General Description

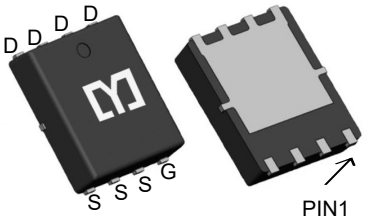
The MY85N12NE5 use advanced SGT MOSFET technology to provide low RDS(ON), low gate charge, fast switching This device is specially designed to get better ruggedness and suitable to use in

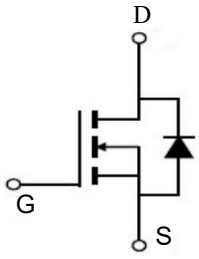
Features

V_{DSS}	120	V
I_D	85	A
$R_{DS(ON)}$(atV_{GS} =10V)	<10	mÝ
$R_{DS(ON)}$(atV_{GS} =4.5V)	<13	mÝ

Application

- Power supply Motor control
- Synchronous-rectification Isolated DC
- Synchronous-rectification applications





Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY85N12NE5	PDFN5*6-8L	8512DN	5000

Absolute Maximum Ratings (T_J=25℃unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain source voltage	VDS	120	V
Gate source voltage	VGS	±20	V
Continuous drain current[1], T_C=25 ℃	ID	85	A
Pulsed drain current[2], T_C=25 ℃	ID, pulse	150	A
Power dissipation[3], T_C=25 ℃	P_D	140	W
Single pulsed avalanche energy[4]	EAS	53.8	mJ
Operation and storage temperature	Tstg，Tj	-55 to 150	℃
Thermal resistance, junction-case	RθJC	0.89	℃/W
Thermal resistance, junction-ambient[5]	RθJA	62	℃/W

Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Parameter	Symbol	Min	Typ.	Max.	Unit	Test condition
Drain-source breakdown voltage	B_{VDSS}	120		200	V	V_{GS}=0 V, I_D=250 μA
Gate threshold voltage	$V_{GS(th)}$	1.5		2.5	V	V_{DS}=V_{GS}, I_D=250 μA
Drain-source on-state resistance	$R_{DS(ON)}$		8.0	10	mΩ	V_{GS}=10 V, I_D=30 A
Drain-source on-state resistance	$R_{DS(ON)}$		11.0	13.0	mΩ	V_{GS}=4.5 V, I_D=20 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	uA	V_{DS}=120 V, V_{GS}=0 V
Input capacitance	Ciss		2640.1		pF	V_{GS}=0 V, V_{DS}=50 V, f=100 kHz
Reverse transfer capacitance	Crss		11.2		pF	
Turn-on delay time	td(on)		22.3		ns	V_{GS}=10 V, V_{DS}=50 V, R_G=2 Ω, I_D=25 A
Rise time	t_r		9.7		ns	
Turn-off delay time	td(off)		85		ns	
Fall time	t_f		112.3		ns	
Total gate charge	Q_g		33.1		nC	I_D=25 A, V_{DS}=50 V, V_{GS}=10 V
Gate-source charge	Q_{gs}		5.6		nC	
Gate-drain charge	Qgd		7.2		nC	
Gate plateau voltage	Vplateau		3.1		V	
Diode forward current	I_S			50	A	VGS<Vth
Pulsed source current	ISP			150		
Diode forward voltage	VSD			1.3	V	I_S=12 A, V_{GS}=0 V
Reverse recovery time	trr		62.3		ns	I_S=25 A, di/dt=100 A/μs
Reverse recovery charge	Q_{rr}		135.3		nC	
Peak reverse recovery current	Irrm		3.5		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) V_{DD}=50 V, R_G=50 Ω, L=0.3 mH, starting T_j=25 °C.
5) The value of $R_{\theta JA}$ 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.

