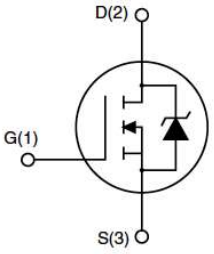
ZHEJIANG UNIU-NE Technology CO.,LTD

浙 江 宇 力 微 新 能 源 科 技 有 限 公 司

APG011N03G Data Sheet

V 1.1

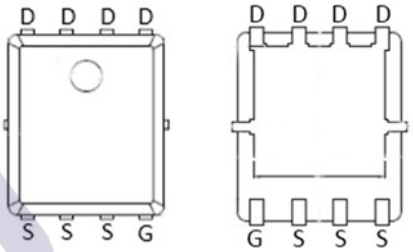
Feature



- 30V,180A
  $R_{DS(ON)}$ <1.1mΩ @V_{GS}=10V TYP=0.9 mΩ
  $R_{DS(ON)}$ <1.7mΩ @V_{GS}=4.5V TYP=1.5 mΩ
- Split Gate Trench Technology
- Lead free product is acquired
- Excellent $R_{DS(ON)}$ and Low Gate Charge

Application

- PWM applications
- Load Switch
- Power management



PDFN5X6

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
G011N03G	APG011N03G	PDFN5X6	13 inch	-	5000

ABSOLUTE MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (T_a =25℃)	I_D	180	A
Continuous Drain Current (T_a =100℃)	I_D	117	A
Pulsed Drain Currenr (1)	I_{DM}	540	A
Singel Pulsed Avalanche Energy (2)	E_{AS}	462	mJ
Power Dissipation	P_D	64	W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	1.93	℃/W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	41	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

MOSFET ELECTRICAL CHARACTERISTICS(T_a=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	30	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS} =24V, V_{GS} = 0V	-	-	1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V	-	-	±100	nA
Gate threshold voltage(3)	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.2	1.7	2.2	V
Drain-source on-resistance(3)	$R_{DS(on)}$	V_{GS} =10V, I_D =40A	-	0.9	1.1	mΩ
		V_{GS} =4.5V, I_D =20A	-	1.5	1.7	
Forward Transconductance	g_{FS}	V_{DS} =5V, I_D =10A	-	76	-	S
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS} =15V, V_{GS} =0V, f =1000KHz	-	3700	-	pF
Output Capacitance	C_{oss}		-	1500	-	
Reverse Transfer Capacitance	C_{rss}		-	90	-	
Switching characteristics						
Turn-on delay time	$t_{d(on)}$	V_{DD}=15V, I_D=30A, R_L=10Ω V_{GS}=10V, R_G=6Ω	-	4	-	ns
Turn-on rise time	t_r		-	12	-	
Turn-off delay time	$t_{d(off)}$		-	114	-	
Turn-off fall time	t_f		-	67	-	
Total Gate Charge	Qg	VDS=15V, ID=30A, VGS=4.5V	-	60.4	-	nC
Gate-Source Charge	Qgs		-	9.8	-	
Gate-Drain Charge	Qgd		-	9.7	-	
Reverse Recovery Chrage	Qrr	I_F=30A,di/dt=100A/us		35		nC
Reverse Recovery Time	Trr	I_F=30A,di/dt=100A/us		49		ns
Source-Drain Diode characteristics						
Diode Forward voltage(3)	V_{DS}	V_{GS} =0V, I_S=10A	-	-	1.2	V
Diode Forward current(4)	I_S		-	-	180	A

Notes:

1. Repetitive Rating: pulse width limited by maximum junction temperature
2. EAS Condition:T_J=25℃,V_{DD}=27V,R_G=25Ω,L=0.5Mh,IAS=43A
3. Pulse Test: pulse width≤300μs, duty cycle≤2%
4. Surface Mounted on FR4 Board,t≤10 sec

