MY005CNE5

30V N-Channel Enhancement Mode MOSFET

MAOYUANWEI semiconductor

General Description

The MY005CNE5 series are from Advanced Power innovated design and silicon process technology to achieve the lowest possible on-resistance and fast switching performance.

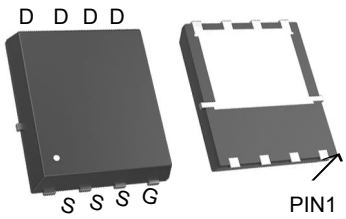
RoHS Compliant

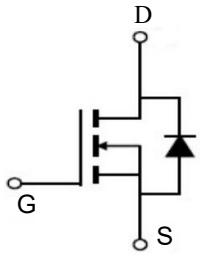
Features

V_{DSS}	30	V
I_D	80	A
$R_{DS(ON)}$(atV_{GS} =10V)	<5.5	mΩ
$R_{DS(ON)}$(atV_{GS} =4.5V)	<6.5	mΩ

Application

- Battery protection
- Load switch
- Uninterruptible power supply





Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY005CNE5	PDFN5*6-8L	005DN	5000

Absolute Maximum Ratings (T_C=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[1,6]	80	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ 10V[1,6]	68	A
I_{DM}	Pulsed Drain Current[2]	216	A
EAS	Single Pulse Avalanche Energy[3]	144.7	mJ
I_{AS}	Avalanche Current	53.8	A
P_D@T_C=25℃	Total Power Dissipation[4]	69	W
P_D@T_A=25℃	Total Power Dissipation[4]	5	W
T_{STG}	Storage Temperature Range	-55 to 175	℃
T_J	Operating Junction Temperature Range	-55 to 175	℃
$R_{\theta JA}$	Thermal Resistance Junction-Ambient [1]	62	℃/W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient [1] (t ≤10s)	25	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	1.8	℃/W

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
$\triangle BV_{DSS}/\triangle T_J$	BVDSS Temperature Coefficient	Reference to 25℃ , I_D=1mA	---	0.0213	---	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V , I_D=30A	---	4.3	5.5	mΩ
		V_{GS}=4.5V , I_D=15A	---	4.8	6.5	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1.2	1.7	2.5	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	-5.73	---	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=30A	---	26.5	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	1.4	---	
Q_g	Total Gate Charge (4.5V)	V_{DS}=15V , V_{GS}=4.5V , I_D=15A	---	98	---	nC
Q_{gs}	Gate-Source Charge		---	11	---	
Q_{gd}	Gate-Drain Charge		---	21	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=15V , V_{GS}=10V , R_G=3.3 I_D=15A	---	17	---	ns
T_r	Rise Time		---	41	---	
$T_{d(off)}$	Turn-Off Delay Time		---	55	---	
T_f	Fall Time		---	66	---	
C_{iss}	Input Capacitance	V_{DS}=15V , V_{GS}=0V , f=1MHz	---	5471	---	pF
C_{oss}	Output Capacitance		---	1628	---	
C_{rss}	Reverse Transfer Capacitance		---	1026	---	
I_S	Continuous Source Current[1,5]	V_G=V_D=0V , Force Current	---	---	130	A
I_{SM}	Pulsed Source Current[2,5]		---	---	520	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=1A , T_J=25℃	---	---	1.2	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 ≦ 300us , duty cycle ≦ 2%
3.The EAS data shows Max. rating . The test condition is V DD =25V,V GS =10V,L=0.1mH,I AS =53.8A
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.
6.Package limitation current is 85A.

