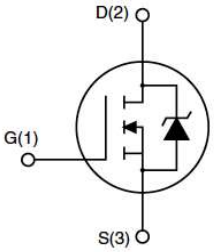
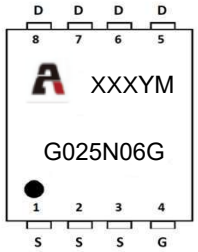
Features

- 60V,148A
  $R_{DS(ON)}$ <2.5mΩ @V_{GS}=10V TYP:2.1mΩ
  $R_{DS(ON)}$ <3.4mΩ @V_{GS}=4.5V TYP:2.7mΩ
- Super Trench
- Extremely low on-resistance RDS(on)
- Excellent Qg x RDS(on) product(FOM)
- Qualified according to JEDEC criteria

Applications

- Load switching
- Motor driver
- High frequency switching, synchronous rectification





Marking and pin Assignment

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
G025N06G	APG025N06G	PDFN5X6	-	-	5000

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

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current (1)	Tc=25℃	I_D	148	A
	Tc=100℃		94	A
Pulsed Drain Current		I_{DM}	592	A
Single Pulsed Avalanche Energy (Tc=25℃,L=1.0mH) (2)		E_{AS}	212	mJ
Drain Power Dissipation		P_D	96	W
Thermal Resistance from Junction to Case		$R_{\theta JC}$	1.3	℃/W
Thermal Resistance- Junction to Ambient(3)		$R_{\theta JA}$	44	℃/W
Junction Temperature		T_J	150	℃
Storage Temperature		T_{STG}	-55~ +150	℃

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

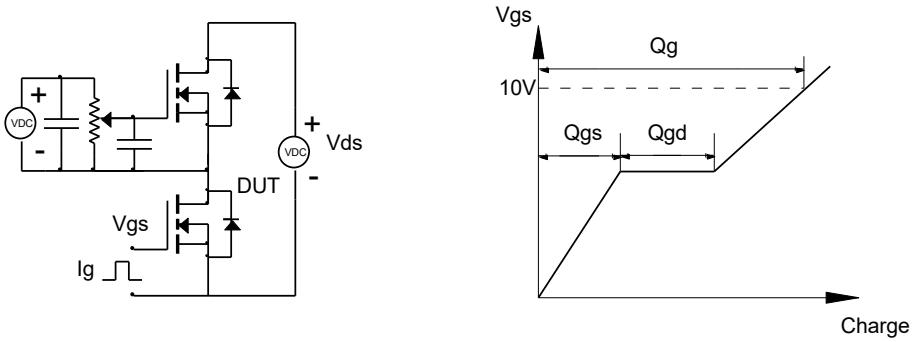
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	60	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS} =60V, V_{GS} = 0V	-	-	1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V	-	-	±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.2	1.7	2.5	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =20A	-	2.1	2.5	mΩ
		V_{GS} =4.5V, I_D =15A		2.7	3.4	mΩ
Gate Resistance	Rg	V_{GS}=0V, V_{DS} Open, f=1MHz		1.4		Ω
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS} =30V, V_{GS} =0V, f =1.0MHz	-	2965	-	pF
Output Capacitance	C_{oss}		-	916	-	
Reverse Transfer Capacitance	C_{rss}		-	29	-	
Switching characteristics						
Turn-on delay time	$t_{d(on)}$	V_{DD}=30V, I_D=20A, R_G=3.0Ω, V_G=10V	-	5.1	-	ns
Turn-on rise time	t_r		-	11	-	
Turn-off delay time	$t_{d(off)}$		-	46.1	-	
Turn-off fall time	t_f		-	22	-	
Total Gate Charge	Qg	V_{DS}=30V, I_D=20A, V_{GS}=10V	-	56.0	-	nC
Gate-Source Charge	Qgs		-	6.7	-	
Gate-Drain Charge	Qgd		-	12	-	
Source-Drain Diode characteristics						
Diode Forward voltage	V_{SD}	T_J=25℃, V_{GS} =0V, I_S=20A	-	0.82	1.20	V
Diode Forward current	I_S	T_C=25℃	-	-	148	A
Body Diode Reverse Recovery Time	trr	T_J=25℃，IF=20A,di/dt=100A/us		50.0	105.0	ns
Body Diode Reverse Recovery Charge	Qrr	T_J=25℃，IF=20A,di/dt=100A/us		80.0	160	nc

