VUSF010R24ANA

Datasheet

General Description

$V_{(BR)DSS}$	$R_{DS(ON)\_max}$	I_D
100V	240mΩ@10V	2A
	260mΩ@6V	
	270mΩ@4.5V	

Symbol

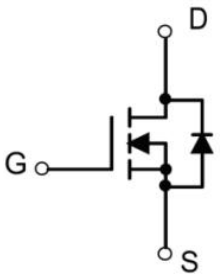


Figure 1 Symbol of VUSF010R24ANA

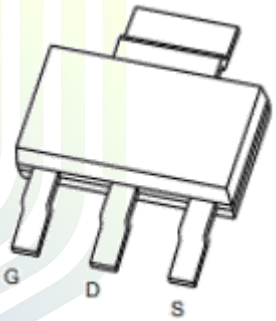
Features

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

Application

- Load Switch
- PWM

Package Type



SOT-223

Figure 2 Package Type of VUSF010R24ANA

Ordering Information

Product Name	Package
VUSF010R24ANA	SOT-223

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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DSS}	100	V
Gate-Source Voltage		V_{GSS}	±20	V
Continuous Drain Current[Note1]	T_C= 25 ºC	I_D	2	A
Pulsed Drain Current [Note2]		I_{DM}	8	
Total Power Dissipation[Note4]	T_A= 25 ºC	P_D	1.6	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[Note5]	$R_{\theta JA}$		75		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	100			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= 100V, V_{GS}=0V			1	uA
Gate-Body Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{DS}= 0V			±100	nA
Gate Threshold Voltage[Note3]	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	1.0	1.5	2.5	V
Static Drain-Source On-Resistance[Note3]	$R_{DS(ON)}$	V_{GS}=10V, I_D= 1.8A		183	240	mΩ
		V_{GS}=6V, I_D= 1.8A		186	260	
		V_{GS}=4.5V, I_D= 1.8A		190	270	
Forward Transconductance[Note3]	g_{FS}	V_{DS}=5V, I_D= 2A		4.5		S
Dynamic Characteristics						
Input Capacitance	C_{ISS}	V_{DS}=45V		439.6		pF
Output Capacitance	C_{OSS}	V_{GS}=0V		18.6		pF
Reverse Transfer Capacitance	C_{RSS}	f=1MHz		14.4		pF
Total Gate Charge	Q_g	V_{DS}=50V		12.1		nC
Gate-Source Charge	Q_{gs}	V_{GS}=10V		1.5		
Gate-Drain Charge	Q_{gd}	I_D= 1.8A		1.6		
Gate Resistance	Rg	f = 1MHz, Open drain		1.78		Ω
Switching Parameters						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}= 50V		3.5		ns
Turn-on Rise Time	t_r	V_{GS}= 10V		2.8		
Turn-off Delay Time	$t_{d(off)}$	R_L=25Ω		16		
Turn-off Fall Time	t_f	R_G=3Ω		2.5		
Diode Characteristics						
Diode Forward Voltage [Note3]	V_{SD}	V_{GS}=0V, I_S= 1.8A			1.1	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.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.

4.The power dissipation P_D is limited by $T_{J(MAX)}$ = 150°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°C.