■ Test circuits and waveforms

Figure A: Gate Charge Test Circuit & Waveforms

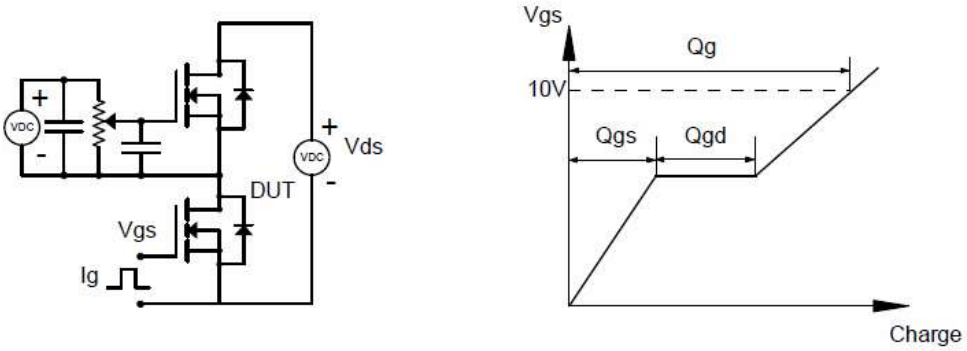


Figure B: Resistive Switching Test Circuit & Waveforms

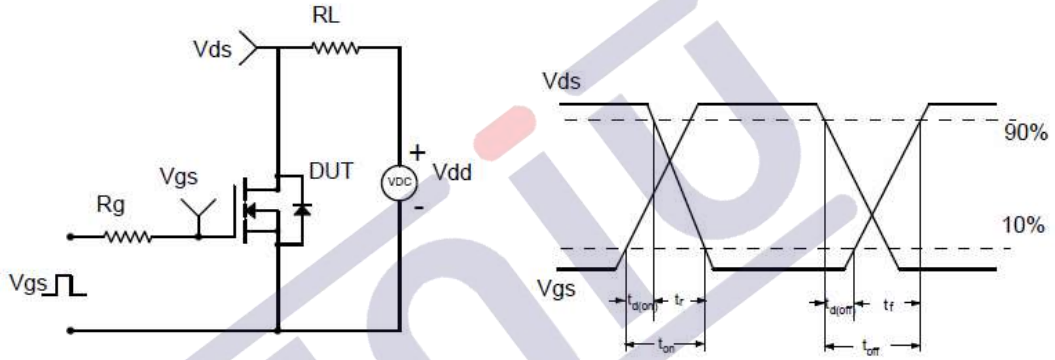


Figure C: Unclamped Inductive Switching (UIS) Test

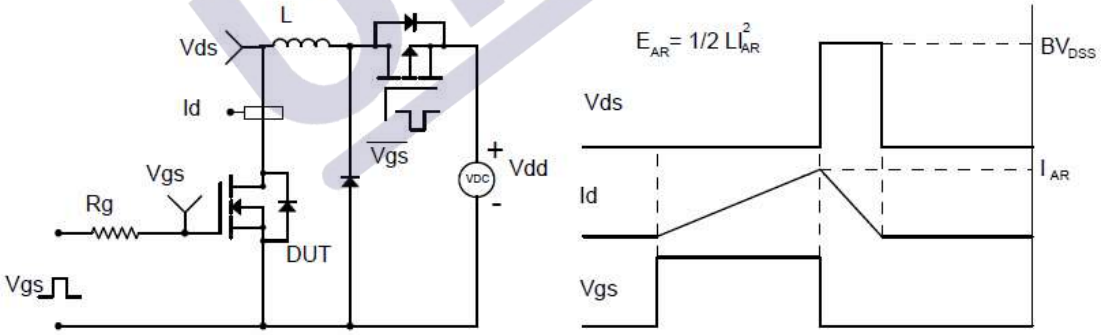
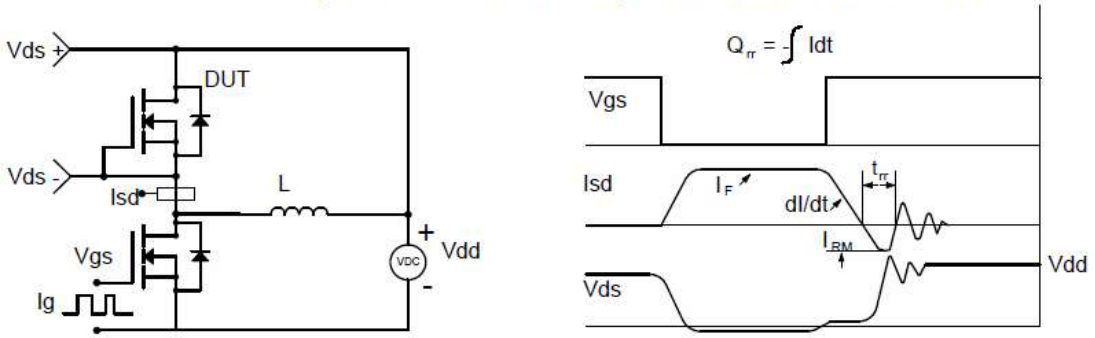