Notes:

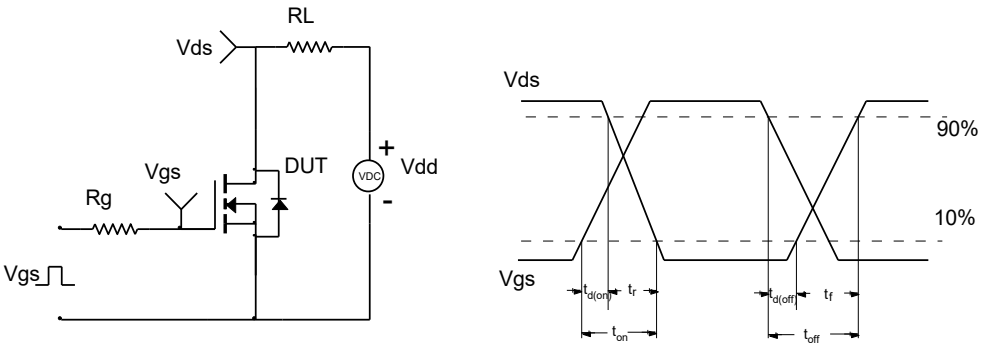
1. This current is chip limited, which is calculated based on Rthjc.
2. EAS condition: TJ=25°C, VDD=30V, VGS=10V, L=1.0mH IAS=20.6A
3. The value of $R_{\theta JA}$ Mounted on FR4 Board（25.4mm*25.4mm*t1.6mm）With 2oz Copper，Ta=25℃

Test Circuit

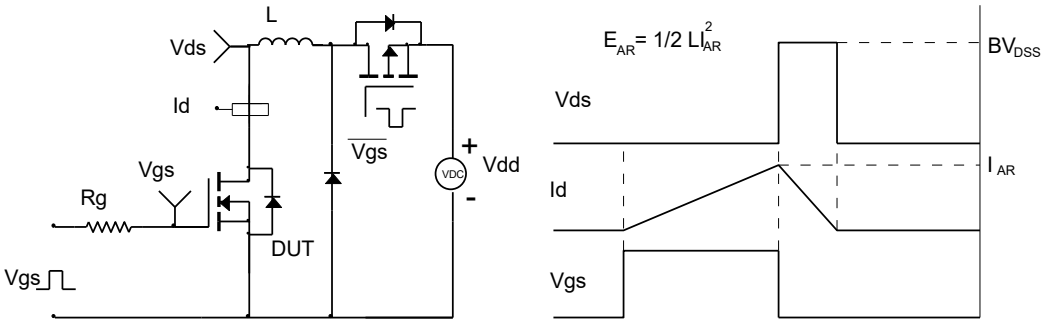
Gate Charge Test Circuit & Waveform



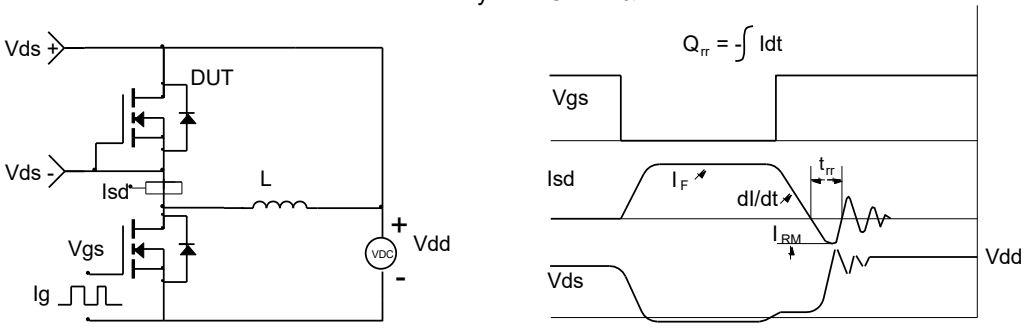
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Typical Characteristics

