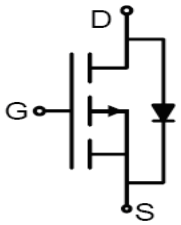
AP30P06G-AU

P-Channel Enhancement Mosfet

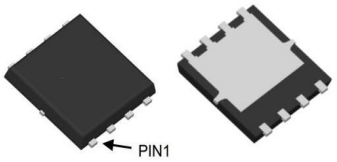
DATA SHEET

Features

- -60V, -26A
  $R_{DS(ON)}$ <29mΩ @V_{GS}=-10V TYP:24mΩ
  $R_{DS(ON)}$ <39mΩ @V_{GS}=-4.5V TYP:30.4mΩ
- Advanced Trench Technology
- High Power and current handing capability
- Lead free product is acquired



Schematic Diagram



PDFN5X6

Applications

- Load Switch
- DC/DC converter for LCD display

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
30P06G-AU	AP30P06G-AU	PDFN5X6	13inch	-	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℃)	I_D	-26	A
Continuous Drain Current (T_C =100℃)	I_D	-18	A
Pulsed Drain Current (1)	I_{DM}	-104	A
Single Pulsed Avalanche Energy (2)	E_{AS}	196	mJ
Drain Power Dissipation	P_D	40.5	W
Thermal Resistance from Junction to Case(2)	$R_{\theta JC}$	3.7	℃/W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	60	℃/W
Junction Temperature	T_J	175	℃
Storage Temperature	T_{STG}	-55~ +175	℃

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	-1.8	-2.5	V
Drain-source on-resistance(3)	$R_{DS(on)}$	V_{GS} =-10V, I_D =-15A	-	24	29	mΩ
		V_{GS} =-4.5V, I_D =-10A		30.4	39	mΩ
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS} =-25V, V_{GS} =0V, f =1.0MHz	-	4026	-	pF
Output Capacitance	C_{oss}		-	134	-	
Reverse Transfer Capacitance	C_{rss}		-	98	-	
Switching characteristics						
Turn-on delay time	$t_{d(on)}$	V_{DS}=-30V, R_L=1.5Ω, R_G=3Ω, V_G=-10V	-	12.2	-	ns
Turn-on rise time	t_r		-	10	-	
Turn-off delay time	$t_{d(off)}$		-	64	-	
Turn-off fall time	t_f		-	14	-	
Total Gate Charge	Qg	V_{DS}=-30V, I_D=-20A, V_{GS}=-10V	-	68	-	nC
Gate-Source Charge	Qgs		-	10.5	-	
Gate-Drain Charge	Qgd		-	13	-	
Source-Drain Diode characteristics						
Diode Forward voltage(1)	V_{SD}	T_J=25℃, V_{GS} =0V, I_S=-15A	-	-	-1.2	V
Diode Forward current	I_S	T_C=25℃	-	-	-26	A
Body Diode Reverse Recovery Time	trr	T_J=25℃，IF=-20A,di/dt=100A/us		26		ns
Body Diode Reverse Recovery Charge	Qrr	T_J=25℃，IF=-20A,di/dt=100A/us		29		nc

Notes:

a) Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

b) EAS condition: TJ=25℃, VDD=-40V, VG=-10V, RG=25Ω, L=0.5mH

c) Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Electrical And Thermal Characteristics (Curves)

