VUPA1P8R073PA

Datasheet

7.3mΩ, -18V, P-Channel Power MOSFET VUPA1P8R073PA

General Description

$V_{(BR)DSS}$	$R_{DS(ON)\_max}$	I_D
-18V	7.3mΩ@-4.5V	-34A
	7.8mΩ@-3.7V	
	9.4mΩ@-2.5V	
	15mΩ@-1.8V	

Symbol

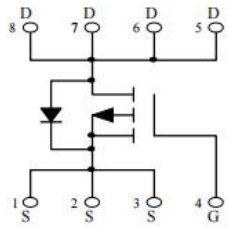


Figure 1 Symbol of VUPA1P8R073PA

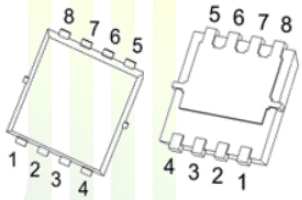
Features

- High cell density trenched P-ch MOSFETs
- Super low gate charge
- Advanced high cell density Trench technology

Application

- Battery protection applications
- Load switch

Package Type



PDFN3.3X3.3-8L

Figure 2 Package Type of VUPA1P8R073PA

Ordering Information

Product Name	Package
VUPA1P8R073PA	PDFN3.3X3.3-8L

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	-18	V
Gate-Source Voltage	V_{GSS}	±12	V
Continuous Drain Current[Note1]	I_D	-34	A
Pulsed Drain Current [Note2]	I_{DM}	-102	
Total Power Dissipation[Note4]	P_D	3	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]	$R_{\theta JA}$		42		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	-18			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= -16V, V_{GS}=0V			-1	uA
Gate-Body Leakage Current	I_{GSS}	V_{GS} = ±12V, V_{DS}= 0V			±100	nA
Gate Threshold Voltage[Note3]	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250uA	-0.35	-0.5	-1	V
Static Drain-Source On-Resistance[Note3]	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D= -10A		5.6	7.3	mΩ
		V_{GS}=-3.7V, I_D= -10A		6.0	7.8	
		V_{GS}=-2.5V, I_D= -8A		7.0	9.4	
		V_{GS}=-1.8V, I_D= -6A		10	15	
Forward Transconductance[Note3]	g_{FS}	V_{DS}=-6V, I_D= -10A	5			S
Dynamic Characteristics						
Input Capacitance	C_{ISS}	V_{DS}=-6V		4850		pF
Output Capacitance	C_{OSS}	V_{GS}=0V		1520		pF
Reverse Transfer Capacitance	C_{RSS}	f=1MHz		1610		pF
Total Gate Charge	Q_g	V_{DS}=-6V		65		nC
Gate-Source Charge	Q_{gs}	V_{GS}=-4.5V		20		
Gate-Drain Charge	Q_{gd}	I_D= -5A		325		
Gate Resistance	Rg	f = 1MHz, Open drain			30	Ω
Switching Parameters						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}= -6V		22		ns
Turn-on Rise Time	t_r	V_{GS}= -4.5V		50		
Turn-off Delay Time	$t_{d(off)}$	R_L=6Ω		100		
Turn-off Fall Time	t_f	R_G=1Ω, I_D= -4A		30		
Diode Characteristics						
Diode Forward Voltage [Note3]	V_{DS}	V_{GS}=0V, I_S= -10A		-0.8	-1.2	V
Continuous Source Current	I_S	T_C=25 ºC			-34	A
Pulsed Source Current	I_{SM}				-102	

