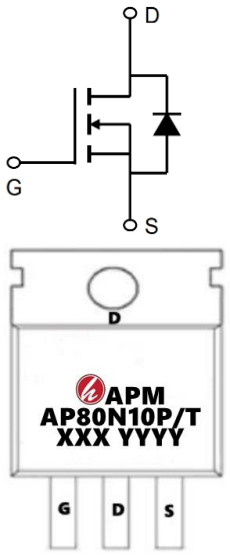
AP80N10P/T

100V N-Channel Enhancement Mode MOSFET

Description

The AP80N10P/T uses advanced APM-SGTⅡtechnology 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} = 100V I_D =80A

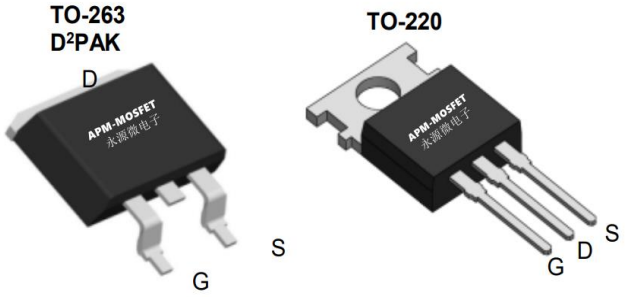
$R_{DS(ON)}$ < 12mΩ @ V_{GS}=10V **(Type：8.0mΩ)**

Application

Isolated DC

Motor control

Synchronous-rectification



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AP80N10P	TO-220-3L	AP80N10P XXX YYYY	1000
AP80N10T	TO-263-3L	AP80N10T XXX YYYY	800

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

Symbol	Parameter	Value	Unit
VDS	Drain source voltage	100	V
VGS	Gate source voltage	±20	V
ID	Continuous drain current, TC=25℃	80	A
IDM	Pulsed drain current, TC=25 ℃	210	A
PD	Power dissipation, TC=25 ℃	107	W
EAS	Single pulsed avalanche energy4)	183.8	mJ
Tstg，Tj	Operation and storage temperature	-55 to 150	℃
RθJC	Thermal resistance, junction-case	1.17	°C/W
RθJA	Thermal resistance, junction-ambient4)	62	°C/W

Electrical Characteristics (T_C=25℃unless otherwise noted)

Symbol	Parameter	Test condition	Min.	Typ.	Max.	Unit
BVDSS	Drain-source breakdown voltage	V_{GS}=0 V, I_D=250 μA	100	111		V
VGS(th)	Gate threshold voltage	V_{DS}=V_{GS}, I_D=250 μA	2.0	3.0	4.0	V
RDS(ON)	Drain-source on-state resistance	V_{GS}=10 V, I_D=20 A		8	12.0	mΩ
RDS(ON)	Drain-source on-state resistance	V_{GS}=4.5 V, I_D=12 A		12	14.0	mΩ
IGSS	Gate-source leakage current	V_{GS}=±20 V			±100	nA
IDSS	Drain-source leakage current	V_{DS}=100 V, V_{GS}=0 V			1	uA
R_G	Gate resistance	f= 1 MHz, Open drain		5.5		Ω
Ciss	Input capacitance	V_{GS}=0 V, V_{DS}=50 V, f=100 kHz		1998.1		pF
Coss	Output capacitance			321.7		pF
Crss	Reverse transfer capacitance			7.1		pF
td(on)	Turn-on delay time	V_{GS}=10 V,		22.1		ns
t_r	Rise time	V_{DS}=50 V,		5.2		ns
td(off)	Turn-off delay time	R_G=2 Ω,		44		ns
t_f	Fall time	I_D=25 A		8.4		ns
Q_g	Total gate charge	I_D=25 A, V_{DS}=50 V, V_{GS}=10 V		28.9		nC
Q_{gs}	Gate-source charge			6		nC
Qgd	Gate-drain charge			6.8		nC
Vplateau	Gate plateau voltage			3.7		V
I_S	Diode forward current	VGS<Vth			60	A
ISP	Pulsed source current				180	
VSD	Diode forward voltage	I_S=20 A, V_{GS}=0 V			1.3	V
trr	Reverse recovery time	I_S=25 A, di/dt=100 A/μs		102.9		ns
Q_{rr}	Reverse recovery charge			379		nC
Irrm	Peak reverse recovery current			6.4		A

