MY20P80NE5

-20V P-Channel Enhancement Mode MOSFET

MAOYUANWEI semiconductor

General Description

The MY20P80NE5 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.

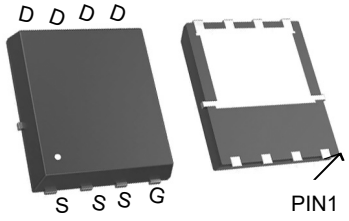
RoHS Compliant

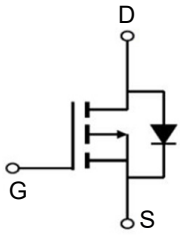
Features

V_{DSS}	-18	V
I_D	-80	A
$R_{DS(ON)}$(atV_{GS} =10V)	2.3	mÝ
$R_{DS(ON)}$(atV_{GS} =4.5V)	3.3	mÝ

Application

- Battery protection
- Load switch
- Uninterruptible power supply





Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY20P80NE5	PDFN5*6-8L	20P80G	5000

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-18	V
V_{GS}	Gate-Source Voltage	±12	V
I_D	Drain Current – Continuous (T_C=25℃)	-80	A
	Drain Current – Continuous (T_C=100℃)	-54	A
I_{DM}	Drain Current – Pulsed[1]	-360	A
P_D	Power Dissipation (T_C=25℃)	41.67	W
	Power Dissipation – Derate above 25℃	0.33	W/℃
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
$R_{\theta}JA$	Thermal Resistance Junction to ambient	62	℃/W
$R_{\theta}JC$	Thermal Resistance Junction to Case	3	℃/W

Electrical Characteristics (T_J=25 ℃, unless otherwise

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=-250uA	-20	---	---	V
△BV_{DSS}/△T_J	BV_{DSS} Temperature Coefficient	Reference to 25℃ , I_D=-1mA	---	-0.008	---	V/℃
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =-250uA	-0.4	-0.6	-1.0	V
△V_{GS}	$V_{GS(th)}$ Temperature Coefficient		---	-3.44	---	mV/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=-4.5V , I_D=-20A	---	2.3	3.0	mΩ
		V_{GS}=-2.5V , I_D=-20A	---	3.3	4.5	mΩ
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-20V , V_{GS}=0V , T_J=25 ℃	---	---	-1	uA
		V_{DS}=-16V , V_{GS}=0V , T_J=125℃	---	---	-30	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±12V , V_{DS}=0V	---	---	±500	nA
gfs	Forward Transconductance	V_{DS}=-10V , I_S=-3A	---	30	---	S
Q_g	Total Gate Charge[2,3]	V_{DS}=-16V , V_{GS}=-4.5V , I_D=-5A	---	149	225	
Q_{gs}	Gate-Source Charge[2,3]		---	14.4	22	
Q_{gd}	Gate-Drain Charge[2,3]		---	42.8	65	
$T_{d(on)}$	Turn-On Delay Time[2,3]	V_{DD}=-15V , V_{GS}=-4.5V, R_G=25Ω , I_D=-1A	---	21.2	42	nS
T_r	Rise Time[2,3]		---	20.6	40	
$T_{d(off)}$	Turn-Off Delay Time[2,3]		---	26	52	
T_f	Fall Time[2,3]		---	400	600	
C_{iss}	Input Capacitance	V_{DS}=-15V , V_{GS}=0V , F=1MHz	---	12000	16000	pF
C_{oss}	Output Capacitance		---	1670	2500	
C_{rss}	Reverse Transfer Capacitance		---	730	1100	
Rg	Gate resistance	V_{GS}=0V, V_{DS}=0V, F=1MHz	---	2.6	---	Ω
IS	Contineous Source Current	Vg=Vd=0V, Force Current			-90	A
ISM	Pulsed Source Current				-180	A
VSD	Diode Forward Voltage	Vgs=0V Is=1A Tj=25℃			-1	V

Note :
1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
3. Essentially independent of operating temperature.

