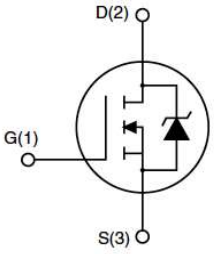
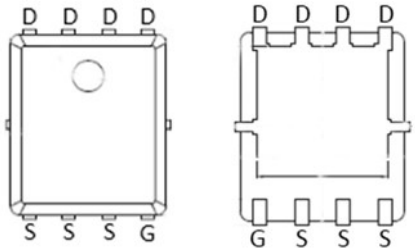
Features

- 60V,50A
  $R_{DS(ON)}$ <7.2mΩ @V_{GS}=10V TYP:5.3mΩ
  $R_{DS(ON)}$ <10.5mΩ @V_{GS}=4.5V TYP:7.6mΩ
- Low RDS(ON)
- 100% UIS Tested
- RoHS compliant (Note 1)
- Halogen-free





PDFN5X6

Applications

- Battery Management System
- Motor Drivers
- DC-DC Converte

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
G072N06G	APG072N06G	PDFN5X6	-	-	5000

ABSOLUTE MAXIMUM RATINGS (T_a=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 (T_C =25℃) (2,3)	I_D	50	A
Continuous Drain Current (T_C =100℃) (2,3)	I_D	36	A
Pulsed Drain Current (1,2,3)	I_{DM}	200	A
Single Pulsed Avalanche Energy (V_{DD} =30V,L=0.5mH)	E_{AS}	90	mJ
Drain Power Dissipation	P_D	30	W
Thermal Resistance from Junction to Case(2)	$R_{\theta JC}$	4.2	℃/W
Thermal Resistance- Junction to Ambient(2)	$R_{\theta JA}$	56	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

Notes:

1. Pulse width ≤ 300 μs, duty cycle ≤ 2 %
2. Surface Mounted on n 1 in2 pad area, t ≤ 10 sec.
3. Limited by bonding wire

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	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	1.0	2.0	3.0	V
Drain-source on-resistance[a]	$R_{DS(on)}$	V_{GS} =10V, I_D =20A	-	5.3	7.2	mΩ
		V_{GS} =4.5V, I_D =15A	-	7.6	10.5	mΩ
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS} =30V, V_{GS} =0V, f =1.0MHz	-	2013	-	pF
Output Capacitance	C_{oss}		-	492	-	
Reverse Transfer Capacitance	C_{rss}		-	34	-	
Switching characteristics						
Turn-on delay time	$t_{d(on)}$	V_{DD}=30V, I_D=50A, R_G=6Ω, R_L=1.5Ω,V_G=10V	-	16	-	ns
Turn-on rise time	t_r		-	89	-	
Turn-off delay time	$t_{d(off)}$		-	47.5	-	
Turn-off fall time	t_f		-	111	-	
Total Gate Charge	Qg	V_{DS}=30V, I_D=50A, V_{GS}=10V	-	32	-	nC
Gate-Source Charge	Qgs		-	4.3	-	
Gate-Drain Charge	Qgd		-	5.2	-	
Source-Drain Diode characteristics						
Diode Forward voltage[a]	V_{SD}	T_J=25℃, V_{GS} =0V, I_S=20A	-	-	0.7	V
Diode Forward current	I_S	T_C=25℃	-	-	45	A
Body Diode Reverse Recovery Time	trr	T_J=25℃，IF=20A,di/dt=100A/us		38		ns
Body Diode Reverse Recovery Charge	Qrr	T_J=25℃，IF=20A,di/dt=100A/us		41		uc

