

VUPB006R160PA

Datasheet

General Description

$V_{(BR)DSS}$	$R_{DS(ON)_{max}}$	I_D
-60V	16mΩ@-10V	-70A
	20mΩ@-4.5V	

Symbol

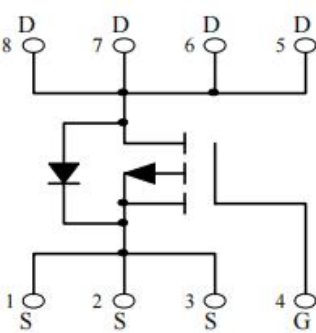
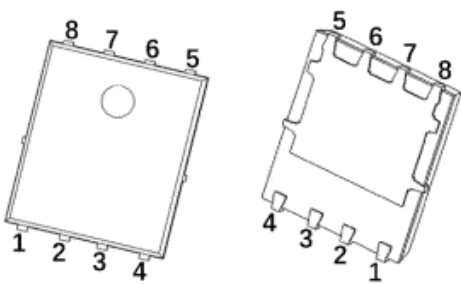


Figure 1 Symbol of VUPB006R160PA

Features

- Trench Technology Power MOSFET
- Low $R_{DS(ON)}$
- Low Gate Charge
- Low Gate Resistance
- 100% UIS Tested

Package Type



Application

- Power Switching Application

PDFN5X6-8L

Figure 2 Package Type of VUPB006R160PA

Ordering Information

Product Name	Package
VUPB006R160PA	PDFN5X6-8L

Absolute Maximum Ratings ($T_A = 25\text{ }^{\circ}\text{C}$, 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} $T_C = 25\text{ }^{\circ}\text{C}$	I_D	-70	A
Continuous Drain Current ^{Note1} $T_C = 100\text{ }^{\circ}\text{C}$		-46	
Pulsed Drain Current ^{Note2}	I_{DM}	-280	
Single Pulsed Avalanche Current ^{Note3}	I_{AS}	-50	
Single Pulsed Avalanche Energy ^{Note3}	E_{AS}	625	mJ
Total Power Dissipation ^{Note5} $T_C = 25\text{ }^{\circ}\text{C}$	P_D	88	W
Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 to 150	$^{\circ}\text{C}$

Thermal Resistance

Parameter	Symbol	Min	Typ	Max	Unit
Thermal Resistance, Junction-to-Ambient ^{Note6}	$R_{\theta JA}$		50		$^{\circ}\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$		1.42		$^{\circ}\text{C}/\text{W}$

Electrical Characteristics ($T_J = 25^\circ\text{C}$, unless otherwise specified)