Typical Characteristics

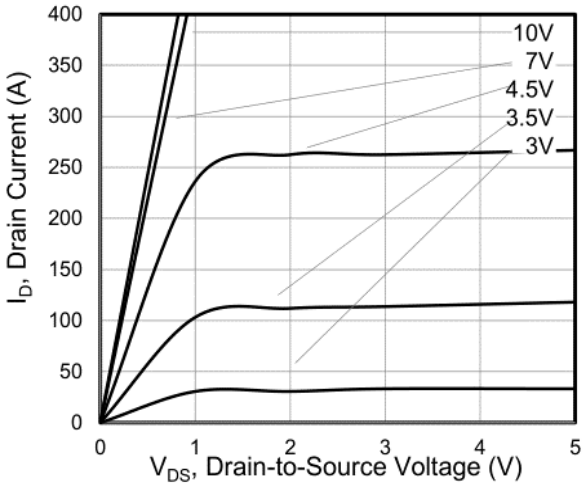


Figure 1. Output Characteristics

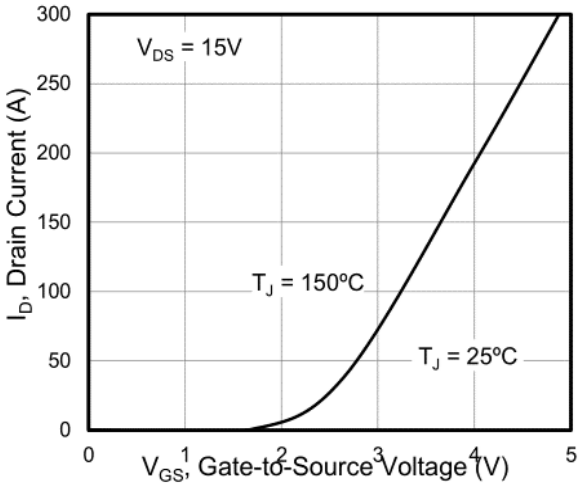


Figure 2. Transfer Characteristics

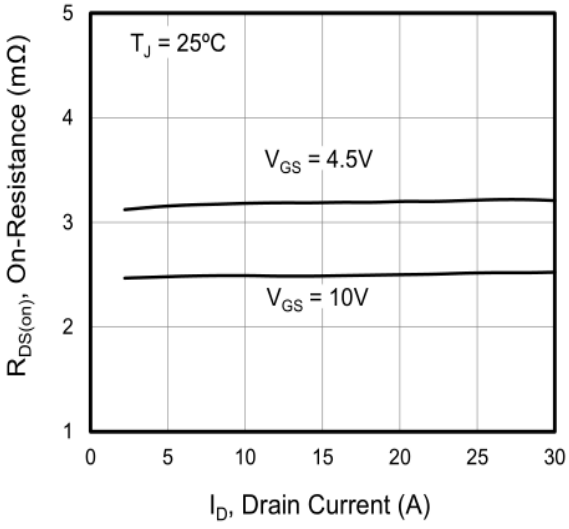


Figure 3. On-Resistance vs. Drain Current

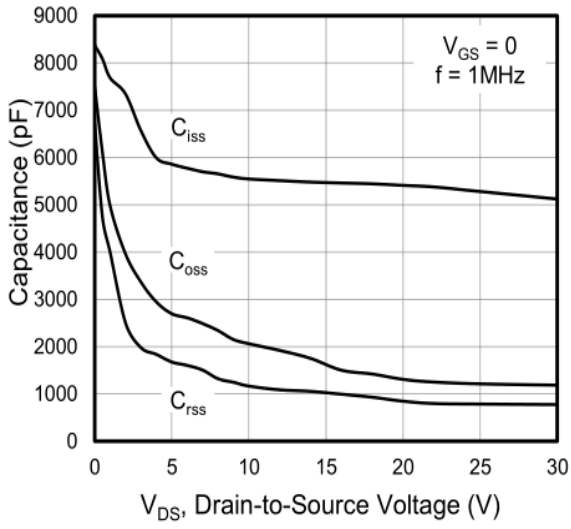


Figure 4. Capacitance

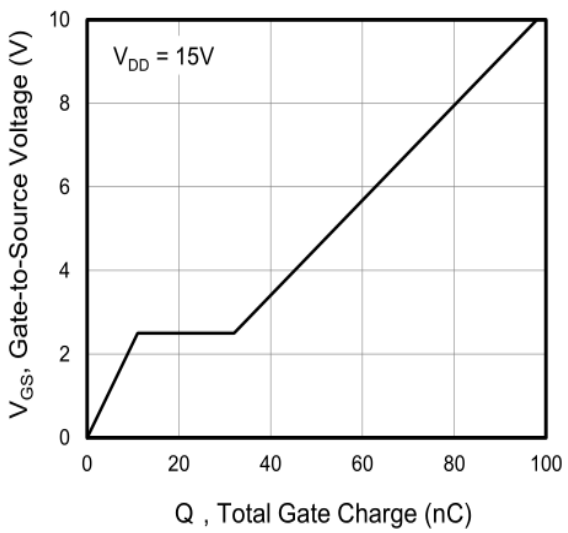


Figure 5. Gate Charge

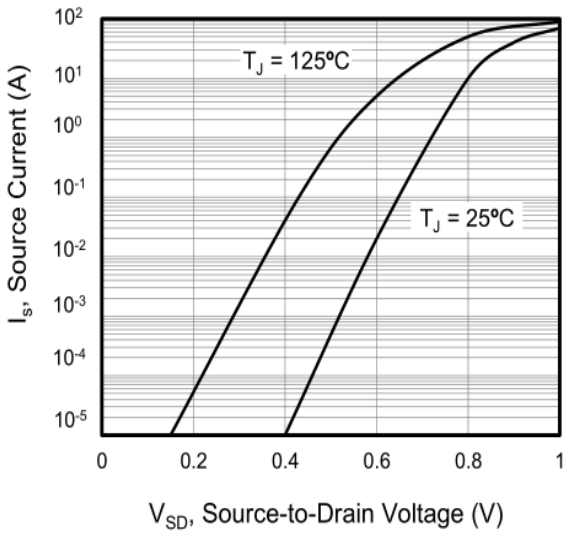


