

General Description

The MY125N10NE5 use advanced SGT MOSFET technology to provide low RDS(ON), low gate charge, fast switching and excellent avalanche characteristics. This device is specially designed to get better ruggedness and suitable to use in

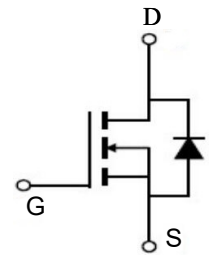
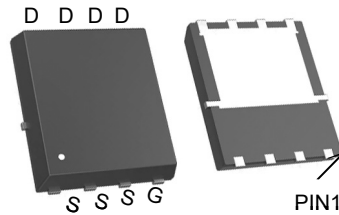


Features

V _{DSS}	100	V
I _D	125	A
P _D (T _C =25 °C)	125	W
R _{DS(ON)} (atV _{GS} =10V)	3.6	mΩ

Application

- Battery protection
- Load switch
- Uninterruptible power supply



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY125N10NE5	PDFN5*6-8L	MY125N10NE5	5000

Absolute Maximum Ratings (T_C=25 °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 °C	I _D	125	A
Pulsed drain current ²⁾ , T _C =25 °C	I _D , pulse	180	A
Power dissipation ³⁾ , T _C =25 °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	°C
Thermal resistance, junction-case	R _{θJC}	1	°C/W
Thermal resistance, junction-ambient ⁴⁾	R _{θJA}	62	°C/W

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Drain-source breakdown voltage	BVDSS	100			V	$V_{GS}=0\text{ V}$, $I_D=250\text{ }\mu\text{A}$
Gate threshold voltage	$V_{GS(th)}$	2.2	3.0	3.8	V	$V_{DS}=V_{GS}$, $I_D=250\text{ }\mu\text{A}$
Drain-source on-state resistance	$R_{DS(ON)}$		3.6	5.2	m Ω	$V_{GS}=10\text{ V}$, $I_D=30\text{ A}$
Gate-source leakage current	IGSS			100	nA	$V_{GS}=20\text{ V}$
				-100		$V_{GS}=-20\text{ V}$
Drain-source leakage current	IDSS			1	μA	$V_{DS}=100\text{ V}$, $V_{GS}=0\text{ V}$
Input capacitance	Ciss		2604		pF	$V_{GS}=0\text{ V}$, $V_{DS}=50\text{ V}$, $f=1\text{ MHz}$
Output capacitance	Coss		361.2		pF	
Reverse transfer capacitance	Crss		6.5		pF	
Turn-on delay time	td(on)		20.6		ns	$V_{GS}=10\text{ V}$, $V_{DS}=50\text{ V}$, $R_G=2.2\text{ }\Omega$, $I_D=25\text{ A}$
Rise time	t _r		5		ns	
Turn-off delay time	td(off)		51.8		ns	
Fall time	t _f		9		ns	
Total gate charge	Q _g		49.9		nC	$I_D=25\text{ A}$, $V_{DS}=50\text{ V}$, $V_{GS}=10\text{ V}$
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			60		$V_{GS}<V_{th}$
Pulsed source current	ISP			180	A	
Diode forward voltage	VSD			1.3	V	$I_S=12\text{ A}$, $V_{GS}=0\text{ V}$
Reverse recovery time	trr		60.4		ns	$I_S=12\text{ A}$, $di/dt=100\text{ A}/\mu\text{s}$
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

