VUSP010R14ANA

Datasheet

General Description

$V_{(BR)DSS}$	$R_{DS(ON)\_max}$	I_D
100V	140mΩ@10V	3A
	150mΩ@4.5V	

Symbol

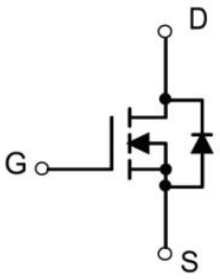


Figure 1 Symbol of VUSP010R14ANA

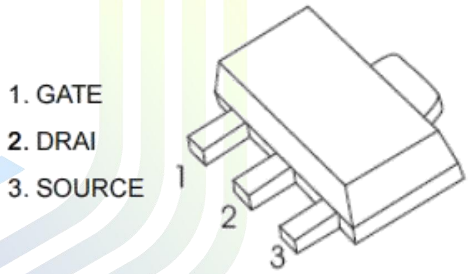
Features

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

Application

- Power Switching Application

Package Type



SOT-89

Figure 2 Package Type of VUSP010R14ANA

Ordering Information

Product Name	Package
VUSP010R14ANA	SOT-89

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	6	A
Continuous Drain Current[Note1]	T_A= 25 ºC		3	
Pulsed Drain Current [Note2]		I_{DM}	12	
Total Power Dissipation[Note4]	T_C= 25 ºC	P_D	2.7	W
Total Power Dissipation[Note4]	T_A= 25 ºC		1.5	
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]	$R_{\theta JA}$		80		ºC/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$		45		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}= 80V, 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	2	3	V
Static Drain-Source On-Resistance[Note3]	$R_{DS(ON)}$	V_{GS}=10V, I_D= 3A		68	140	mΩ
		V_{GS}=4.5V, I_D= 3A		84	150	
Forward Transconductance[Note3]	g_{FS}	V_{DS}=10V, I_D= 3A	3			S
Dynamic Characteristics						
Input Capacitance	C_{ISS}	V_{DS}=50V		790		pF
Output Capacitance	C_{OSS}	V_{GS}=0V		31		pF
Reverse Transfer Capacitance	C_{RSS}	f=1MHz		28		pF
Total Gate Charge	Q_g	V_{DS}=50V		18		nC
Gate-Source Charge	Q_{gs}	V_{GS}=10V		3		
Gate-Drain Charge	Q_{gd}	I_D= 3A		3.6		
Gate Resistance	Rg	f = 1MHz, Open drain		1.3		Ω
Switching Parameters						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}= 50V		17		ns
Turn-on Rise Time	t_r	V_{GS}= 10V		7		
Turn-off Delay Time	$t_{d(off)}$	R_L=17Ω		35		
Turn-off Fall Time	t_f	R_G=3Ω		6		
Diode Characteristics						
Diode Forward Voltage [Note3]	V_{SD}	V_{GS}=0V, I_S= 3A			1.2	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 1in2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.

