VUDD002R130NB

Datasheet

General Summary

$V_{(BR)DSS}$	$R_{DS(ON)\_max}$	I_D
20V	13mΩ@4.5V	12A
	18mΩ@2.5V	
	30mΩ@1.8V	

Symbol

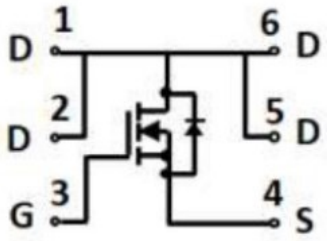


Figure 1 Symbol of VUDD002R130NB

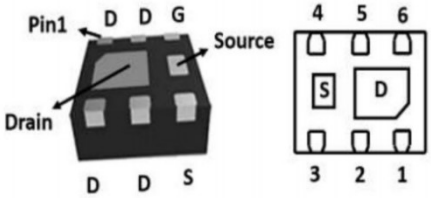
Features

- Small package DFNWB2×2-6L-J
- Trench FET Power MOSFET
- N-Channel Switch Low $R_{DS(ON)}$
- Operated at Low Logic Level Gate Drive

Application

- Interfacing switching
- Load Switch for Portable Applications
- PWM Switch

Package Type



DFNWB2X2-6L-J

Figure 2 Package Type of VUDD002R130NB

Ordering Information

Product Name	Package
VUDD002R130NB	DFNWB2X2-6L-J

Absolute Maximum Ratings (T_A= 25 ºC, unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	20	V
Gate-Source Voltage	V_{GSS}	±10	V
Continuous Drain Current[Note1,2]	I_D	12	A
Pulsed Drain Current	I_{DM}	40	A
Max Power Dissipation[Note1]	P_D	0.75	W
Junction Temperature	T_J	150	ºC
Storage Temperature	T_{STG}	-55 to 150	ºC

Thermal Resistance

Parameter	Symbol	Min	Typ	Max	Unit
Thermal Resistance, Junction-to-Ambient [Note1,2]	$R_{\theta JA}$		167		ºC/W

Electrical Characteristics T_A= 25 ºC, unless otherwise specified

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Statistic Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250uA	20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= 16V, V_{GS}=0V			1	uA
Gate-Body Leakage Current	I_{GSS}	V_{GS} = ±10V,V_{DS}=0V			±100	nA
Gate Threshold Voltage[Note3]	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250uA	0.35	0.7	1.0	V
Static Drain-Source On-Resistance[Note3]	$R_{DS(ON)}$	V_{GS}= 4.5V, I_D=3A		10	13	mΩ
		V_{GS}= 2.5V, I_D=3A		14	18	
		V_{GS}= 1.8V, I_D=3A		23	30	
Forward tranconductance[Note3]	g_{FS}	V_{DS}= 4V,I_D= 10A	10			S
Dynamic Characteristics						
Input Capacitance	C_{ISS}	V_{DS}= 4V		1900		pF
Output Capacitance	C_{OSS}	V_{GS}=0V		700		pF
Reverse Transfer Capacitance	C_{RSS}	f=1MHz		480		pF
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS}= 4V		20		nC
Gate-source Charge	Q_{gs}	V_{GS}= 5V		2.5		
Gate-drain Charge	Q_{gd}	I_D= 10A		6.5		
Turn-on Delay Time	$t_{d(on)}$	V_{DD}= 4V		15		ns
Rise Time	t_r	V_{GEN}= 4.5V		10		
Turn-off Delay Time	$t_{d(off)}$	R_L=0.4Ω		70		
Fall Time	t_f	R_G=1Ω		15		
Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_{SD}= 1A			1.2	V
Diode Forward Current	I_S				12	A

Notes :

1.$R_{\theta JA}$ is measured with the device mounted on 1 in^2 FR4 board with 1oz. single side copper, in a still air environment with T_A = 25°C.

2.$R_{\theta JA}$ is measured in the steady state

3.Pulse test : Pulse width ≤ 380μs, duty cycle ≤ 2%.

