VUDA003R80APA

Datasheet

800mΩ, -30V, P-Channel Power MOSFET VUDA003R80APA

General Description

$V_{(BR)DSS}$	$R_{DS(ON)\_max}$	I_D
-30V	800mΩ@-10V	-0.45A
	900mΩ@-4.5V	

Symbol

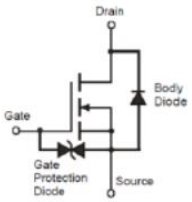
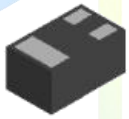


Figure 1 Symbol of VUDA003R80APA

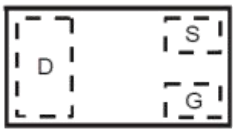
Features

- Trench Technology Power MOSFET
- Low $R_{DS(ON)}$
- Low Gate Charge
- ESD Protected

Package Type



Bottom View



Top View
Internal Schematic

DFN1006-3L

Figure 2 Package Type of VUDA003R80APA

Application

- Load Switch
- DC/DC Converter

Ordering Information

Product Name	Package
VUDA003R80APA	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	-0.45	A
Pulsed Drain Current [Note2]	I_{DM}	-1.8	
Total Power Dissipation[Note4]	P_D	0.3	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[Note5]	$R_{\theta JA}$		416		ºC/W

Electrical Characteristics (T_J= 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			±5	uA
Gate Threshold Voltage[Note3]	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250uA	-0.5	-1	-1.5	V
Static Drain-Source On-Resistance[Note3]	$R_{DS(ON)}$	V_{GS}=-10V, I_D= -0.3A		470	800	mΩ
		V_{GS}=-4.5V, I_D= -0.3A		680	900	
Dynamic Characteristics						
Input Capacitance	C_{ISS}	V_{DS}=-15V		55.2		pF
Output Capacitance	C_{OSS}	V_{GS}=0V		10.8		pF
Reverse Transfer Capacitance	C_{RSS}	f=1MHz		7.4		pF
Total Gate Charge	Q_g	V_{DS}=-10V		0.60		nC
Gate-Source Charge	Q_{gs}	V_{GS}=-4.5V		0.46		
Gate-Drain Charge	Q_{gd}	I_D= -0.5A		0.12		
Gate Resistance	Rg	f = 1MHz, Open drain		13.4		Ω
Switching Parameters						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}= -10V		8.5		ns
Turn-on Rise Time	t_r	V_{GS}= -4.5V		5.8		
Turn-off Delay Time	$t_{d(off)}$	R_L=50Ω		31		
Turn-off Fall Time	t_f	R_G=3Ω		18		
Diode Characteristics						
Diode Forward Voltage [Note3]	V_{SD}	V_{GS}=0V, I_S= -0.3A			-1.2	V

Notes :

1.The maximum current rating is limited by package.And device mounted on a large heatsink

2.Pulse Test : Pulse Width ≤ 10μs, duty cycle ≤ 1%.

3.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.

4.The power dissipation P_D is limited by $T_{J(MAX)}$ = 150°C.And device mounted on a large heatsink

