

## General Description

The WSD2018ADN22 is the highest performance trench N-Ch MOSFET with extreme high cell density, which provide excellent RDSON and gate charge for most of the small power switching and load switch applications.

The WSD2018ADN22 meet the RoHS and Green Product requirement with full function reliability approved.

## Features

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent Cdv/dt effect decline
- Green Device Available

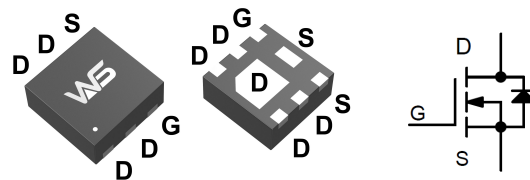
## Product Summary

BVDSS	RDSON	ID
20V	9.5mΩ	11A

## Applications

- High Frequency Point-of-Load Synchronous Small power switching for MB/NB/UMPC/VGA
- Networking DC-DC Power System
- Load Switch

## DFNWB2×2-6L-J Pin Configuration



## Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	20	V
$V_{GS}$	Gate-Source Voltage	$\pm 10$	V
$I_D@T_C=25^\circ C$	Continuous Drain Current, $V_{GS} @ 4.5V^1$	11	A
$I_D@T_C=70^\circ C$	Continuous Drain Current, $V_{GS} @ 4.5V^1$	9.5	A
$I_{DM}$	Pulsed Drain Current <sup>2</sup>	40	A
$P_D@T_A=25^\circ C$	Total Power Dissipation <sup>3</sup>	2.0	W
$T_{STG}$	Storage Temperature Range	-55 to 150	$^\circ C$
$T_J$	Operating Junction Temperature Range	-55 to 150	$^\circ C$

## Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient <sup>1</sup>	---	167	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case <sup>1</sup>	---	65	$^\circ C/W$

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	20	---	---	V
$\Delta BV_{DSS}/\Delta T_J$	BVDSS Temperature Coefficient	Reference to $25^\circ\text{C}$ , $I_D=1\text{mA}$	---	0.027	---	$V/^\circ\text{C}$
$R_{DS(on)}$	Static Drain-Source On-Resistance <sup>2</sup>	$V_{GS}=4.5V, I_D=5A$	---	9.5	12	m $\Omega$
		$V_{GS}=2.5V, I_D=5A$	---	11	14	
		$V_{GS}=1.8V, I_D=5A$		14.5	18	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	0.4	0.7	1.0	V
$\Delta V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	2.56	---	$\text{mV}/^\circ\text{C}$
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS}=16V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	1	$\mu\text{A}$
		$V_{DS}=16V, V_{GS}=0V, T_J=55^\circ\text{C}$	---	---	5	
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 12V, V_{DS}=0V$	---	---	$\pm 100$	nA
gfs	Forward Transconductance	$V_{DS}=4V, I_D=9.7A$	20	---	---	S
$R_g$	Gate Resistance	$f=1\text{MHz}$	---	2.5	---	$\Omega$
$Q_g$	Total Gate Charge (4.5V)	$V_{DS}=4V, V_{GS}=5V, I_D=10A$	---	16	32	nC
$Q_{gs}$	Gate-Source Charge		---	1.3	---	
$Q_{gd}$	Gate-Drain Charge		---	1.6	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=4V, V_{GS}=4.5V, R_G=1\Omega$ $I_D=10A, R_L=0.4\Omega$	---	16	20	ns
$T_r$	Rise Time		---	25	45	
$T_{d(off)}$	Turn-Off Delay Time		---	124	150	
$T_f$	Fall Time		---	101	120	
$C_{iss}$	Input Capacitance	$V_{DS}=4V, V_{GS}=0V, f=1\text{MHz}$	---	1177	---	pF
$C_{oss}$	Output Capacitance		---	157	---	
$C_{riss}$	Reverse Transfer Capacitance		---	138	---	

**Notes :**

- 1.Surface mounted on FR4 board using 1 square inch pad size,1oz copper.
- 2.Surface mounted on FR4 board using the minimum pad size,1oz copper.
3. Pulse test : Pulse width=300 $\mu\text{s}$ , duty cycle $\leq 2\%$ .
4. These parameters have no way to verify.