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

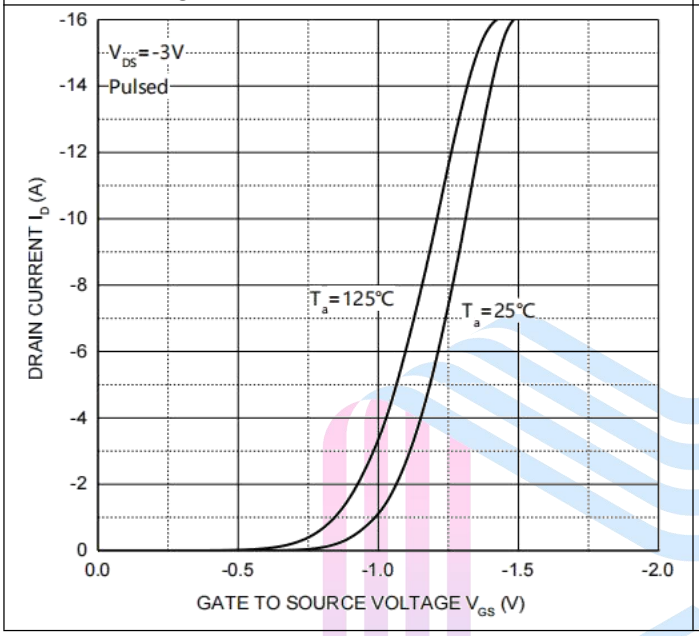


Figure 4: Output Characteristics

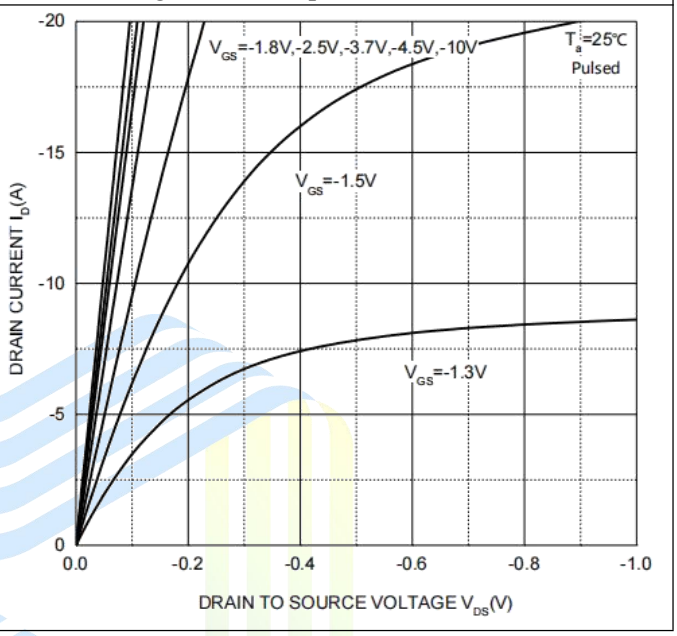


Figure 5: On-Resistance vs. Drain Current

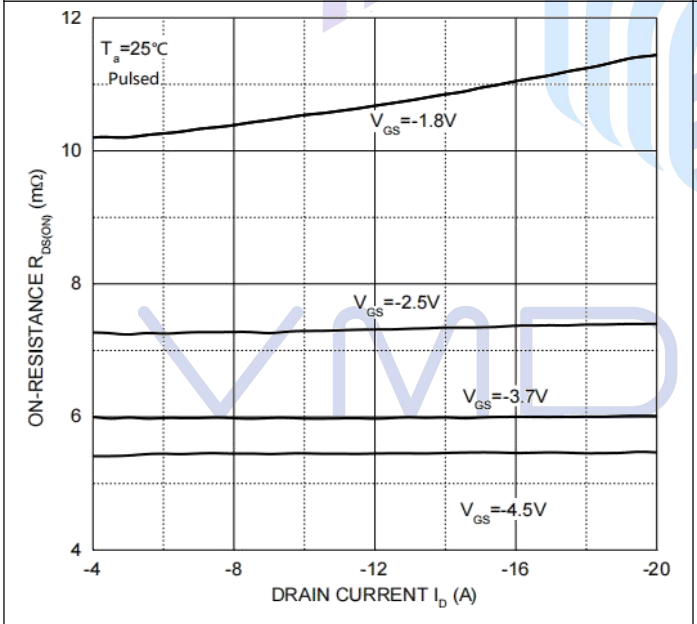


