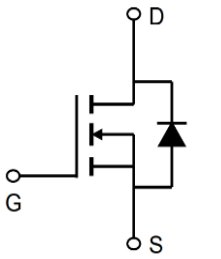
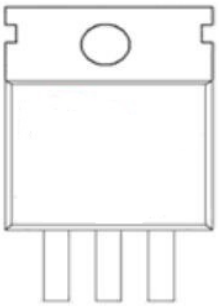
80N10

107V N-Channel Enhancement Mode MOSFET

Description

The 80N10 T uses advanced 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} = 107V I_D =80A

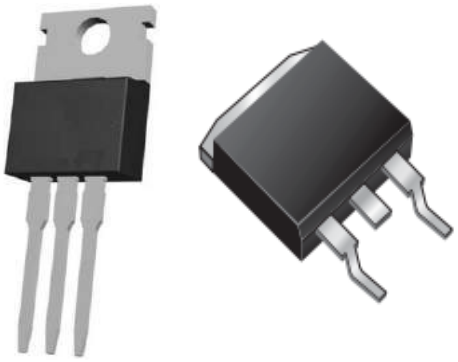
$R_{DS(ON)}$ < 9.0mΩ @ V_{GS}=10V (Type：7.2mΩ)

Application

Isolated DC

Motor control

Synchronous-rectification



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

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	107	V
VGS	Gate-Source Voltage	±20	V
I_D@T_A=25℃	Continuous Drain Current[1]	80	A
I_D@T_A=70℃	Continuous Drain Current[1]	62	A
IDM	Pulsed Drain Current[2]	210	A
EAS	Single Pulse Avalanche Energy[3]	100	mJ
IAS	Avalanche Current	15	A
P_D@T_A=25℃	Total Power Dissipation[4]	100	W
TSTG	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
$R_{\theta}JA$	Thermal Resistance Junction-Ambient [1]	62	℃/W
$R_{\theta}JC$	Thermal Resistance Junction-Case[1]	1.25	℃/W

Electrical Characteristics (T_C=25℃unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BVDSS	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	107	111	---	V
RDS(ON)	Static Drain-Source On-Resistance[2]	V_{GS}=10V , I_D=30A	---	7.2	9.0	mΩ
	Static Drain-Source On-Resistance[2]	V_{GS}=4.5V , I_D=12A	---	9.0	11	
VGS(th)	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1.2	1.8	2.5	V
IDSS	Drain-Source Leakage Current	V_{DS}=100V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=100V , V_{GS}=0V , T_J=55℃	---	---	5	
IGSS	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
Qg	Total Gate Charge (10V)	VDS=50V , VGS=10V , ID=25A	---	49.9	---	nC
Qg	Total Gate Charge (4.5V)		---	6.5	---	
Qgs	Gate-Source Charge		---	12.4	---	
Qgd	Gate-Drain Charge		---	3.4	---	
Td(on)	Turn-On Delay Time	VDD=50V , VGS=10V , RG=2.2Ω, ID=25A	---	20.6	---	ns
Tr	Rise Time		---	5	---	
Td(off)	Turn-Off Delay Time		---	51.8	---	
Tf	Fall Time		---	9	---	
Ciss	Input Capacitance	VDS=50V , VGS=0V , f=1MHz	---	2640	---	pF
Coss	Output Capacitance		---	361	---	
Crss	Reverse Transfer Capacitance		---	6.5	---	
IS	Continuous Source Current[1,5]	V_G=V_D=0V , Force Current	---	---	5	A
VSD	Diode Forward Voltage[2]	V_{GS}=0V , I_S=30A , T_J=25℃	---	---	1.3	V
trr	Reverse Recovery Time	Vr=50V IS=12A , di/dt=100A/μs , T_J=25℃	---	60.4	---	nS
Q_{rr}	Reverse Recovery Charge		---	106	---	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 ≦ 300us , duty cycle ≦ 2%