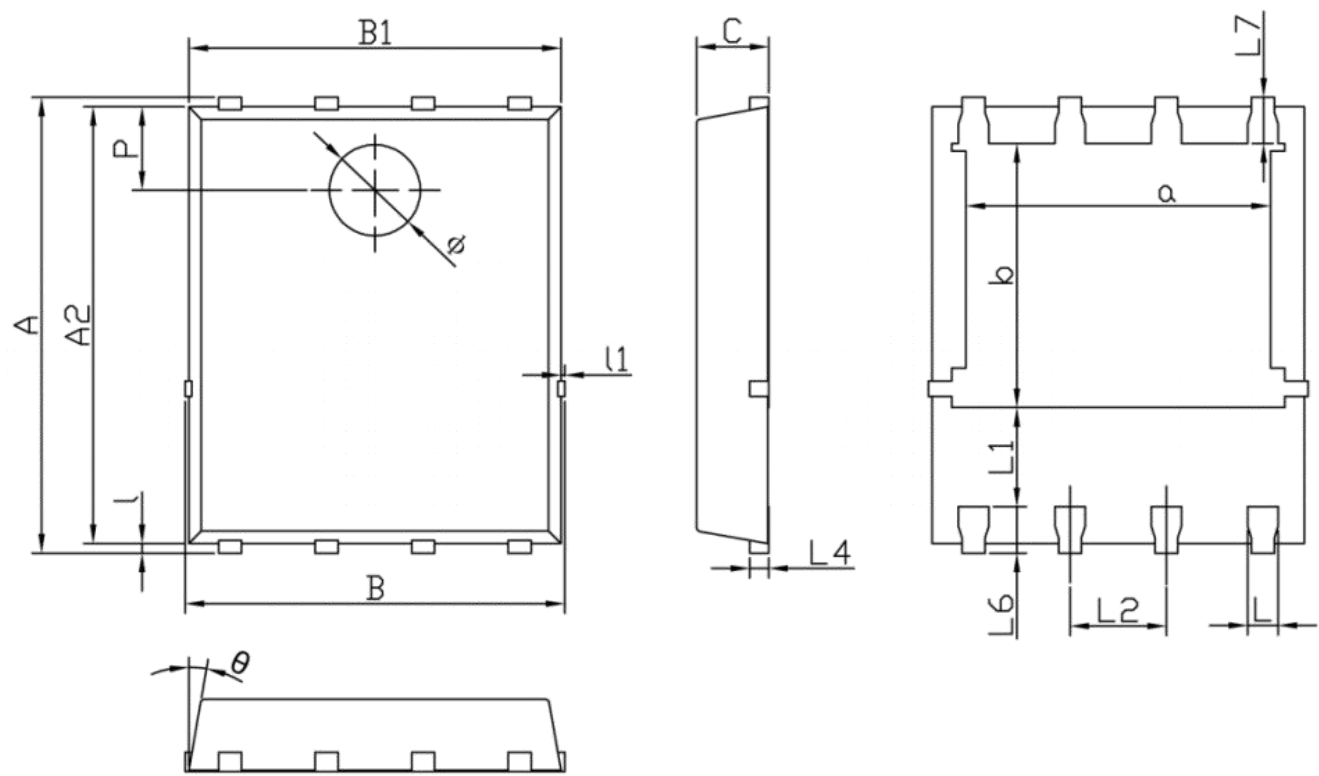
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Statistic Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D = 250uA	-60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -60V, V _{GS} =0V			-1	uA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
Gate Threshold Voltage ^{Note3}	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250uA	-1	-1.9	-3	V
Static Drain-Source On-Resistance ^{Note3}	R _{DS(ON)}	V _{GS} =-10V, I _D = -20A		12	16	mΩ
		V _{GS} =-4.5V, I _D = -20A		16	20	
Dynamic Characteristics						
Input Capacitance	C _{ISS}	V _{DS} = -30V V _{GS} =0V f=1MHz		2522		pF
Output Capacitance	C _{OSS}			710		pF
Reverse Transfer Capacitance	C _{RSS}			61		pF
Total Gate Charge	Q _g	V _{DS} = -30V		41		nC
Gate-Source Charge	Q _{gs}	V _{GS} = -10V		9.2		
Gate-Drain Charge	Q _{gd}	I _D = -20A		7.8		
Gate Resistance	R _g	f = 1MHz, Open drain		3		Ω
Switching Parameters						
Turn-on Delay Time	t _{d(on)}	V _{DD} = -30V V _{GS} = -10V R _L =2.5Ω R _G =6Ω		11		ns
Turn-on Rise Time	t _r			39		
Turn-off Delay Time	t _{d(off)}			72		
Turn-off Fall Time	t _f			64		
Diode Characteristics						
Diode Forward Voltage ^{Note3}	V _{SD}	V _{GS} =0V, I _S = -20A			-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 $\leq 10\mu s$, duty cycle $\leq 1\%$.
- 3.EAS condition: $V_{DD}=-30V, V_{GS}=-10V, L=0.5mH, R_G=25\Omega$ Starting $T_J=25^\circ\text{C}$.
- 4.Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- 5.The power dissipation P_D is limited by $T_{J(MAX)}=150^\circ\text{C}$.And device mounted on a large heatsink
- 6.Device mounted on $1in^2$ FR-4 board with 2oz Copper, in a still air environment with $T_A=25^\circ\text{C}$.

Mechanical Dimensions:

PDFN5X6-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	5.900	6.100	0.232	0.240
a	3.910	4.110	0.154	0.162
A2	5.700	5.800	0.224	0.228
B	4.900	5.100	0.193	0.201
b	3.370	3.570	0.133	0.141
B1	4.800	5.000	0.189	0.197
C	0.900	1.000	0.035	0.039
L	0.350	0.450	0.014	0.018
l	0.060	0.200	0.002	0.008
L1	1.100	-	0.043	-
l1	-	0.100	-	0.004
L2	1.170	1.370	0.046	0.054
L4	0.210	0.340	0.008	0.013
L6	0.510	0.710	0.020	0.028
L7	0.510	0.710	0.020	0.028
P	1.000	1.200	0.039	0.047
Φ	1.100	1.300	0.043	0.051
θ	8°	12°	8°	12°