

General Description

The MY80N10D 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

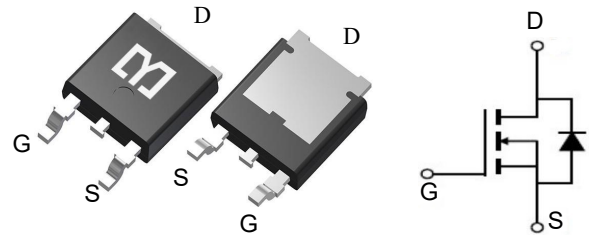


Features

V_{DSS}	100	V
I_D	80	A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	8	m Ω
$R_{DS(ON)}$ (at $V_{GS}=4.5V$)	10	m Ω

Application

- Battery protection
- Load switch
- Uninterruptible power supply



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY80N10D	TO-252-2L	MY80N10D	2500

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

Parameter	Symbol	Value	Unit
Drain source voltage	VDS	100	V
Gate source voltage	VGS	± 20	V
Continuous drain current ¹⁾ , $T_C=25^\circ\text{C}$	I_D	80	A
Pulsed drain current ²⁾ , $T_C=25^\circ\text{C}$	I_D , pulse	180	A
Power dissipation ³⁾ , $T_C=25^\circ\text{C}$	P_D	125	W
Single pulsed avalanche energy ⁵⁾	EAS	100	mJ
Operation and storage temperature	Tstg , Tj	-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	Test condition	Min.	Typ.	Max.	Unit
Drain-source breakdown voltage	BV _{DSS}	V _{GS} =0 V, I _D =250 μA	100			V
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250 μA	1.0		2.5	V
Drain-source on-state resistance	R _{DS(ON)}	V _{GS} =10 V, I _D =10 A		8	10	mΩ
Drain-source on-state resistance	R _{DS(ON)}	V _{GS} =4.5 V, I _D =10 A		10	12	mΩ
Gate-source leakage current	I _{GSS}	V _{GS} =20 V			100	nA
					-100	
Drain-source leakage current	I _{DSS}	V _{DS} =100 V, V _{GS} =0 V			1	μA
Input capacitance	C _{iss}	V _{GS} =0 V, V _{DS} =50 V, f=1 MHz		2604		pF
Output capacitance	C _{oss}			361.2		pF
Reverse transfer capacitance	C _{rss}			6.5		pF
Turn-on delay time	t _{d(on)}	V _{GS} =10 V, V _{DS} =50 V, R _G =2.2 Ω, I _D =25 A		20.6		ns
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	I _D =25A, V _{DS} =50 V, V _{GS} =10 V		49.9		nC
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	V _{GS} <V _{th}			40	
Pulsed source current	I _{SP}				120	A
Diode forward voltage	V _{SD}	I _S =8 A, V _{GS} =0 V			1.3	V
Reverse recovery time	t _{rr}	I _S =8 A, di/dt=100 A/μs		50.2		ns
Reverse recovery charge	Q _{rr}				95.1	nC
Peak reverse recovery current	I _{rm}				2.5	A

Note

- 1) Calculated continuous current based on maximum allowable junction temperature.
- 2) Repetitive rating; pulse width limited by max. junction temperature.
- 3) P_d 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

