

IRFM460
500V, N-CHANNEL

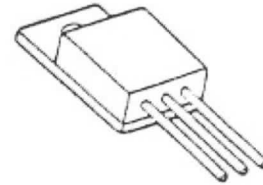
FEATURES

- Isolated Case
- Hermetically Sealed Package
- Repetitive Avalanche Rating
- Dynamic dv/dt Rating
- Ceramic Eyelets
- MIL STX Screening Available

APPLICATIONS

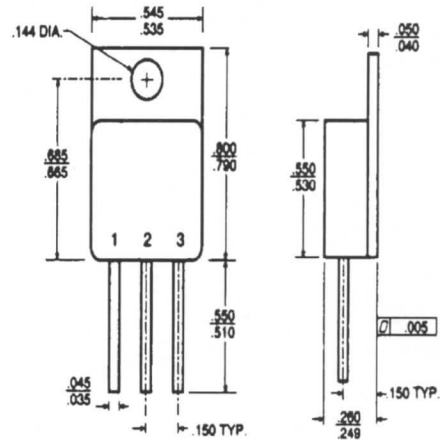
- High Reliability Power Supplies
- Switch Mode Power Supplies
- Battery Back-Up Supplies
- High Speed Power Switching

PACKAGE



T0-254

CASE OUTLINE



Pin 1: D Pin 2: S Pin 3: G

Absolute Maximum Ratings

Parameter	Maximum	Units
Continuous Drain Current I_p @ $T_c = 25^\circ C$, $V_{GS} @ 10V$	19	A
Continuous Drain Current I_p @ $T_c = 100^\circ C$, $V_{GS} @ 10V$	12	A
Pulse Drain Current I_{DM}	76	A
Power Dissipation $P_D @ T_c = 25^\circ C$	250	W
Linear Derating Factor	2.0	W/ $^\circ C$
Gate-to-Source Voltage V_{GS}	± 20	V
Peak Diode Recovery dv/dt	3.5	V/ns
Operating & Storage Temperature T_j & T_{STG}	-55 to 150	$^\circ C$



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Static @ T_j = 25°C (unless otherwise specified)

Parameter	Min.	Typ.	Max.	Units	Conditions
Drain-to-Source Breakdown Voltage V _{(BR)DSS}	500	—	—	V	V _{GS} = 0V, I _D = 1.0mA
Static Drain to Source On-Resistance R _{DS(on)}	—	—	0.27 0.31	Ω	V _{GS} = 10V, I _D = 12A V _{GS} = 10V, I _D = 19A
Gate Threshold Voltage V _{GS}	2.0	—	4.0	V	V _{DS} = V _{GS} , I _D = 250uA
Drain-to-Source Leakage Current I _{DSS}	—	—	25	uA	V _{DS} = 0.8 x Max rating, V _{GS} = 0V
	—	—	250		V _{DS} = 0.8 x Max Rating, V _{GS} = 0V, T _j = 125°C
Gate-to-Source Forward Leakage I _{GSS}	—	—	100	nA	V _{GS} = 20V
Gate-to-Source Reverse Leakage I _{GSS}	—	—	-100		V _{GS} = -20V

Dynamic @ T_j = 25°C (unless otherwise specified)

Parameter	Min.	Typ.	Max.	Units	Conditions
Forward Transconductance g _{fs}	13	—	—	S	V _{DS} = 15V, I _{DS} = 12A
Total Gate Charge Q _g	—	—	190	nC	I _D = 19A V _{DS} = 0.5 x Max Rating V _{GS} = 10V
Gate-to-Source Charge Q _{gs}	—	—	27		
Gate-to-Drain ("Miller") charge Q _{gd}	—	—	135		
Turn-on-Delay Time t _{d(on)}	—	—	35	ns	V _{DD} = 250V I _D = 19A R _G = 2.35Ω
Rise Time t _r	—	—	120		
Turn-Off-Delay Time t _{d(off)}	—	—	130		
Fall time t _f	—	—	98		
Input Capacitance C _{iss}	—	4300	—	pF	V _{GS} = 0V V _{DS} = 25V f = 1.0 MHz
Output Capacitance C _{oss}	—	1000	—		
Reverse Transfer Capacitance C _{rss}	—	250	—		
Internal Drain Inductance L _D	—	8.7	—	nH	Measured from drain lead, 6mm from package to center of die.
Internal Source Inductance L _S	—	8.7	—		

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Avalanche Characteristics

Parameter		Typ.	Max.	Units
Single Pulse Avalanche Energy	E_{AS}	—	1200	mJ
Avalanche Current	I_{AR}	—	19	A
Repetitive Avalanche Energy	E_{AR}	—	25	mJ

Thermal Resistance

Parameter		Typ.	Max.	Units
Junction-to-case	$R_{\theta JC}$	—	0.5	°C/W
Case-to-Sink, flat, Greased Surface	$R_{\theta CS}$	0.21	—	
Junction-to-ambient	$R_{\theta JA}$	—	48	

Diode Characteristics

Parameter		Min.	Typ.	Max.	Units	Conditions
Continuous Source Current	I_S	—	—	19	A	
Pulsed Source Current	I_{SM}	—	—	76		
Diode Forward Voltage	V_{SD}	—	—	1.8	V	$T_J = 25^\circ\text{C}$, $I_S = 19\text{A}$, $V_{GS} = 0\text{V}$
Reverse Recovery Time	t_{rr}	—	—	580	ns	$T_J = 25^\circ\text{C}$, $I_F = 19\text{A}$ $di/dt = 100\text{A}/\mu\text{s}$ $V_{DD} \square 50\text{V}$
Reverse Recovery Charge	Q_{rr}	—	—	8.1	μC	
Forward Turn-on Time	t_{on}	Intrinsic turn-on time is negligible				