VUSF003R290NA

Datasheet

General Description

$V_{(BR)DSS}$	$R_{DS(ON)\_max}$	I_D
30V	29mΩ@10V	5.8A
	40mΩ@4.5V	

Symbol

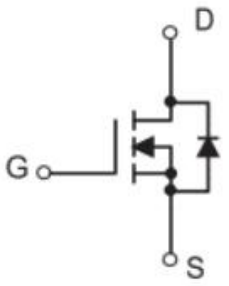
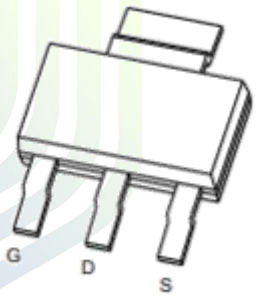


Figure 1 Symbol of VUSF003R290NA

Features

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

Package Type



SOT-223

Figure 2 Package Type of VUSF003R290NA

Application

- Load Switch
- DC/DC Converter

Ordering Information

Product Name	Package
VUSF003R290NA	SOT-223

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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current Note1	T_A= 25 ºC	I_D	5.8	A
Pulsed Drain Current Note2		I_{DM}	23.2	
Avalanche Current Note3		I_{AS}	10	A
Single Pulsed Avalanche Energy Note3		E_{AS}	25	mJ
Total Power Dissipation Note5	T_A= 25 ºC	P_D	2.5	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 Note6	$R_{\theta JA}$		50		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	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} = ±20V, V_{DS}= 0V			±100	nA
Gate Threshold Voltage[Note4]	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	1	1.6	3	V
Static Drain-Source On-Resistance[Note4]	$R_{DS(ON)}$	V_{GS}=10V, I_D= 3.2A		22	29	mΩ
		V_{GS}=4.5V, I_D=2.8A		30	40	
Dynamic Characteristics						
Input Capacitance	C_{ISS}	V_{DS}=15V		520		pF
Output Capacitance	C_{OSS}	V_{GS}=0V		63.8		pF
Reverse Transfer Capacitance	C_{RSS}	f=1MHz		50.8		pF
Total Gate Charge	Q_g	V_{DS}=15V		11.3		nC
Gate-Source Charge	Q_{gs}	V_{GS}=10V		2.2		
Gate-Drain Charge	Q_{gd}	I_D= 3.2A		2.0		
Gate Resistance	Rg	f = 1MHz, Open drain		2.8		Ω
Switching Parameters						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}= 15V		6.4		ns
Turn-on Rise Time	t_r	V_{GS}= 10V		3.1		
Turn-off Delay Time	$t_{d(off)}$	I_D= 6A		15		
Turn-off Fall Time	t_f	R_G=3Ω		2.6		
Diode Characteristics						
Diode Forward Voltage [Note4]	V_{SD}	V_{GS}=0V, I_S= 1A			1.0	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.E_{AS} condition: V_{DD} = 25V,V_{GS} = 10V, L = 0.5mH, R_G = 25Ω Starting T_J = 25°C.

4.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.

5.The power dissipation P_D is limited by $T_{J(MAX)}$ = 150°C.And device mounted on a large heatsink

