VUSA003R600PA

Datasheet

General Description

$V_{(BR)DSS}$	$R_{DS(ON)\_max}$	I_D
-30V	60mΩ@-10V	-5.1A
	67mΩ@-6V	
	105mΩ@-4.5V	

Symbol

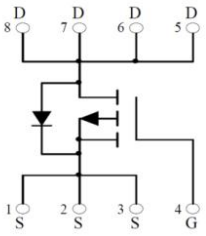


Figure 1 Symbol of VUSA003R600PA

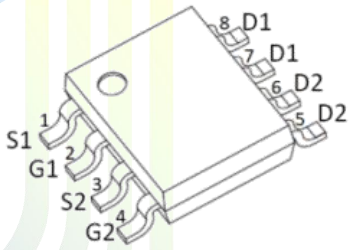
Features

- Trench FET Power MOSFET
- Excellent $R_{DS(on)}$ and Low Gate Charge

Application

- Load Switch for Portable Devices
- Battery Switch

Package Type



SOP8

Figure 2 Package Type of VUSA003R600PA

Ordering Information

Product Name	Package
VUSA003R600PA	SOP8

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	-30	V
Gate-Source Voltage	V_{GSS}	±20	V
Continuous Drain Current[Note1]	I_D	-5.1	A
Pulsed Drain Current [Note2]	I_{DM}	-20	
Single Pulsed Avalanche Energy[Note6]	E_{AS}	20	mJ
Total Power Dissipation[Note4]	P_D	1.4	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]	$R_{\theta JA}$		89		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}= -24V, 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	-2.0	V
Static Drain-Source On-Resistance[Note3]	$R_{DS(ON)}$	V_{GS}=-10V, I_D= -4.6A		42	60	mΩ
		V_{GS}=-6V, I_D= -4.1A		51	67	
		V_{GS}=-4.5V, I_D= -2A		62	105	
Forward tranconductance[Note3]	g_{FS}	V_{DS}=-15V, I_D= -4.6A	5			S
Dynamic Characteristics						
Total Gate Charge	Q_g	V_{DS}=-15V			40	nC
Gate-Source Charge	Q_{gs}	V_{GS}=-10V		4		
Gate-Drain Charge	Q_{gd}	I_D= -4.6A		6.3		
Gate Resistance	Rg	f = 1MHz, Open drain		4.5		Ω
Switching Parameters						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}= -15V			30	ns
Turn-on Rise Time	t_r	V_{GS}= -10V			60	
Turn-off Delay Time	$t_{d(off)}$	I_D= -1A			120	
Turn-off Fall Time	t_f	R_G=6Ω, R_L=15Ω			100	
Diode Characteristics						
Diode Forward Voltage [Note3]	V_{SD}	V_{GS}=0V, I_S= -2.6A			-1.2	V
Diode Forward Current	I_S				-5.1	A
Pulsed Diode Forward Current	I_{SM}				-20	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.

