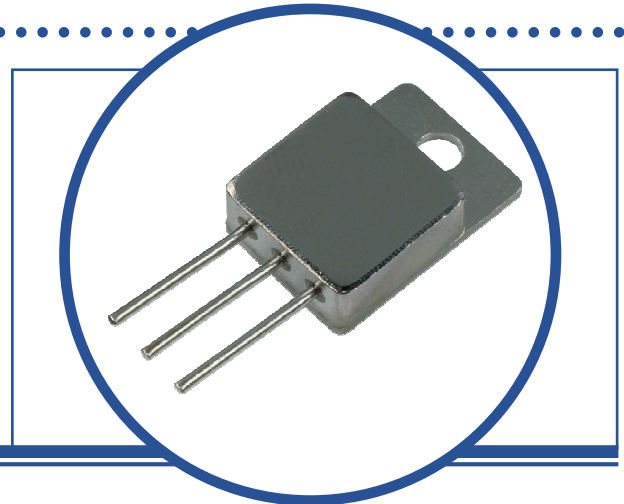


# N-CHANNEL POWER MOSFET

## 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 ( $T_C = 25^\circ\text{C}$ unless otherwise stated)

V <sub>DS</sub>	Drain – Source Voltage		100V
V <sub>GS</sub>	Gate – Source Voltage		±20V
I <sub>D</sub>	Continuous Drain Current	$T_C = 25^\circ\text{C}$	28A
I <sub>D</sub>	Continuous Drain Current	$T_C = 100^\circ\text{C}$	20A
I <sub>DM</sub>	Pulsed Drain Current <sup>(1)</sup>		112A
P <sub>D</sub>	Total Power Dissipation at	$T_C = 25^\circ\text{C}$	100W
	Derate Above 25°C		0.8W/°C
E <sub>AS</sub>	Single Pulse Avalanche Energy <sup>(2)</sup>		250mJ
dv/dt	Peak Diode Recovery <sup>(3)</sup>		5.5V/ns
T <sub>J</sub>	Junction Temperature Range		-55 to +150°C
T <sub>stg</sub>	Storage Temperature Range		-55 to +150°C

### THERMAL PROPERTIES

Symbols	Parameters	Min.	Typ.	Max.	Units
R <sub>θJC</sub>	Thermal Resistance, Junction To Case			1.25	°C/W

#### Notes

- (1) Repetitive Rating: Pulse width limited by maximum junction temperature
- (2) @V<sub>DD</sub> = 25V, L ≥ 470μH, Peak I<sub>L</sub> = 28A, Starting T<sub>J</sub> = 25°C
- (3) @ I<sub>SD</sub> ≤ 28A, di/dt ≤ 170A/μs, V<sub>DD</sub> ≤ BV<sub>DSS</sub>, T<sub>J</sub> ≤ 150°C, Suggested R<sub>G</sub> = 9.1Ω
- (4) Pulse Width ≤ 300us, δ ≤ 2%

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## ELECTRICAL CHARACTERISTICS (T<sub>J</sub> = 25°C unless otherwise stated)

Symbols	Parameters	Test Conditions	Min.	Typ	Max.	Units
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> = 0 I <sub>D</sub> = 1.0mA	100			V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	Reference to 25°C I <sub>D</sub> = 1.0mA		0.13		V/°C
R <sub>DS(on)</sub> <sup>(4)</sup>	Static Drain-Source On-State Resistance	V <sub>GS</sub> = 10V I <sub>D</sub> = 20A			0.077	Ω
		V <sub>GS</sub> = 10V I <sub>D</sub> = 28A			0.125	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> = V <sub>GS</sub> I <sub>D</sub> = 250μA	2		4	V
g <sub>fs</sub> <sup>(4)</sup>	Forward Transconductance	V <sub>DS</sub> ≥ 15V I <sub>DS</sub> = 21A	9.1			S(Ω)
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>GS</sub> = 0 V <sub>DS</sub> = 0.8BV <sub>DSS</sub> T <sub>J</sub> = 125°C			25	μA
					250	
I <sub>GSS</sub>	Forward Gate-Source Leakage	V <sub>GS</sub> = 20V			100	nA
I <sub>GSS</sub>	Reverse Gate-Source Leakage	V <sub>GS</sub> = -20V			-100	