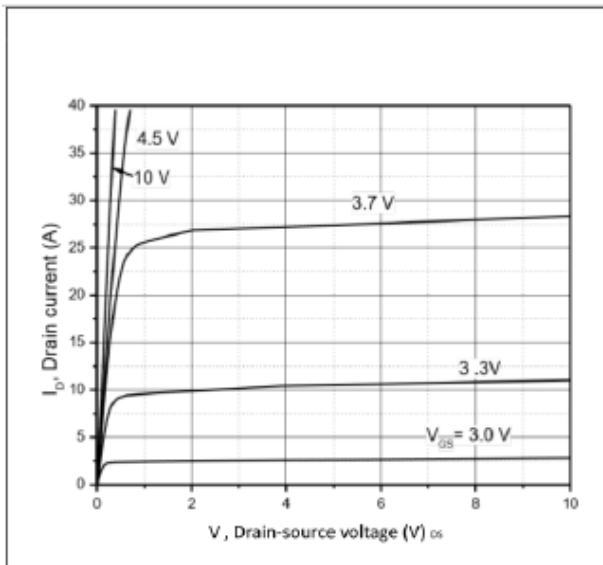


Figure 1, Typ. output characteristics

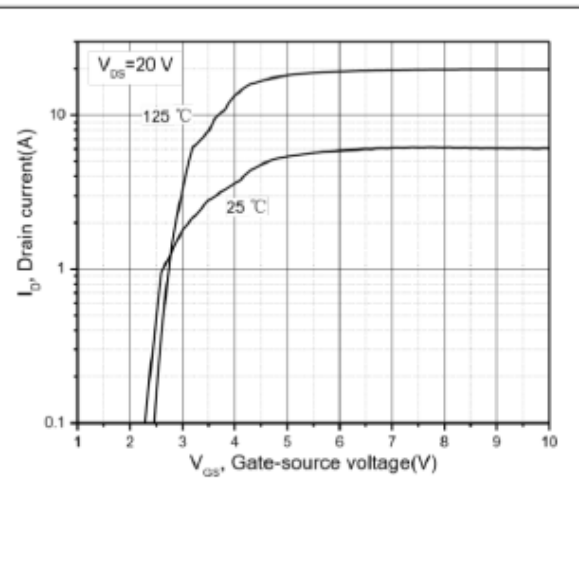


Figure 2, Typ. transfer characteristics

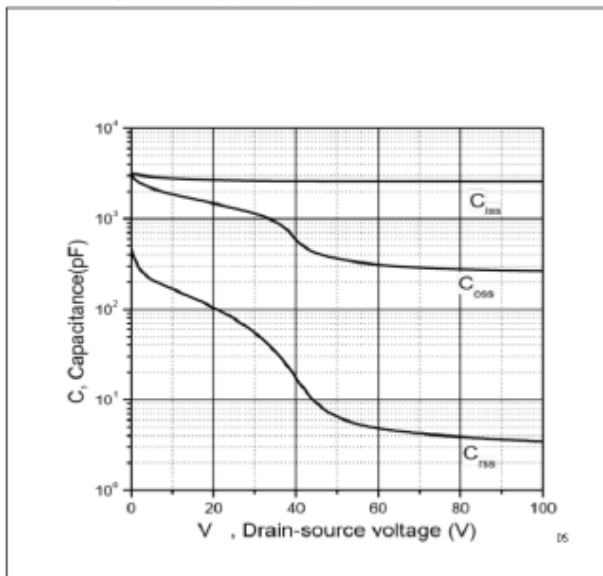


Figure 3, Typ. capacitances

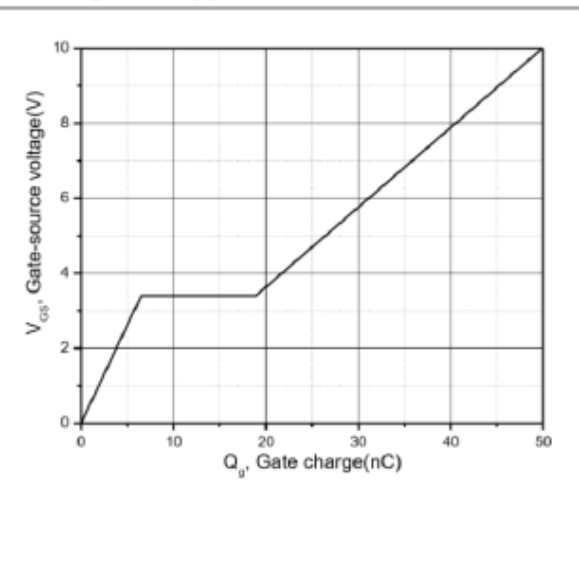
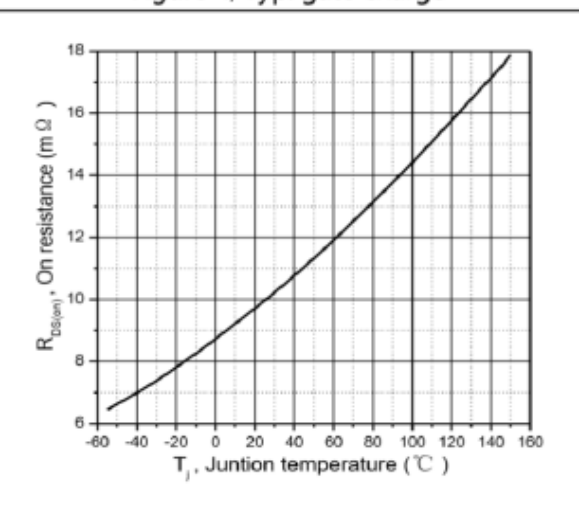
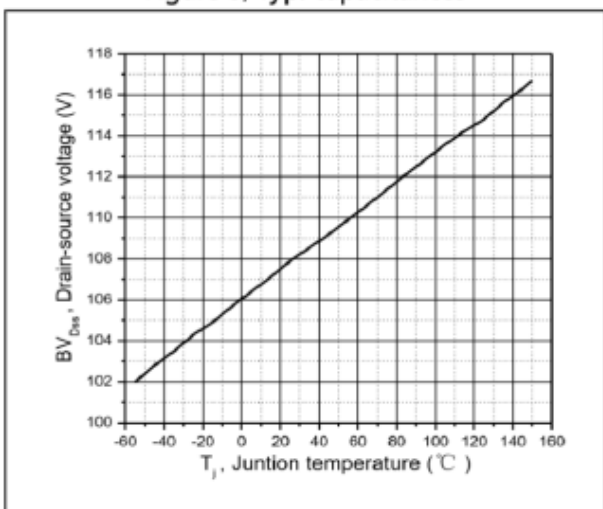


