

General Description

The MY60N10NE5 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.

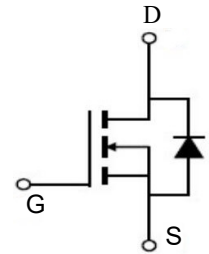
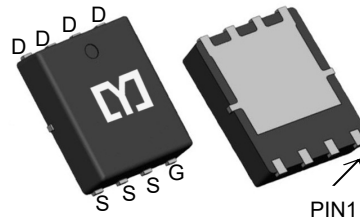


Features

X_{FU}	100	X
K	60	C
$T_{FU}^{*QP} \#cXI U? 10X+$	>8.5	o á
$T_{FU}^{*QP} \#cXI U? 4.5X+$	>12	o á

Application

- Battery protection
- Load switch
- Uninterruptible power supply



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY60N10NE5	PDFN5*6-8L	NULL	5000

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

Parameter	Symbol	Value	Unit
Drain source voltage	V_{DS}	100	V
Gate source voltage	V_{GS}	± 20	V
Continuous drain current ¹⁾ , $T_C=25^\circ\text{C}$	I_D	60	A
Pulsed drain current ²⁾ , $T_C=25^\circ\text{C}$	$I_{D, pulse}$	210	A
Power dissipation ³⁾ $T_C=25^\circ\text{C}$	P_D	125	W
Single pulsed avalanche energy ⁵⁾	E_{AS}	100	mJ
Operation and storage temperature	T_{stg}, T_j	-55 to 150	$^\circ\text{C}$
Thermal resistance, junction-case	$R_{\theta JC}$	1	$^\circ\text{C/W}$
Thermal resistance, junction-ambient ⁴⁾	$R_{\theta JA}$	62	$^\circ\text{C/W}$

Electrical Characteristics (T_J=25 °C, unless otherwise noted)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Drain-source breakdown voltage	BV _{DSS}	100			V	V _{GS} =0 V, I _D =250 μA
Gate threshold voltage	V _{GS(th)}	1.0		2.5	V	V _{DS} =V _{GS} , I _D =250 μA
Drain-source on-state resistance	R _{DS(ON)}		8.5	10.0	mΩ	V _{GS} =10 V, I _D =10 A
Drain-source on-state resistance	R _{DS(ON)}		9.5	12.0	mΩ	V _{GS} =4.5 V, I _D =10 A
Gate-source leakage current	I _{GSS}			100	nA	V _{GS} =20 V
				-100		V _{GS} =-20 V
Drain-source leakage current	I _{DSS}			1	μA	V _{DS} =100 V, V _{GS} =0 V
Input capacitance	C _{iss}		2604		pF	V _{GS} =0 V, V _{DS} =50 V, f=1 MHz
Output capacitance	C _{oss}		361.2		pF	
Reverse transfer capacitance	C _{rss}		6.5		pF	
Turn-on delay time	t _{d(on)}		20.6		ns	V _{GS} =10 V, V _{DS} =50V, R _G =2.2 Ω, I _D =25 A
Rise time	t _r		5		ns	
Turn-off delay time	t _{d(off)}		51.8		ns	
Fall time	t _f		9		ns	
Total gate charge	Q _g		49.9		nC	I _D =25 A, V _{DS} =50 V, V _{GS} =10 V
Gate-source charge	Q _{gs}		6.5		nC	
Gate-drain charge	Q _{gd}		12.4		nC	
Gate plateau voltage	V _{plateau}		3.4		V	
Diode forward current	I _S			70	A	V _{GS} <V _{th}
Pulsed source current	I _{SP}			210		
Diode forward voltage	V _{SD}			1.3	V	I _S =12 A, V _{GS} =0 V
Reverse recovery time	t _{rr}		60.4		ns	I _S =12 A, di/dt=100 A/μs
Reverse recovery charge	Q _{rr}		106.1		nC	
Peak reverse recovery current	I _{rrm}		3		A	

Note

- 1) Calculated continuous current based on maximum allowable junction temperature.
- 2) Repetitive rating; pulse width limited by max. junction temperature.
- 3) Pd is based on max. junction temperature, using junction-case thermal resistance.
- 4) The value of R_{θJA} is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with T_a=25 °C.
- 5) V_{DD}=50 V, R_G=25 Ω, L=0.3 mH, starting T_J=25 °C.

