VUSG002R750PA

Datasheet

General Description

$V_{(BR)DSS}$	$R_{DS(ON)\_max}$	I_D
-20V	75mΩ@-4.5V	-1.4A
	105mΩ@-2.5V	
	156mΩ@-1.8V	

Symbol

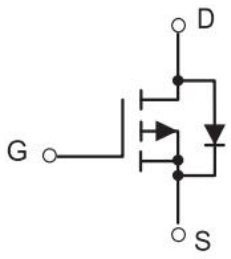
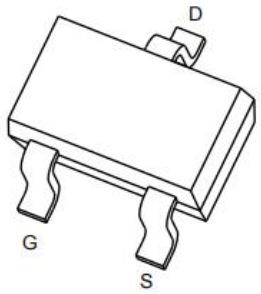


Figure 1 Symbol of VUSG002R750PA

Features

- Leading Trench Technology for Low $R_{DS(on)}$
- Extending Battery Life

Package Type



SOT-323

Figure 2 Package Type of VUSG002R750PA

Application

- High Side Load Switch
- Charging Circuit
- Single Cell Battery Applications

Ordering Information

Product Name	Package
VUSG002R750PA	SOT-323

Absolute Maximum Ratings (T_A= 25 ºC, unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	-20	V
Gate-Source Voltage	V_{GSS}	±8.0	V
Continuous Drain Current Note1,2	I_D	-1.4	A
Pulsed Drain Current	I_{DM}	-5.6	A
Total Power Dissipation Note1	P_D	0.57	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 Note1,2	$R_{\theta JA}$		220		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	-20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= -16V, V_{GS}=0V			-1	uA
Gate-Body Leakage Current	I_{GSS}	V_{GS} = ±8V, V_{DS}= 0V			±100	nA
Gate Threshold Voltage Note3	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250uA	-0.4	-0.7	-1.0	V
Static Drain-Source On-Resistance Note3	$R_{DS(ON)}$	V_{GS}= -4.5V, I_D= -1.0A		50	75	mΩ
		V_{GS}= -2.5V, I_D= -0.5A		70	105	
		V_{GS}= -1.8V, I_D= -0.3A		115	156	
Forward tranconductance Note3	g_{FS}	V_{DS}= -5V, I_D= -0.8A	8			S
Dynamic Characteristics						
Input Capacitance	C_{ISS}	V_{DS}= -10V		350		pF
Output Capacitance	C_{OSS}	V_{GS}=0V		75		pF
Reverse Transfer Capacitance	C_{RSS}	f=1MHz		67		pF
Switching Parameters						
Total Gate Charge	Q_g	V_{DS}= -10V		8.2		nC
Gate-source Charge	Q_{gs}	V_{GS}= -4.5V		1.1		
Gate-drain Charge	Q_{gd}	I_D= -1.4A		2.0		
Turn-on Delay Time	$t_{d(on)}$	V_{DD}= -10V		7.0		ns
Turn-on Rise Time	t_r	V_{GS}= -4.5V		32		
Turn-off Delay Time	$t_{d(off)}$	I_D= -1.4A		49		
Turn-off Fall Time	t_f	R_G=3Ω		55		
Diode Characteristics						
Diode Forward Voltage Note3	V_{SD}	V_{GS}=0V, I_S= -0.3A			-1.2	V

Notes :

1.$R_{\theta JA}$ is measured with the device mounted on 1 in^2 FR4 board with 1oz. single side copper, in a still air environment with T_A= 25°C.

2.$R_{\theta JA}$ is measured in the steady state

3.Pulse test : Pulse width ≤ 380μs, duty cycle ≤ 2%.