Typical Performance Characteristics

Figure 3: Transfer Characteristics

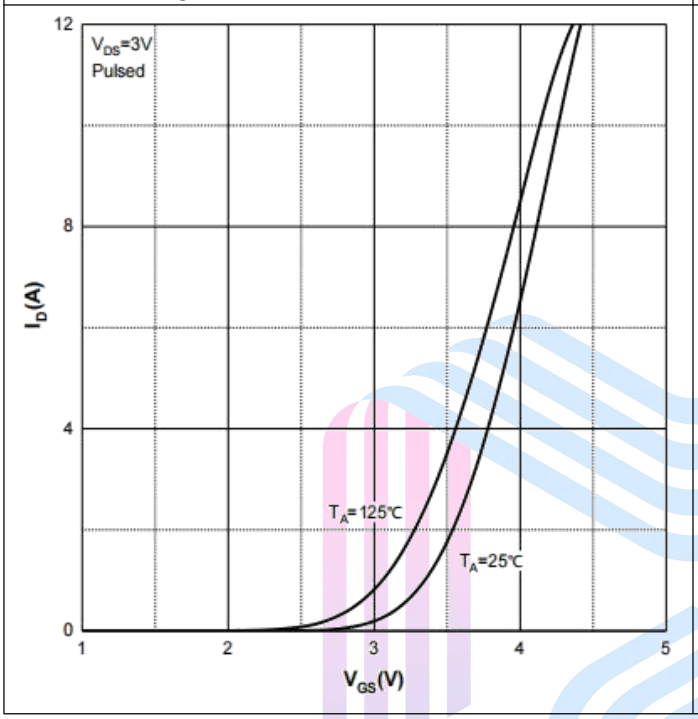


Figure 4: Output Characteristics

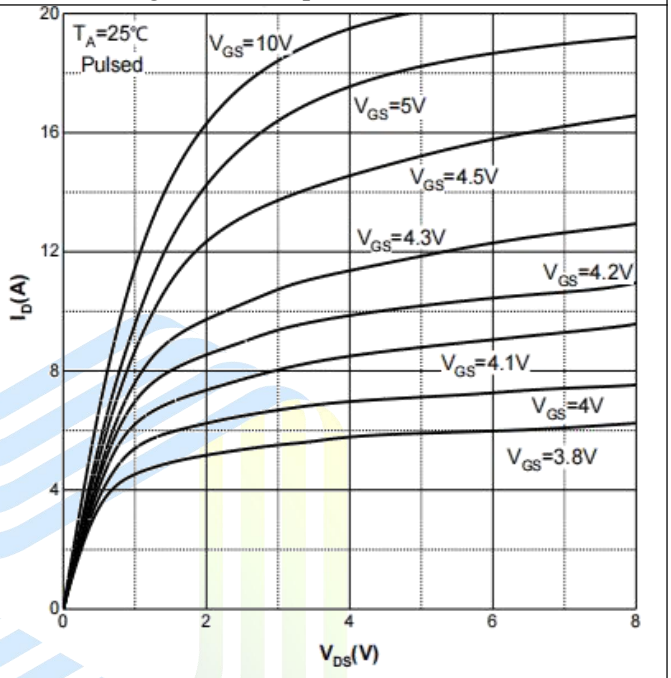


Figure 5: On-Resistance vs. Drain Current

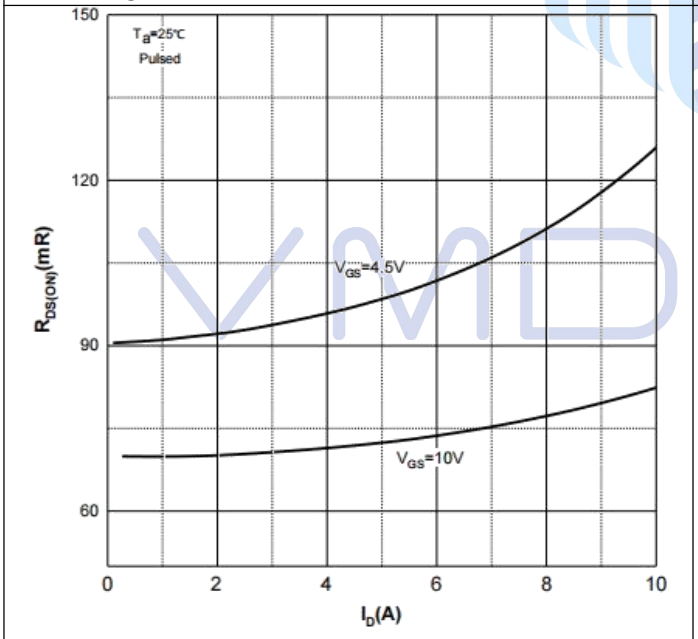