Figure D: Diode Recovery Test Circuit & Waveforms



Typical Performance Characteristics

Fig.1 Power Dissipation Derating Curve

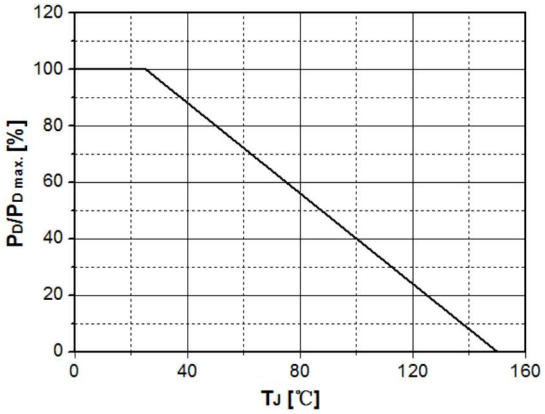


Fig.2 Avalanche Energy Derating Curve vs. Junction Temperature

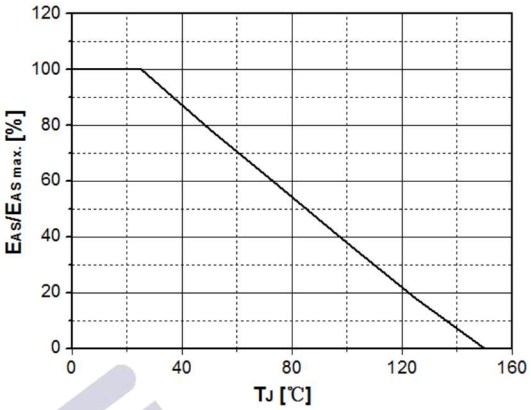


Fig.3 Typical Output Characteristics

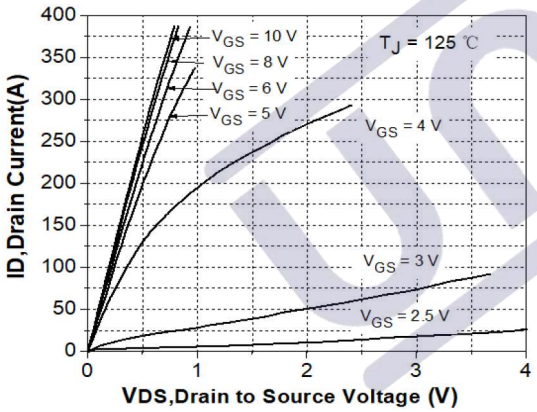


Fig. 4 Transconductance vs. Drain Current

