

## Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
100V	8.5mΩ@10V	60A
	12mΩ@4.5V	

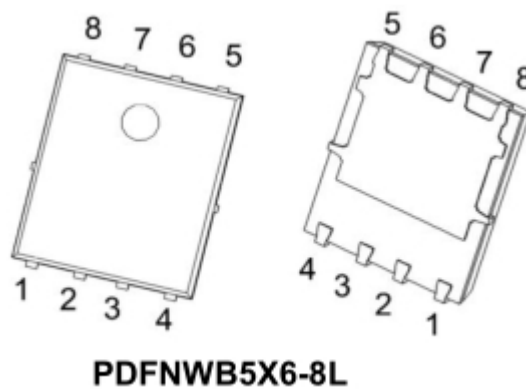
## Feature

- Low  $R_{DS(on)}$  & FOM
- Extremely low switching loss
- Excellent stability and uniformity
- Fast switching and soft recovery

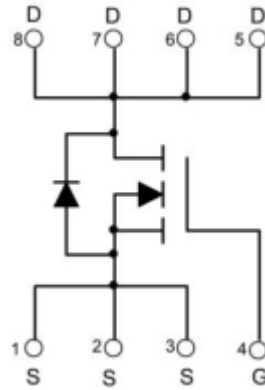
## Application

- Consumer electronic power supply
- Motor control Synchronous rectification
- Isolated DC/DC convertor
- Invertors

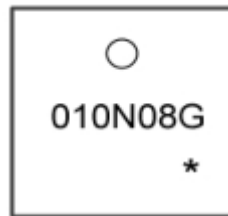
## Package



## Circuit diagram



## Marking



010N08G : Product code  
\* : Month code.

## Absolute maximum ratings

( $T_a=25^\circ\text{C}$  unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current <sup>1</sup> ( $T_C = 25^\circ\text{C}$ )	$I_D$	60	A
Pulsed Drain Current <sup>2</sup> ( $T_C = 25^\circ\text{C}$ )	$I_{DM}$	180	A
Power Dissipation <sup>3</sup> ( $T_C = 25^\circ\text{C}$ )	$P_D$	107	W
Single Pulse Avalanche Energy <sup>4</sup>	$E_{AS}$	65	mJ
Thermal Resistance Junction-Case <sup>1</sup>	$R_{\theta JC}$	1.17	$^\circ\text{C}/\text{W}$
Thermal resistance, junction-ambient	$R_{\theta JA}$	62	$^\circ\text{C}/\text{W}$
Operation and storage temperature	$T_{STG}, T_J$	-55~ +150	$^\circ\text{C}$

## Electrical characteristics

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

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	BV <sub>DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	100			V
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =100V,V <sub>GS</sub> = 0V , T <sub>j</sub> =25°C			1	uA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V			±100	uA
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1	2	2.5	V
Drain-Source on-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =30A		8.5	11	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =12A		12	16	
Dynamic characteristics						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =50V,V <sub>GS</sub> =0V, f=1MHz		1998		pF
Output Capacitance	C <sub>Oss</sub>			322		
Reverse Transfer Capacitance	C <sub>rss</sub>			7.1		
Switching Characteristics						
Turn-On Delay Time	T <sub>d(on)</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =50V, R <sub>G</sub> =2.2.Ω, I <sub>D</sub> =25A		22.1		nS
Rise Time	T <sub>r</sub>			5.2		
Turn-Off Delay Time	T <sub>d(off)</sub>			44		
Fall Time	T <sub>f</sub>			8.4		
Total Gate Charge (4.5V)	Q <sub>g</sub>	I <sub>D</sub> =25A, V <sub>DS</sub> =50V, V <sub>GS</sub> =10V		28.9		nC
Gate-Source Charge	Q <sub>gS</sub>			6		
Gate-Drain Charge	Q <sub>gd</sub>			6.8		
Drain-Source Diode Characteristics						
Diode forward voltage	V <sub>SD</sub>	I <sub>S</sub> =30A, V <sub>GS</sub> =0V			1.3	V
Reverse recovery time	t <sub>rr</sub>	I <sub>S</sub> =12 A, di/dt=100 A/μs		102.9		ns
Reverse recovery charge	Q <sub>rr</sub>			379		nC
Peak reverse recovery current	I <sub>rrm</sub>			6.4		A

### Notes:

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.  $V_{DD} = 50V, R_G = 25\Omega, L = 0.3mH$ , starting  $T_J = 25^{\circ}\text{C}$ .

