MY30B03NE5
30V Dual N-Channel Enhancement Mode MOSFET

MAOYUAN *semiconductor*

General Description

The MY30B03NE5 is the highest performance trench N-ch MOSFETS with extreme high cell density,which provide excellent R_{DSON} and gate charge for most of the small power switching and load switch applications.
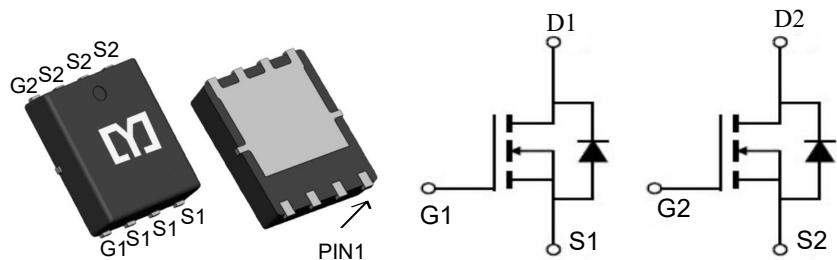
Features

V_{DSS}	30	V
I_D	30	A
$R_{DS(ON)}(at V_{GS}=10V)$	10	mΩ
$R_{DS(ON)}(at V_{GS}=4.5V)$	14	mΩ

RoHS Compliant

Application

➢ Battery protection
➢ Load switch
➢ Uninterruptible power supply

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY30B03NE5	PDFN5*6-8L	30B03DS	5000

Absolute Maximum Ratings (T$_A$=25℃ unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T$_C$=25℃	Continuous Drain Current, V$_{GS}$ @ 10V[1]	30	A
I_D@T$_C$=100℃	Continuous Drain Current, V$_{GS}$ @ 10V[1]	26	A
I_{DM}	Pulsed Drain Current[2]	75	A
EAS	Single Pulse Avalanche Energy[3]	32	mJ
I_{AS}	Avalanche Current	30	A
P_D@T$_C$=25℃	Total Power Dissipation[4]	26	W
P_D@T$_A$=25℃	Total Power Dissipation[4]	1.67	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
$R_{θJA}$	Thermal Resistance Junction-Ambient [1]	75	℃/W
$R_{θJC}$	Thermal Resistance Junction-Case[1]	4.8	℃/W

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	30	---	---	V
$\triangle BV_{DSS}/\triangle T_J$	BV_{DSS} Temperature Coefficient	Reference to 25℃ , I_D=1mA	---	0.023	---	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance [2]	V_{GS}=10V , I_D=15A	---	---	10	mΩ
		V_{GS}=4.5V , I_D=10A	---	---	14	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1.0	---	2.5	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	-5.08	---	mV/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=24V , V_{GS}=0V , T_J=25 ℃	---	---	1	uA
		V_{DS}=24V , V_{GS}=0V , T_J=55℃	---	---	5	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=5V , I_D=15A	---	24.4	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	1.8	---	Ω
Q_g	Total Gate Charge (4.5V)	V_{DS}=15V , V_{GS}=4.5V , I_D=12A	---	9.82	---	nC
Q_{gs}	Gate-Source Charge		---	2.24	---	
Q_{gd}	Gate-Drain Charge		---	5.54	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=15V , V_{GS}=10V , R_G=1.5 □ I_D=20A	---	6.4	---	ns
T_r	Rise Time		---	39	---	
$T_{d(off)}$	Turn-Off Delay Time		---	21	---	
T_f	Fall Time		---	4.7	---	
C_{iss}	Input Capacitance	V_{DS}=15V , V_{GS}=0V , f=1MHz	---	896	---	pF
C_{oss}	Output Capacitance		---	126	---	
C_{rss}	Reverse Transfer Capacitance		---	108	---	
I_S	Continuous Source Current[1,5]	V_G=V_D=0V , Force Current	---	---	37	A
I_{SM}	Pulsed Source Current[2,5]		---	---	75	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=1A , T_J=25℃	---	---	1	V

Note :

1 .The data tested by surface mounted on a 1 inch[2] FR-4 board with 2OZ copper.