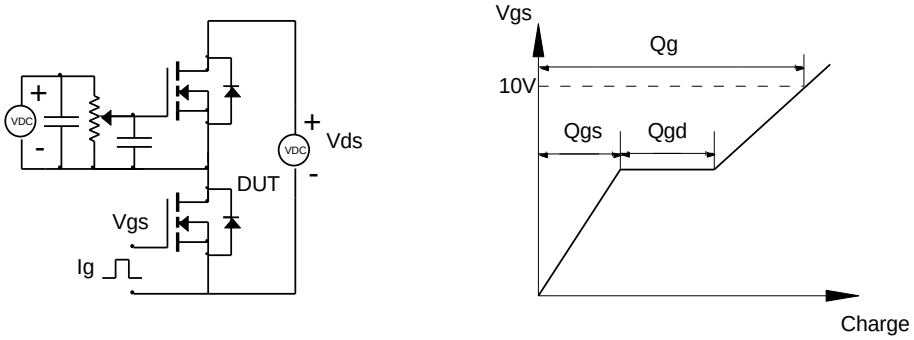
Notes:

a) Pulse width ≤ 300 μs, duty cycle ≤ 2%

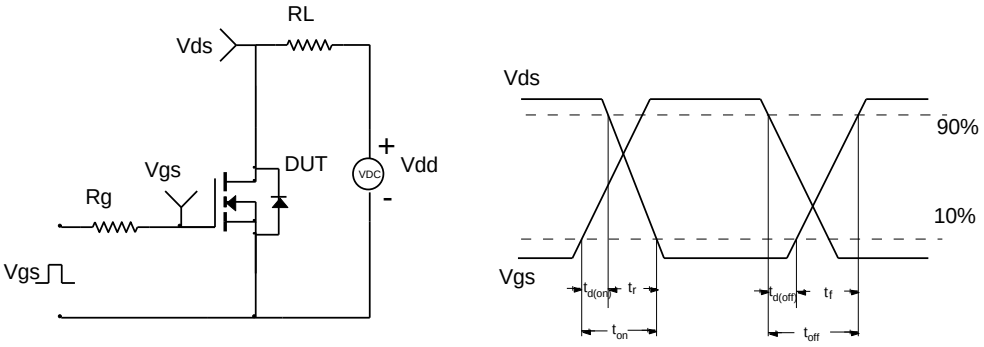
b) Guaranteed by design, not subject to production testing

Test Circuit

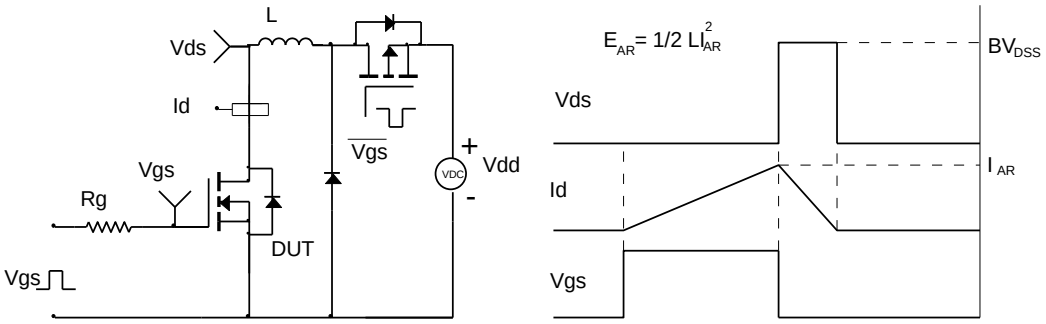
Gate Charge Test Circuit & Waveform



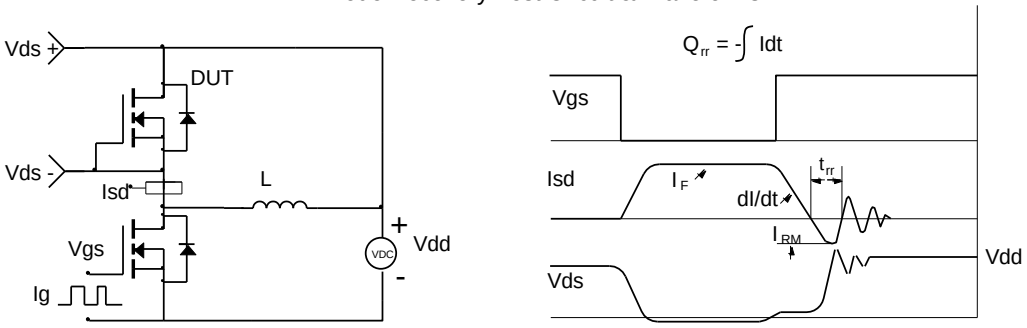
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Typical Performance Characteristics

