

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.

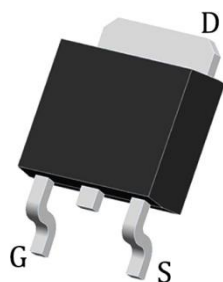
FEATURES

- 70V/90A, $R_{DS(ON)} = 6.2\text{m}\Omega @ V_{GS} = 10\text{V}$ (typical)
- Fast switching and reverse body recovery
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation

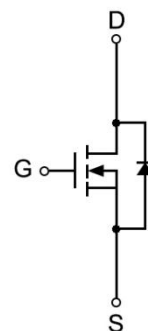
APPLICATIONS

- 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($T_c=25^{\circ}\text{C}$ 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	$T_c=25^{\circ}\text{C}$	A
		$T_c=100^{\circ}\text{C}$	
I_{DM}	Pulsed Drain Current	315	A
P_D	Maximum Power Dissipation	100	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range	$-55+175$	$^{\circ}\text{C}$
$R_{\theta JC}$	Thermal Resistance-Junction to Case	1.5	$^{\circ}\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	62.5	$^{\circ}\text{C}/\text{W}$

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

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

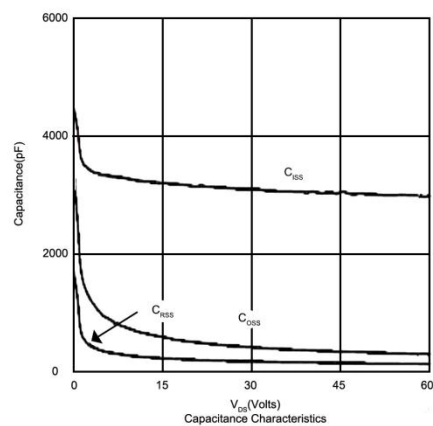
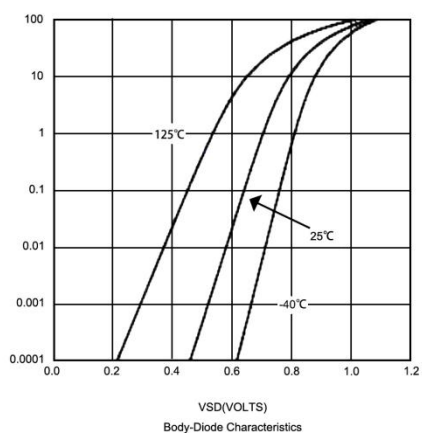
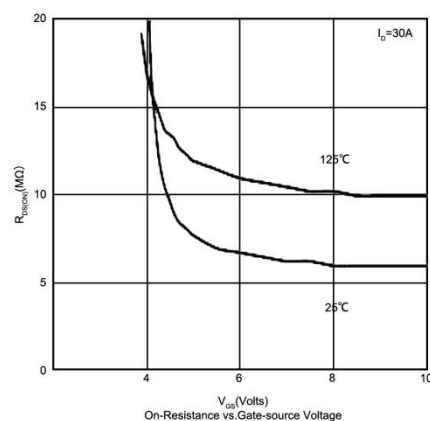
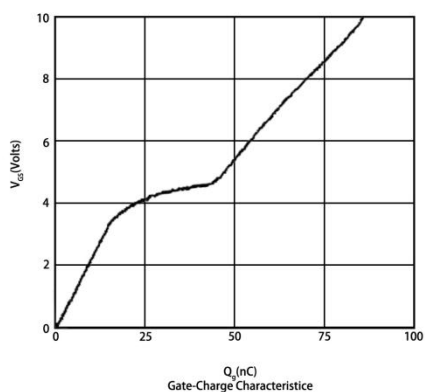
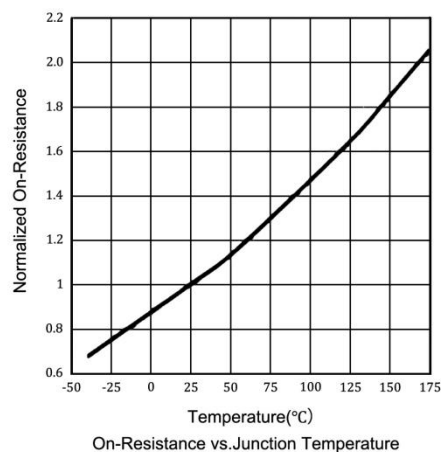
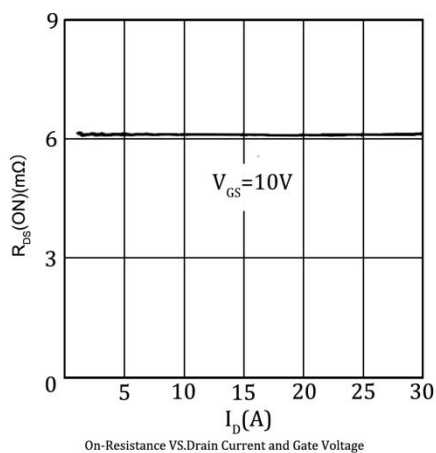
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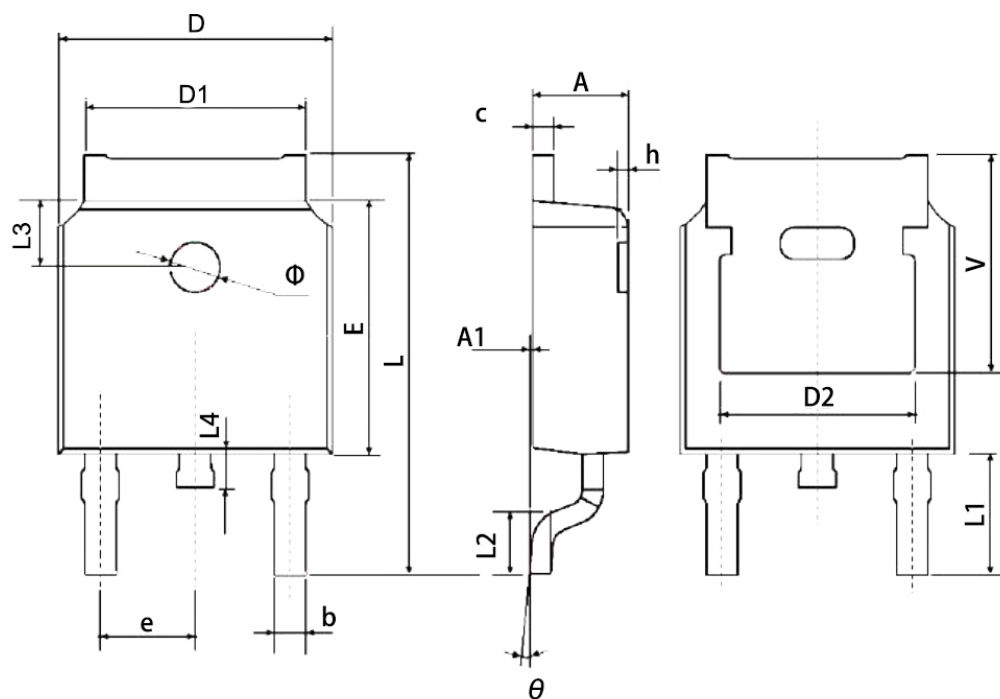
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Drain-Source Diode Characteristics						
V _{SD}	Diode Forward Voltage	V _{GS} =0V,I _{SD} =30A			1.3	V
T _{rr}	Reverse Recovery Time	I _{SD} =30A di/dt=100A/us		35		ns
Q _{rr}	Reverse Recovery Charge			50		nC
Dynamic Characteristics						
T _{d(on)}	Turn-on 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



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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.	