VUDA003R42ANA

Datasheet

General Description

$V_{(BR)DSS}$	$R_{DS(ON)\_max}$	I_D
30V	420mΩ@4.5V	0.6A
	540mΩ@2.5V	

Symbol

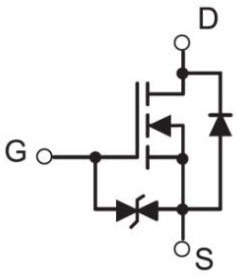
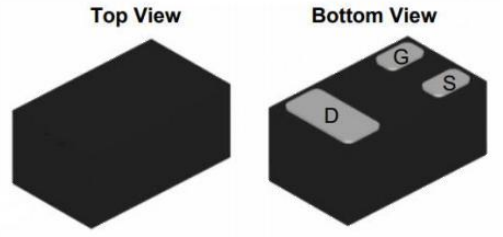


Figure 1 Symbol of VUDA003R42ANA

Features

- N-Channel Switch with Low $R_{DS(on)}$
- Surface Mount Package
- Operated at Low Logic Level Gate Drive

Package Type



DFN1006-3L

Figure 2 Package Type of VUDA003R42ANA

Application

- Load/Power Switching
- Interfacing Switching
- Battery Management for Ultra Small Portable Electronics
- Logic Level Shift

Ordering Information

Product Name	Package
VUDA003R42ANA	DFN1006-3L

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}	±12	V
Continuous Drain Current Note1	I_D	0.6	A
Pulsed Drain Current (tp=10us)	I_{DM}	1.8	A
Total Power Dissipation Note2	P_D	100	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	$R_{\theta JA}$		125		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}= 20V, V_{GS}=0V			1	uA
Gate-Body Leakage Current	I_{GSS}	V_{GS} = ±10V, V_{DS}= 0V			±3	uA
Gate Threshold Voltage[Note3]	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	0.5	1.0	1.5	V
Static Drain-Source On-Resistance[Note3]	$R_{DS(ON)}$	V_{GS}=4.5V, I_D= 0.6A		320	420	mΩ
		V_{GS}= 2.5V, I_D= 0.3A		410	540	
Forward tranconductance[Note3]	g_{FS}	V_{DS}= 5V, I_D= 0.5A		1		S
Dynamic Characteristics						
Input Capacitance	C_{ISS}	V_{DS}=10V		44		pF
Output Capacitance	C_{OSS}	V_{GS}=0V		15		pF
Reverse Transfer Capacitance	C_{RSS}	f=1MHz		8		pF
Total gate charge	Q_g	V_{DS}=10V		1.2		nC
Gate-source charge	Q_{gs}	V_{GS}=4.5V		0.28		nC
Gate-drain charge	Q_{gd}	I_D= 0.8A		0.3		nC
Switching Parameters						
Turn-on Delay Time	$t_{d(on)}$	V_{DS}= 15V		5.0		ns
Turn-on Rise Time	t_r	V_{GS}= 4.5V		8.2		
Turn-off Delay Time	$t_{d(off)}$	I_D= 0.7A		23		
Turn-off Fall Time	t_f	R_G=51Ω		41		
Diode Characteristics						
Diode Forward Voltage [Note3]	V_{SD}	V_{GS}=0V, I_S= 0.6A		0.87	1.2	V

Notes :

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. This test is performed with no heat sink at Ta=25°C .
3. Pulse Test : Pulse Width≤300μs, Duty Cycle≤0.5%.

