VUDE002R070NA

Datasheet

General Description

$V_{(BR)DSS}$	$R_{DS(ON)\_max}$	I_D
20V	7.0mΩ@4.5V	25A
	7.5mΩ@4.0V	
	8mΩ@3.8V	
	9mΩ@3.1V	
	10mΩ@2.5V	

Symbol

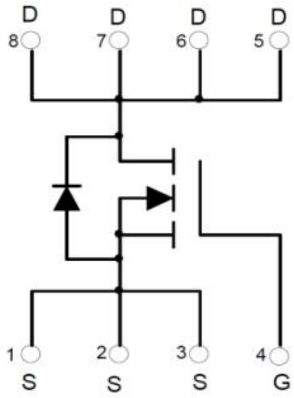
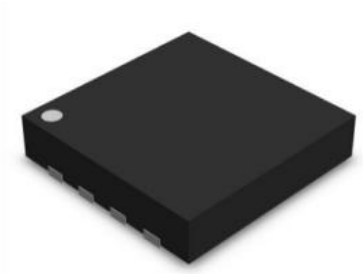


Figure 1 Symbol of VUDE002R070NA

Features

- Low Gate Charge
- Low Gate Resistance
- Advanced high cell density Trench technology

Package Type



DFN3030-8L

Figure 2 Package Type of VUDE002R070NA

Application

- Load / Power Switch
- Battery protection applications

Ordering Information

Product Name	Package
VUDE002R070NA	DFN3030-8L

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 Note1	I_D	25	A
Pulsed Drain Current Note2	I_{DM}	75	A
Total Power Dissipation Note3	P_D	3	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	$R_{\theta JA}$		42		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[Note4]	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	0.4	0.7	1.0	V
Static Drain-Source On-Resistance[Note4]	$R_{DS(ON)}$	V_{GS}=4.5V, I_D= 10A		5.5	7.0	mΩ
		V_{GS}=4.0V, I_D= 10A		6.0	7.5	
		V_{GS}=3.8V, I_D= 10A		6.5	8.0	
		V_{GS}=3.1V, I_D= 10A		7.0	9.0	
		V_{GS}= 2.5V, I_D= 10A		7.5	10.0	
Dynamic Characteristics						
Input Capacitance	C_{ISS}	V_{DS}=10V		1500		pF
Output Capacitance	C_{OSS}	V_{GS}=0V		260		pF
Reverse Transfer Capacitance	C_{RSS}	f=1MHz		240		pF
Total Gate Charge	Q_g	V_{DS}=10V		20		nC
Gate-Source Charge	Q_{gs}	V_{GS}=4.5V		4		
Gate-Drain Charge	Q_{gd}	I_D= 8A		9		
Switching Parameters						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}= 10V		5		ns
Turn-on Rise Time	t_r	V_{GS}= 4.5V		15		
Turn-off Delay Time	$t_{d(off)}$	R_L=1.2Ω		70		
Turn-off Fall Time	t_f	R_{GEN}=3Ω		22		
Diode Characteristics						
Diode Forward Voltage [Note4]	V_{SD}	V_{GS}=0V, I_S= 10A T_J= 25 °C			1.2	V
Continuous Source Current	I_S	V_G=V_D=0V			25	A
Pulsed Source Current	I_{SM}	Force Current			75	

Notes :

1.The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper

2.Pulse Test:Pulse Width < 10us, Duty Cycle < 0.5%.

3.The power dissipation is limited by 150℃ junction temperature

4.Pulse Test : Pulse width≤300μs, duty cycle≤0.5%.

