VUSG002R11APA

Datasheet

General Description

VUSG002R11APA MOSFET is based on unique device design to achieve low $R_{DS(ON)}$, low gate charge, fast switching and excellent avalanche characteristics.

Symbol

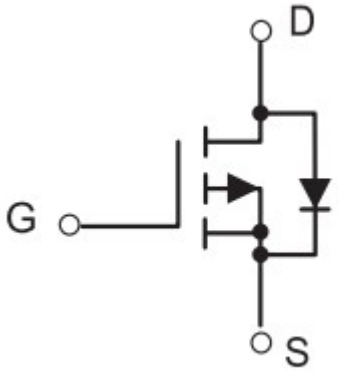


Figure 1 Symbol of VUSG002R11APA

Features

- Leading Trench Technology for Low $R_{DS(on)}$
- $R_{DS(ON)\_max}$ = 110mΩ@V_{GS} = -4.5V
- Extending Battery Life

Application

- Power switching application
- High Side Load Switch
- Charging Circuit
- Single Cell Battery Applications

Package Type

SOT-323

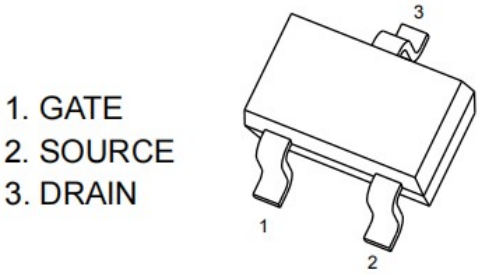


Figure 2 Package Type of VUSG002R11APA

Ordering Information

Product Name	Package
VUSG002R11APA	SOT-323

Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	-20	V
Gate-Source Voltage	V_{GSS}	±8	V
Continuous Drain Current	I_D	-1.4	A
Pulsed Drain Current	I_{DM}	-3.0	A
Max Power Dissipation	P_D	0.29	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	$R_{\theta JA}$		431		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	-20			V
Zero Gate Voltage Drain Current		I_{DSS}	V_{DS}=-20V, V_{GS}=0V			-1	uA
Gate-Body Leakage Current	Forward	I_{GSSF}	V_{GS} = -8V			100	nA
	Reverse	I_{GSSR}	V_{GS} = 8V			-100	
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=-250uA	-0.45	-0.65	-1	V
Static Drain-Source On-Resistance		$R_{DS(ON)}$	V_{GS}= -4.5V, I_D= -1.0A		90	110	mΩ
			V_{GS}= -2.5V, I_D= -0.5A		115	140	
			V_{GS}= -1.8V, I_D= -0.3A		145	210	
Forward trans conductance		g_{FS}	V_{DS}= -10V, I_D= -0.8A		2		S
Dynamic Characteristics							
Input Capacitance		C_{ISS}	V_{DS}= -8V		640		pF
Output Capacitance		C_{OSS}	V_{GS}=0V		120		pF
Reverse Transfer Capacitance		C_{RSS}	f=1MHz		82		pF
Turn-on Delay Time		$t_{d(on)}$	V_{DS}= -4V		6.2		ns
Rise Time		t_r	V_{GS}=-4.5V		15		
Turn-off Delay Time		$t_{d(off)}$	I_D= -1.0A		26		
Fall Time		t_f	R_G=6.2Ω		18		
Gate Charge Characteristics							
Gate to Source Charge		Q_{gs}	V_{DS}= -10V		0.7		nC
Gate to Drain Charge		Q_{gd}	V_{GS}= -2.5V		1.3		
Gate Charge Total		Q_g	I_D= -3.0A		3.3	6	
Diode Characteristics							
Diode Forward Voltage		V_{SD}	V_{GS}=0V, I_{SD}= -0.3A			-1.2	V

Note :

1. Pulse Test : pulse width ≤300μs, duty cycle ≤2%.
2. Switching characteristics are independent of operating junction temperatures.
3. These parameters have no way to verify.