Typical Performance Characteristics

Figure 3: Transfer Characteristics

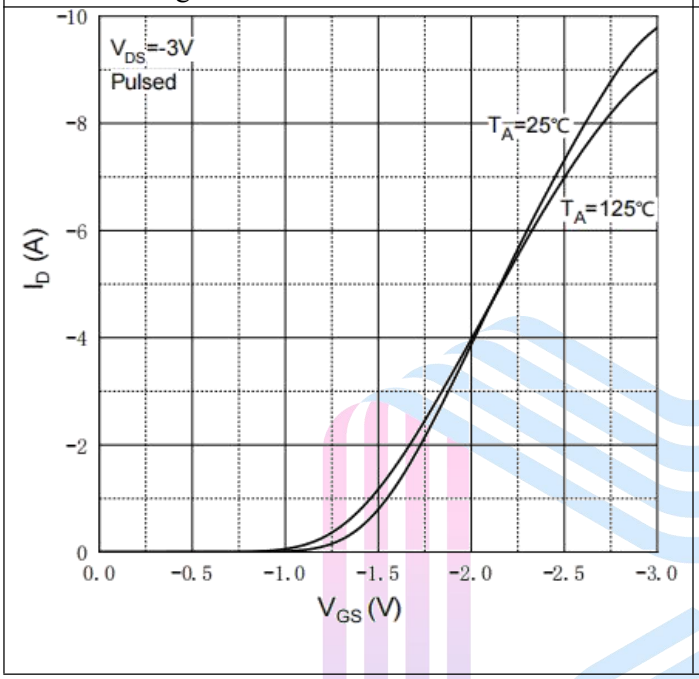


Figure 4: Output Characteristics

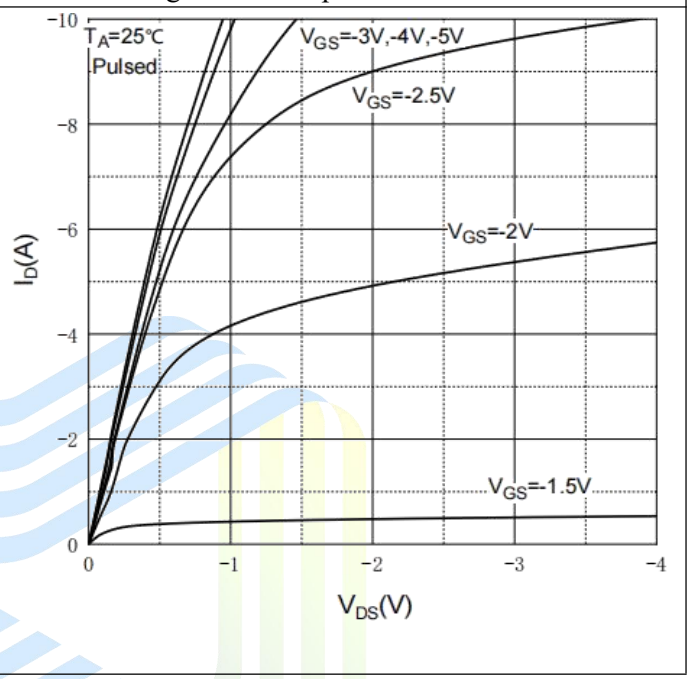


Figure 5: On-Resistance vs. Drain Current

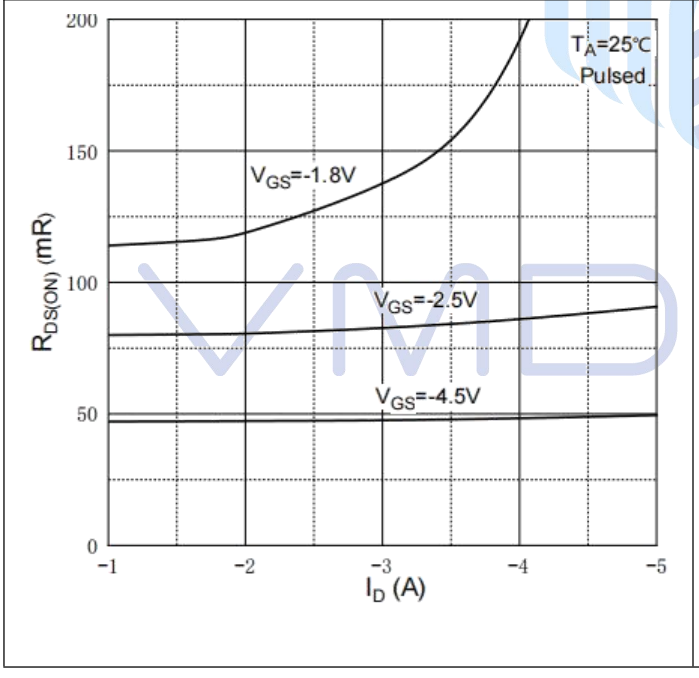


