

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.

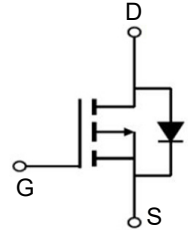
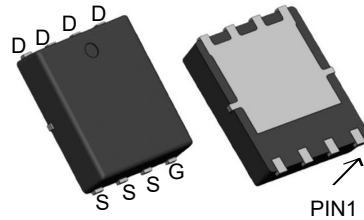


Features

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)

Parameter	Symbol	Value	Unit	
Drain-Source Voltage	V_{DS}	-30	V	
Gate-Source Voltage	V_{GS}	± 20	V	
Continuous Drain Current@-10V ¹	I_D	$T_C = 25^\circ\text{C}$	-80	A
		$T_C = 75^\circ\text{C}$	-35	
Pulsed Drain Current ²	I_{DM}	-175	A	
Single Pulse Avalanche Energy ³	EAS	31	mJ	
Avalanche Current	I_{AS}	-70	A	
Total Power Dissipation ⁴	P_D	31.2	W	
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$	

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction-to-Ambient ¹	$R_{\theta JA}$	61	$^\circ\text{C/W}$
Thermal Resistance from Junction-to-Case ¹	$R_{\theta JC}$	4	$^\circ\text{C/W}$

Electrical Characteristics (T_A=25 °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	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 ≤ 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}= -25A
- 4.The power dissipation is limited by 150°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