5.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

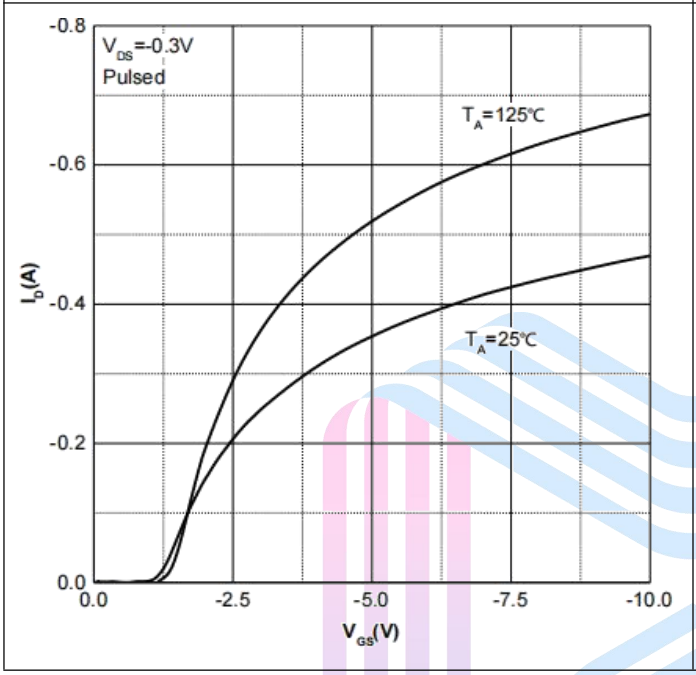


Figure 4: Output Characteristics

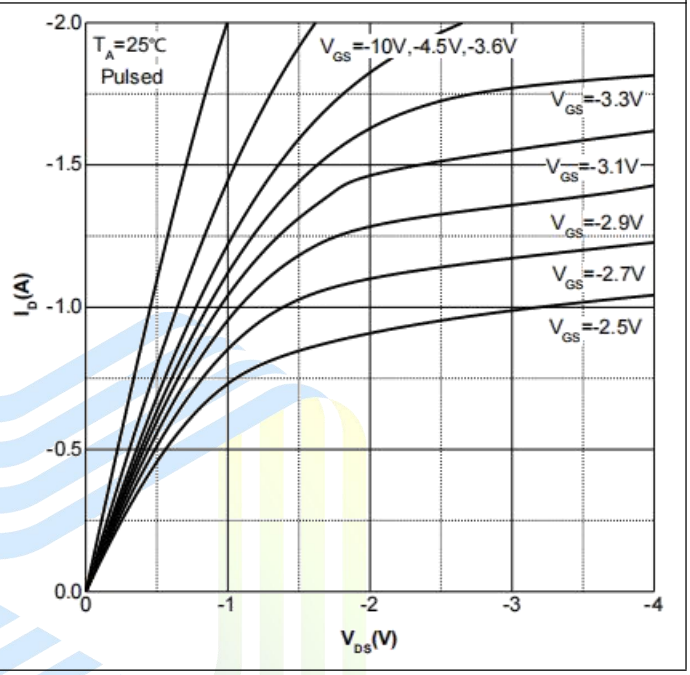


Figure 5: On-Resistance vs. Drain Current

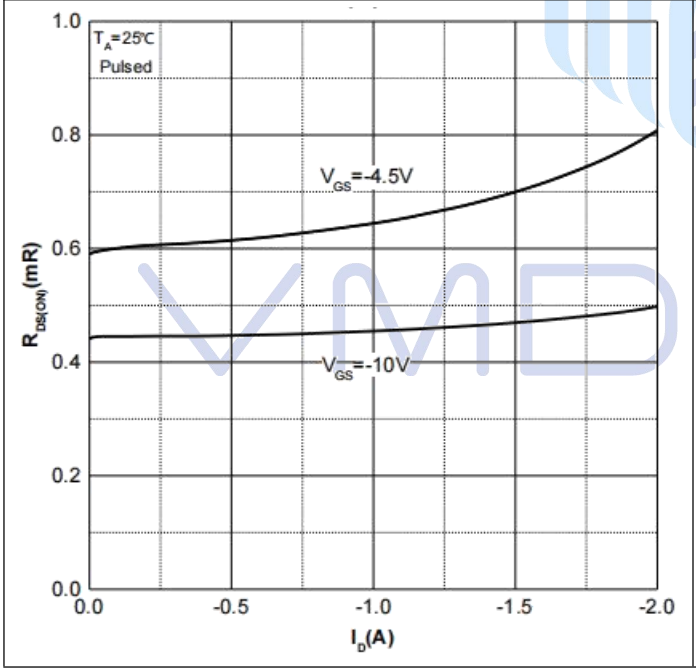


Figure 6: On-Resistance vs. Gate Voltage

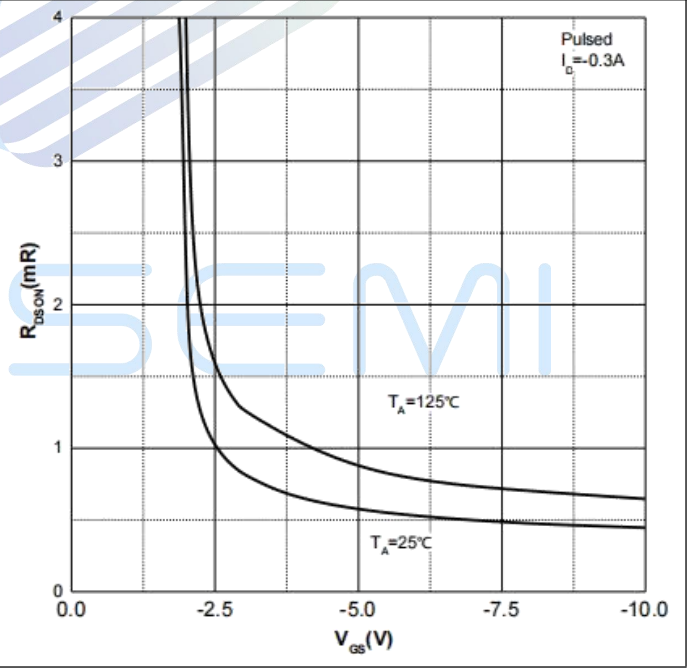


Figure 7: Body Diode Characteristics

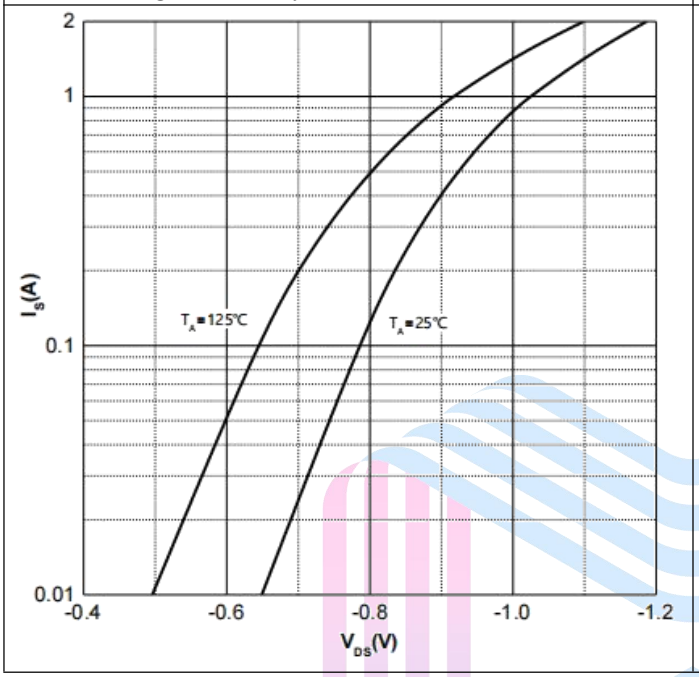
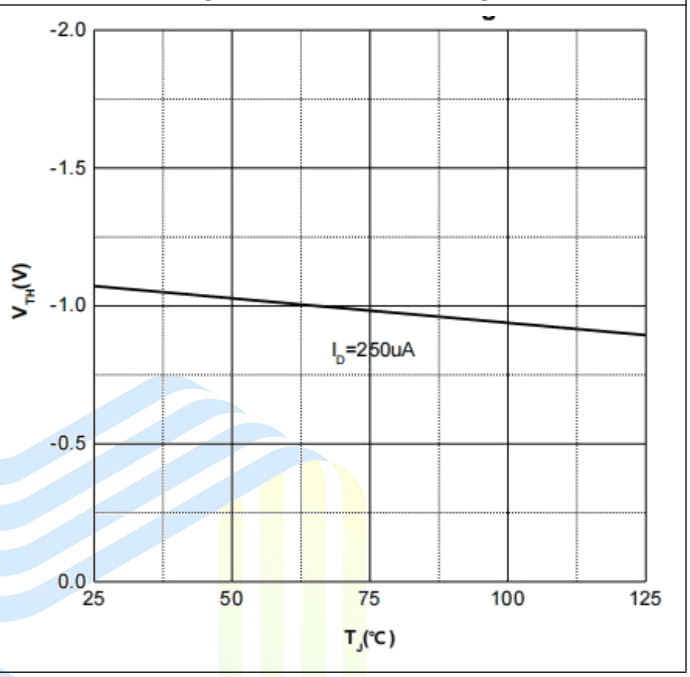
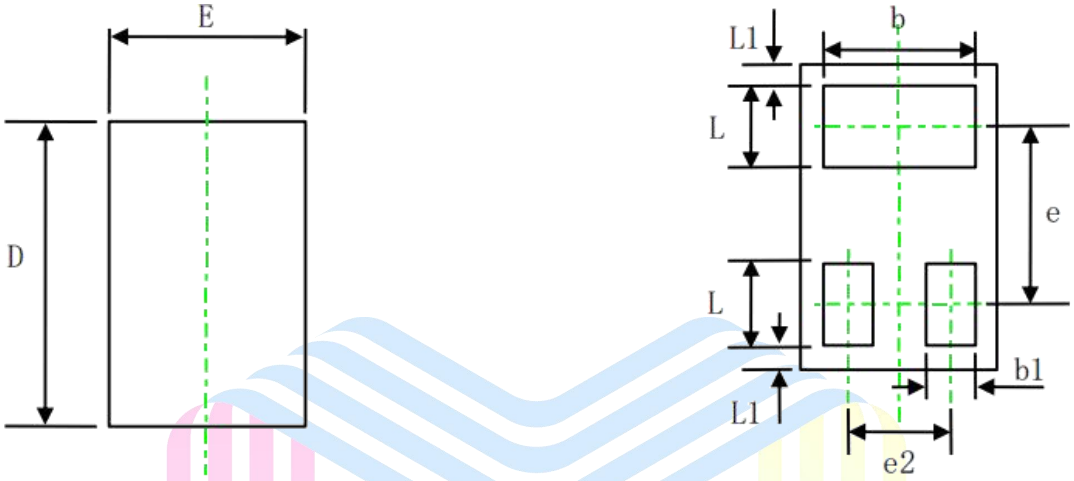


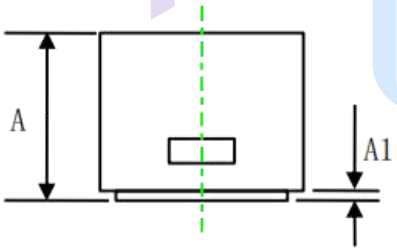
Figure 8: Threshold Voltage



Mechanical Dimensions:

DFN1006-3L Package Information





Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.400	0.550	0.016	0.022
A1	0.000	0.050	0.000	0.002
D	0.950	1.050	0.037	0.041
E	0.550	0.650	0.022	0.026
b	0.400	0.600	0.016	0.024
e	0.65 TYP		0.026 TYP	
e2	0.35 TYP		0.014 TYP	
L1	0.05 REF		0.002 REF	
L	0.200	0.300	0.008	0.012
b1	0.100	0.200	0.004	0.008

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