

P Channel Enhancement Mode Power MOSFET

GENERAL DESCRIPTION

The JY4P7M 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 high current load applications.

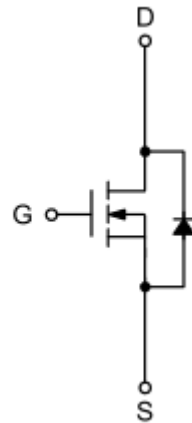
FEATURES

- -40V/-70A, $R_{DS(ON)} \leq 10m\Omega @ V_{GS} = -10V$
- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation

APPLICATIONS

- Load switch in high current applications
- Power Management for Inverter Systems

PIN DESCRIPTION



JY4P7M

Absolute Maximum Ratings(Tc=25° C Unless Otherwise Noted)

Symbol	Parameter		Limit	Unit
V _{DS}	Drain-Source Voltage		-40	V
V _{GS}	Gate-Source Voltage		± 20	V
I _D	Continuous Drain Current	Tc=25° C	-70	A
		Tc=100° C	-50	
I _{DM}	Pulsed Drain Current		-200	A
P _D	Maximum Power Dissipation		130	W
T _J T _{STG}	Operating Junction and Storage Temperature Range		-55 to +175	° C
R _{θJC}	Thermal Resistance-Junction to Case		0.98	° C/W

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

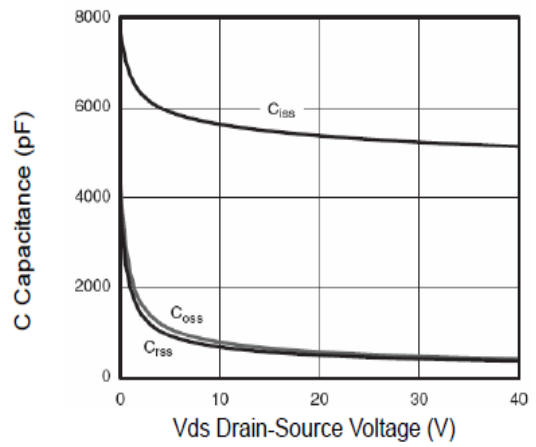
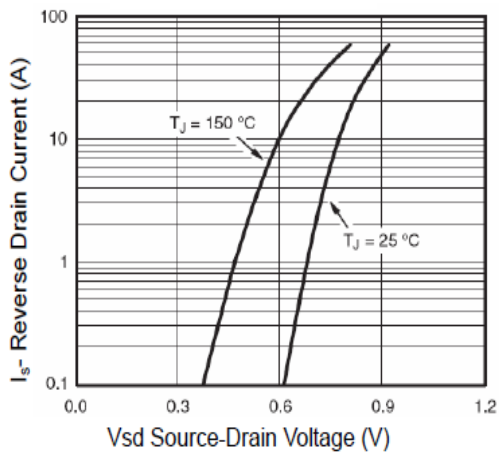
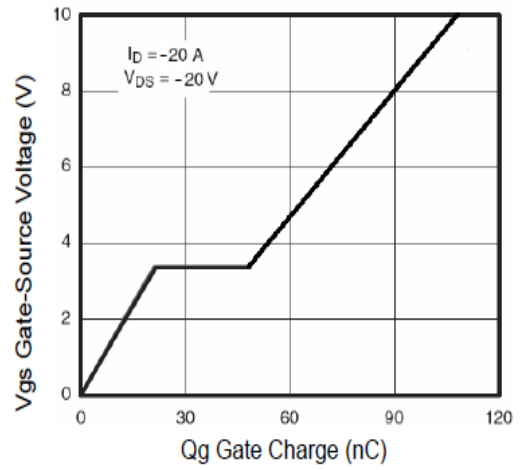
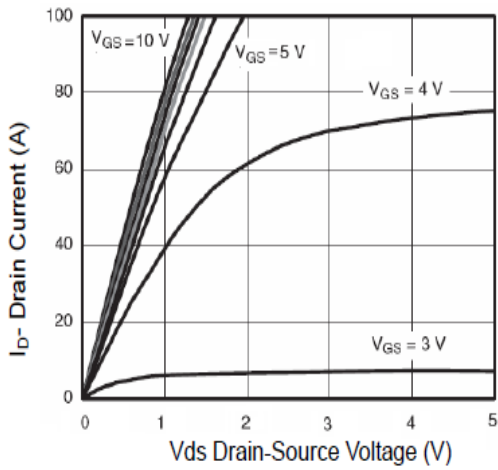
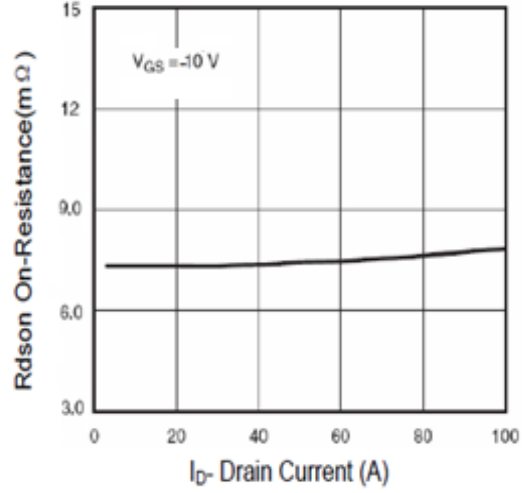
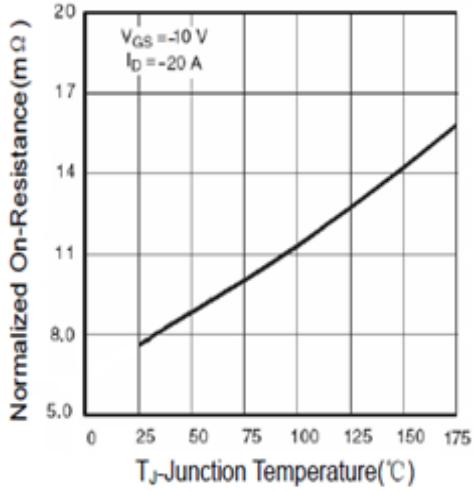
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250uA	-40			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-40V, V _{GS} =0V			-1	uA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ± 20V, V _{DS} =0V			± 100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _{DS} =-250uA	-1.2		-2.5	V
R _{DS(ON)}	Drain-Source On-state Resistance	V _{GS} =-10V, I _{DS} =-20A		7.8	10	mΩ
g _{FS}	Forward Transconductance	V _{DS} =-10V, I _{DS} =-20A	38			S