Figure 6. Body Diode Forward Voltage

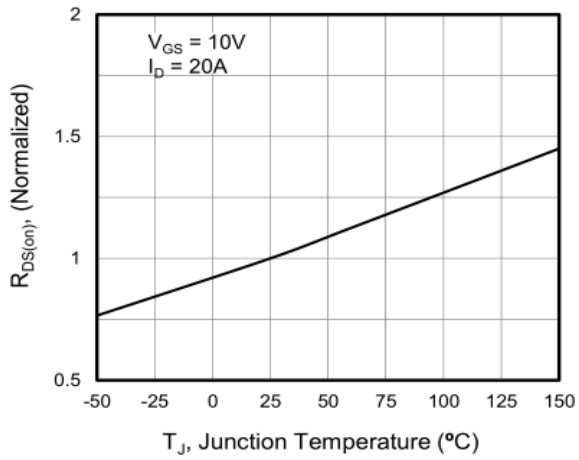


Figure 7. On-Resistance vs.Junction Temperature

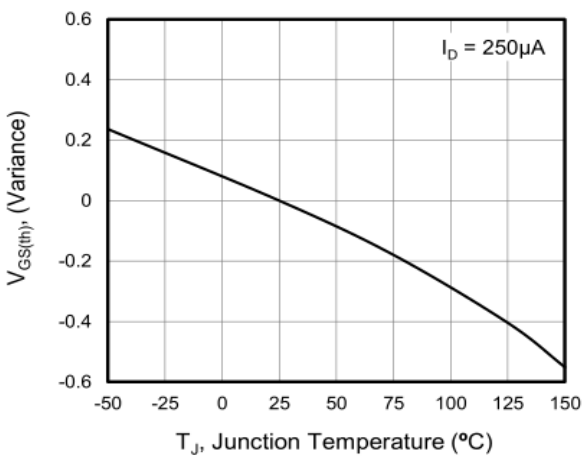


Figure 8. Threshold Voltage vs.Junction Temperature

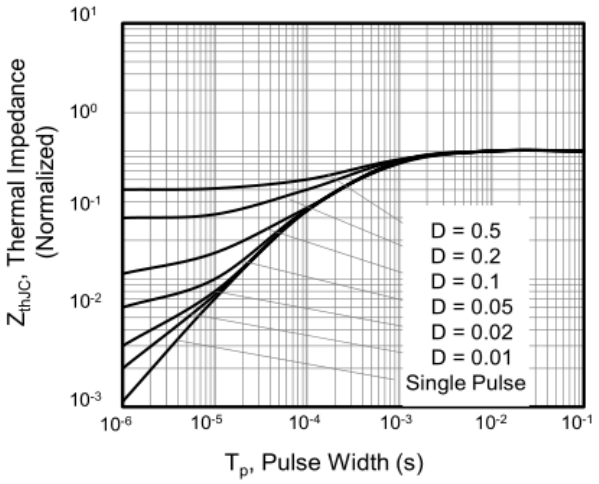


Figure 9. Transient Thermal Impedance

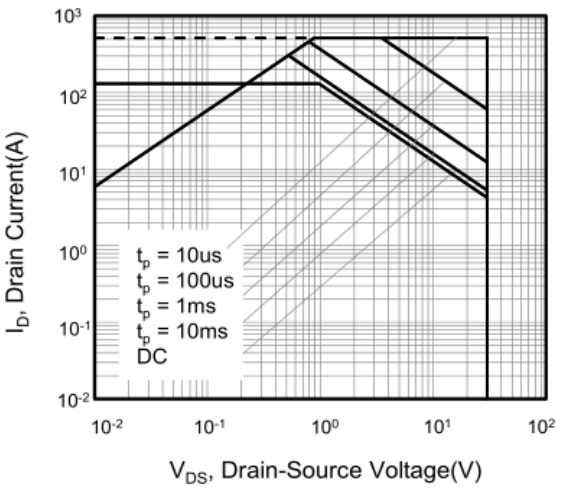


Figure 10. Safe operation area

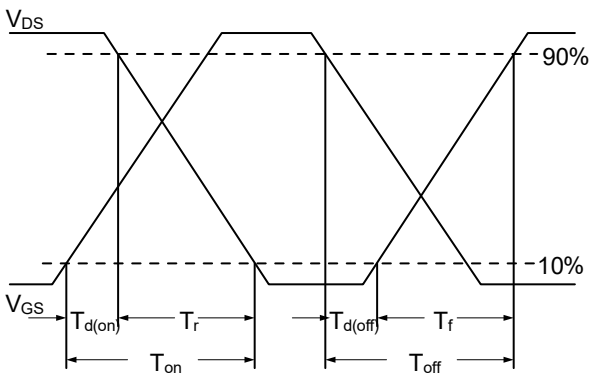