2.The data tested by pulsed , pulse width $\leqq$ 300us , duty cycle $\leqq$ 2%

3 .The EAS data shows Max. rating . The test condition is V_{DD}=25V,V_{GS}=10V,L=0.1mH,I_{AS}=22A

4.The power dissipation is limited by 175℃ junction temperature

5 .The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics
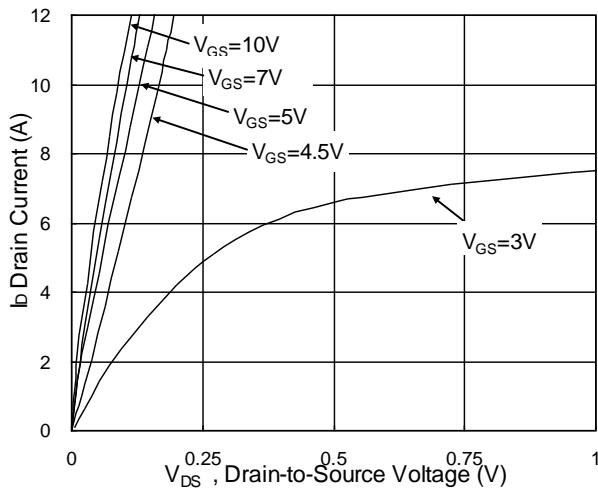

**Fig.1 Typical Output Characteristics**
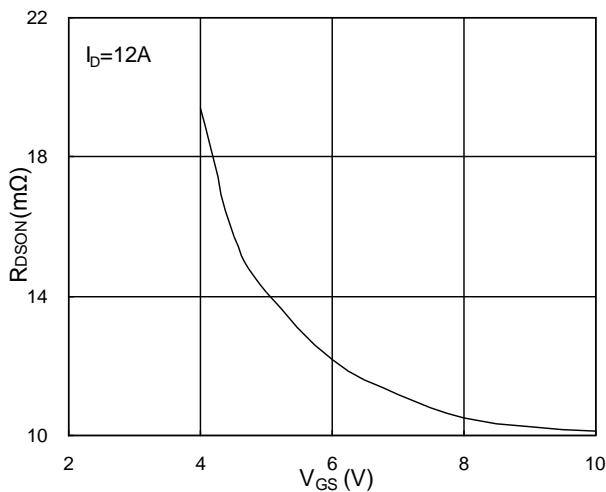
Fig.2 On-Resistance vs. G-S Voltage
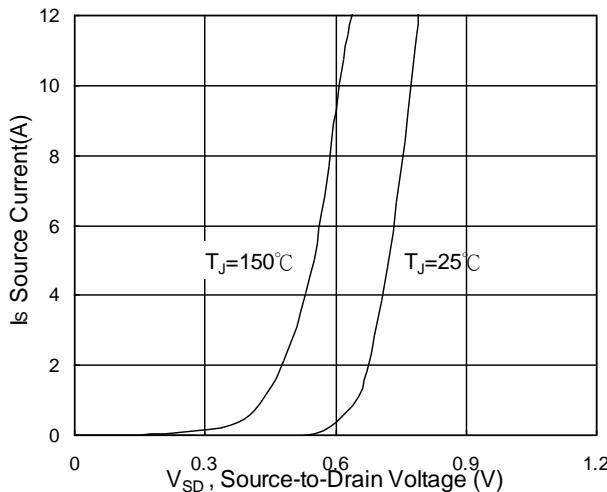
**Fig.3 Forward Characteristics of Reverse**
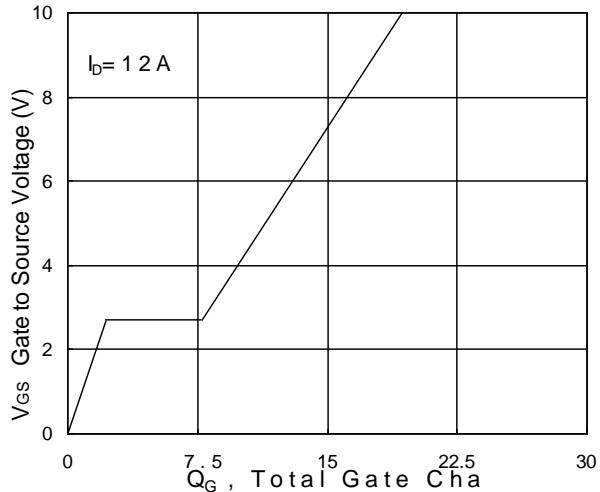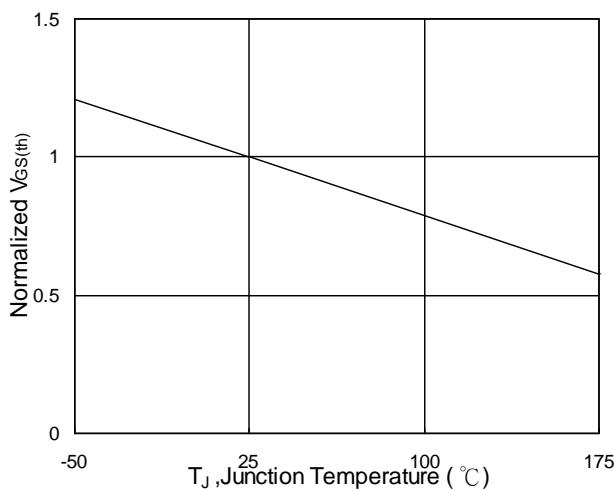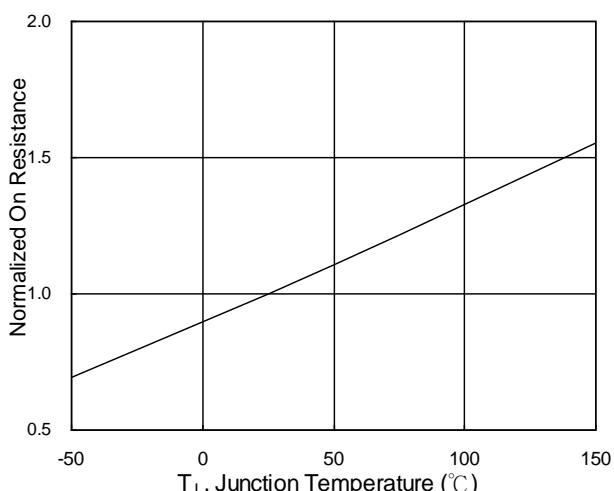