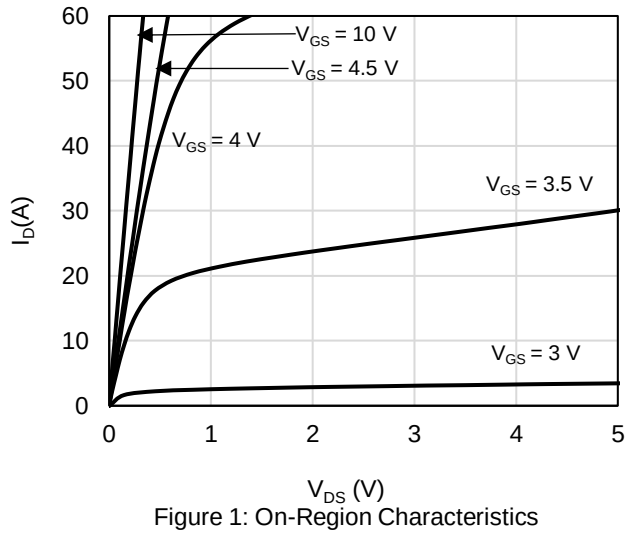


Figure 1: On-Region Characteristics

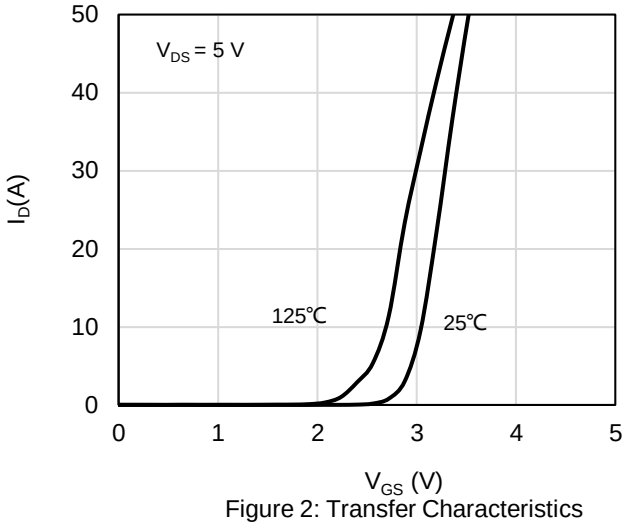


Figure 2: Transfer Characteristics

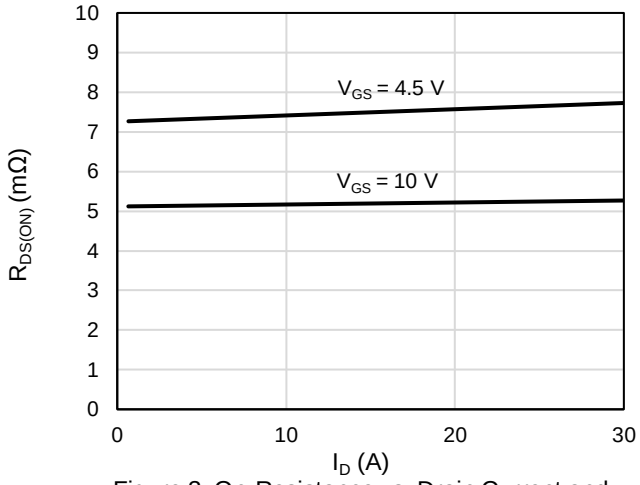


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

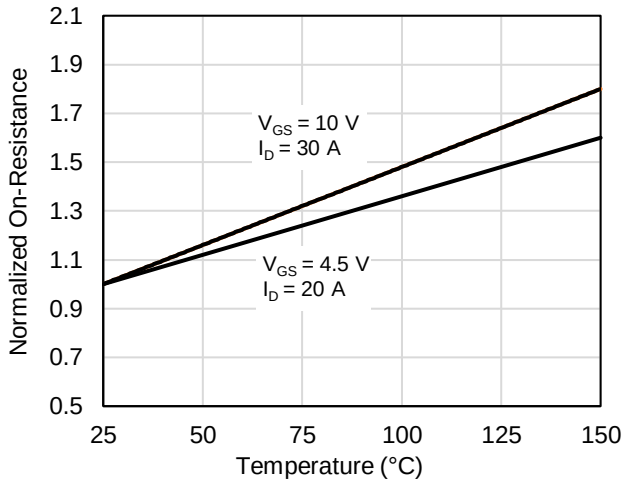


Figure 4: On-Resistance vs. Junction Temperature

