

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.

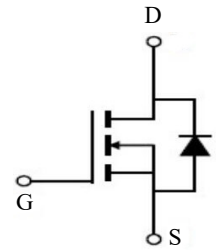
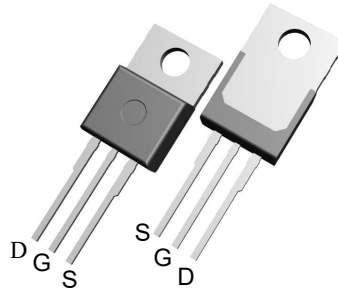


Features

V_{DSS}	60	V
I_D	20	A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	29	$m\Omega$
$R_{DS(ON)}$ (at $V_{GS}=4.5V$)	37	$m\Omega$

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 ($T_c=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain- Source Voltage	60	V
V_{GS}	Gate Source Voltage	± 20	V
$I_D @ T_c=25^\circ\text{C}$	Continuous Drain Current ¹	20	A
$I_D @ T_c=100^\circ\text{C}$	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
$P_D @ T_c=25^\circ\text{C}$	Total Power Dissipation ⁴	45	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$
$R_{\theta JC}$	Thermal Resistance, Junction- to- Case ²	1.9	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ²	62	$^\circ\text{C}/\text{W}$

Electrical Characteristics (T_c=25 °C, 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°C	---	---	1	uA
		V _{DS} =48V, V _{GS} =0V, T _J =85°C	---	---	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 Current ^{1,4}	V _G =V _D =0V	---	---	20	A
I _{SM}	Pulsed Source Current		---	---	80	A
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V, I _{SD} =10A, T _J =25°C	---	---	0.8	V
T _{rr}	Reverse Recovery Time	I _S =1A, V _{GS} =0V, di/dt=100A/μs T _J =25°C	---	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 ≤ 10 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 V_{DD}=30V, V_{GS}=10V, L=0.1mH, I_{AS}=14A