Fig.4 Gate-charge Characteristics

**Fig.5 Normalized $V_{GS(th)}$ vs. T_J**

**Fig.6 Normalized R_{DSON} vs. T_J**
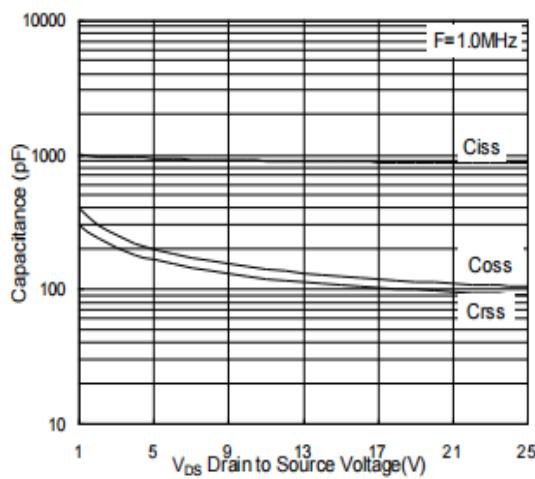
Fig.7 Capacitance
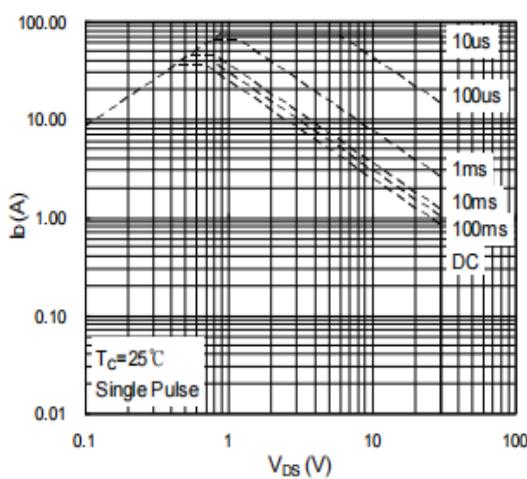
Fig.8 Safe Operating Area
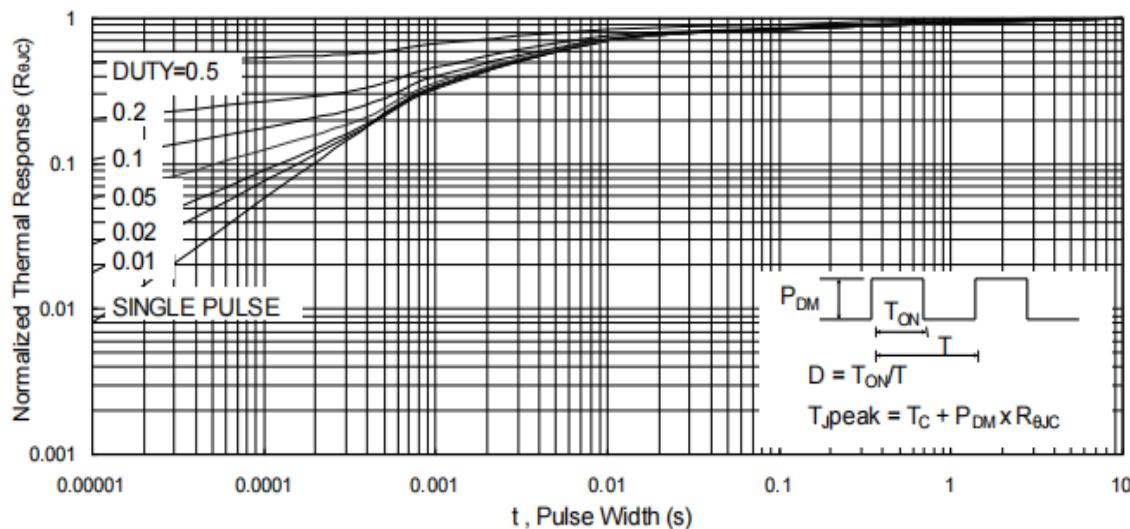
Fig.9 Normalized Maximum Transient Thermal Impedance