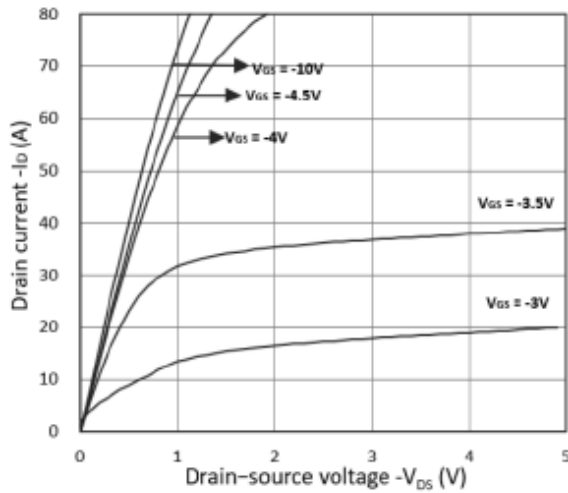


Figure 1. Output Characteristics

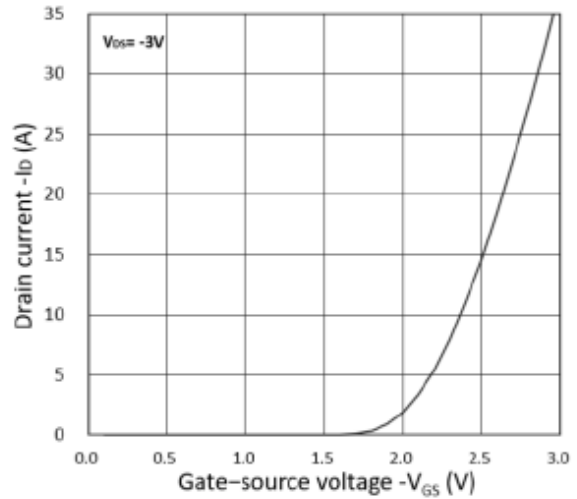


Figure 2. Transfer Characteristics

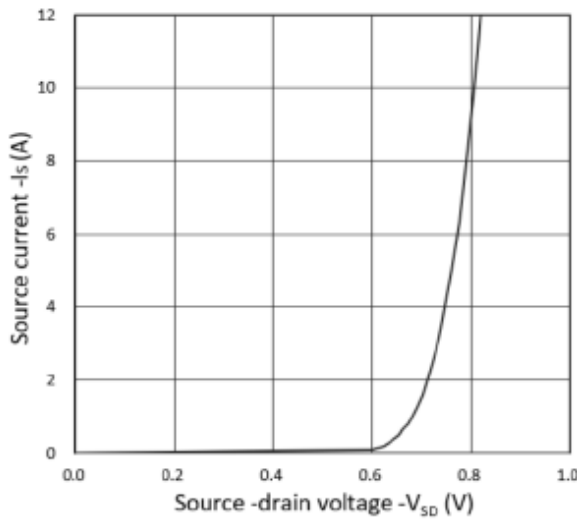


Figure 3. Forward Characteristics of Reverse

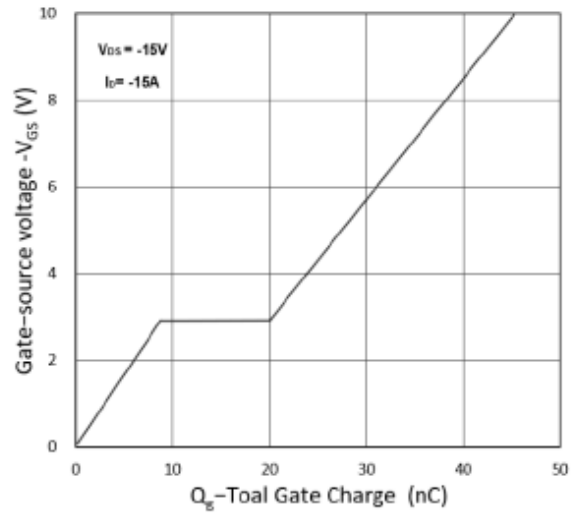


Figure 4. Gate Charge Characteristics

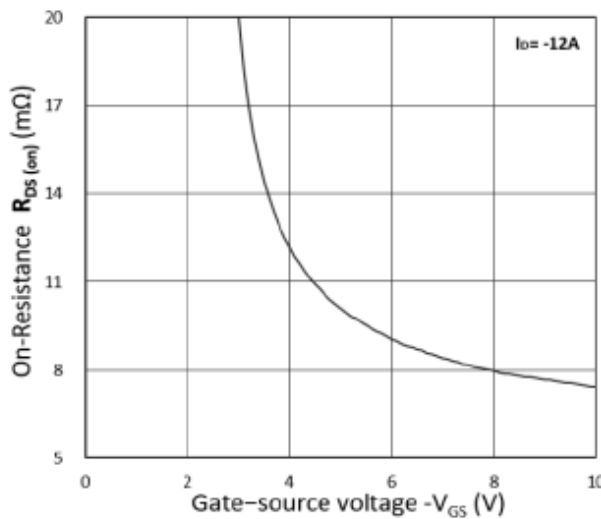


Figure 5. $R_{DS(on)}$ vs. V_{GS}

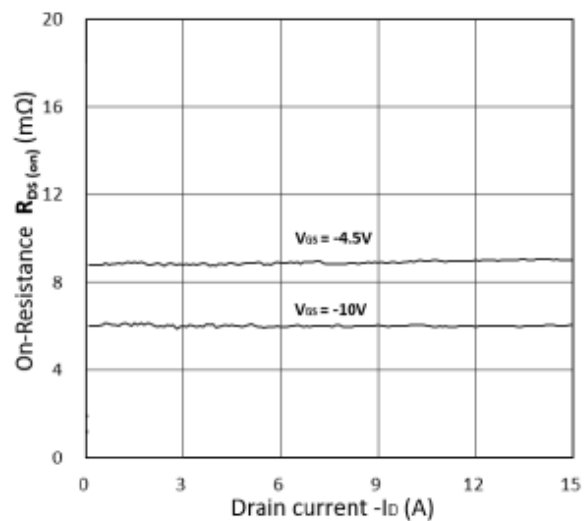


Figure 6. $R_{DS(on)}$ vs. I_D

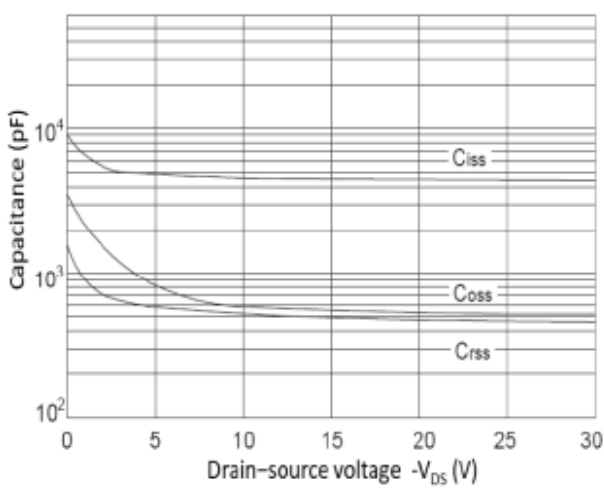