Figure 6: On-Resistance vs. Gate Voltage

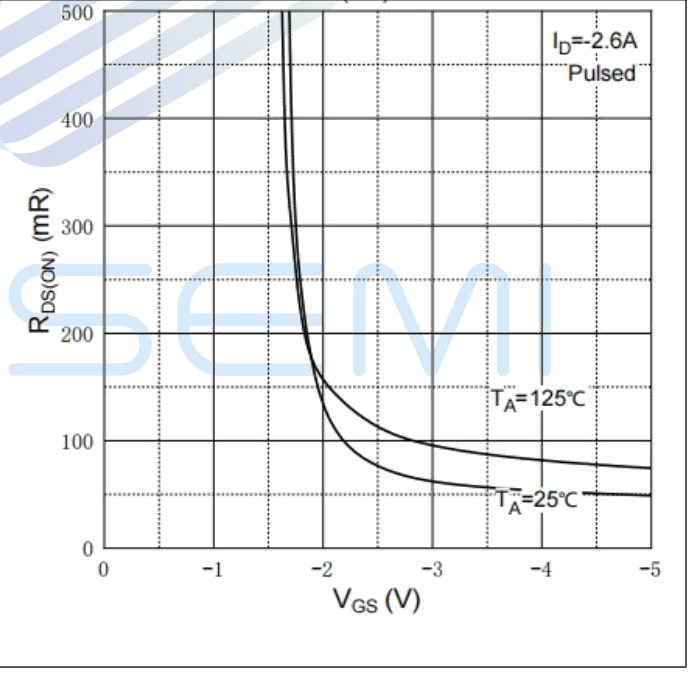


Figure 7: Body Diode Characteristics

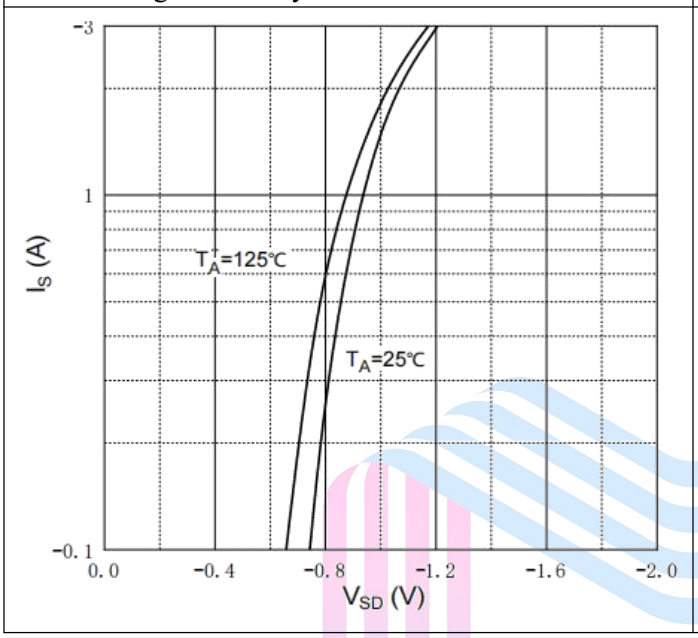
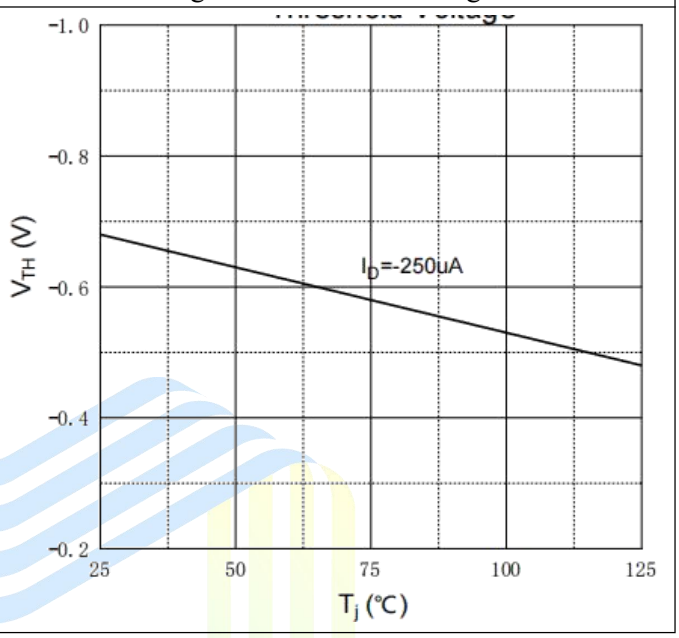
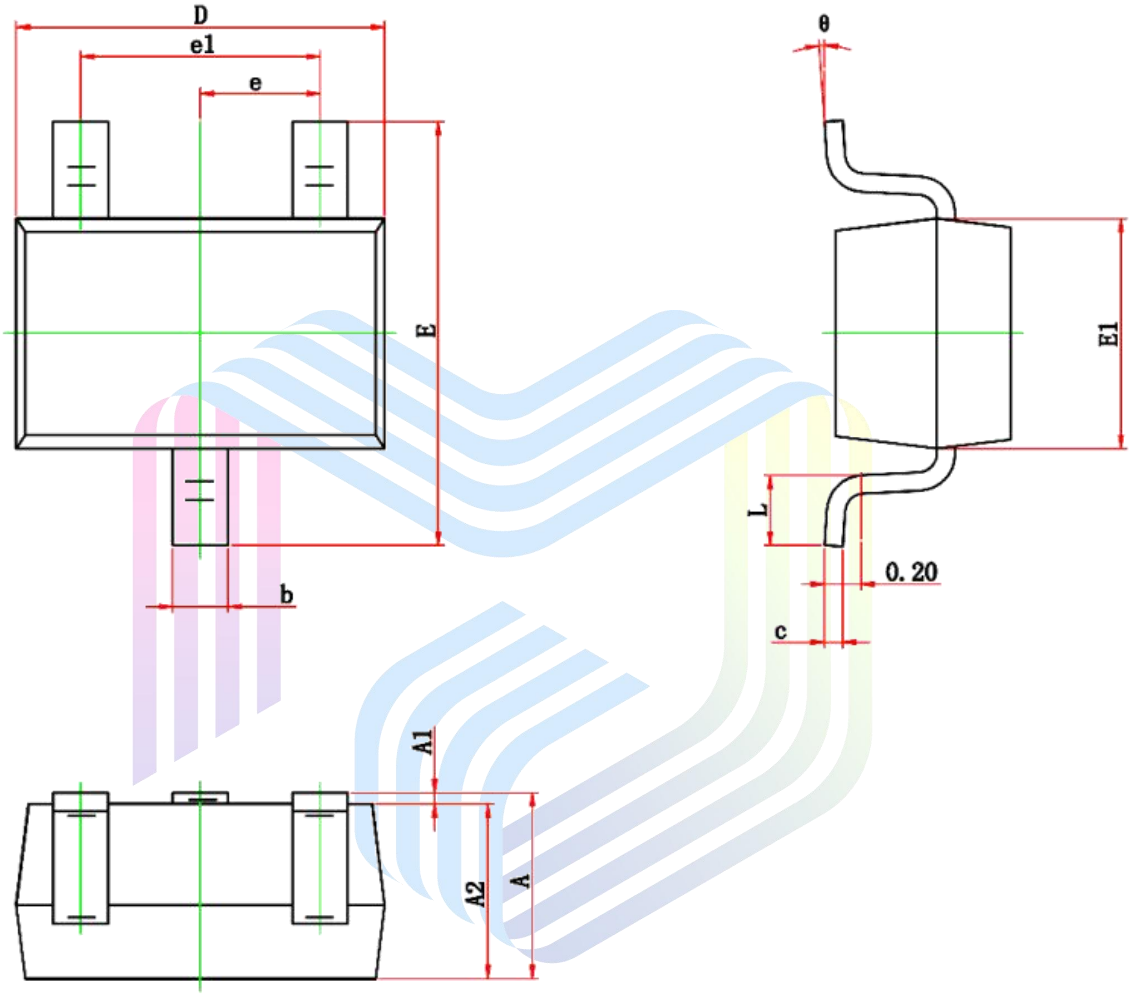