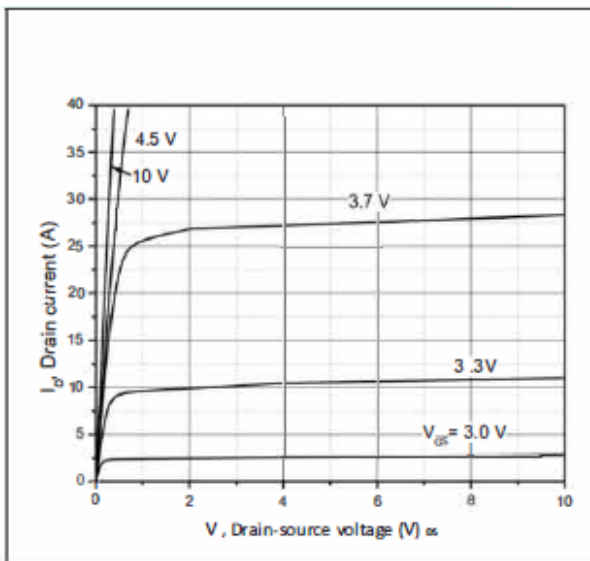


Figure 1, Typ. output characteristics

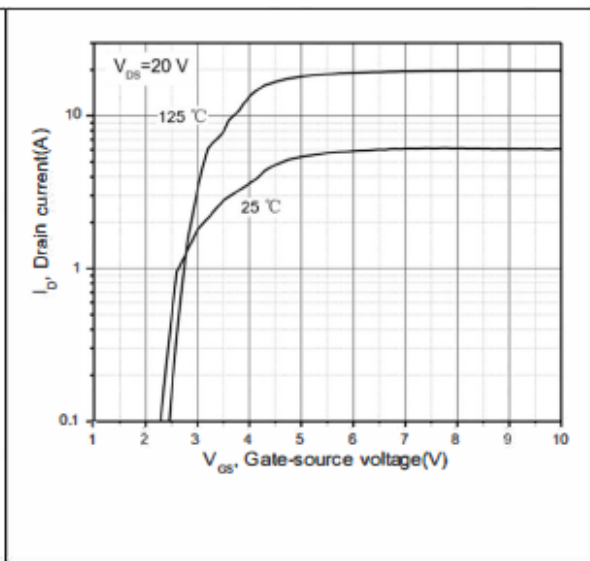


Figure 2, Typ. transfer characteristics

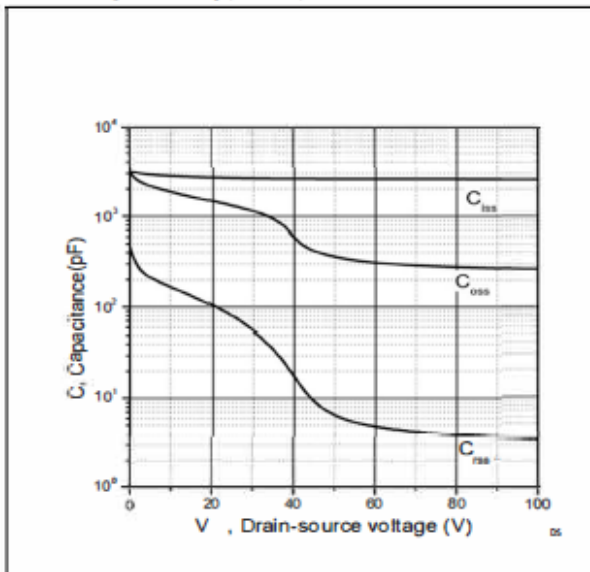


Figure 3, Typ. capacitances

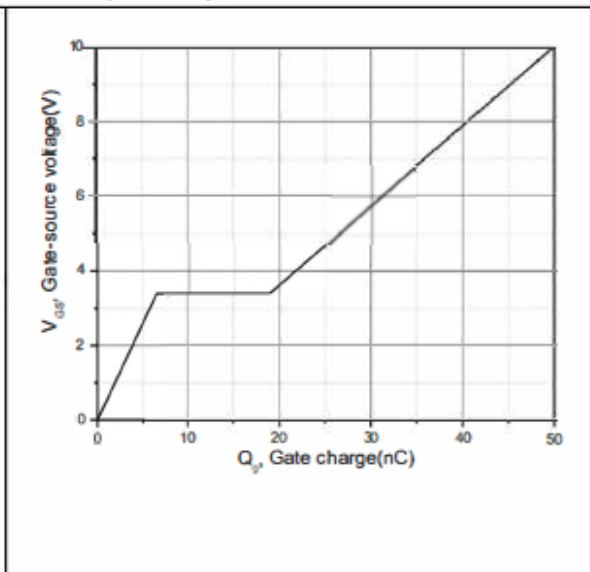


Figure 4, Typ. gate charge

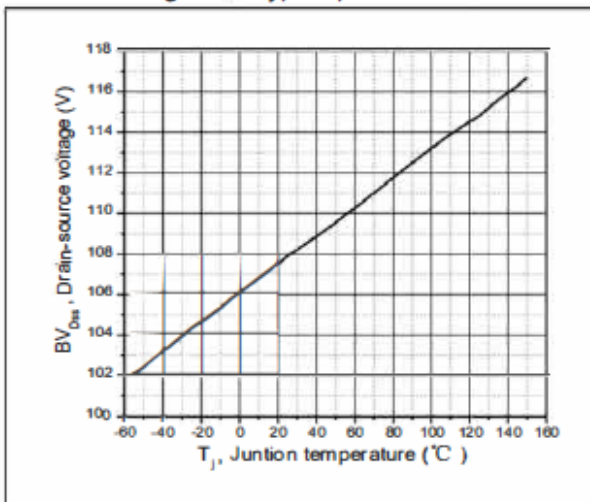


Figure 5, Drain-source breakdown voltage

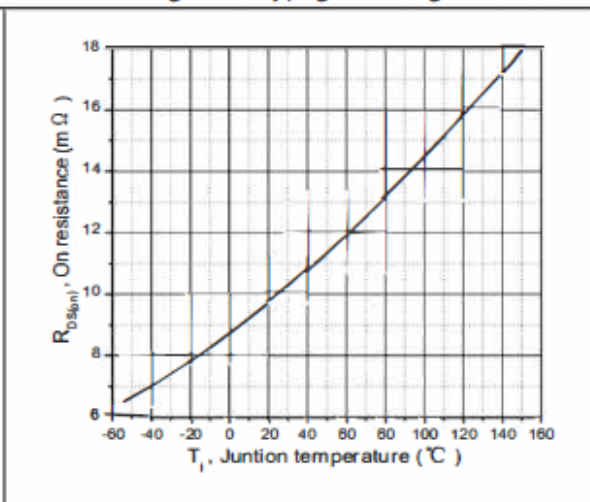


Figure 6, Drain-source on-state resistance