Figure 1. Output Characteristics

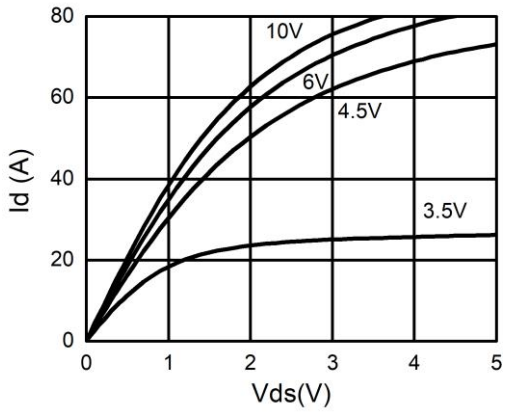


Figure 2. Transfer Characteristics

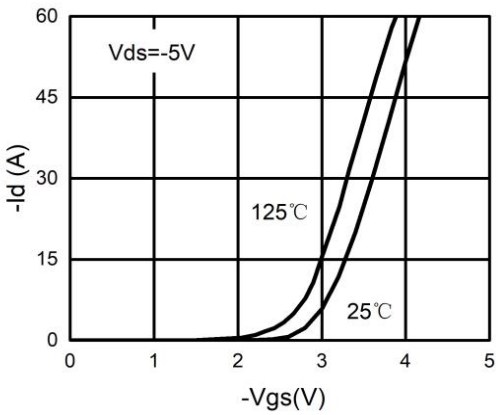


Figure 3. Power Dissipation

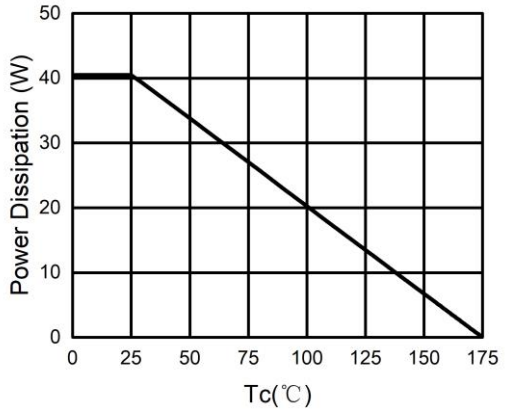


Figure 4. Drain Current

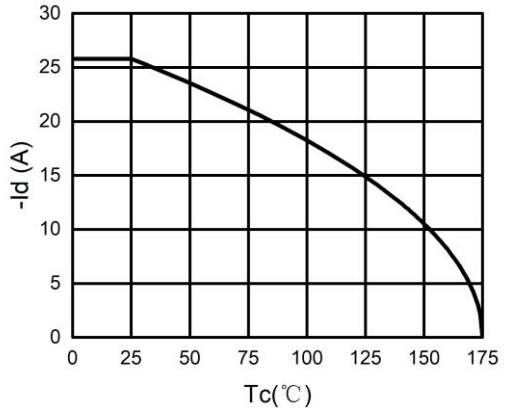


Figure 5. BV_{DSS} vs Junction Temperature

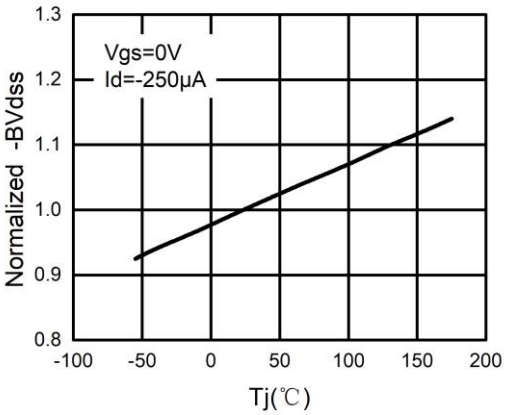
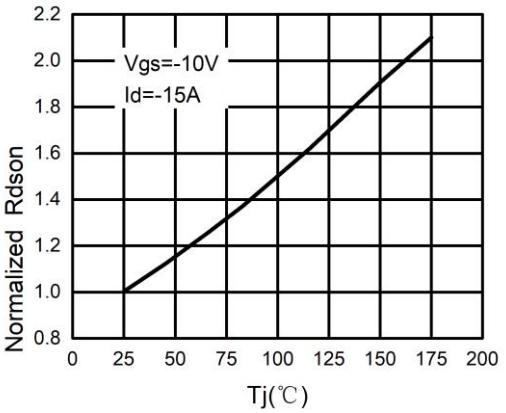


Figure 6. $R_{DS(ON)}$ vs Junction Temperature



Typical Electrical And Thermal Characteristics (Curves)