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

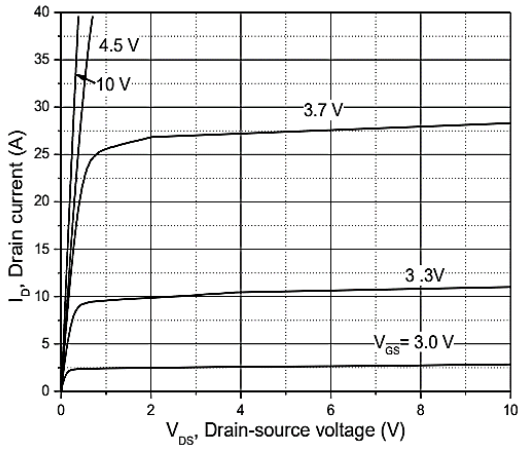


Figure 1. Typ. output characteristics

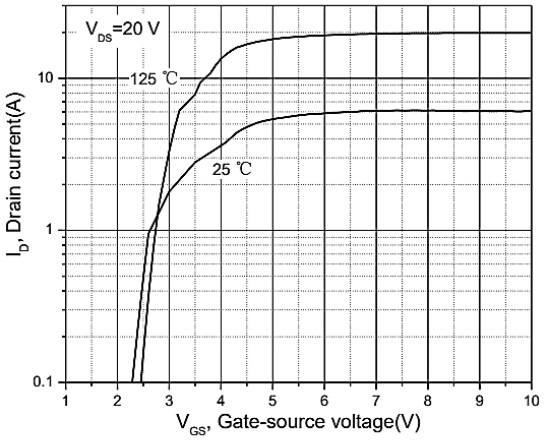


Figure 2. Typ. transfer characteristics

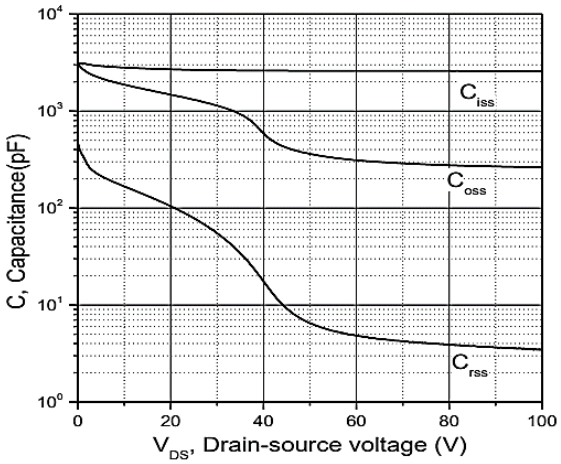


Figure 3. Typ. capacitances

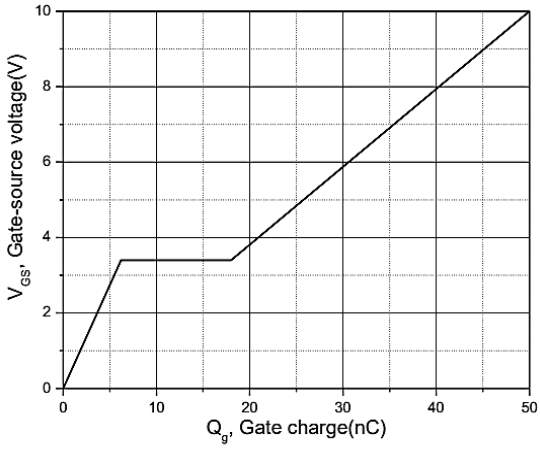


Figure 4. Typ. gate charge

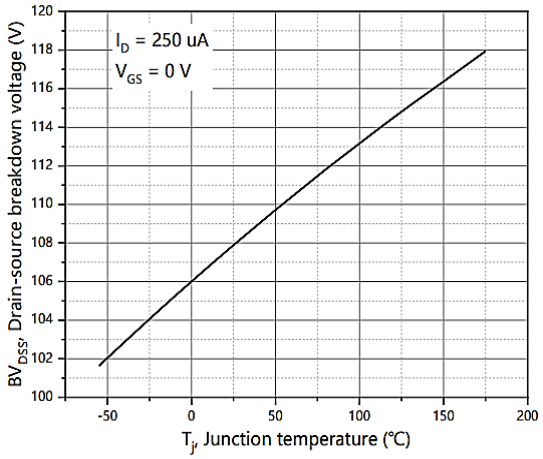


Figure 5. Drain-source breakdown voltage

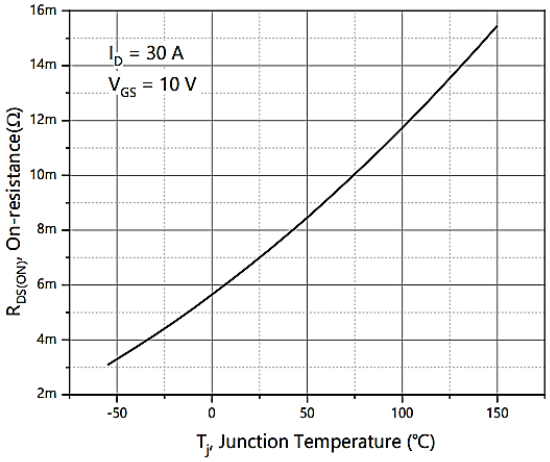