Figure 7. Capacitance Characteristics

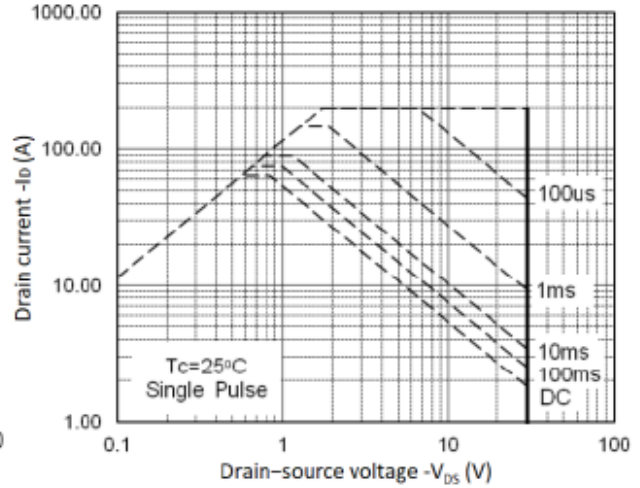


Figure 8. Safe Operating Area

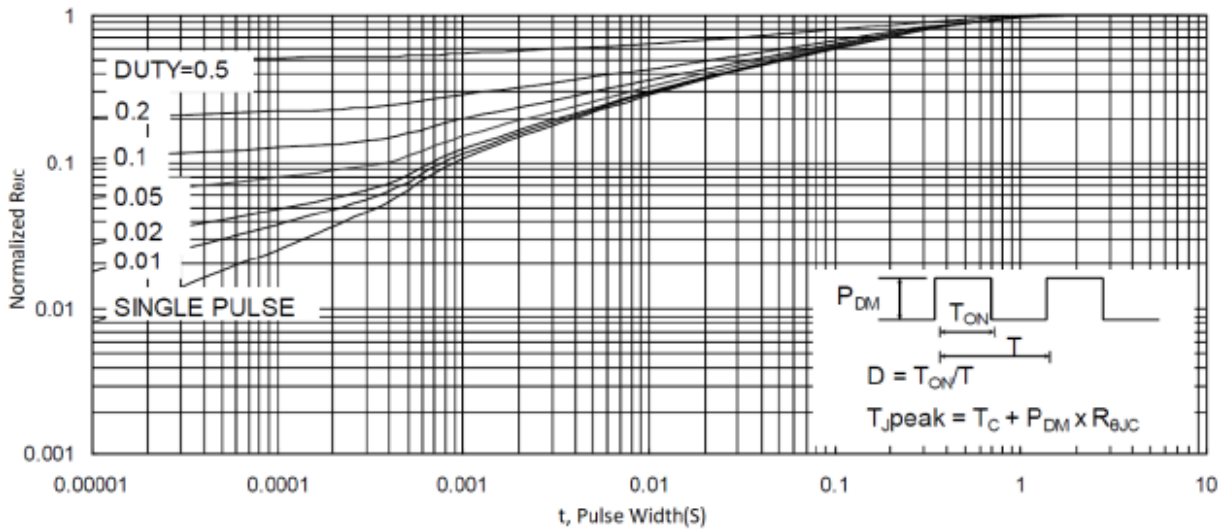


Figure 9. Normalized Maximum Transient Thermal Impedance

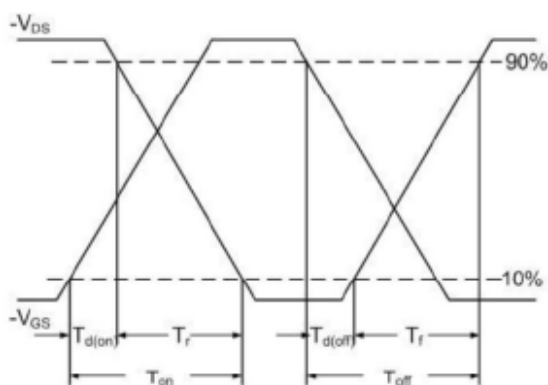


Figure 10. Switching Time Waveform

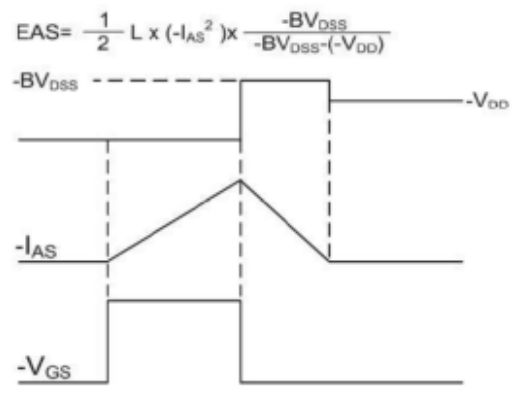
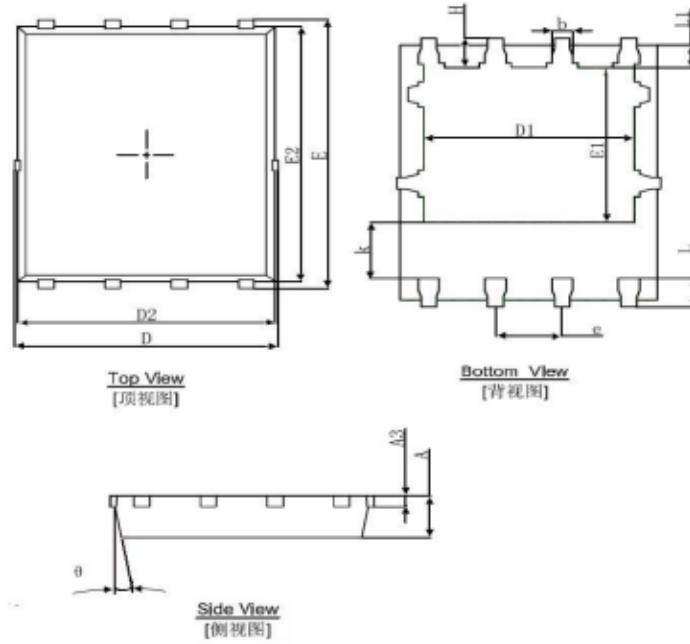


Figure 11. Unclamped Inductive Switching
 Waveform

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°