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 ≦ 300us , duty cycle ≦ 2%

3、The EAS data shows Max. rating . The test condition is VDD=30V,VGS=10V, L=0.3mH, starting Tj=25°C

4、The power dissipation is limited by 150℃ junction temperature

5、The data is theoretically the same as I D and I DM , in real applications , should be limited by total power dissipation

Typical Characteristics

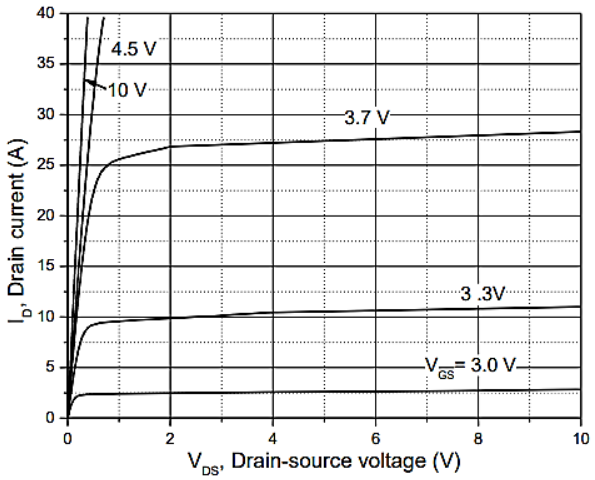


Figure 1. Typ. output characteristics

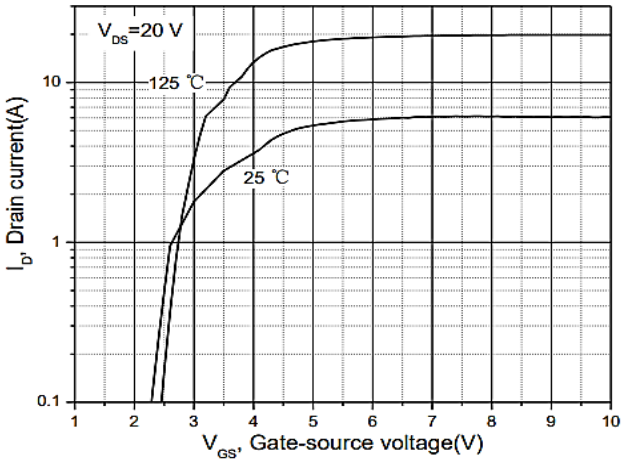


Figure 2. Typ. transfer characteristics