Typical Characteristics

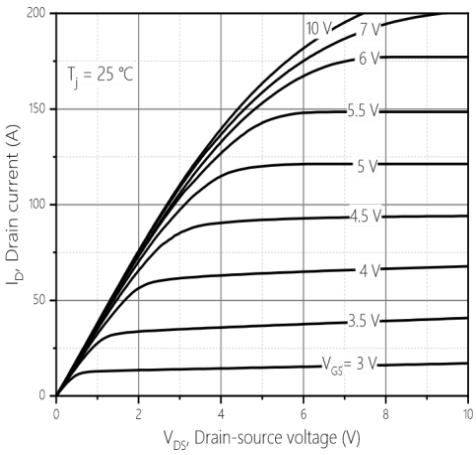


Figure 1, Typ. output characteristics

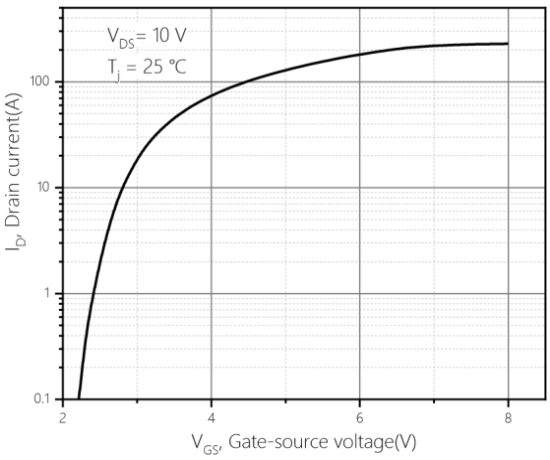


Figure 2, Typ. transfer characteristics

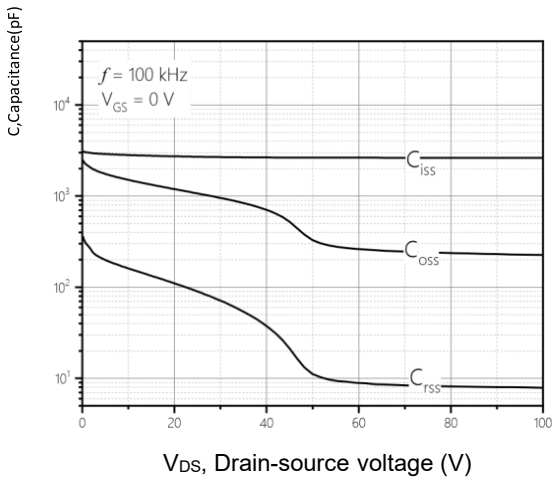


Figure 3, Typ. capacitances

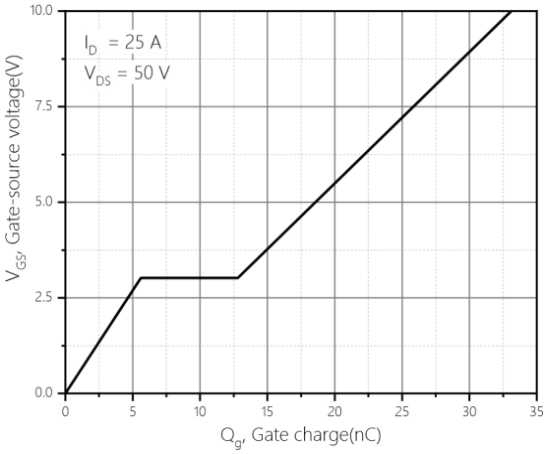


Figure 4, Typ. gate charge

