VUTX003R13APA

Datasheet

General Description

$V_{(BR)DSS}$	$R_{DS(ON)\_max}$	I_D
-30V	130mΩ@-10V	-1.8A
	190mΩ@-4.5V	

Symbol

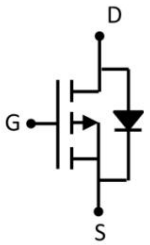


Figure 1 Symbol of VUTX003R13APA

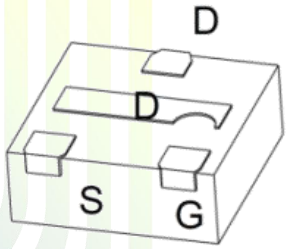
Features

- Advanced trench MOSFET process technology
- Ultra low on-resistance with low gate charge
- High power and current handing capability

Application

- PWM application
- Load switch for Portable Devices

Package Type



DFNWB1X1-3L

Figure 2 Package Type of VUTX003R13APA

Ordering Information

Product Name	Package
VUTX003R13APA	DFNWB1X1-3L

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}	±20	V
Continuous Drain Current[Note1]	I_D	-1.8	A
Pulsed Drain Current [Note2]	I_{DM}	-5.0	
Total Power Dissipation[Note4]	P_D	0.2	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]	$R_{\theta JA}$		625		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} = ±20V, V_{DS}= 0V			±100	nA
Gate Threshold Voltage[Note3]	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250uA	-1.0	-1.6	-2.4	V
Static Drain-Source On-Resistance[Note3]	$R_{DS(ON)}$	V_{GS}=-10V, I_D= -2A		105	130	mΩ
		V_{GS}=-4.5V, I_D= -2A		160	190	
Forward Transconductance[Note3]	g_{FS}	V_{DS}=-5V, I_D= -2A	1	3.8		S
Dynamic Characteristics						
Input Capacitance	C_{ISS}	V_{DS}=-10V		290		pF
Output Capacitance	C_{OSS}	V_{GS}=0V		60		pF
Reverse Transfer Capacitance	C_{RSS}	f=1MHz		34		pF
Total Gate Charge	Q_g	V_{DS}=-10V		3.0		nC
Gate-Source Charge	Q_{gs}	V_{GS}=-4.5V		0.5		
Gate-Drain Charge	Q_{gd}	I_D= -2A		0.8		
Switching Parameters						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}= -10V		10		ns
Turn-on Rise Time	t_r	V_{GS}= -4.5V		5.0		
Turn-off Delay Time	$t_{d(off)}$	R_L=5Ω		21		
Turn-off Fall Time	t_f	R_G=3Ω		7		
Diode Characteristics						
Diode Forward Voltage [Note3]	V_{SD}	V_{GS}=0V, I_S= -2A			-1.2	V
Continuous Source Current	I_S	T_C=25 ºC			-1.5	A

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%.

