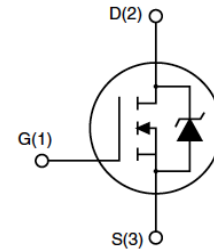


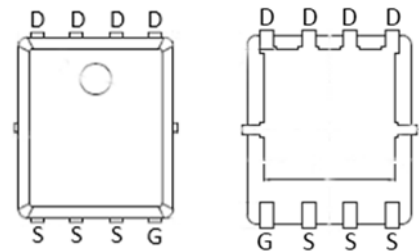
Feature

- 60V,150A
 $R_{DS(ON)} < 2.3m\Omega @ V_{GS}=10V$ (TYP:1.9m Ω)
 $R_{DS(ON)} < 3.5m\Omega @ V_{GS}=4.5V$ (TYP:3.0m Ω)
- Split Gate Trench Technology
- Lead free product is acquired
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- $T_{jmax}=175^{\circ}C$
- AEC-Q101 qualified



Application

- PWM applications
- Load Switch
- Power management



PDFN5X6

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
G022N06G	APG022N06G-AU	PDFN5X6	-	-	5000

ABSOLUTE MAXIMUM RATINGS ($T_a=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_c = 25^{\circ}C$)	I_D	150	A
Continuous Drain Current ($T_c = 100^{\circ}C$)	I_D	100	A
Pulsed Drain Current ⁽¹⁾	I_{DM}	450	A
Single Pulsed Avalanche Energy ⁽²⁾	E_{AS}	520	mJ
Power Dissipation	P_D	168	W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	0.89	$^{\circ}C/W$
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	45	$^{\circ}C/W$
Junction Temperature	T_J	175	$^{\circ}C$
Storage Temperature	T_{STG}	-55~ +175	$^{\circ}C$

MOSFET ELECTRICAL CHARACTERISTICS(T_a=25°C unless otherwise noted)

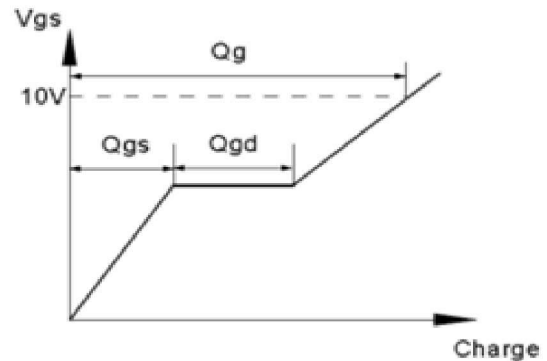
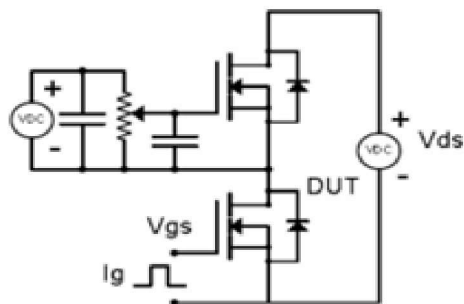
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	60	-	-	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =60V, V _{GS} = 0V	-	-	1	μA
Gate-body leakage current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V	-	-	±100	nA
Gate threshold voltage ⁽³⁾	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.5	2.0	3.0	V
Drain-source on-resistance ⁽³⁾	R _{DS(on)}	V _{GS} =10V, I _D =20A	-	1.9	2.3	mΩ
		V _{GS} =4.5V, I _D =10A	-	3.0	3.5	mΩ
Forward Threshold Voltage	g _{fs}	V _{DS} =5V, I _D =20A	-	75	-	S
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f =100KHz	-	6052	-	pF
Output Capacitance	C _{oss}		-	1470	-	
Reverse Transfer Capacitance	C _{rss}		-	185	-	
Switching characteristics						
Turn-on delay time	t _{d(on)}	V _{DD} =30V, I _D =25A, V _{GS} =10V, R _G =2Ω	-	8	-	ns
Turn-on rise time	t _r		-	15	-	
Turn-off delay time	t _{d(off)}		-	55	-	
Turn-off fall time	t _f		-	25	-	
Total Gate Charge	Q _g	V _{DS} =30V, I _D =25A, V _{GS} =10V	-	110	-	nC
Gate-Source Charge	Q _{gs}		-	20	-	
Gate-Drain Charge	Q _{gd}		-	21	-	
Reverse Recovery Chrage	Q _{rr}	I _F =20A, di/dt=100A/us		100		nC
Reverse Recovery Time	T _{rr}	I _F =20A, di/dt=100A/us		72		ns
Source-Drain Diode characteristics						
Diode Forward voltage ⁽³⁾	V _{SD}	V _{GS} =0V, I _S =10A	-	-	1.2	V
Diode Forward current ⁽⁴⁾	I _S		-	-	150	A