Figure 6: On-Resistance vs. Gate Voltage

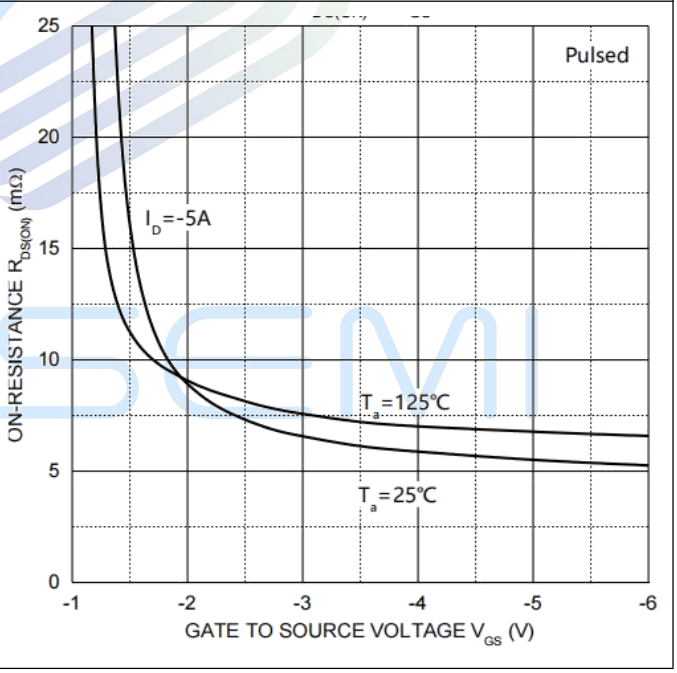


Figure 7: Body Diode Characteristics

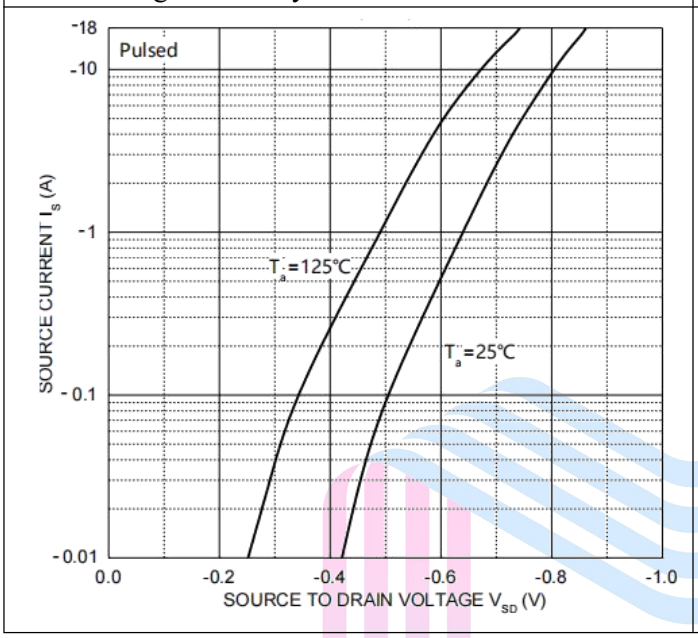
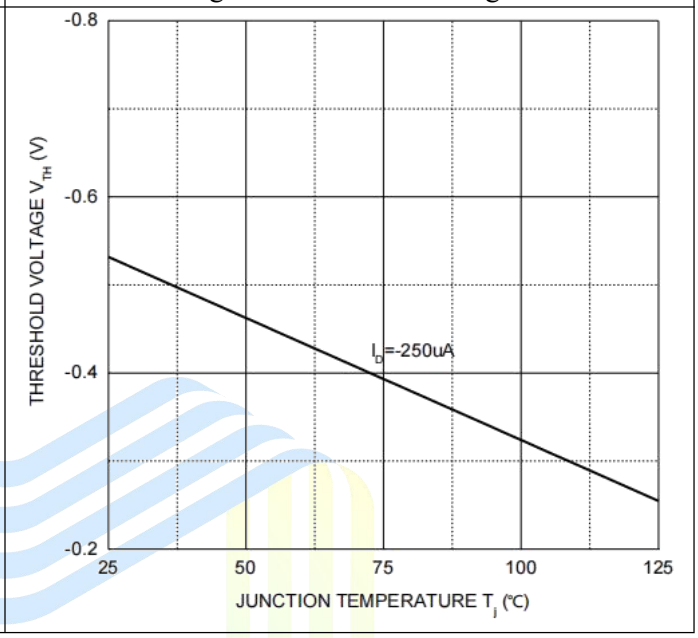
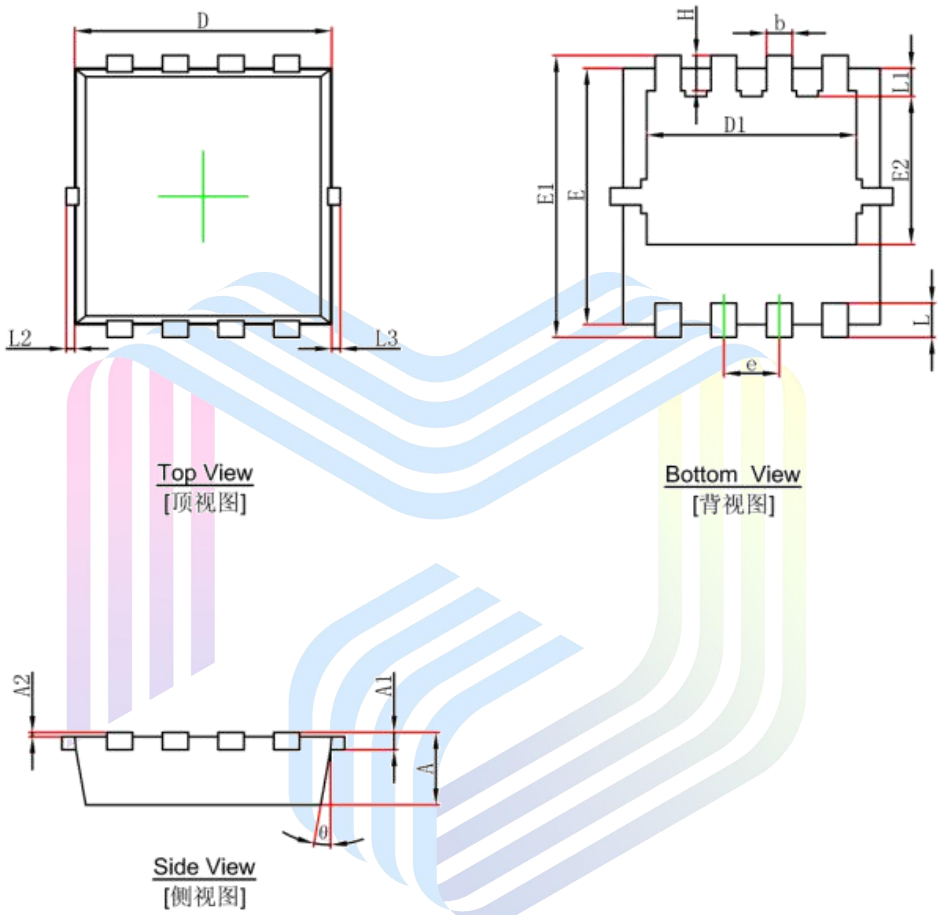


