VUDD003R400NA

Datasheet

General Description

$V_{(BR)DSS}$	$R_{DS(ON)\_max}$	I_D
30V	40mΩ@10V	5A
	42mΩ@4.5V	
	50mΩ@2.5V	

Symbol

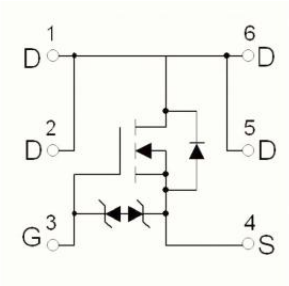
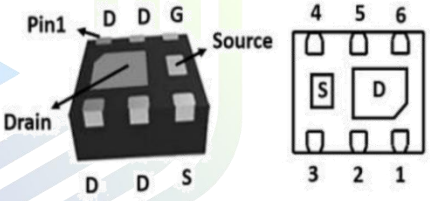


Figure 1 Symbol of VUDD003R400NA

Features

- Trench Technology Power MOSFET
- Low Gate Charge
- Low Gate Resistance
- Typical ESD Protection

Package Type



DFN-2X2-6L

Figure 2 Package Type of VUDD003R400NA

Application

- Load / Power Switch
- Load Switch for Portable Application

Ordering Information

Product Name	Package
VUDD003R400NA	DFN2X2-6L

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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DSS}	30	V
Gate-Source Voltage		V_{GSS}	±10	V
Continuous Drain Current Note1	T_A= 25 ºC	I_D	5	A
Pulsed Drain Current		I_{DM}	20	A
Total Power Dissipation Note3	T_A= 25 ºC	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 Note4	$R_{\theta JA}$		250		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	30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= 30V, V_{GS}=0V			1	uA
Gate-Body Leakage Current	I_{GSS}	V_{GS} = ±10V, V_{DS}= 0V			±10	uA
Gate Threshold Voltage[Note2]	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	0.6	0.75	1.0	V
Static Drain-Source On-Resistance[Note2]	$R_{DS(ON)}$	V_{GS}=10V, I_D= 5A		30	40	mΩ
		V_{GS}=4.5V, I_D= 5A		32	42	
		V_{GS}= 2.5V, I_D= 4A		38	50	
Forward Transconductance[Note2]	g_{fs}	V_{GS}=4.5V, I_D= 4A		15		S
Dynamic Characteristics						
Input Capacitance	C_{ISS}	V_{DS}=15V		245		pF
Output Capacitance	C_{OSS}	V_{GS}=0V		35		pF
Reverse Transfer Capacitance	C_{RSS}	f=1MHz		20		pF
Total Gate Charge	Q_g	V_{DS}=15V			10	nC
Gate-Source Charge	Q_{gs}	V_{GS}=10V		0.5		
Gate-Drain Charge	Q_{gd}	I_D= 4A		1		
Switching Parameters						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}= 15V		2		ns
Turn-on Rise Time	t_r	V_{GS}= 10V		3.5		
Turn-off Delay Time	$t_{d(off)}$	R_L=3.75Ω		22		
Turn-off Fall Time	t_f	R_{GEN}=3Ω		3.5		
Diode Characteristics						
Diode Forward Voltage [Note2]	V_{SD}	V_{GS}=0V, I_S= 1A			1.2	V
Continuous Source Current	I_S	V_G = V_D = 0V			5	A
Pulsed Source Current	I_{SM}	Force Current			20	

Notes :

1.The maximum current rating is limited by package.

2.Pulse Test : Pulse Width ≤ 380μs, duty cycle ≤ 2%.

3.The power dissipation PD is limited by $T_{J(MAX)}$ = 150°C.

4.Device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.