Typical Characteristics

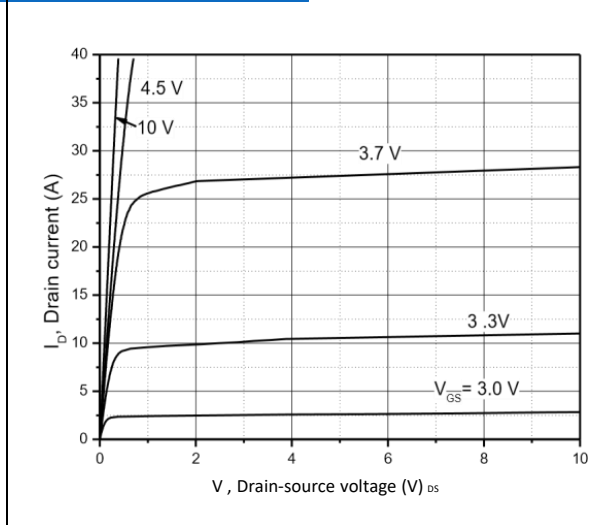


Figure 1, Typ. output characteristics

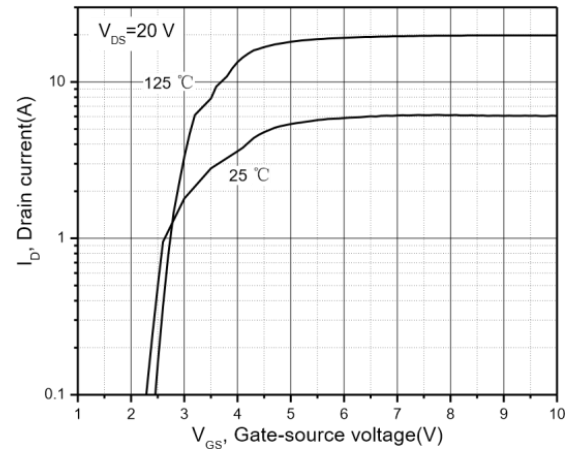


Figure 2, Typ. transfer characteristics

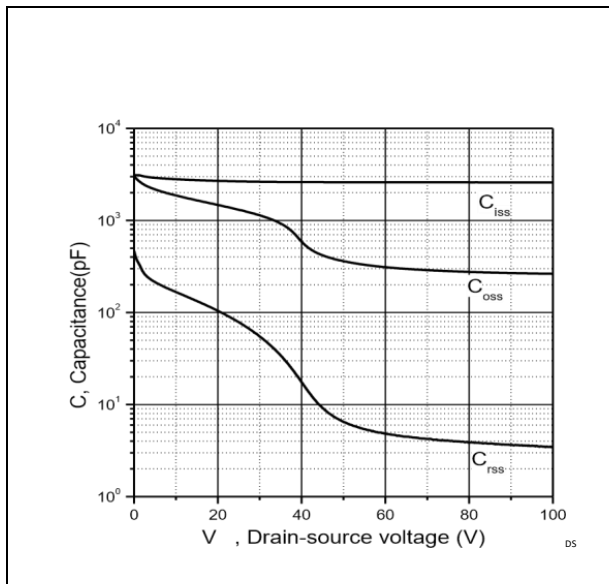


Figure 3, Typ. capacitances

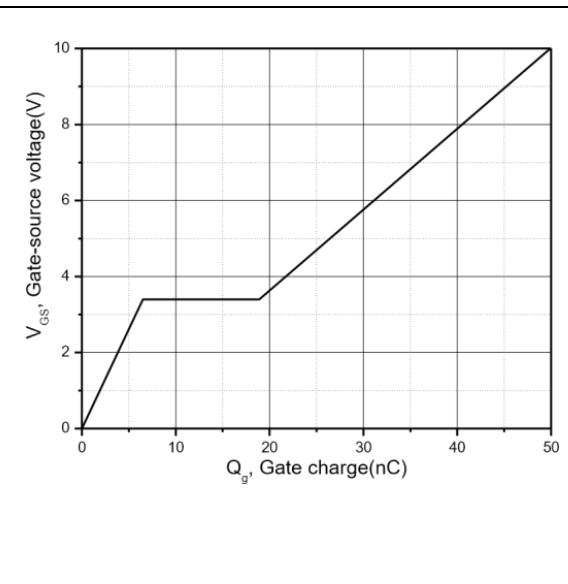


Figure 4, Typ. gate charge

