VUSC1P2R190PA

Datasheet

General Description

$V_{(BR)DSS}$	$R_{DS(ON)\_max}$	I_D
-12V	19mΩ@-4.5V	-11A
	28mΩ@-2.5V	

Symbol

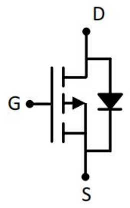
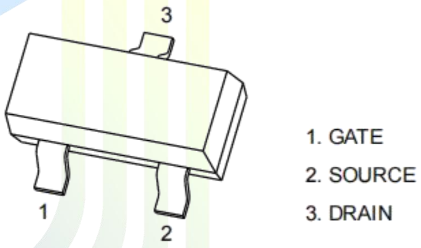


Figure 1 Symbol of VUSC1P2R190PA

Features

- Advanced trench MOSFET process technology
- Ultra low on-resistance with low gate charge

Package Type



SOT-23-3L

Figure 2 Package Type of VUSC1P2R190PA

Application

- PWM application
- Load switch
- Battery charge in cellular handset

Ordering Information

Product Name	**Package**
VUSC1P2R190PA	SOT-23-3L

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	-12	V
Gate-Source Voltage	V_{GSS}	±10	V
Continuous Drain Current[Note1]	I_D	-11	A
Pulsed Drain Current [Note2]	I_{DM}	-44	
Total Power Dissipation[Note4]	P_D	0.45	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]	$R_{\theta JA}$		313		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	-12			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= -12V, V_{GS}=0V			-1	uA
Gate-Body Leakage Current	I_{GSS}	V_{GS} = ±10V, V_{DS}= 0V			±100	nA
Gate Threshold Voltage^{Note3}	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250uA	-0.5	-0.8	-1.2	V
Static Drain-Source On-Resistance^{Note3}	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D= -6A		14	19	mΩ
		V_{GS}=-2.5V, I_D= -6A		19	28	
Forward Transconductance^{Note3}	g_{FS}	V_{DS}=-5V, I_D= -6A	9	19		S
Dynamic Characteristics						
Input Capacitance	C_{ISS}	V_{DS}=-10V V_{GS}=0V f=1MHz		2700		pF
Output Capacitance	C_{OSS}			680		pF
Reverse Transfer Capacitance	C_{RSS}			590		pF
Total Gate Charge	Q_g	V_{DS}=-6V V_{GS}=-4.5V I_D= -10A		35	48	nC
Gate-Source Charge	Q_{gs}			5		
Gate-Drain Charge	Q_{gd}			10		
Switching Parameters						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}= -10V V_{GS}= -4.5V I_D= -1A R_G=10Ω		11		ns
Turn-on Rise Time	t_r			35		
Turn-off Delay Time	$t_{d(off)}$			30		
Turn-off Fall Time	t_f			10		
Diode Characteristics						
Diode Forward Voltage^{Note3}	V_{DS}	V_{GS}=0V, I_S= -2A		-0.8	-1.2	V
Continuous Source Current	I_S				-11	A