Figure 6. Drain-source on-state resistance

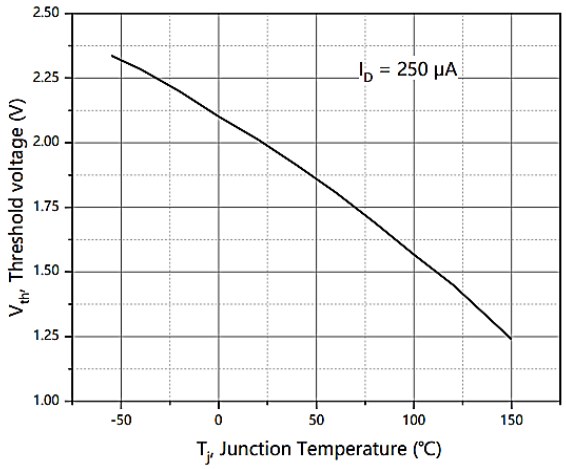


Figure 7. Threshold voltage

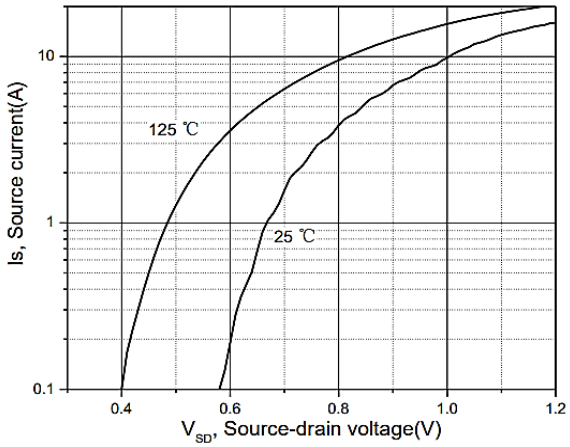


Figure 8. Forward characteristic of body diode

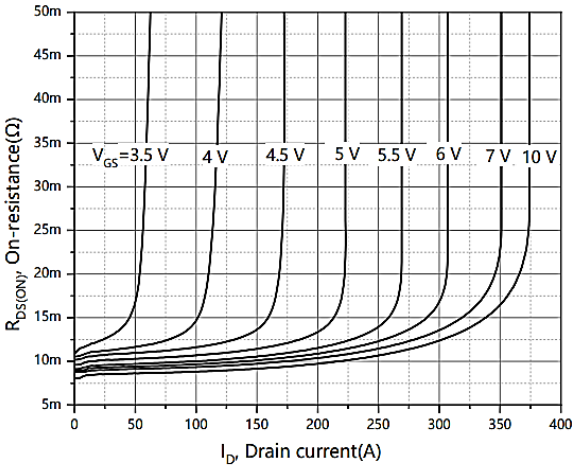


Figure 9. Drain-source on-state resistance

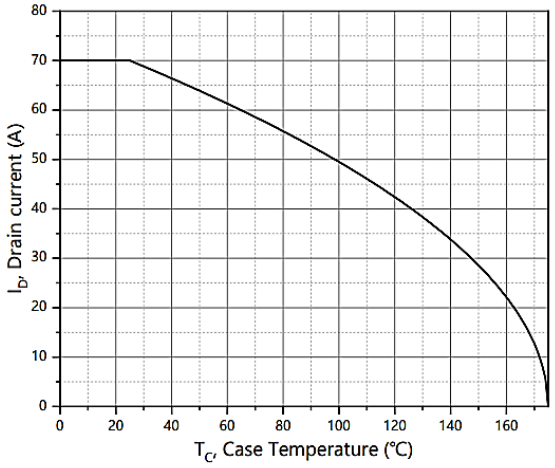


Figure 10. Drain current

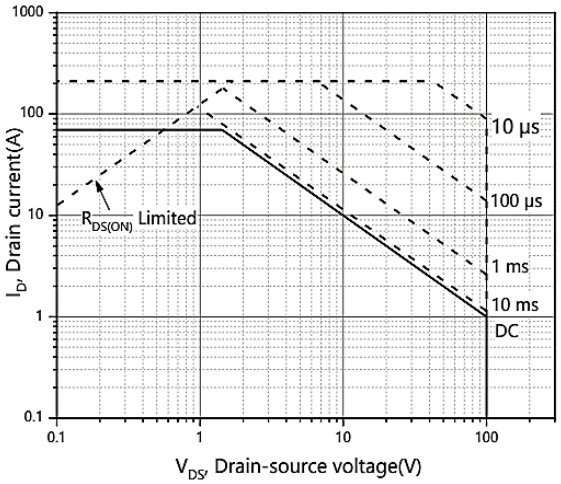


Figure 11. Safe operation area T_C=25 ℃

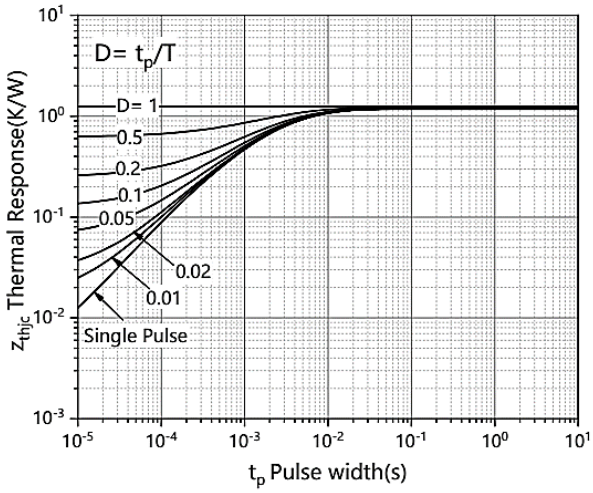
