

N Channel Enhancement Mode Power MOSFET

GENERAL DESCRIPTION

The JY4N5M utilizes the latest planar processing techniques to achieve the high cell density and reduces the on-resistance with high repetitive avalanche rating. These features combine to make this design an extremely efficient and reliable device for use in power switching application and a wide variety of other applications.

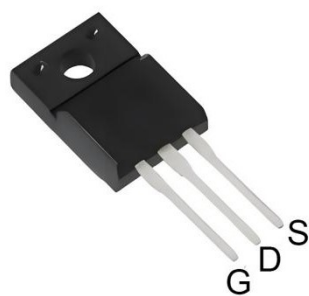
FEATURES

- 500V/4A, $R_{DS(ON)} = 2.0\Omega @ V_{GS}=10V$
- Fast switching and reverse body recovery
- Excellent package for good heat dissipation

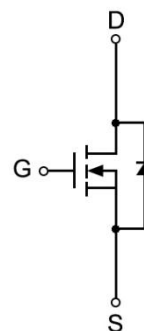
APPLICATIONS

- Lighting
- High efficiency switch mode power supplies

PIN DESCRIPTION



TO-220F



N-Channel MOSFET

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Absolute Maximum Ratings($T_c=25^{\circ}\text{C}$ Unless Otherwise Noted)

Symbol	Parameter		Limit	Unit
V_{DS}	Drain-Source Voltage		500	V
V_{GS}	Gate-Source Voltage		± 30	V
I_D	Continuous Drain Current	$T_c=25^{\circ}\text{C}$	4	A
		$T_c=100^{\circ}\text{C}$	2.8	
I_{DM}	Pulsed Drain Current		16	A
P_D	Maximum Power Dissipation		30	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range		$-55+150$	$^{\circ}\text{C}$
$R_{\theta JC}$	Thermal Resistance-Junction to Case		4.16	$^{\circ}\text{C}/\text{W}$

Electrical Characteristics($T_c=25^{\circ}\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=250\mu A$	500	525		V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=500V, V_{GS}=0V$			1	μA
I_{GSS}	Gate-Body Leakage Current	$V_{GS}=\pm 30V, V_{DS}=0V$			± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	2.0		4.0	V
$R_{DS(ON)}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_{DS}=2A$		2.0	2.1	Ω

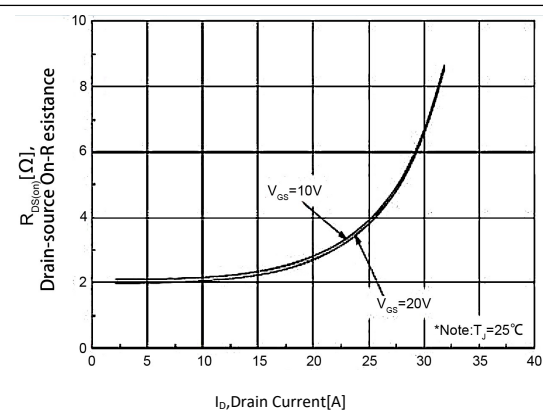
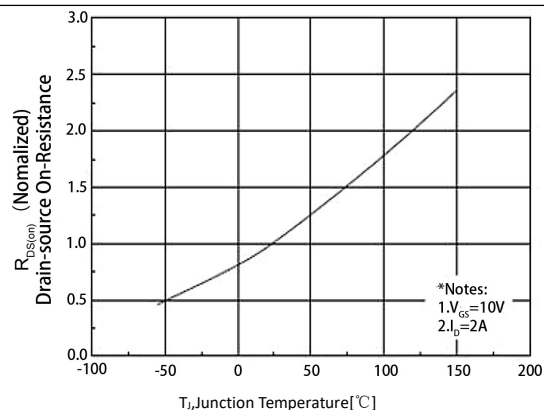
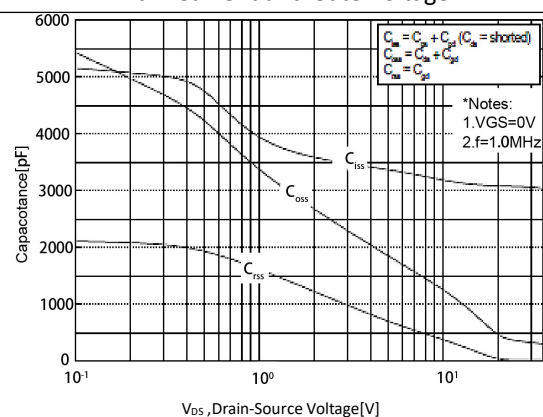
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Electrical Characteristics(Tc=25°C Unless Otherwise Noted)