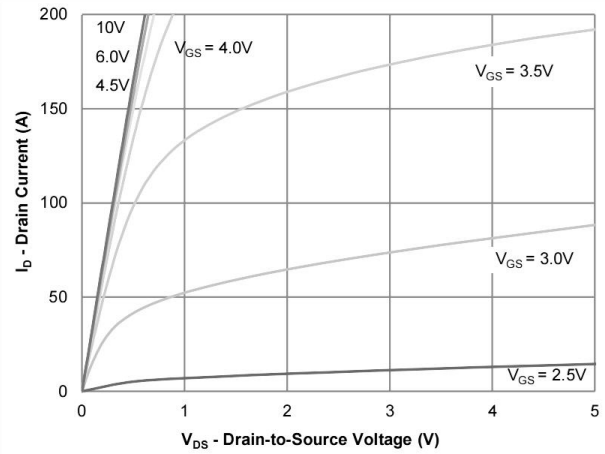


Figure 1: Output Characteristics

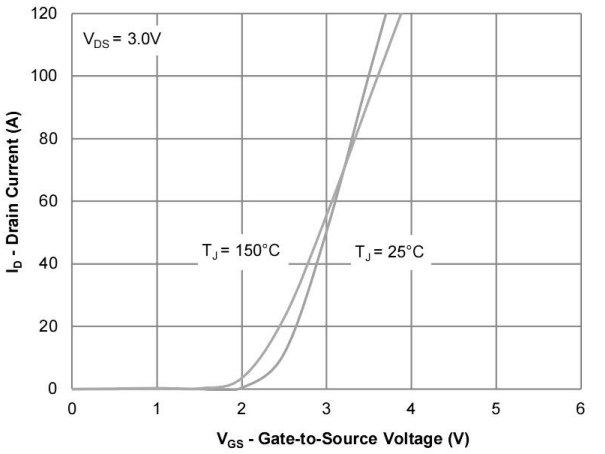


Figure 2: Transfer Characteristics

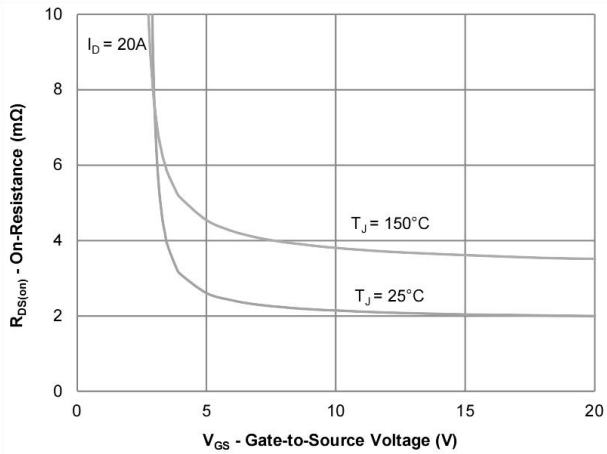


Figure 3: On-Resistance vs. Gate-Source Voltage

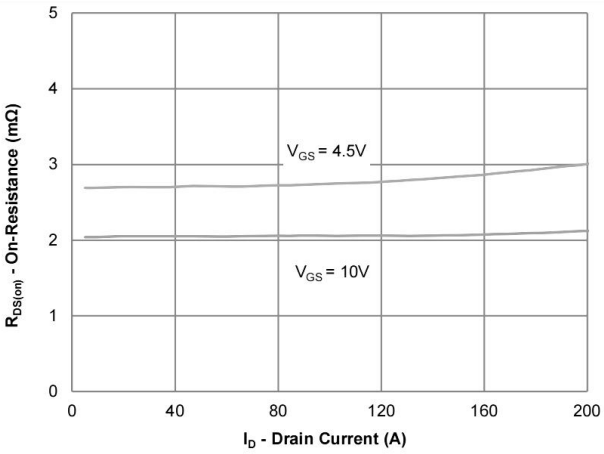


Figure 4: On-Resistance vs. Gate-Source Voltage

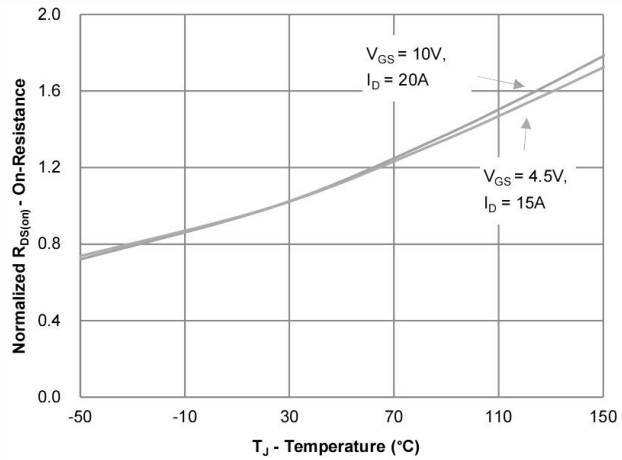


Figure 5: On-Resistance vs. Junction Temperature

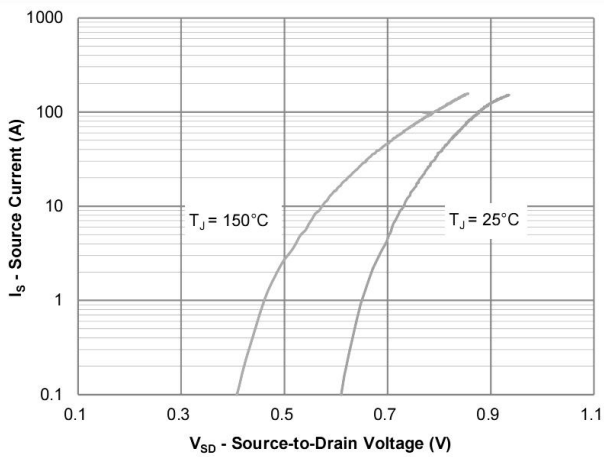


Figure 6: Source-Drain Diode Forward Voltage

Typical Characteristics

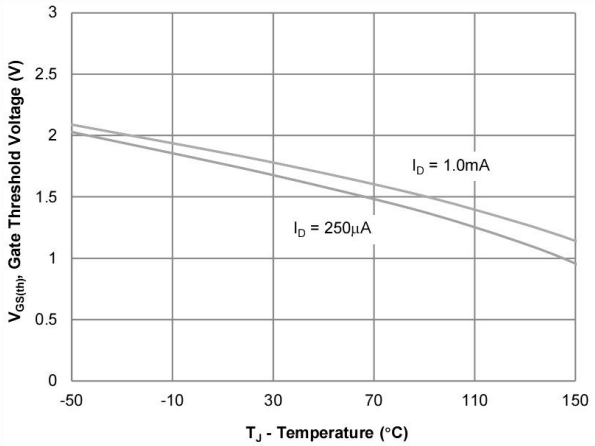


Figure 7: Gate Threshold Variation vs. Junction Temperature

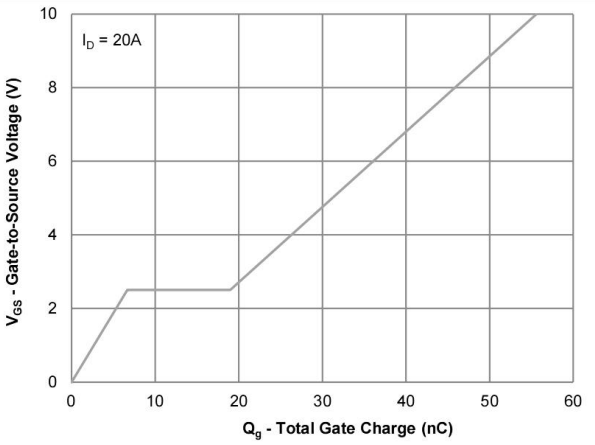


