VUDD002R080NA

Datasheet

8.0mΩ, 20V, N-Channel Power MOSFET VUDD002R080NA

General Description

$V_{(BR)DSS}$	$R_{DS(ON)\_max}$	I_D
20V	8.0mΩ@4.5V	14A
	8.5mΩ@4.0V	
	9.0mΩ@3.8V	
	10mΩ@3.1V	
	11mΩ@2.5V	

Symbol

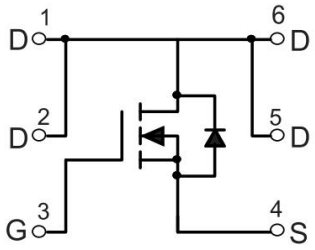
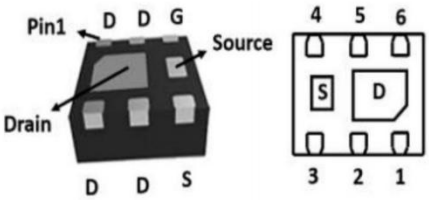


Figure 1 Symbol of VUDD002R080NA

Features

- Trench Technology Power MOSFET
- Low Gate Charge
- Low Gate Resistance
- High Power and Current Handing Capability

Package Type



DFN-2X2-6L

Figure 2 Package Type of VUDD002R080NA

Application

- Load / Power Switch
- Battery Protection
- Power Management

Ordering Information

Product Name	Package
VUDD002R080NA	DFN2X2-6L

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}	±12	V
Continuous Drain Current Note2	I_D	14	A
Pulsed Drain Current	I_{DM}	56	A
Total Power Dissipation	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	$R_{\theta JA}$		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} = ±12V, V_{DS}= 0V			±100	nA
Gate Threshold Voltage[Note3]	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	0.4	0.7	1.1	V
Static Drain-Source On-Resistance[Note3]	$R_{DS(ON)}$	V_{GS}=4.5V, I_D= 5A		6.5	8.0	mΩ
		V_{GS}=4.0V, I_D= 5A		6.6	8.5	
		V_{GS}=3.8V, I_D= 5A		6.7	9.0	
		V_{GS}=3.1V, I_D= 5A		7.2	10	
		V_{GS}= 2.5V, I_D= 5A		8.8	11.0	
Forward tranconductance[Note3]	g_{FS}	V_{DS}= 5V, I_D= 5A	16			S
Dynamic Characteristics						
Input Capacitance	C_{ISS}	V_{DS}=10V		1750		pF
Output Capacitance	C_{OSS}	V_{GS}=0V		230		pF
Reverse Transfer Capacitance	C_{RSS}	f=1MHz		200		pF
Total Gate Charge	Q_g	V_{DS}=10V		16		nC
Gate-Source Charge	Q_{gs}	V_{GS}=4.5V		2.4		
Gate-Drain Charge	Q_{gd}	I_D= 7A		6.3		
Switching Parameters						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}= 10V		2.0		ns
Turn-on Rise Time	t_r	V_{GS}= 5V		6		
Turn-off Delay Time	$t_{d(off)}$	R_L=1.2Ω		35		
Turn-off Fall Time	t_f	R_{GEN}=3Ω		77		
Diode Characteristics						
Diode Forward Voltage [Note3]	V_{SD}	V_{GS}=0V, I_S= 10A			1.2	V
Diode Forward Current					14	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

