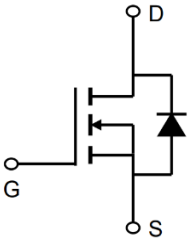
AP85N08BP/T

80V N-Channel Enhancement Mode MOSFET

Description

The AP85N08BP/T uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 10V.

This device is suitable for use as a Battery protection or in other Switching application.



General Features

V_{DS} = 80V I_D =85A

$R_{DS(ON)}$ < 8.5mΩ V_{GS}=10V （Type：6.5mΩ）

Application

Battery protection

Load switch

Uninterruptible power supply

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AP85N08BP	TO-220-3L	AP85N08BP XXX YYYY	1000
AP85N08BT	TO-263-3L	AP85N08BT XXX YYYY	800

Absolute Maximum Ratings (T_C=25℃unless otherwise noted)

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V）	80	V
VGS	Gate-Source Voltage (VDS=0V)	±20	V
ID@TC=25℃	Continuous Drain Current, VGS @ 10V	85	A
ID@TC=100℃	Continuous Drain Current, VGS @ 10V	55	A
IDM	Drain Current-Continuous@ Current-Pulsed	300	A
PD@TC=25℃	Maximum Power Dissipation(Tc=25℃)	160	W
EAS	Single pulse avalanche energy	550	mJ
TSTG	Storage Temperature Range	-55 to 150	℃
TJ	Operating Junction Temperature Range	-55 To 175	℃
RθJA	Thermal Resistance Junction-Ambient	0.94	℃/W
RθJC	Thermal Resistance Junction-Case	63	℃/W

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V(BR)DSS	Drain-source breakdown voltage	V_{GS}=0V, I_D=250uA	80	85		V
VGS(th)	Gate threshold voltage	V_{DS}=V_{GS},I_D=250uA T_j=25°C	2.0	3.0	4.0	V
IDSS	Zero gate voltage drain current	V_{DS}=80V,V_{GS}=0V T_j=25°C	-		1	μA
IDSS	Zero gate voltage drain current	V_{DS}=80V,V_{GS}=0V T_j=125°C		- 5		μA
IGSS	Gate-source leakage current	V_{GS}=20V,V_{DS}=0V	-	-	100	nA
RDS(on)	Drain-source on-state resistance	V_{GS}=10V, I_D=50A,T_j=25°C	-	6.5	8.5	mΩ
gfs	Transconductance	V_{DS}=5V,I_D=50A	-	80	-	S
Ciss	Input Capacitance	V_{GS}=0V, V_{DS}=40V, f=1MHz	-	2948	-	pF
Coss	Output Capacitance		-	354	-	pF
Crss	Reverse Transfer Capacitance		-	198	-	pF
Q_G	Gate Total Charge	V_{GS}=10V, V_{DS}=40V,I_D=50A	-	61	-	nC
Qgs	Gate-Source charge		-	13	-	nC
Qgd	Gate-Drain charge		-	24	-	nC
td(on)	Turn-on delay time	T_j=25°C, V_{GS}=10V, V_{DS}=40V, R_L=3Ω	-	24	-	ns
t_r	Rise time		-	15	-	ns
td(off)	Turn-off delay time		-	52	-	ns
t_f	Fall time		-	17	-	ns
R_G	Gate resistance	V_{GS}=0V, V_{DS}=0V, f=1MHz	-	1.2	-	Ω
VSD	Body Diode Forward Voltage	V_{GS}=0V,I_{SD}=50A	-	0.9	1.2	V
trr	Body Diode Reverse Recovery Time	I_F=20A, dI/dt=500A/μs	-	40	-	ns
Qrr	Body Diode Reverse Recovery Charge	I_F=20A, dI/dt=500A/μs	-	61	-	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 V_{DD}=64V_{GS}=10V,L=0.1mH,I_{AS}=41A
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