Figure 4, Typ. gate charge



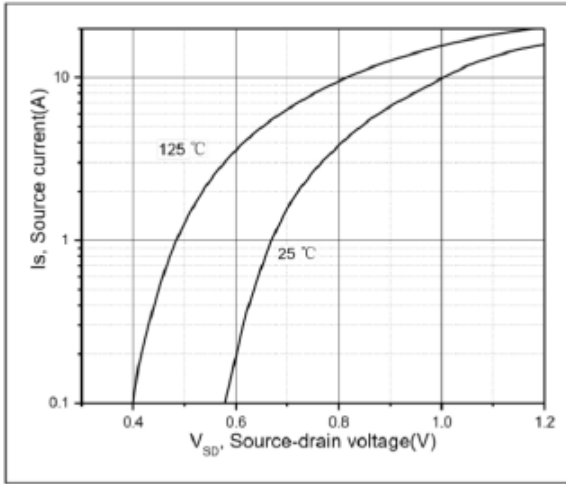


Figure 7, Forward characteristic of body diode

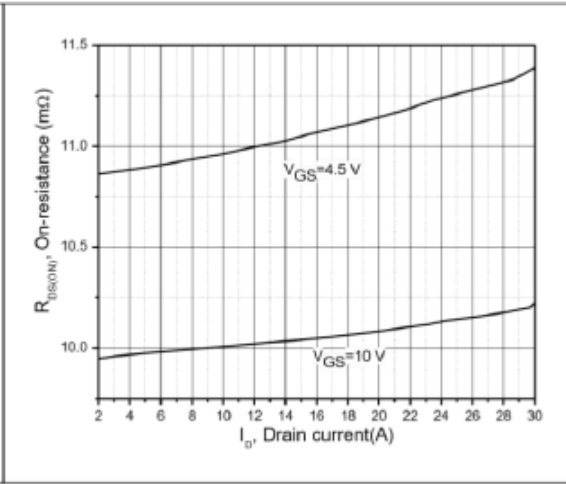


Figure 8, Drain-source on-state resistance

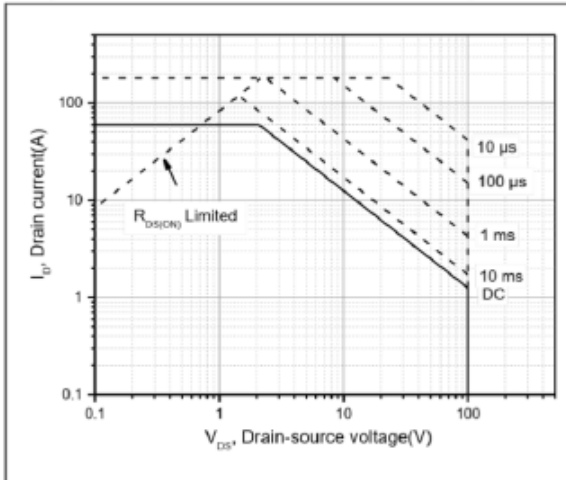