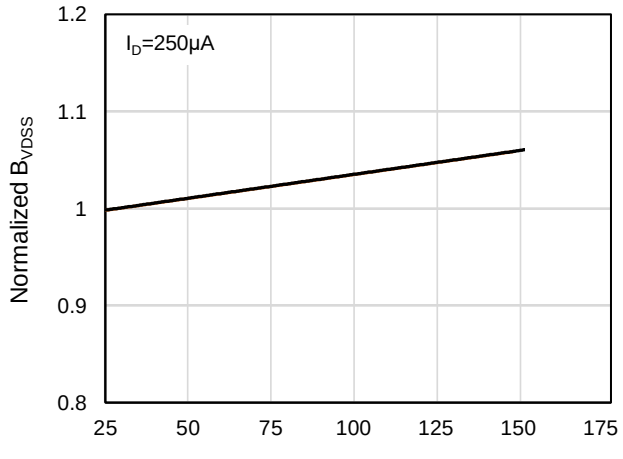


Figure 5: Breakdown Voltage vs. Junction Temperature

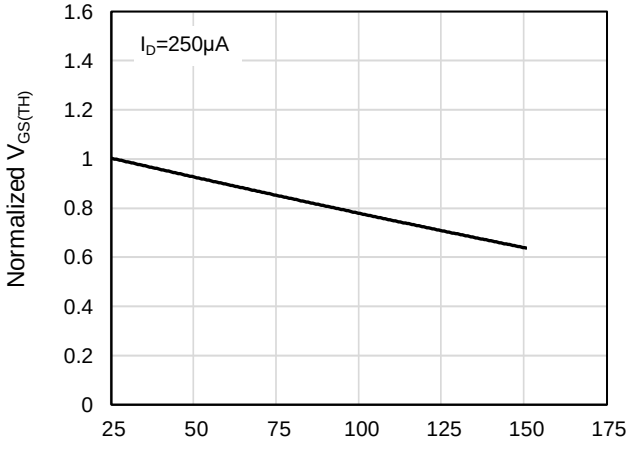


Figure 6: Threshold Voltage vs. Junction Temperature

Typical Performance Characteristics

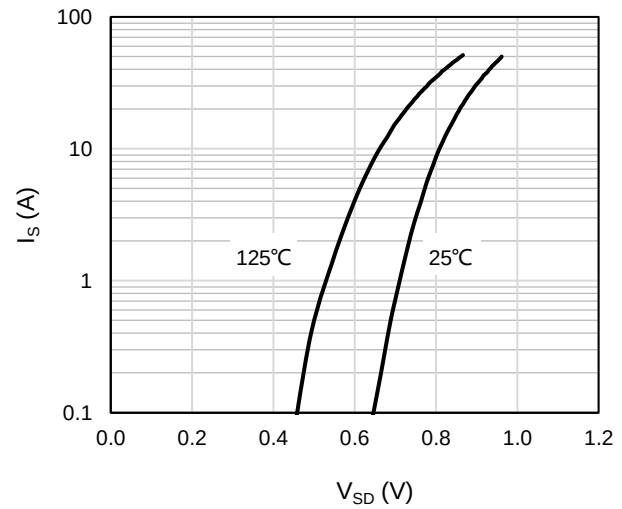


Figure 7: Body-Diode Characteristics

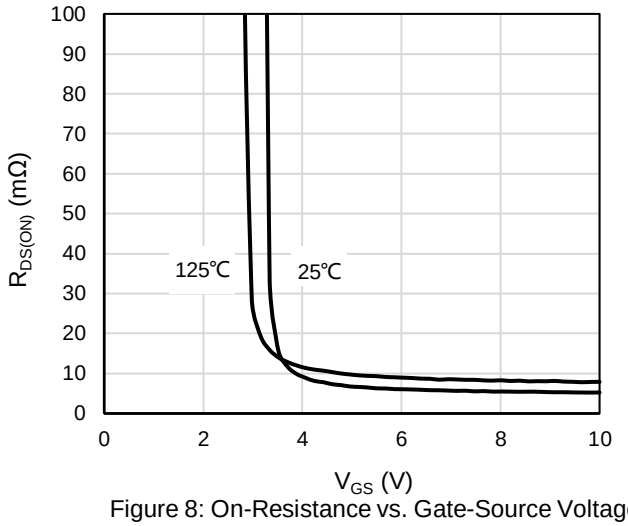