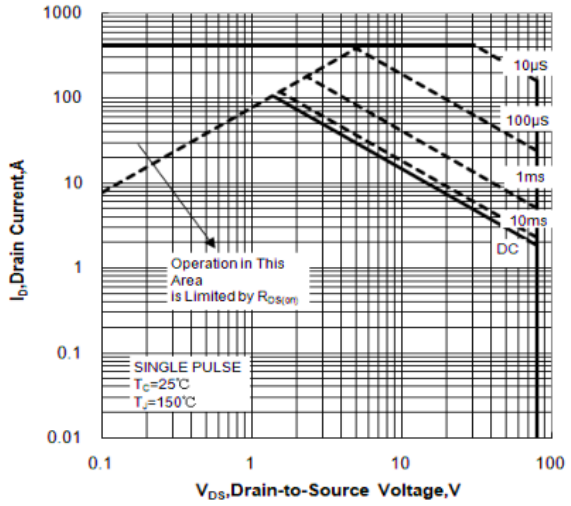


Figure 1. Maximum Safe Operating Area

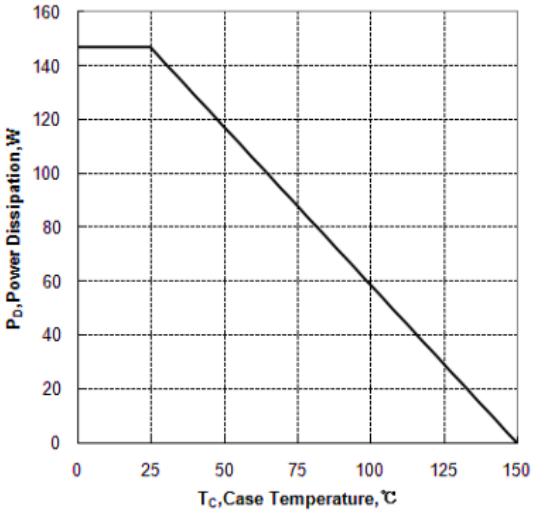


Figure 2. Maximum Power Dissipation vs Case Temperature

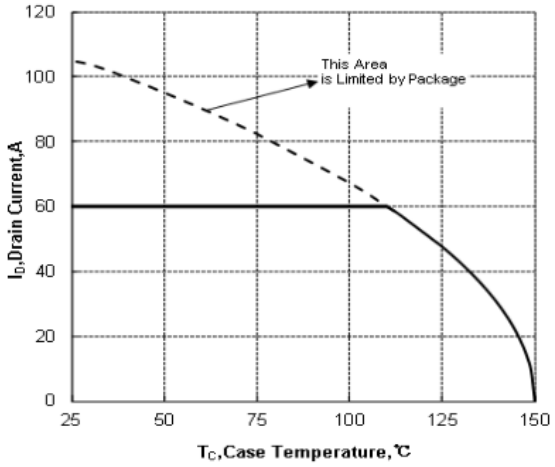


Figure 3. Maximum Continuous Drain Current vs

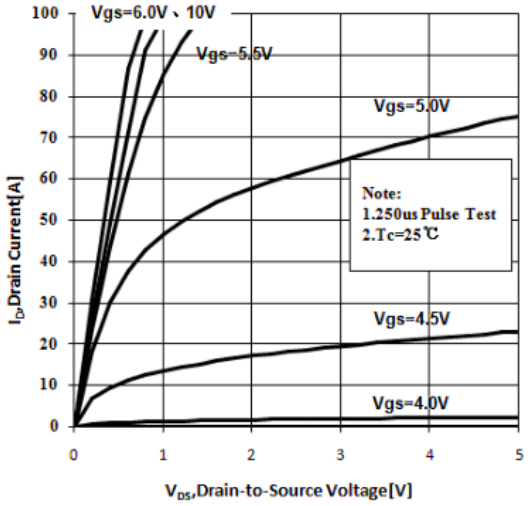


Figure 4. Typical output Characteristics

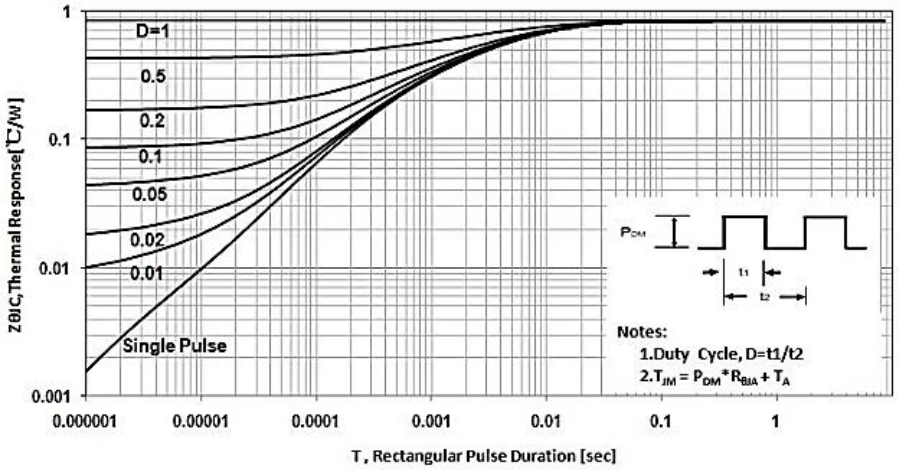


Figure 5 Maximum Effective Thermal Impedance , Junction to Case

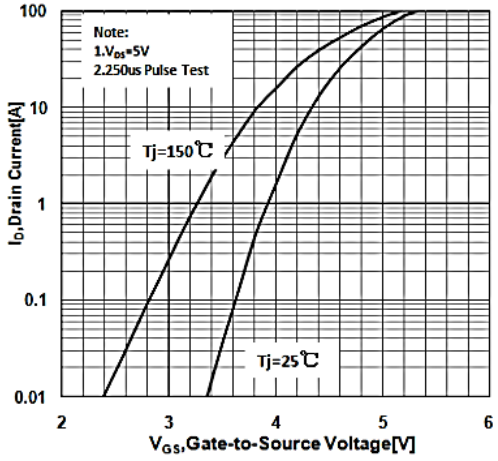


Figure 6 Typical Transfer Characteristics