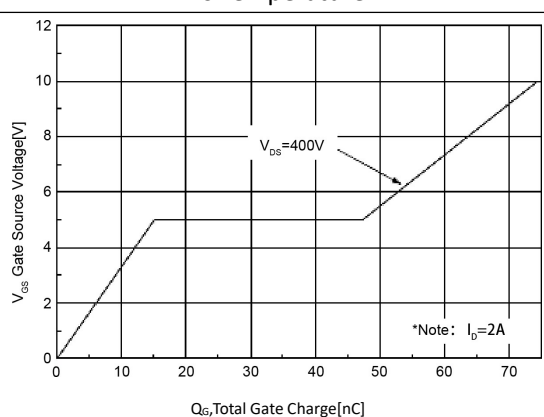
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Drain-Source Diode Characteristics						
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _{SD} =4A			1.3	V
T _{rr}	Reverse Recovery Time	I _{SD} =4A		515		ns
Q _{rr}	Reverse Recovery Charge	di/dt=100A/us		6.2		μC
Dynamic Characteristics						
T _{d(on)}	Turn-on Delay Time	V _{DS} =250V, R _G =25Ω, I _{DS} =2A, V _{GS} =10V,		41		ns
T _r	Turn-on Rise Time			45		
T _{d(off)}	Turn-off Delay Time			332		
T _f	Turn-off Fall Time			90		
C _{ISS}	Input Capacitance	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		3082		pF
C _{OSS}	Output Capacitance			352		
C _{RSS}	Reverse Transfer Capacitance			15		
Q _g	Total Gate Charge	V _{DS} =400V, I _D =2A, V _{GS} =10V		74		nC
Q _{gs}	Gate-Source Charge			15		
Q _{gd}	Gate-Drain Charge			32		

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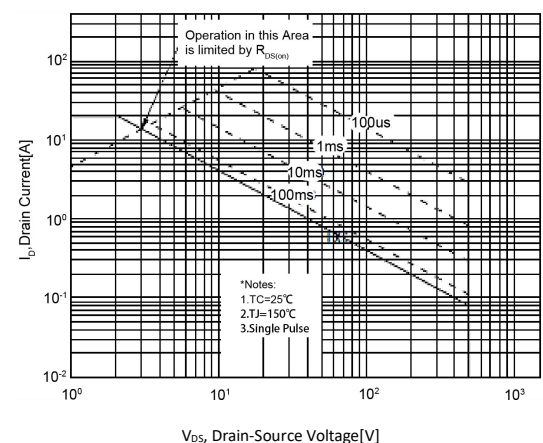
Typical electrical and thermal characteristics

On-Resistance Variation vs
Drain Current and Gate VoltageOn-Resistance Variation
vs Temperature