Typical Performance Characteristics

Figure 3: Transfer Characteristics

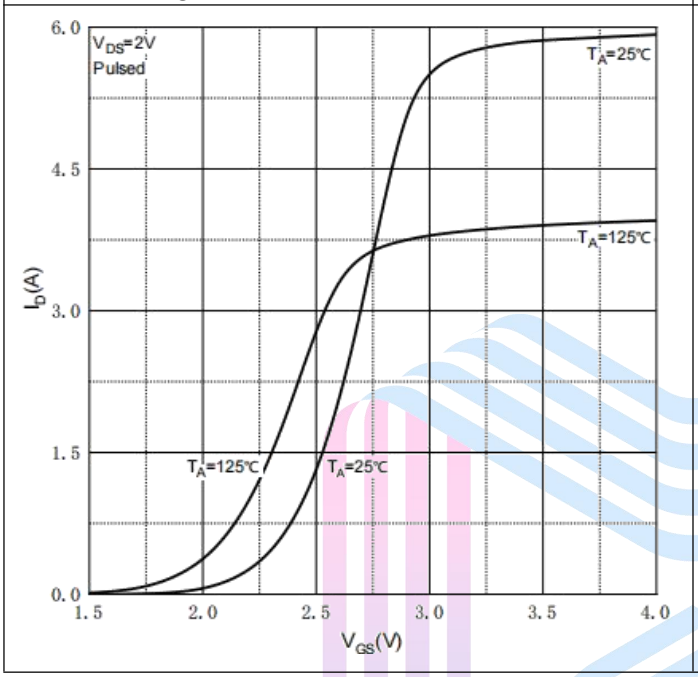


Figure 4: Output Characteristics

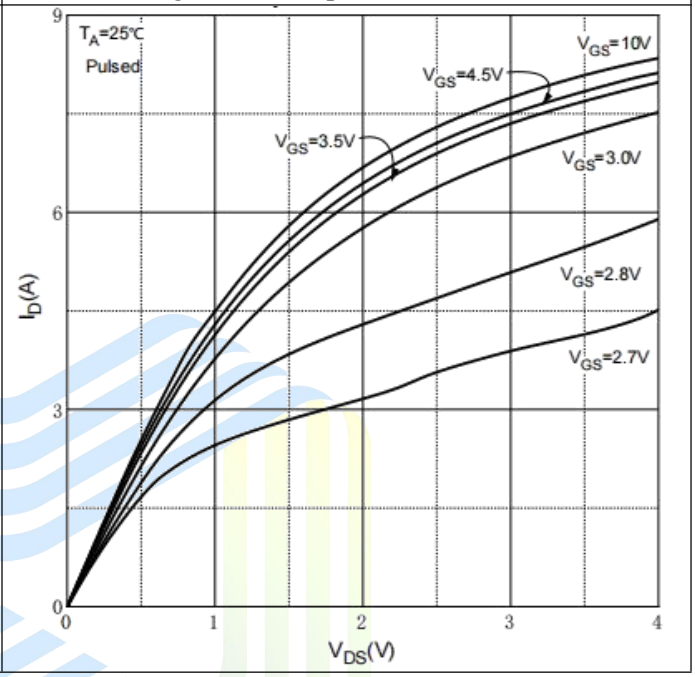


Figure 5: On-Resistance vs. Drain Current