Figure 9, Safe operation area $T_C=25\text{ }^\circ\text{C}$

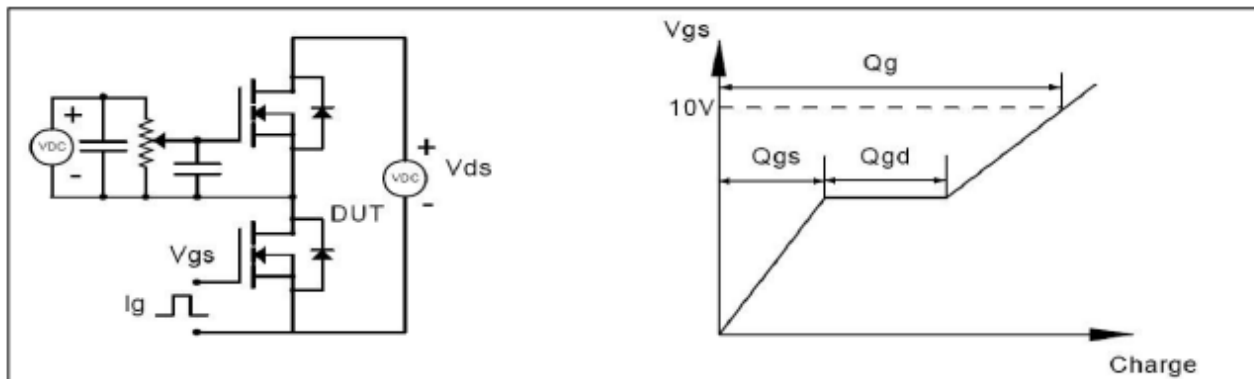


Figure 1, Gate charge test circuit & waveform

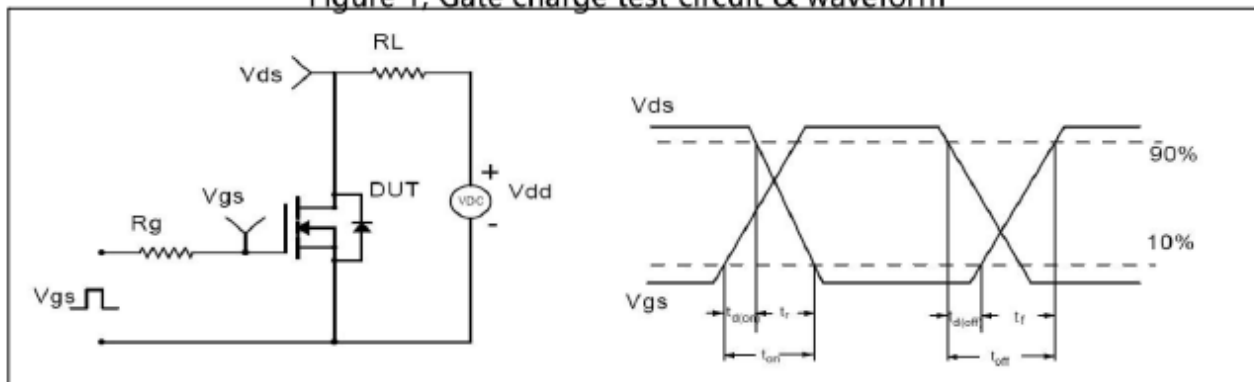


Figure 2, Switching time test circuit & waveforms

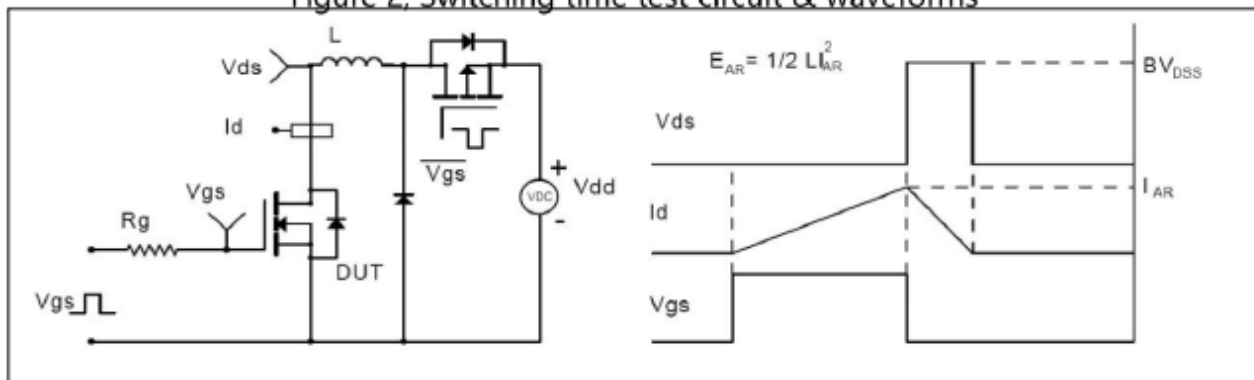