Typical Performance Characteristics

Figure 3: Transfer Characteristics

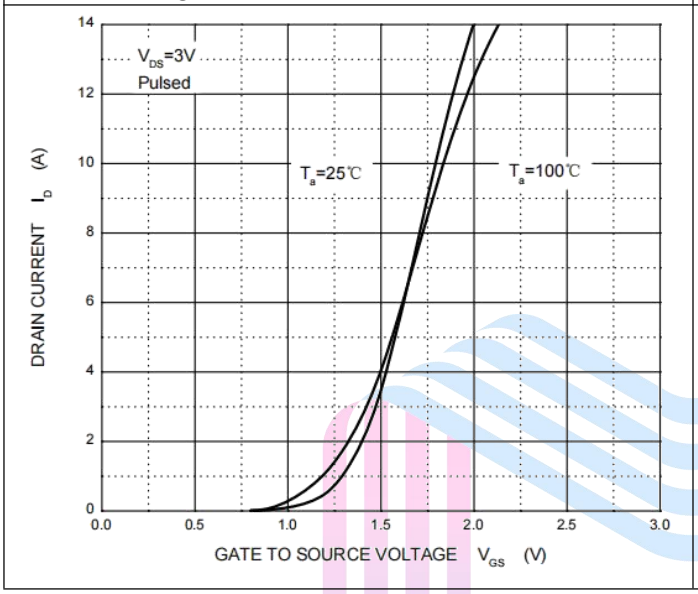


Figure 4: Output Characteristics

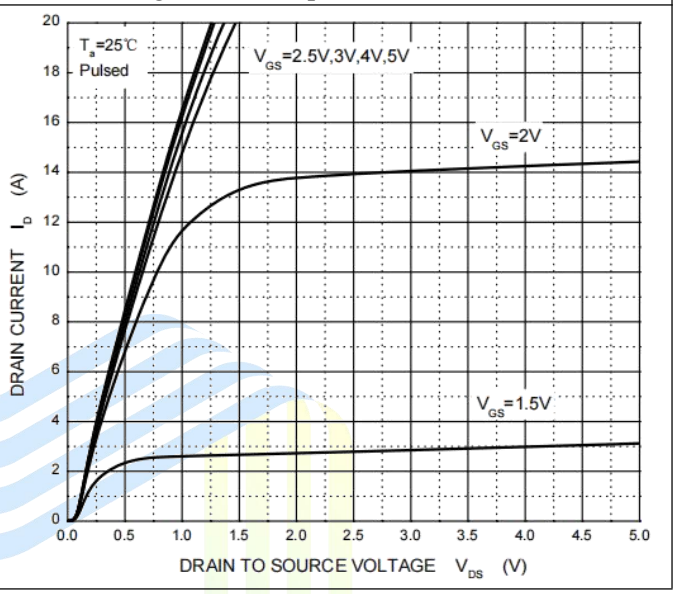


Figure 5: On-Resistance vs. Drain Current

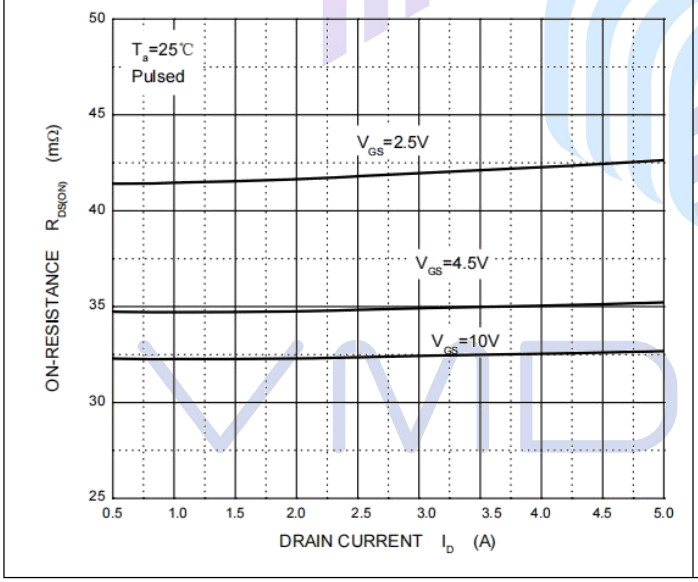


Figure 6: On-Resistance vs. Gate Voltage

