



VMDSEMI

VUSB002R900PA

Datasheet



VMDSEMI

General Description

Symbol

$V_{(BR)DSS}$	$R_{DS(ON)_{max}}$	I_D
-20V	90mΩ@-4.5V	-3.2A
	140mΩ@-2.5V	

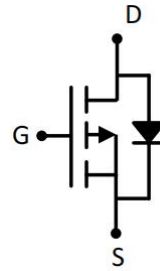


Figure 1 Symbol of VUSB002R900PA

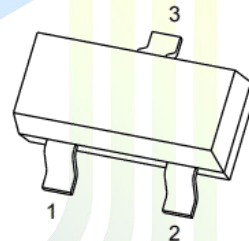
Features

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

Application

- Load Switch
- DC/DC Converters

Package Type



1. GATE
2. SOURCE
3. DRAIN

SOT-23

Figure 2 Package Type of VUSB002R900PA

Ordering Information

Product Name	Package
VUSB002R900PA	SOT-23

Absolute Maximum Ratings ($T_A = 25\text{ }^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	-20	V
Gate-Source Voltage	V_{GSS}	± 12	V
Continuous Drain Current ^{Note1}	I_D	-3.2	A
Pulsed Drain Current ^{Note2}	I_{DM}	-12.8	
Total Power Dissipation ^{Note4}	P_D	1.1	W
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 to 150	$^\circ\text{C}$

Thermal Resistance

Parameter	Symbol	Min	Typ	Max	Unit
Thermal Resistance, Junction-to-Ambient ^{Note5}	$R_{\theta JA}$		113.6		$^\circ\text{C/W}$



Electrical Characteristics ($T_J = 25\text{ }^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Statistic Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	-20			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-20V, V_{GS}=0V$			-1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 12V, V_{DS}=0V$			± 100	nA
Gate Threshold Voltage ^{Note3}	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.4	-0.7	-1	V
Static Drain-Source On-Resistance ^{Note3}	$R_{DS(ON)}$	$V_{GS}=-4.5V, I_D=-3A$		50	90	mΩ
		$V_{GS}=-2.5V, I_D=-2A$		68	140	
Dynamic Characteristics						
Input Capacitance	C_{ISS}	$V_{DS}=-10V$		373		pF
Output Capacitance	C_{OSS}	$V_{GS}=0V$		88		pF
Reverse Transfer Capacitance	C_{RSS}	$f=1MHz$		79		pF
Total Gate Charge	Q_g	$V_{DS}=-10V$		3.8		nC
Gate-Source Charge	Q_{gs}	$V_{GS}=-4.5V$		1.2		
Gate-Drain Charge	Q_{gd}	$I_D=-2A$		1.5		
Gate Resistance	R_g	$f=1MHz, \text{Open drain}$		5.0		Ω
Switching Parameters						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=-10V$		10		ns
Turn-on Rise Time	t_r	$V_{GS}=-4.5V$		5.2		
Turn-off Delay Time	$t_{d(off)}$	$R_L=5\Omega$		19		
Turn-off Fall Time	t_f	$R_G=3\Omega$		7		
Diode Characteristics						
Diode Forward Voltage ^{Note3}	V_{SD}	$V_{GS}=0V, I_S=-1.3A$			-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 $\leq 10\mu s$, duty cycle $\leq 1\%$.
- 3.Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- 4.The power dissipation P_D is limited by $T_{J(MAX)} = 150^\circ\text{C}$.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 $T_A = 25^\circ\text{C}$.