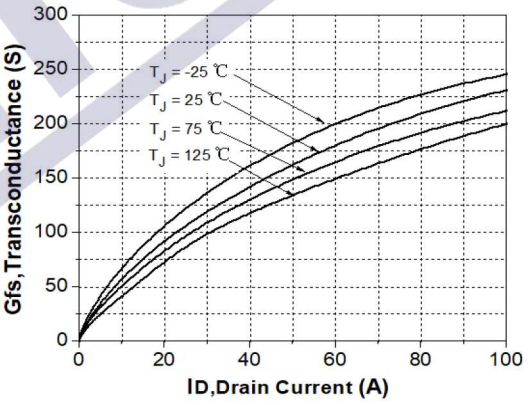


Fig.5 Typical Transfer Characteristics

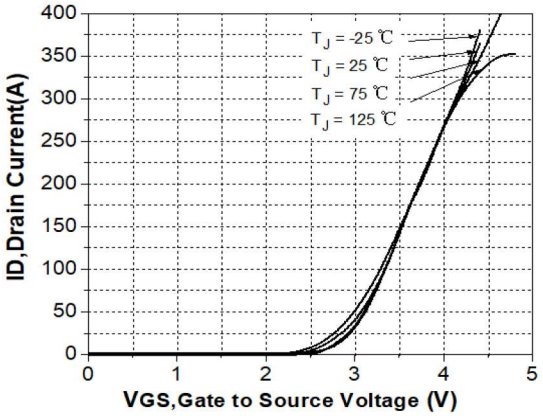


Fig. 6 State Resistance vs. Drain Current @-25℃

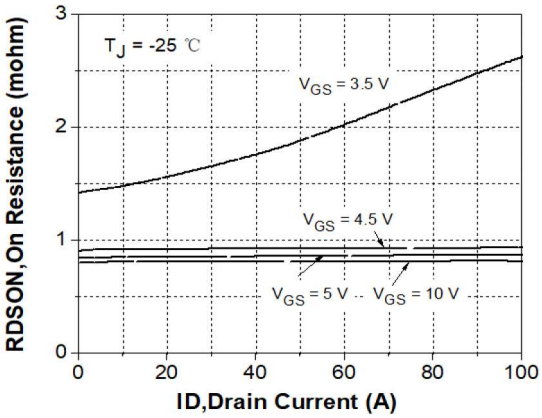


Fig.7 State Resistance vs. Drain Current @25℃

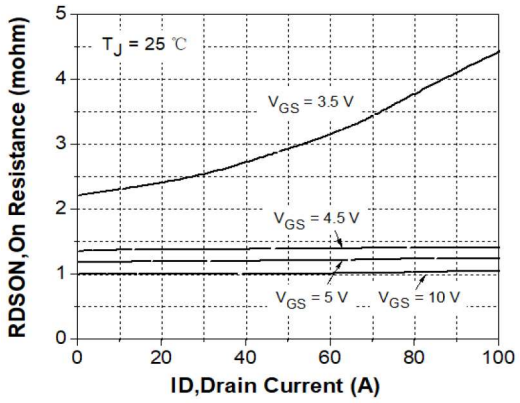


Fig. 8 State Resistance vs. Drain Current @125℃

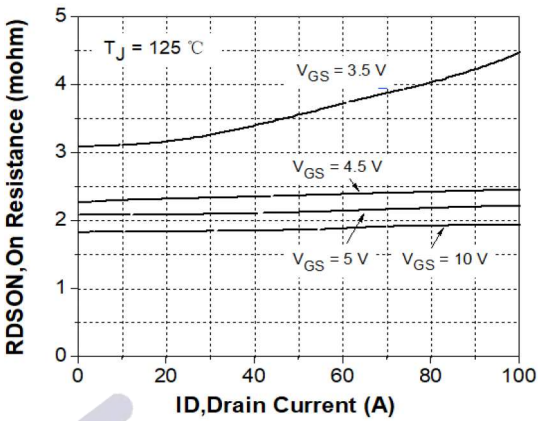


