VUPA006R350NA

Datasheet

35mΩ, 60V, N-Channel Power MOSFET VUPA006R350NA

General Description

$V_{(BR)DSS}$	$R_{DS(ON)\_max}$	I_D
60V	35mΩ@10V	20A

Symbol

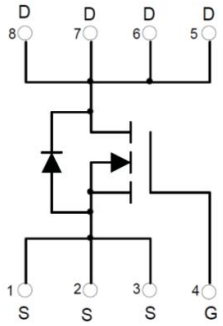
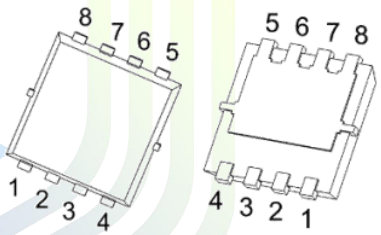


Figure 1 Symbol of VUPA006R350NA

Features

- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high EAS
- Excellent package for good heat dissipation
- Special technology for high ESD capability

Package Type



PDFN3.3X3.3-8L

Figure 2 Package Type of VUPA006R350NA

Application

- Power switching application
- Load Hard switched and high frequency circuits
- Uninterruptible Power Supply

Ordering Information

Product Name	Package
VUPA006R350NA	PDFN3.3X3.3-8L

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current[Note1]	I_D	20	A
Pulsed Drain Current [Note2]	I_{DM}	60	
Single Pulsed Avalanche Energy[Note3]	E_{AS}	70	mJ
Total Power Dissipation[Note5]	P_D	1.5	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 [Note6]	$R_{\theta JA}$		83.3		ºC/W

Electrical Characteristics (T_C= 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[Note4]	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	1	2	3	V
Static Drain-Source On-Resistance[Note4]	$R_{DS(ON)}$	V_{GS}=10V, I_D= 10A		26	35	mΩ
Forward Transconductance[Note4]	g_{FS}	V_{DS}=6V, I_D= 10A	18			S
Dynamic Characteristics						
Input Capacitance	C_{ISS}	V_{DS}=30V		960		pF
Output Capacitance	C_{OSS}	V_{GS}=0V		62		pF
Reverse Transfer Capacitance	C_{RSS}	f=1MHz		54		pF
Total Gate Charge	Q_g	V_{DS}=48V		12		nC
Gate-Source Charge	Q_{gs}	V_{GS}=10V		4.1		
Gate-Drain Charge	Q_{gd}	I_D= 10A		4.5		
Switching Parameters						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}= 30V		5		ns
Turn-on Rise Time	t_r	V_{GS}= 10V		2.6		
Turn-off Delay Time	$t_{d(off)}$	R_L=15Ω		17		
Turn-off Fall Time	t_f	R_G=2.5Ω		2.5		
Diode Characteristics						
Diode Forward Voltage [Note4]	V_{SD}	V_{GS}=0V, I_S= 10A		0.72	1.2	V
Continuous Source Current	I_S	V_G = V_D = 0V Force Current			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.E_{AS} condition: V_{DD} = 30V, V_{GS} = 10V, L = 0.5mH, R_G = 25Ω Starting T_J = 25°C.

4.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.

5.The power dissipation P_D is limited by $T_{J(MAX)}$ = 150°C.And device mounted on a large heatsink

