VUSB006R25BNB

Datasheet

2.5Ω, 60V, N-Channel Power MOSFET VUSB006R25BNB

General Description

$V_{(BR)DSS}$	$R_{DS(ON)\_max}$	I_D
60V	2.5Ω@10V	0.34A
	3.0Ω@4.5V	

Symbol

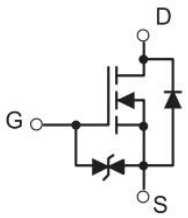


Figure 1 Symbol of VUSB006R25BNB

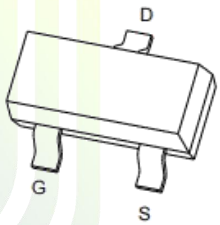
Features

- Trench Technology Power MOSFET
- Low Gate Charge
- Low R_{DSON}
- ESD Protected

Application

- Power Switch Application
- Load Switch

Package Type



SOT-23

Figure 2 Package Type of VUSB006R25BNB

Ordering Information

Product Name	Package
VUSB006R25BNB	SOT-23

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[Note1]	T_A= 25 ºC	I_D	0.34	A
Pulsed Drain Current [Note2]		I_{DM}	1.0	
Total Power Dissipation[Note4]	T_A= 25 ºC	P_D	0.35	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]	$R_{\theta JA}$		357		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	60			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= 48V, V_{GS}=0V			1	uA
Gate-Body Leakage Current	I_{GSS}	V_{GS} =±20V, V_{DS}= 0V			±5	uA
Gate Threshold Voltage[Note3]	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	1	1.5	2.5	V
Static Drain-Source On-Resistance[Note3]	$R_{DS(ON)}$	V_{GS}=10V, I_D= 0.3A		0.9	2.5	Ω
		V_{GS}=4.5V, I_D= 0.2A		1.1	3	
Dynamic Characteristics						
Input Capacitance	C_{ISS}	V_{DS}=30V		23.7		pF
Output Capacitance	C_{OSS}	V_{GS}=0V		5.3		pF
Reverse Transfer Capacitance	C_{RSS}	f=1MHz		2.5		pF
Total Gate Charge	Q_g	V_{DS}=30V		0.29		nC
Gate-Source Charge	Q_{gs}	V_{GS}=10V		0.23		
Gate-Drain Charge	Q_{gd}	I_D=0.3A		0.12		
Gate Resistance	Rg	f = 1MHz, Open drain		160		Ω
Switching Parameters						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}= 30V		3.5		ns
Turn-on Rise Time	t_r	V_{GS}= 10V		3.2		
Turn-off Delay Time	$t_{d(off)}$	R_L=100Ω		12		
Turn-off Fall Time	t_f	R_G=3Ω		10		
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 1in2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.

