VUDA006R15BNA

Datasheet

General Description

$V_{(BR)DSS}$	$R_{DS(ON)\_max}$	I_D
60V	1.5Ω@10V	0.41A
	1.8Ω@4.5V	

Symbol

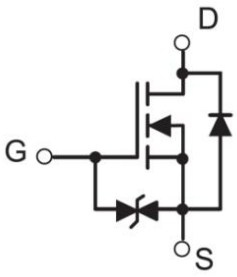


Figure 1 Symbol of VUDA006R15BNA

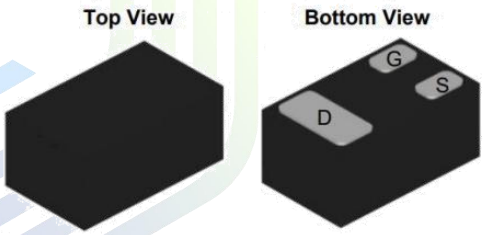
Features

- Low On-Resistance
- Low Threshold Voltage
- Fast Switching Speed
- ESD Protected Gate

Application

- Load Switch
- Portable Applications
- Power Management Functions

Package Type



DFN1006-3L

Figure 2 Package Type of VUDA006R15BNA

Ordering Information

Product Name	Package
VUDA006R15BNA	DFN1006-3L

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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_A= 25 ºC	I_D	0.41	A
Continuous Drain Current	T_A= 85 ºC		0.30	
Pulsed Drain Current (tp=10us)		I_{DM}	1.2	A
Total Power Dissipation Note1		P_D	0.1	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	$R_{\theta JA}$		1250		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	60			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= 60V, V_{GS}=0V			100	nA
Gate-Body Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{DS}= 0V			±10	uA
		V_{GS} = ±5V, V_{DS}= 0V			±1	
Gate Threshold Voltage[Note2]	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	1.0	1.4	2.5	V
Static Drain-Source On-Resistance[Note2]	$R_{DS(ON)}$	V_{GS}=10V, I_D= 40mA		1.2	1.5	Ω
		V_{GS}= 5.5V, I_D= 35mA		1.3	1.8	
Forward tranconductance[Note2]	g_{FS}	V_{DS}= 5V, I_D= 40mA	100			S
Dynamic Characteristics						
Input Capacitance	C_{ISS}	V_{DS}=40V		41	80	pF
Output Capacitance	C_{OSS}	V_{GS}=0V		3.6	7	pF
Reverse Transfer Capacitance	C_{RSS}	f=1MHz		2.9	5.6	pF
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}= 4.5V; V_{DS}= 50V, I_D= 1A		0.72	1.5	nC
		V_{GS}= 10V; V_{DS}= 50V, I_D= 1A		1.41	2.8	
Gate-Source Charge	Q_{gs}	V_{GS}= 10V; V_{DS}= 50V, I_D= 1A		0.24	0.4	
Gate-Drain Charge	Q_{gd}	V_{GS}= 10V; V_{DS}= 50V, I_D= 1A		0.24	0.5	
Gate resistance	Rg	f=1MHz,Open Drain		81	200	Ω
Turn-on Delay Time[Note3]	$t_{d(on)}$	V_{DS}= 50V, V_{GS}= 10V, I_D= 1A, R_G=6Ω		3.98	10	ns
Turn-on Rise Time[Note3]	t_r			4.95	10	
Turn-off Delay Time[Note3]	$t_{d(off)}$			18.52	40	
Turn-off Fall Time[Note3]	t_f			11.94	25	
Diode Characteristics						
Diode Forward Voltage [Note2]	V_{SD}	V_{GS}=0V, I_S= 0.3A		0.84	1.1	V

Notes :

1. Surface mounted on FR4 board using the minimum recommended pad size.
2. Pulse Test : Pulse Width≤300μs, Duty Cycle≤2%.
3. Switching characteristics are independent of operating junction temperatures.