Typical Performance Characteristics

Figure 3: Transfer Characteristics

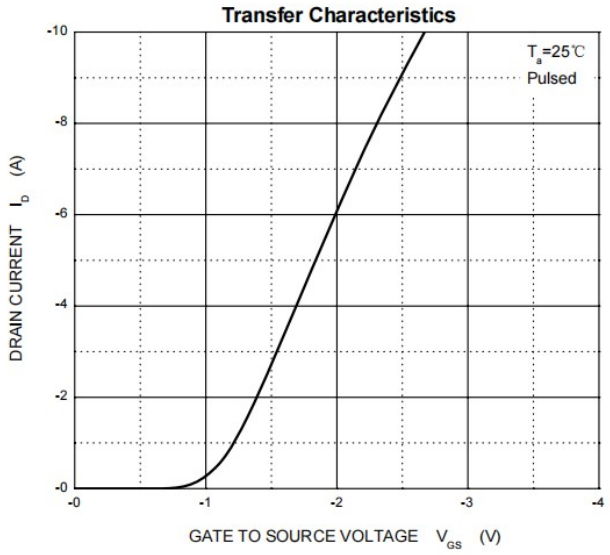


Figure 4: Typ. Output Characteristics

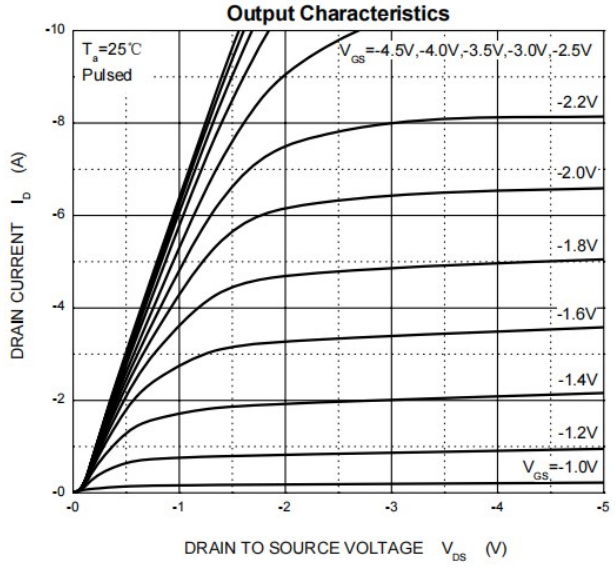


Figure 5: Drain-Source On-State Resistance-I_D

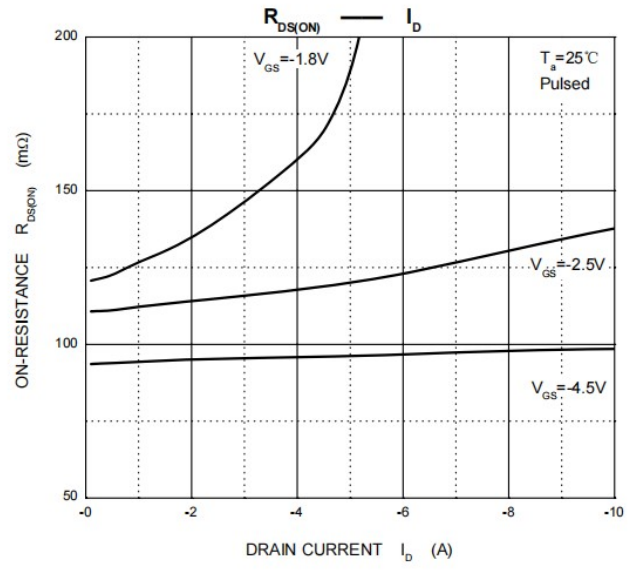


Figure 6: Drain-Source On-State Resistance -V_{GS}

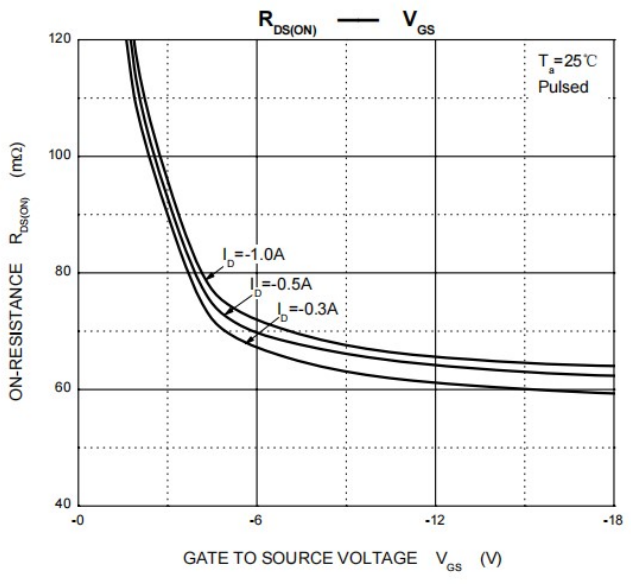
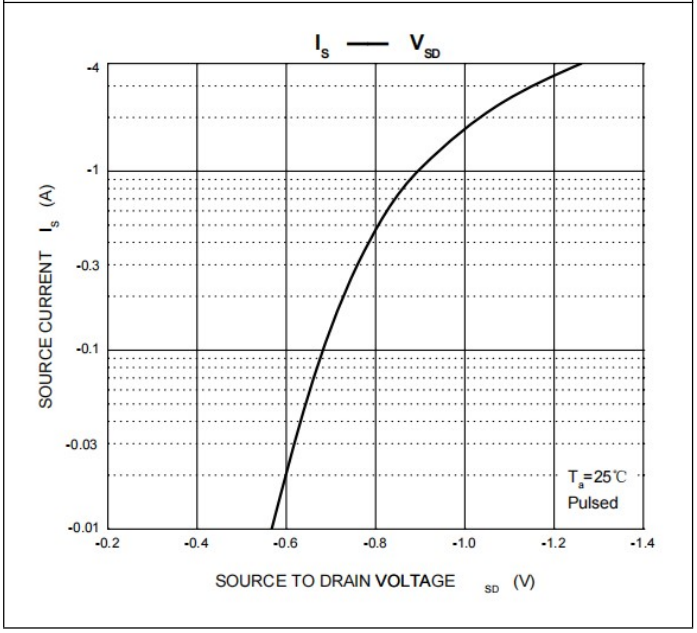
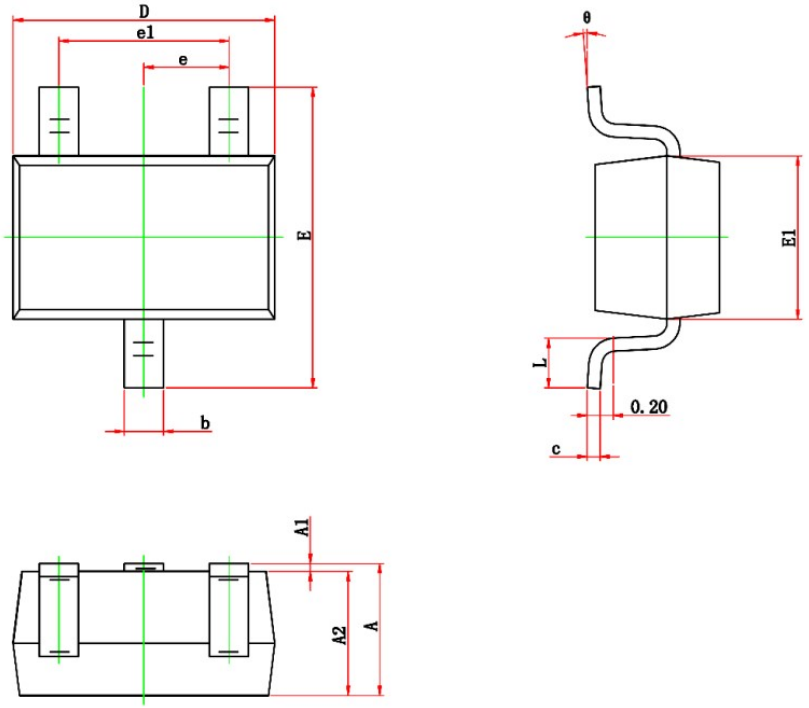


Figure 7: Source Current



Mechanical Dimensions:



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	0.650REF		0.026REF	
e1	1.200	1.400	0.047	0.055
L	0.200	0.460	0.008	0.018
θ	0°	8°	0°	8°

NOTICE

Hangzhou VMD Semiconductor Co., Ltd (VMD) reserves the right to make changes without notice in order to improve reliability, function or design and to discontinue any product or service without notice. Customers should obtain the latest relevant information before orders and should verify that such information is current and complete. All products are sold subject to VMD's terms and conditions supplied at the time of order acknowledgement.

VMD, its affiliates, agents, and employees, and all persons acting on its or their behalf, disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product. VMD disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify VMD's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

VMD warrants performance of its hardware products to the specifications at the time of sale, testing, reliability and quality control are used to the extent VMD deems necessary to support this warrantee. Except where agreed upon by contractual agreement, testing of all parameters of each product is not necessarily performed.

VMD does not assume any liability arising from the use of any product or circuit designs described herein. Customers are responsible for their products and applications using VMD's components. To minimize risk, customers must provide adequate design and operating safeguards.

VMD does not warrant or convey any license to any intellectual property rights either expressed or implied under its patent rights, nor the rights of others. Reproduction of information in VMD's data sheets or data books is permissible only if reproduction is without modification or alteration. Reproduction of this information with any alteration is an unfair and deceptive business practice.

VMD is not responsible or liable for such altered documentation. Resale of VMD's products with statements different from or beyond the parameters stated by VMD for that product or service voids all express or implied warrantees for the associated VMD product or service and is an unfair and deceptive business practice.

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 Center.
17B, No.1 Phoenix Building, 2008 Shennan Road, 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