Typical Performance Characteristics

Figure 3: Transfer Characteristics

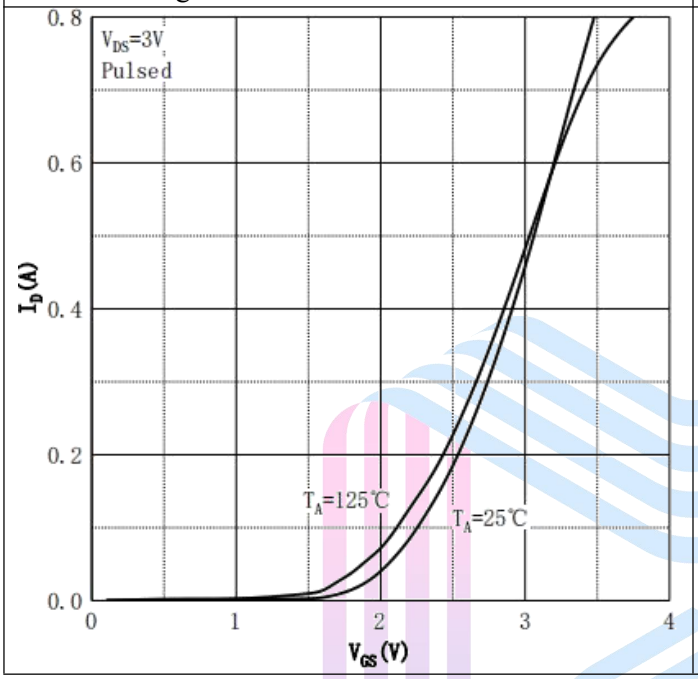


Figure 4: Output Characteristics

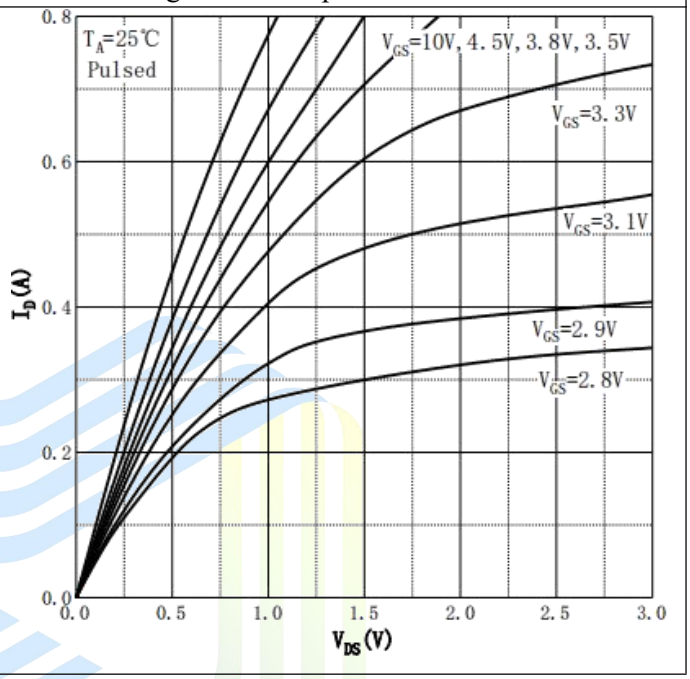


Figure 5: On-Resistance vs. Drain Current

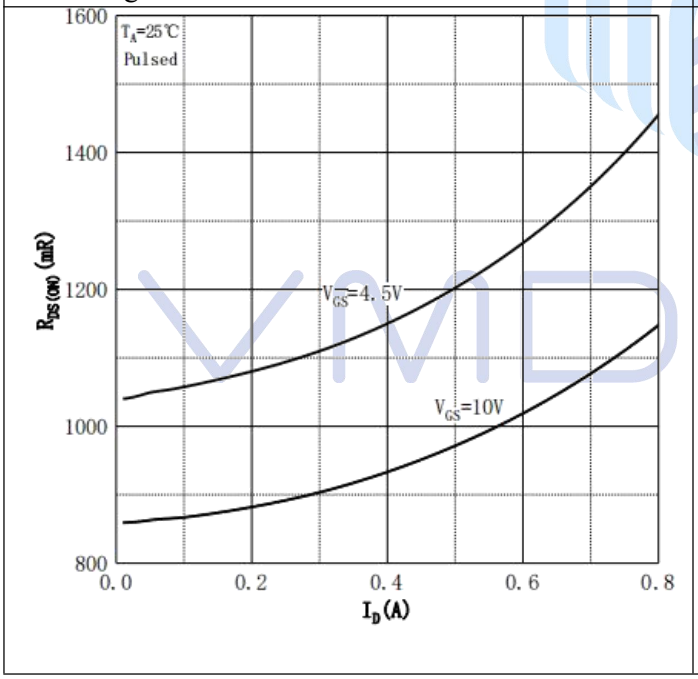


Figure 6: On-Resistance vs. Gate Voltage

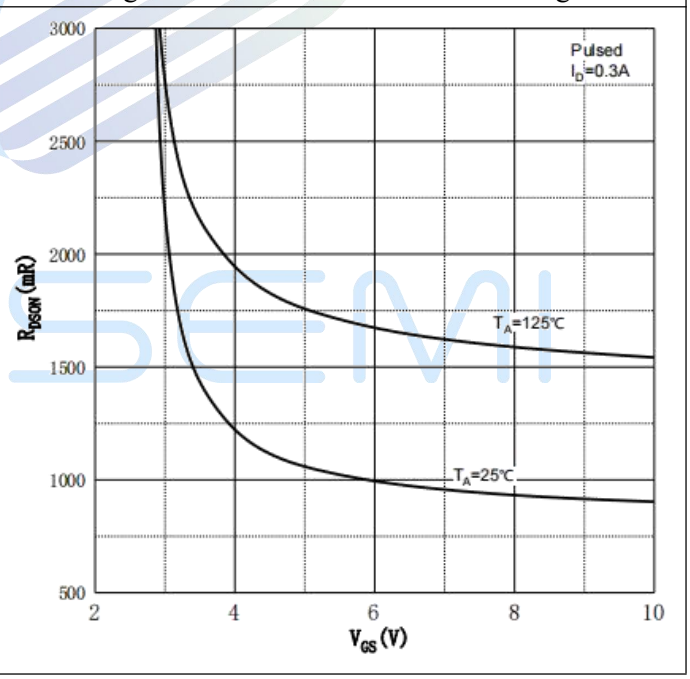


