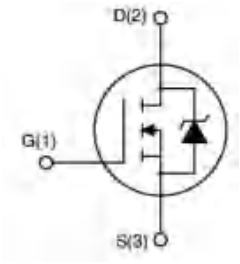
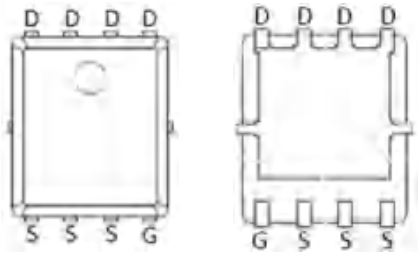
Features

- 40V,65A
  $R_{DS(ON)}$ <5.9mΩ @V_{GS}=10V TYP:5.0mΩ
  $R_{DS(ON)}$ <10mΩ @V_{GS}=4.5V TYP:7.5mΩ
- Lead free and Green Device Available
- Excellent RDS(ON) and Low Gate Charge
- Lead free product Fast switching speed





PDFN5X6

Applications

- Load Switch
- PWM Application
- Power management

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
85N04G	AP85N04G	PDFN5X6	-	-	5000

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (T_C =25℃)	I_D	65	A
Continuous Drain Current (T_C =100℃)	I_D	41	A
Pulsed Drain Current[1]	I_{DM}	260	A
Power Dissipation (T_a =25℃)	P_D	48	W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	2.6	℃/W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	60	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-50~ +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	40	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS} =40V, V_{GS} = 0V,T_J=25℃	-	-	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	1.5	2.2	V
Drain-source on-resistance(2)	$R_{DS(on)}$	V_{GS} =10V, I_D =30A	-	5.0	5.9	mΩ
		V_{GS} =4.5V, I_D =20A		7.5	10	
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS} =20V, V_{GS} =0V, f =1.0MHz	-	2448	-	pF
Output Capacitance	C_{oss}		-	396	-	
Reverse Transfer Capacitance	C_{rss}		-	200	-	
Switching characteristics						
Turn-on delay time	$t_{d(on)}$	V_{DD}=20V, I_D=20A, R_L=1Ω ,R_G=3Ω V_{GS}=10V	-	13	-	ns
Turn-on rise time	t_r		-	11	-	
Turn-off delay time	$t_{d(off)}$		-	41	-	
Turn-off fall time	t_f		-	14	-	
Total Gate Charge	Qg	V_{DS}=20V, I_D=30A, V_{GS}=4.5V	-	56	-	nC
Gate-Source Charge	Qgs		-	5	-	
Gate-Drain Charge	Qgd		-	13.5	-	
Source-Drain Diode characteristics						
Diode Forward voltage	V_{SD}	T_J=25℃, V_{GS} =0V, I_S=30A	-	-	1.2	V
Diode Forward current	I_S	T_C=25℃	-	-	65	A
Body Diode Reverse Recovery Time	trr	T_J=25℃， IF=30A,di/dt=100A/us		22		ns
Body Diode Reverse Recovery Charge	Qrr	T_J=25℃， IF=30A,di/dt=100A/us		11		uc