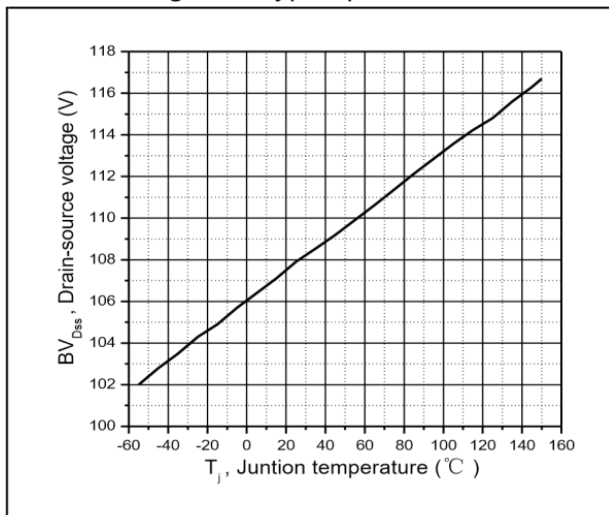


Figure 5, Drain-source breakdown voltage

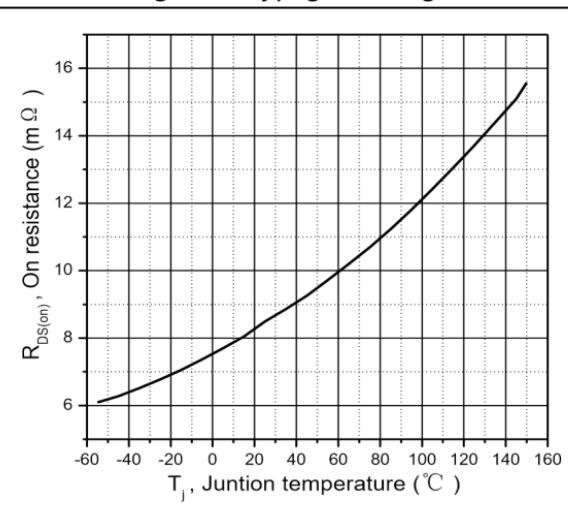


Figure 6, Drain-source on-state resistance

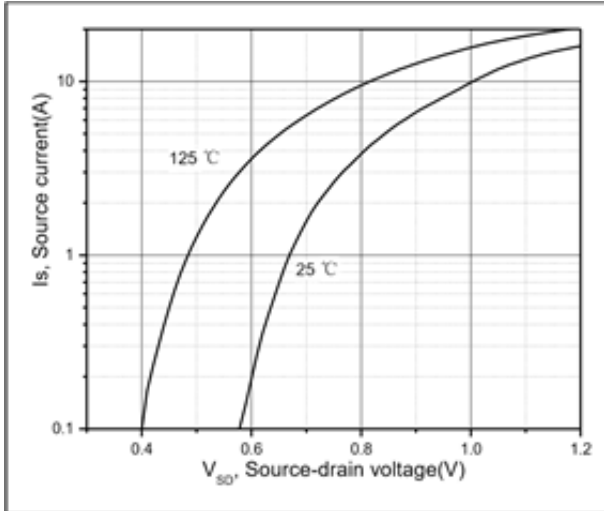


Figure 7, Forward characteristic of body diode

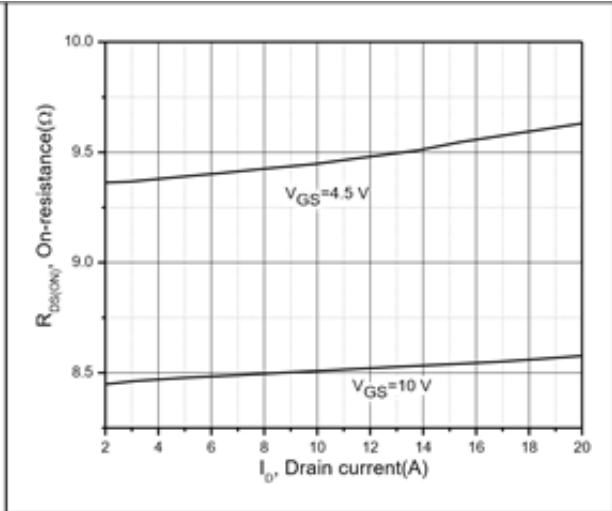
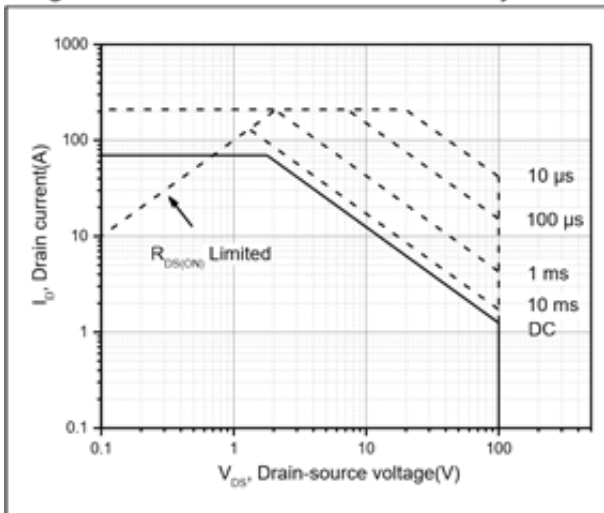