Figure 8: Gate Charge Characteristics

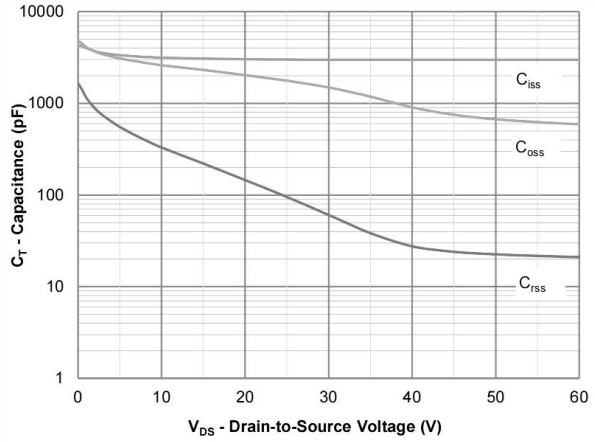


Figure 9: Capacitance Characteristics

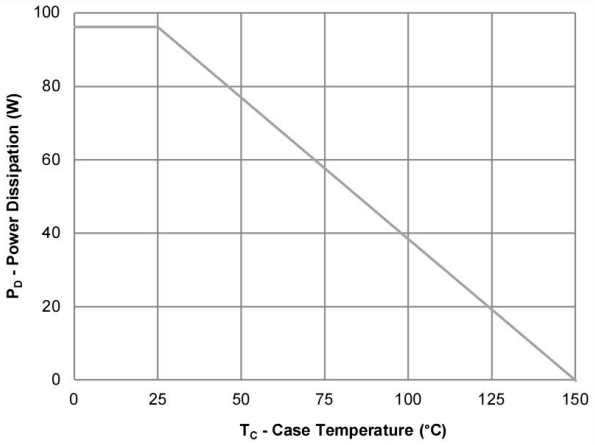


Figure 10: Power Derating

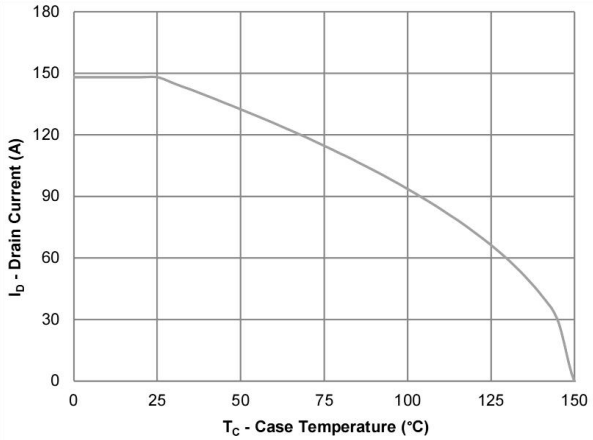


Figure 11: Current Derating

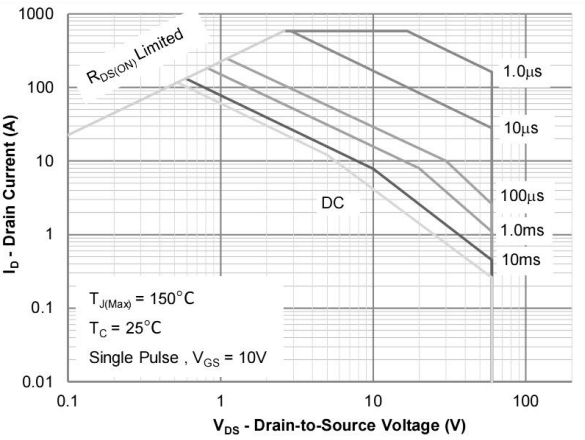


Figure 12: Safe Operating Area

Typical Characteristics

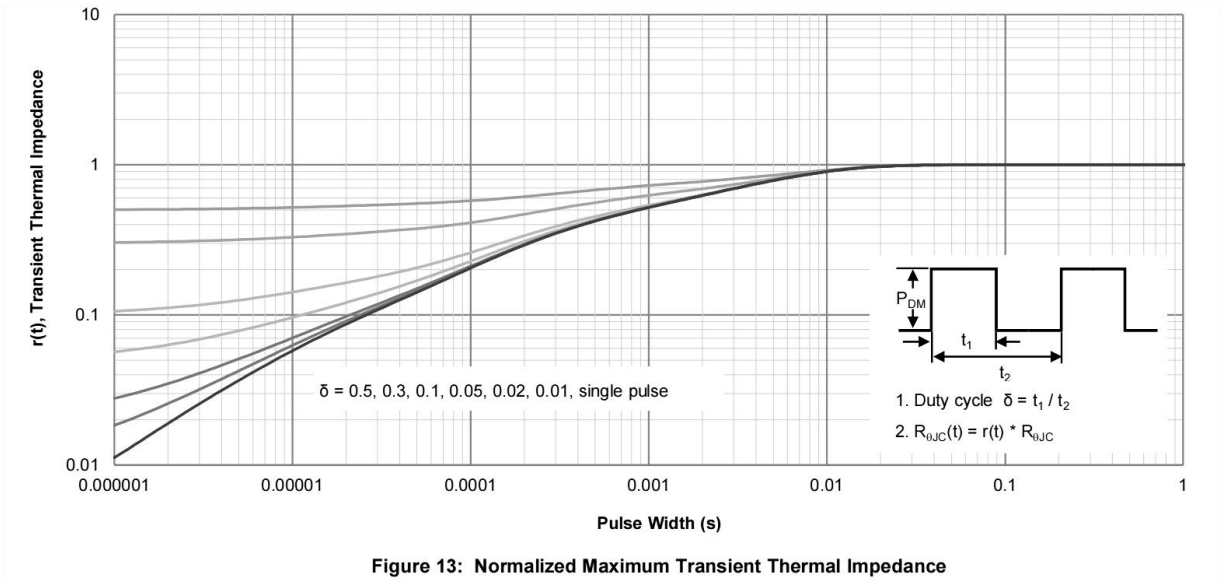
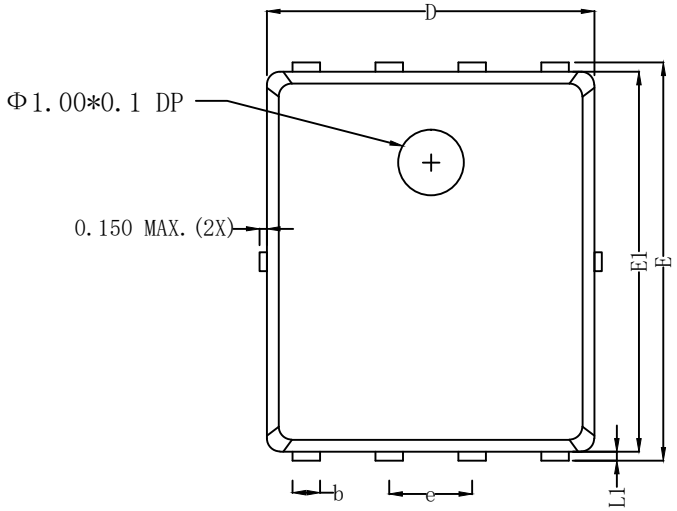
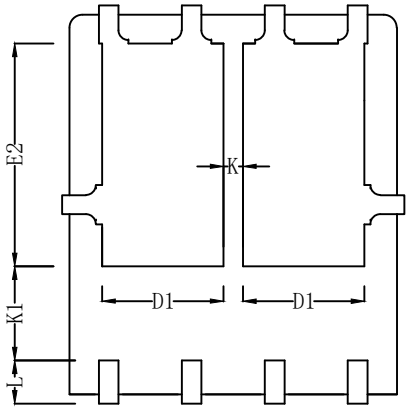
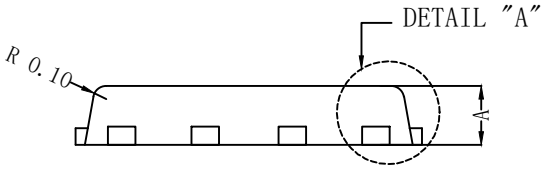


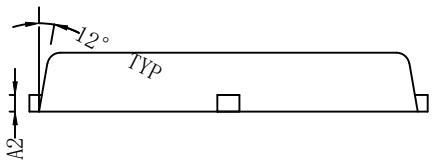
Figure 13: Normalized Maximum Transient Thermal Impedance

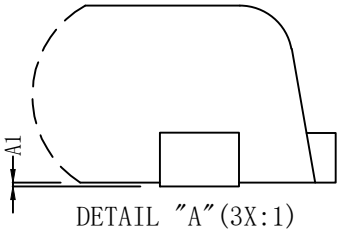
PDFN5X6 Package Information