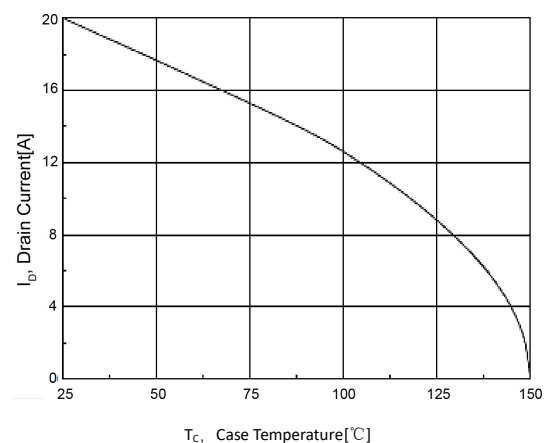
Capacitance Characteristics



Gate Charge Characteristics

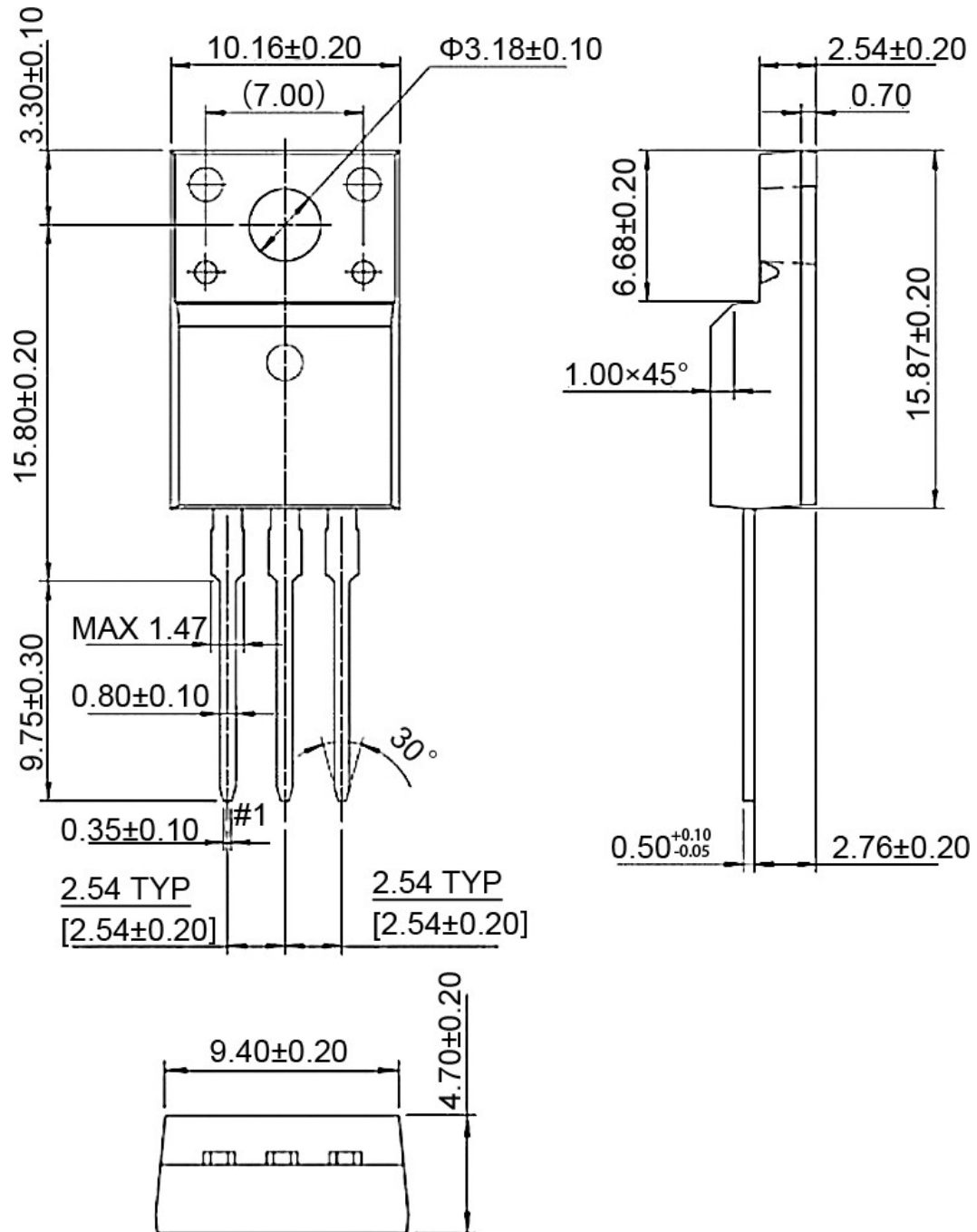


Maximum Safe Operating Area

Maximum Drain Current
vs Case Temperature

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T0220F-3 Package Outline



Dimensions in Millimeters