Typical Characteristics

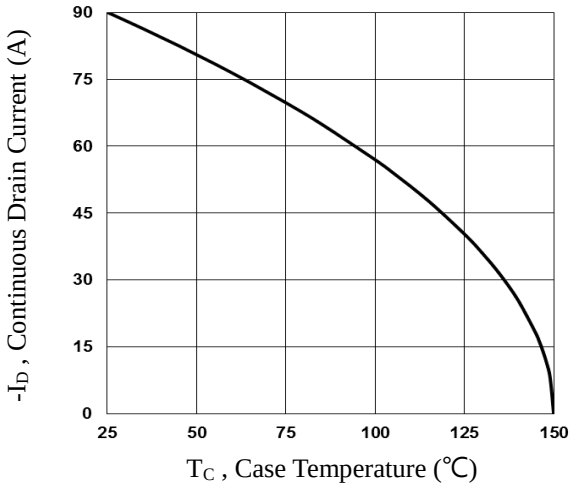


Fig.1 Continuous Drain Current

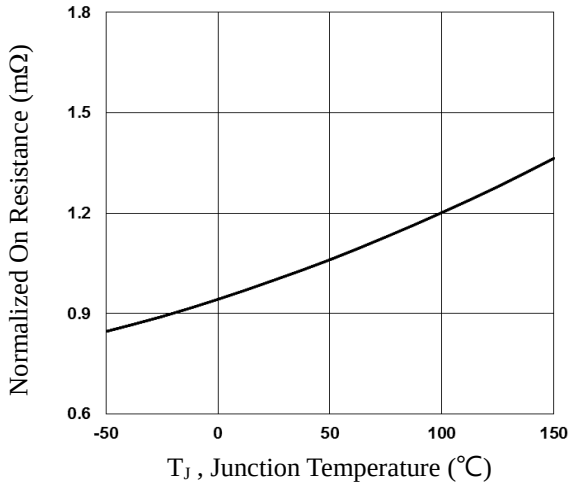


Fig.2 Normalized RDSON vs. T_J

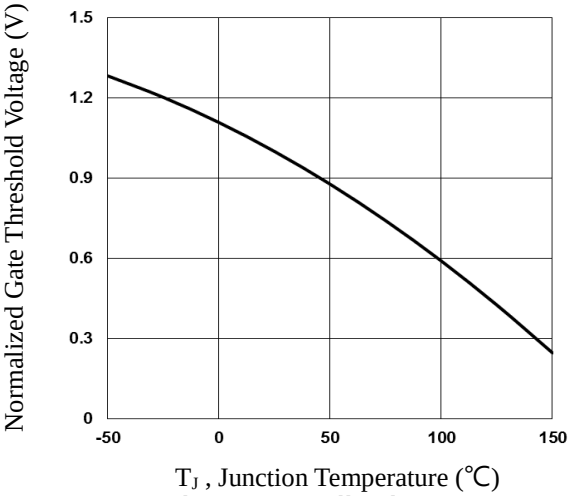


Fig.3 Normalized V_{th} vs.

