

General Description

The MY80P03NE5 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.

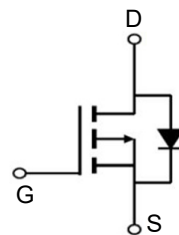
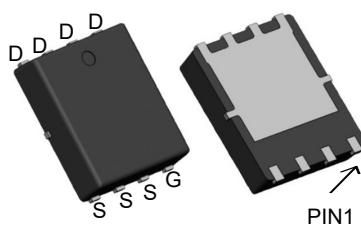


Features

V_{DSS}	-30	V
I_D	-80	A
$R_{DS(ON)}(at V_{GS} = -10V)$	4.4	$m\Omega$
$R_{DS(ON)}(at V_{GS} = -4.5V)$	6.8	$m\Omega$

Application

- Battery protection
- Load switch
- Uninterruptible power supply



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY80P03NE5	PDFN5*6-8L	MY80P03NE5	5000

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	-30	V
VGS	Gate-Source Voltage	± 20	V
$I_D @ T_A = 25^\circ\text{C}$	Drain Current ³ , $V_{GS} @ 10V$	-80	A
$I_D @ T_A = 70^\circ\text{C}$	Drain Current ³ , $V_{GS} @ 10V$	-35	A
IDM	Pulsed Drain Current ¹	-175	A
$P_D @ T_A = 25^\circ\text{C}$	Total Power Dissipation	31.2	W
TSTG	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$
Rthj-c	Maximum Thermal Resistance, Junction- case	4	$^\circ\text{C/W}$
Rthj-a	Maximum Thermal Resistance, Junction- ambient ³	61	$^\circ\text{C/W}$

Electrical Characteristics ($T_A=25^\circ\text{C}$, unless otherwise noted)

Parameter		Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics							
Drain-Source Breakdown Voltage		V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-30	-	-	V
Gate-body Leakage current		I _{GSS}	V _{DS} = 0V, V _{GS} = ±20V	-	-	±100	nA
Zero Gate Voltage Drain Current	T _J =25°C	I _{DSS}	V _{DS} = -24V, V _{GS} = 0V	-	-	-1	μA
	T _J =55°C			-	-	-5	
Gate-Threshold Voltage		V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-1.1	-1.6	-2.1	V
Drain-Source On-Resistance ²		R _{DS(on)}	V _{GS} = -10V, I _D = -12A	-	4.4	5.8	mΩ
			V _{GS} = -4.5V, I _D = -8A	-	6.8	9.0	
Forward Transconductance		g _{fs}	V _{DS} = -5V, I _D = -20A	-	28	-	S
Dynamic Characteristics							
Input Capacitance		C _{iss}	V _{DS} = -15V, V _{GS} =0V, f =1MHz	-	4320	-	pF
Output Capacitance		C _{oss}		-	529	-	
Reverse Transfer Capacitance		C _{rss}		-	487	-	
Switching Characteristics							
Gate Resistance		R _g	V _{DS} = 0V, V _{GS} = 0V, f=1.0MHz	-	4.0	-	Ω
Total Gate Charge		Q _g	V _{GS} = -10V, V _{DS} = -15V, I _D = -15A	-	45	-	nC
Gate-Source Charge		Q _{gs}		-	8.5	-	
Gate-Drain Charge		Q _{gd}		-	12.8	-	
Turn-On Delay Time		t _{d(on)}	V _{GS} = -10V, V _{DD} = -15V, R _G = 2.5Ω, I _D = -15A	-	18.9	-	nS
Rise Time		t _r		-	15.7	-	
Turn-Off Delay Time		t _{d(off)}		-	64.8	-	
Fall Time		t _f		-	36.5	-	
Drain-Source Body Diode Characteristics							
Diode Forward Voltage ²		V _{SD}	I _S = -1A, V _{GS} = 0V	-	-	-1	V
Continuous Source Current ^{1,5}		I _S	V _G =V _D =0V , Force Current	-	-	-65	A

Note :

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
- 2.The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3.The EAS data shows Max. rating . The test condition is $V_{DD} = -25V, V_{GS} = -10V, L = 0.1mH, I_{AS} = -25A$
- 4.The power dissipation is limited by 150 $^\circ\text{C}$ 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