Typical Performance Characteristics

Figure 3: Transfer Characteristics

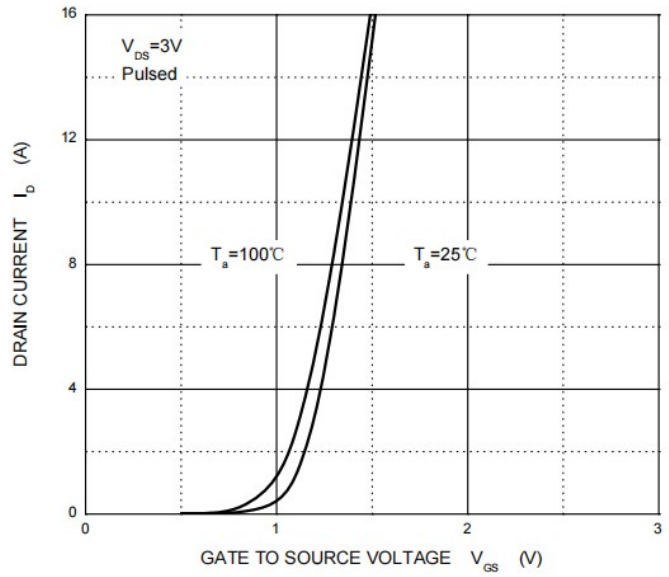


Figure 4: Typ. Output Characteristics

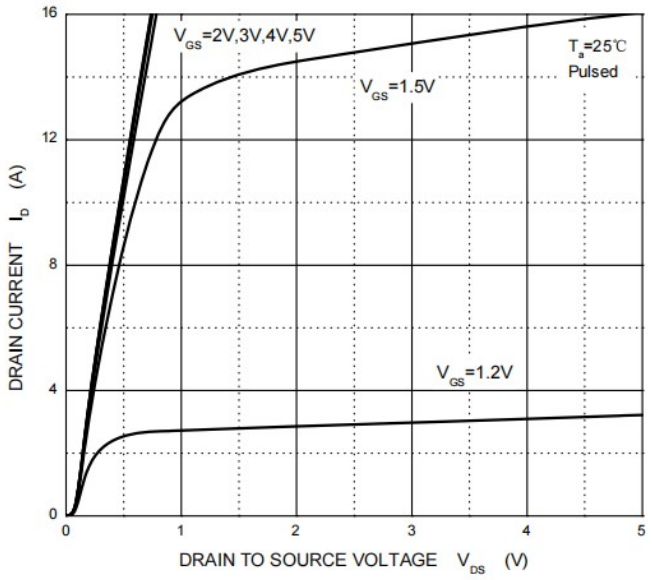


Figure 5: Drain-Source On-State Resistance-I_D

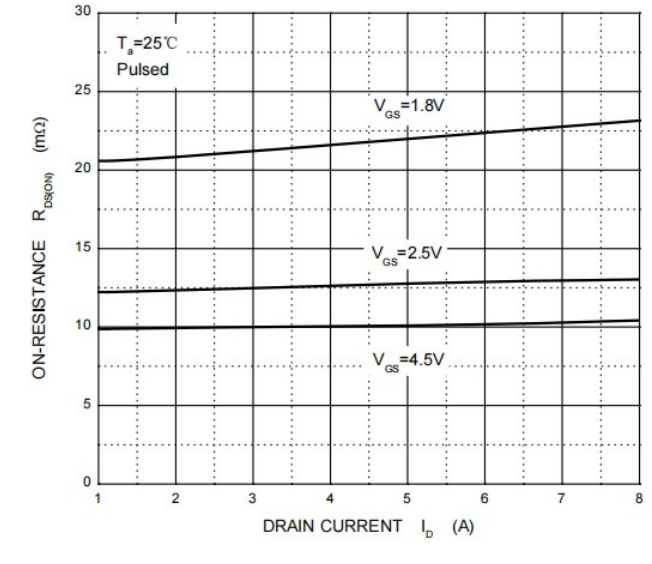


Figure 6: Drain-Source On-State Resistance -V_{GS}

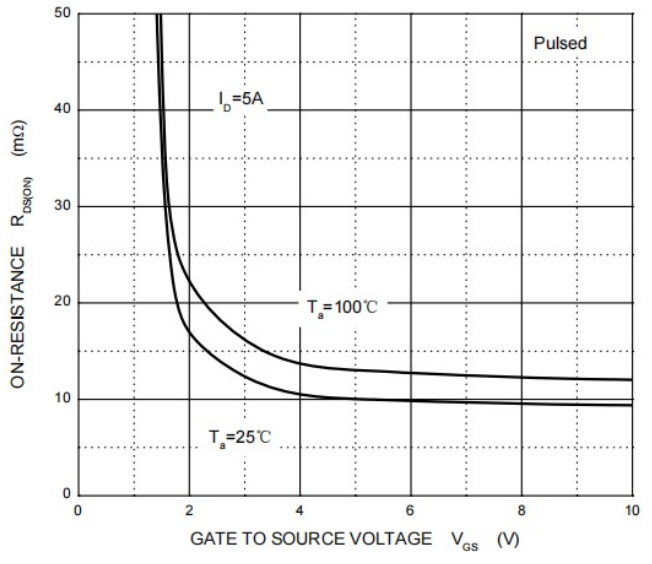