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

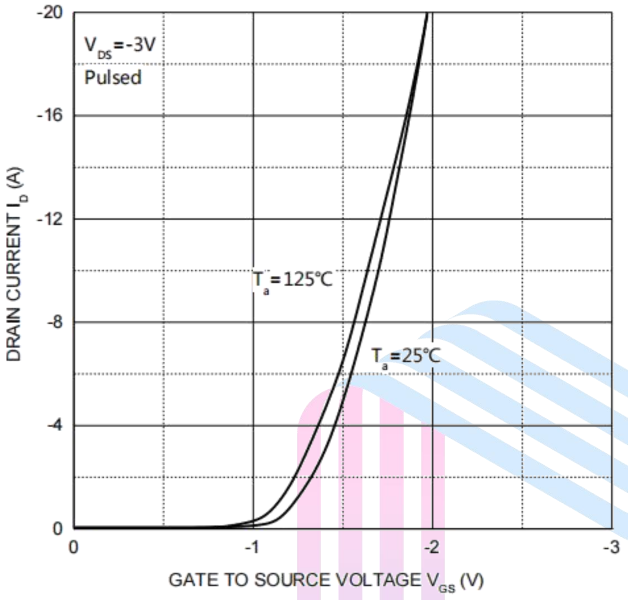


Figure 4: Output Characteristics

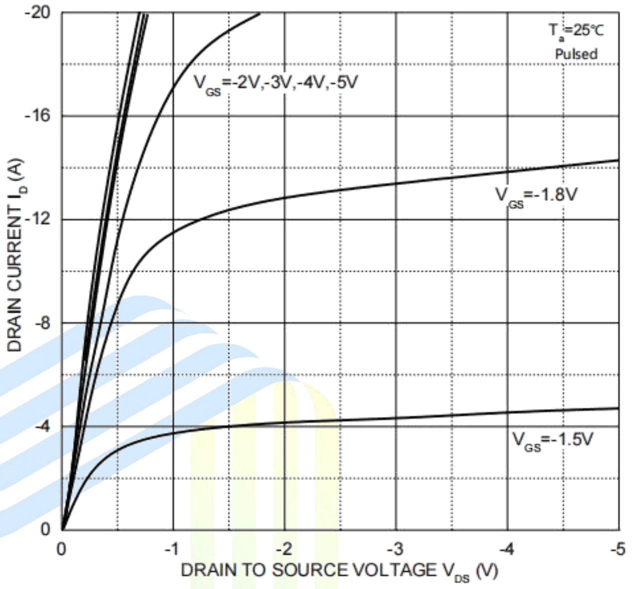


Figure 5: On-Resistance vs. Drain Current

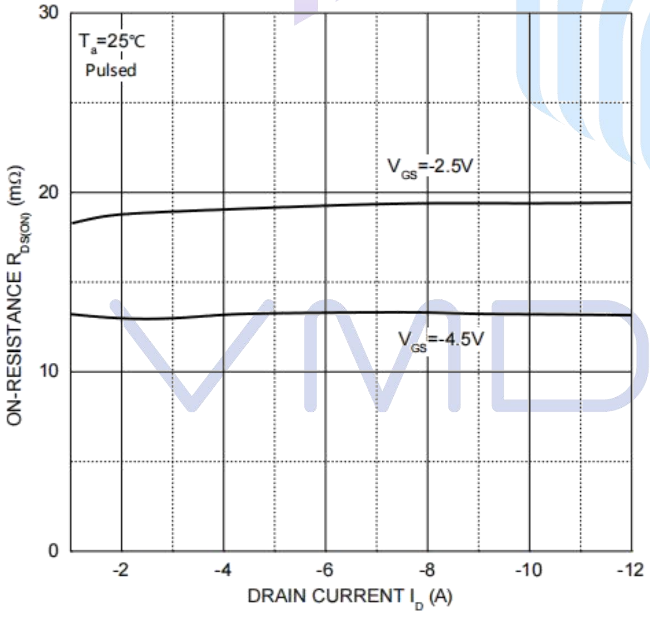


Figure 6: On-Resistance vs. Gate Voltage

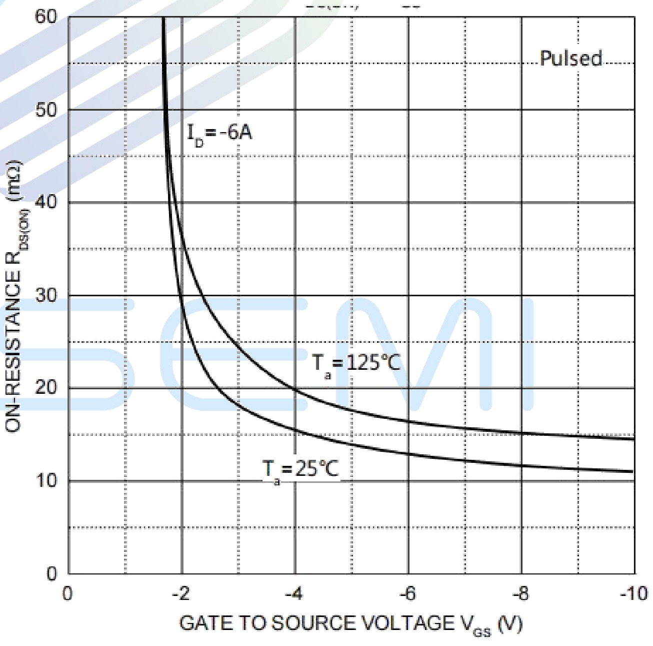


Figure 7: Body Diode Characteristics

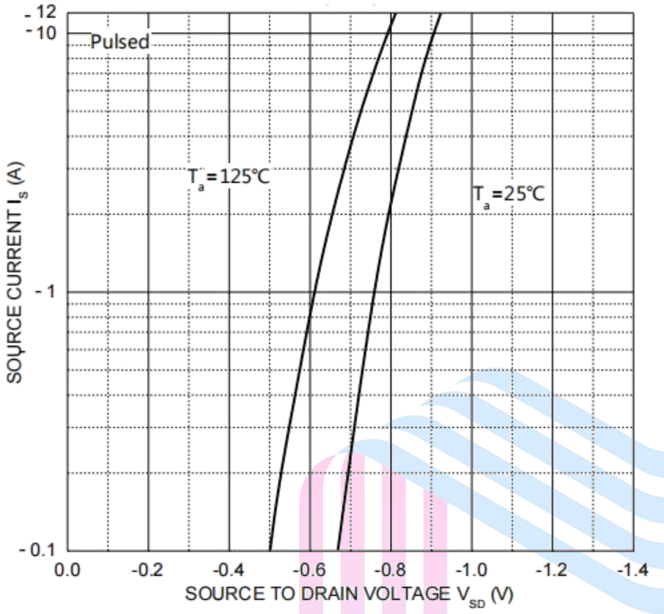