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Test Circuit

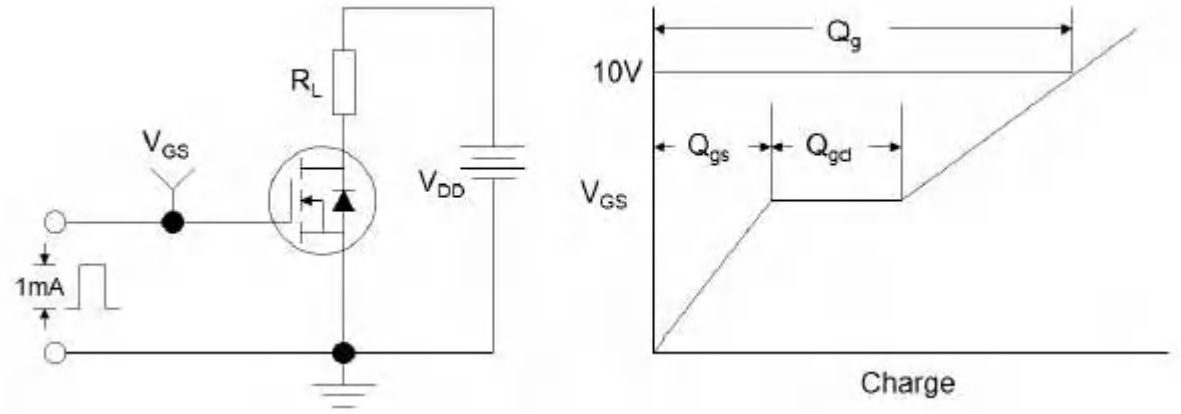


Figure1:Gate Charge Test Circuit & Waveform

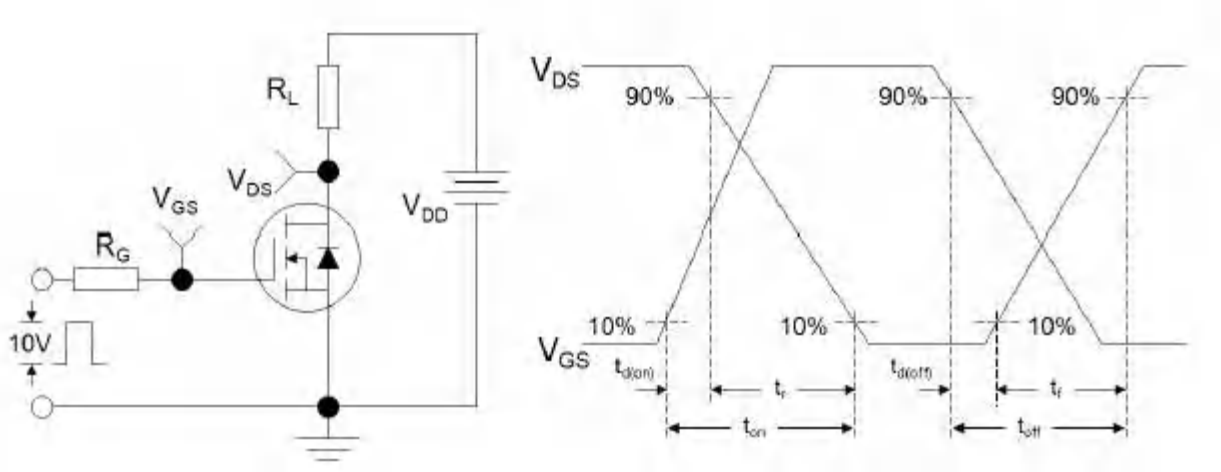


Figure 2: Resistive Switching Test Circuit & Waveforms

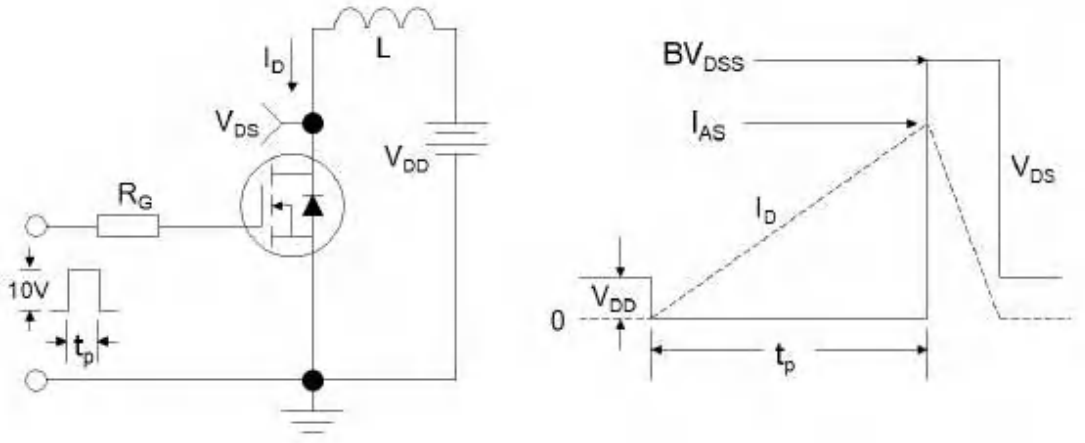


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

Typical Performance Characteristics

Figure1: Output Characteristics

