VUSG003R50ANA

Datasheet

General Description

$V_{(BR)DSS}$	$R_{DS(ON)\_max}$	I_D
30V	500mΩ@4.5V	0.6A
	600mΩ@2.5V	

Symbol

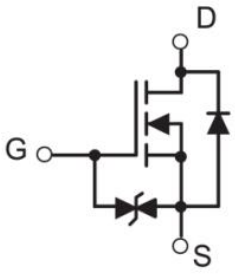
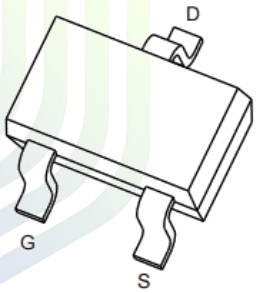


Figure 1 Symbol of VUSG003R50ANA

Features

- Surface Mount Package
- N-Channel Switch with Low $R_{DS(on)}$
- Operated at Low Logic Level Gate Drive

Package Type



SOT-323

Figure 2 Package Type of VUSG003R50ANA

Application

- Load /Power Switch
- Interfacing Switching
- Battery Management for Ultra Small Portable Electronics
- Logic Level Shift

Ordering Information

Product Name	Package
VUSG003R50ANA	SOT-323

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	0.6	A
Pulsed Drain Current	I_{DM}	1.8	A
Total Power Dissipation Note2	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 Note4	$R_{\theta JA}$		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} = ±10V, V_{DS}= 0V			±3	uA
Gate Threshold Voltage[Note3]	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	0.5	1.0	1.5	V
Static Drain-Source On-Resistance[Note3]	$R_{DS(ON)}$	V_{GS}= 4.5V, I_D= 0.6A		320	500	mΩ
		V_{GS}= 2.5V, I_D= 0.3A		410	600	
Forward tranconductance[Note3]	g_{FS}	V_{DS}= 5V, I_D= 0.5A	0.1			S
Dynamic Characteristics						
Input Capacitance	C_{ISS}	V_{DS}=10V		44		pF
Output Capacitance	C_{OSS}	V_{GS}=0V		15		
Reverse Transfer Capacitance	C_{RSS}	f=1MHz		8		
Total gate charge	Q_g	V_{DS}=15V		1.2		nC
Gate-source charge	Q_{gs}	V_{GS}=4.5V		0.28		
Gate-drain charge	Q_{gd}	I_D= 0.8A		0.3		
Switching Parameters						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}= 15V		5.0		ns
Turn-on Rise Time	t_r	V_{GS}= 4.5V		8.2		
Turn-off Delay Time	$t_{d(off)}$	I_D= 0.7A		23		
Turn-off Fall Time	t_f	R_G=51Ω		41		
Source-Drain Diode characteristics						
Diode Forward voltage	V_{DS}	I_S= 0.6A,V_{GS}=0V		0.87	1.2	V

Notes :

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. This test is performed with no heat sink at Ta=25°C .
3. Pulse Test : Pulse Width≤300μs, Duty Cycle≤0.5%.
4. 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

