N Channel Enhancement Mode Power MOSFET

GENERAL DESCRIPTION

The JY09M utilizes the latest trench processing techniques to achieve the high cell density and reduces the on-resistance with low gate charge. 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.

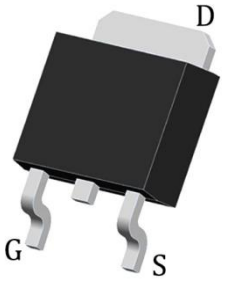
FEATURES

- 70V/90A, RDS(ON) =6.2mΩ@VGS=10V(typical)
- Fast switching and reverse body recovery
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation

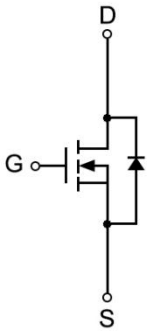
APPLICATIONS

- Power Switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

PIN DESCRIPTION



TO-252



N-Channel MOSFET

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Absolute Maximum Ratings(Tc=25ºC Unless Otherwise Noted)

Symbol	Parameter		Limit	Unit
V_{DS}	Drain-Source Voltage		70	V
V_{GS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	Tc=25° C	90	A
		Tc=100° C	65	
I_{DM}	Pulsed Drain Current		315	A
P_D	Maximum Power Dissipation		100	W
T_J T_{STG}	Operating Junction and Storage Temperature Range		-55+175	℃
$R_{\theta JC}$	Thermal Resistance-Junction to Case		1.5	℃/W
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		62.5	℃/W

Electrical Characteristics(Ta=25ºC Unless Otherwise Noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V,I_{DS}=250uA	70			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=70V,V_{GS}=0V			1	uA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V,V_{DS}=0V			±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_{DS}=250uA	2		4	V
$R_{DS(ON)}$	Drain-Source On-state Resistance	V_{GS}=10V,I_{DS}=30A		6.2	7.2	mΩ

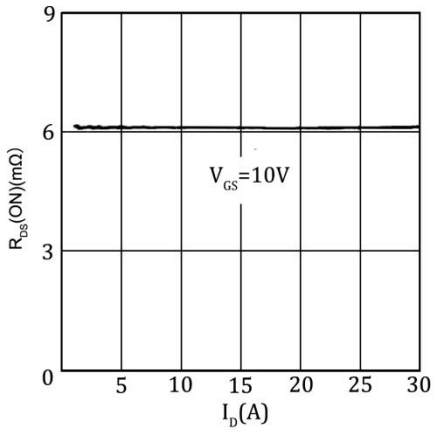
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Electrical Characteristics(Ta=25ºC Unless Otherwise Noted)

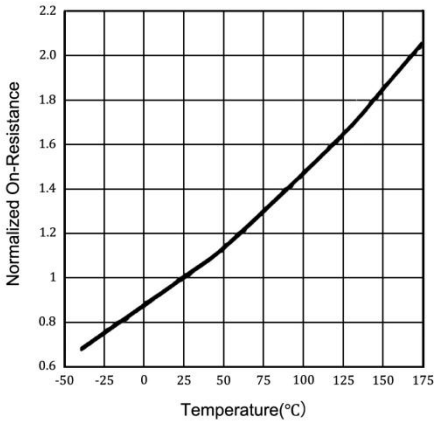
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage	V_{GS}=0V,I_{SD}=30A			1.3	V
Trr	Reverse Recovery Time	I_{SD}=30A di/dt=100A/us		35		ns
Qrr	Reverse Recovery Charge			50		nC
Dynamic Characteristics						
$T_{d(on)}$	Turn-on Delay Time	V_{DS}=30V, R_G=3Ω, I_{DS}=30A,V_{GS}=10V ,		15		ns
Tr	Turn-on Rise Time			12		
$T_{d(off)}$	Turn-off Delay Time			50		
T_f	Turn-off Fall Time			14		
C_{ISS}	Input Capacitance	V_{GS}=0V, V_{DS}=30V, f=1.0MHz		3215		pF
C_{OSS}	Output Capacitance			345		
C_{RSS}	Reverse Transfer Capacitance			230		
Q_g	Total Gate Charge	V_{DS}=30V,I_D=30A, V_{GS}=10V		86		nC
Q_{gs}	Gate-Source Charge			19		
Q_{gd}	Gate-Drain Charge			25		

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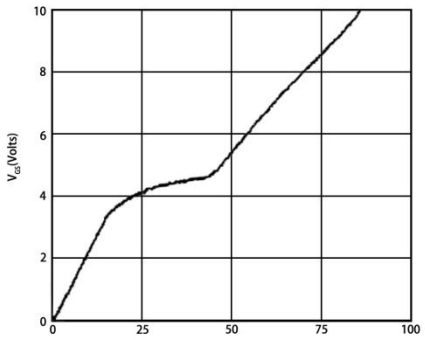
Typical electrical and thermal characteristics