Figure 8, Drain-source on-state resistance



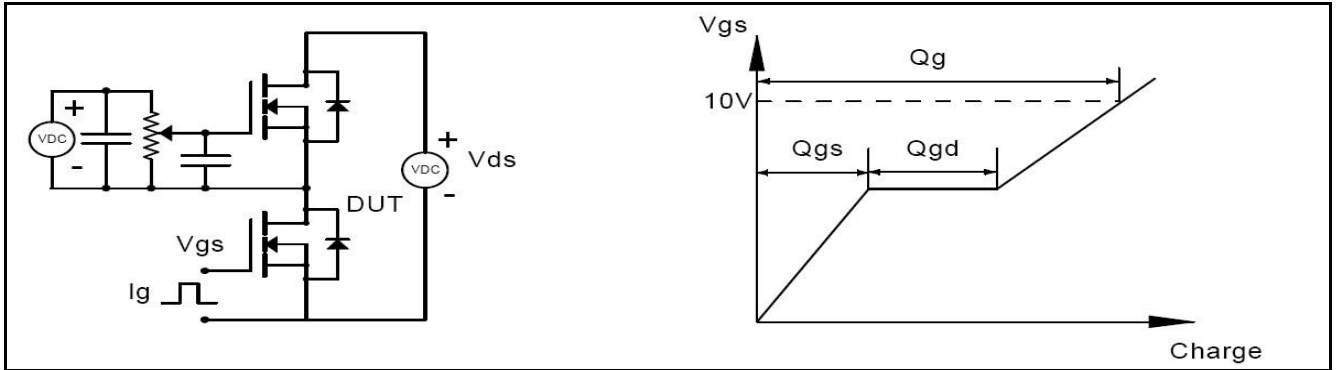


Figure 1 , Gate charge test circuit & waveform

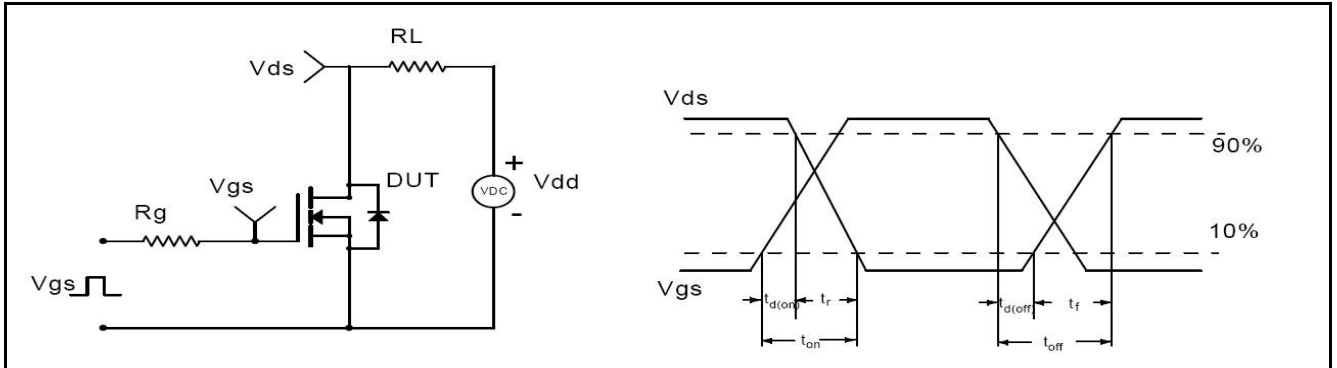


Figure 2, Switching time test circuit & waveforms

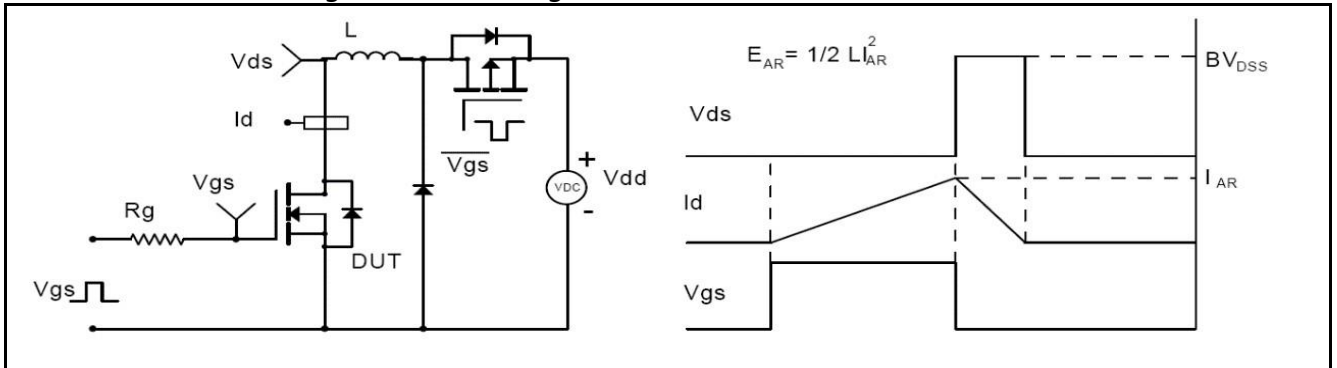


Figure 3, Unclamped inductive switching (UIS) test circuit & waveforms