## DYNAMIC CHARACTERISTICS

C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> = 0		1660		pF
C <sub>oss</sub>	Output Capacitance	V <sub>DS</sub> = 25V		550		
C <sub>rss</sub>	Reverse Transfer Capacitance	f = 1.0MHz		120		
Q <sub>g</sub>	Total Gate Charge	V <sub>GS</sub> = 10V	30		59	nC
Q <sub>gs</sub>	Gate-Source Charge	I <sub>D</sub> = 28A	2.4		12	
Q <sub>gd</sub>	Gate-Drain Charge	V <sub>DS</sub> = 0.5BV <sub>DSS</sub>	12		30.7	
t <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DD</sub> = 50V			21	ns
t <sub>r</sub>	Rise Time	I <sub>D</sub> = 20A			145	
t <sub>d(off)</sub>	Turn-Off Delay Time				64	
t <sub>f</sub>	Fall Time	R <sub>G</sub> = 9.1Ω			105	

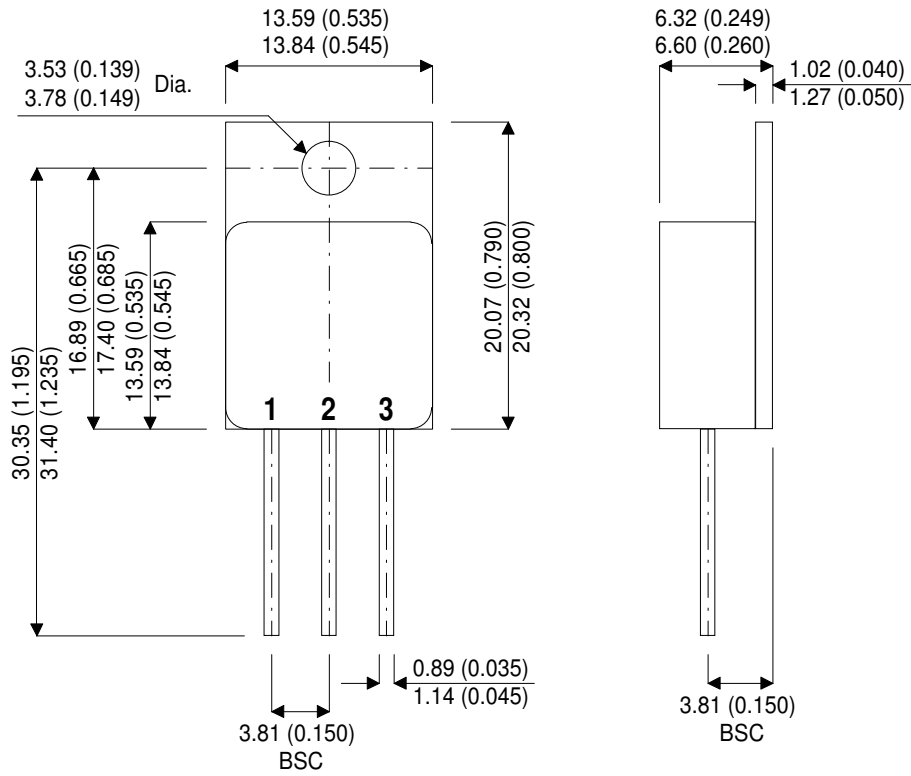
## SOURCE-DRAIN DIODE CHARACTERISTICS

I <sub>S</sub>	Continuous Source Current				28	A
I <sub>SM</sub> <sup>(1)</sup>	Pulse Source Current				112	
V <sub>SD</sub> <sup>(4)</sup>	Diode Forward Voltage	I <sub>S</sub> = 28A V <sub>GS</sub> = 0	T <sub>J</sub> = 25°C		1.5	V
t <sub>rr</sub> <sup>(4)</sup>	Reverse Recovery Time	I <sub>S</sub> = 28A	T <sub>J</sub> = 25°C		400	ns
Q <sub>rr</sub> <sup>(4)</sup>	Reverse Recovery Charge	V <sub>DD</sub> ≤ 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