Figure 7. Gate Charge Waveforms

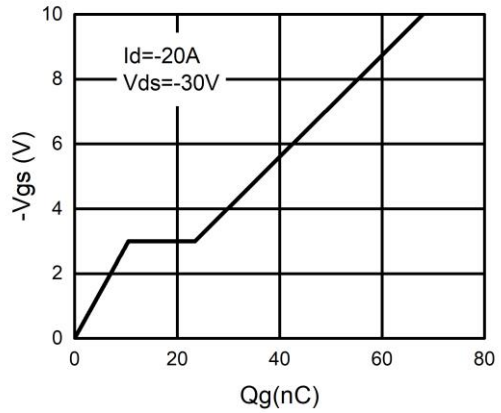


Figure 8. Capacitance

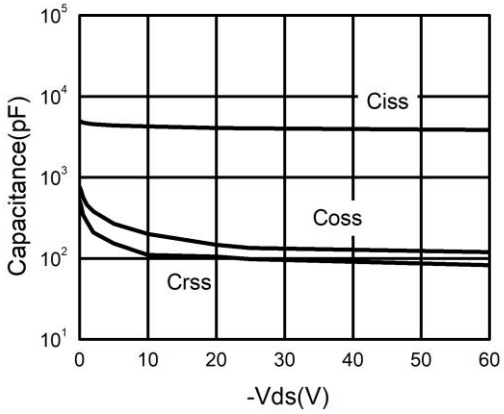


Figure 9. Body-Diode Characteristics

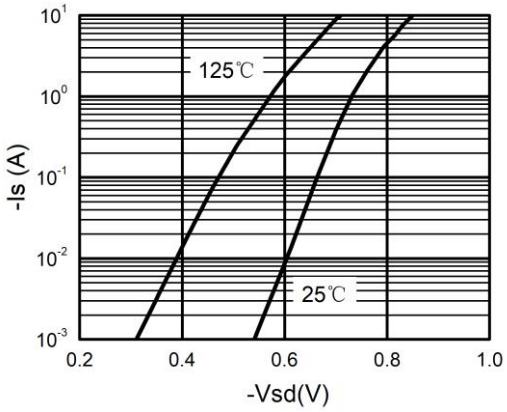
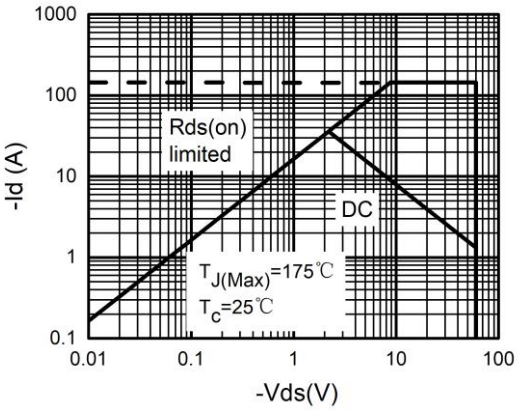
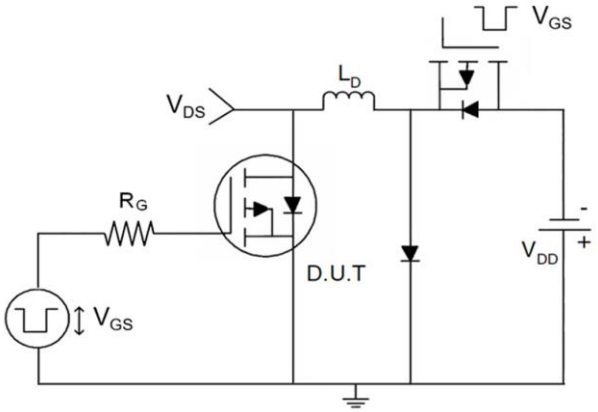