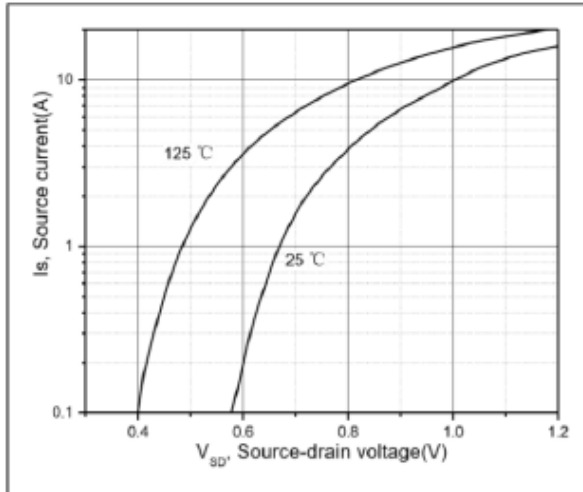


Figure 7, Forward characteristic of body diode

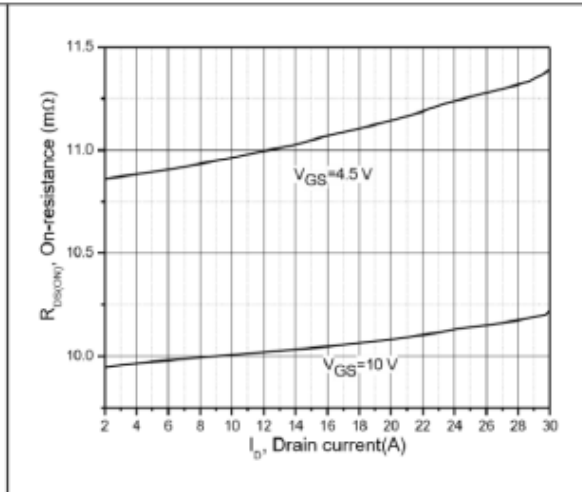


Figure 8, Drain-source on-state resistance

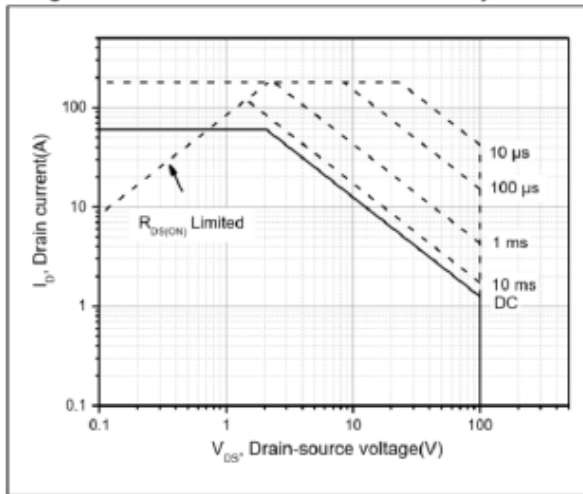


Figure 9, Safe operation area $T_C=25\text{ }^\circ\text{C}$

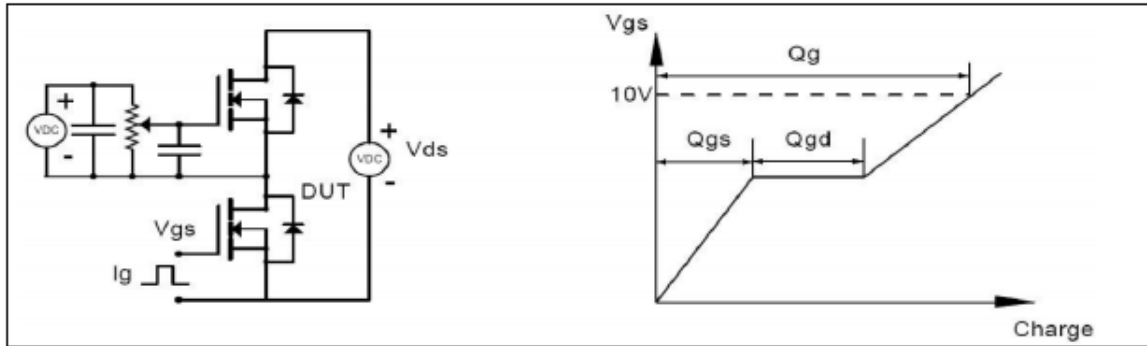


Figure 1. Gate charge test circuit & waveform

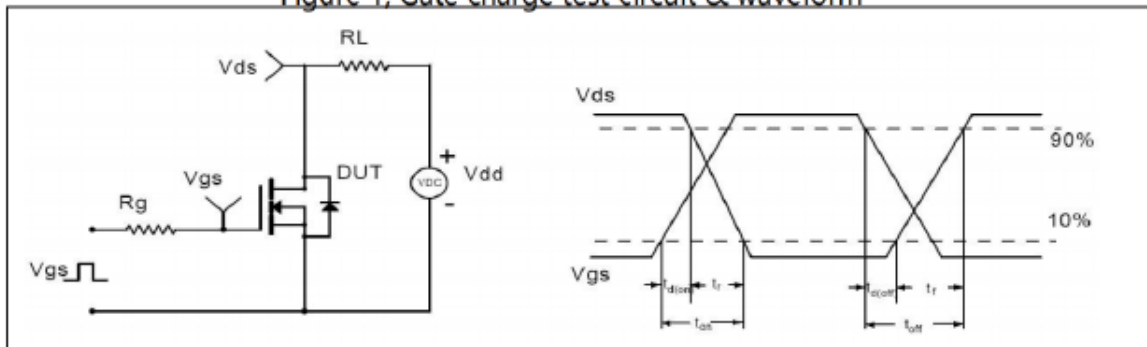


Figure 2. Switching time test circuit & waveforms