## Typical Characteristics

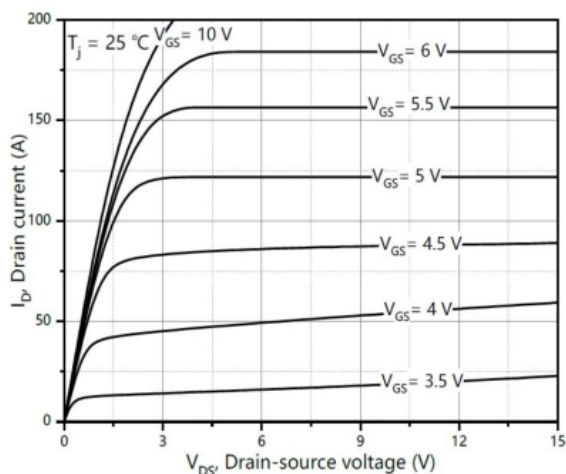


Figure 1, Typ. output characteristics

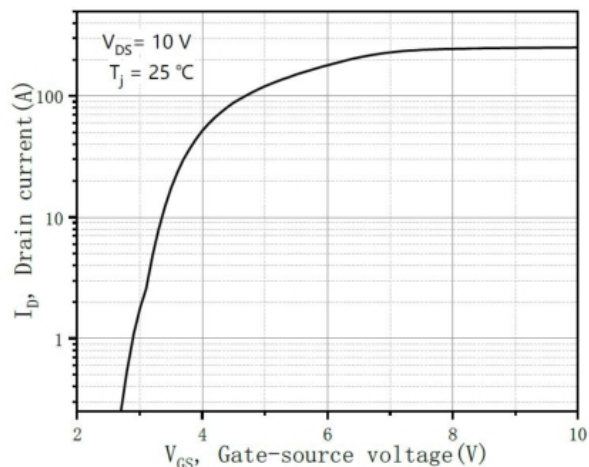


Figure 2, Typ. transfer characteristics

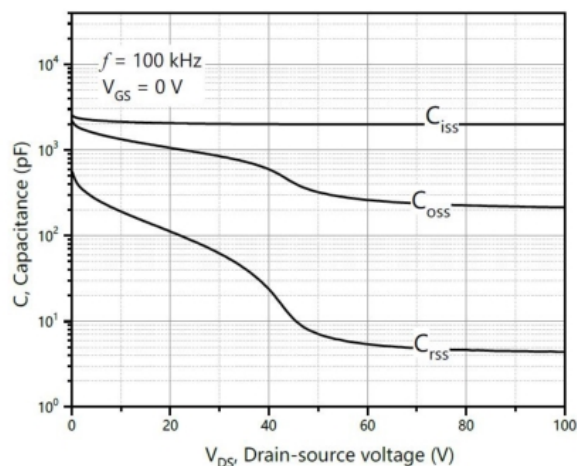


Figure 3, Typ. capacitances

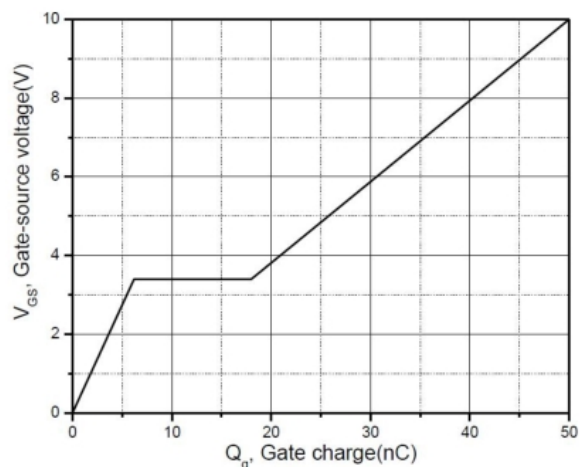


Figure 4, Typ. gate charge

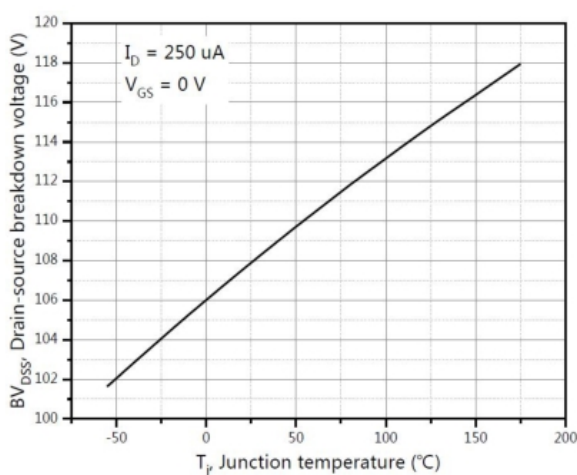


Figure 5, Drain-source breakdown voltage

