MY20N06P

60V N-Channel Enhancement Mode MOSFET

MAOYUANWEI semiconductor

General Description

The MY20N06P uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

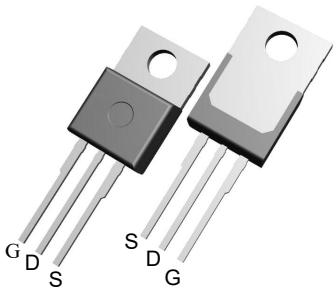
RoHS Compliant

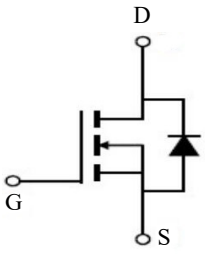
Features

V_{DSS}	60	V
I_D	20	A
$R_{DS(ON)}$(atV_{GS}=10V)	29	mΩ
$R_{DS(ON)}$(atV_{GS}=4.5V)	37	mΩ

Application

- Battery protection
- Load switch
- Uninterruptible power supply





Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY20N06P	TO-220	MY20N06P	1000

Absolute Maximum Ratings (T_C=25℃unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain- Source Voltage	60	V
V_{GS}	Gate Source Voltage	±20	V
I_D@ T_C=25℃	Continuous Drain Current[1]	20	A
I_D@T_C=100℃	Continuous Drain Current[1]	14	A
I_{DM}	Pulsed Drain Current[3]	60	A
E_{AS},E_{AR}	Avalanche Energy[5]	10	mJ
I_{AS},I_{AR}	Avalanche Current[5]	14	A
P_D@ T_C=25℃	Total Power Dissipation[4]	45	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
$R_{\theta JC}$	Thermal Resistance, Junction- to- Case[2]	1.9	℃/W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient [2]	62	℃/W

Electrical Characteristics (T_C=25 ℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250uA	60	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V,I_D=10A	---	29	32	mΩ
		V_{GS}=4.5V,I_D=10A	---	37	39	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1	2	3	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=60V,V_{GS}=0V,T_J=25℃	---	---	1	uA
		V_{DS}=48V,V_{GS}=0V,T_J=85℃	---	---	10	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V,V_{DS}=0V	---	---	±100	nA
g_{FS}	Forward Transconductance	V_{DS}=10V,I_D=10A	---	8	---	S
Q_g	Total Gate Charge (4.5V)	V_{DS}=30V , V_{GS}=10V , I_D=20A	---	16.6	24	nC
Q_{gs}	Gate-Source Charge		---	2.2	4.4	
Q_{gd}	Gate-Drain Charge		---	3.9	8	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=30V, I_{DS}=1A, V_{GEN}=10V, R_G=6Ω	---	4.6	9	nS
T_r	Rise Time		---	14.8	28	
$T_{d(off)}$	Turn-Off Delay Time		---	27.2	52	
T_f	Fall Time		---	7.8	12	
C_{iss}	Input Capacitance	V_{DS}=30V , V_{GS}=0V , f=1MHz	---	876	930	pF
C_{oss}	Output Capacitance		---	68	100	
C_{rss}	Reverse Transfer Capacitance		---	45	70	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Curren1,4	VG=VD=0V	---	---	20	A
I_{SM}	Pulsed Source Current		---	---	80	A
V_{SD}	Diode Forward Voltage2	V_{GS}=0V , I_{SD}=10A , T_J=25℃	---	---	0.8	V
T_{rr}	Reverse Recovery Time	I_S=1A,V_{GS}=0V, di/dt=100A/μs TJ=25℃	---	17	---	nS
Q_{rr}	Reverse Recovery Charge		---	12	---	nC

Notes:

1 . Repetitive Rating: Pulse width limited by maximum junction temperature.
2 . Surface Mounted on FR4 Board, t ≤ 1 0 sec.
3 . Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤2 %.
4 . The data is theoretically the same as I D and I DM , in real applications , should be limited by total power dissipation.
5 . The EAS test condition is VDD =30V,VGS =10V,L=0.1mH,IAS =14A

