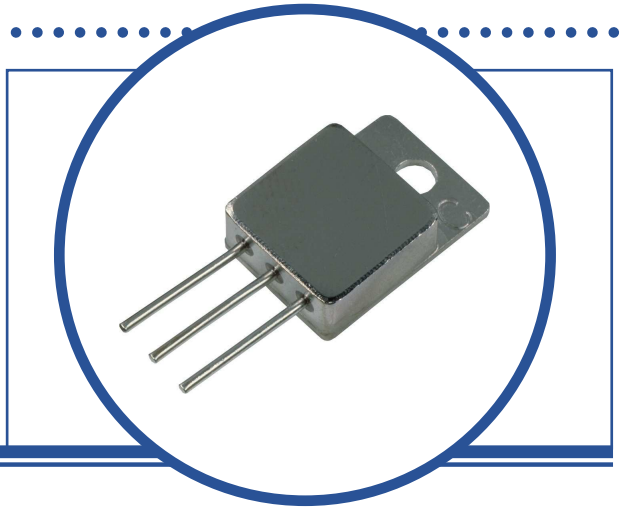
N-CHANNEL POWER MOSFET

TT electronics
Semelab Limited

2N7225 / IRFM250



- V_{DSS} = 200V, $I_{D(CONT)}$ = 27.4A, $R_{DS(ON)}$ = 100mΩ
- Hermetic Isolated Metal TO-254AA Package
- Integral Body Diode
- High-Reliability Screening Options Available
- Tabless and Z Tab options available

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

V_{DS}	Drain – Source Voltage		200V
V_{GS}	Gate – Source Voltage		±20V
I_D	Continuous Drain Current	T_C = 25°C	27.4A
I_D	Continuous Drain Current	T_C = 100°C	17A
I_{DM}	Pulsed Drain Current [1]		110A
P_D	Total Power Dissipation at	T_C = 25°C	150W
		Derate Above 25°C	1.2W/°C
dv/dt	Peak Diode Recovery [2]		5.5V/ns
T_J	Junction Temperature Range		-55 to +150°C
T_{stg}	Storage Temperature Range		-55 to +150°C

THERMAL PROPERTIES

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance Junction to Case	0.83	°C/W

INTERNAL PACKAGE INDUCTANCE

Symbols	Parameters	Min.	Typ.	Max.	Units
L_D	Internal Drain Inductance		8.7		nH
L_S	Internal Source Inductance		8.7		

Notes

(1) Repetitive Rating: Pulse width limited by maximum junction temperature

(2) @ I_{SD} ≤ 27.4A, di/dt ≤ 190A/µs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C, Suggested R_G = 2.35Ω

(3) Pulse Width ≤ 300us, δ ≤ 2%

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ELECTRICAL CHARACTERISTICS (T_C = 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	200			V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficent of Breakdown Voltage	Reference to 25°C	I_D = 1.0mA		0.28		V/°C
$R_{DS(on)}$ (3)	Static Drain-Source On-State Resistance	V_{GS} = 10V	I_D = 17A			0.100	Ω
		V_{GS} = 10V	I_D = 27.4A			0.105	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$	I_D = 250µA	2		4	V
			T_J = 125°C	1.0			
			T_J = -55°C			5	
g_{fs} (3)	Forward Transconductance	$V_{DS} \geq 15V$	I_{DS} = 17A	9			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
		V_{DS} = 0V	T_J = 125°C			200	
I_{GSS}	Reverse Gate-Source Leakage	V_{GS} = -20V				-100	
		V_{DS} = 0V	T_J = 125°C			-200	

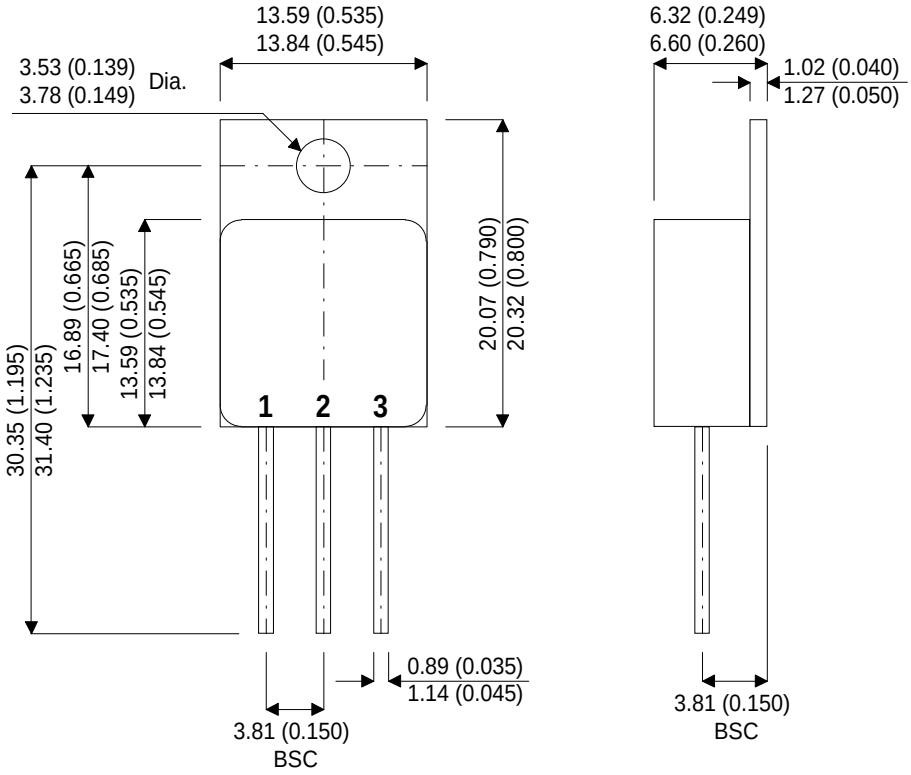
DYNAMIC CHARACTERISTICS

C_{iss}	Input Capacitance	V_{GS} = 0		3500		pF
C_{oss}	Output Capacitance	V_{DS} = 25V		700		
C_{rss}	Reverse Transfer Capacitance	f = 1.0MHz		110		
Q_g	Total Gate Charge	V_{GS} = 10V		85		nC
Q_{gs}	Gate-Source Charge	I_D = 27.4A		15		
Q_{gd}	Gate-Drain Charge	$V_{DS} = 0.5BV_{DSS}$		45		
$t_{d(on)}$	Turn-On Delay Time	V_{DD} = 100V I_D = 27.4A V_{GS} = 10V R_G = 2.35Ω			35	ns
t_r	Rise Time				190	
$t_{d(off)}$	Turn-Off Delay Time				170	
t_f	Fall Time				130	

SOURCE-DRAIN DIODE CHARACTERISTICS

I_S	Continuous Source Current				27.4	A
I_{SM} (1)	Pulse Source Current				110	
V_{SD} (3)	Diode Forward Voltage	I_S = 27.4A V_{GS} = 0	T_J = 25°C		1.9	V
t_{on}	Forward Turn-On Time			Negligible		

MECHANICAL DATA
Dimensions in mm (Inches)



TO-254AA
Isolated Metal Package

PIN 1 – Drain PIN 2 – Source PIN 3 - Gate