Notes:

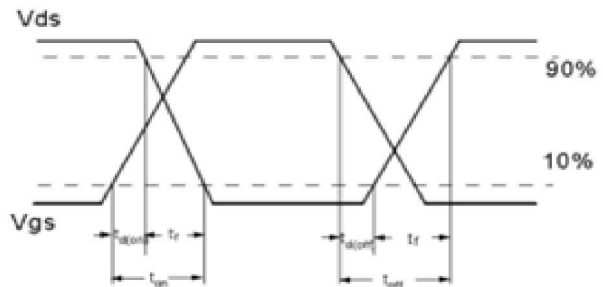
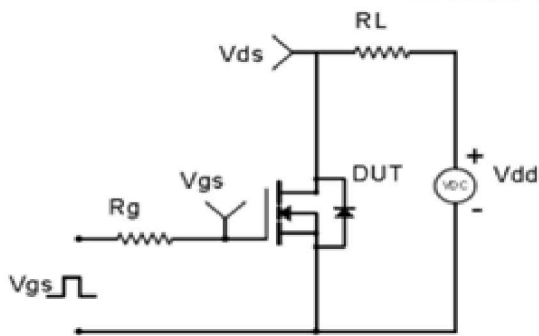
1. Repetitive Rating: pulse width limited by maximum junction temperature
2. EAS Condition: T_J=25°C, V_{DD}=48V, R_G=25 Ω, L=0.5Mh
3. Pulse Test: pulse width≤300μs, duty cycle≤2%
4. Surface Mounted on FR4 Board, t≤10 sec

Test Circuit & Waveform

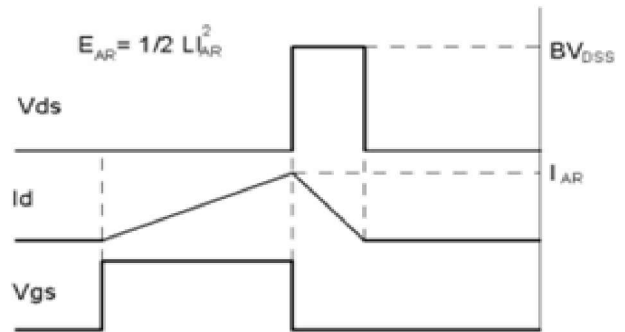
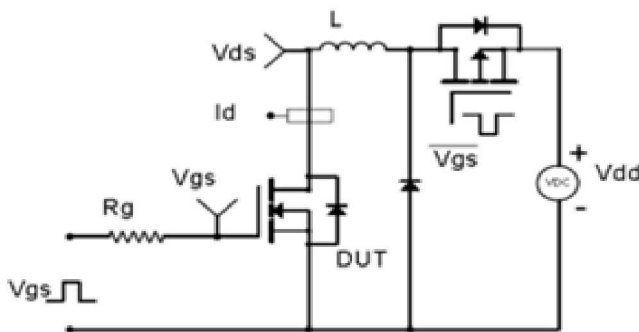
Gate Charge Test Circuit & Waveform