Fig.9 Typical Capacitance vs. Drain Source Voltage

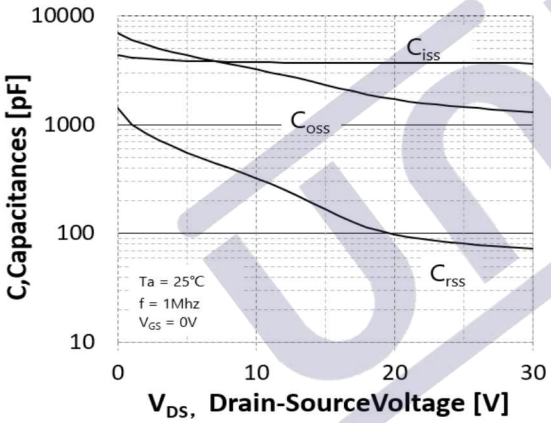


Fig.10 Dynamic Input Characteristics

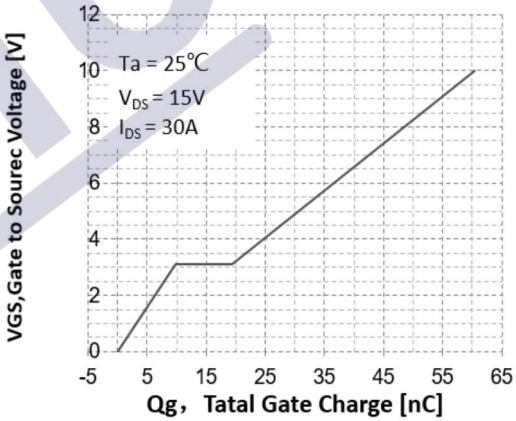


Fig.11 Breakdown Voltage vs. Junction Temperature

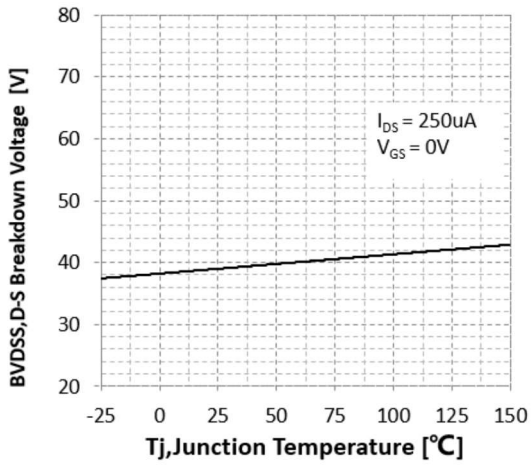


Fig. 12 Gate Threshold Voltage vs. Junction Temperature

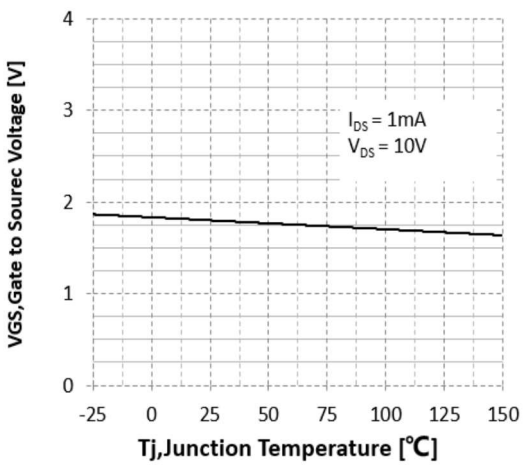


Fig.13 On-Resistance Variation vs. Junction Temperature