Fig.11 Switching Time Waveform

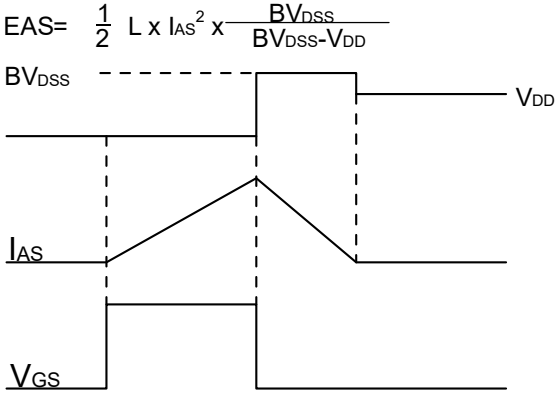
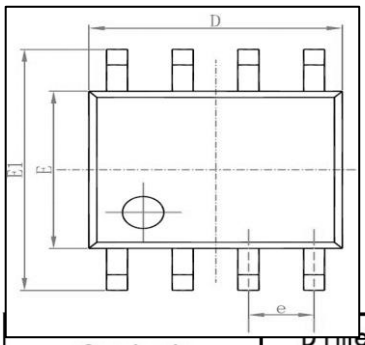
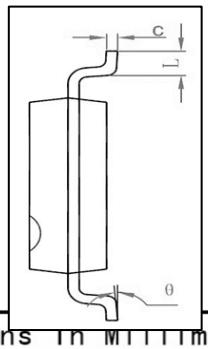
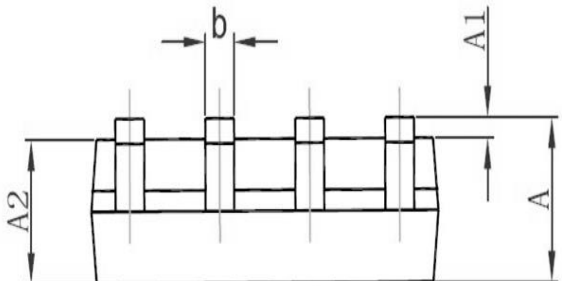


Fig.12 Unclamped Inductive Switching Waveform

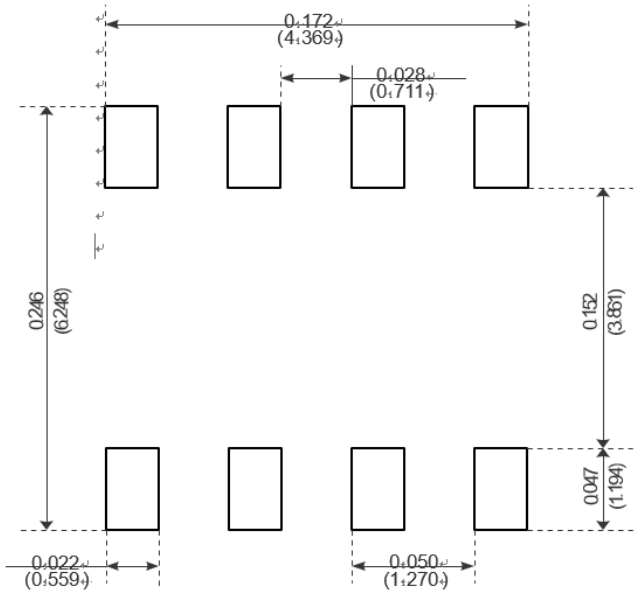
Package Mechanical Data-SOP-8







Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°



Recommended Minimum Pads