6.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

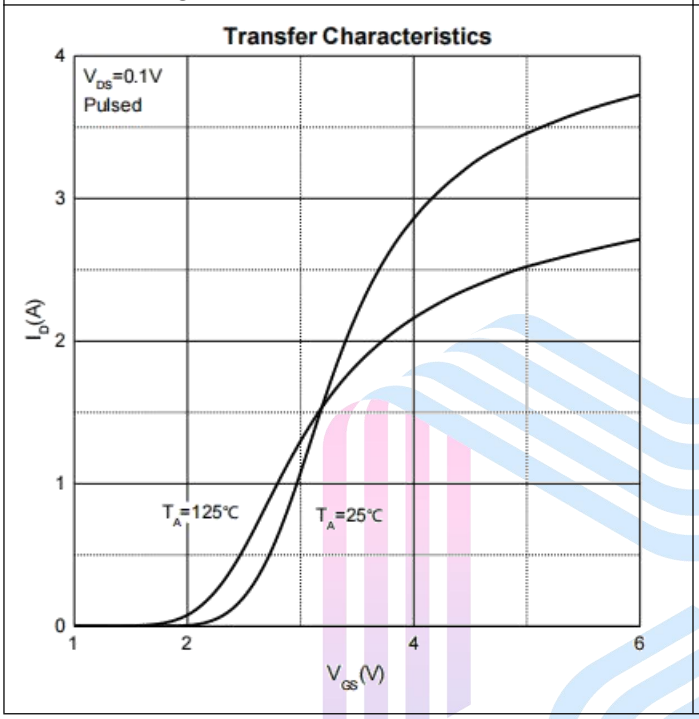


Figure 4: Output Characteristics

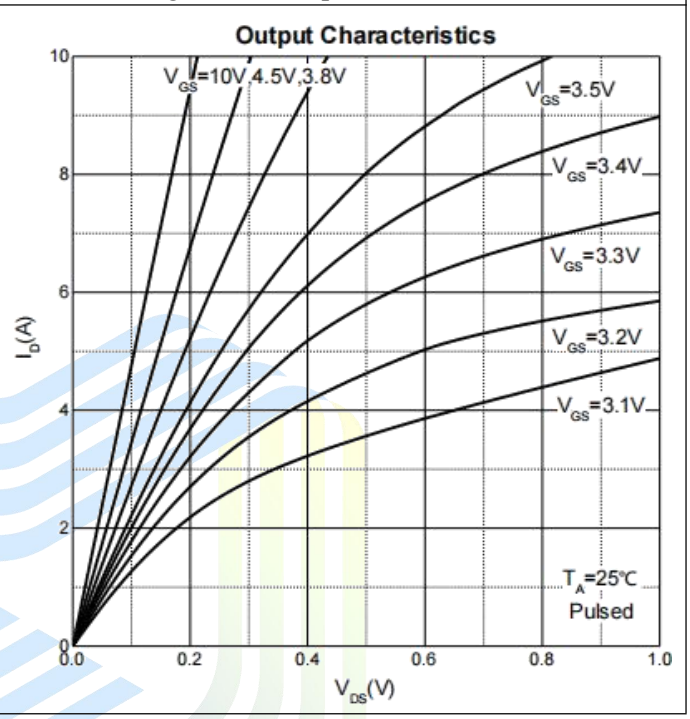


Figure 5: On-Resistance vs. Drain Current

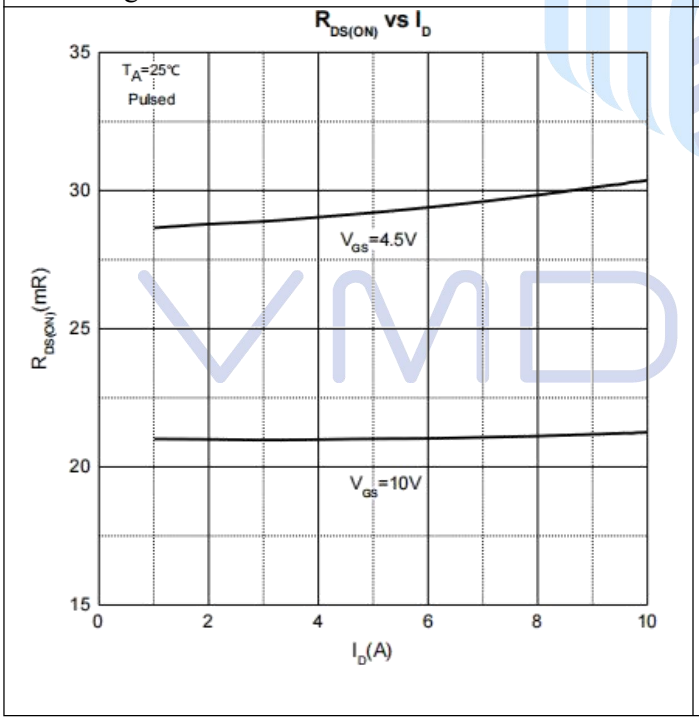


Figure 6: On-Resistance vs. Gate Voltage