Typical Performance Characteristics

Figure 3: Transfer Characteristics

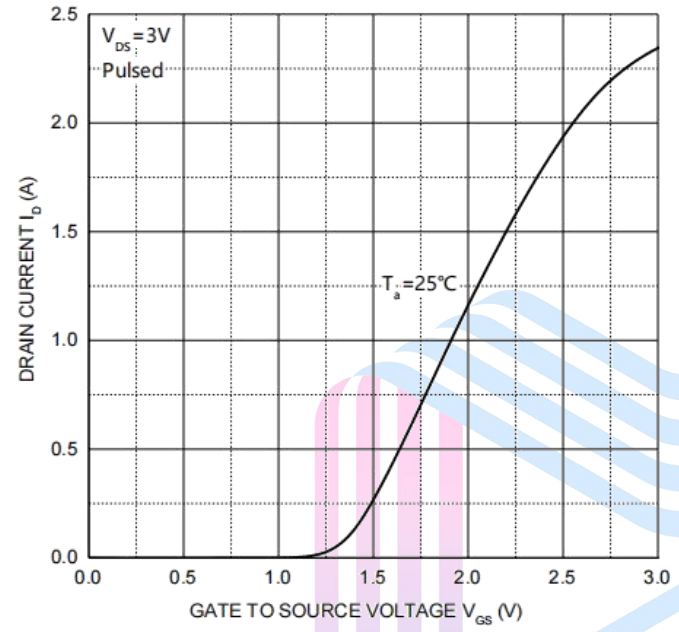


Figure 4: Output Characteristics

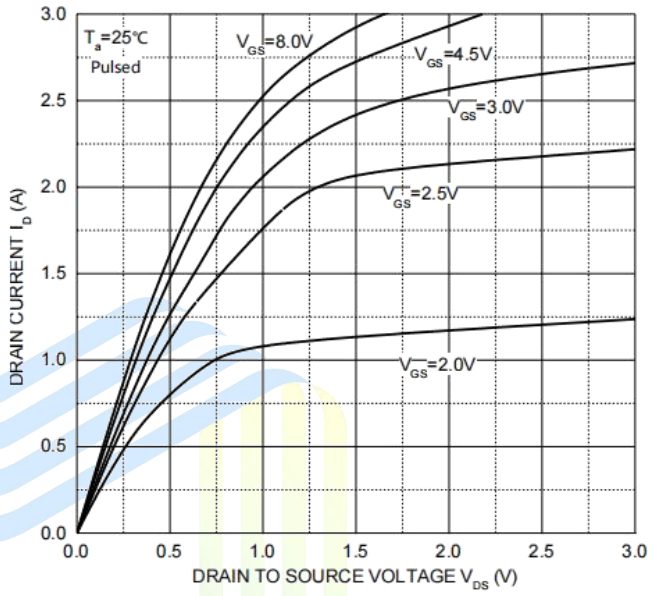


Figure 5: On-Resistance vs. Drain Current

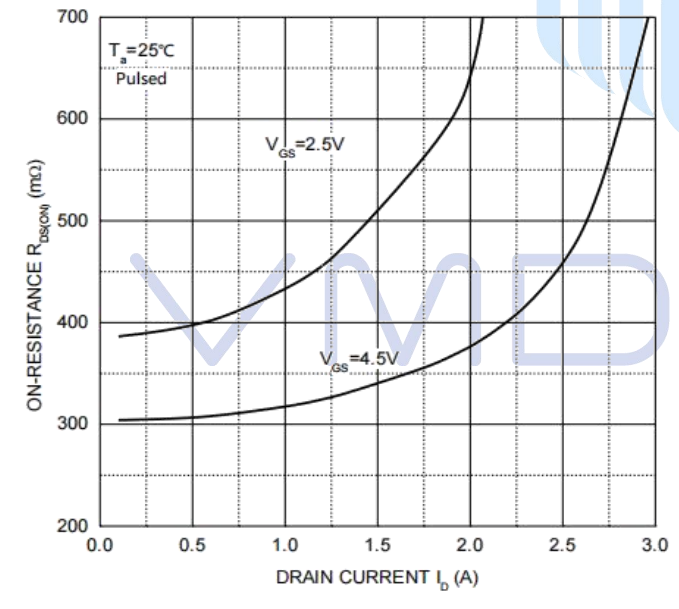


Figure 6: On-Resistance vs. Gate Voltage

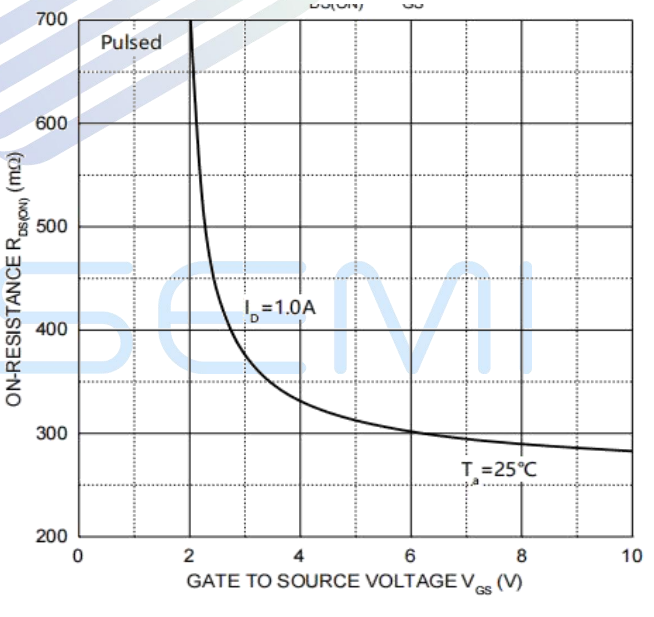


Figure 7: Body Diode Characteristics

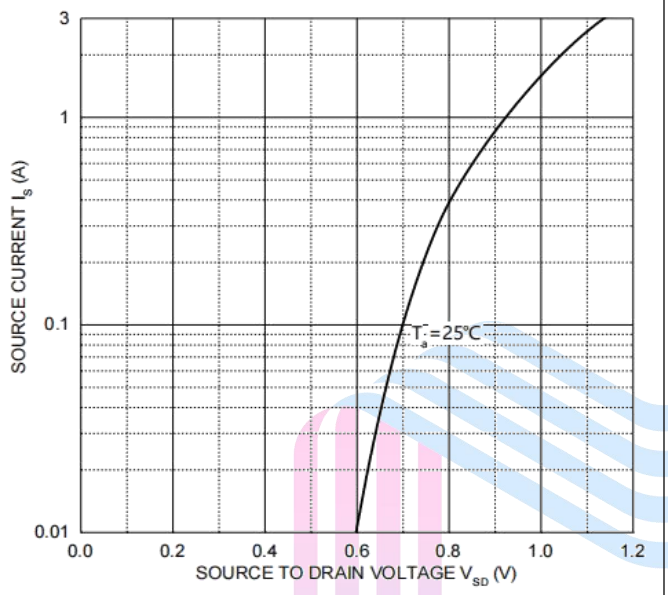
