AP85N06D

60V N-Channel Enhancement Mode MOSFET

Description

The AP85N06D uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

General Features

V_{DS} = 60V I_D =85A

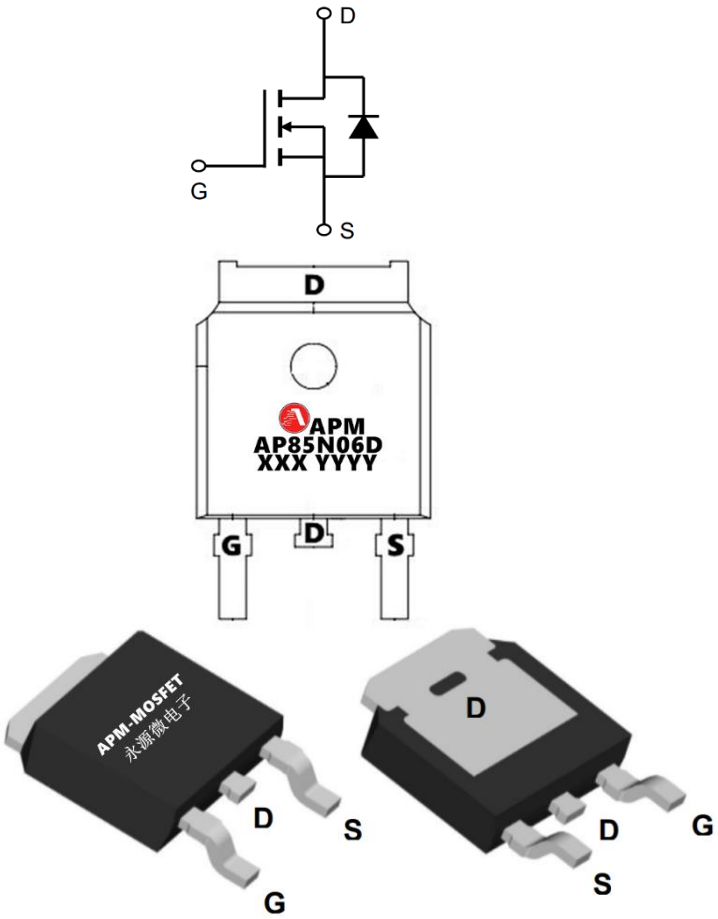
$R_{DS(ON)}$ < 8.5mΩ @ V_{GS}=10V （**Type：7.0mΩ**）

Application

Battery protection

Load switch

Uninterruptible power supply



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AP85N06D	TO-252-3L	AP85N06D XXX YYYY	1000

Absolute Maximum Ratings@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Value	Unit
VDS	Drain source voltage	60	V
VGS	Gate source voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current, V_{GS} @ 10V[1]	85	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ 10V[1]	21	A
IDM	Pulsed drain current[2)]	415	A
IAS	Diode forward current	35	A
P_D@T_C=25℃	Power dissipation	70	W
EAS	Single pulsed avalanche energy[)]	121	mJ
Tstg，Tj	Operation and storage temperature	-55 to 150	℃
RθJC	Thermal resistance, junction-case	2.14	℃/W
RθJA	Thermal resistance, junction-ambient[4)]	62.5	℃/W

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Electrical Characteristics (T_J=25℃, unless otherwise noted)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
V(BR)DSS	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	60	65	-	V
IDSS	Zero Gate Voltage Drain Current	V_{DS}=60V, V_{GS} = 0V,	-	-	1.0	μA
IGSS	Gate to Body Leakage Current	V_{DS}=0V, V_{GS} = ±20V	-	-	±100	nA
VGS(th)	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	1.2	1.8	2.5	V
RDS(on)	Static Drain-Source on-Resistance note3	V_{GS}=10V, I_D=30A	-	7.0	8.5	mΩ
		V_{GS}=4.5V, I_D=20A	-	8.5	10	
C_{iss}	Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1.0MHz	-	4605	-	pF
Coss	Output Capacitance		-	215	-	pF
Crss	Reverse Transfer Capacitance		-	191	-	pF
Q_g	Total Gate Charge	V_{DS}=30V, I_D=30A, V_{GS}=10V	-	77	-	nC
Q_{gs}	Gate-Source Charge		-	9	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	23	-	nC
td(on)	Turn-on Delay Time	V_{DS}=30V, I_D=30A, R_G=1.8Ω, V_{GS}=10V	-	7.1	-	ns
t_r	Turn-on Rise Time		-	5.3	-	ns
td(off)	Turn-off Delay Time		-	27.2	-	ns
t_f	Turn-off Fall Time		-	6.2	-	ns
IS	Maximum Continuous Drain to Source Diode Forward Current		-	-	58	A
ISM	Maximum Pulsed Drain to Source Diode Forward Current		-	-	232	A
VSD	Drain to Source Diode Forward Voltage	V_{GS}=0V, I_S=30A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	I_F=30A, dI/dt=100A/μs	-	29	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	45	-	nC