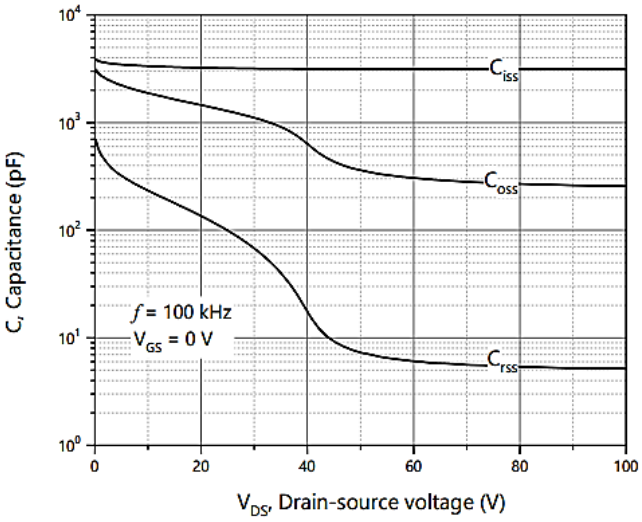


Figure 3. Typ. capacitances

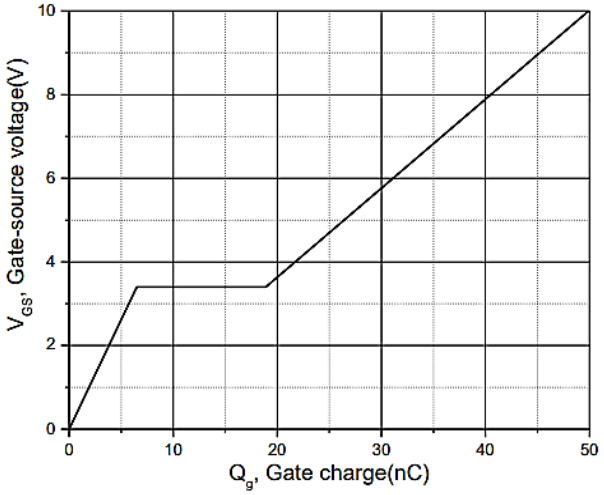


Figure 4. Typ. gate charge

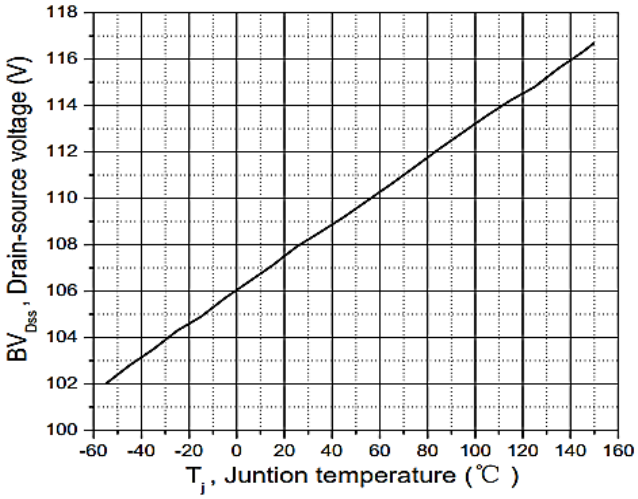


Figure 5. Drain-source breakdown voltage

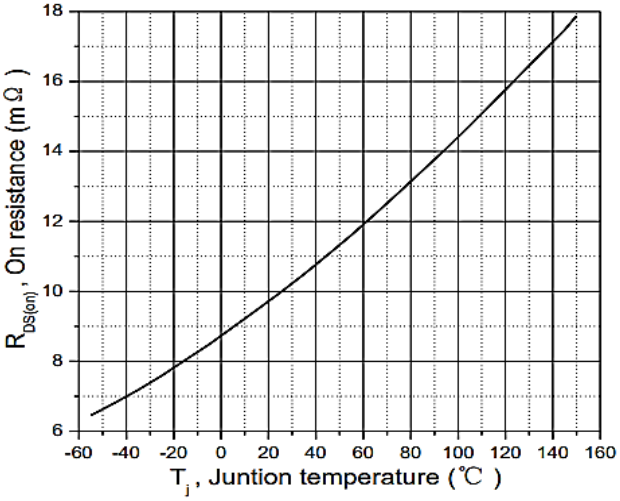


Figure 6. Drain-source on-state resistance

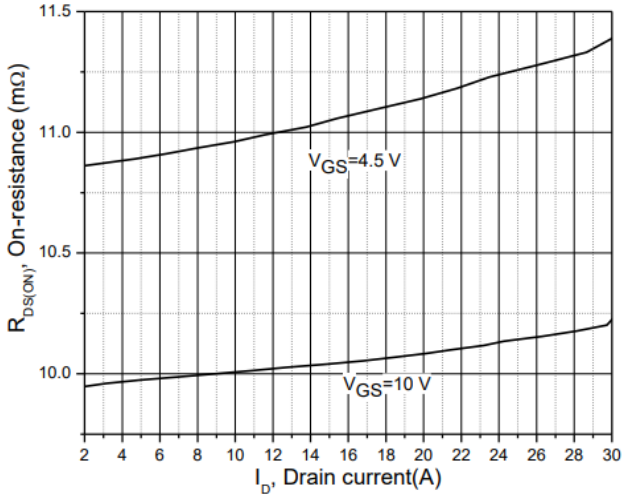


Figure 7. Drain-source on-state resistance

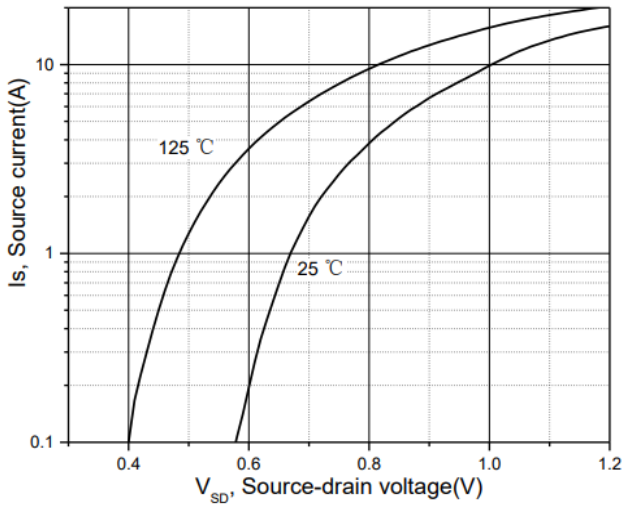


Figure 8. Forward characteristic of body diode

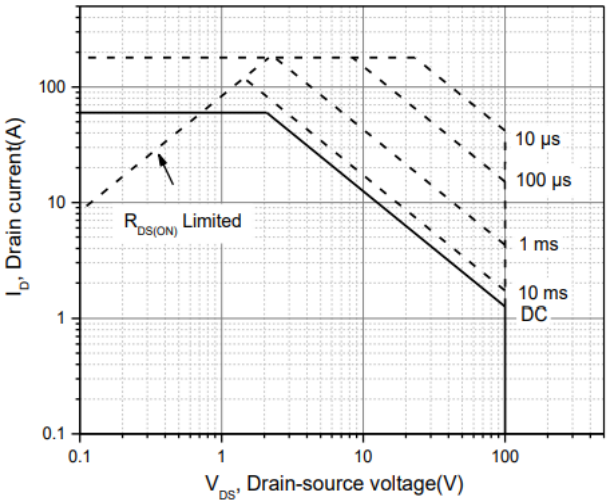