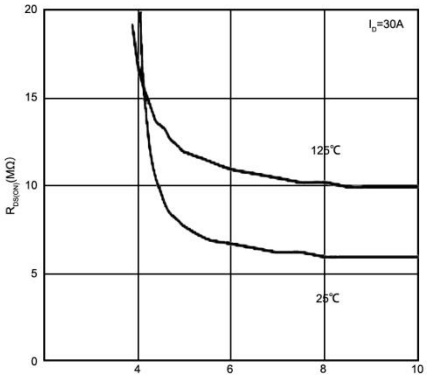
On-Resistance VS.Drain Current and Gate Voltage



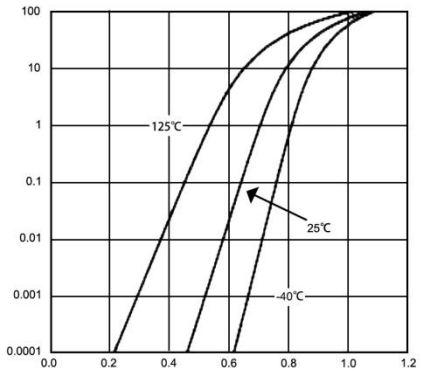
On-Resistance vs.Junction Temperature



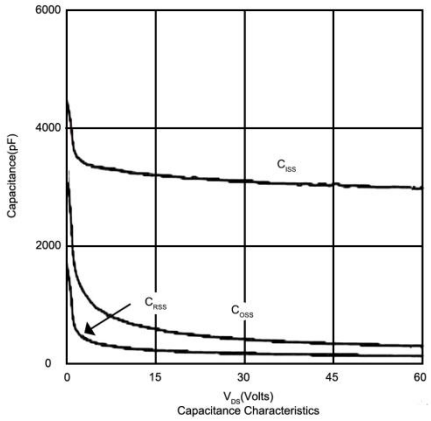
Gate-Charge Characteristice



On-Resistance vs.Gate-source Voltage

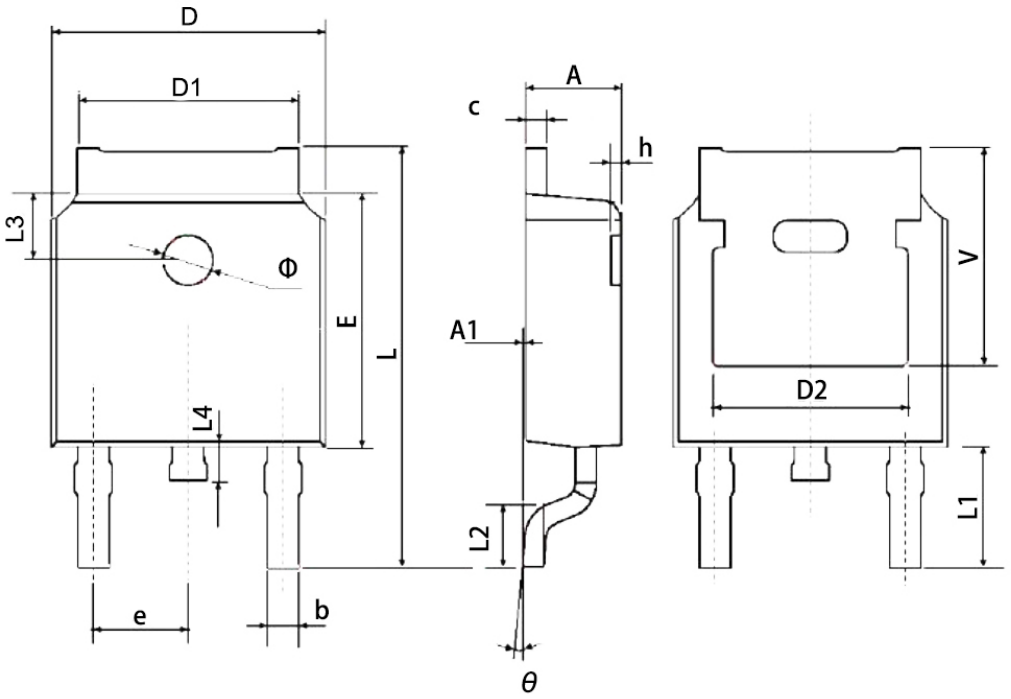


Body-Diode Characteristics



Capacitance Characteristics

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Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	0.483 TYP.			
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 TYP.		0.114 TYP.	
L2	1.400	1.700	0.055	0.067
L3	1.600 TYP.		0.063 TYP	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 TYP.		0.211TYP.	