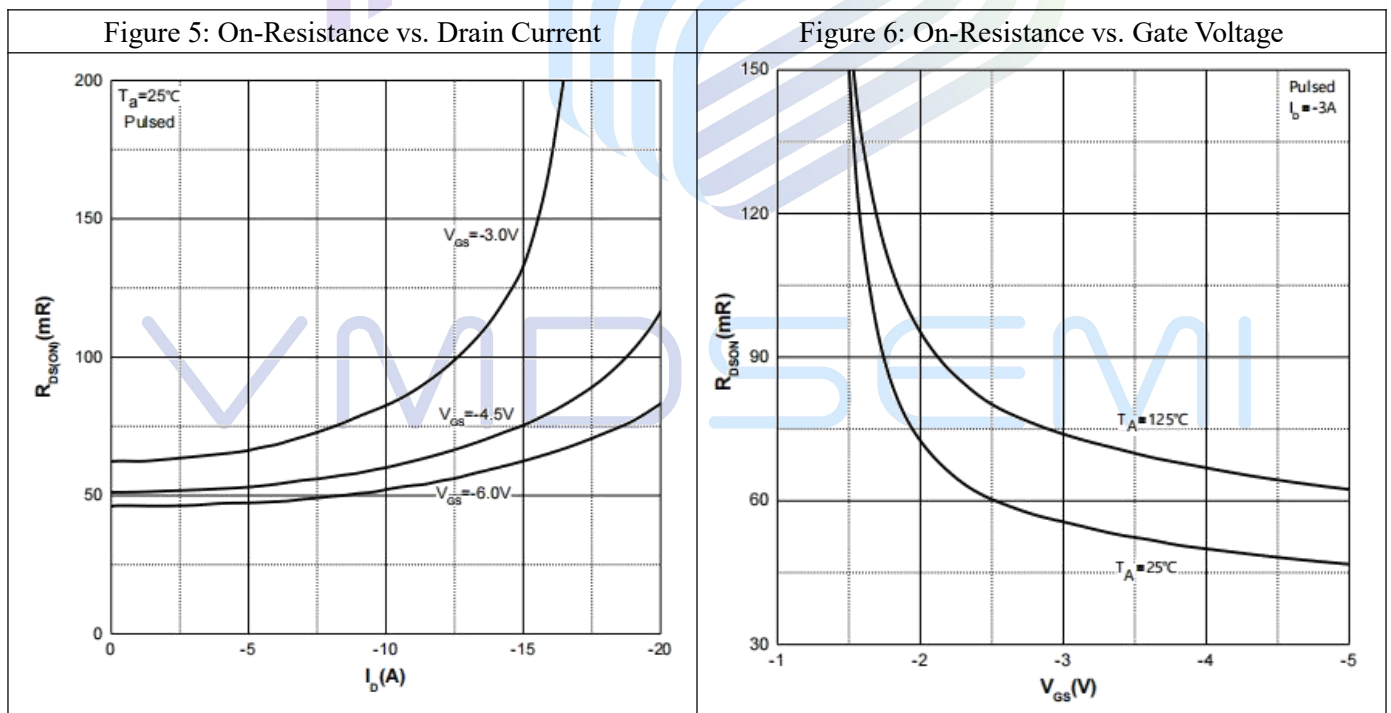
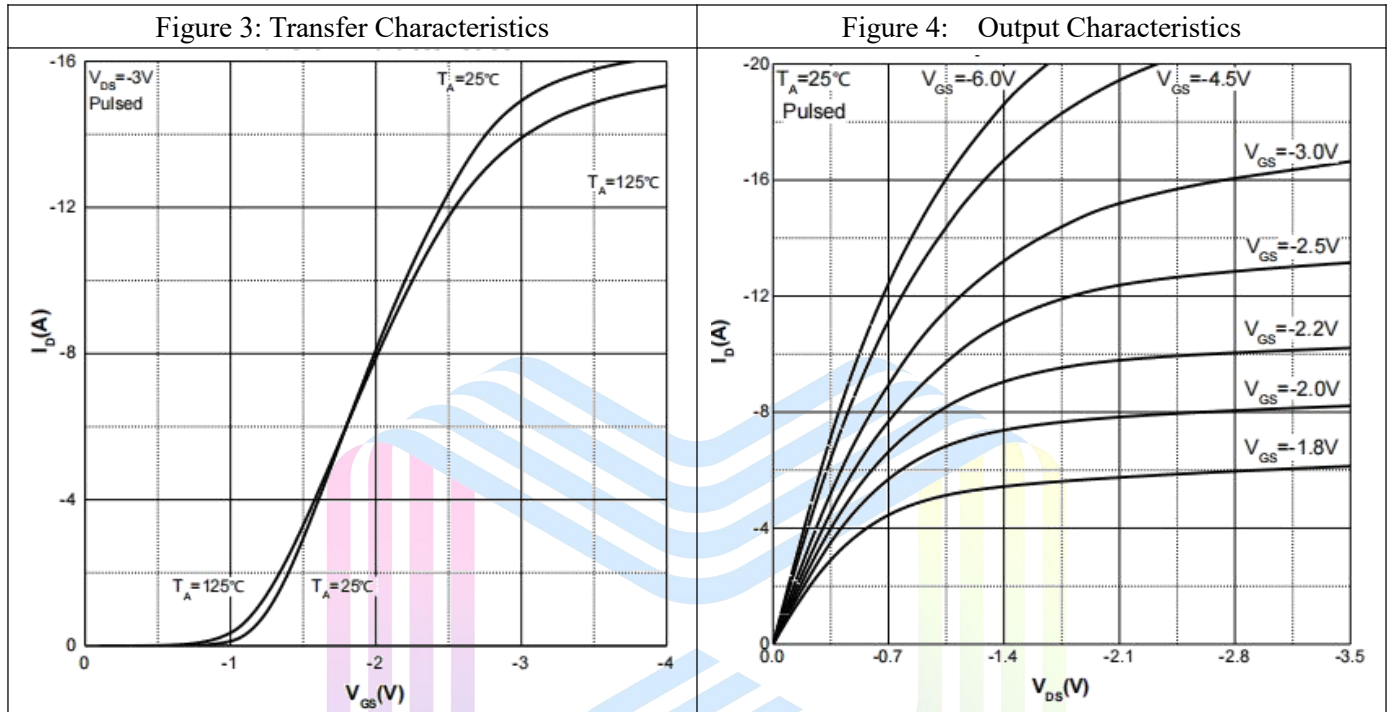
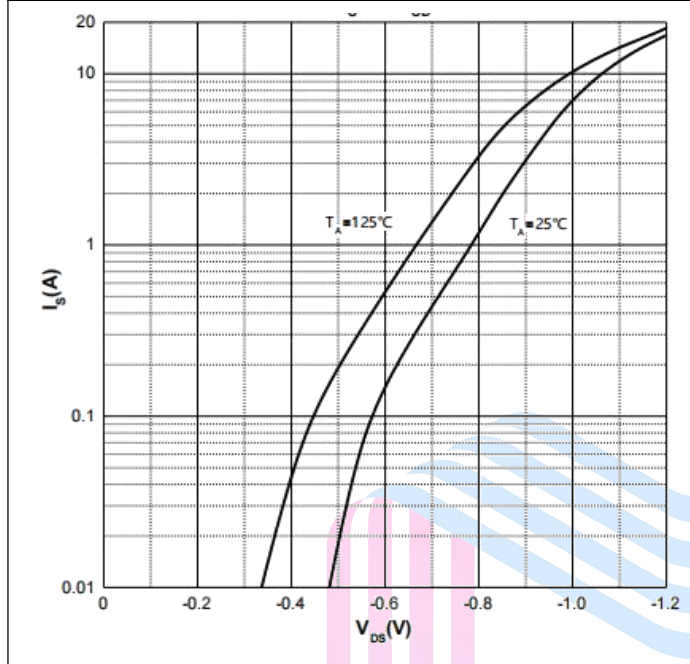
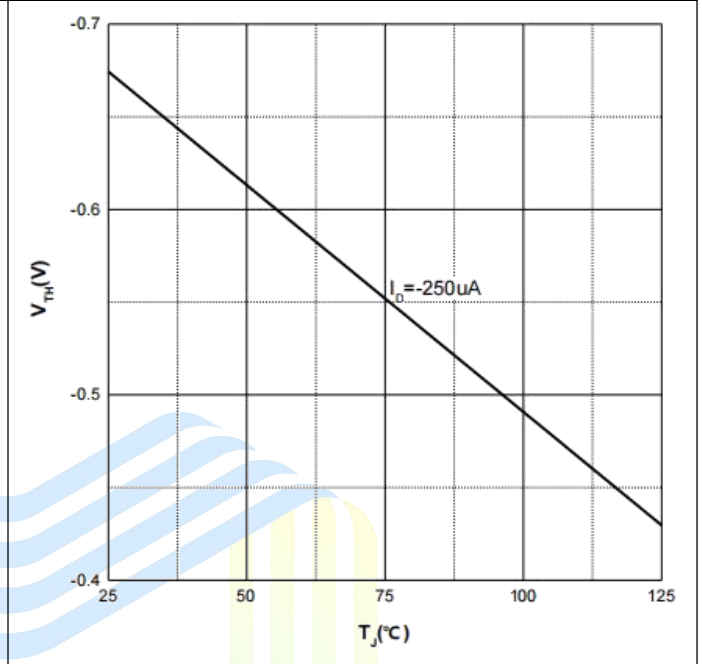
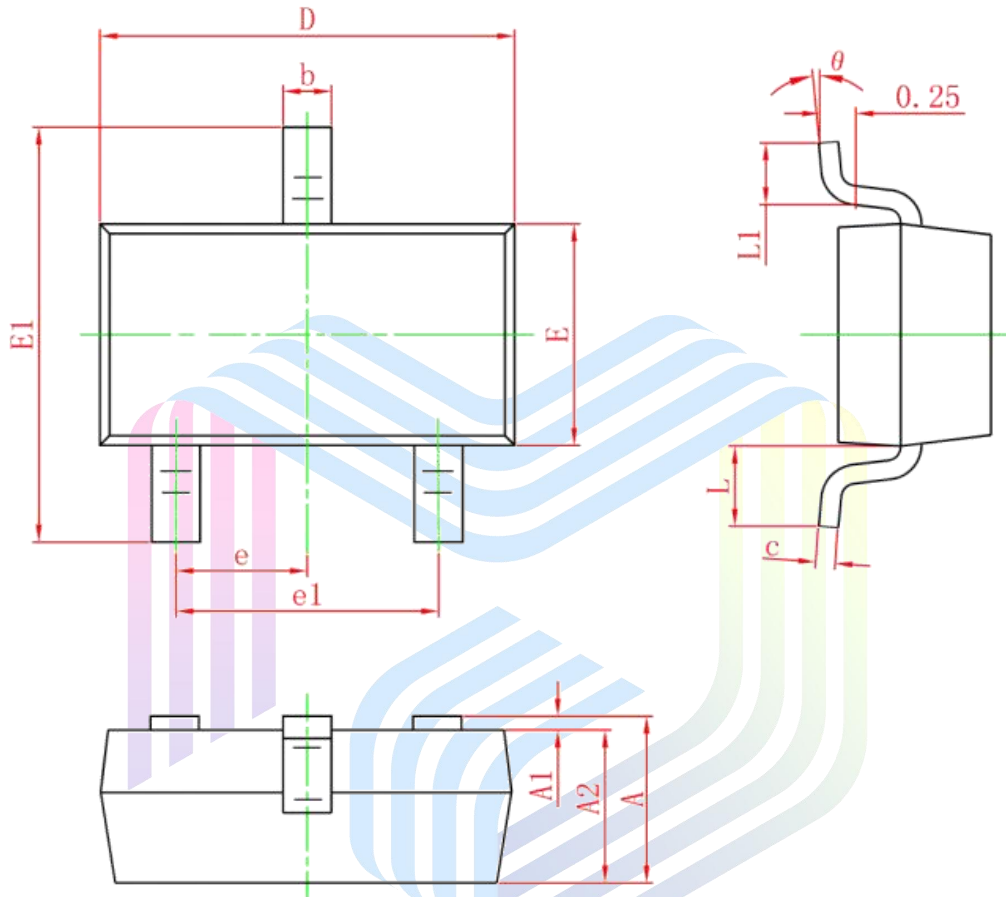
Typical Performance Characteristics


Figure 7: Body Diode Characteristics

Figure 8: Threshold Voltage


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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	0.100	0	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	1.150	1.500	0.045	0.059
E1	2.250	2.650	0.089	0.104
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.550REF		0.022REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

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