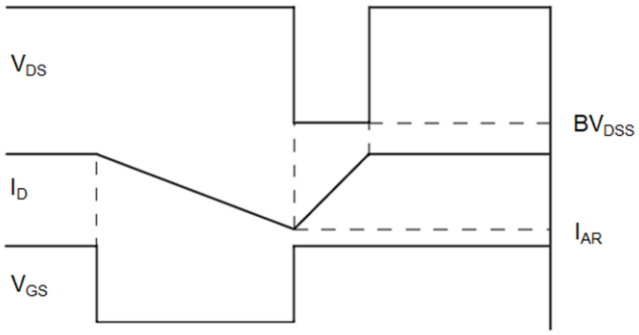
Figure 10. Maximum Safe Operating Area



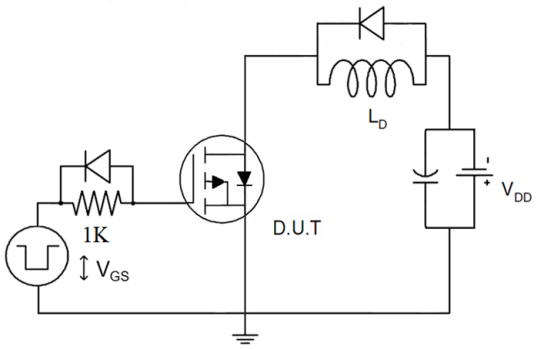
Test Circuit

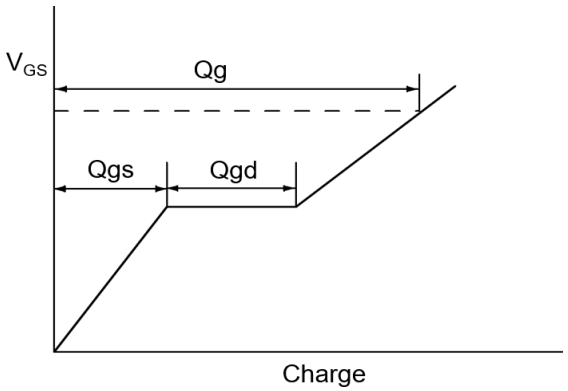
1) E_{AS} Test Circuits



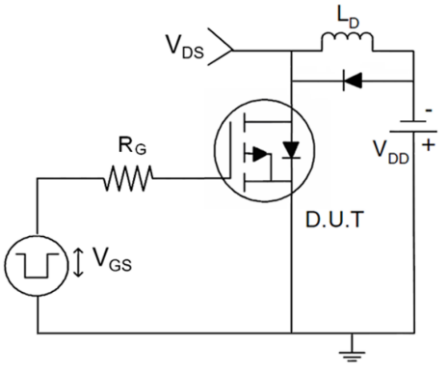


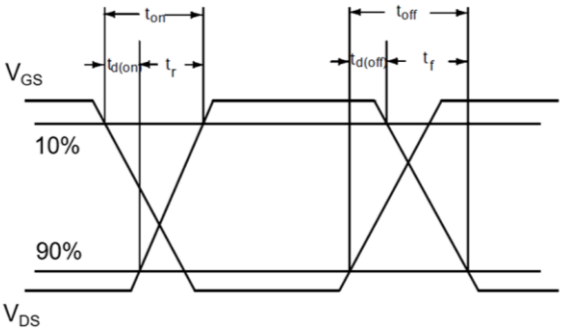
2) Gate Charge Test Circuit



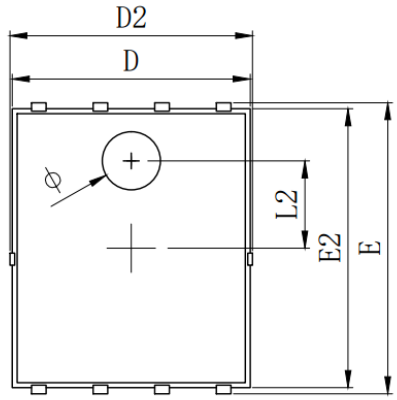


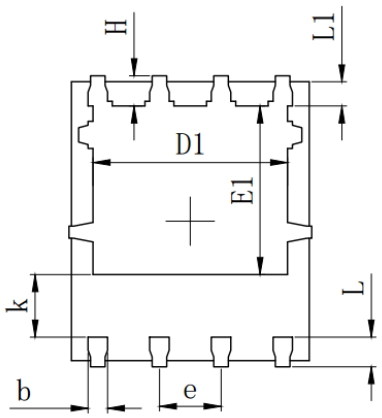
3) Switch Time Test Circuit

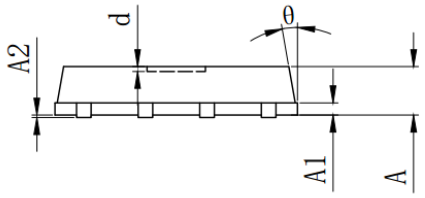




PDFN5X6 Package Information







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