

Description

The **STB80NF10T4** uses advanced **APM-SGT11** 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

$V_{DS} = 100V$ $I_D = 80A$

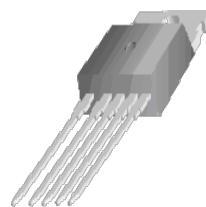
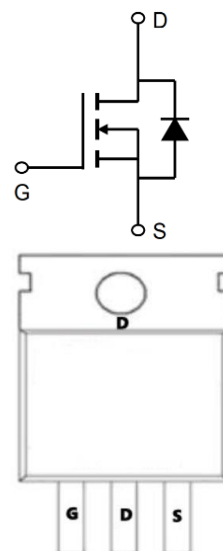
$R_{DS(ON)} < 12m\Omega$ @ $V_{GS}=10V$ (Type: **8.0m Ω**)

Application

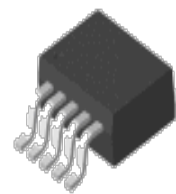
Isolated DC

Motor control

Synchronous-rectification



TO-220



TO-263

Absolute Maximum Ratings ($T_C=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{DS}	Drain source voltage	100	V
V_{GS}	Gate source voltage	± 20	V
I_D	Continuous drain current, $T_C=25^\circ\text{C}$	80	A
I_{DM}	Pulsed drain current, $T_C=25^\circ\text{C}$	210	A
PD	Power dissipation, $T_C=25^\circ\text{C}$	107	W
E_{AS}	Single pulsed avalanche energy ⁴⁾	183.8	mJ
T_{stg}, T_j	Operation and storage temperature	-55 to 150	$^\circ\text{C}$
$R_{\theta JC}$	Thermal resistance, junction-case	1.17	$^\circ\text{C/W}$
$R_{\theta JA}$	Thermal resistance, junction-ambient ⁴⁾	62	$^\circ\text{C/W}$

Electrical Characteristics (T_c=25°C 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
Q _{gd}	Gate-drain charge			6.8		nC
V _{plateau}	Gate plateau voltage			3.7		V
I _S	Diode forward current	V _{GS} <V _{th}			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
I _{rrm}	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°C 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