Typical Characteristics

TYPICAL CHARACTERISTIC CURVES

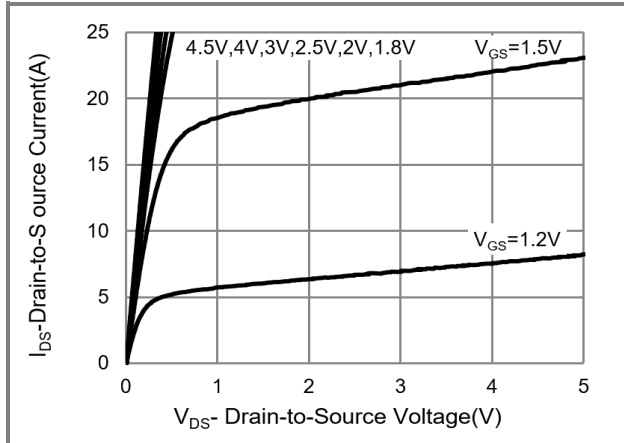


Fig.1 On-Region Characteristics

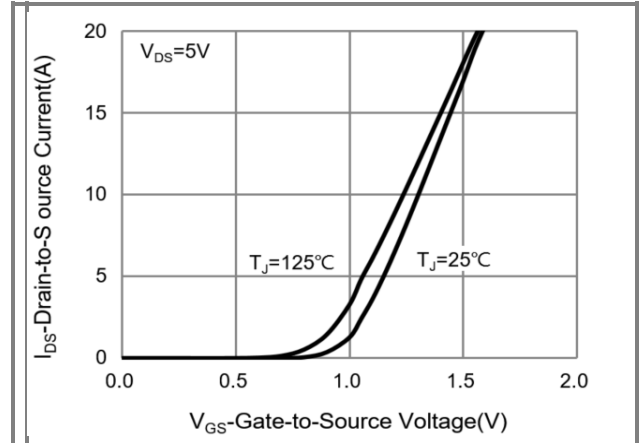


Fig.2 Transfer Characteristics

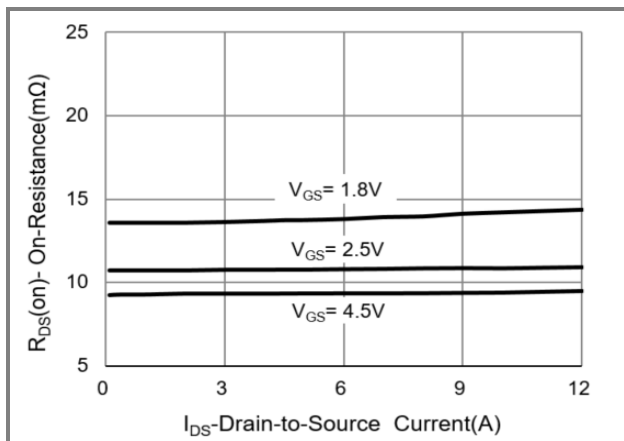


Fig.3 On-Resistance vs. Drain Current