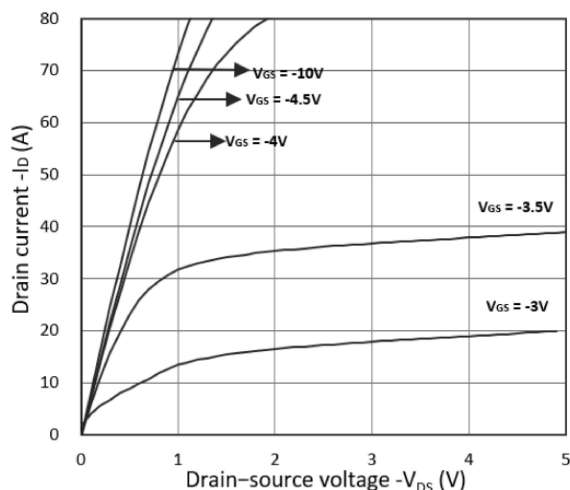


Figure 1. Output Characteristics

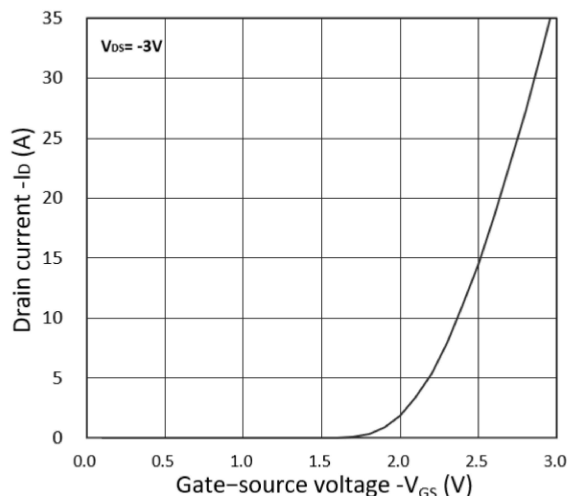


Figure 2. Transfer Characteristics

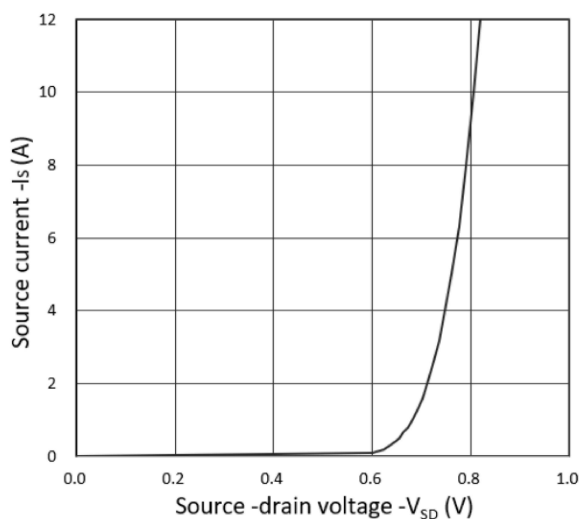


Figure 3. Forward Characteristics of Reverse

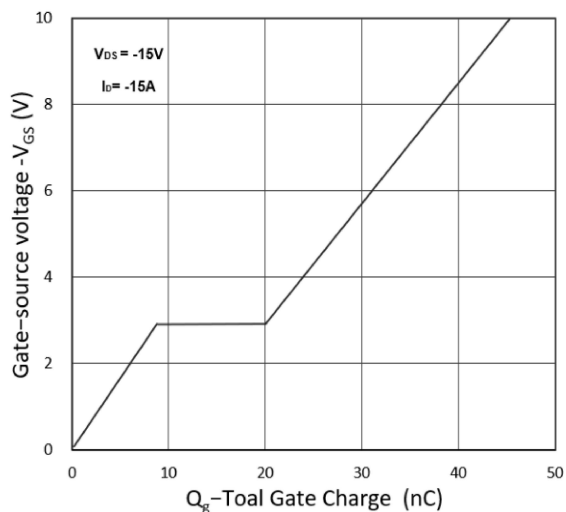


Figure 4. Gate Charge Characteristics

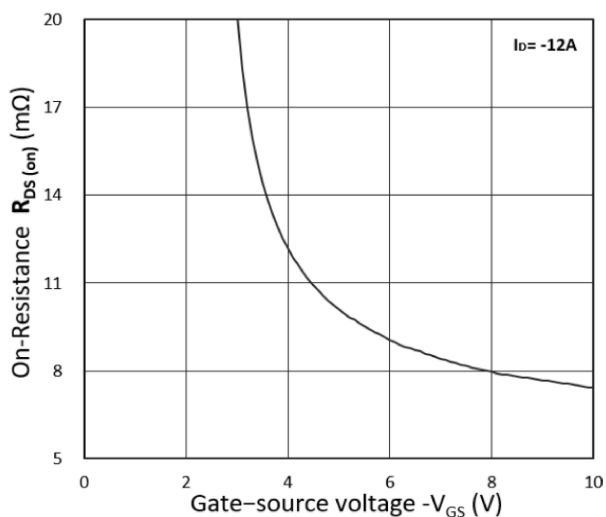


Figure 5. $R_{DS(on)}$ vs. V_{GS}