$$D = T_{ON}/T$$

$$T_J peak = T_C + P_{DM} \times R_{\theta JC}$$
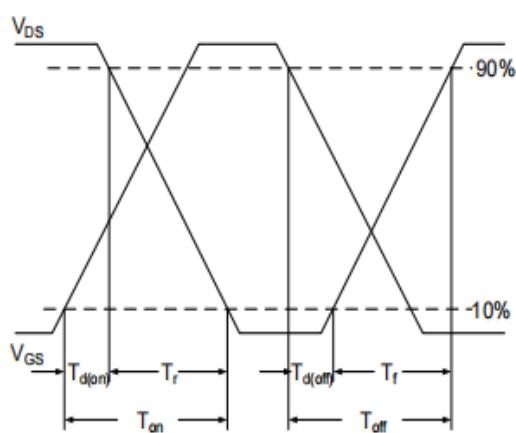
Fig.10 Switching Time Waveform

$$EAS = \frac{1}{2} L \times I_{AS}^2 \times \frac{BV_{DSS}}{BV_{DSS} - V_{DD}}$$
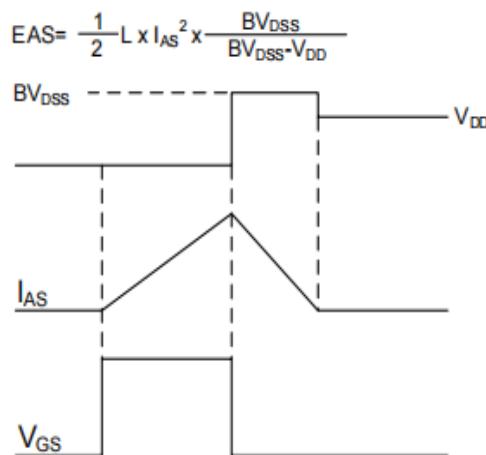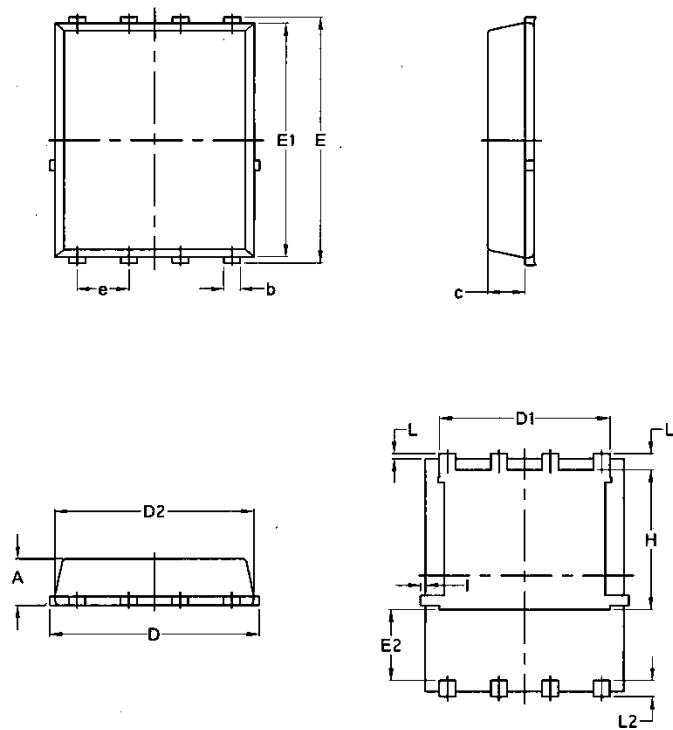
Fig.11 Unclamped Inductive Waveform

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