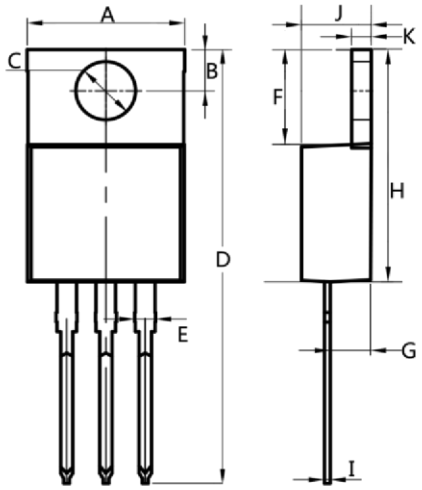


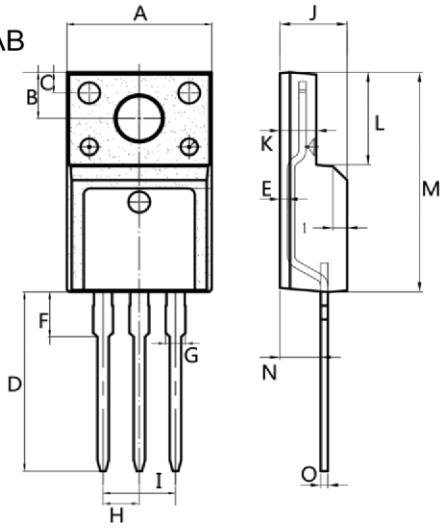
Figure 9. Safe operation area T_C=25 ℃

TO-220AB



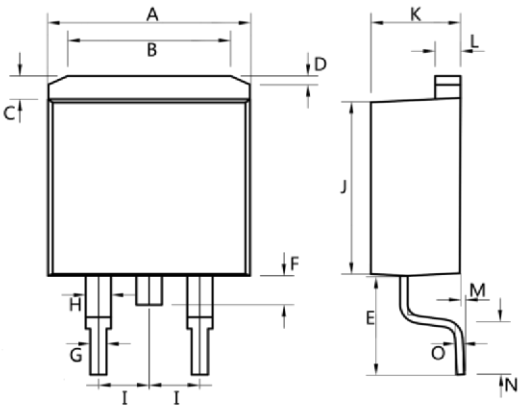
Dim.	Min.	Max.
A	10.0	10.4
B	2.5	3.0
C	3.5	4.0
D	28.0	30.0
E	1.1	1.5
F	6.2	6.6
G	2.9	3.3
H	15.0	16.0
I	0.35	0.45
J	4.3	4.7
K	1.2	1.4
All Dimensions in millimeter		

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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100V N-Channel Enhancement Mode MOSFET

Edition	Date	Change
Rve1.0	2018/1/31	Initial release