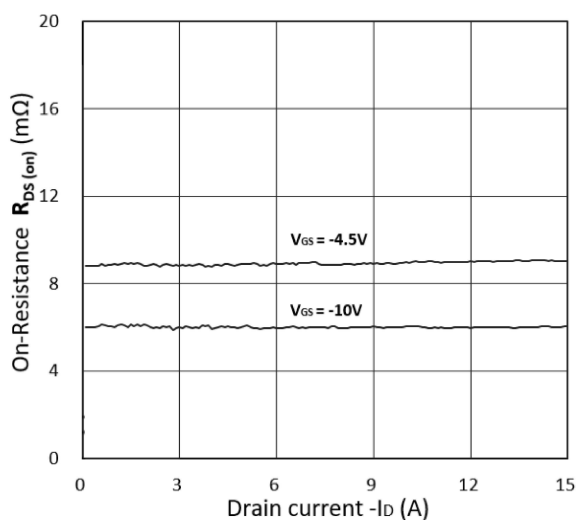


Figure 6. $R_{DS(on)}$ vs. I_D

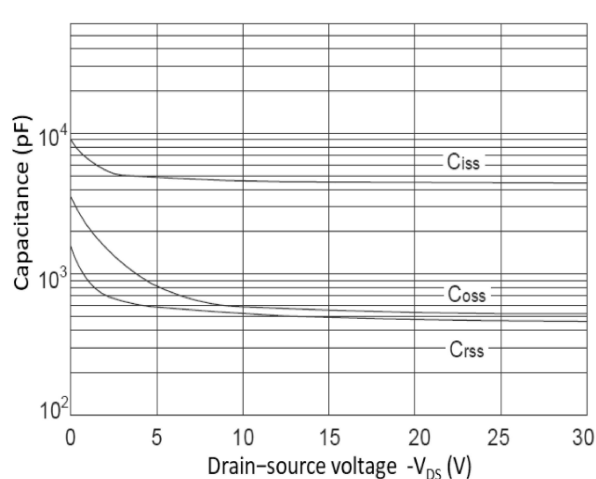


Figure 7. Capacitance Characteristics

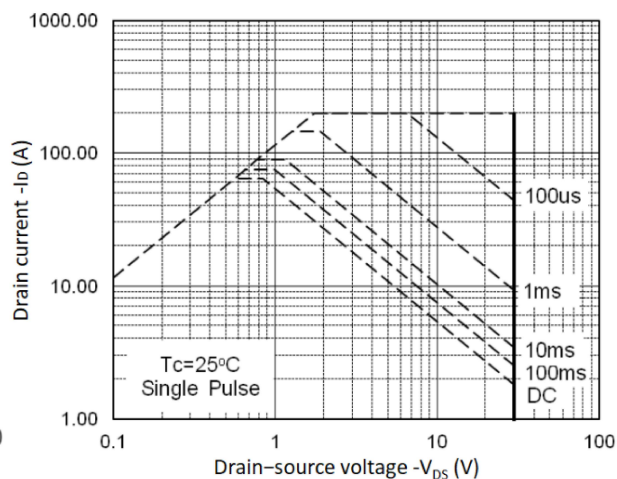


Figure 8. Safe Operating Area

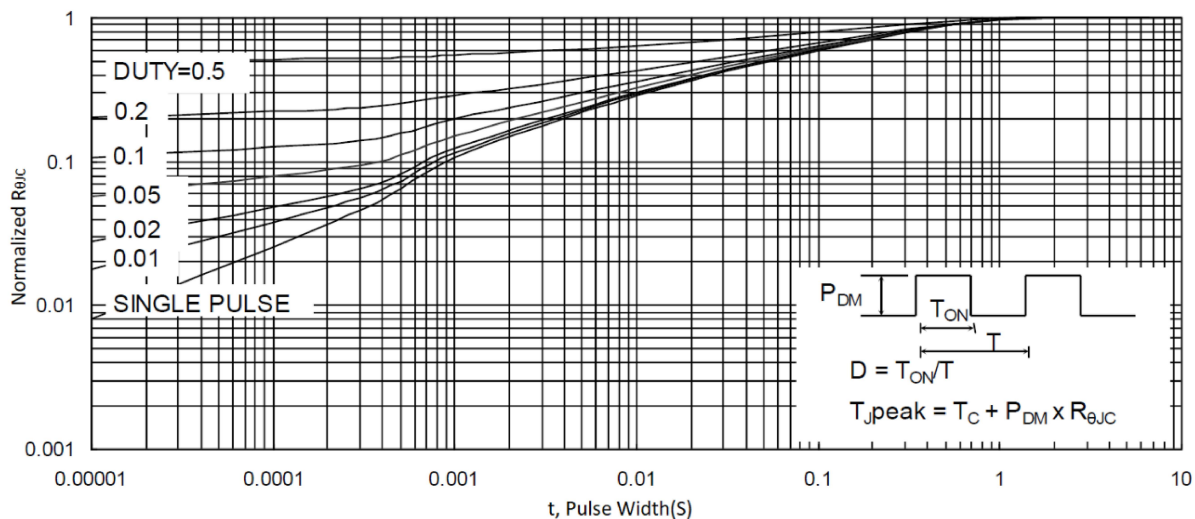


Figure 9. Normalized Maximum Transient Thermal Impedance

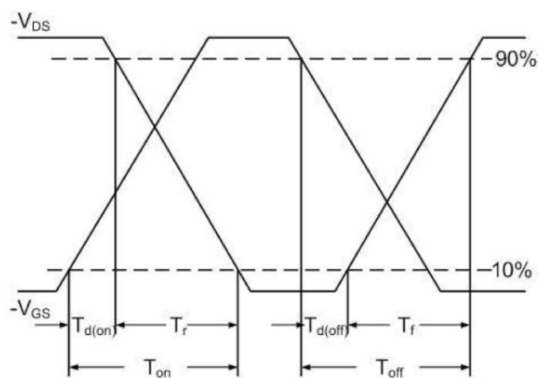


Figure 10. Switching Time Waveform