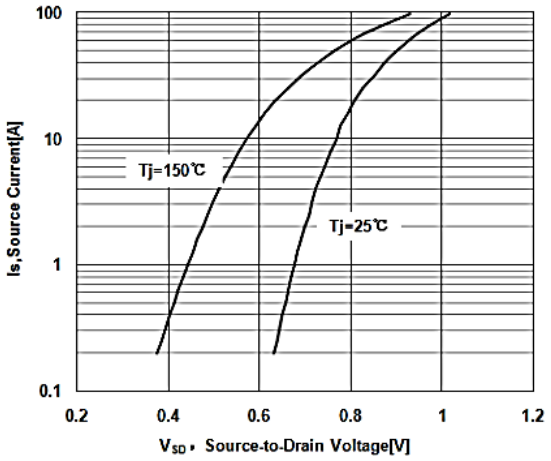


Figure 7 Typical Body Diode Transfer Characteristics

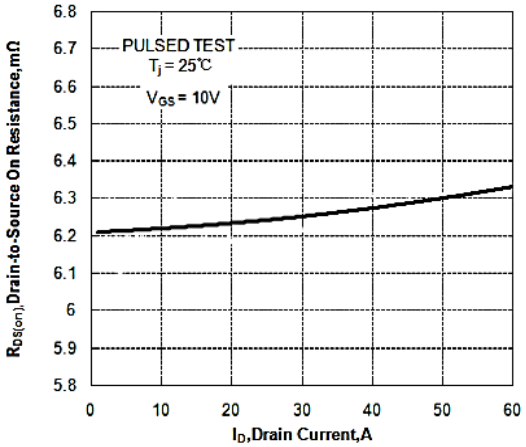


Figure 8. Drain-to-Source On Resistance vs Drain Current

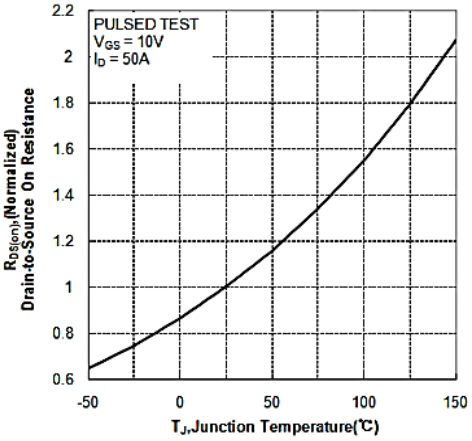


Figure 9. Normalized On Resistance vs Junction Temperature

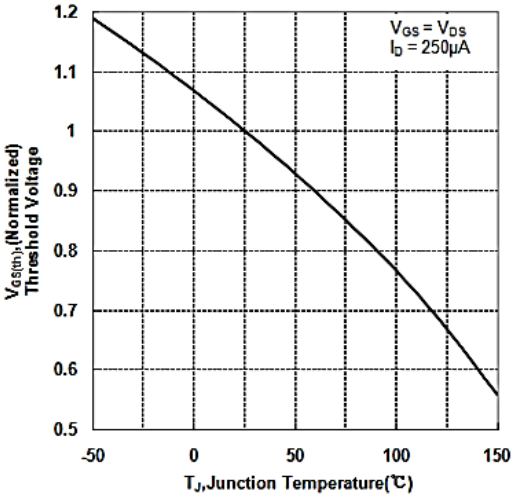


Figure10. Normalized Threshold Voltage vs Junction Temperature

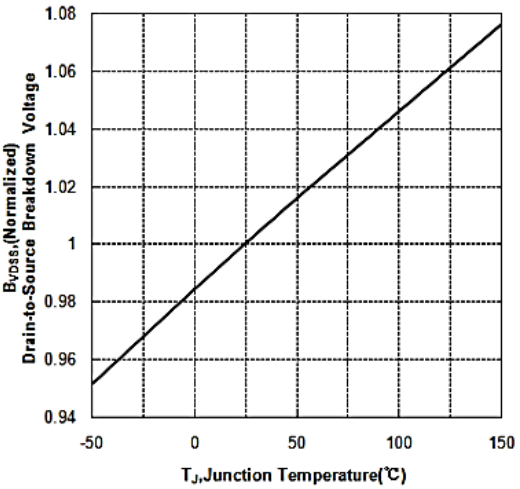


Figure 11. Normalized Breakdown Voltage vs Junction Temperature