Typical Performance Characteristics

Figure 3: Transfer Characteristics

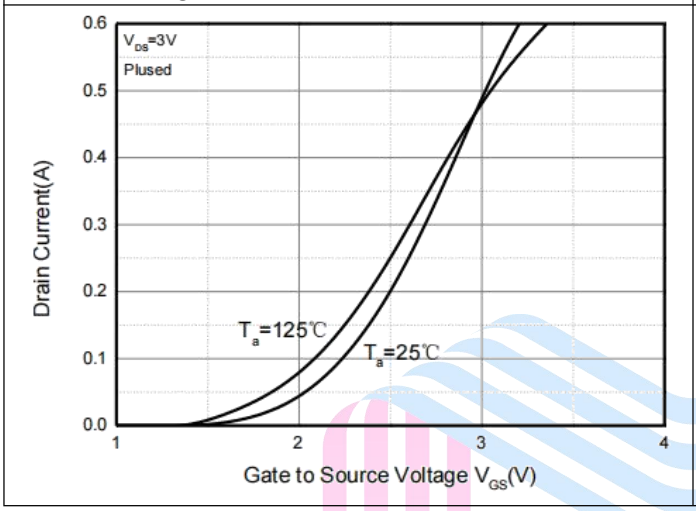


Figure 4: Output Characteristics

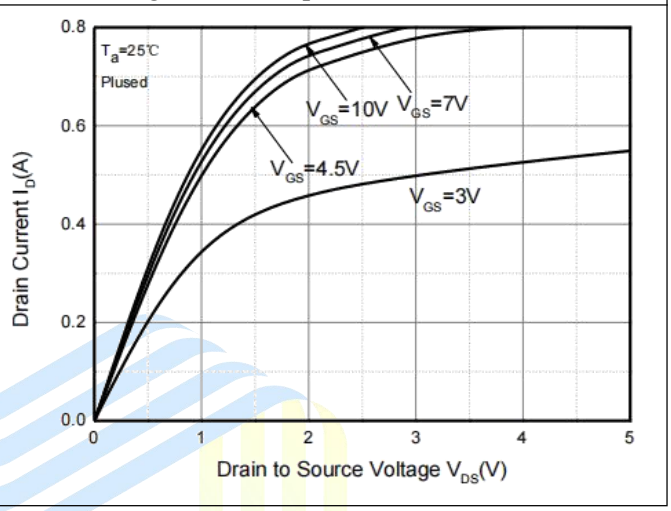


Figure 5: On-Resistance vs. Drain Current

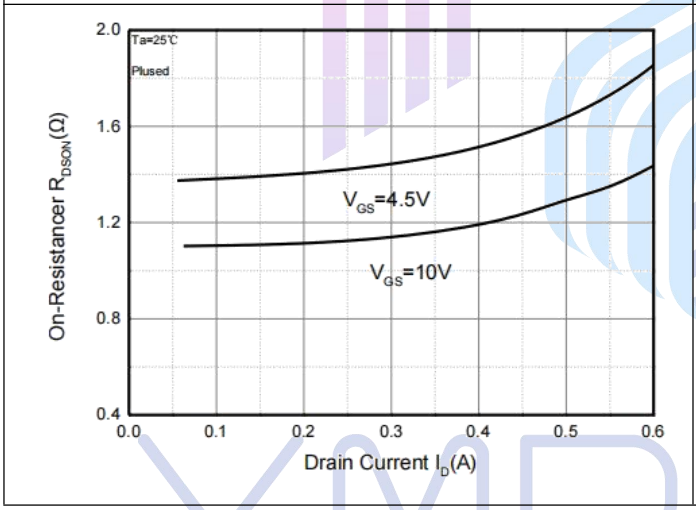


Figure 6: On-Resistance vs. Gate Voltage

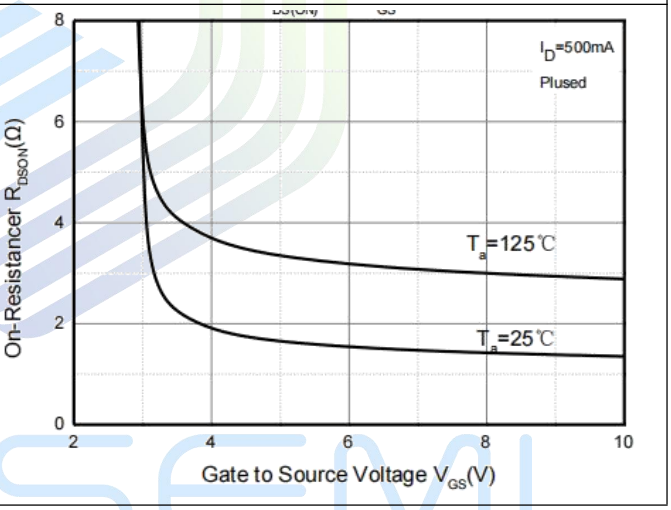


Figure 7: Body Diode Characteristics

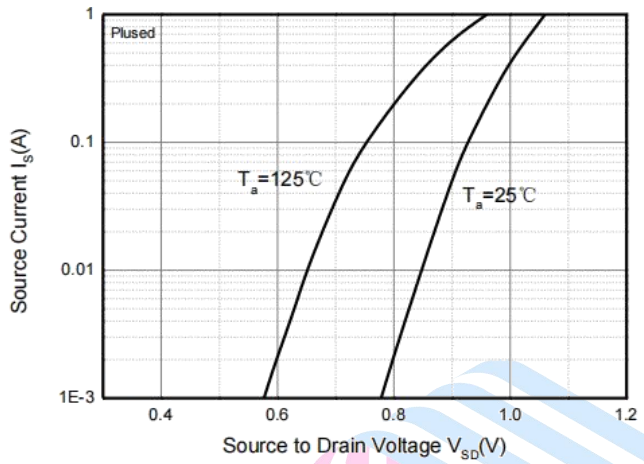