Figure 8: On-Resistance vs. Gate-Source Voltage

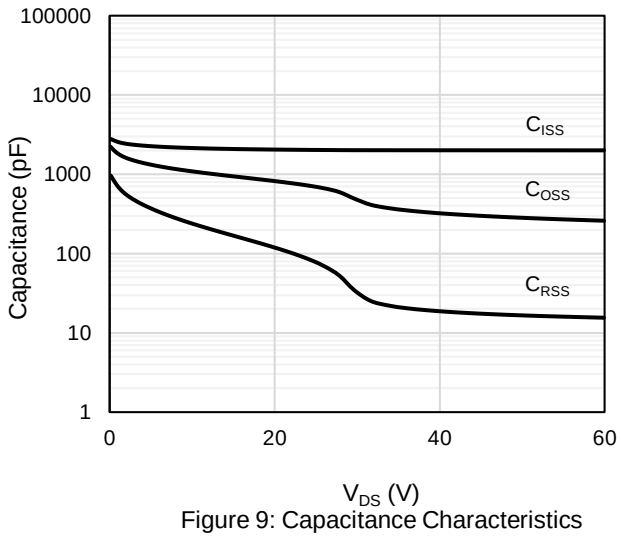


Figure 9: Capacitance Characteristics

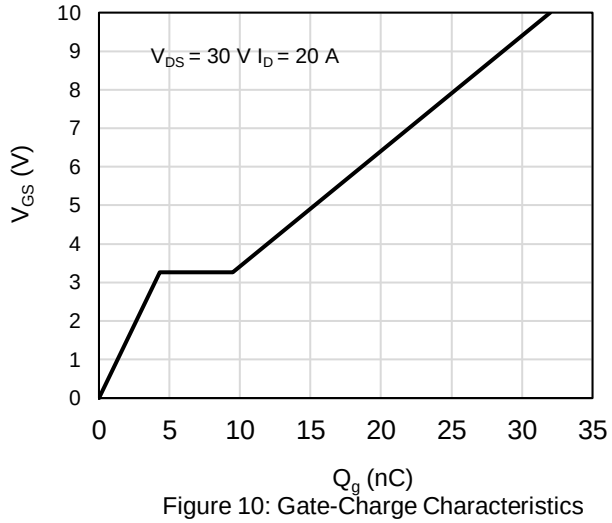


Figure 10: Gate-Charge Characteristics

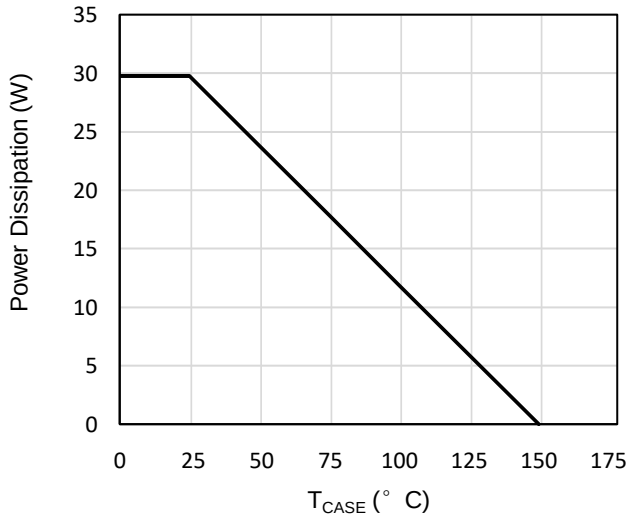


Figure 11: Power De-rating

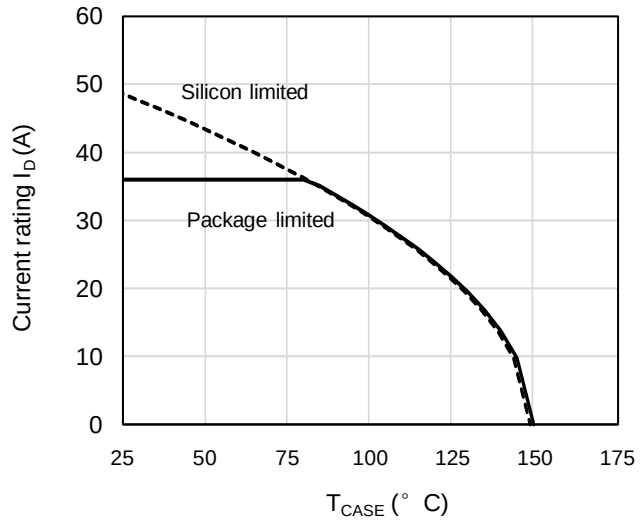


Figure 12: Current De-rating