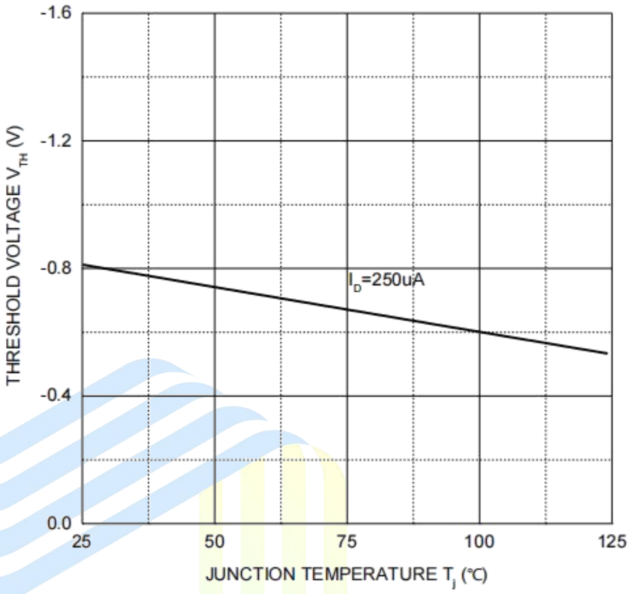
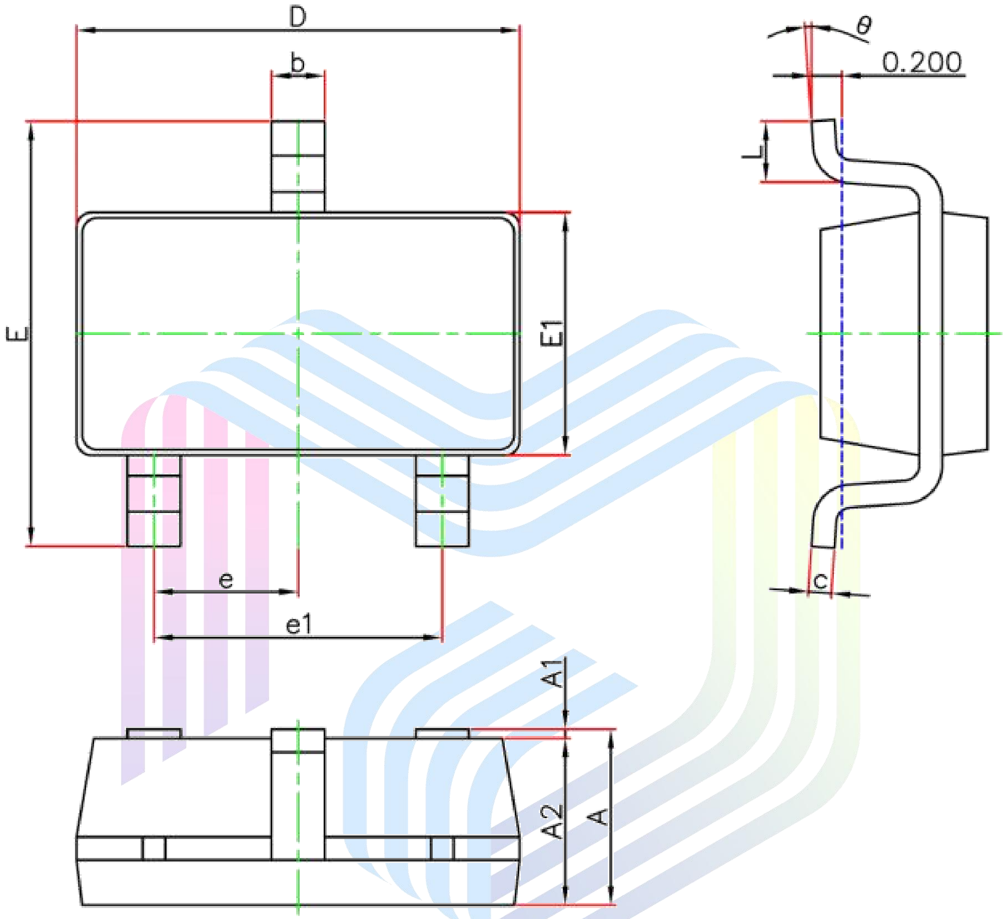


Figure 8: Threshold Voltage



Mechanical Dimensions:

SOT-23-3L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0	0.150	0.000	0.006
A2	1.050	1.250	0.041	0.049
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	2.650	2.950	0.104	0.116
E1	1.500	1.700	0.059	0.067
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

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