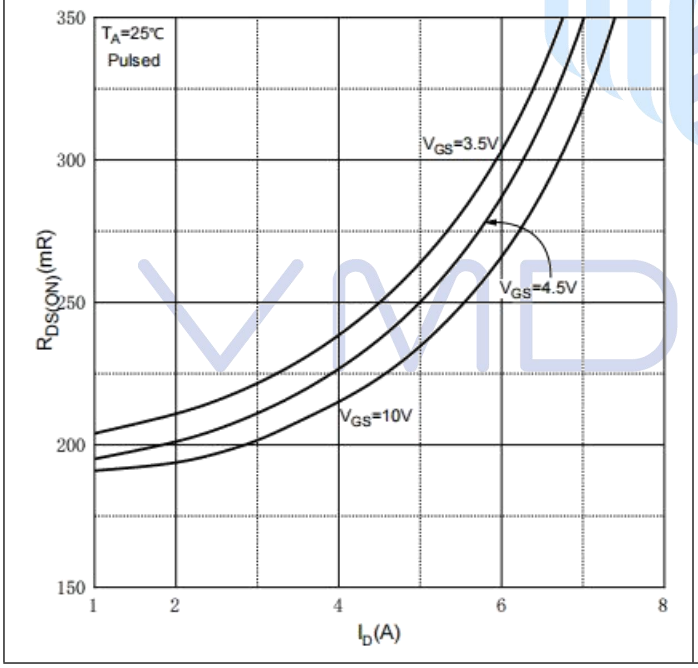


Figure 6: On-Resistance vs. Gate Voltage

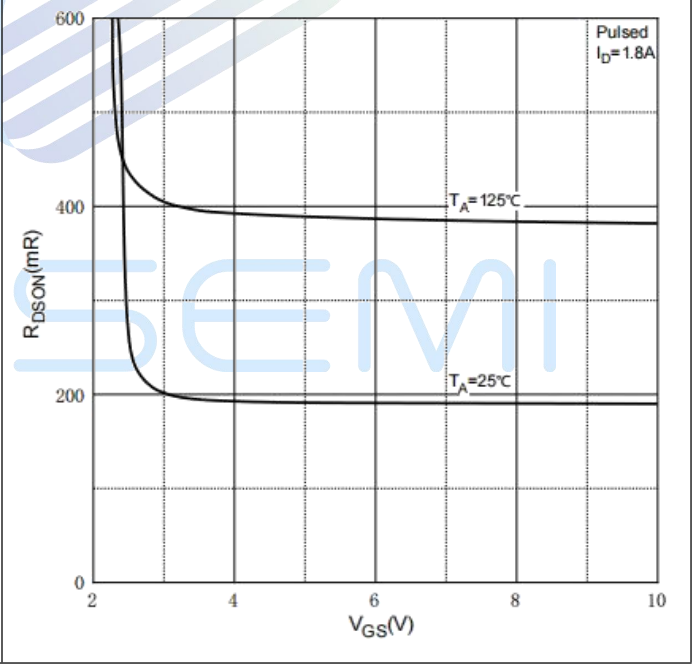


Figure 7: Body Diode Characteristics

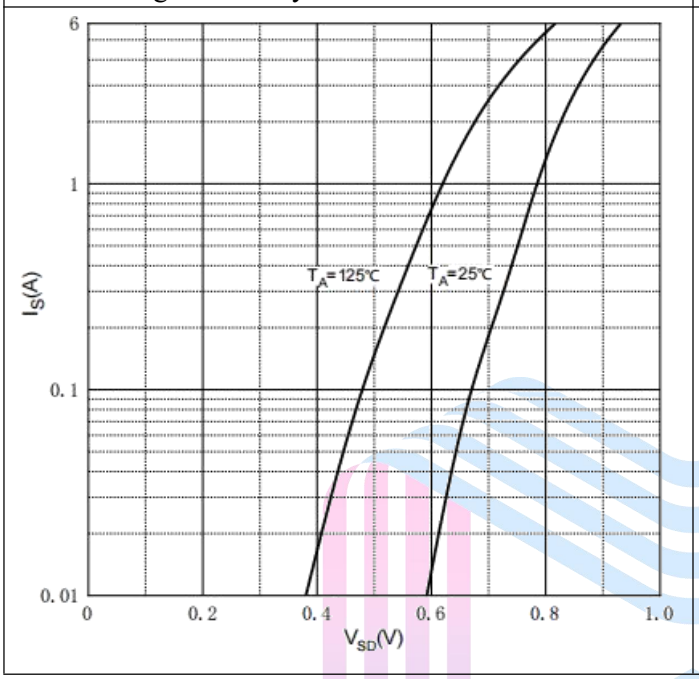