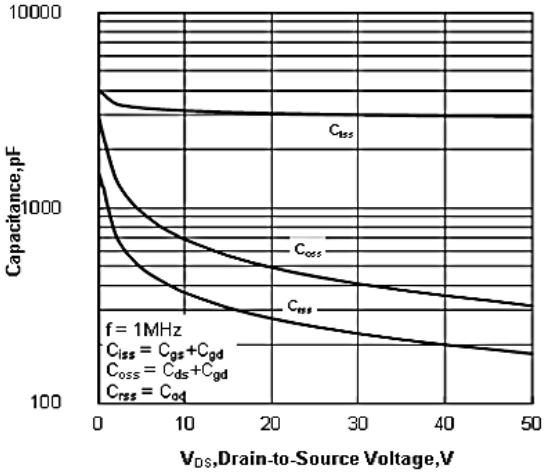


Figure 12. Capacitance Characteristics

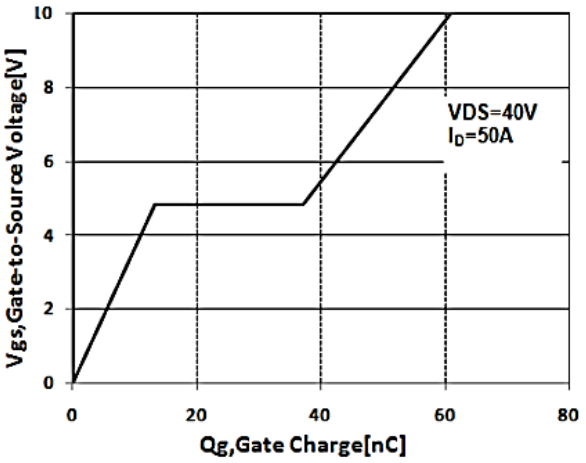
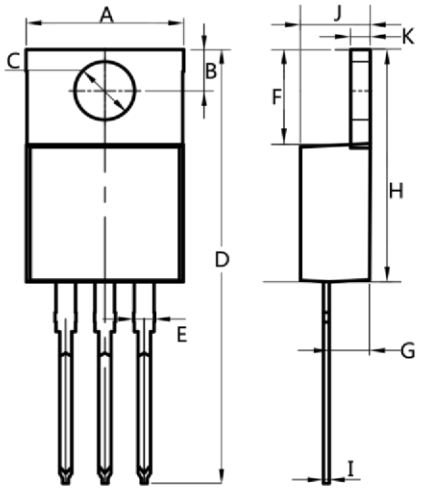


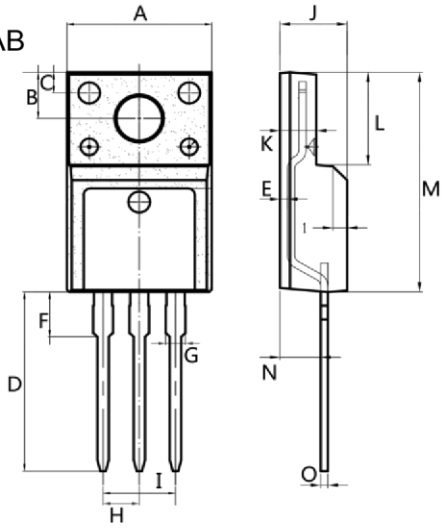
Figure 13 .Typical Gate Charge vs Gate to Source Voltage

TO-220AB



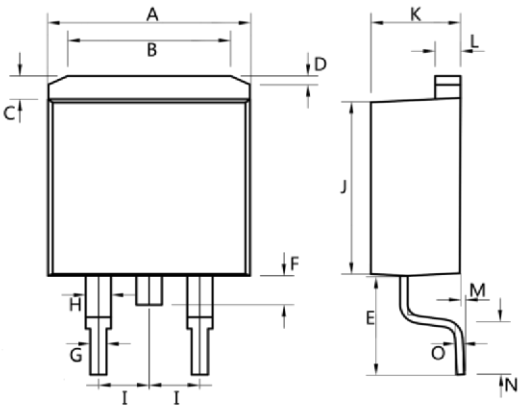
Dim.	Min.	Max.
A	10.0	10.4
B	2.5	3.0
C	3.5	4.0
D	28.0	30.0
E	1.1	1.5
F	6.2	6.6
G	2.9	3.3
H	15.0	16.0
I	0.35	0.45
J	4.3	4.7
K	1.2	1.4
All Dimensions in millimeter		

ITO-220AB



Dim.	Min.	Max.
A	9.9	10.3
B	2.9	3.5
C	1.15	1.45
D	12.75	13.25
E	0.55	0.75
F	3.1	3.5
G	1.25	1.45
H	Typ 2.54	
I	Typ 5.08	
J	4.55	4.75
K	2.4	2. 7
L	6.35	6.75
M	15.0	16.0
N	2.75	3.15
O	0.45	0.60
All Dimensions in millimeter		

TO-263



Dim.	Min.	Max.
A	10.0	10. 5
B	7.25	7.75
C	1.3	1.5
D	0.55	0.75
E	5.0	6.0
F	1.4	1.6
G	0.75	0.95
H	1.15	1.35
I	Typ 2.54	
J	8.4	8.6
K	4.4	4.6
L	1.25	1.45
M	0.02	0.1
N	2.4	2.8
O	0.35	0.45
All Dimensions in millimeter		

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80V N-Channel Enhancement Mode MOSFET

Edition	Date	Change
Rve1.0	2020/10/31	Initial release