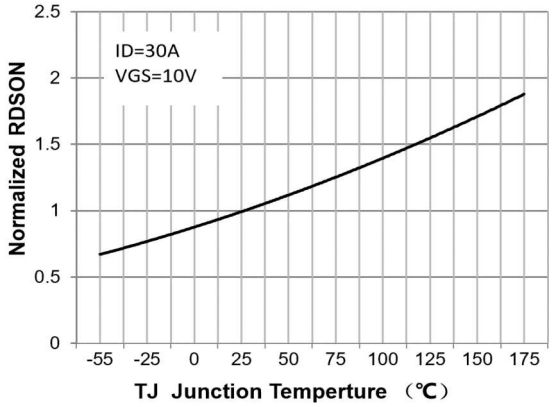


Fig.14 Maximum Drain Current vs. Case Temperature

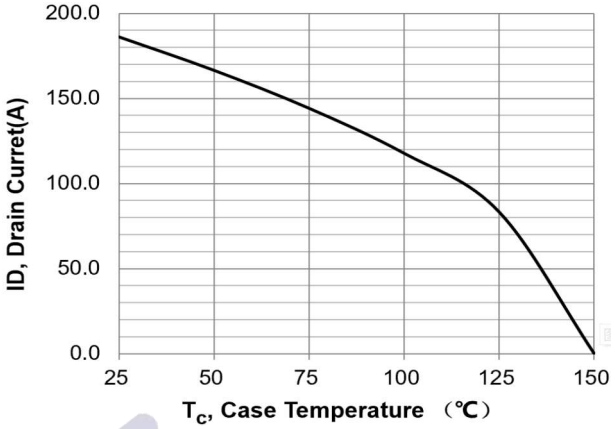


Fig.15 Body Diode Forward Voltage Vs Reverse Drain Current

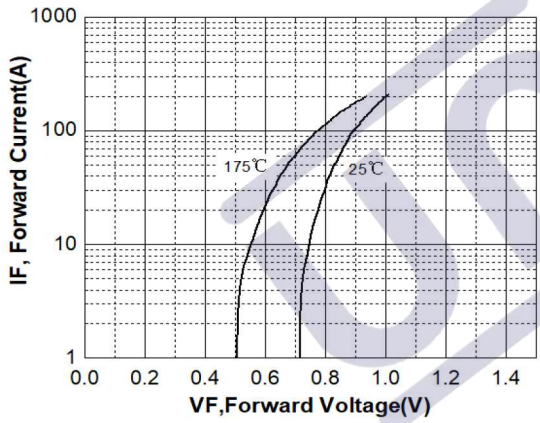


Fig.16 Safe Operating Area

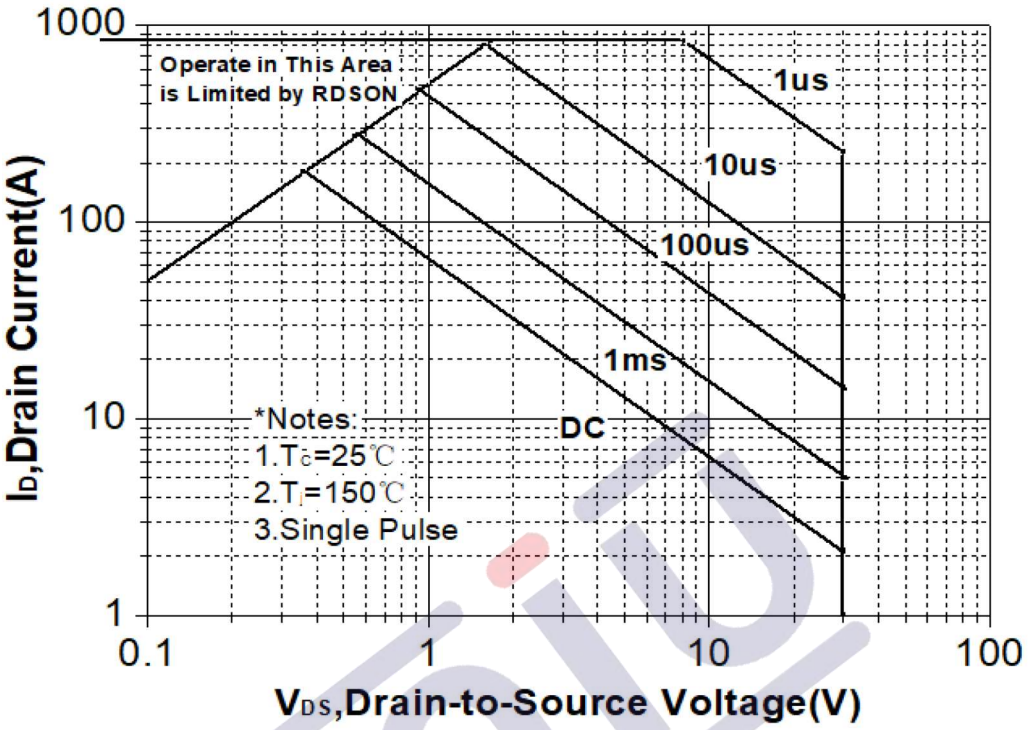
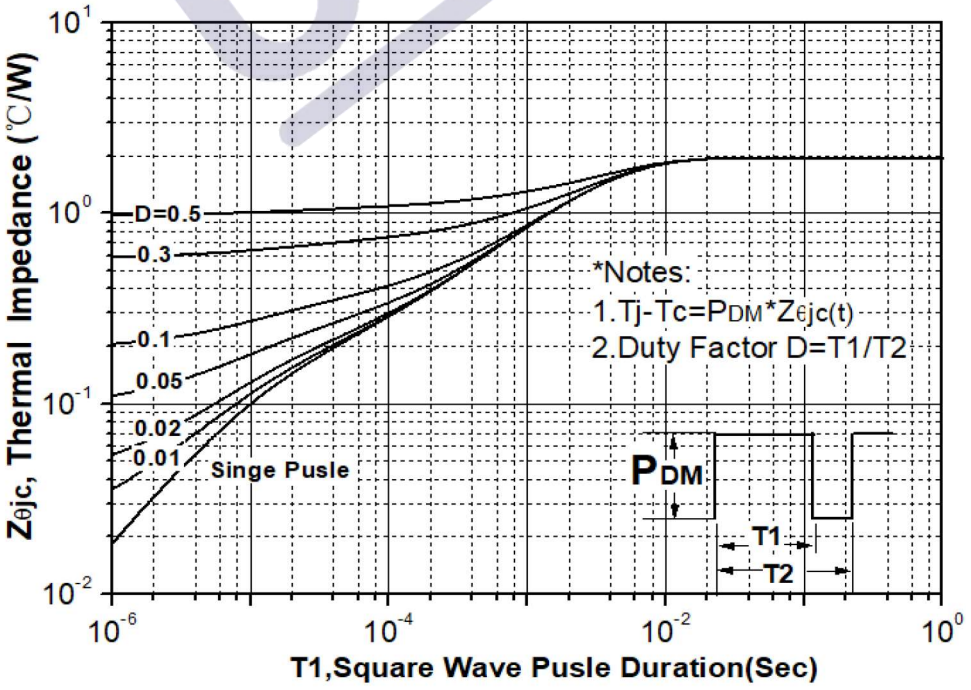
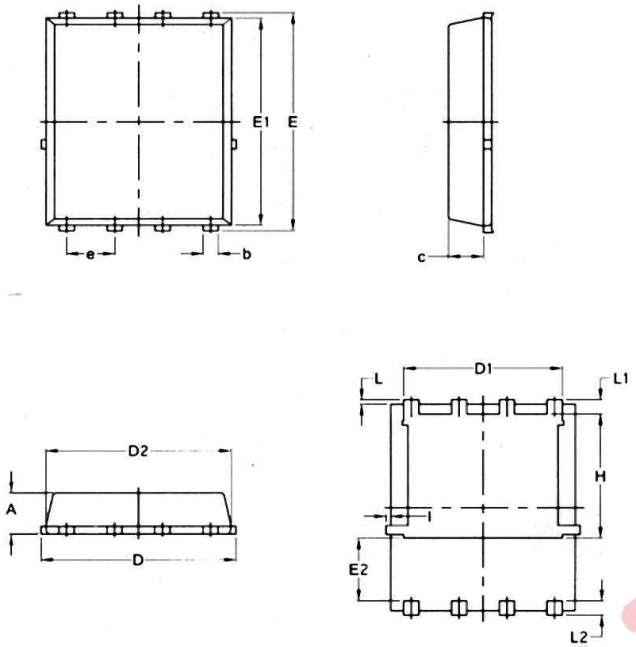


