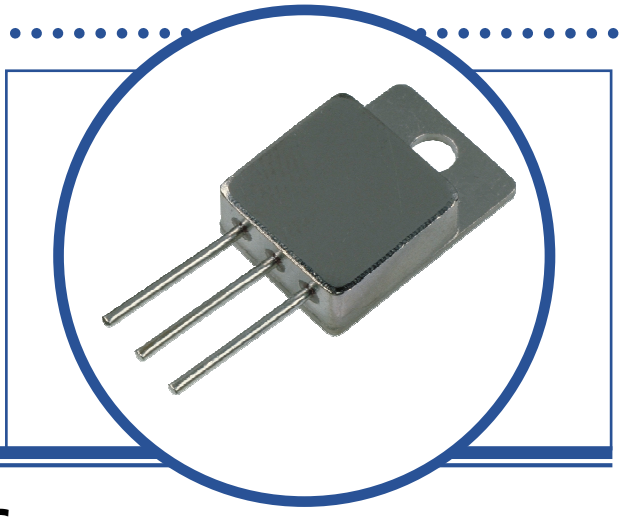
N-CHANNEL POWER MOSFET

TT electronics
Semelab Limited

IRFM140 / 2N7218

- Low $R_{DS(on)}$ MOSFET Transistor In A Isolated Hermetic Metal Package
- Designed For Switching, Power Supply, Motor Control and Amplifier Applications
- Screening Options Available



ABSOLUTE MAXIMUM RATINGS (T_C = 25°C unless otherwise stated)

VDS	Drain – Source Voltage		100V
V_{GS}	Gate – Source Voltage		±20V
I_D	Continuous Drain Current	T_C = 25°C	28A
I_D	Continuous Drain Current	T_C = 100°C	20A
I_{DM}	Pulsed Drain Current (1)		112A
P_D	Total Power Dissipation at	T_C = 25°C	100W
		Derate Above 25°C	0.8W/°C
E_{AS}	Single Pulse Avalanche Energy(2)		250mJ
dv/dt	Peak Diode Recovery(3)		5.5V/ns
T_J	Junction Temperature Range		-55 to +150°C
T_{stg}	Storage Temperature Range		-55 to +150°C

THERMAL PROPERTIES

Symbols	Parameters	Min.	Typ.	Max.	Units
$R_{\theta JC}$	Thermal Resistance, Junction To Case			1.25	°C/W

Notes

(1) Repetitive Rating: Pulse width limited by maximum junction temperature
(2) @V_{DD} = 25V, L ≥ 470µH, Peak I_L = 28A, Starting T_J = 25°C
(3) @ I_{SD} ≤ 28A, di/dt ≤ 170A/µs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C, Suggested R_G = 9.1Ω
(4) Pulse Width ≤ 300us, δ ≤ 2%

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ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise stated)

Symbols	Parameters	Test Conditions		Min.	Typ	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0	I_D = 1.0mA	100			V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficent of Breakdown Voltage	Reference to 25°C	I_D = 1.0mA		0.13		V/°C
$R_{DS(on)}$ (4)	Static Drain-Source On-State Resistance	V_{GS} = 10V	I_D = 20A			0.077	Ω
		V_{GS} = 10V	I_D = 28A			0.125	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}	I_D = 250µA	2		4	V
g_{fs} (4)	Forward Transconductance	V_{DS} ≥ 15V	I_{DS} = 21A	9.1			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		1660		pF
C_{oss}	Output Capacitance	V_{DS} = 25V		550		
C_{rss}	Reverse Transfer Capacitance	f = 1.0MHz		120		
Q_g	Total Gate Charge	V_{GS} = 10V	30		59	nC
Q_{gs}	Gate-Source Charge	I_D = 28A	2.4		12	
Q_{gd}	Gate-Drain Charge	V_{DS} = 0.5BV_{DSS}	12		30.7	
$t_{d(on)}$	Turn-On Delay Time	V_{DD} = 50V			21	ns
t_r	Rise Time	I_D = 20A			145	
$t_{d(off)}$	Turn-Off Delay Time				64	
t_f	Fall Time	R_G = 9.1Ω			105	

SOURCE-DRAIN DIODE CHARACTERISTICS

I_S	Continuous Source Current				28	A
I_{SM} (1)	Pulse Source Current				112	
V_{SD} (4)	Diode Forward Voltage	I_S = 28A V_{GS} = 0	T_J = 25°C		1.5	V
t_{rr} (4)	Reverse Recovery Time	I_S = 28A	T_J = 25°C		400	ns
Q_{rr} (4)	Reverse Recovery Charge	V_{DD} ≤ 50V	di/dt = 100A/µs		2.9	µC

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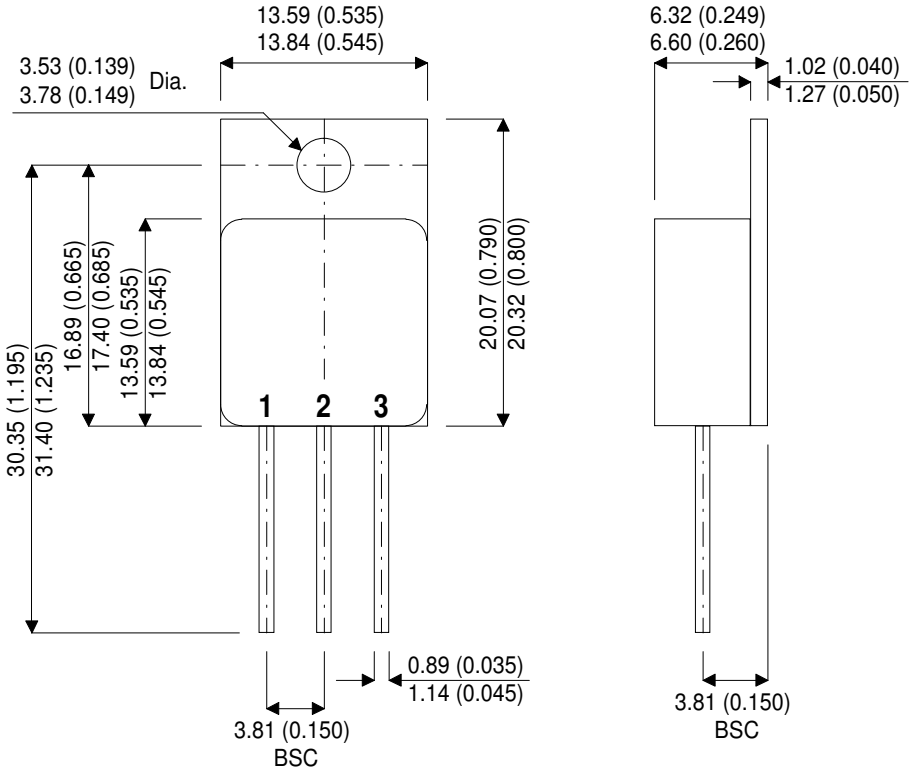
MECHANICAL DATA

Dimensions in mm (inches)



TO-254AA

Pin 1 - Drain Pin 2 - Source Pin 3 - Gate