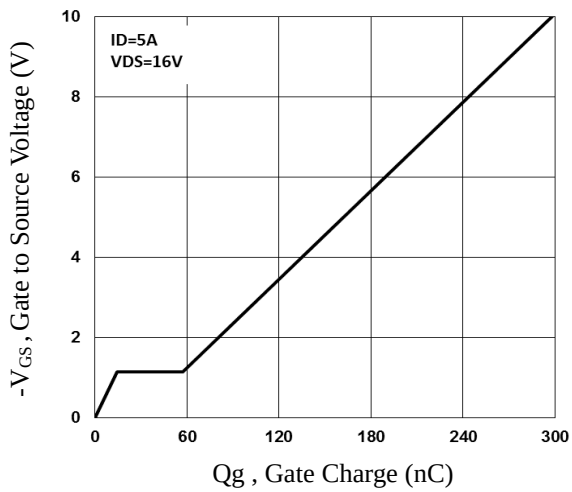


Fig.4 Gate Charge Waveform

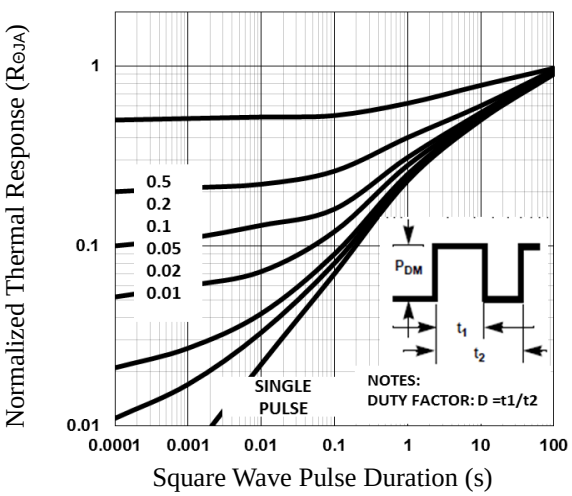


Fig.5 Normalized Transient Response

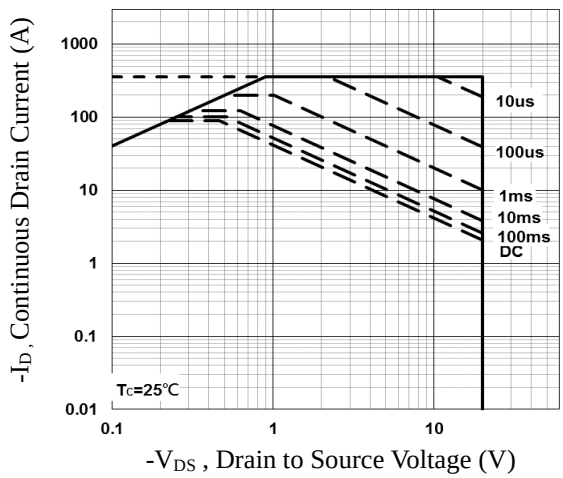


Fig.6 Maximum Safe Operation Area

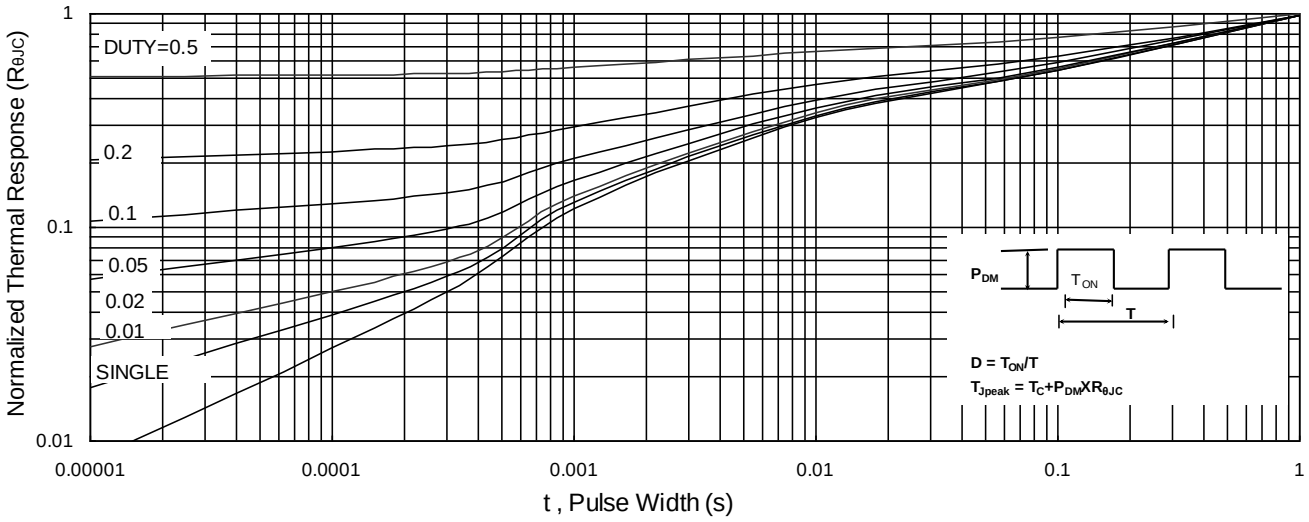


Fig.9 Normalized Maximum Transient Thermal Impedance

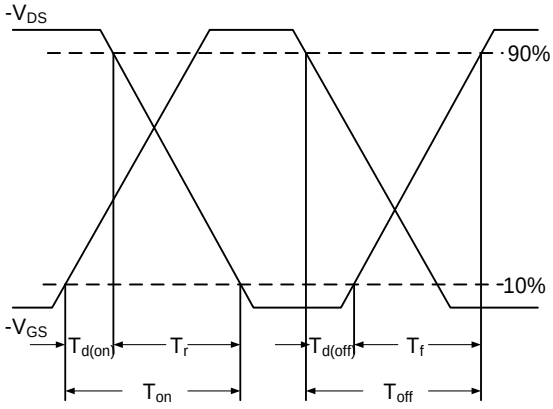


Fig.10 Switching Time Waveform