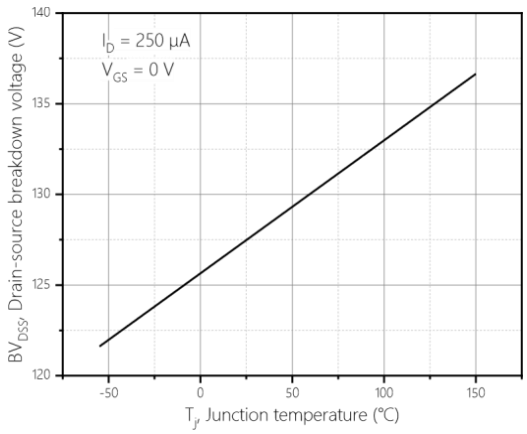


Figure 5, Drain-source breakdown voltage

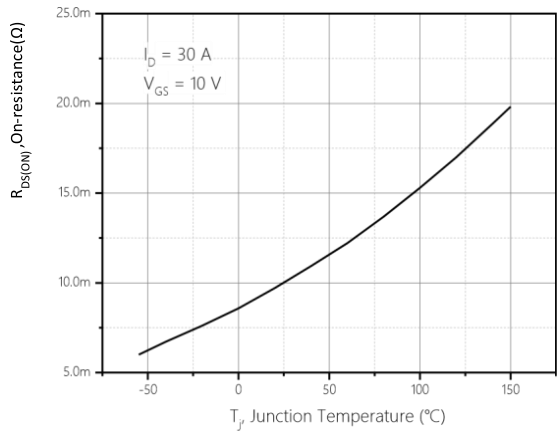


Figure 6, Drain-source on-state resistan

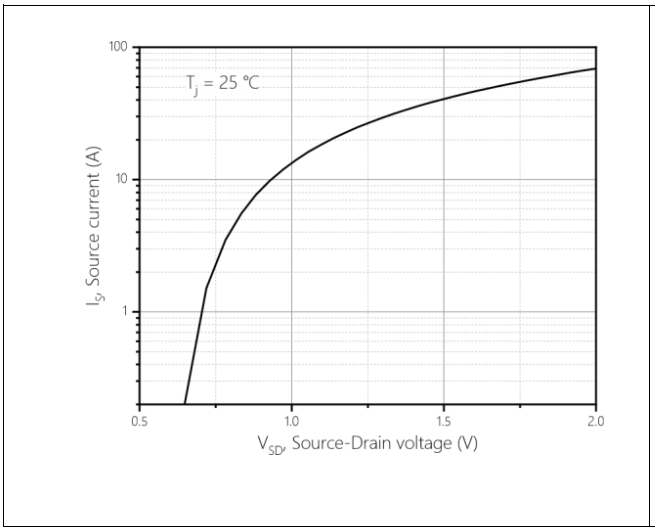


Figure 7, Forward characteristic of body diode

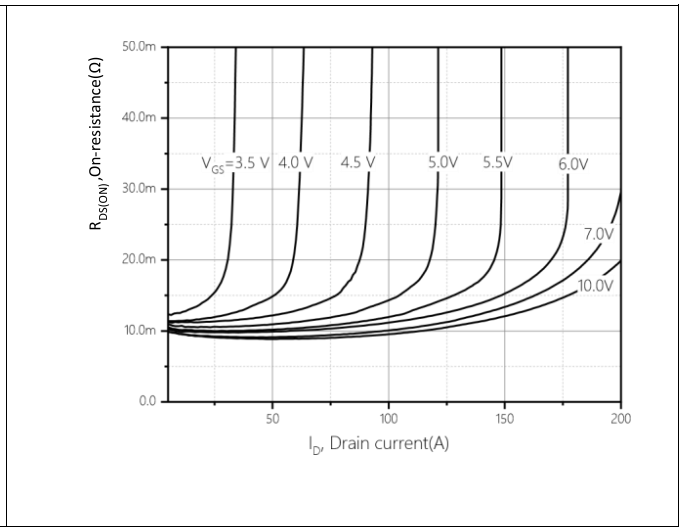


Figure 8, Drain-source on-state resistance