Figure 8: Threshold Voltage



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	0.050	0.150	0.002	0.006
D	1.900	2.200	0.075	0.087
E	2.000	2.450	0.079	0.096
E1	1.150	1.350	0.045	0.053
e	0.650TYP.		0.026TYP.	
e1	1.200	1.400	0.047	0.055
L	0.200	0.460	0.008	0.018
θ	0°	8°	0°	8°

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Via-Media Semiconductor Limited Company

http://www.vmdsemi.com

Main Sites:

- **Headquarters**

Hangzhou Via-Media Semiconductor Co., LTD.
1305-1306, Building 71, No. 90, Wensan Road, Xihu District, Hangzhou, Zhejiang Province, P.R. China
Tel: +86-0571-8515 0563

- **Chengdu Office**

Chengdu Winhi Semiconductor Co., LTD.
Floor 15, Building 5, No. 171, Hele 2nd Street, Chengdu, Sichuan Province, P.R. China
Tel: +86-028-8505 0771

- **Shanghai**

Shanghai R&D Center.
1506~1508, Xinyin Building, 888 Yishan Road, Shanghai, P.R of China
Tel: +86- 021-54201999

- **Shenzhen**

Shenzhen Sales office
Room 4A15, Block AB, Tianxiang Building, Chegongmiao , Futian District, Shenzhen, P.R of China
Tel: +86-0755- 82570682

- **Xi'an**

Xi'an R&D Center
1703B, Building A, Greenland Center, Jinye Road, High-Tech Zone, Xi'an, Shaanxi, P.R of China