JY4P7M

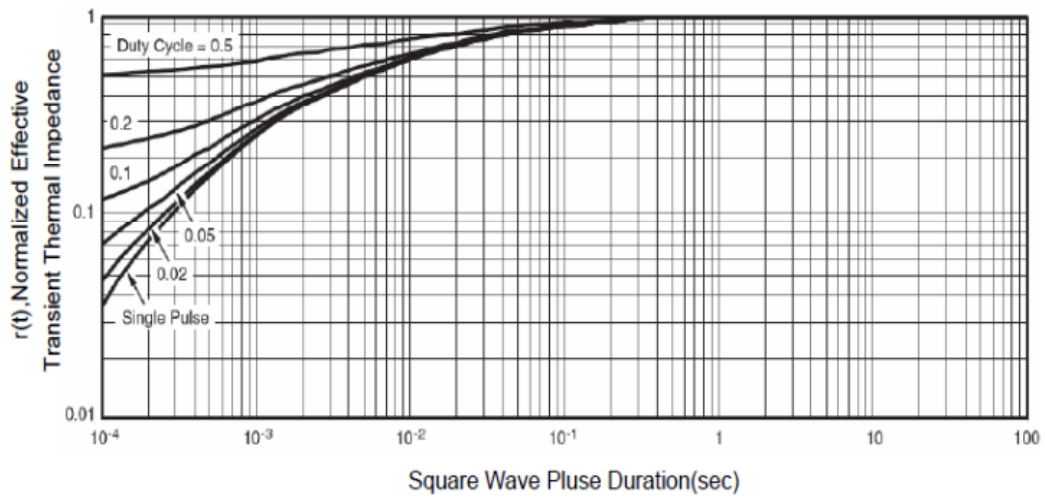
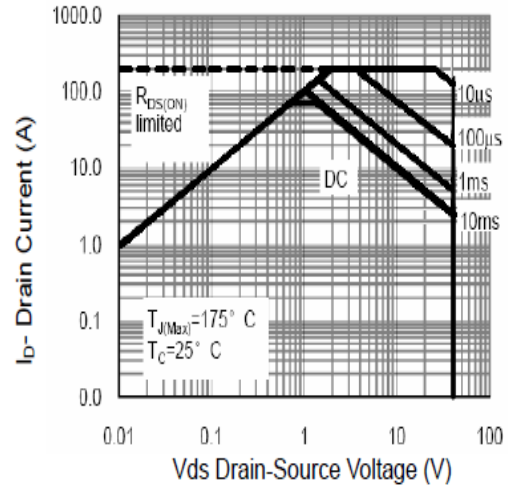
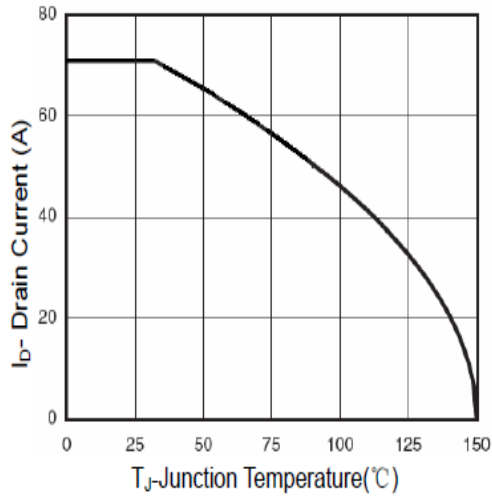
Electrical Characteristics(Ta=25°C Unless Otherwise Noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage	$V_{GS}=0V, I_{SD}=-70A$			-1.2	V
T_{rr}	Reverse Recovery Time	$I_{SD}=-40A$ $di/dt=100A/us$		45		ns
Q_{rr}	Reverse Recovery Charge			42		nC
Dynamic Characteristics						
R_G	Gate Resistance	$V_{GS}=0V, V_{DS}=0V,$ $f=1MHz$		1.3		Ω
$T_{d(on)}$	Turn-on Delay Time	$V_{DS}=-20V,$ $R_G=1.5\Omega,$ $I_{DS}=-20A,$ $V_{GS}=-10V,$		16		ns
T_r	Turn-on Rise Time			12		
$T_{d(off)}$	Turn-off Delay Time			73		
T_f	Turn-off Fall Time			17		
C_{ISS}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=-20V,$ $f=1.0MHz$		5360		pF
C_{OSS}	Output Capacitance			580		
C_{RSS}	Reverse Transfer Capacitance			495		
Q_g	Total Gate Charge	$V_{DS}=-20V, I_D=-20A,$ $V_{GS}=-10V$		110		nC
Q_{gs}	Gate-Source Charge			23		
Q_{gd}	Gate-Drain Charge			30		