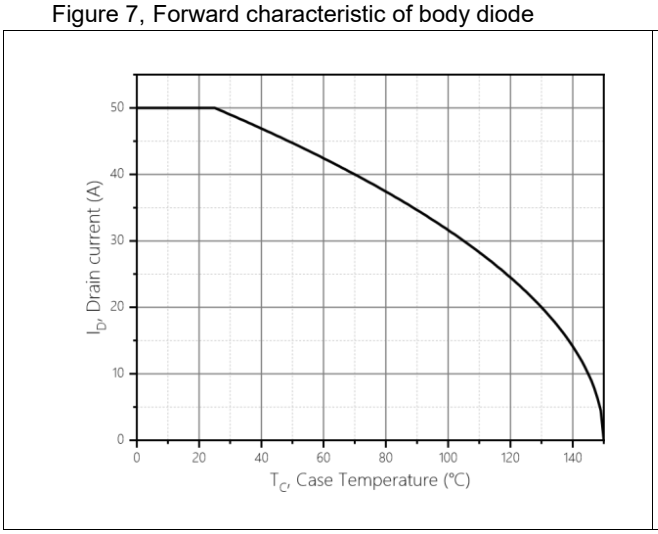


Figure 9, Drain current

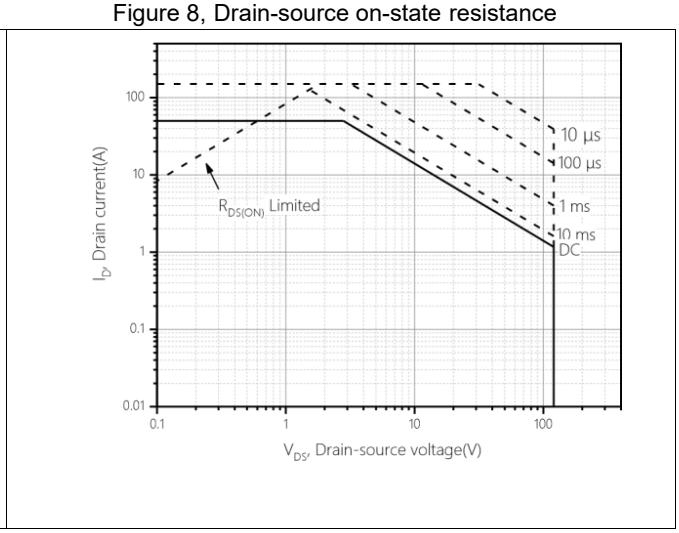


Figure 10, Safe operation area T_C=25 ℃

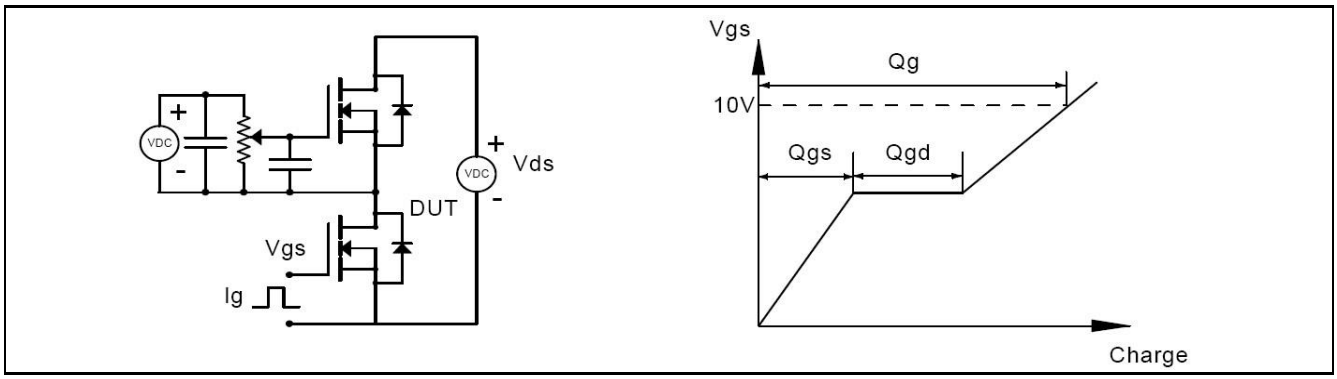


Figure 1, Gate charge test circuit & waveform

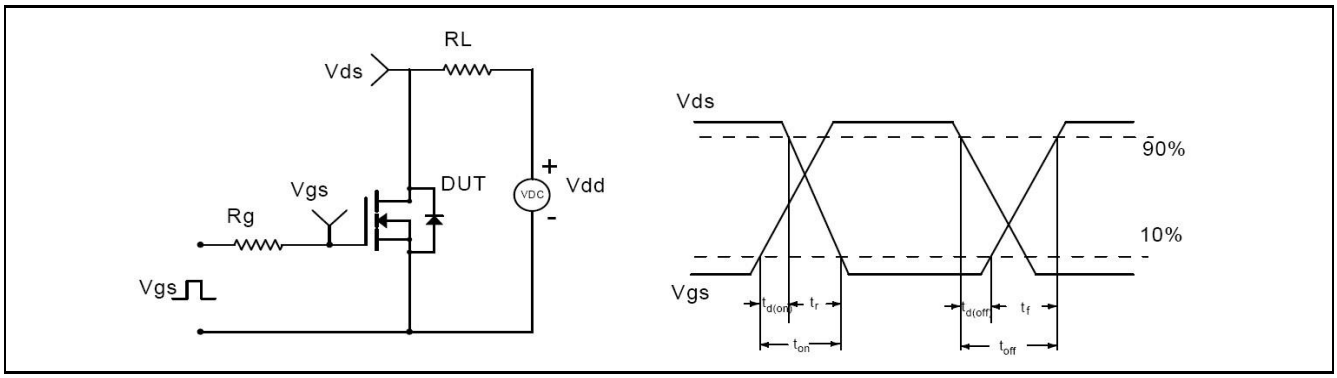


Figure 2, Switching time test circuit & waveforms