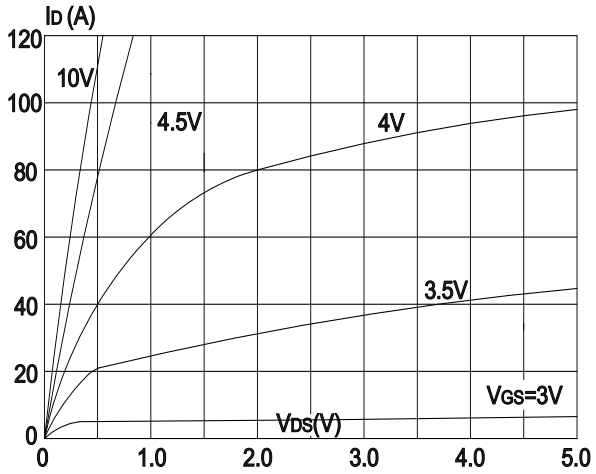


Figure 2: Typical Transfer Characteristics

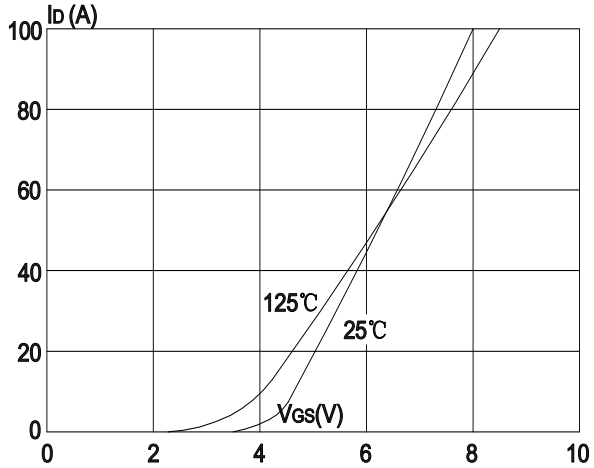


Figure 3: On-resistance vs. Drain Current

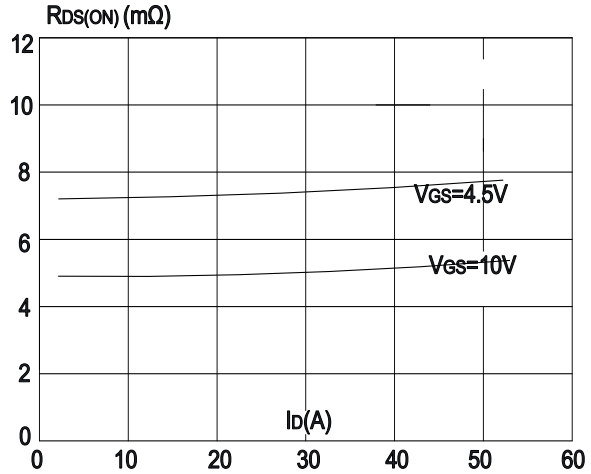


Figure 4: Body Diode Characteristics

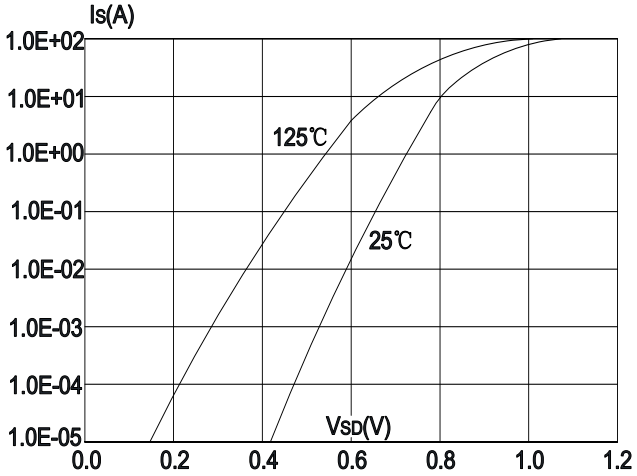


Figure 5: Gate Charge Characteristics

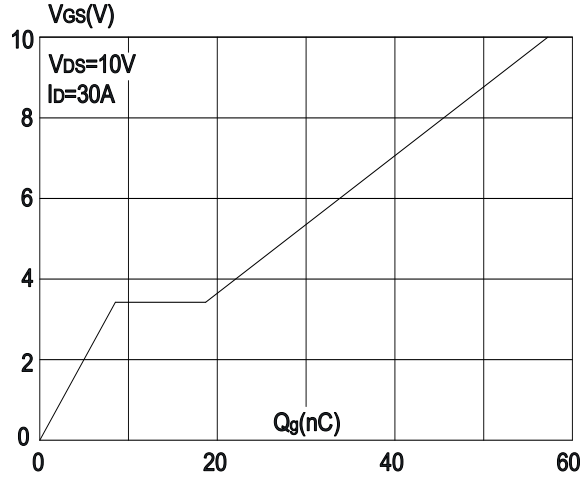
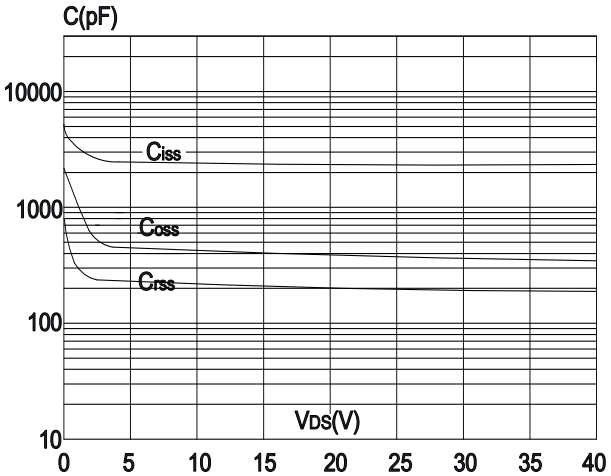