Fig. 17 Transient Thermal Response Curve



PDFN5X6 Package Information



PDFN5X6

SYMBOL	COMMON			
	MM		INCH	
	MIN.	MAX.	MIN.	MAX.
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.970	0.0324	0.0382
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	—	0.0630	—
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
I	—	0.18	—	0.0070

1.版本记录

DATE	REV.	DESCRIPTION
2022/04/20	1.0	Initial Release
2023/08/01	1.1	Layout Adjustment

2.免责声明

浙江宇力微新能源科技有限公司保留对本文档的更改和解释权力，不另行通知！客户在下单前应获取我司最新版本资料，并验证相关信息是否最新和完整。量产方案需使用方自行验证并自担所有批量风险责任。未经我司授权，该文件不得私自复制和修改。产品不断提升，以追求高品质、稳定性强、可靠性高、环保、节能、高效为目标，我司将竭诚为客户提供性价比高的系统开发方案、技术支持等更优秀的服务。

3.联系我们

浙江宇力微新能源科技有限公司
总部地址：绍兴市越城区斗门街道袍渎路25号中节能科创园45幢4/5楼
电话：0575-85087896（研发部）
传真：0575-88125157
E-mail: htw@uni-semic.com

无锡地址：无锡市锡山区先锋中路 6 号中国电子（无锡）数字芯城 1#综合楼 503室
电 话 : 0510-85297939
E-mail: zh@uni-semic.com

深圳地址：深圳市宝安区西乡街道南昌社区宝源路泳辉国际商务大厦410
电 话 ： 0755-84510976
E-mail: htw@uni-semic.com