6.E_{AS} condition: V_{DD}=-20V,L=0.5mH, R_G=25Ω, Starting T_J = 25°C

Typical Performance Characteristics

Figure 3: Transfer Characteristics

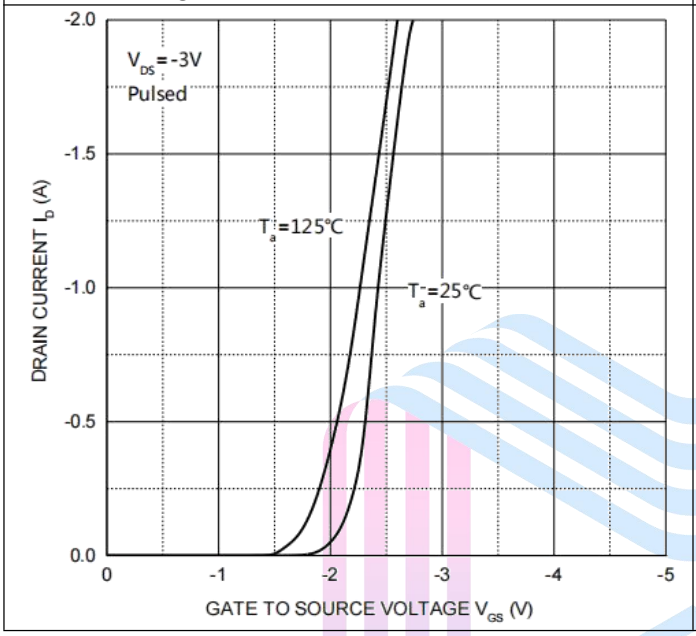


Figure 4: Output Characteristics

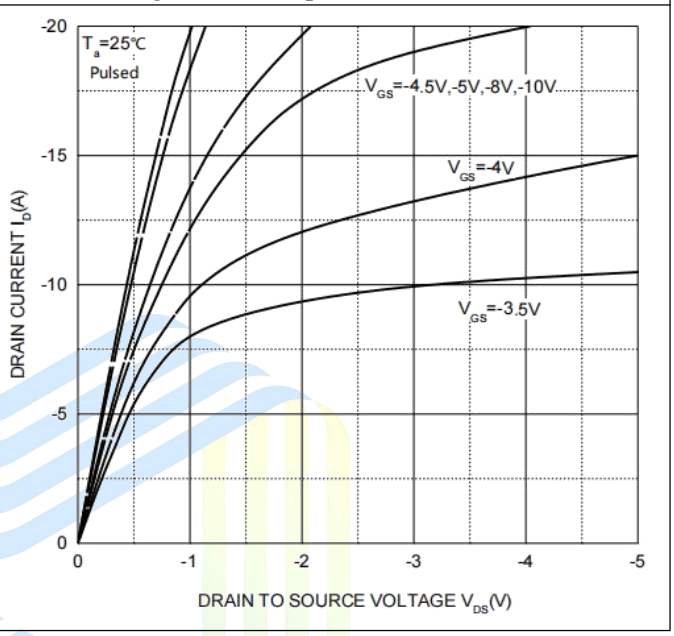


Figure 5: On-Resistance vs. Drain Current