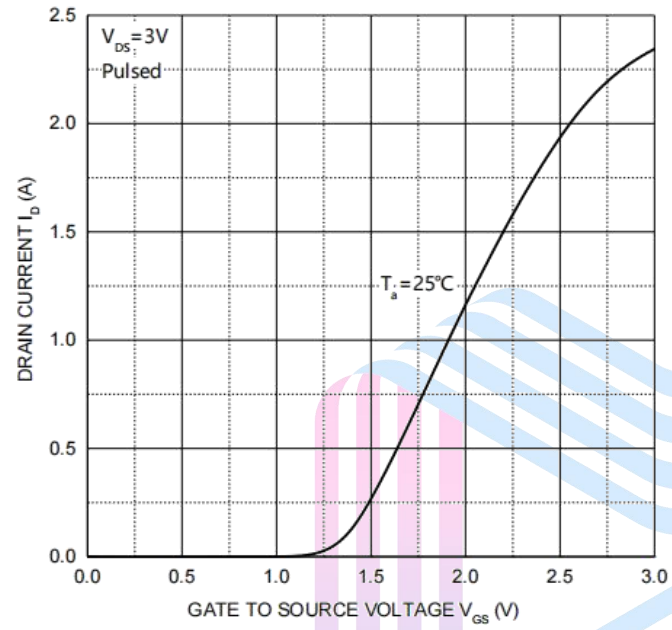


Figure 4: Output Characteristics

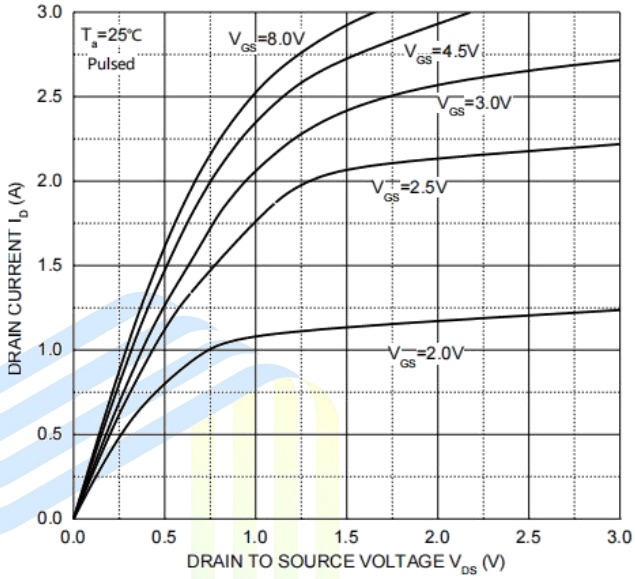


Figure 5: On-Resistance vs. Drain Current

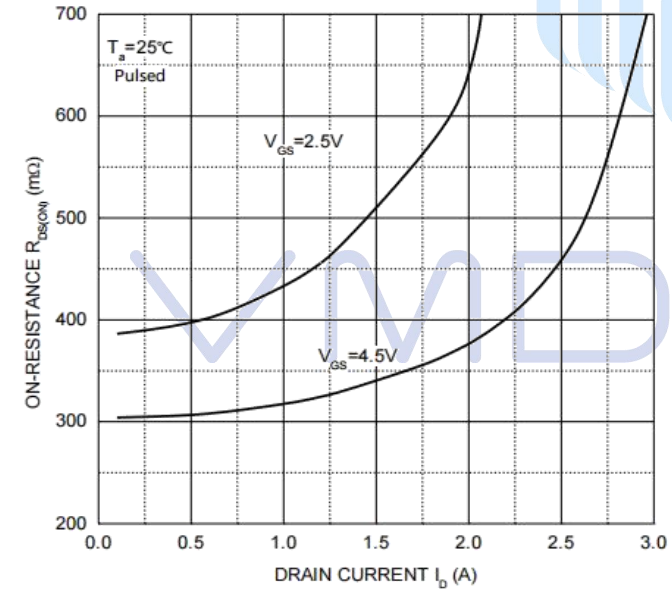


Figure 6: On-Resistance vs. Gate Voltage

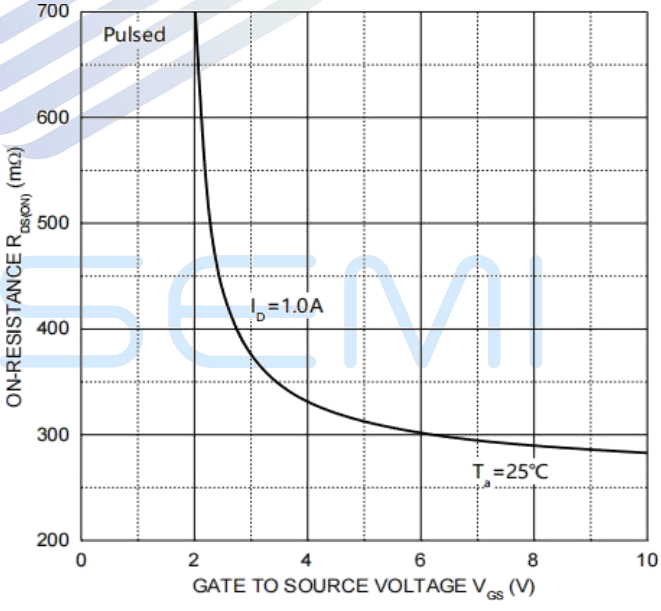


Figure 7: Body Diode Characteristics