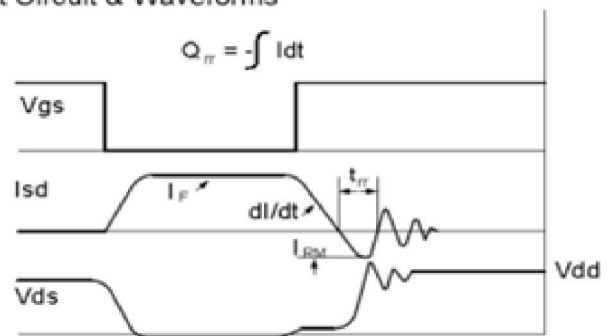
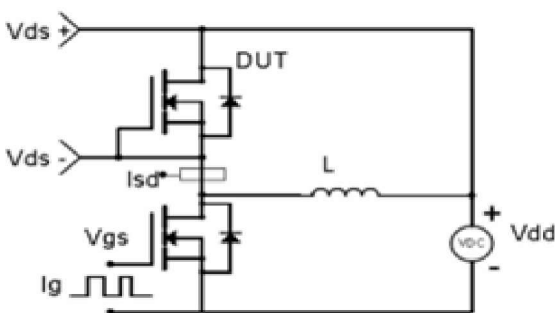
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Typical Performance Characteristics