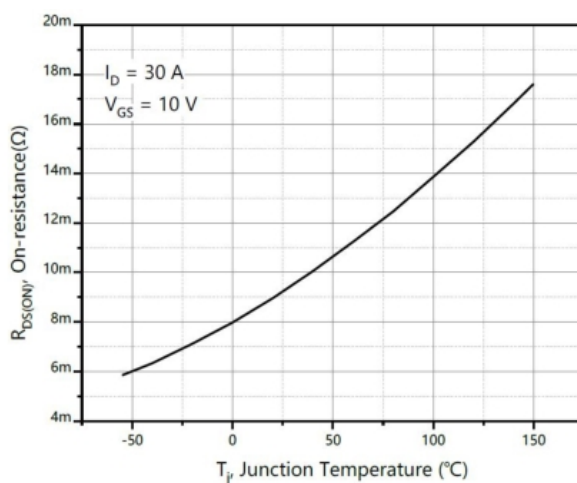


Figure 6, Drain-source on-state resistance

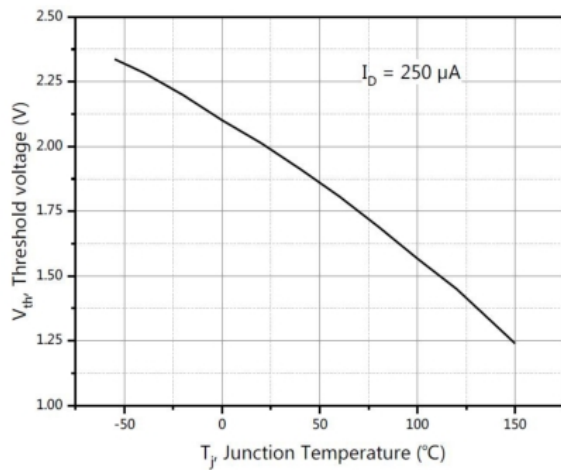


Figure 7, Threshold voltage

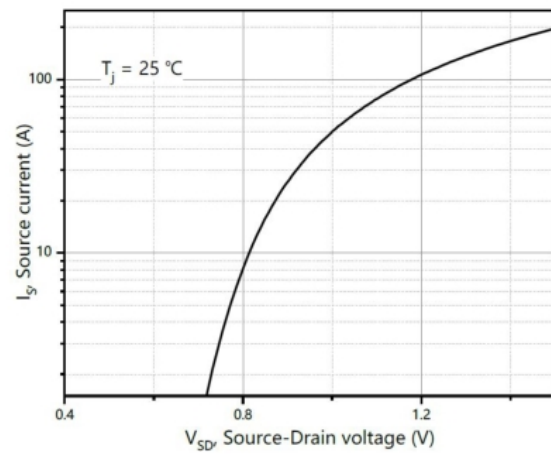


Figure 8, Forward characteristic of body diode

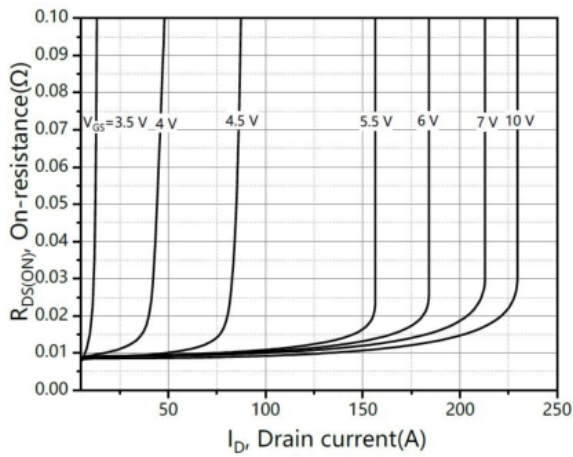


Figure 9, Drain-source on-state resistance

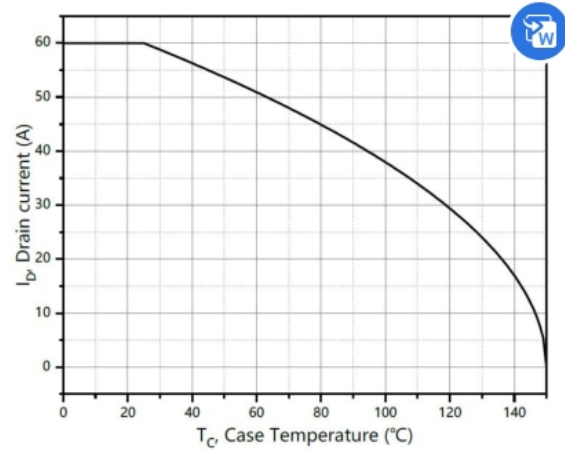


Figure 10, Drain current