Dimensions In Millimeterer			
Symbol	MIN	TYP	MAX
A	0.90	1.00	1.10
A1	0.00	0.03	0.05
A2		0.254 REF	
b	0.25	0.30	0.35
D	4.80	4.90	5.00
D1	1.60	1.70	1.80
E	5.90	6.00	6.10
E1	5.65	5.75	5.85
E2	3.38	3.48	3.58
e		1.27 BSC	
K	0.55	0.60	0.65
K1		1.35 REF	
L	0.55	0.60	0.65
L1	0.10	0.13	0.16

Revision History

Revision	Release	Remark
V1.0	2024/07/01	Initial Release

Disclaimer

The information given in this document describes the independent performance of the product,but similar performance is not guaranteed under other working conditions,and cannot be guaranteed when installed with other products or equipment.To achieve the required performance of the product in actual scenarios,the customer should conduct a complete application test to assess the functionality of the product.

Allpower assumes no responsibility for equipment failures result from using products at values that exceed the ratings,operating conditions,or other parameters listed in the product specifications.

The product described in this specification is not applicable for aerospace or other applications which requires high reliability.Customers using or selling these products for use in medical,life-saving,or life-sustaining applications do so at their own risk and agree to fully indemnify.

Due to product or technical improvements,the information described or contained herein may be changed without prior notice.