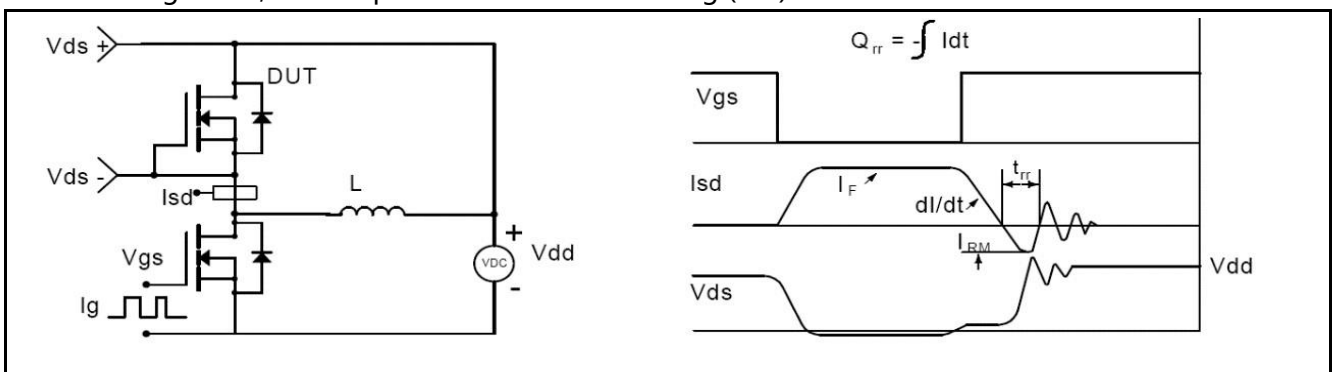
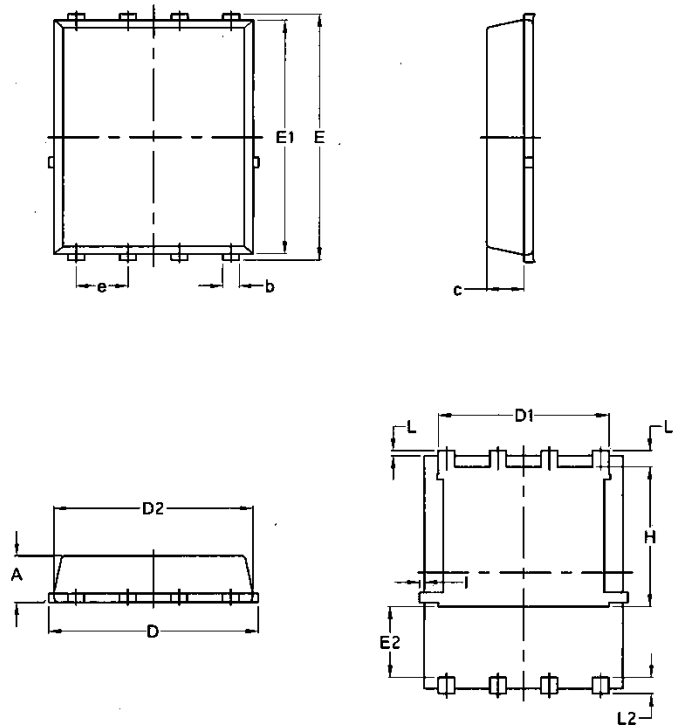


Figure 4, Diode reverse recovery test circuit & waveforms

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



Symbol	Common			
	mm		Inch	
	Min	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