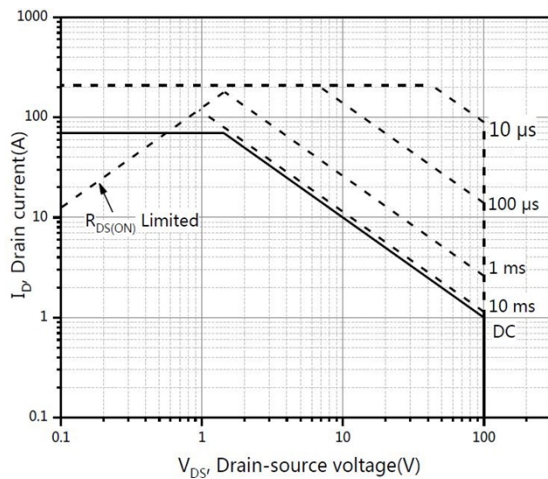


Figure 11, Safe operation area TC=25 °C

## Test circuits and waveforms

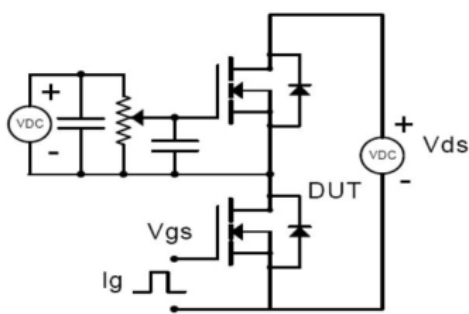


Figure 1, Gate charge test circuit & waveform

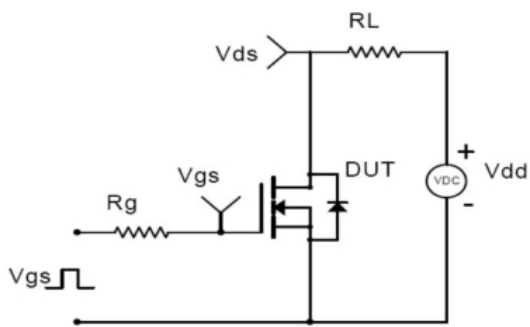
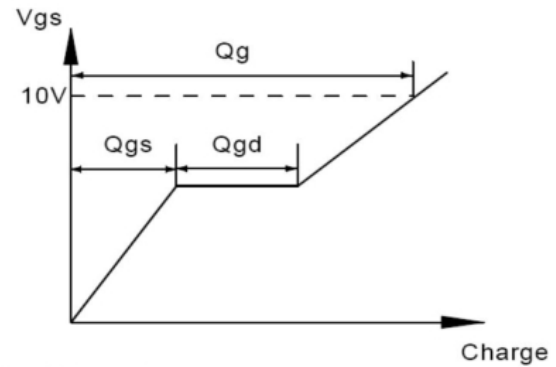


Figure 2, Switching time test circuit & waveforms

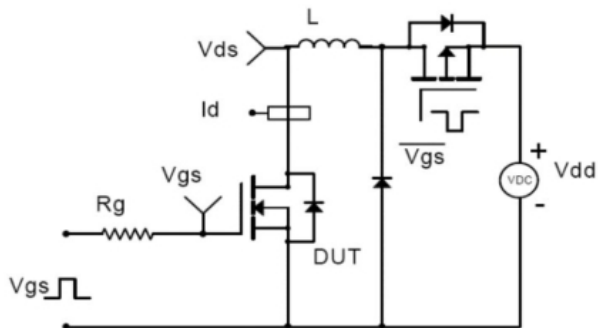
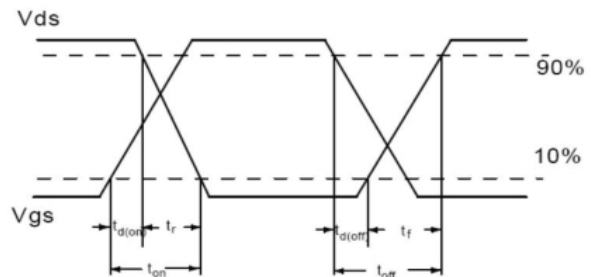