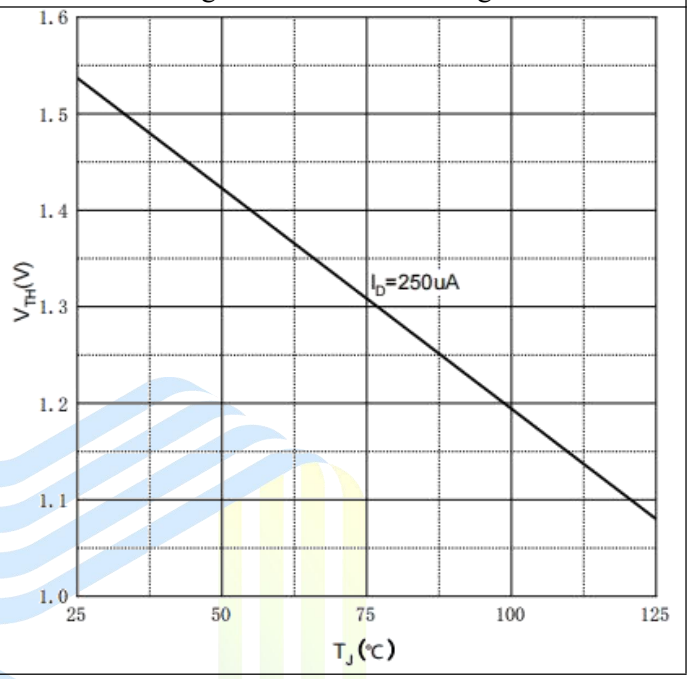
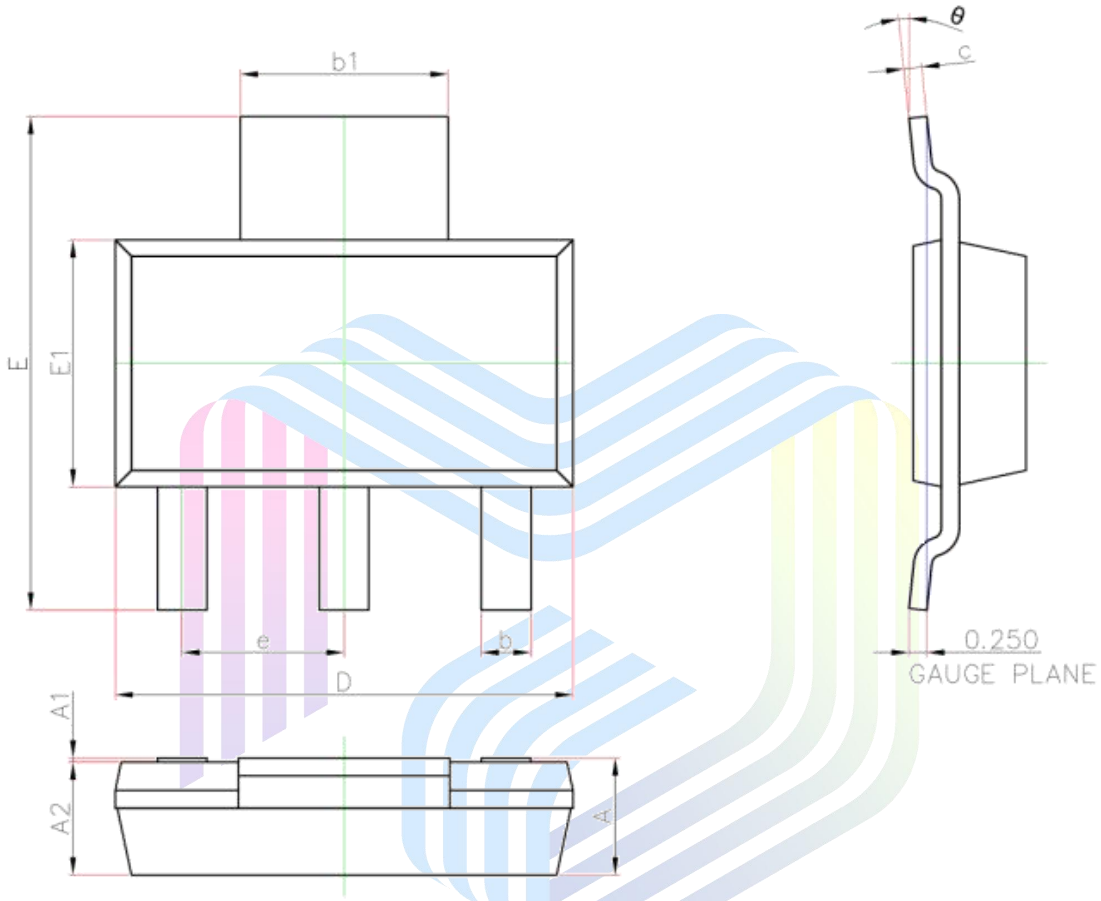


Figure 8: Threshold Voltage



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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