Note :

1、The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.
2、The data tested by pulsed , pulse width .The EAS data shows Max. rating .
3、The test cond≦ 300us duty cycle ≦ 2%, duty cycle ition is TJ =25℃, VDD=48V, VG=10V, RG =25Ω, L=0.1mH, IAS=35A
4、The power dissipation is limited by 175℃ junction temperature
5、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics

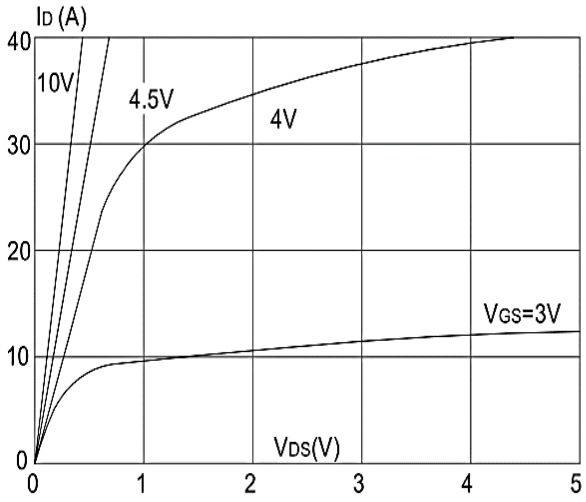


Figure1: Output Characteristics

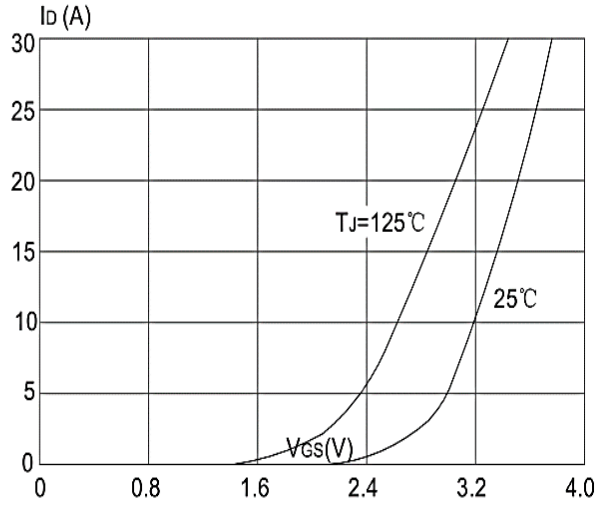


Figure 2: Typical Transfer Characteristics

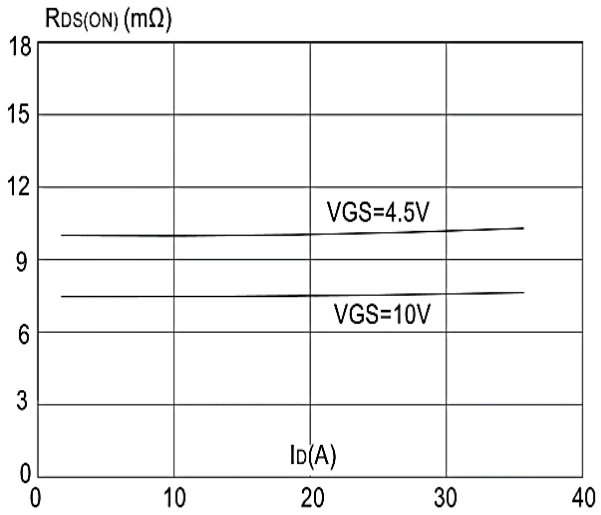


Figure 3:On-resistance vs. Drain Current