Figure 3, Unclamped inductive switching (UIS) test circuit & waveforms

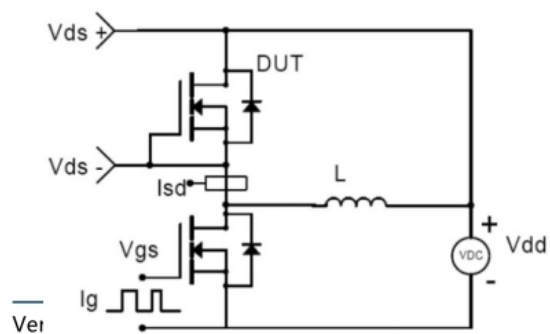
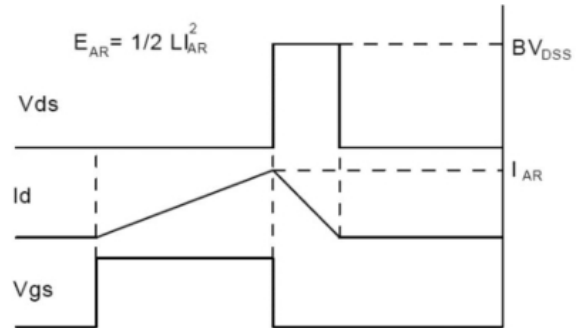
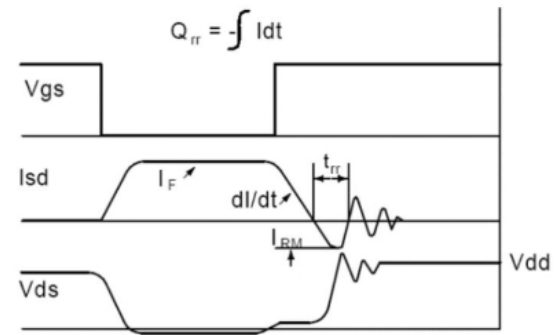
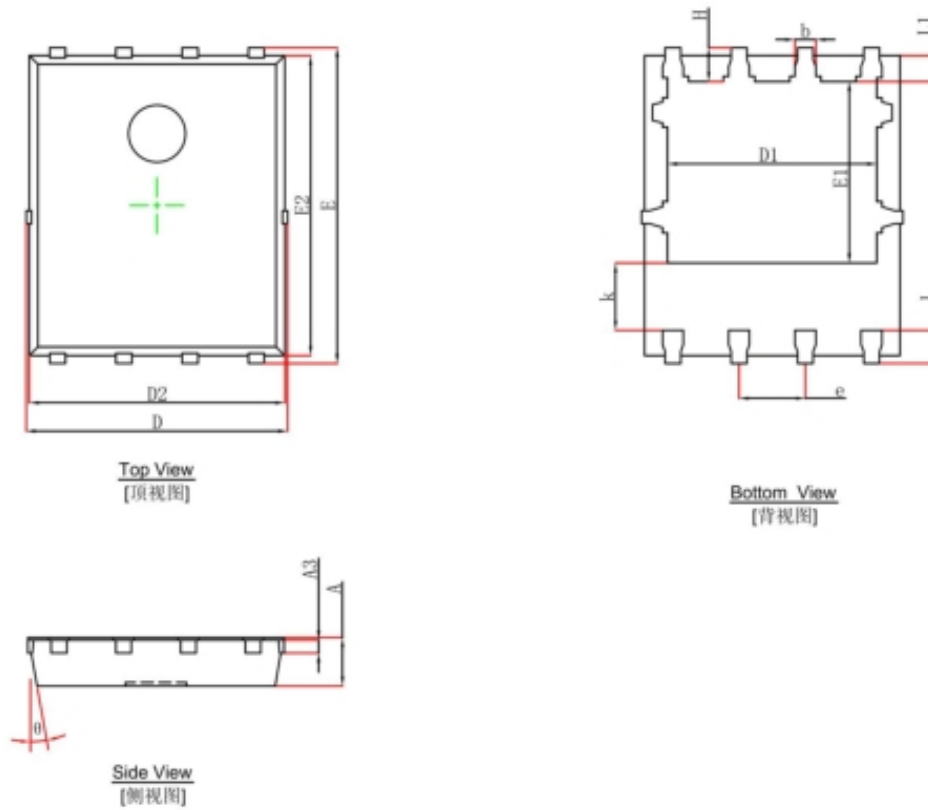


Figure 4, Diode reverse recovery test circuit & waveforms



## PDFNWB5X6-8L Package Information



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	10°	12°	10°	12°