Figure 6: On-Resistance vs. Gate Voltage

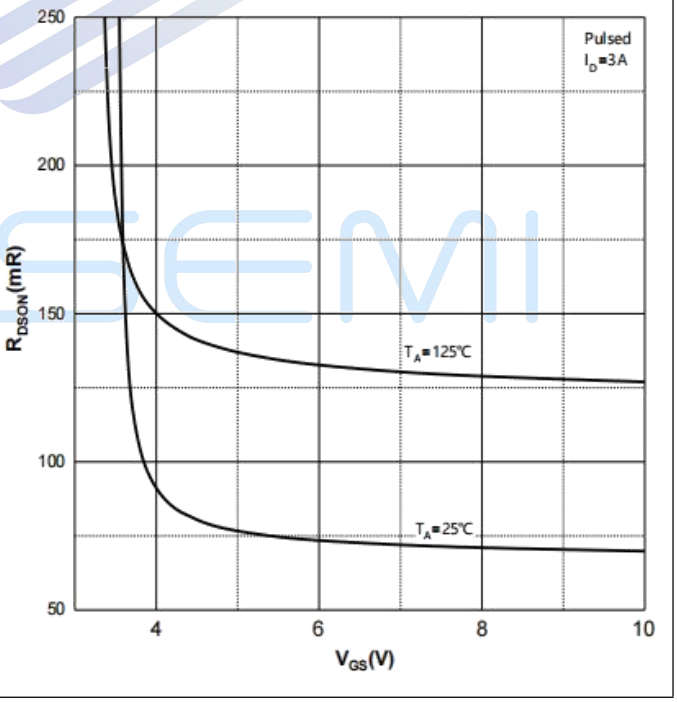


Figure 7: Body Diode Characteristics

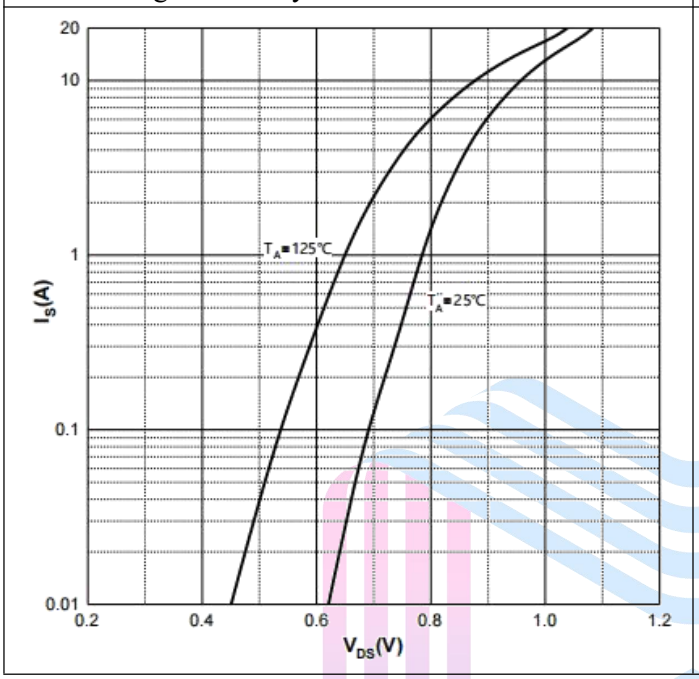
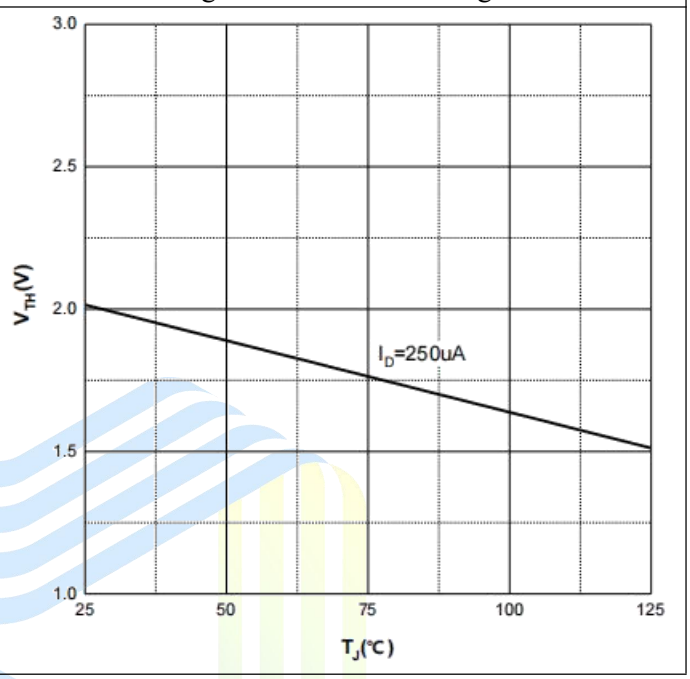
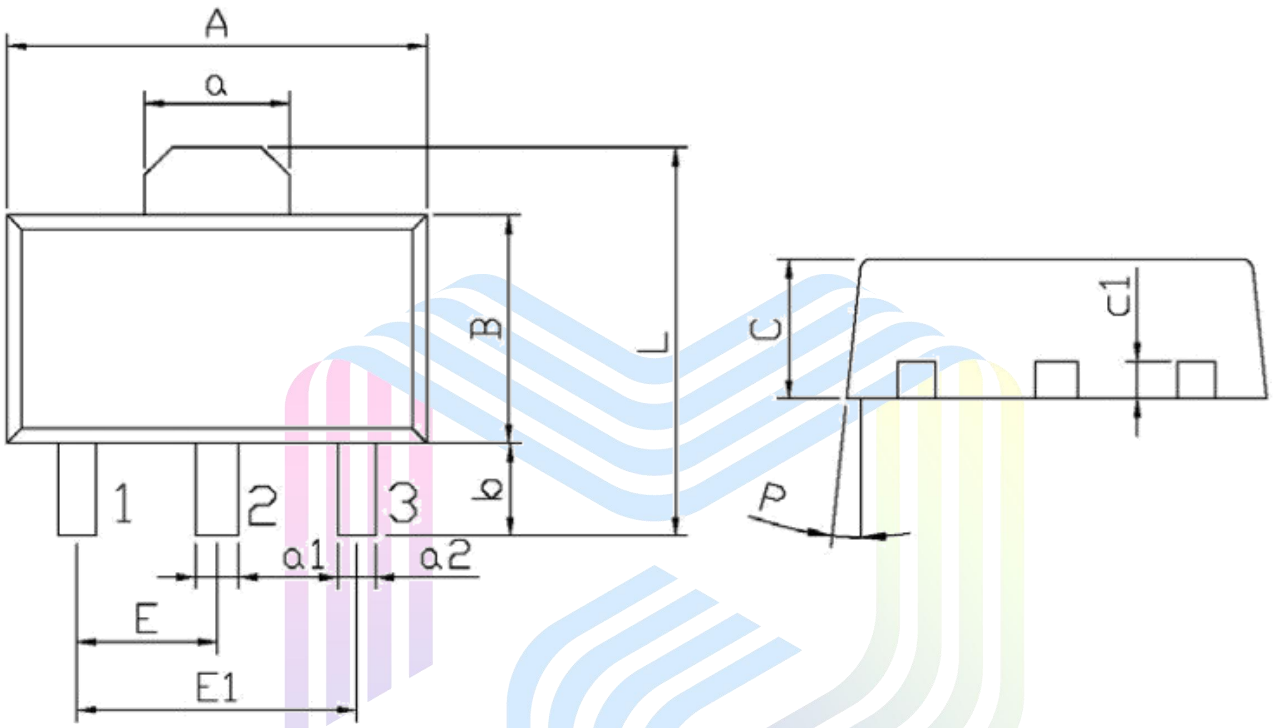


Figure 8: Threshold Voltage



Mechanical Dimensions:

SOT-89 Package Information



Symbol	Dimensions In Millmeters		Symbol	Dimensions In Millmeters	
	Min	Max		Min	Max
A	4.4	4.7	a1	0.36	0.56
B	2.35	2.65	a2	0.30	0.50
L	3.878	4.478	C	1.40	1.70
a	1.45	1.65	c1	0.35	0.50
E	1.40	1.60	P	6°	
E1	2.80	3.20			
b	0.80	1.20			

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