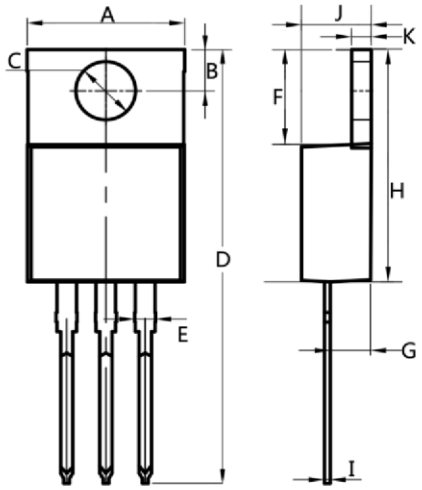


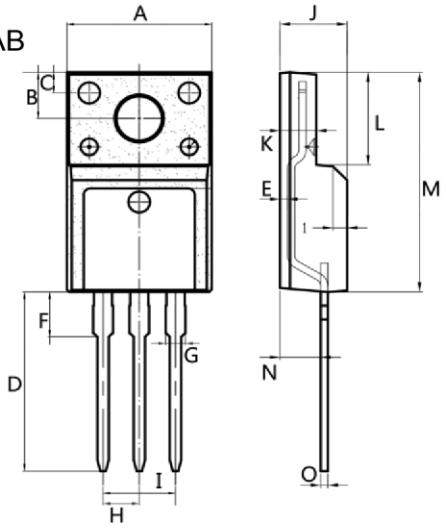
Figure 12. Max. transient thermal impedance

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		

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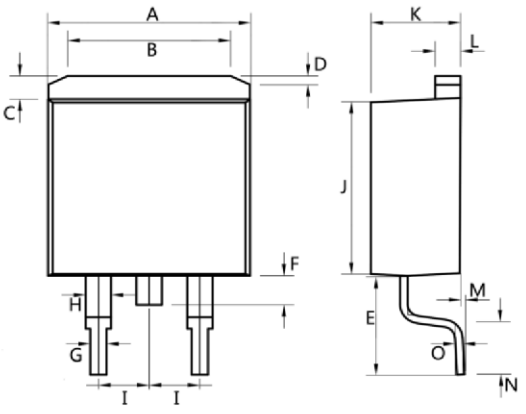

Dim.	Min.	Max.
A	10.0	10. 5
B	7.25	7.75
C	1.3	1.5
D	0.55	0.75
E	5.0	6.0
F	1.4	1.6
G	0.75	0.95
H	1.15	1.35
I	Typ 2.54	
J	8.4	8.6
K	4.4	4.6
L	1.25	1.45
M	0.02	0.1
N	2.4	2.8
O	0.35	0.45
All Dimensions in millimeter		