Typical Performance Characteristics

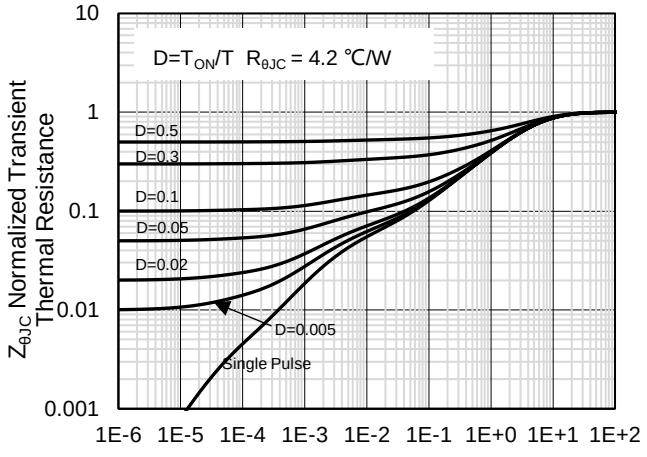


Figure 13: Normalized Maximum Transient Thermal Impedance

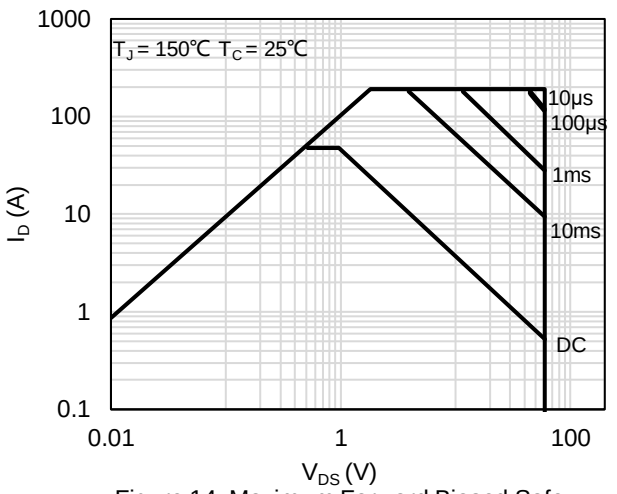
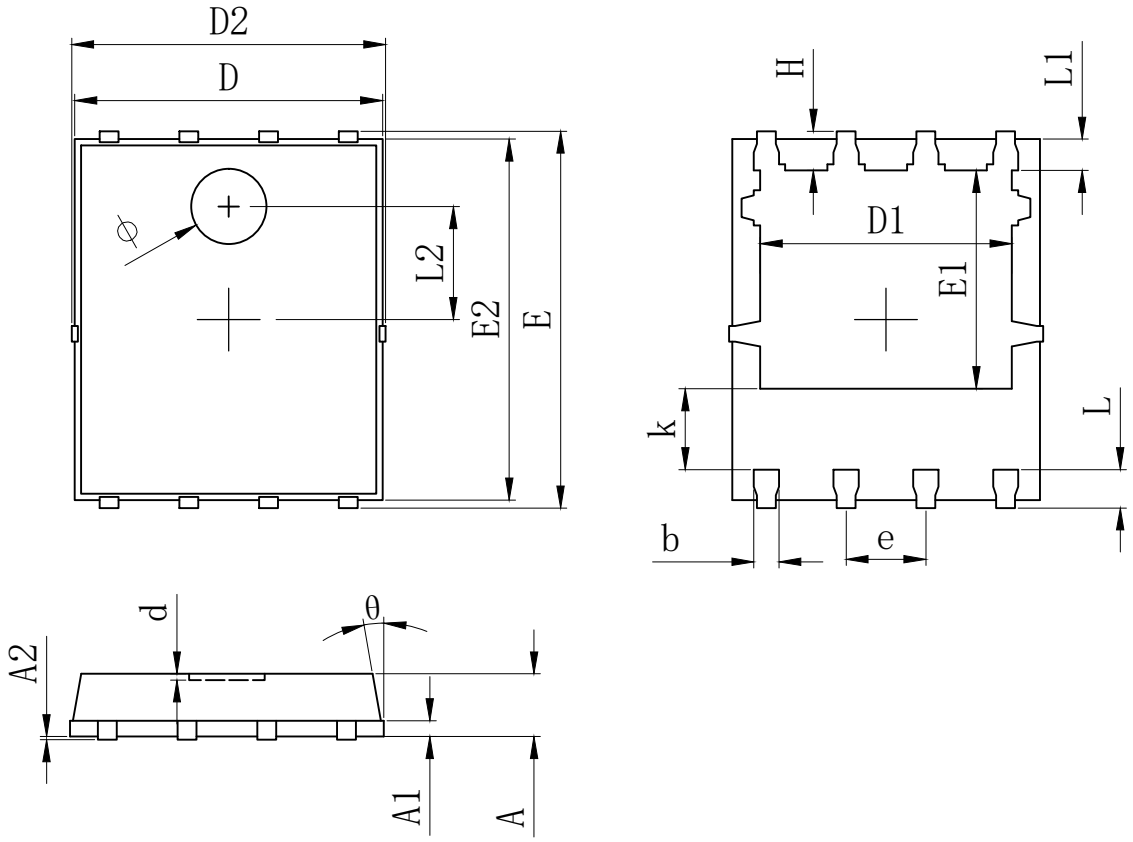


Figure 14: Maximum Forward Biased Safe Operating Area

PDFN5X6 Package Information



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	0.900	1.000	1.100
A1	0.254 REF.		
A2	0~0.05		
D	4.824	4.900	4.976
D1	3.910	4.010	4.110
D2	4.924	5.000	5.076
E	5.924	6.000	6.076
E1	3.375	3.475	3.575
E2	5.674	5.750	5.826
b	0.350	0.400	0.450
e	1.270 TYP.		
L	0.534	0.610	0.686
L1	0.424	0.500	0.576
L2	1.800 REF.		
k	1.190	1.290	1.390
H	0.549	0.625	0.701
θ	8°	10°	12°
Φ	1.100	1.200	1.300
d			0.100