Typical Characteristics

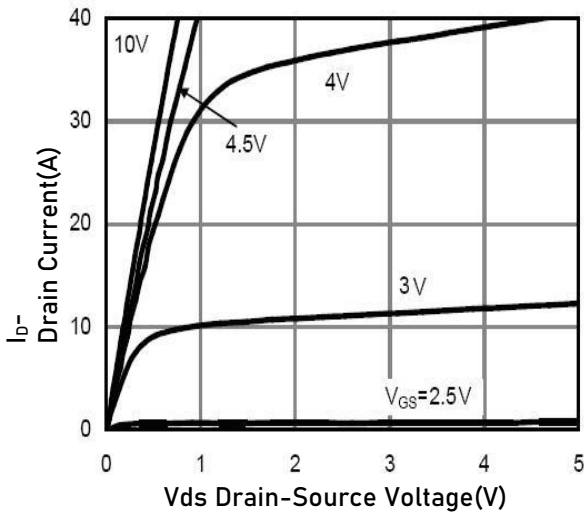


Fig.1 Typical Output Characteristics

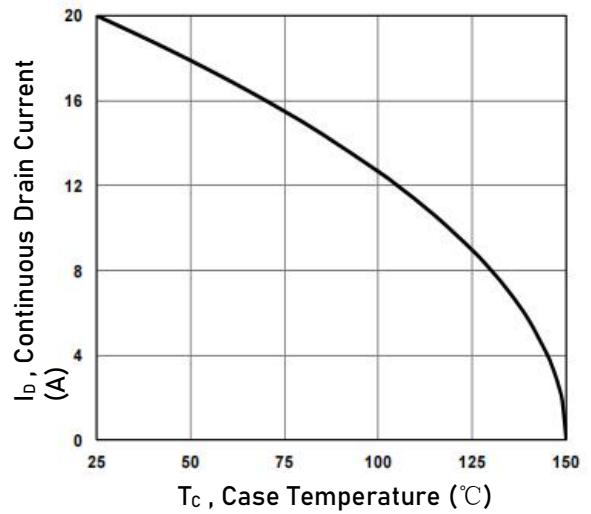


Fig.2 Drain Current

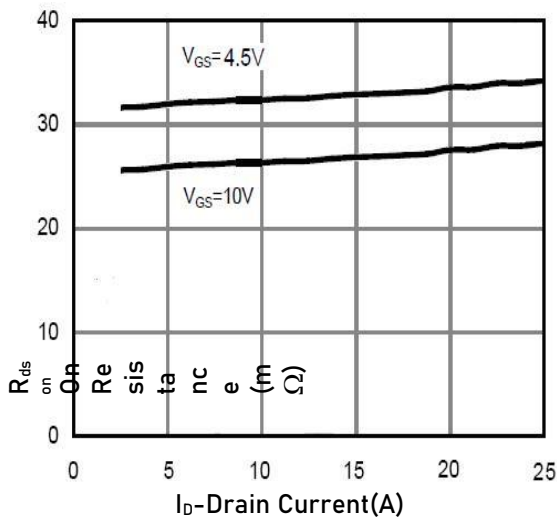


Fig.3 Drain-Source On Resistance

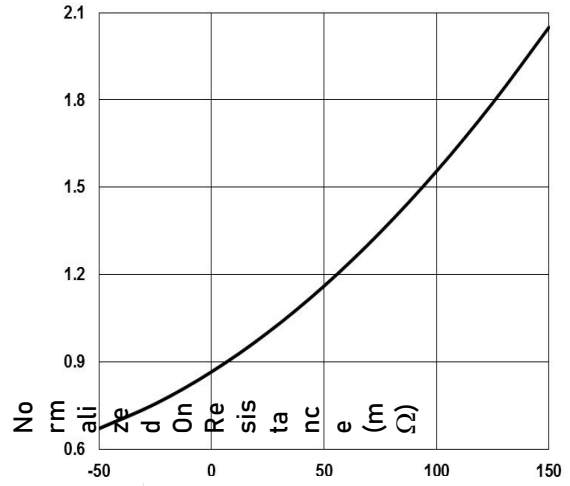


Fig.4 Normalized RDSON vs. T_j

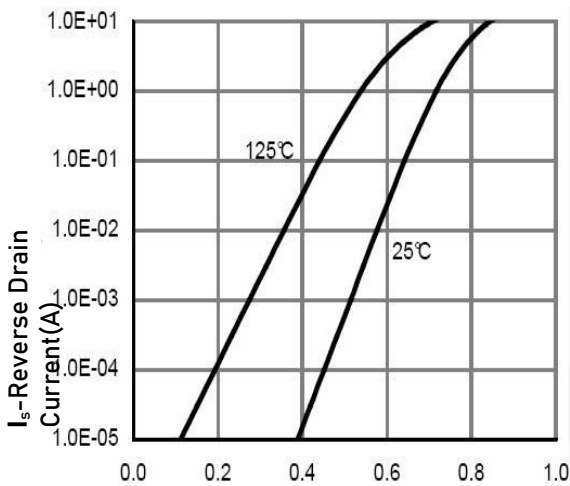


Fig.5 Forward Characteristics Of Reverse