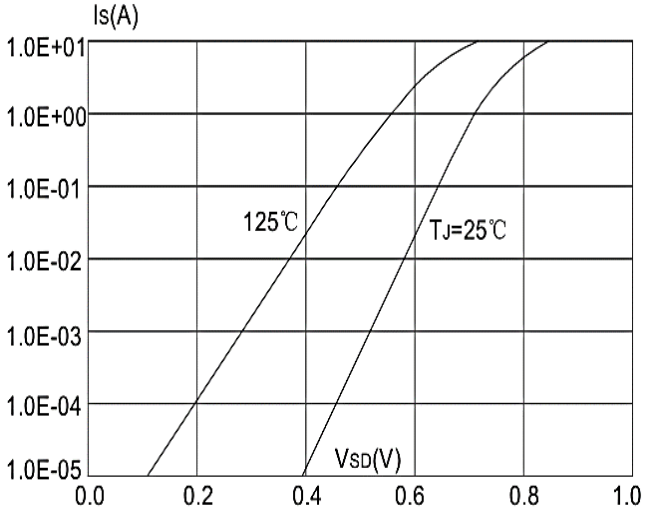


Figure 4: Body Diode Characteristics

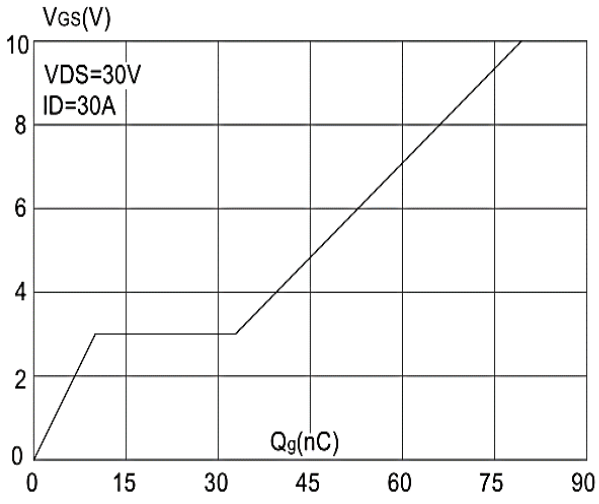


Figure 5: Gate Charge Characteristics

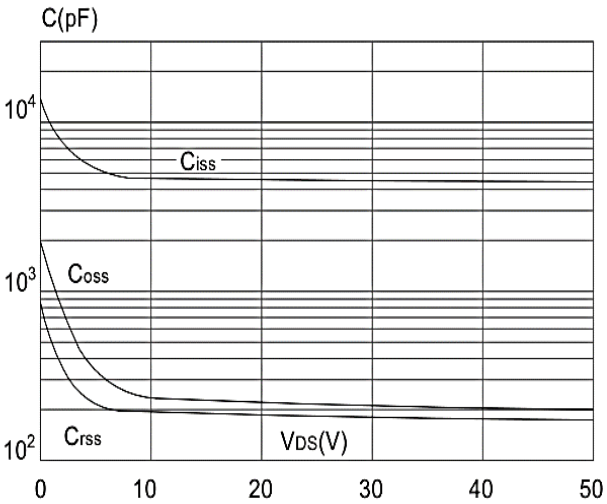


Figure 6: Capacitance Characteristics

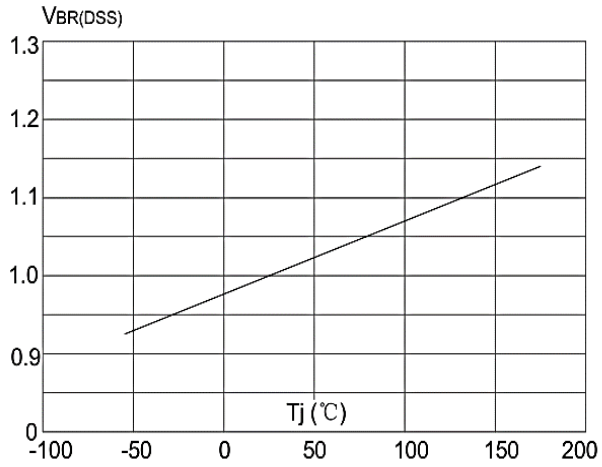


Figure 7: Normalized Breakdown Voltage vs Junction Temperature

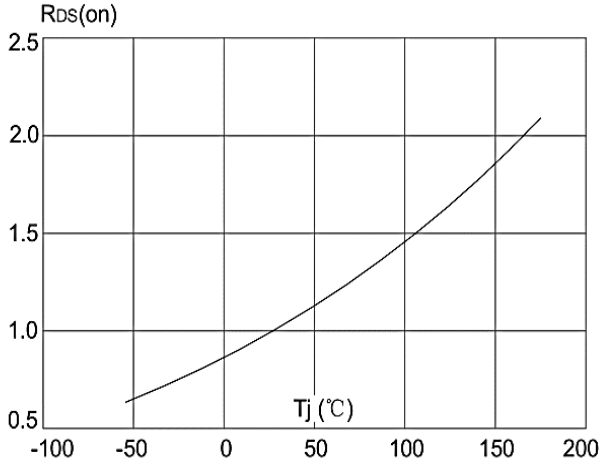


Figure 8: Normalized on Resistance vs. Junction Temperature

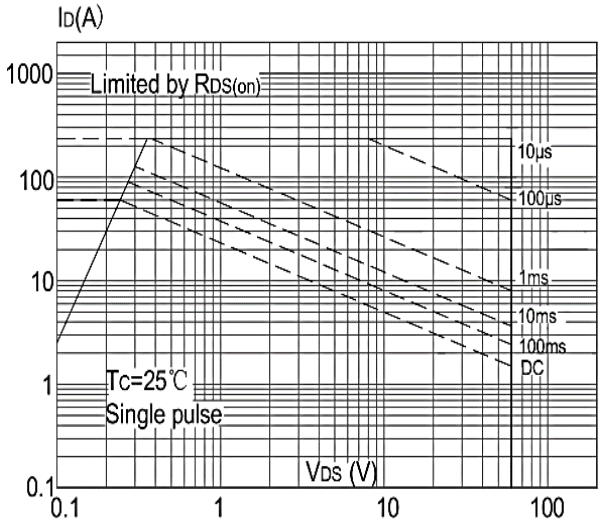


Figure 9: Maximum Safe Operating Area

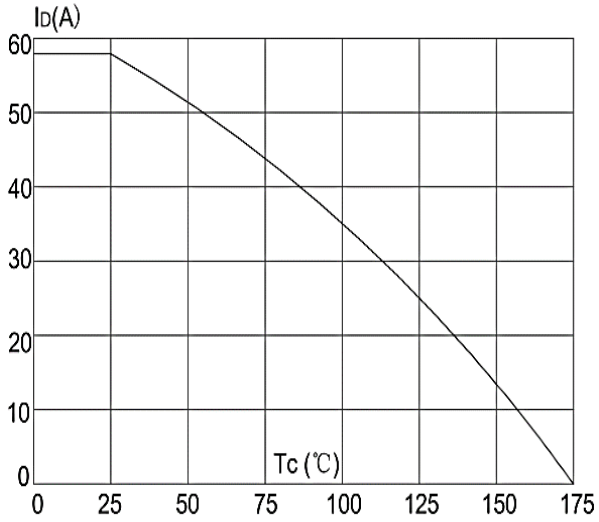