Figure 6: Capacitance Characteristics



Typical Performance Characteristics

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

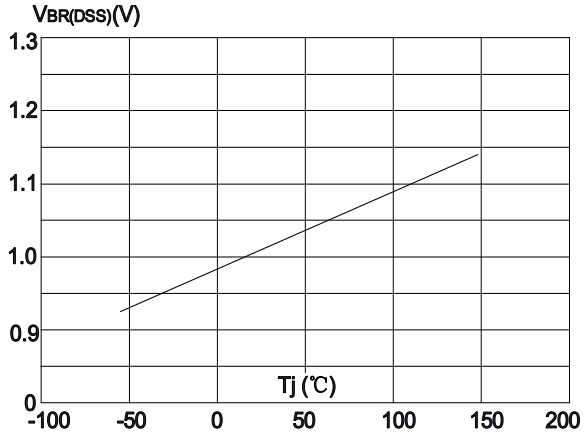


Figure 8: Normalized on Resistance vs. Junction Temperature

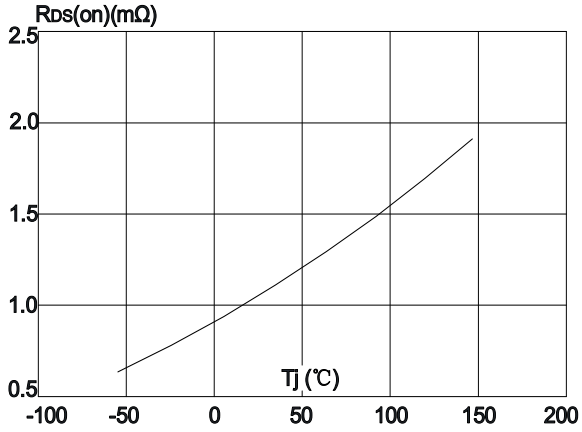


Figure 9: Maximum Safe Operating Area