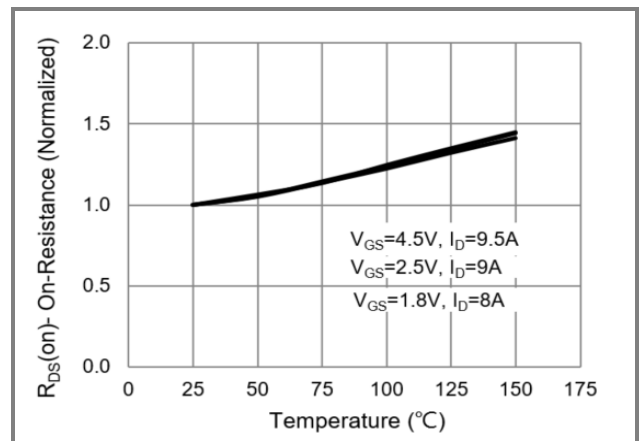


Fig.4 On-Resistance vs. Junction temperature

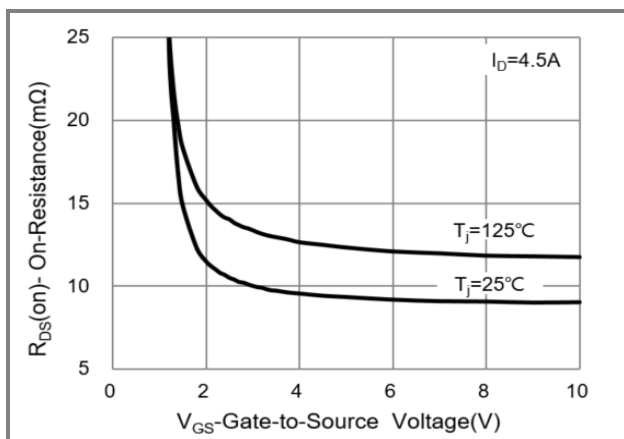


Fig.5 On-Resistance Variation with  $V_{GS}$

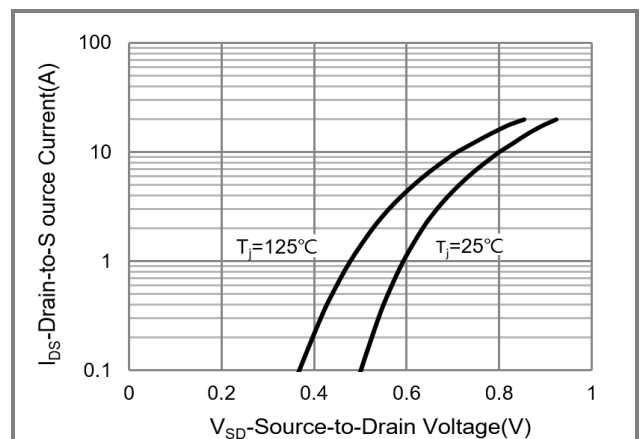
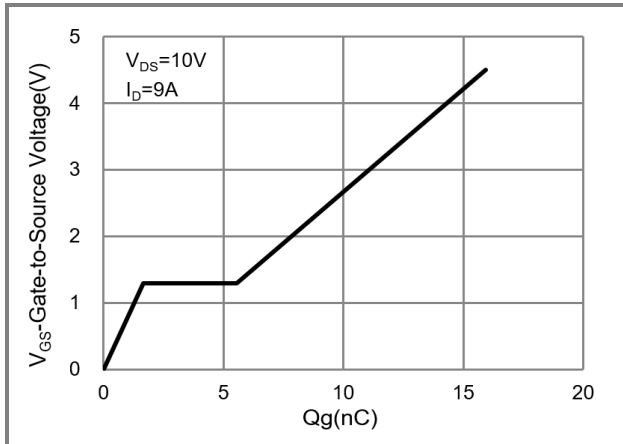
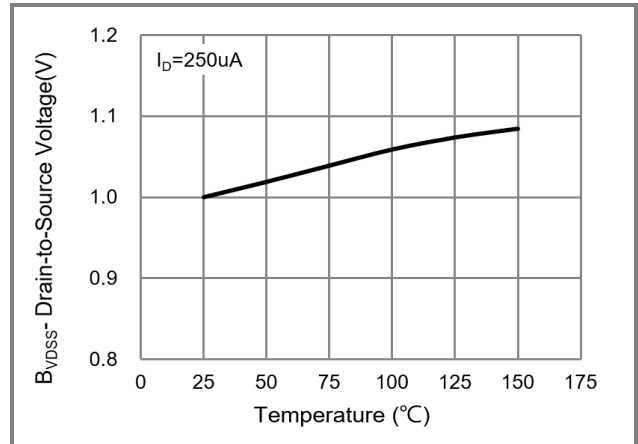