Fig.1 Power Dissipation Derating Curve

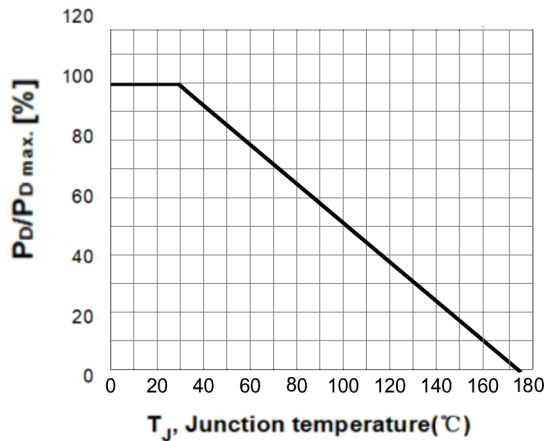


Fig.2 Avalanche Energy Derating Curve vs. Junction Temperature

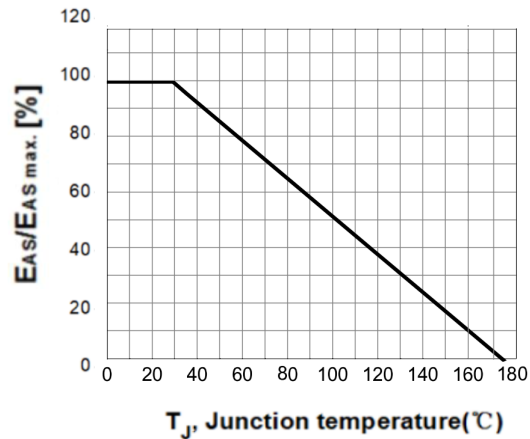


Fig.3 Typical Output Characteristics

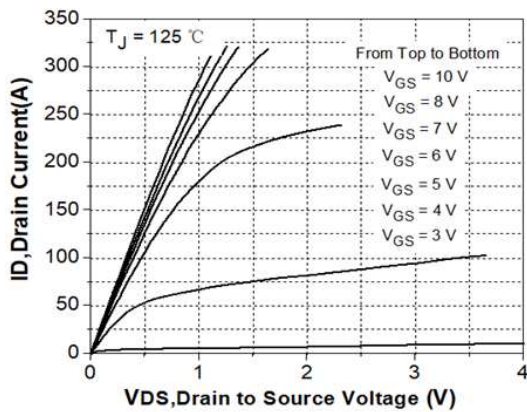


Fig. 4 Transconductance vs. Drain Current

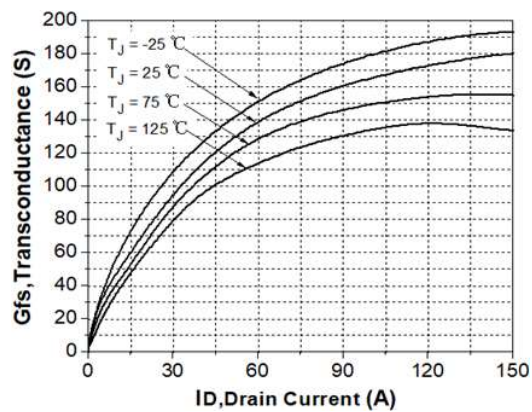


Fig.5 Typical Transfer Characteristics

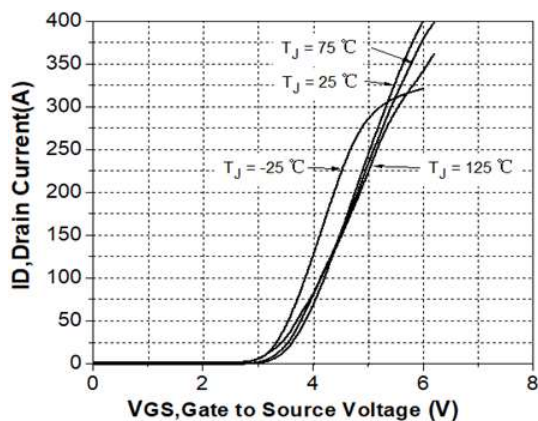