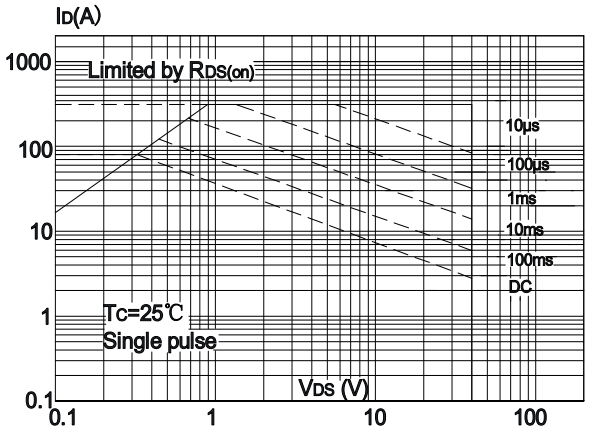


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

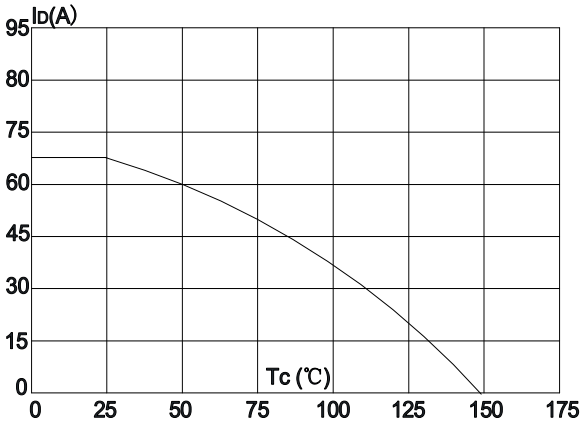
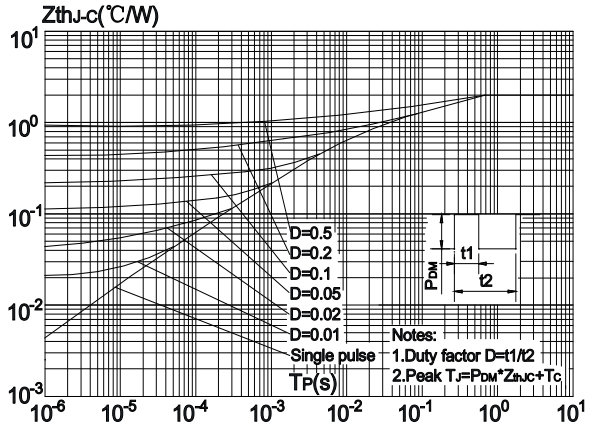
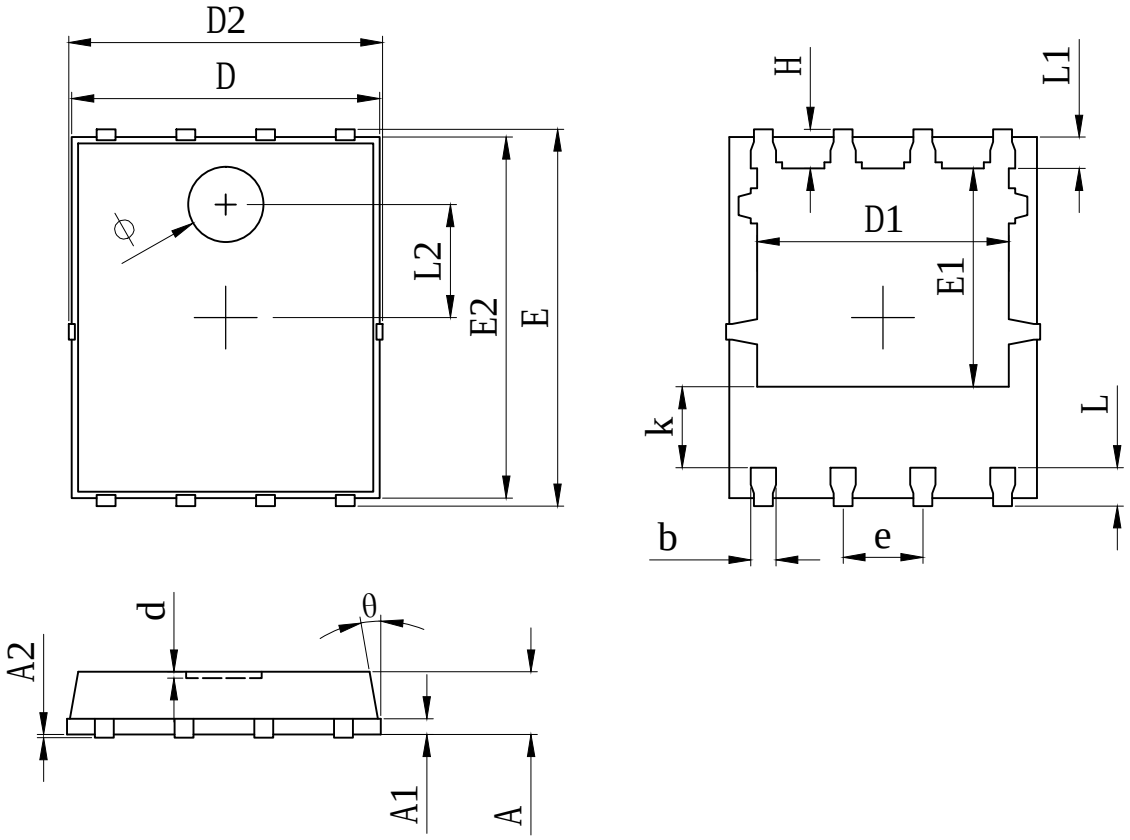


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



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