Fig.6 Body Diode Characteristics

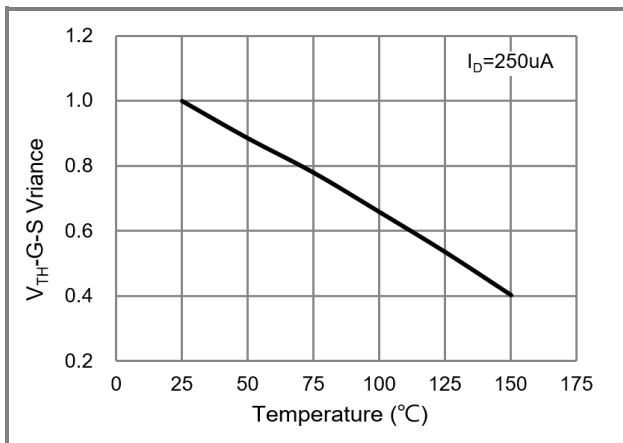
**TYPICAL CHARACTERISTIC CURVES**



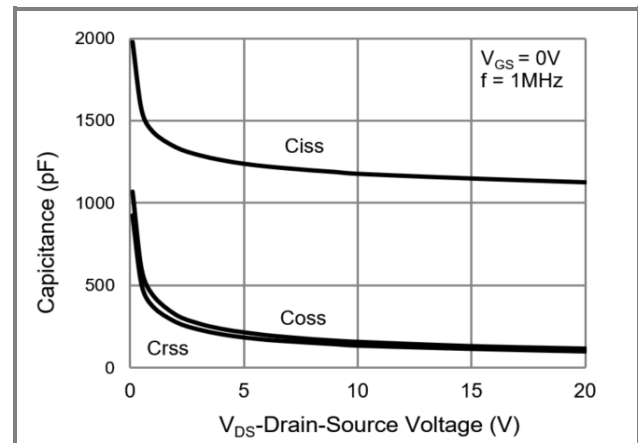
**Fig.7 Gate-Charge Characteristics**



**Fig.8 Breakdown Voltage Variation vs. Temperature**

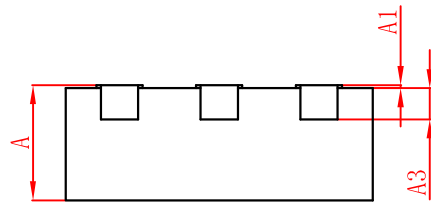
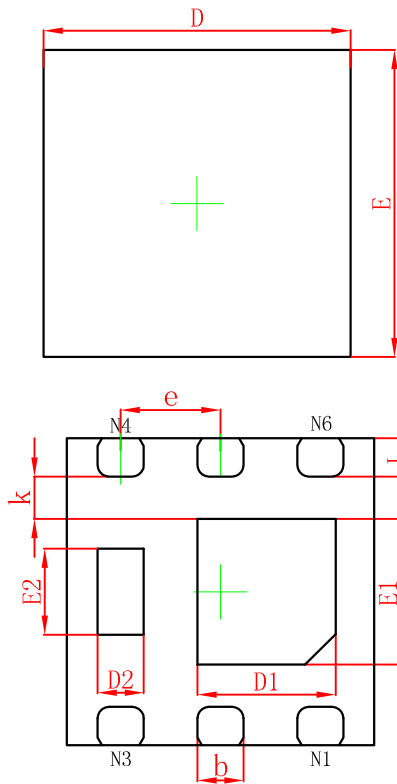


**Fig.9 Threshold Voltage Variation with Temperature**



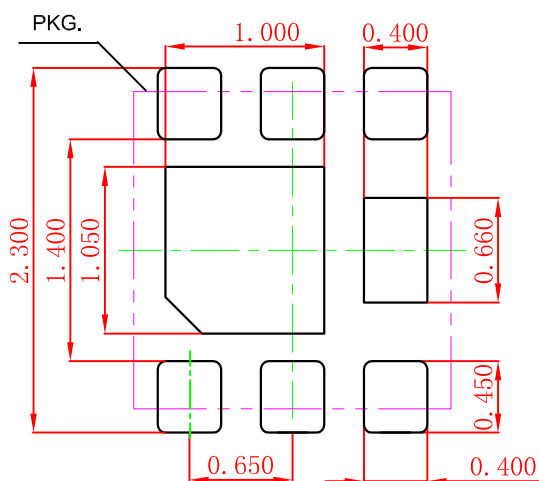
**Fig.10 Capacitance vs. Drain-Source Voltage**

## DFNWB2X2-6L-J Package



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.800		0.032
A1	0.000	0.050	0.000	0.002
A3	0.203REF.		0.008REF.	
D	1.924	2.076	0.076	0.082
E	1.924	2.076	0.076	0.082
D1	0.800	1.000	0.031	0.039
E1	0.850	1.050	0.033	0.041
D2	0.200	0.400	0.008	0.016
E2	0.460	0.660	0.018	0.026
k	0.200MIN.		0.008MIN.	
b	0.250	0.350	0.010	0.014
e	0.650TYP.		0.026TYP.	
L	0.174	0.326	0.007	0.013

## DFNWB2X2-6L-J Suggested Pad Layout



- Note:
1. Controlling dimension: in millimeters.
  2. General tolerance:  $\pm 0.050$ mm.
  3. The pad layout is for reference purposes only.



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