Figure 7: Body Diode Characteristics

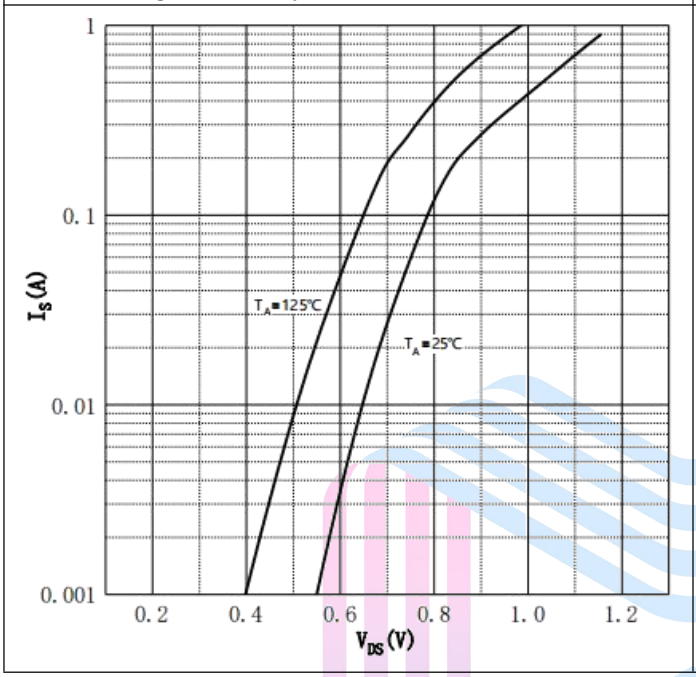
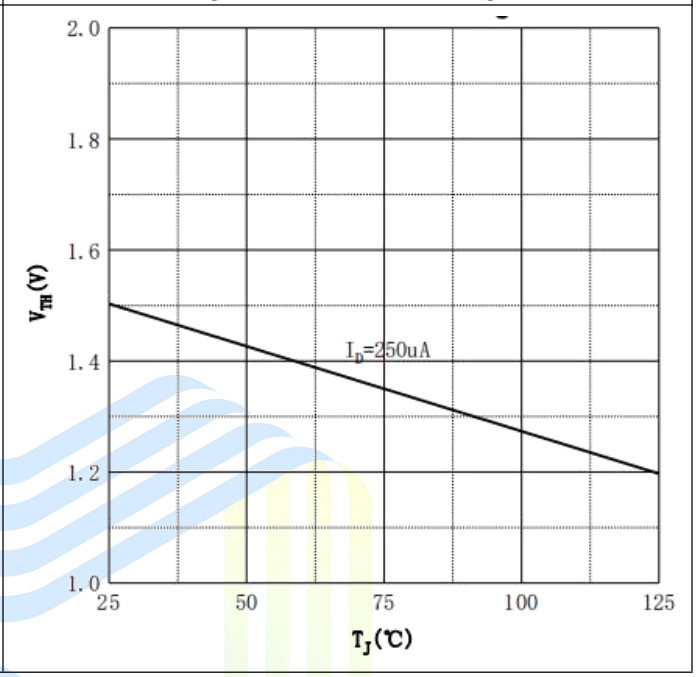
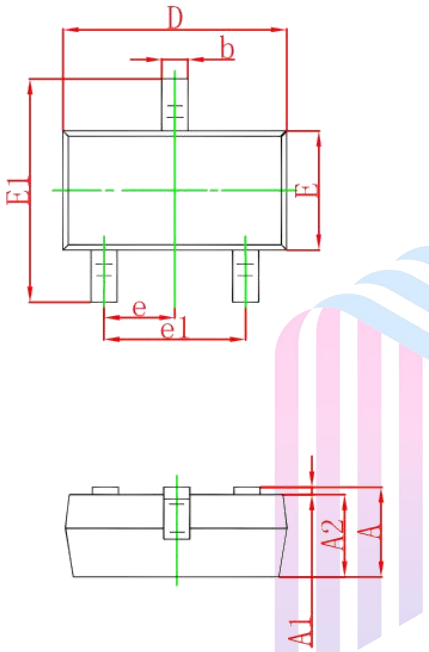


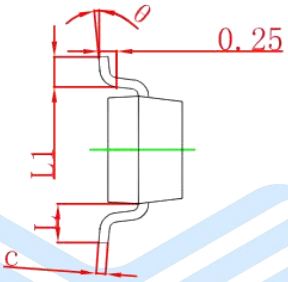
Figure 8: Threshold Voltage



Mechanical Dimensions:

SOT-23 Package Information





Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

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