VUSP006R360NA

Datasheet

36mΩ, 60V, N-Channel Power MOSFET VUSP006R360NA

General Description

$V_{(BR)DSS}$	$R_{DS(ON)\_max}$	I_D
60V	36mΩ@10V	6A
	55mΩ@4.5V	

Symbol

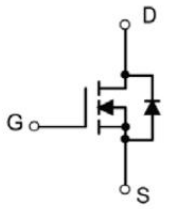


Figure 1 Symbol of VUSP006R360NA

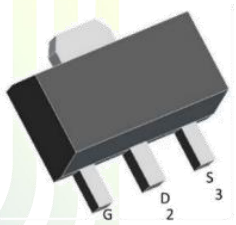
Features

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

Application

- Power Switch Application
- Load Switch

Package Type



SOT-89-3L

Figure 2 Package Type of VUSP006R360NA

Ordering Information

Product Name	Package
VUSP006R360NA	SOT-89-3L

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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DSS}	60	V
Gate-Source Voltage		V_{GSS}	±20	V
Continuous Drain Current[Note1]	T_A= 25 ºC	I_D	6	A
Pulsed Drain Current [Note2]		I_{DM}	24	
Total Power Dissipation[Note4]	T_A= 25 ºC	P_D	2	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]	$R_{\theta JA}$		63		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	60			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= 60V, 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	1.6	3.0	V
Static Drain-Source On-Resistance[Note3]	$R_{DS(ON)}$	V_{GS}=10V, I_D= 5A		28	36	mΩ
		V_{DS}= 4.5V, I_D= 3A		35	55	
Dynamic Characteristics						
Input Capacitance	C_{ISS}	V_{DS}=30V		859		pF
Output Capacitance	C_{OSS}	V_{GS}=0V		61		pF
Reverse Transfer Capacitance	C_{RSS}	f=1MHz		54		pF
Total Gate Charge	Q_g	V_{DS}=30V		20.3		nC
Gate-Source Charge	Q_{gs}	V_{GS}=10V		2.7		
Gate-Drain Charge	Q_{gd}	I_D=5A		5.0		
Gate Resistance	Rg	f = 1MHz, Open drain		1.6		Ω
Switching Parameters						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}= 30V		10		ns
Turn-on Rise Time	t_r	V_{GS}= 10V		4		
Turn-off Delay Time	$t_{d(off)}$	R_L=6.7Ω		23		
Turn-off Fall Time	t_f	R_G=3Ω		6		
Diode Characteristics						
Diode Forward Voltage [Note3]	V_{SD}	V_{GS}=0V, I_S= 5A			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