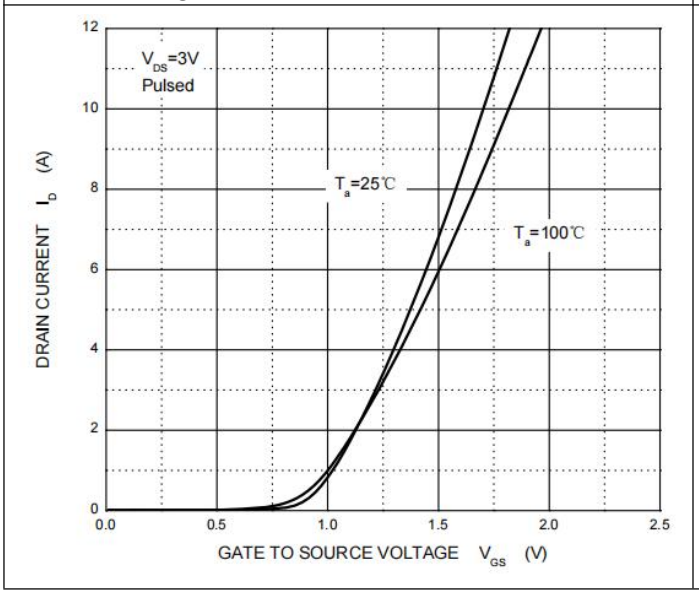


Figure 4: Output Characteristics

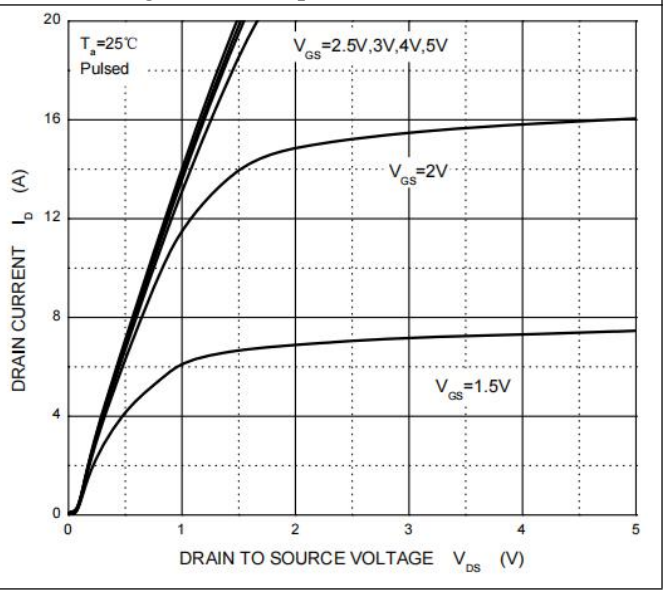


Figure 5: On-Resistance vs. Drain Current

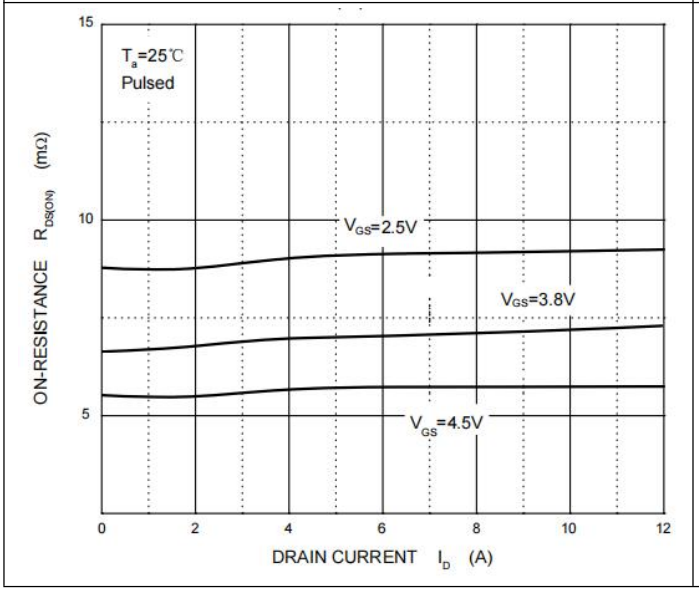


Figure 6: On-Resistance vs. Gate Voltage

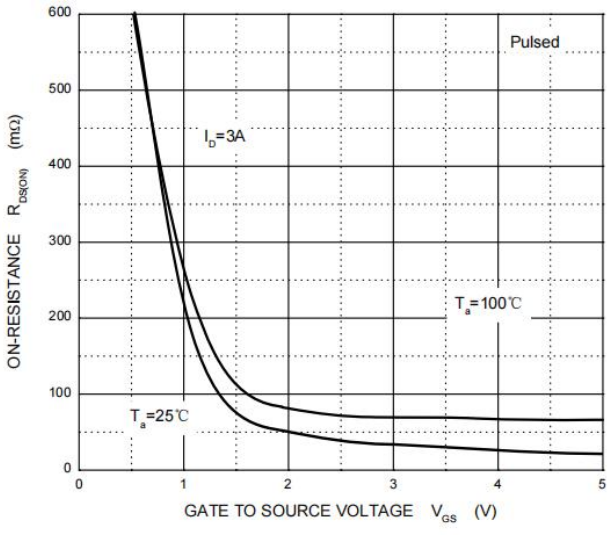


Figure 7: Body Diode Characteristics

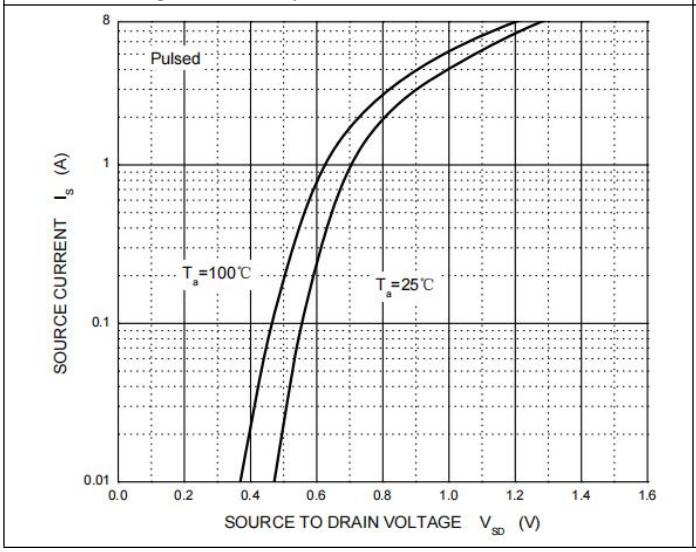