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

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

6.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

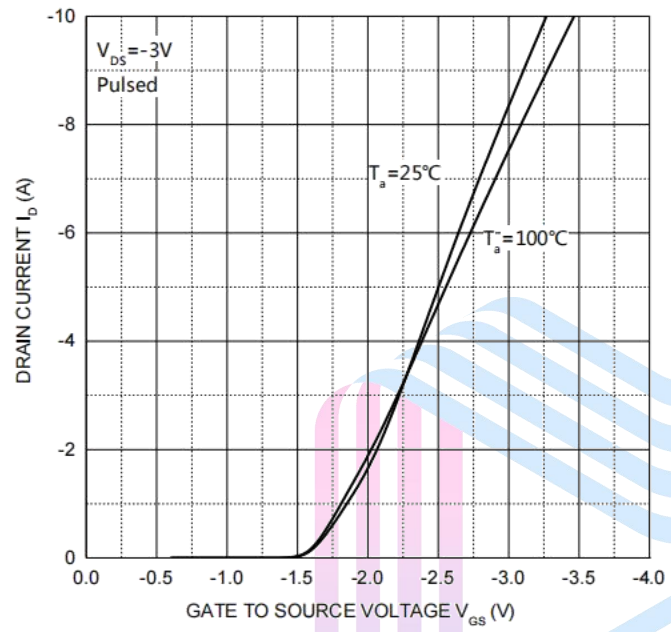


Figure 4: Output Characteristics

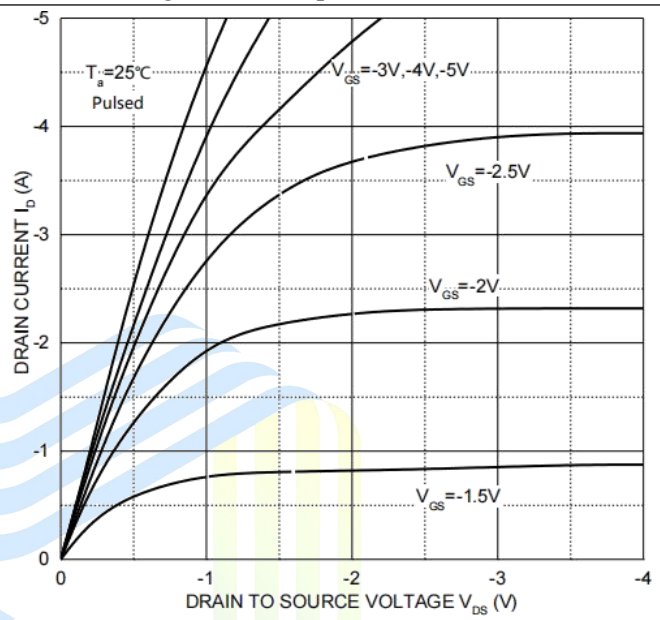


Figure 5: On-Resistance vs. Drain Current

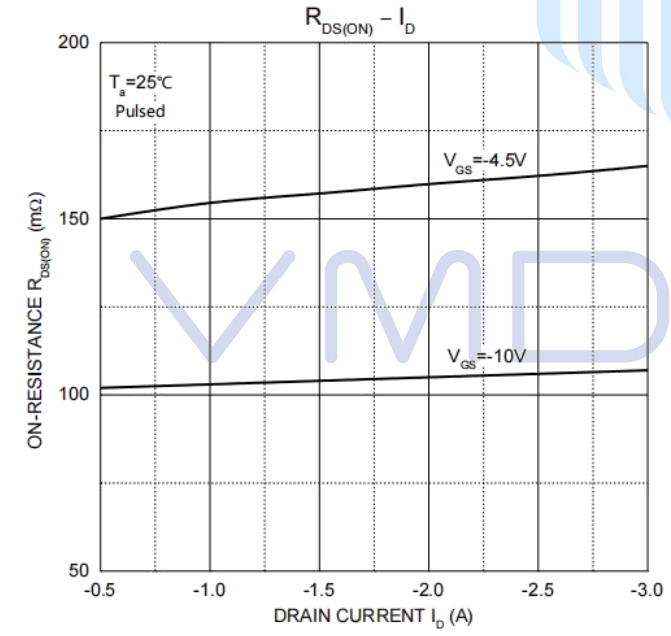


Figure 6: On-Resistance vs. Gate Voltage

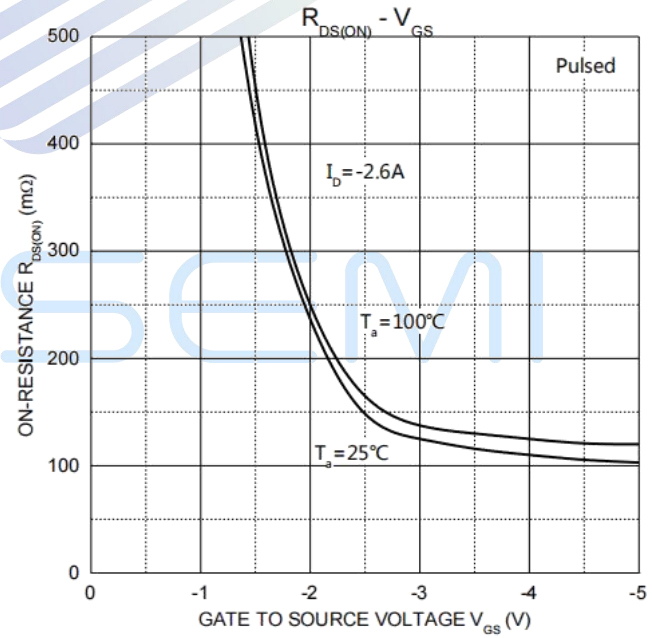


Figure 7: Body Diode Characteristics

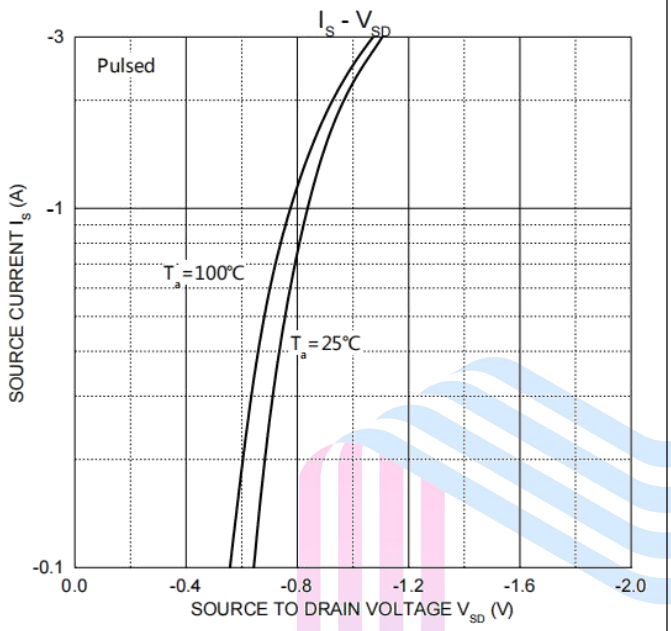
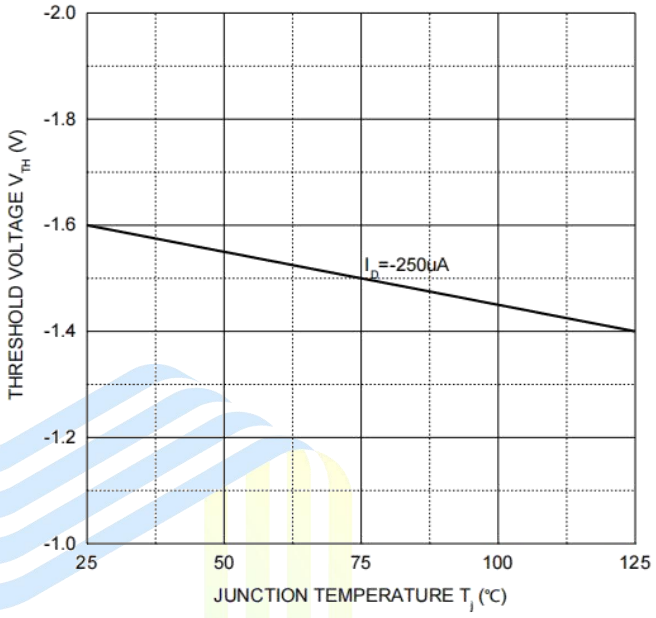
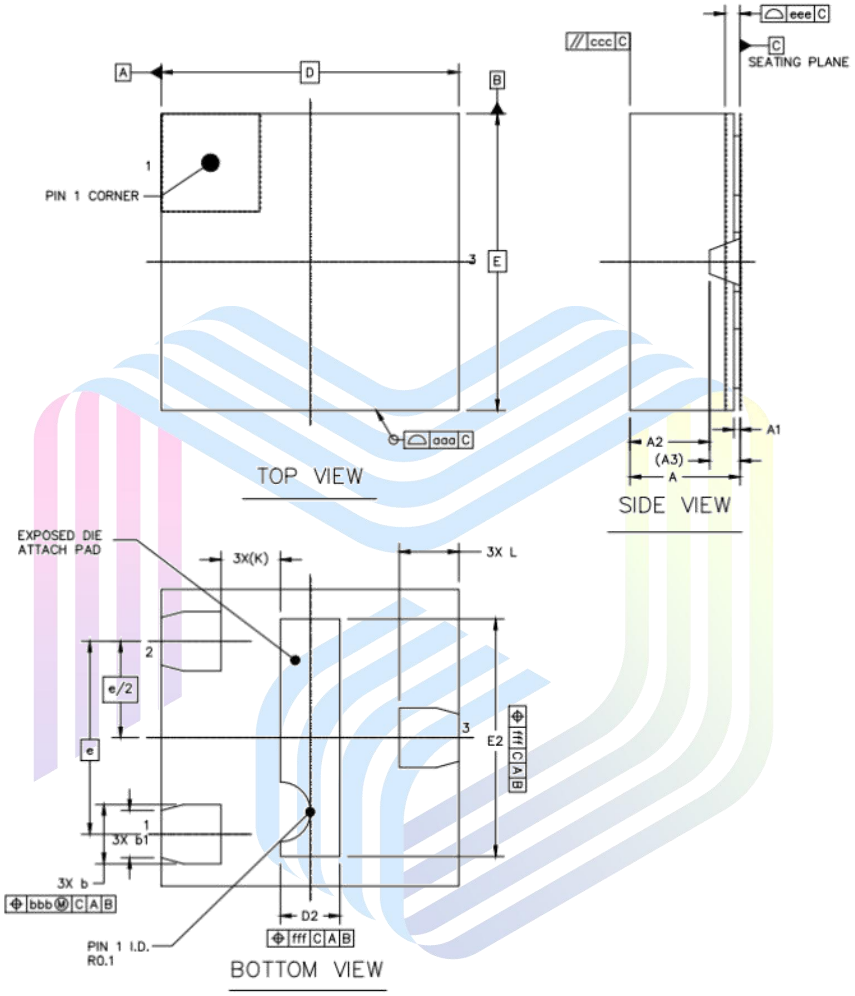


Figure 8: Threshold Voltage



Mechanical Dimensions:

DFNWB1X1-3L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.340	0.400	0.013	0.016
A1	0.000	0.050	0.000	0.002
A2	0.270TYP		0.011TYP	
A3	0.102REF		0.004REF	
b	0.150	0.250	0.006	0.010
b1	0.160REF		0.006REF	
D	1.000BSC		0.039BSC	
E	1.000BSC		0.039BSC	
e	0.650BSC		0.026BSC	
D2	0.100	0.300	0.004	0.012
E2	0.700	0.900	0.028	0.035
L	0.150	0.250	0.006	0.010
K	0.200REF		0.008REF	
aaa	0.100TYP		0.004TYP	
ccc	0.100TYP		0.004TYP	
eee	0.050TYP		0.002TYP	
bbb	0.100TYP		0.004TYP	
fff	0.100TYP		0.004TYP	

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