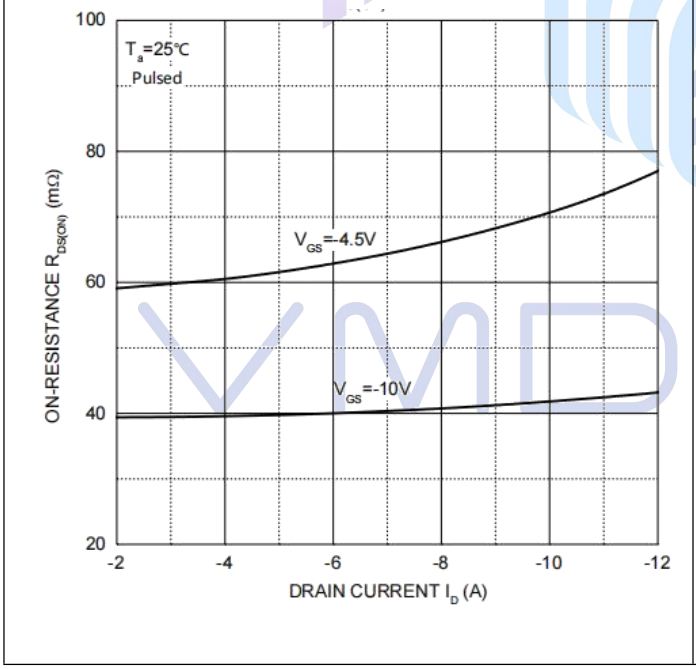


Figure 6: On-Resistance vs. Gate Voltage

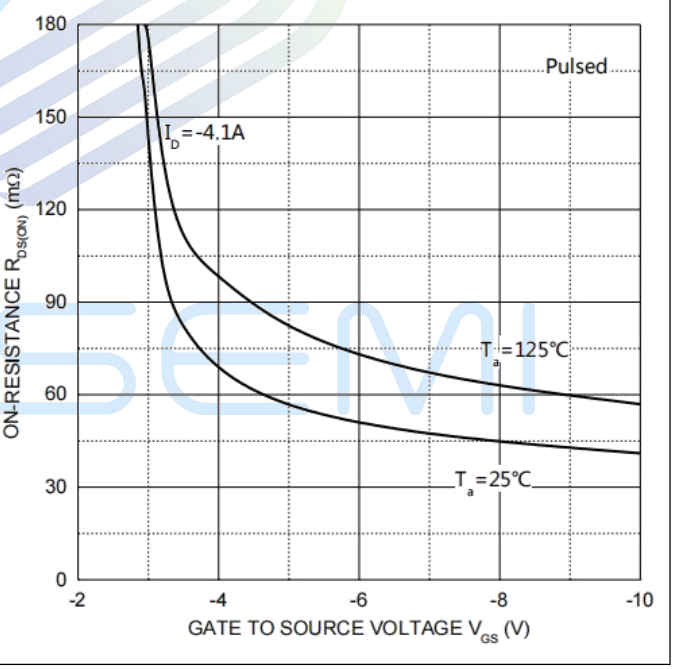


Figure 7: Body Diode Characteristics

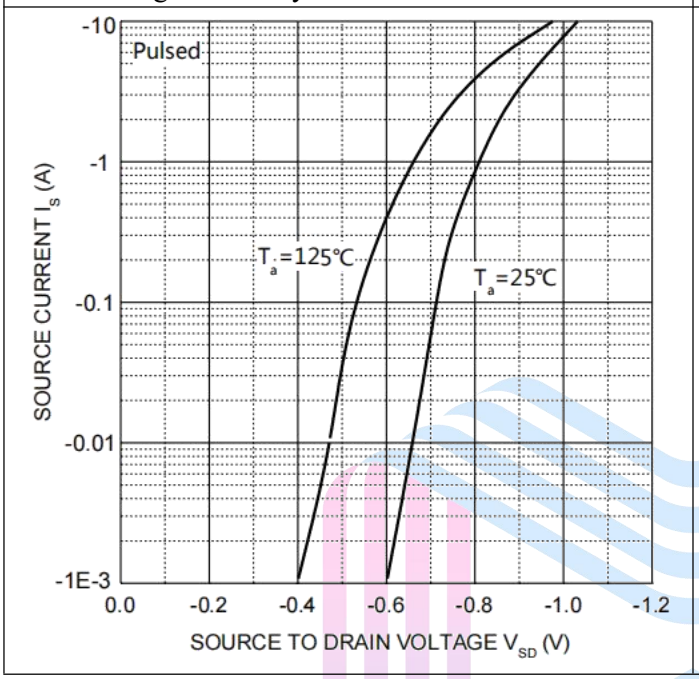
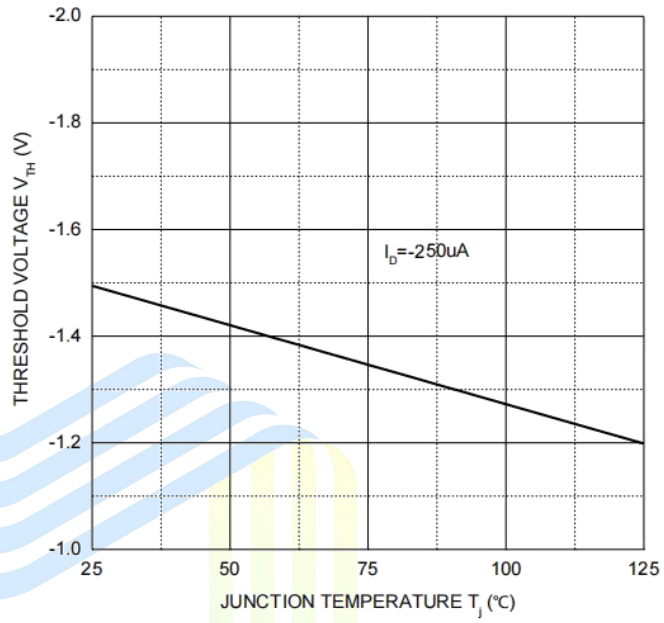
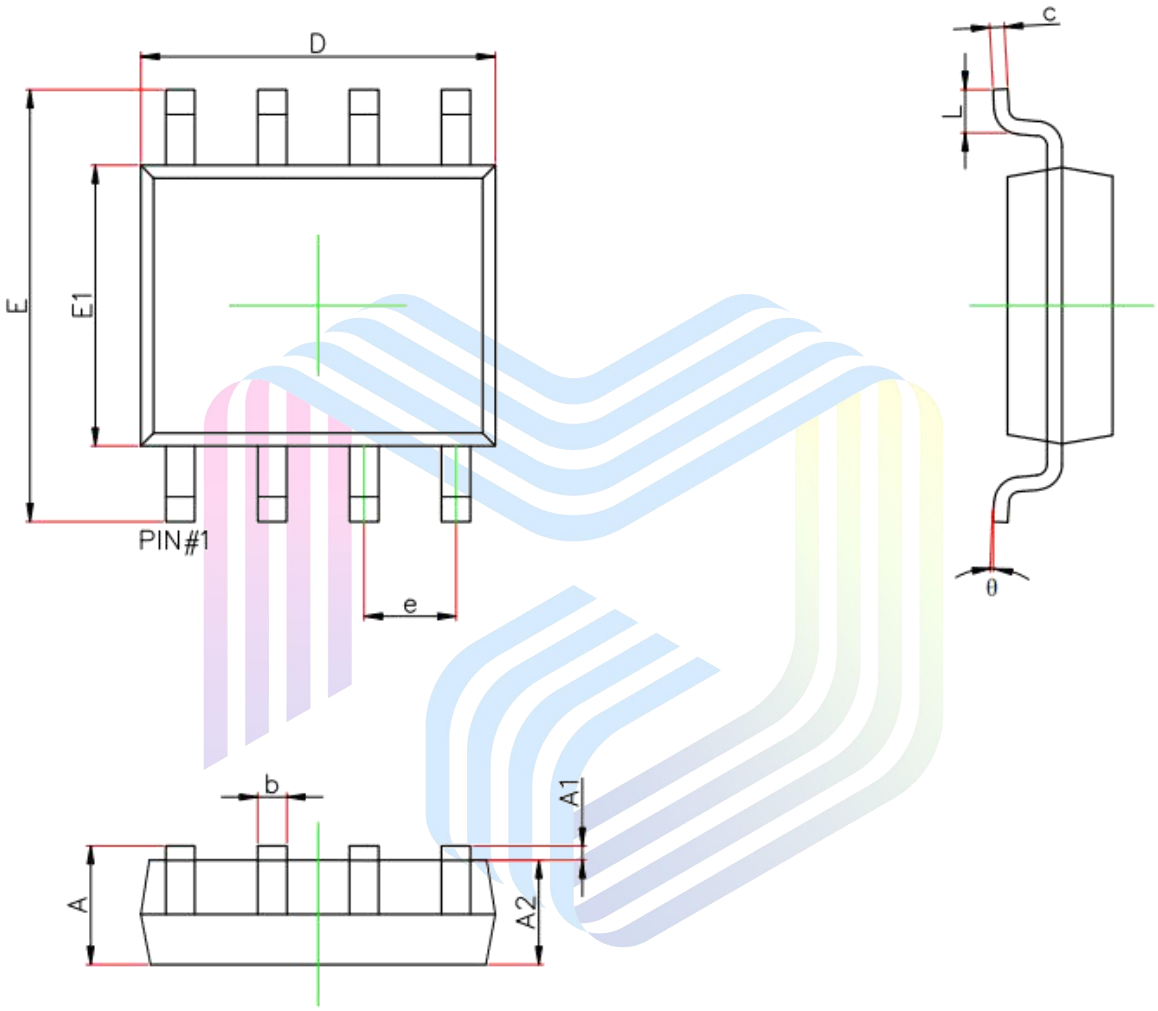


Figure 8: Threshold Voltage



Mechanical Dimensions:

SOP8 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.156	0.250	0.006	0.010
D	4.700	5.100	0.185	0.201
e	1.270(BSC)		0.050(BSC)	
E	5.800	6.200	0.228	0.244
E1	3.700	4.100	0.146	0.161
L	0.400	1.270	0.016	0.05
θ	0°	8°	0°	8°

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