Typical Characteristics

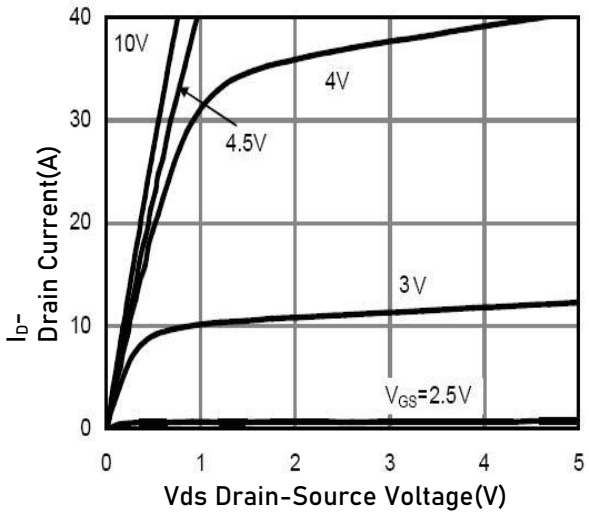


Fig.1 Typical Output Characteristics

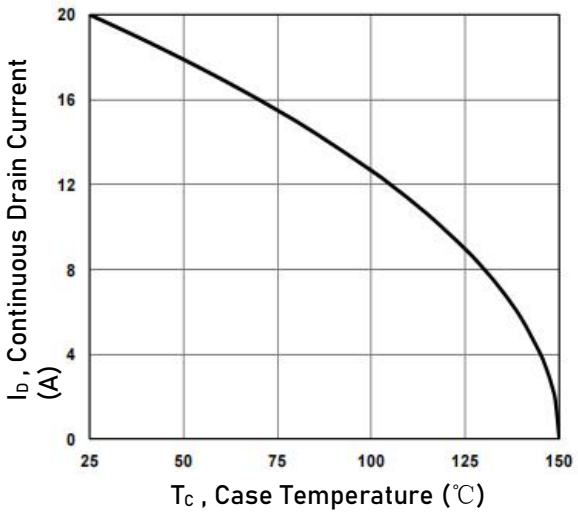


Fig.2 Drain Current

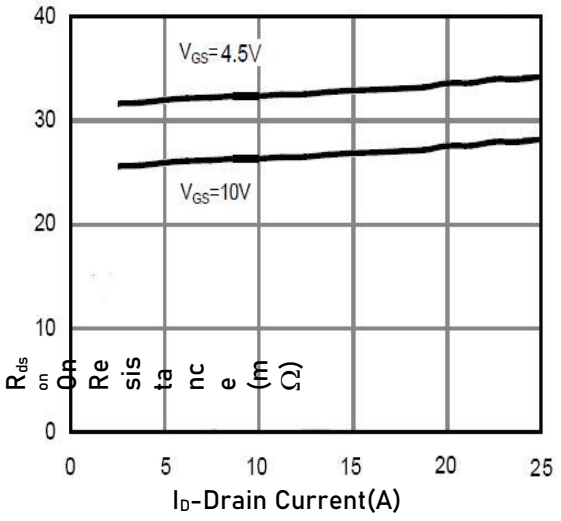


Fig.3 Drain-Source On Resistance

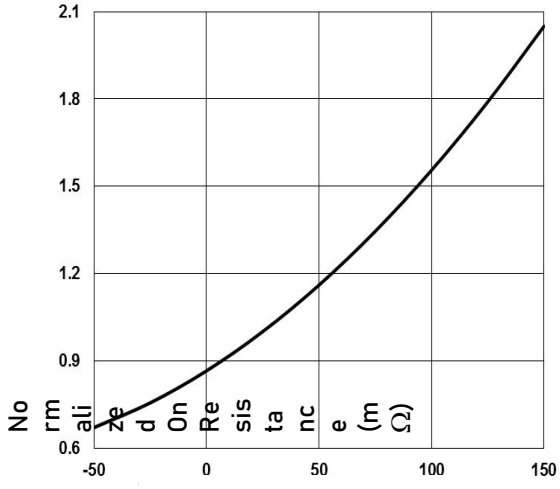


Fig.4 Normalized RDSON vs. T_J

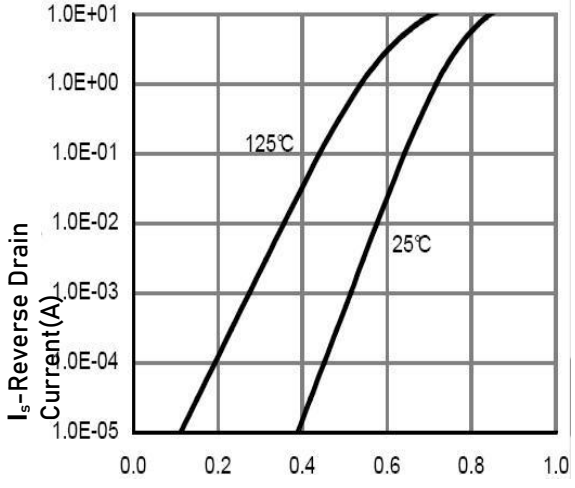


Fig.5 Forward Characteristics Of Reverse