Figure 8: Threshold Voltage



Mechanical Dimensions:

PDFN3.3X3.3-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
A1	0.152REF		0.006REF	
A2	0.000	0.050	0.000	0.002
D	2.900	3.200	0.114	0.126
D1	2.300	2.600	0.091	0.102
E	2.900	3.200	0.114	0.126
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	0.000	0.100	0.000	0.004
L3	0.000	0.100	0.000	0.004
H	0.315	0.515	0.012	0.020
θ	0°	12°	0°	12°

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Via-Media Semiconductor Limited Company

http://www.vmdsemi.com

Main Sites:

- **Headquarters**

Hangzhou Via-Media Semiconductor Co., LTD.
1305-1306, Building 71, No. 90, Wensan Road, Xihu District, Hangzhou, Zhejiang Province, P.R. China
Tel: +86-0571-8515 0563

- **Chengdu Office**

Chengdu Winhi Semiconductor Co., LTD.
Floor 15, Building 5, No. 171, Hele 2nd Street, Chengdu, Sichuan Province, P.R. China
Tel: +86-028-8505 0771

- **Shanghai**

Shanghai R&D Center.
1506~1508, Xinyin Building, 888 Yishan Road, Shanghai, P.R of China
Tel: +86- 021-54201999

- **Shenzhen**

Shenzhen Sales office
Room 4A15, Block AB, Tianxiang Building, Chegongmiao , Futian District, Shenzhen, P.R of China
Tel: +86-0755- 82570682

- **Xi'an**

Xi'an R&D Center
1703B, Building A, Greenland Center, Jinye Road, High-Tech Zone, Xi'an, Shaanxi, P.R of China