Fig. 6 On-Resistance vs. Drain Current @-25°C

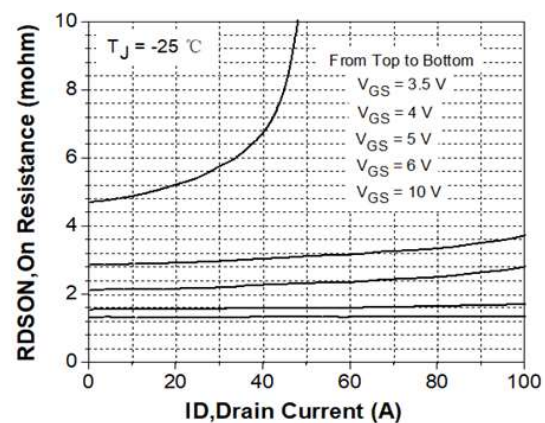


Fig.7 On-Resistance vs. Drain Current @25°C

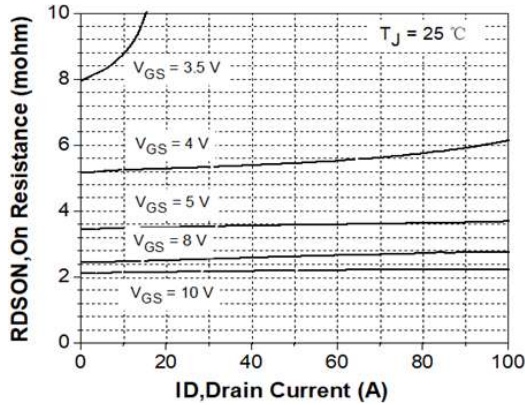


Fig. 8 On-Resistance vs. Drain Current @125°C

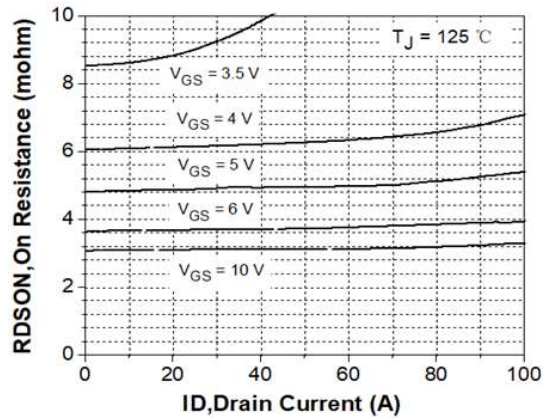


Fig.9 Typical Capacitance vs. Drain Source Voltage

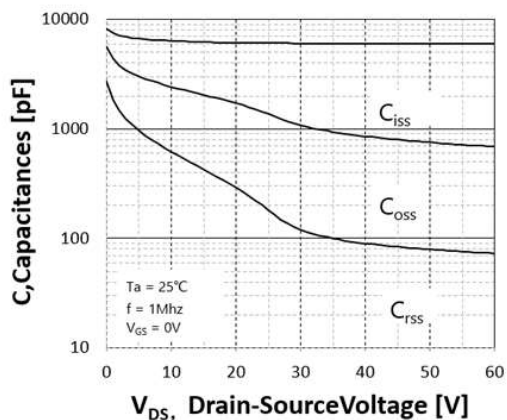


Fig.10 Dynamic Input Characteristics

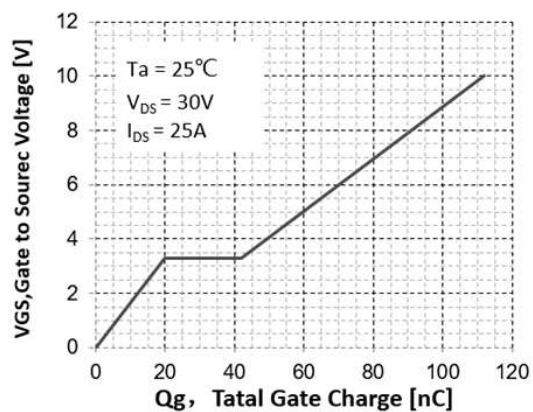