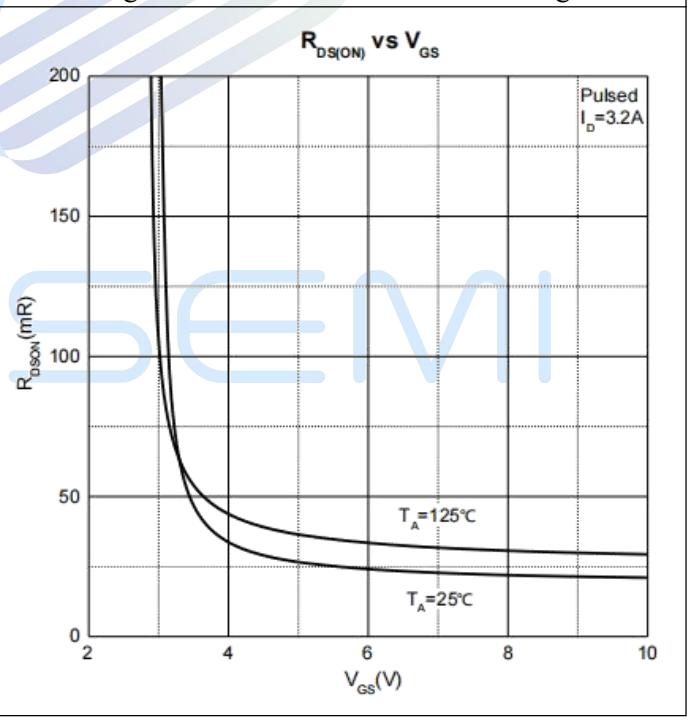


Figure 7: Body Diode Characteristics

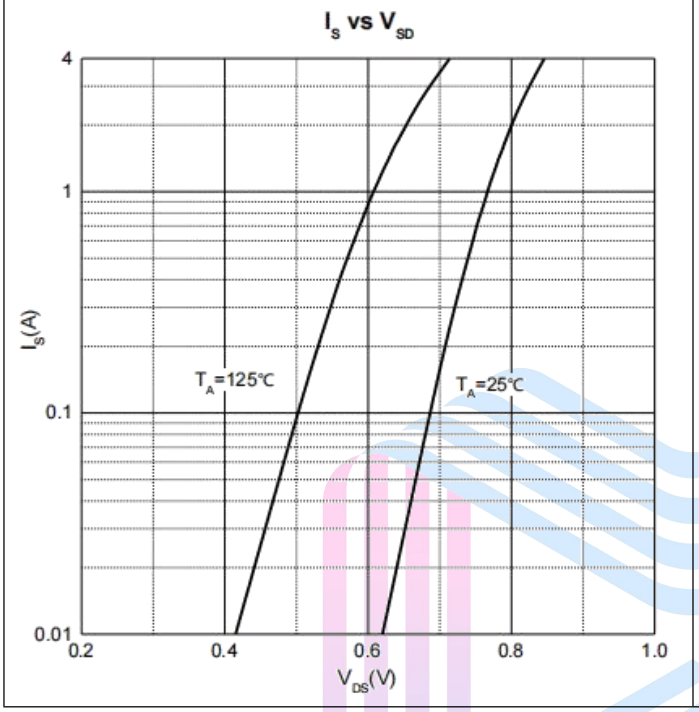
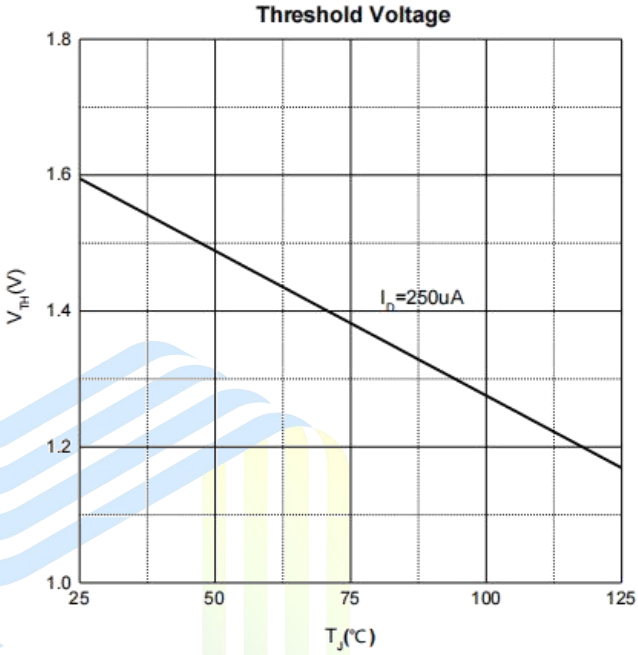
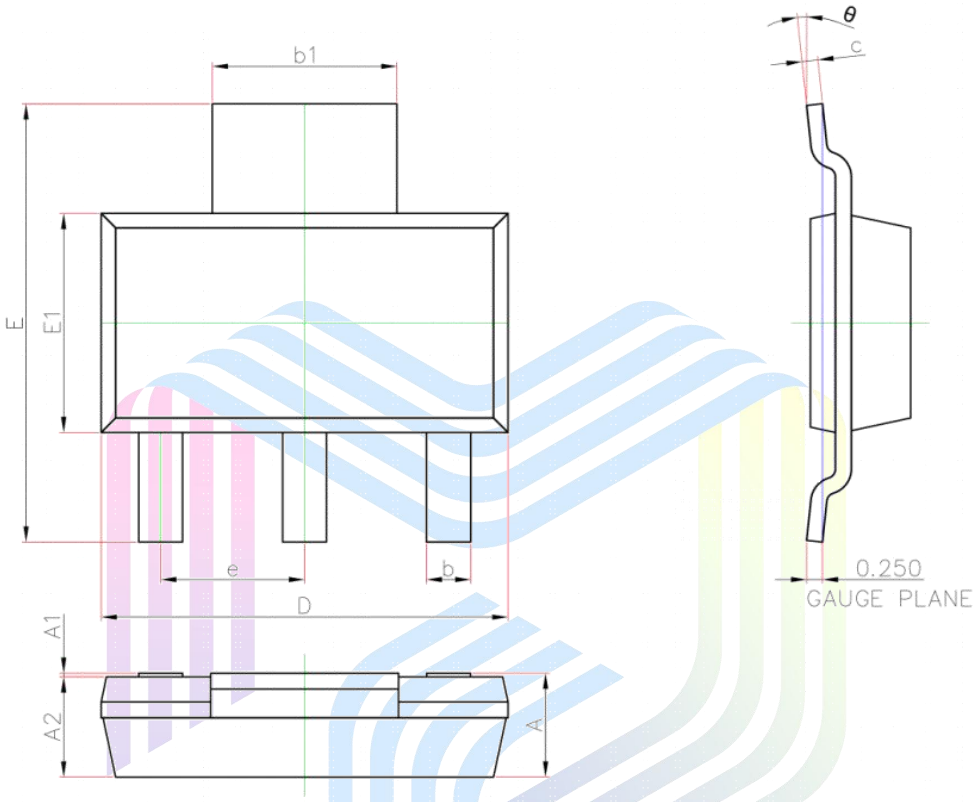


Figure 8: Threshold Voltage



Mechanical Dimensions:

SOT-223 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.800MAX		0.071MAX	
A1	0.020	0.100	0.001	0.004
A2	1.500	1.700	0.059	0.067
b	0.600	0.840	0.024	0.033
b1	2.900	3.100	0.114	0.122
c	0.200	0.400	0.008	0.016
D	6.100	6.700	0.240	0.264
E	6.700	7.300	0.264	0.287
E1	3.300	3.700	0.130	0.146
e	2.300BSC		0.091BSC	
θ	0°	10°	0°	10°

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