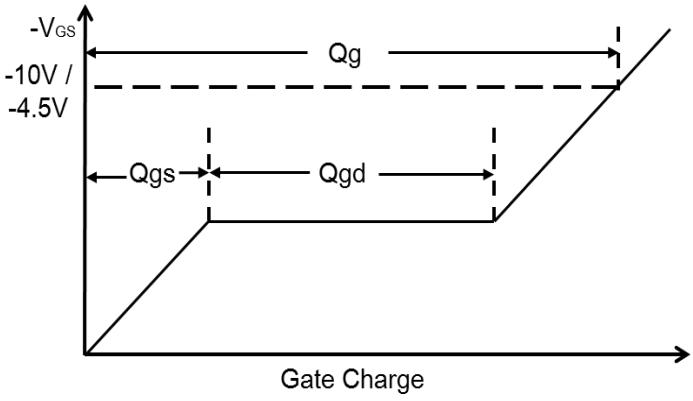
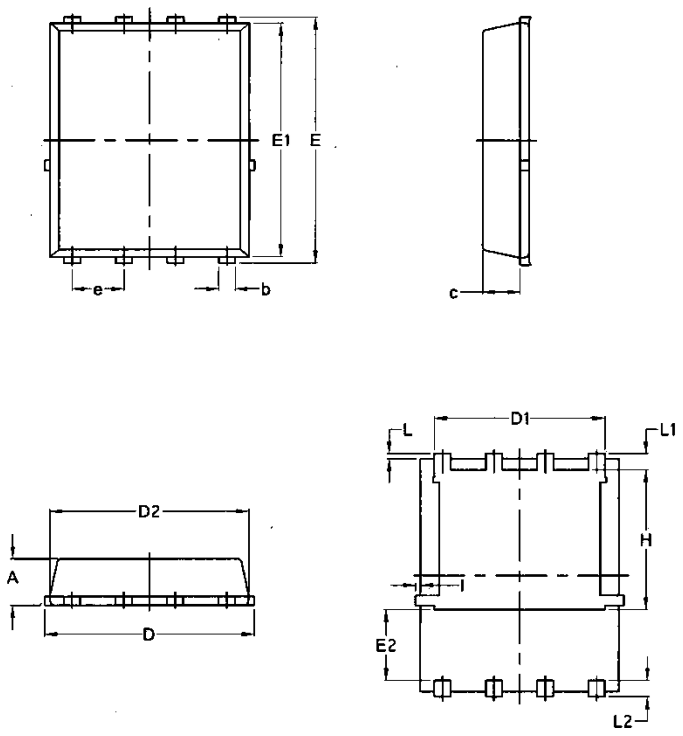


Fig.11 Unclamped Inductive Switching Waveform

Package Mechanical Data-DFN5*6-8L-JQ Single



Symbol	Common			
	mm		Inch	
	Mim	Max	Min	Max
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.0970	0.0324	0.082
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	/	0.0630	/
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
I	/	0.18	/	0.0070