6.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

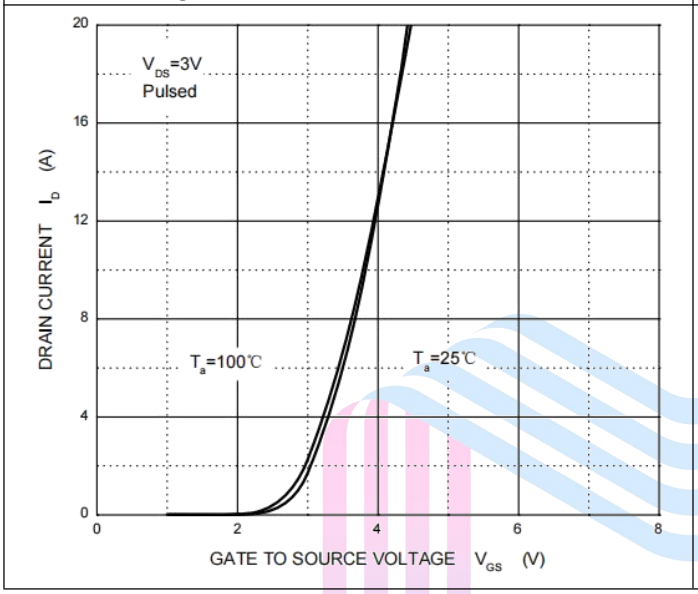


Figure 4: Output Characteristics

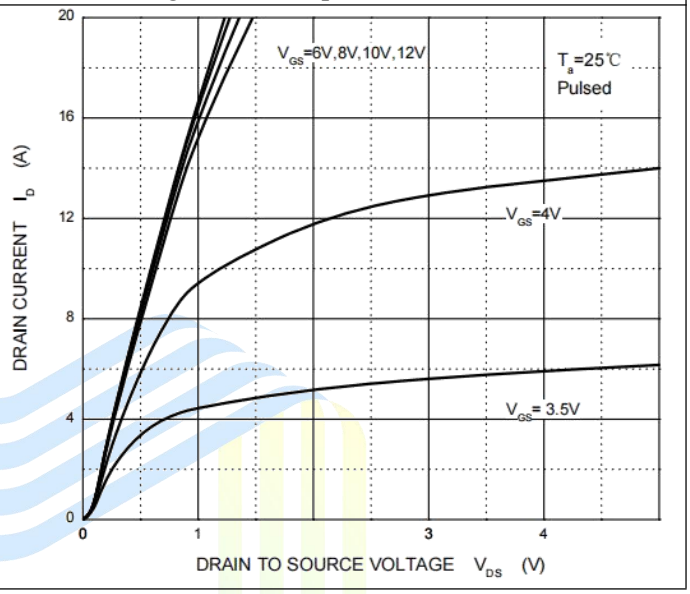


Figure 5: On-Resistance vs. Drain Current

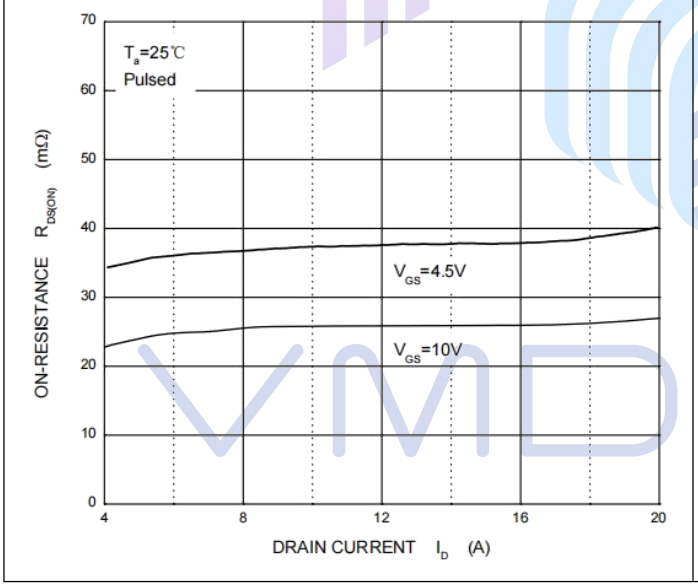


Figure 6: On-Resistance vs. Gate Voltage

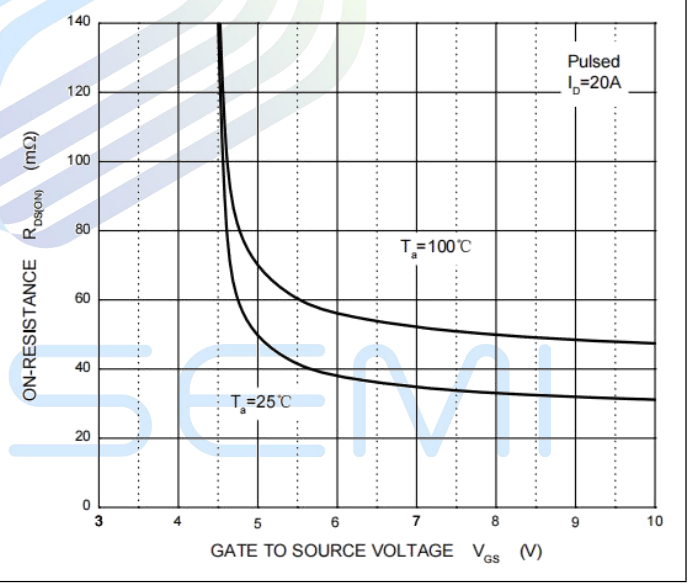


Figure 7: Body Diode Characteristics

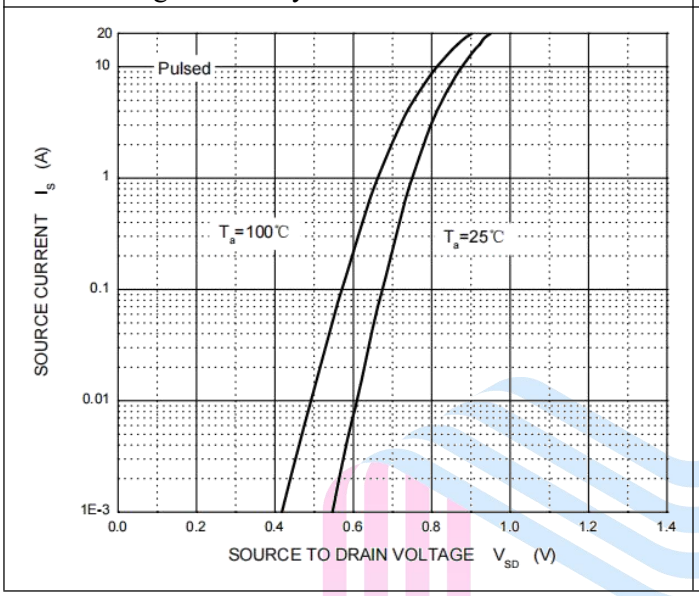
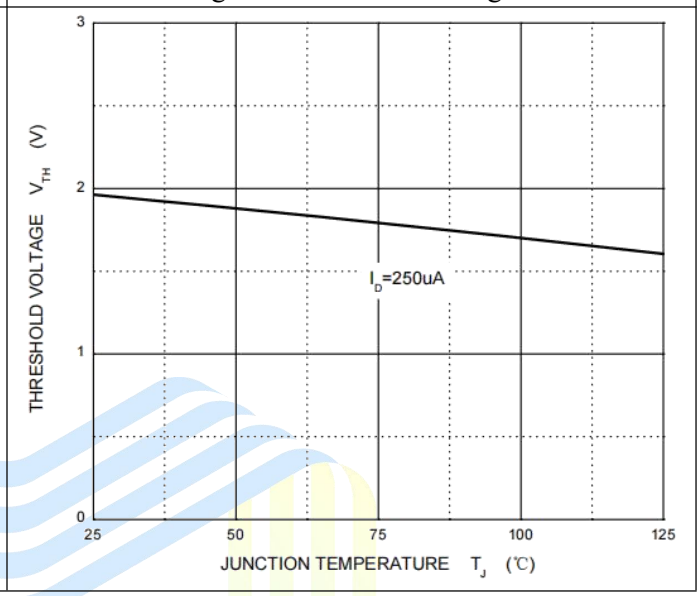
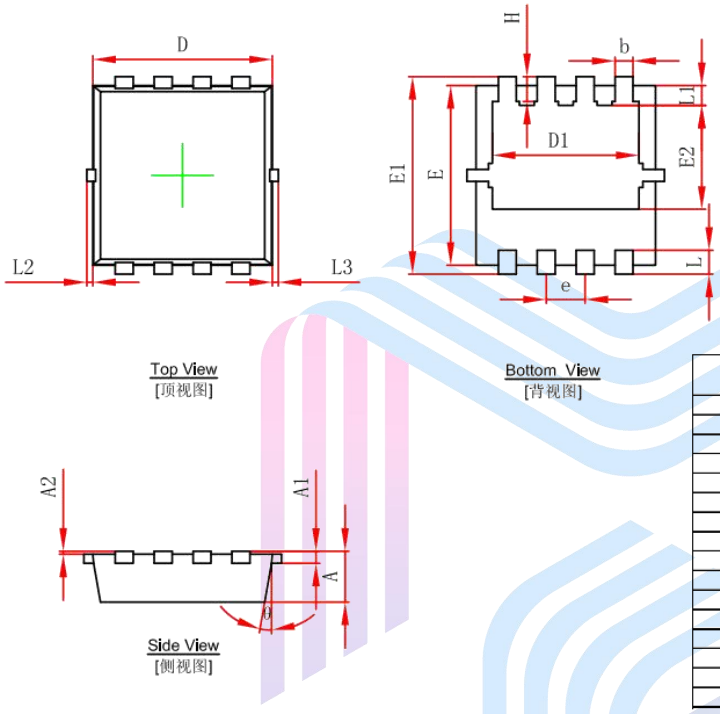


Figure 8: Threshold Voltage



Mechanical Dimensions:

PDFN3.3X3.3-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.650	0.850	0.026	0.033
A1	0.152 REF.		0.006 REF.	
A2	0~0.05		0~0.002	
D	2.900	3.100	0.114	0.122
D1	2.300	2.600	0.091	0.102
E	2.900	3.100	0.114	0.122
E1	3.150	3.450	0.124	0.136
E2	1.535	1.935	0.060	0.076
b	0.200	0.400	0.008	0.016
e	0.550	0.750	0.022	0.030
L	0.300	0.500	0.012	0.020
L1	0.180	0.480	0.007	0.019
L2	0~0.100		0~0.004	
L3	0~0.100		0~0.004	
H	0.315	0.515	0.012	0.020
θ	9°	13°	9°	13°

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