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

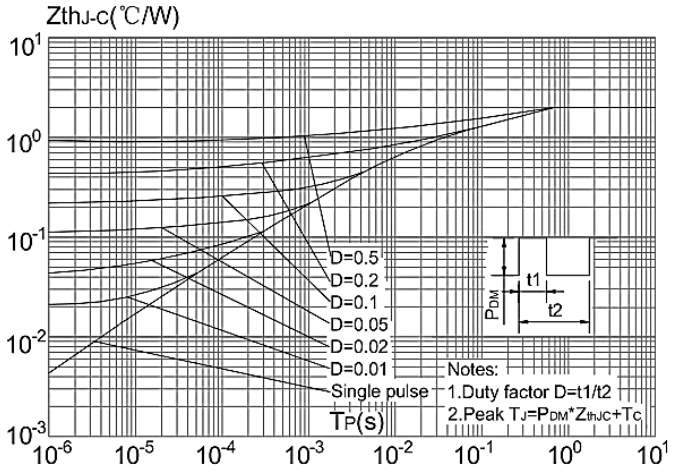
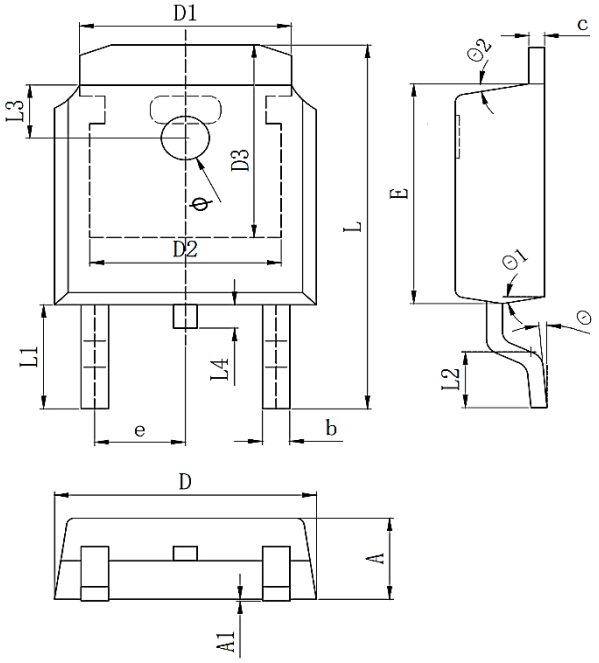


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambien

Package Mechanical Data-TO-252-3L



Symbol	Dim in mm		
	Min	Typ	Max
A	2.1	2.3	2.5
A1	0	0.064	0.128
b	0.64	0.75	0.86
c	0.45	0.52	0.6
D	6.4	6.6	6.8
D1	5.33REF		
D2	4.83REF		
D3	5.25REF		
E	5.9	6.1	6.3
e	2.286TYP		
L	9.8	10.1	10.4
L1	2.888REF		
L2	1.4	1.5	1.7
L3	1.65REF		
L4	0.6	0.8	1
ϕ	1.1	1.2	1.3
θ	0°		10°
θ1	5°		10°
θ2	5°		10°

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Edition	Date	Change
REV1.0	2022/7/15	Initial release