

New Jersey Semi-Conductor Products, Inc.

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IRFM250

POWER MOSFET THRU-HOLE (TO-254AA)

Features:

- Simple Drive Requirements
- Ease of Paralleling
- Hermetically Sealed
- Electrically Isolated
- Dynamic dv/dt Rating
- Light-weight

Absolute Maximum Ratings

	Parameter		Units
$I_D @ V_{GS} = 10V, T_C = 25^\circ C$	Continuous Drain Current	27.4	A
$I_D @ V_{GS} = 10V, T_C = 100^\circ C$	Continuous Drain Current	17	
I_{DM}	Pulsed Drain Current ①	110	
$P_D @ T_C = 25^\circ C$	Max. Power Dissipation	150	W
	Linear Derating Factor	1.2	W/°C
V_{GS}	Gate-to-Source Voltage	± 20	V
EAS	Single Pulse Avalanche Energy ②	500	mJ
IAR	Avalanche Current ①	27.4	A
EAR	Repetitive Avalanche Energy ①	15.0	mJ
dv/dt	Peak Diode Recovery dv/dt ③	5.0	V/ns
T_J	Operating Junction	-55 to 150	°C
TSTG	Storage Temperature Range		
	Lead Temperature	300 (0.063 in.(1.6mm) from case for 10s)	
	Weight	9.3 (Typical)	g



NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

Quality Semi-Conductors

IRFM250

Electrical Characteristics @ T_j = 25°C (Unless Otherwise Specified)

	Parameter	Min	Typ	Max	Units	Test Conditions
BV _{DSS}	Drain-to-Source Breakdown Voltage	200	—	—	V	V _{GS} = 0V, I _D = 1.0mA
ΔBV _{DSS} /ΔT _J	Temperature Coefficient of Breakdown Voltage	—	0.28	—	V/°C	Reference to 25°C, I _D = 1.0mA
R _{DS(on)}	Static Drain-to-Source On-State Resistance	—	—	0.100	Ω	V _{GS} = 10V, I _D = 17A ④
		—	—	0.105		V _{GS} = 10V, I _D = 27.4A ④
V _{GS(th)}	Gate Threshold Voltage	2.0	—	4.0	V	V _{DS} = V _{GS} , I _D = 250μA
g _{fs}	Forward Transconductance	9.0	—	—	S (r)	V _{DS} > 15V, I _{DS} = 17A ④
I _{DSS}	Zero Gate Voltage Drain Current	—	—	25	μA	V _{DS} = 160V, V _{GS} = 0V
		—	—	250		V _{DS} = 160V, V _{GS} = 0V, T _J = 125°C
I _{GSS}	Gate-to-Source Leakage Forward	—	—	100	nA	V _{GS} = 20V
I _{GSS}	Gate-to-Source Leakage Reverse	—	—	-100	nA	V _{GS} = -20V
Q _g	Total Gate Charge	—	—	115	nC	V _{GS} = 10V, I _D = 27.4A
Q _{gs}	Gate-to-Source Charge	—	—	22		V _{DS} = 100V
Q _{gd}	Gate-to-Drain ('Miller') Charge	—	—	60		
t _{d(on)}	Turn-On Delay Time	—	—	35	ns	V _{DD} = 50V, I _D = 44A, V _{GS} = 10V, R _G = 2.35Ω
t _r	Rise Time	—	—	190		
t _{d(off)}	Turn-Off Delay Time	—	—	170		
t _f	Fall Time	—	—	130		
L _S + L _D	Total Inductance	—	6.8	—	nH	Measured from drain lead (6mm/0.25in. from package) to source lead (6mm/0.25in. from package)
C _{iss}	Input Capacitance	—	3500	—	pF	V _{GS} = 0V, V _{DS} = 25V f = 1.0MHz
C _{oss}	Output Capacitance	—	700	—		
C _{rss}	Reverse Transfer Capacitance	—	110	—		
C _{DC}	Drain-to-Case Capacitance	—	12	—		

Source-Drain Diode Ratings and Characteristics

	Parameter	Min	Typ	Max	Units	Test Conditions
I _S	Continuous Source Current (Body Diode)	—	—	27.4	A	
I _{SM}	Pulse Source Current (Body Diode) ①	—	—	110		
V _{SD}	Diode Forward Voltage	—	—	1.9	V	T _J = 25°C, I _S = 27.4A, V _{GS} = 0V ④
t _{rr}	Reverse Recovery Time	—	—	950	nS	T _J = 25°C, I _F = 27.4A, di/dt ≤ 100A/μs
Q _{RR}	Reverse Recovery Charge	—	—	9.0	μC	V _{DD} ≤ 50V ④
t _{on}	Forward Turn-On Time	Intrinsic turn-on time is negligible. Turn-on speed is substantially controlled by L _S + L _D .				

Thermal Resistance

	Parameter	Min	Typ	Max	Units	Test Conditions
R _{thJC}	Junction-to-Case	—	—	0.83	°C/W	Typical socket mount
R _{thJCS}	Case-to-Sink	—	0.21	—		
R _{thJA}	Junction-to-Ambient	—	—	48		