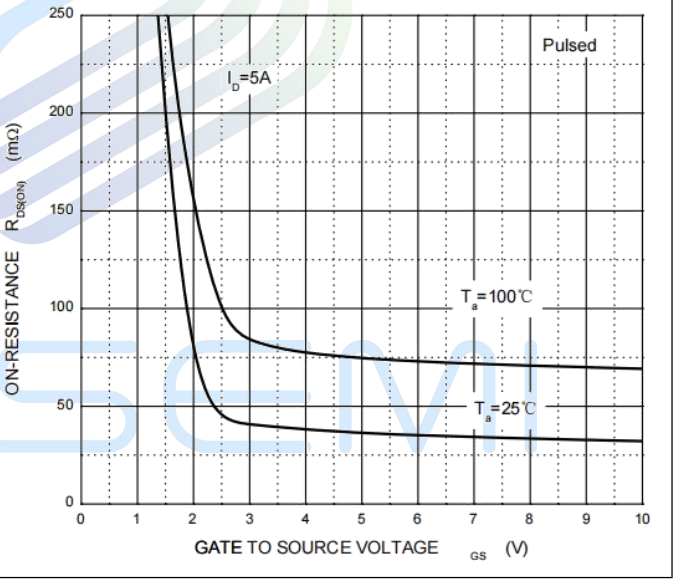


Figure 7: Body Diode Characteristics

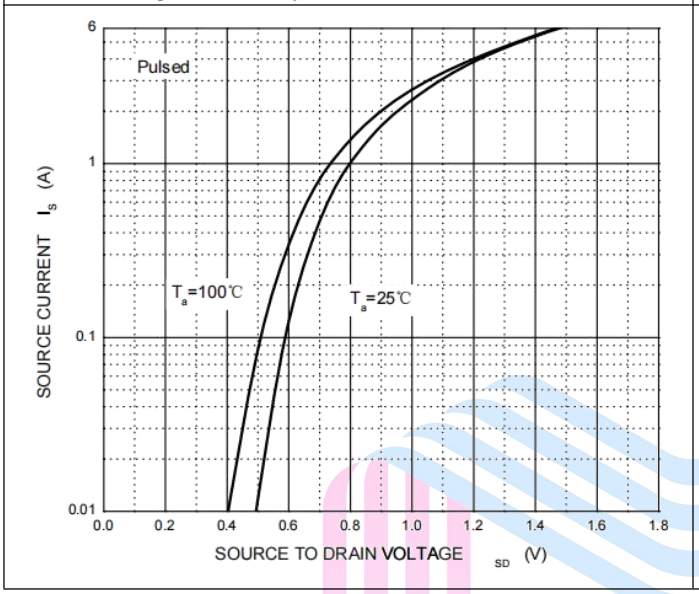
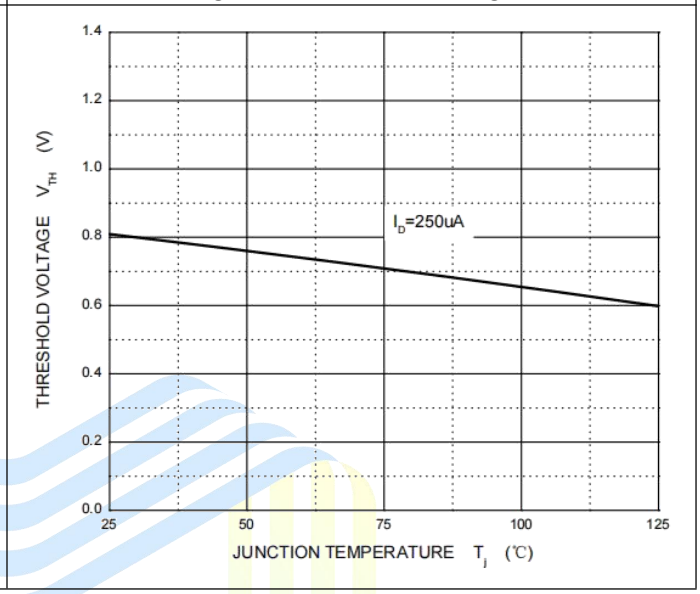
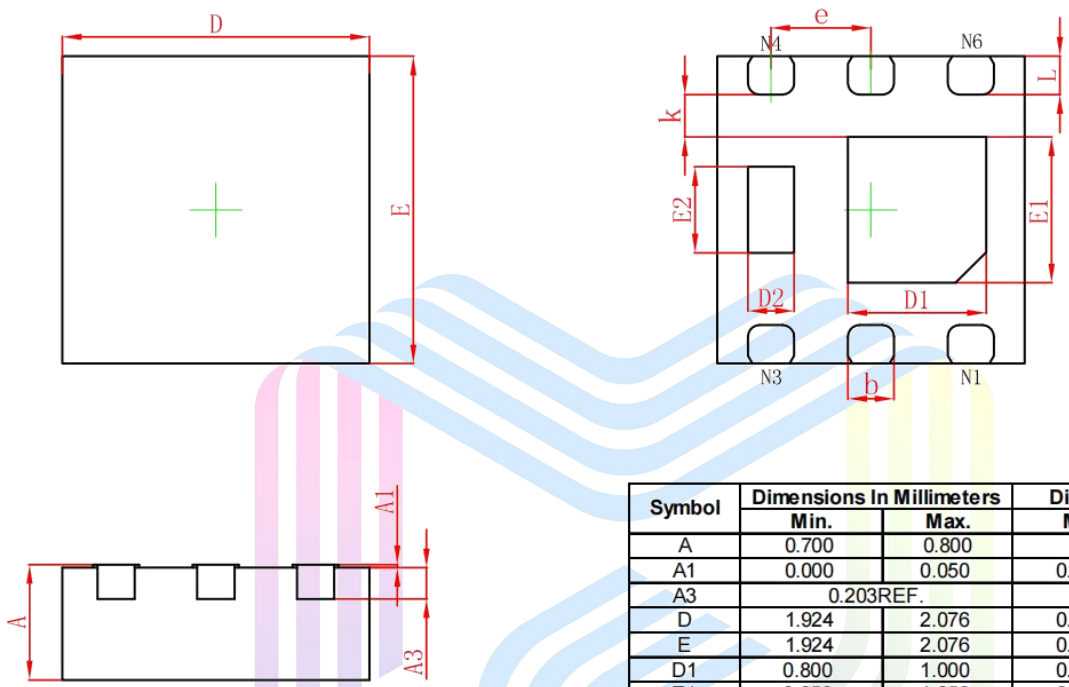


Figure 8: Threshold Voltage



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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