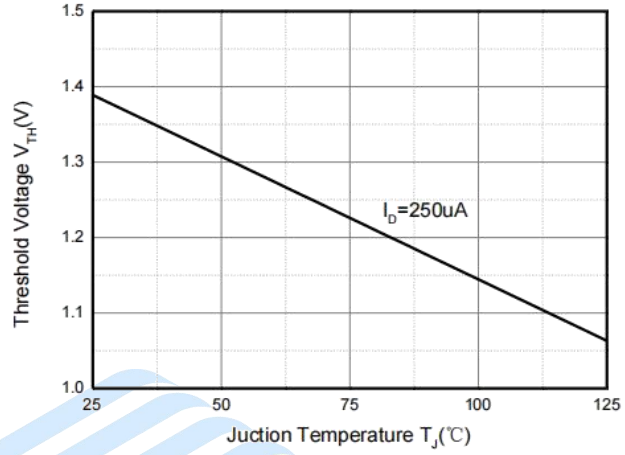
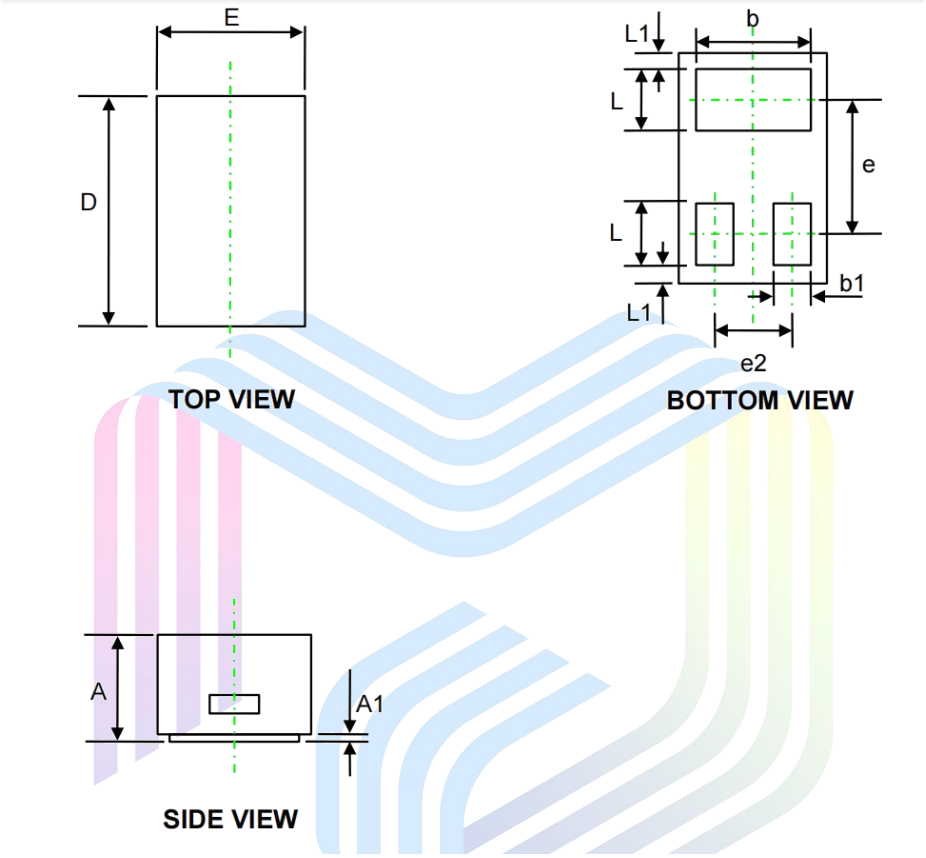


Figure 8: Threshold Voltage



Mechanical Dimensions:

DFN1006-3L Package Information



Symbol	Dimensions In Millimeters (mm)		
	Min.	Typ.	Max.
A	0.34	0.37	0.40
A1	0.00	0.03	0.05
D	0.95	1.00	1.05
E	0.55	0.60	0.65
b	0.45	0.50	0.55
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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