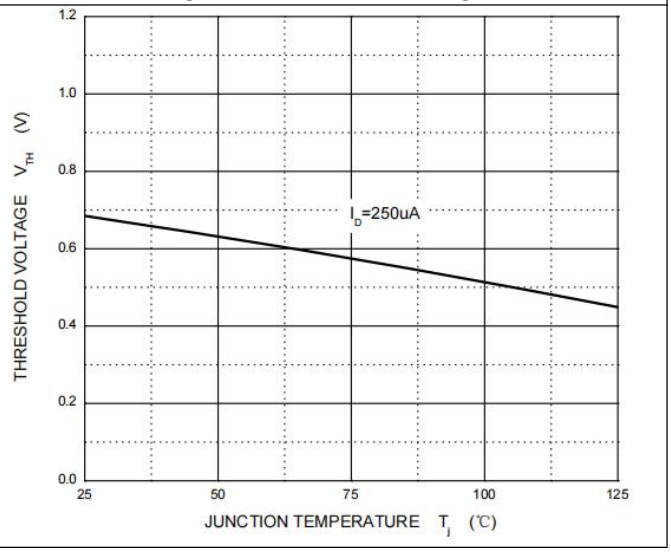
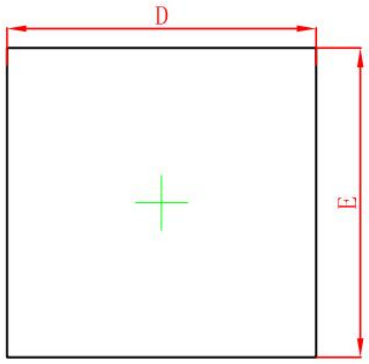


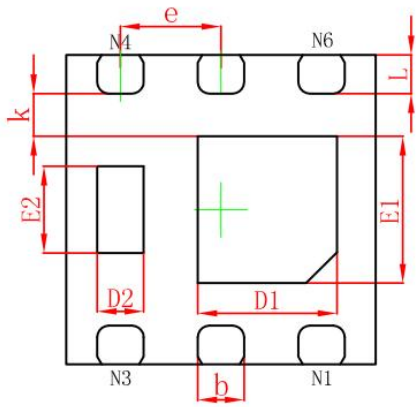
Figure 8: Threshold Voltage

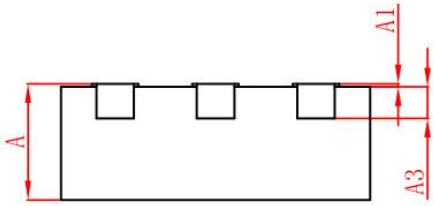


Mechanical Dimensions:

DFN2X2-6L Package Information







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

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