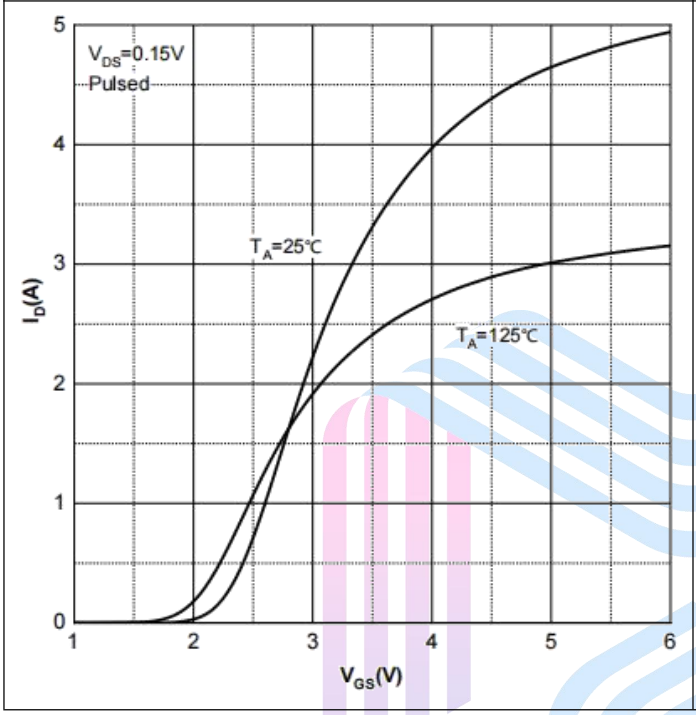


Figure 4: Output Characteristics

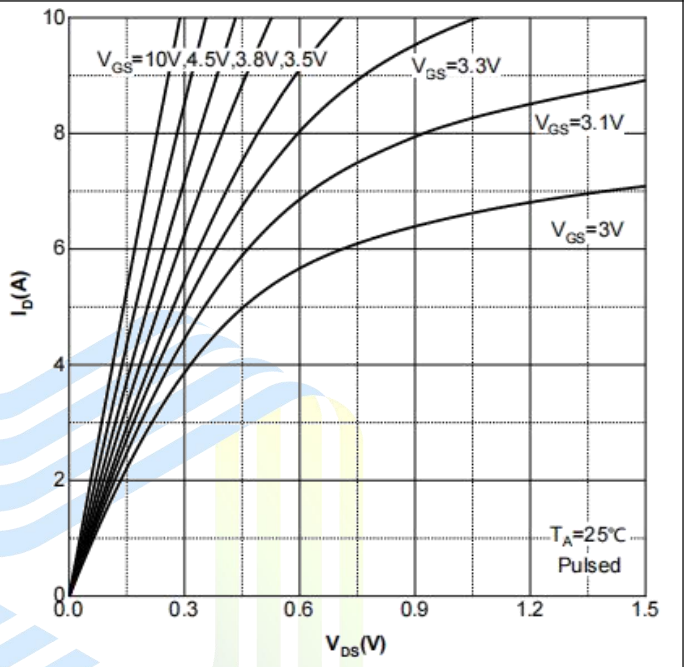


Figure 5: On-Resistance vs. Drain Current

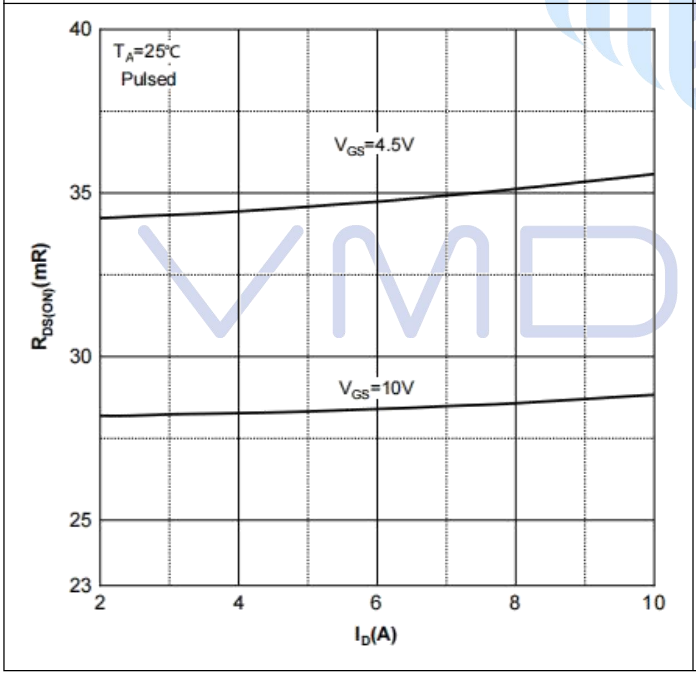


Figure 6: On-Resistance vs. Gate Voltage

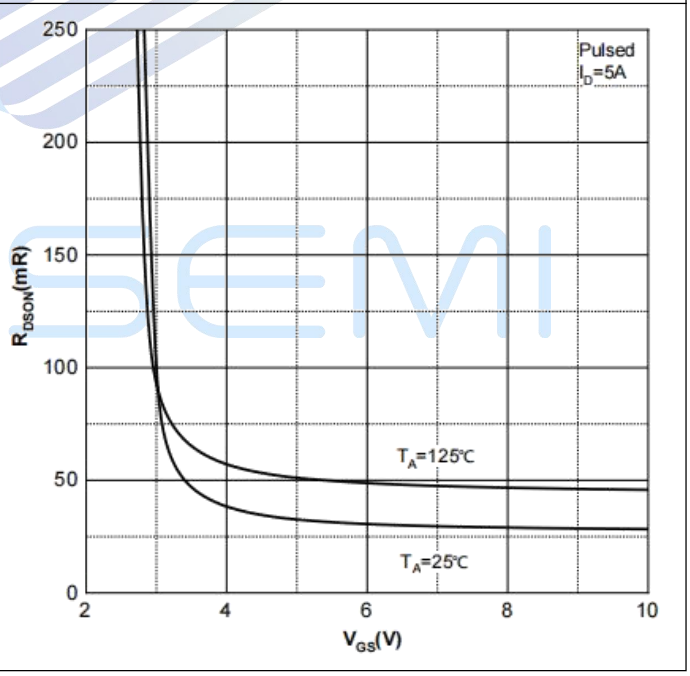