Typical Performance Characteristics

Figure 3: Transfer Characteristics

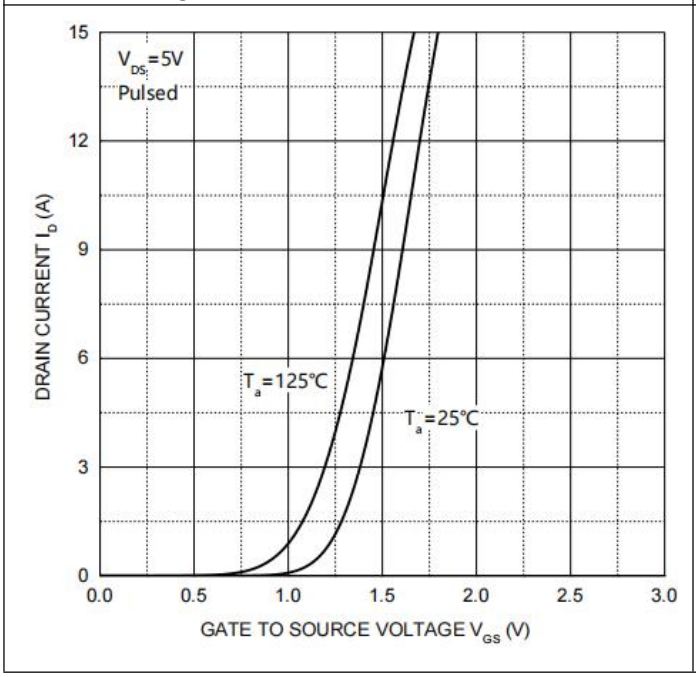


Figure 4: Output Characteristics

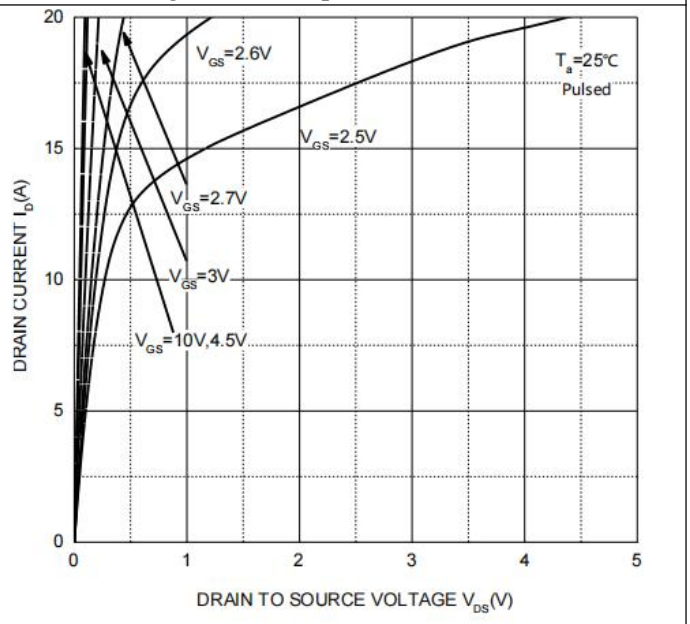


Figure 5: On-Resistance vs. Drain Current

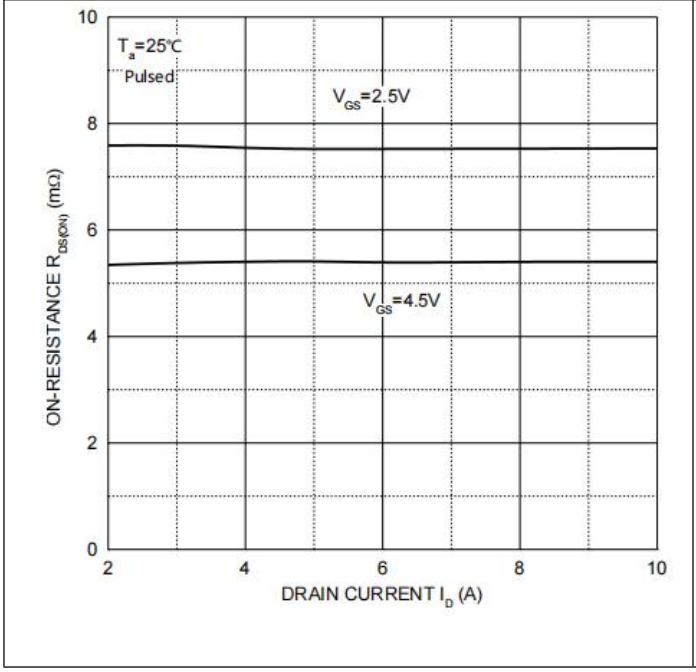


Figure 6: On-Resistance vs. Gate Voltage

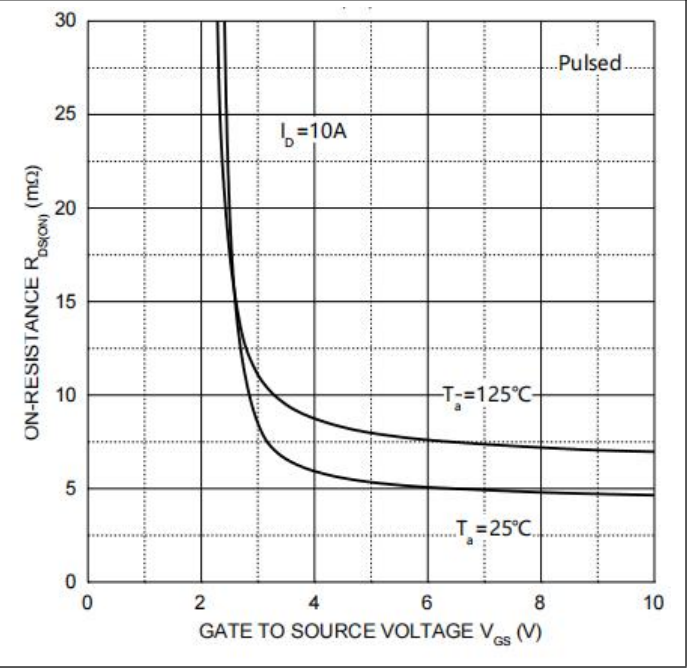


Figure 7: Body Diode Characteristics

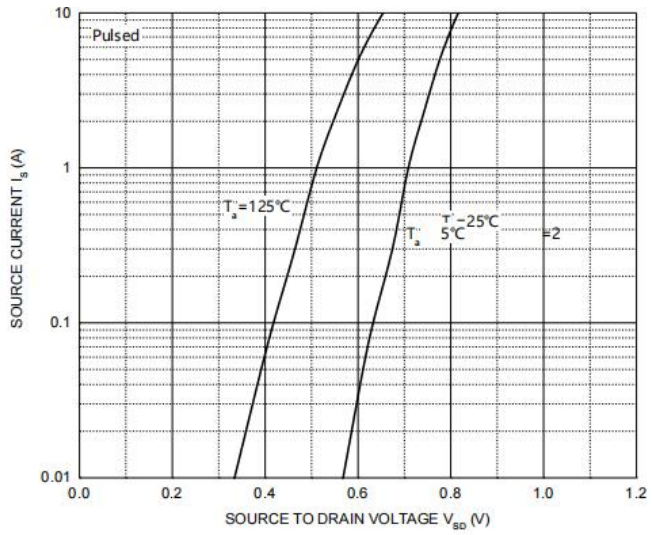
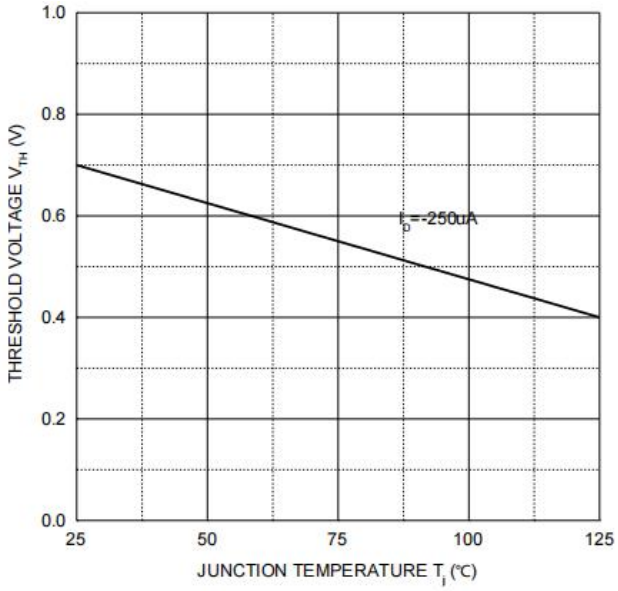