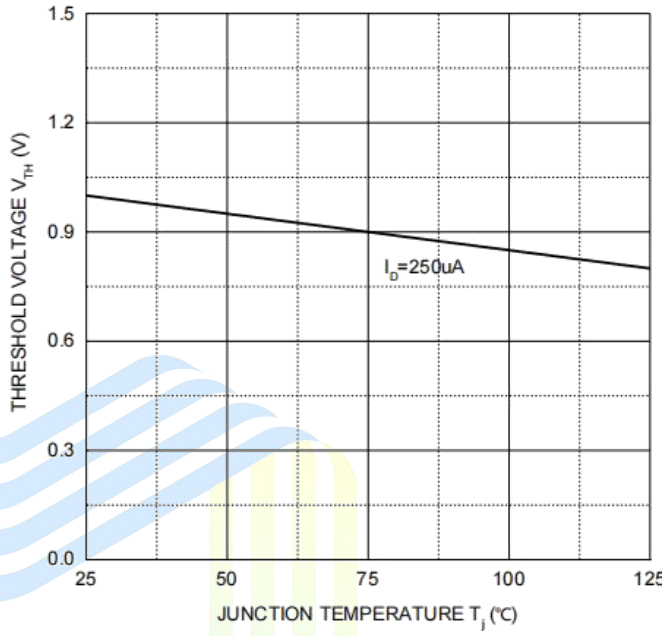
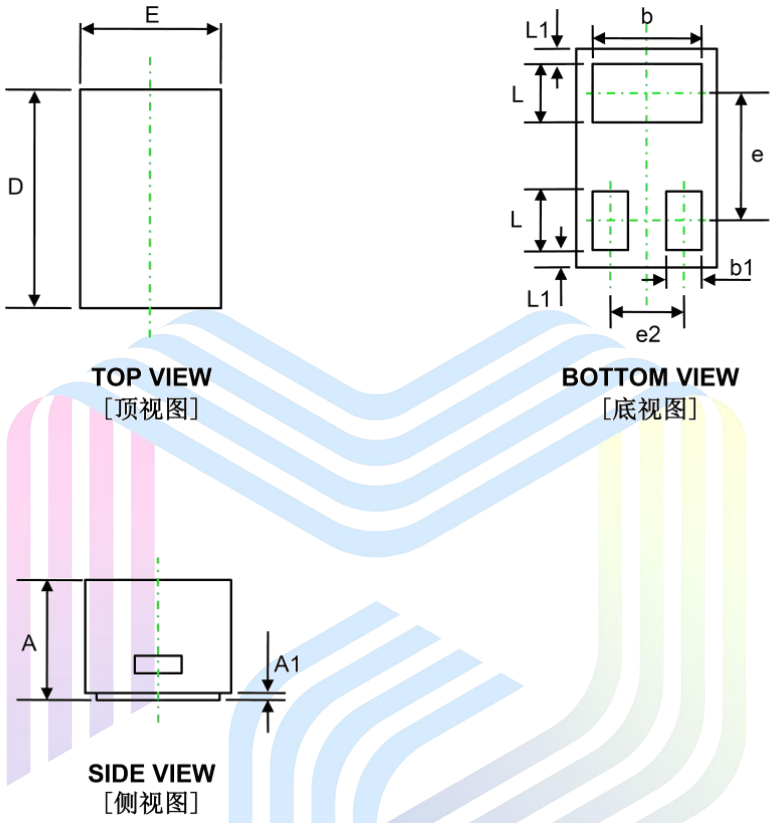


Figure 8: Threshold Voltage



Mechanical Dimensions:

DFN1006-3L Package Information



Symbol	Dimensions In Millimeters (mm)		
	Min.	Typ.	Max.
A	0.40	0.47	0.55
A1	0.00	0.03	0.05
D	0.95	1.00	1.05
E	0.55	0.60	0.65
b	0.40	0.50	0.60
e	-	0.65	-
e2	-	0.35	-
L1	0.05 REF.		
L	0.20	0.25	0.30
b1	0.10	0.15	0.20

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