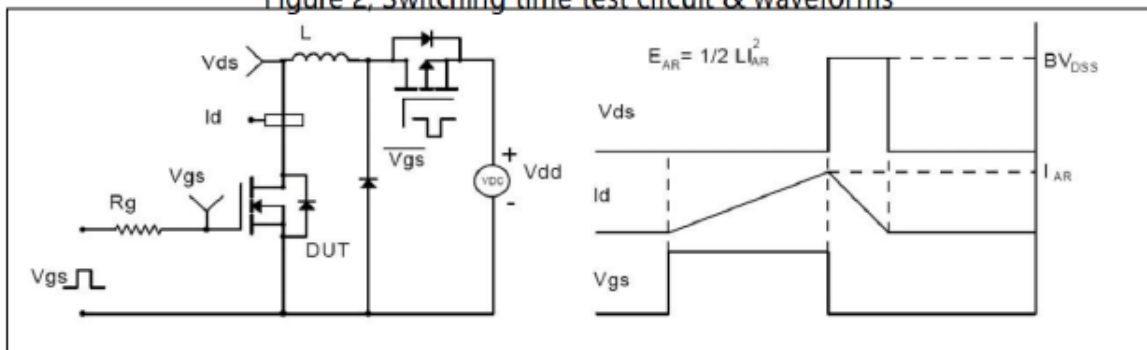


Figure 3. Unclamped inductive switching (UIS) test circuit & waveforms

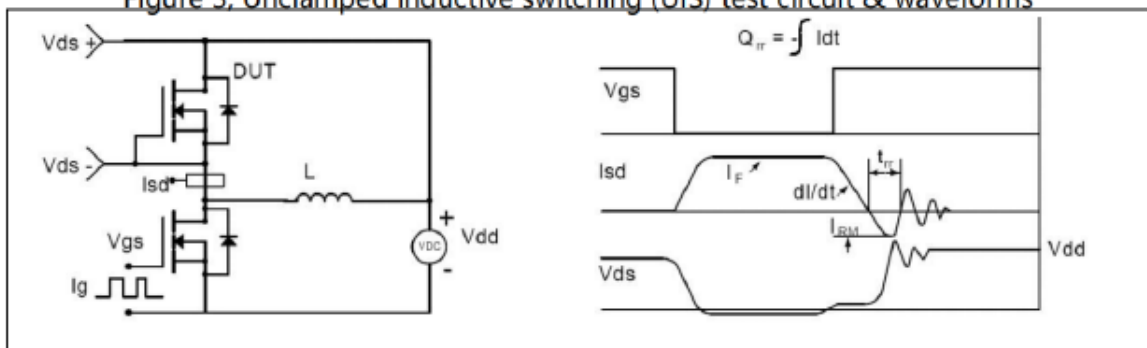
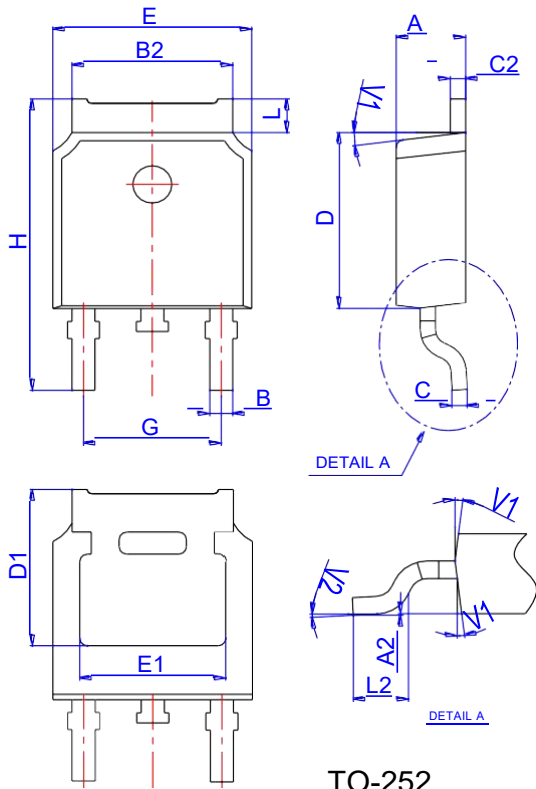


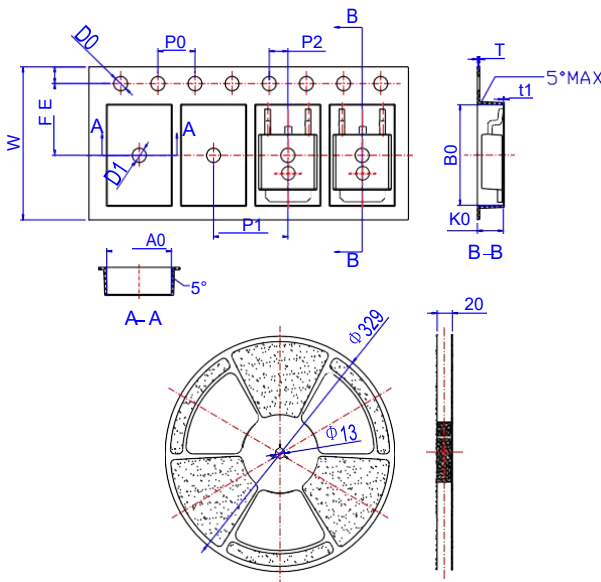
Figure 4. Diode reverse recovery test circuit & waveforms

Package Mechanical Data-TO-252-JQ Single



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

Reel Specification-TO-252



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
W	15.90	16.00	16.10	0.626	0.630	0.634
E	1.65	1.75	1.85	0.065	0.069	0.073
F	7.40	7.50	7.60	0.291	0.295	0.299
D0	1.40	1.50	1.60	0.055	0.059	0.063
D1	1.40	1.50	1.60	0.055	0.059	0.063
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	7.90	8.00	8.10	0.311	0.315	0.319
P2	1.90	2.00	2.10	0.075	0.079	0.083
A0	6.85	6.90	7.00	0.270	0.271	0.276
B0	10.45	10.50	10.60	0.411	0.413	0.417
K0	2.68	2.78	2.88	0.105	0.109	0.113
T	0.24		0.27	0.009		0.011
t1	0.10			0.004		
10P0	39.80	40.00	40.20	1.567	1.575	1.583