Figure 7: Body Diode Characteristics

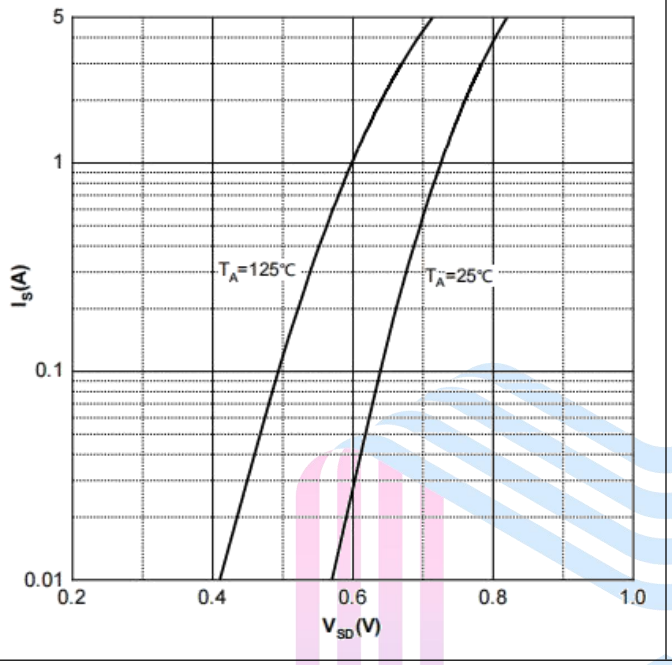
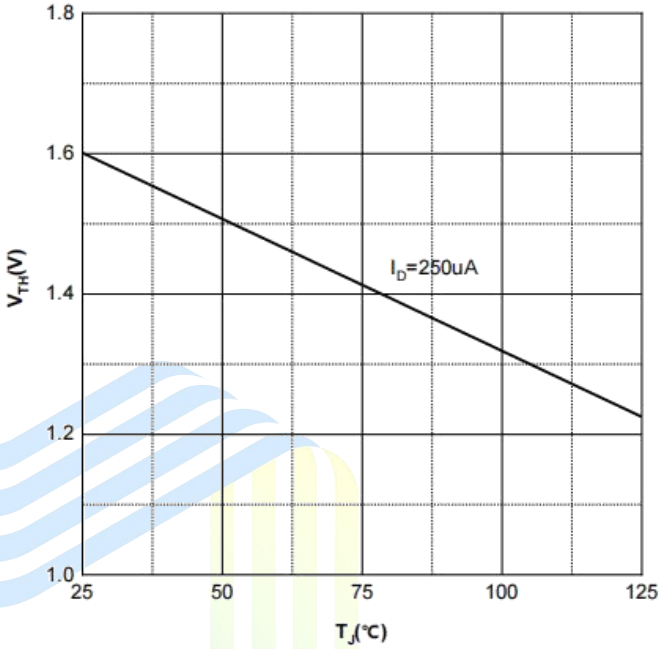
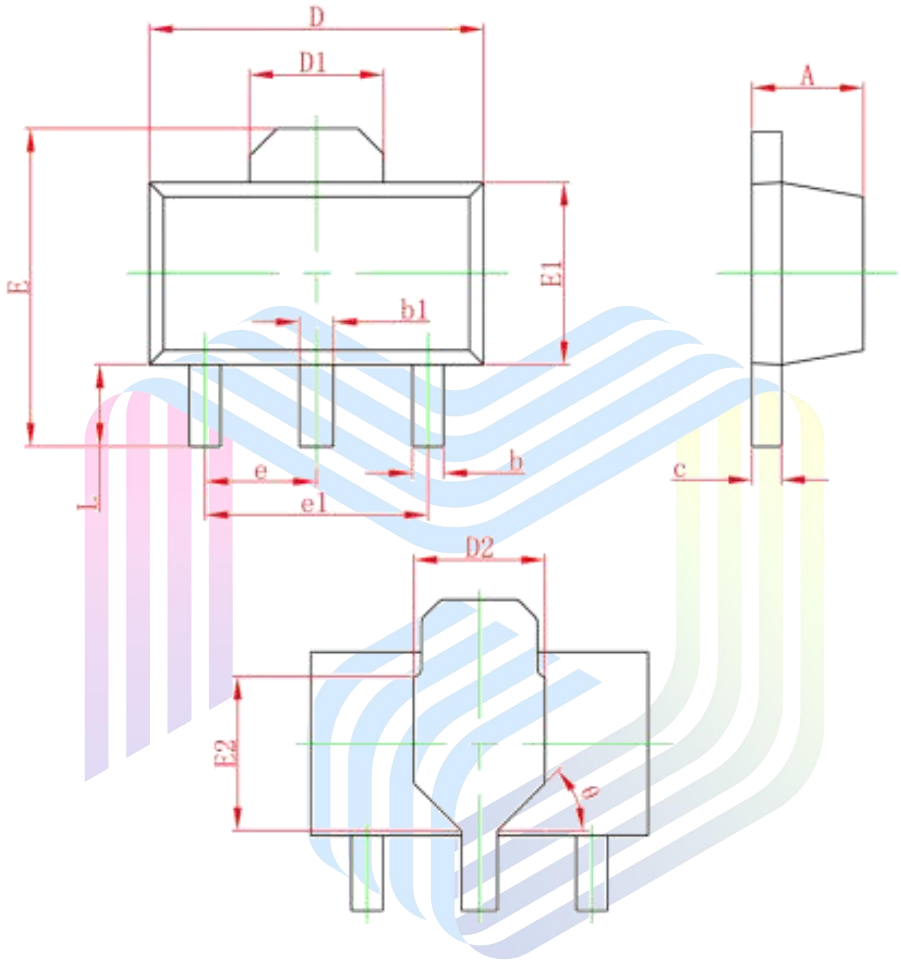


Figure 8: Threshold Voltage



Mechanical Dimensions:

SOT-23-6L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.380	0.580	0.015	0.023
c	0.350	0.500	0.014	0.020
D	4.400	4.600	0.173	0.181
D1	1.650REF		0.065REF	
D2	1.650	1.850	0.065	0.073
E	3.900	4.400	0.154	0.173
E1	2.300	2.600	0.091	0.102
E2	1.900REF		0.075REF	
e	1.500TYP		0.059TYP	
e1	3.000TYP		0.118TYP	
L	0.900	1.200	0.035	0.047
θ	45°		45°	

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