum Junction-to-Case (Drain)	R_{thJC}	-	1.7	

SPECIFICATIONS (T_J = 25 °C, unless otherwise noted)							
PARAMETER	**SYMBOL**	**TEST CONDITIONS**		**MIN.**	**TYP.**	**MAX.**	**UNIT**
Static							
Drain-Source Breakdown Voltage	V_{DS}	V_{GS} = 0 V, I_D = 250 µA		60	-	-	V
V_{DS} Temperature Coefficient	$\Delta V_{DS}/T_J$	Reference to 25 °C, I_D = 1 mA		-	0.065	-	V/°C
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 µA		2.0	-	4.0	V
Gate-Source Leakage	I_{GSS}	V_{GS} = ± 20 V		-	-	± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 60 V, V_{GS} = 0 V		-	-	25	µA
		V_{DS} = 48 V, V_{GS} = 0 V, T_J = 150 °C		-	-	250	
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} = 10 V	I_D = 18 A[b]	-	-	0.050	Ω
Forward Transconductance	g_{fs}	V_{DS} = 25 V, I_D = 18 A		9.3	-	-	S
Dynamic							
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1.0 MHz, see fig. 5		-	1200	-	pF
Output Capacitance	C_{oss}			-	600	-	
Reverse Transfer Capacitance	C_{rss}			-	100	-	
Total Gate Charge	Q_g	V_{GS} = 10 V	I_D = 30 A, V_{DS} = 48 V, see fig. 6 and 13[b]	-	-	46	nC
Gate-Source Charge	Q_{gs}			-	-	11	
Gate-Drain Charge	Q_{gd}			-	-	22	
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 30 V, I_D = 30 A, R_g = 12 Ω, R_D = 1.0 Ω, see fig. 10[b]		-	13	-	ns
Rise Time	t_r			-	100	-	
Turn-Off Delay Time	$t_{d(off)}$			-	29	-	
Fall Time	t_f			-	52	-	
Internal Drain Inductance	L_D	Between lead, 6 mm (0.25") from package and center of die contact 		-	4.5	-	nH
Internal Source Inductance	L_S			-	7.5	-	
Drain-Source Body Diode Characteristics							
Continuous Source-Drain Diode Current	I_S	MOSFET symbol showing the integral reverse p - n junction diode 		-	-	30	A
Pulsed Diode Forward Current[a]	I_{SM}			-	-	120	
Body Diode Voltage	V_{SD}	T_J = 25 °C, I_S = 30 A, V_{GS} = 0 V[b]		-	-	1.6	V
Body Diode Reverse Recovery Time	t_{rr}	T_J = 25 °C, I_F = 30 A, dI/dt = 100 A/µs		-	120	230	ns
Body Diode Reverse Recovery Charge	Q_{rr}			-	0.7	1.4	nC
Forward Turn-On Time	t_{on}	Intrinsic turn-on time is negligible (turn-on is dominated by L_S and L_D)					

Notes

a. Repetitive rating; pulse width limited by maximum junction temperature (see fig. 11).

b. Pulse width ≤ 300 µs; duty cycle ≤ 2 %.