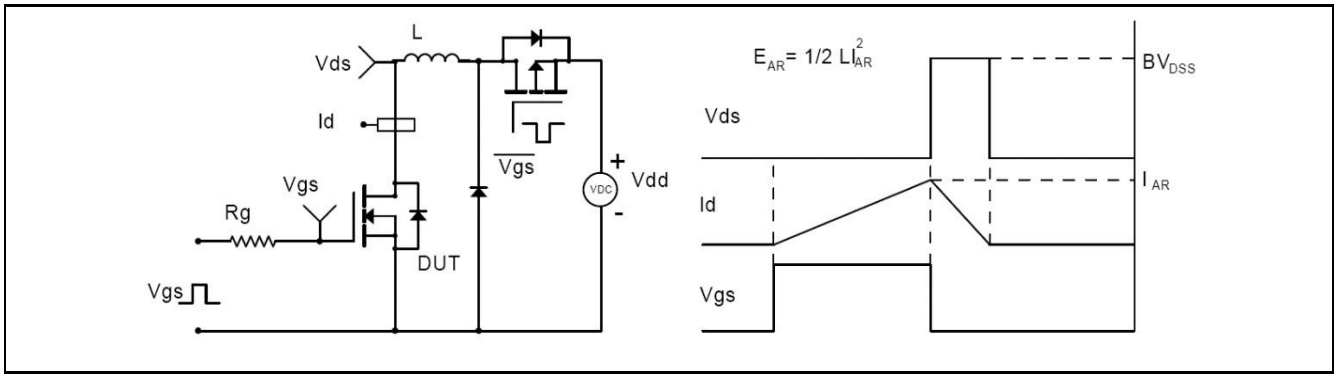
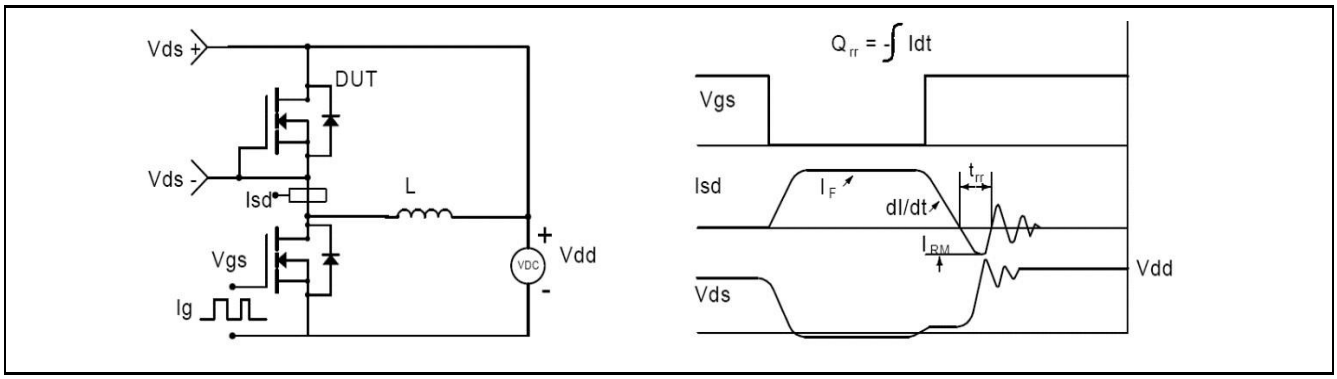
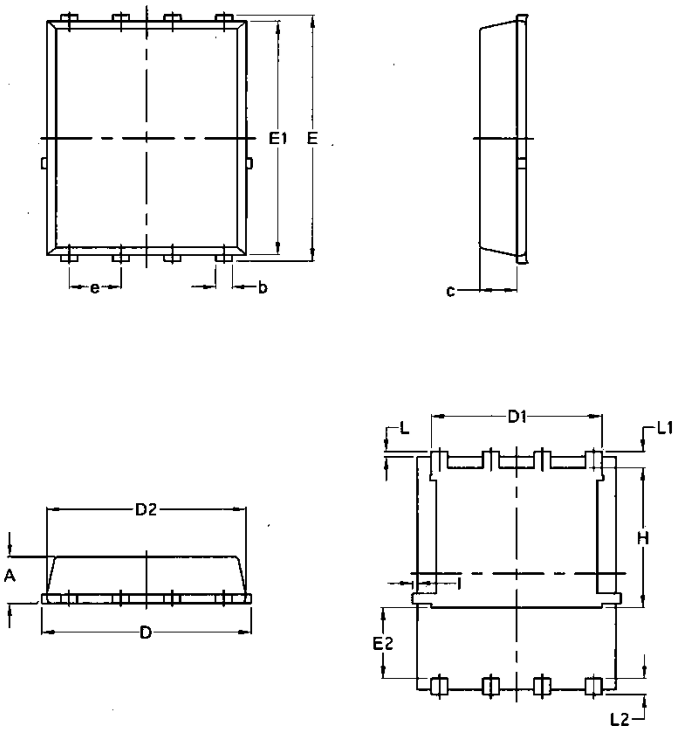


Figure 3, Unclamped inductive switching (UIS) test circuit & waveforms



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



Symbol	Common			
	mm		Inch	
	Mim	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