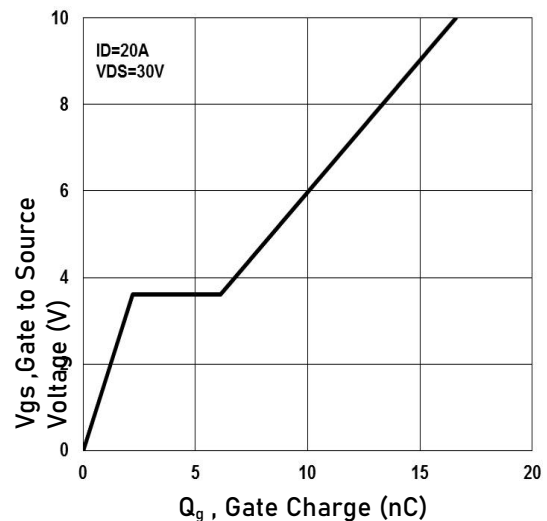


Fig.6 Gate-Charge Characteristics

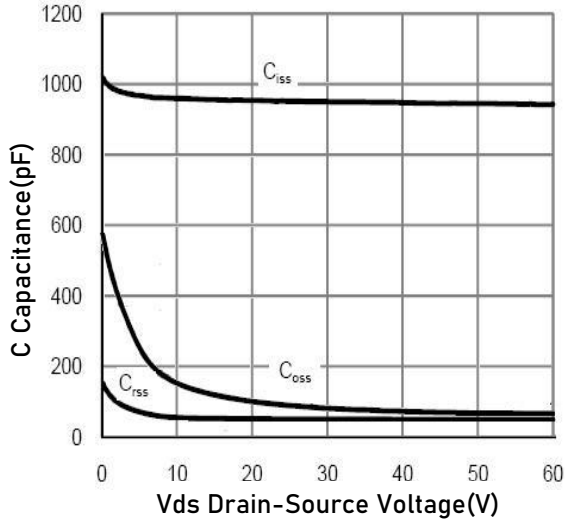


Fig.7 Capacitance

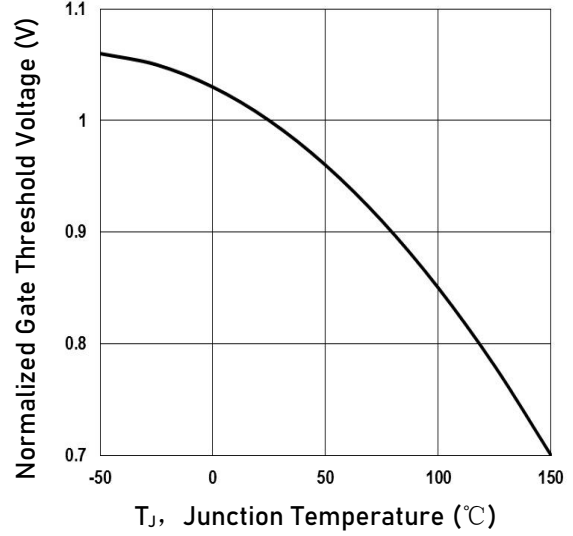


Fig.8 Normalized Vth vs. TJ

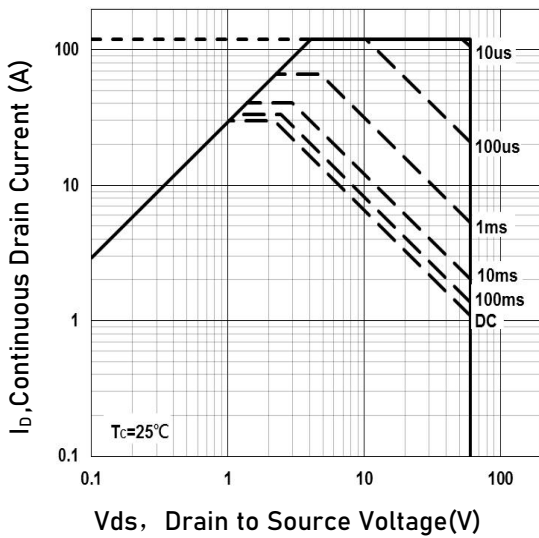


Fig.9 Safe Operating Area

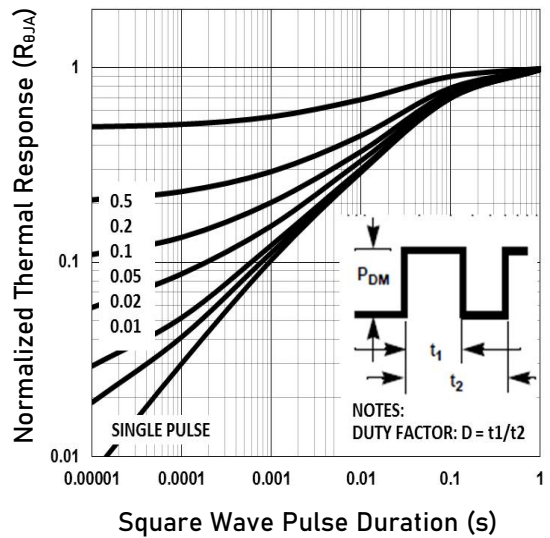


Fig.10 Transient Thermal Impedance

Package Mechanical Data-TO-220JQ Single