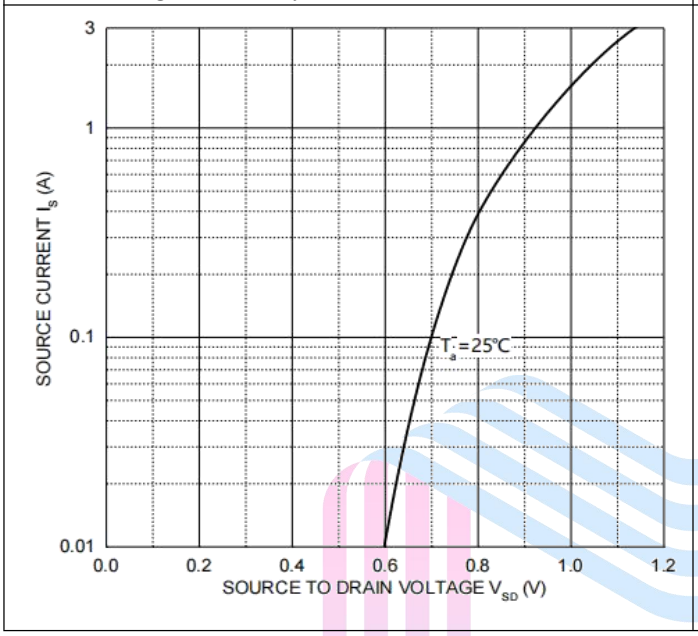
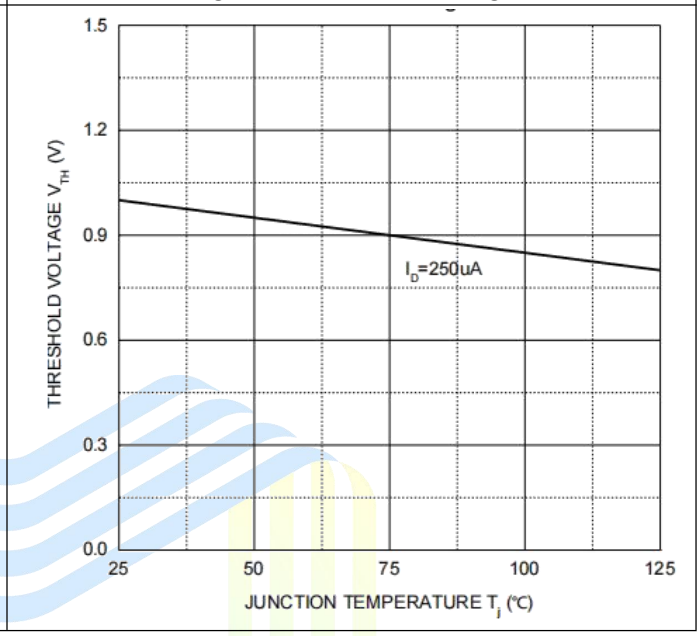
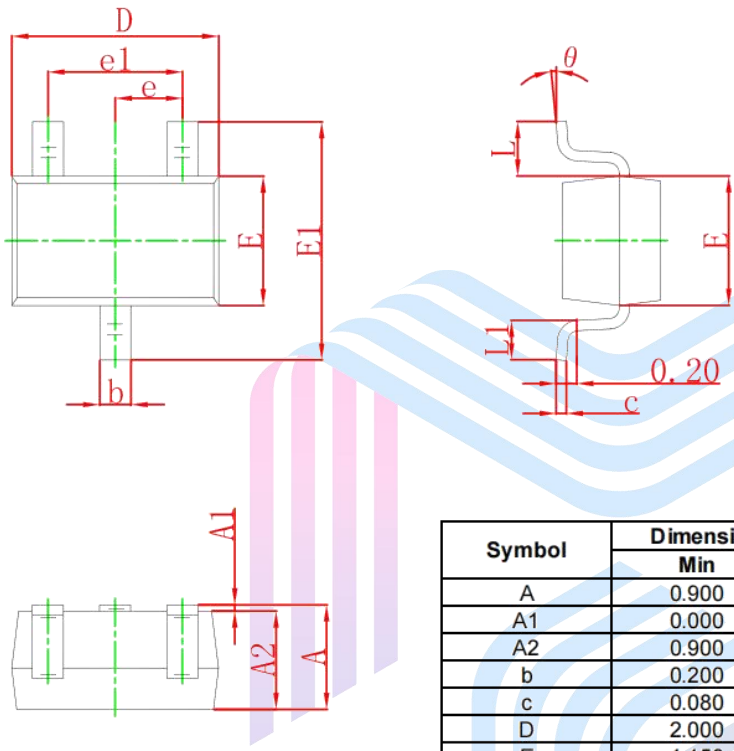


Figure 8: Threshold Voltage



Mechanical Dimensions:

SOT-323 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

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