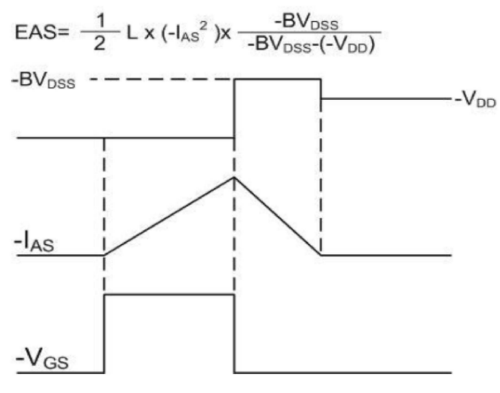
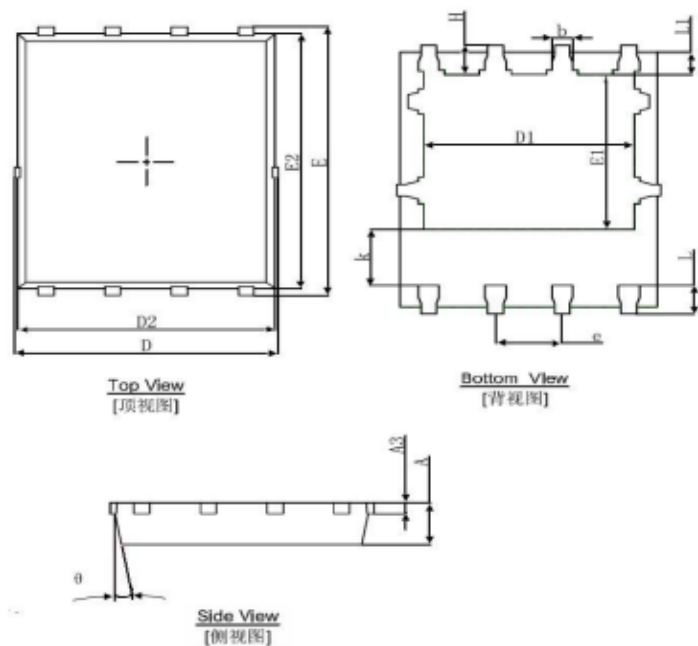


Figure 11. Unclamped Inductive Switching

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



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	3.910	4.110	0.154	0.162
E1	3.375	3.575	0.133	0.141
D2	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270TYP.		0.050TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	8°	12°	8°	12°