Fig.11 Breakdown Voltage vs. Junction Temperature

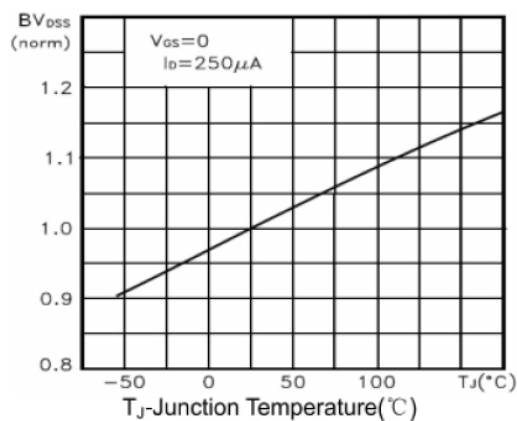


Fig. 12 Gate Threshold Voltage vs. Junction Temperature

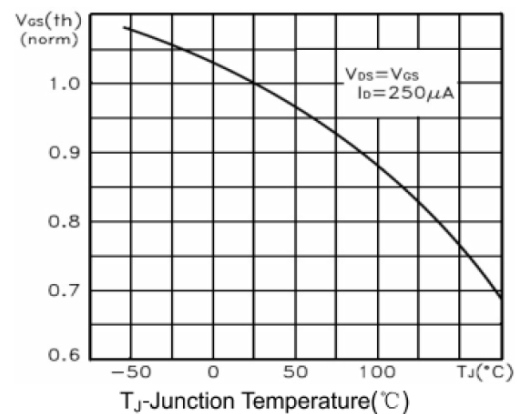


Fig.13 On-Resistance Variation vs. Junction Temperature

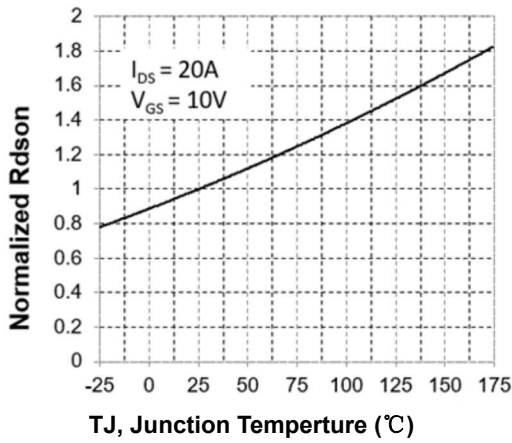


Fig.14 Body Diode Forward Voltage vs. Reverse Drain Current

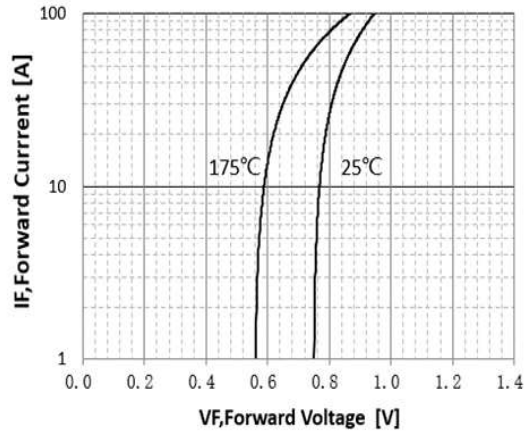


Fig.15 Safe Operating Area

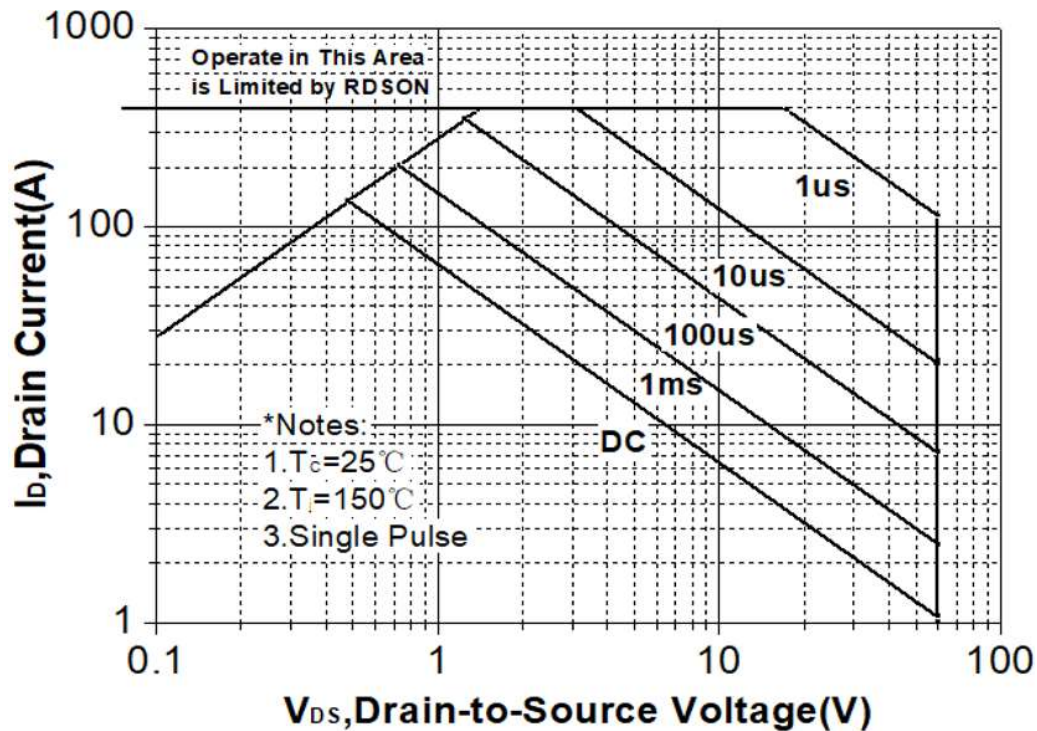