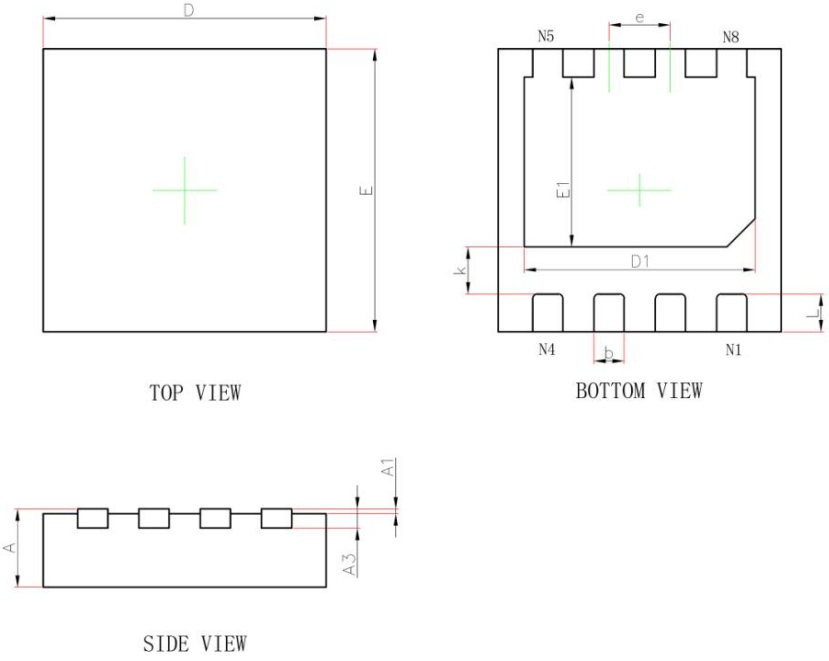


Figure 8: Threshold Voltage



Mechanical Dimensions:

DFN3030-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700/0.800	0.800/0.900	0.028/0.031	0.031/0.035
A1	0.000	0.050	0.000	0.002
A3	0.203REF.		0.008REF.	
D	2.924	3.076	0.115	0.121
E	2.924	3.076	0.115	0.121
D1	2.350	2.550	0.093	0.100
E1	1.700	1.900	0.067	0.075
k	0.450	0.550	0.018	0.022
b	0.270	0.370	0.011	0.015
e	0.650TYP.		0.026TYP.	
L	0.324	0.476	0.013	0.019

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