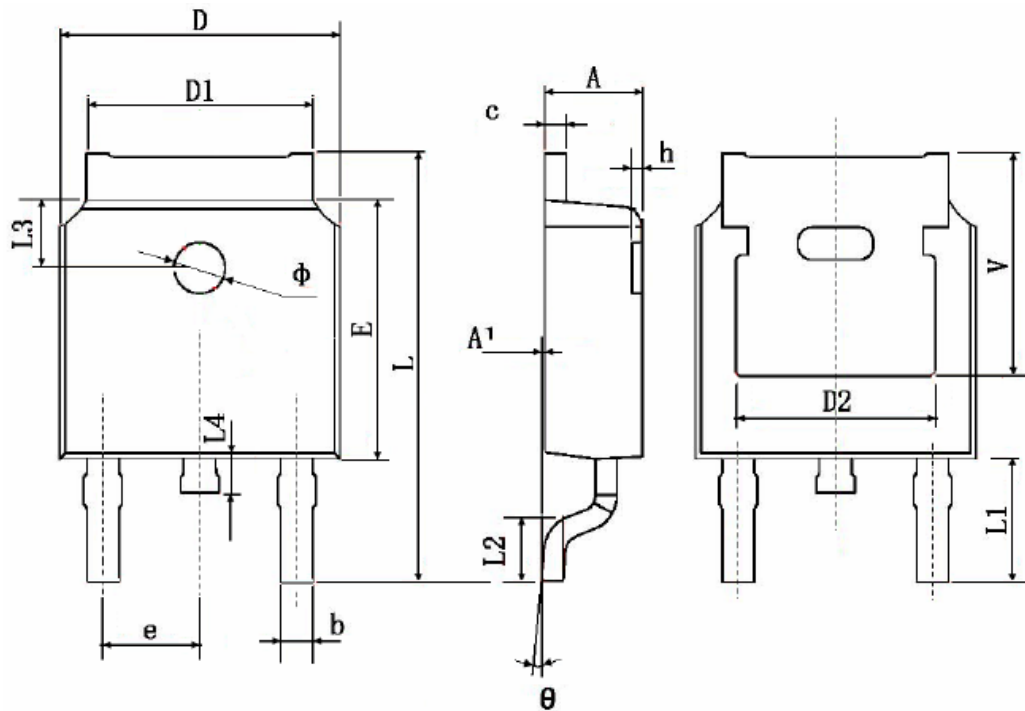
Typical electrical and thermal characteristics



Typical electrical and thermal characteristics



TO252 Package Outline



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.		0.190 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.		0.211 TYP.	