Figure 7: Source Current

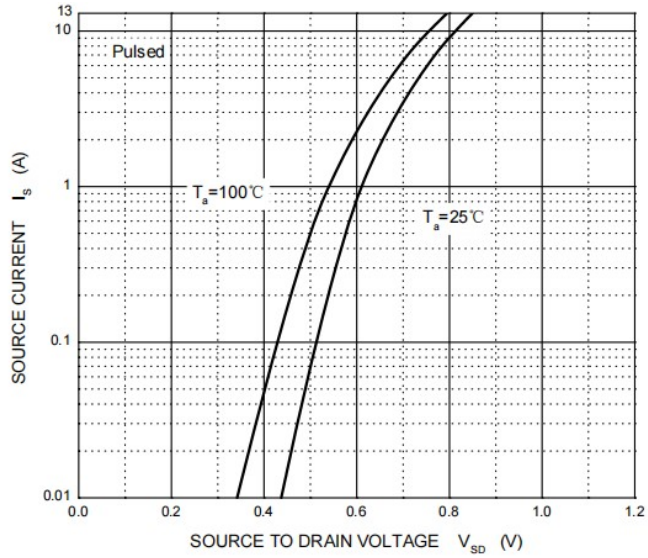
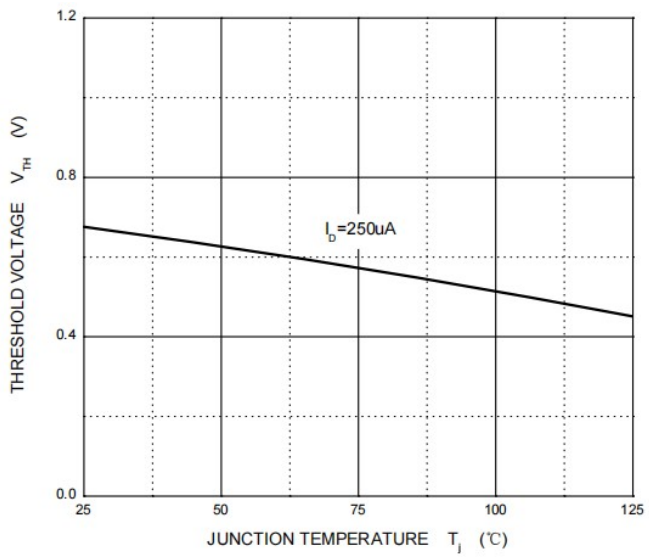
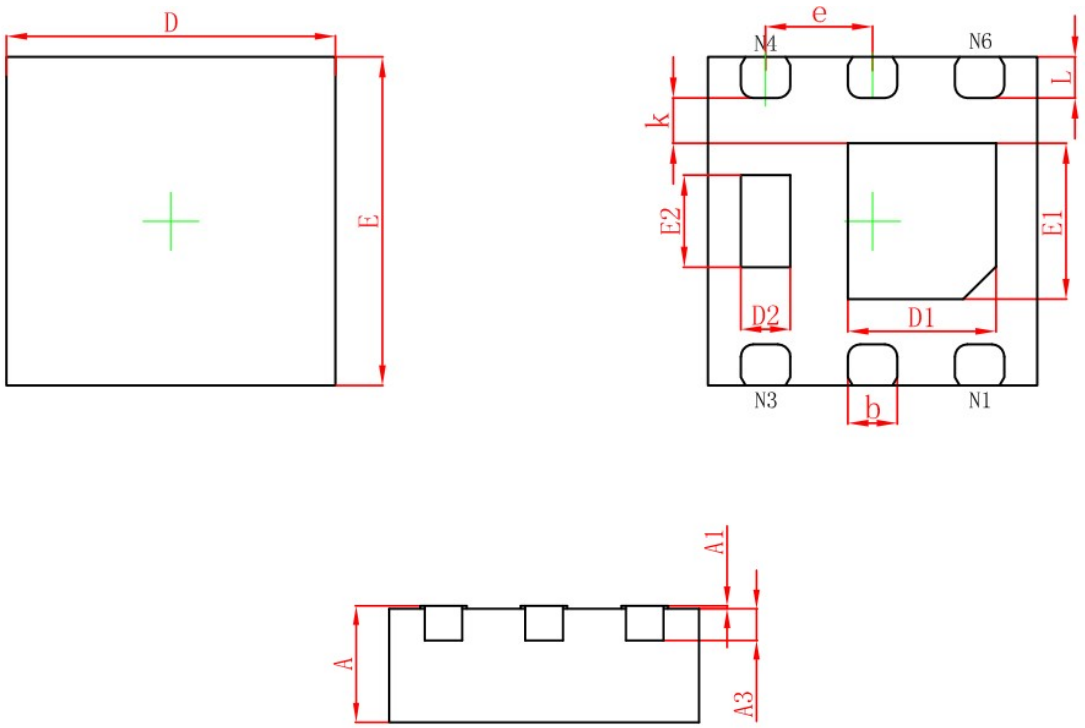


Figure 8: Threshold Voltage



Mechanical Dimensions:

DFNWB2×2-6L-J Package Information



Symbol	Dimensions (Unit:mm)		Dimensions (Unit:inch)	
	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

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