Figure 3, Unclamped inductive switching (UIS) test circuit & waveforms

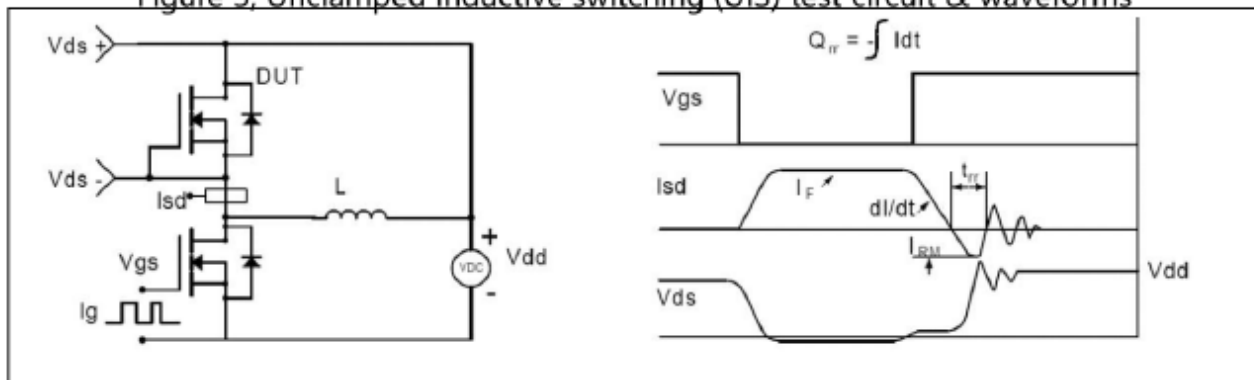
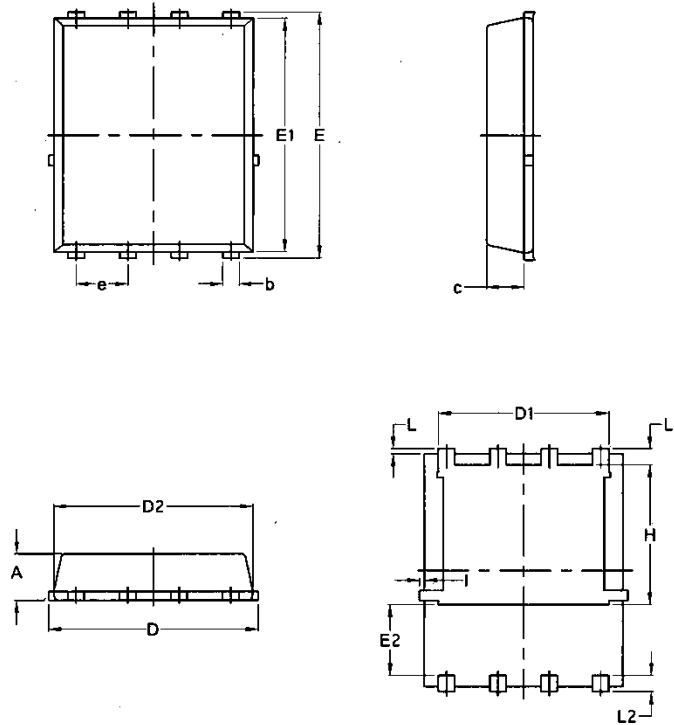


Figure 4, Diode reverse recovery test circuit & waveforms

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