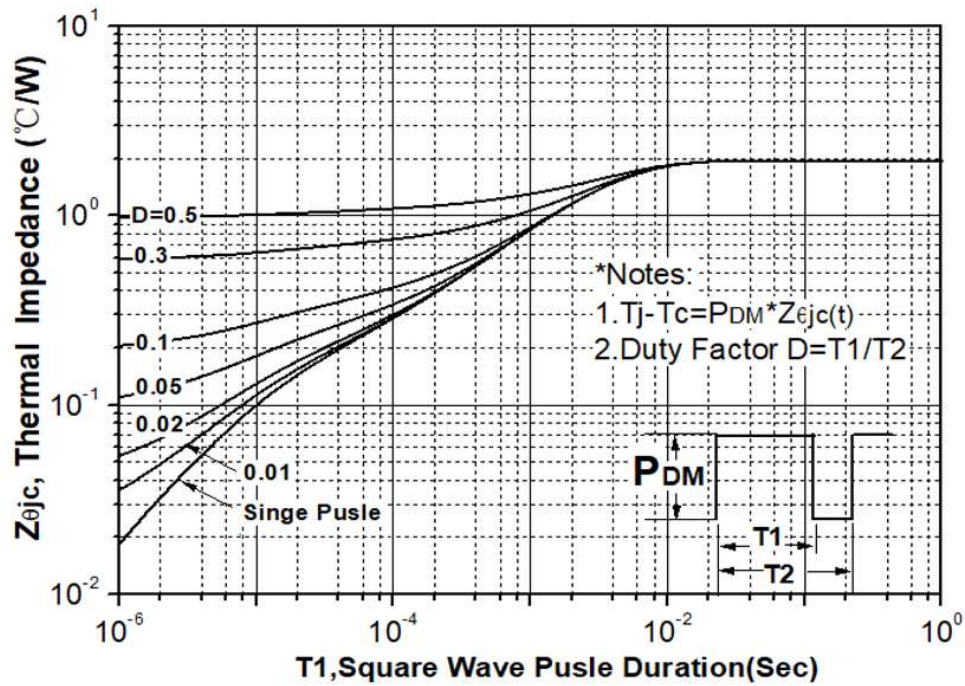
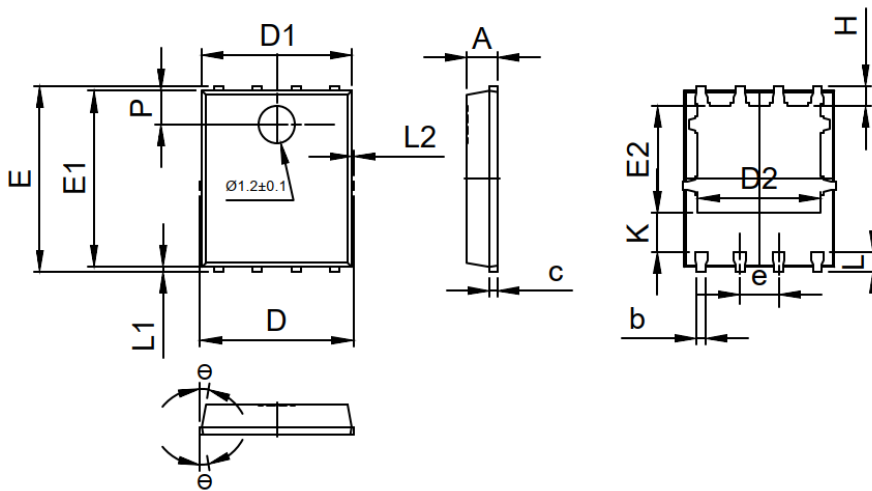


Fig.16 Transient Thermal Response Curve



PDFN5X6 Package Information



SYMBOL	MIN	NOM	MAX
A	0.90	1.00	1.10
b	0.25	0.30	0.35
c	0.21	0.25	0.34
D	-	-	5.10
D1	4.80	4.90	5.00
D2	3.91	4.01	4.11
e	1.27 BSC		
E	5.90	6.00	6.10
E1	5.70	5.75	5.80
E2	3.375	3.475	3.575
H	0.55	0.65	0.75
K	1.20	-	-
L	0.55	0.65	0.75
L1	0.05	0.15	0.25
L2	-	-	0.12
θ	8°	10°	12°
P	1.00	1.10	1.20