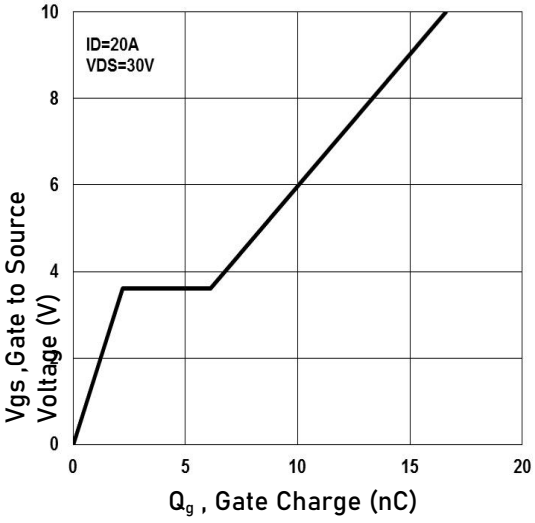


Fig.6 Gate-Charge Characteristics

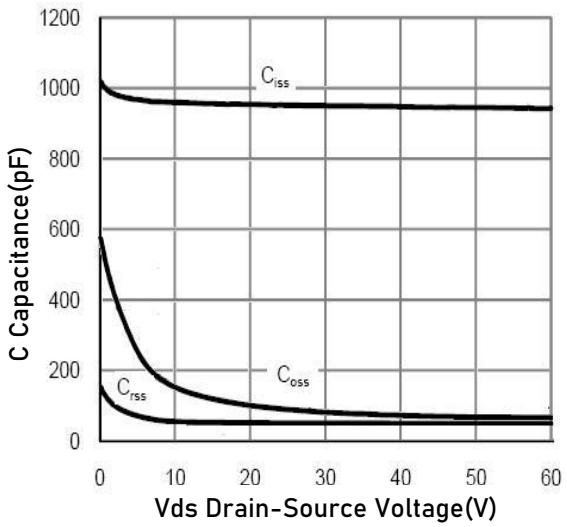


Fig.7 Capacitance

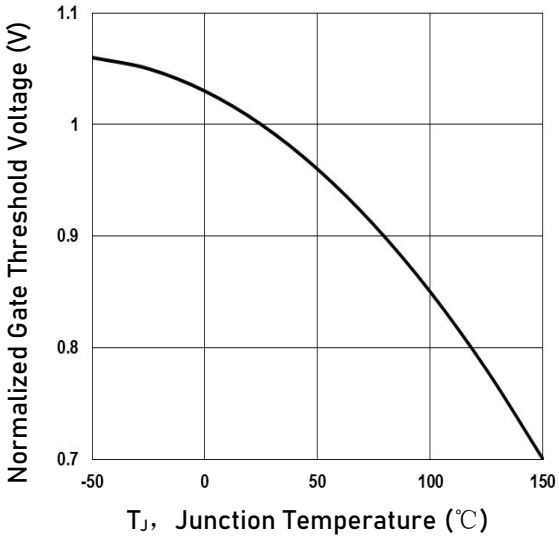


Fig.8 Normalized Vth vs. TJ

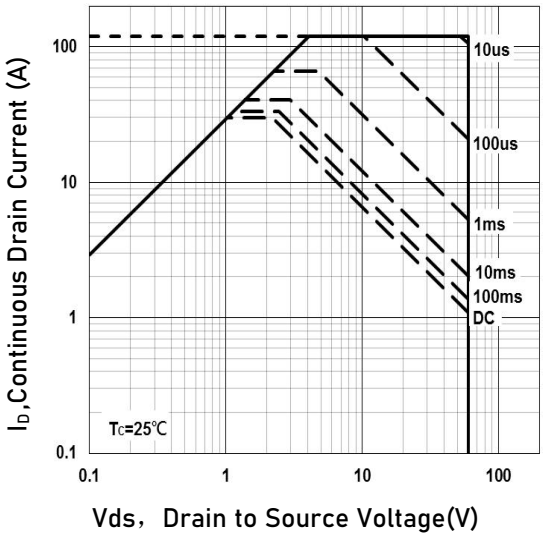


Fig.9 Safe Operating Area

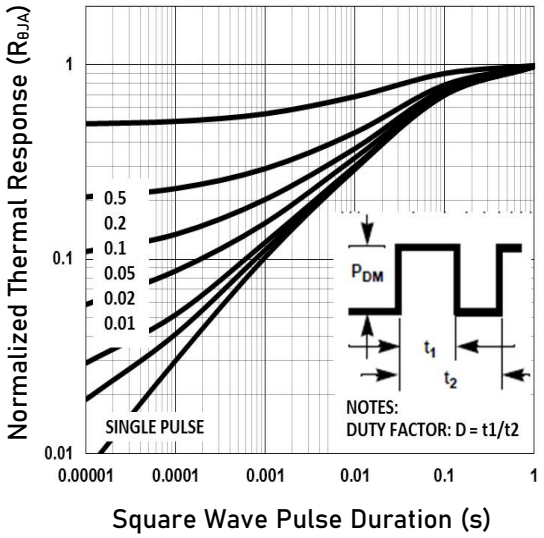


Fig.10 Transient Thermal Impedance

Package Mechanical Data-TO-220JQ Single