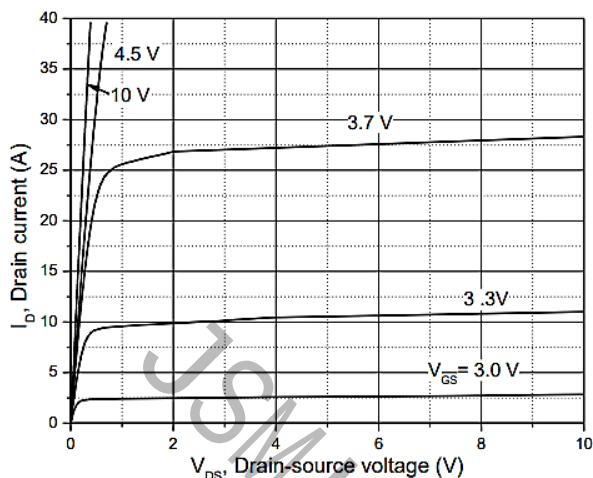


Figure 1. Typ. output characteristics

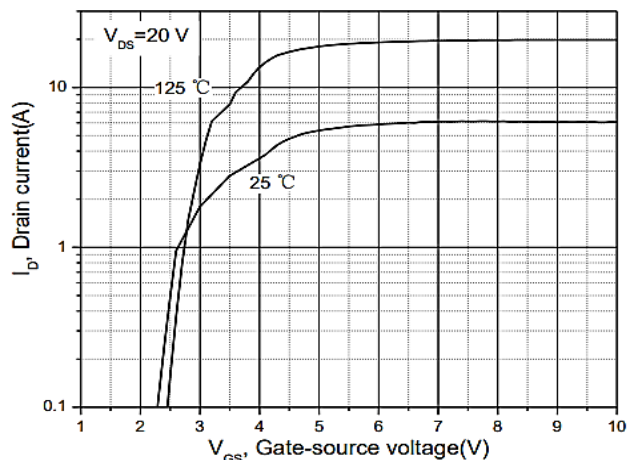


Figure 2. Typ. transfer characteristics

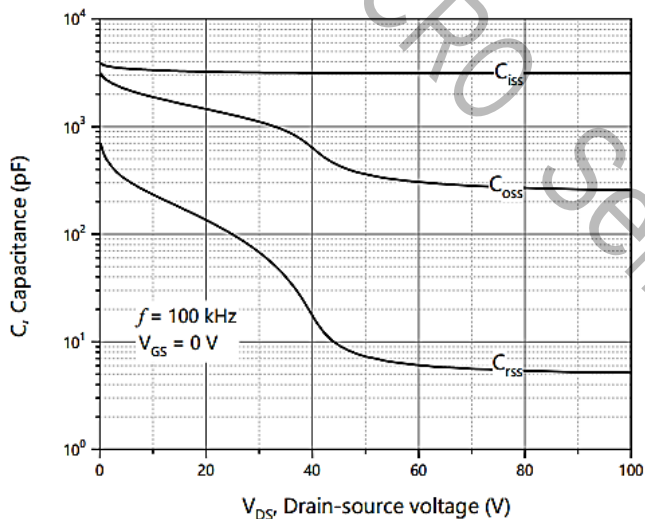


Figure 3. Typ. capacitances

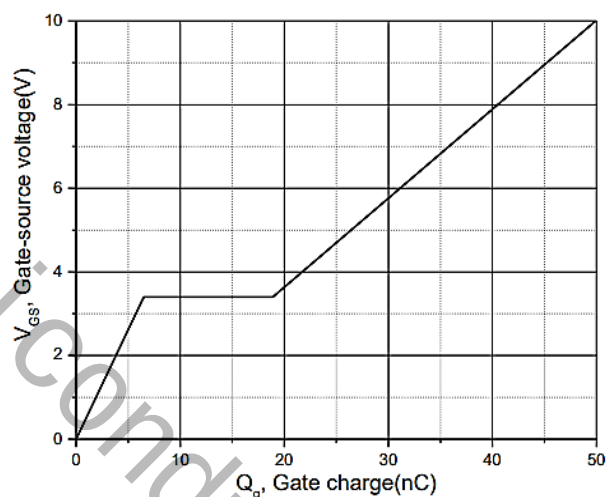


Figure 4. Typ. gate charge

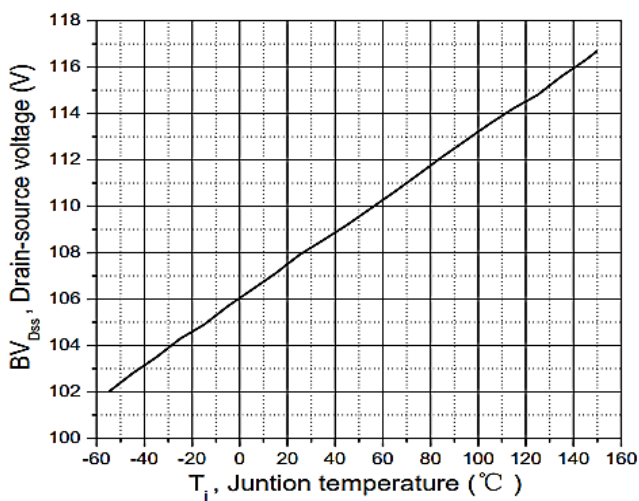


Figure 5. Drain-source breakdown voltage

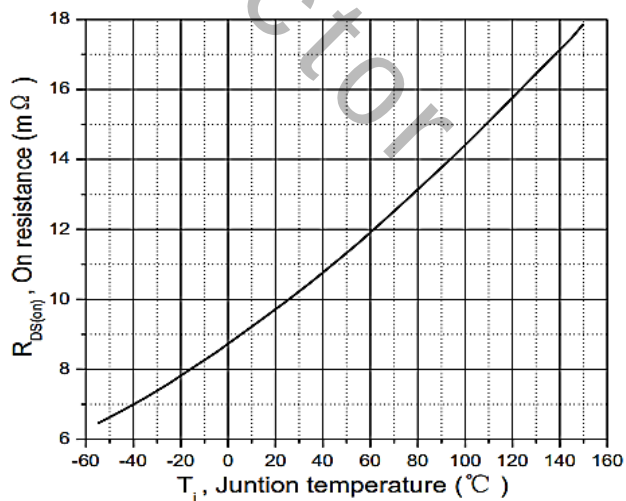


Figure 6. Drain-source on-state resistance

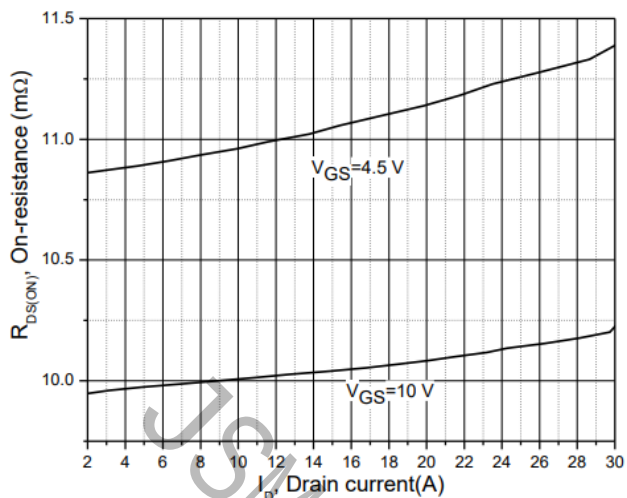


Figure 7. Drain-source on-state resistance

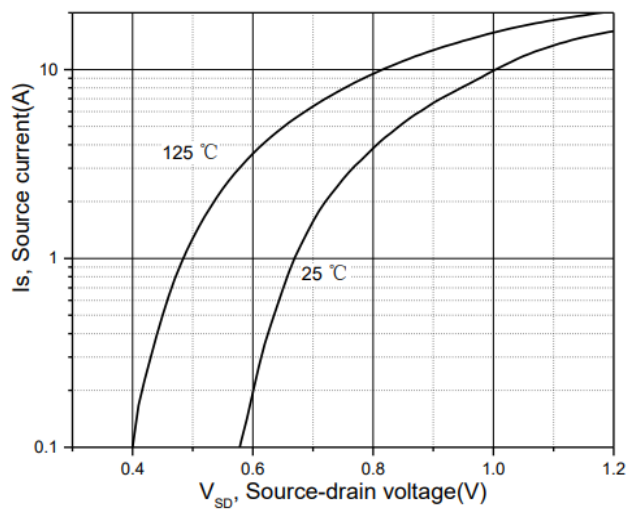


Figure 8. Forward characteristic of body diode

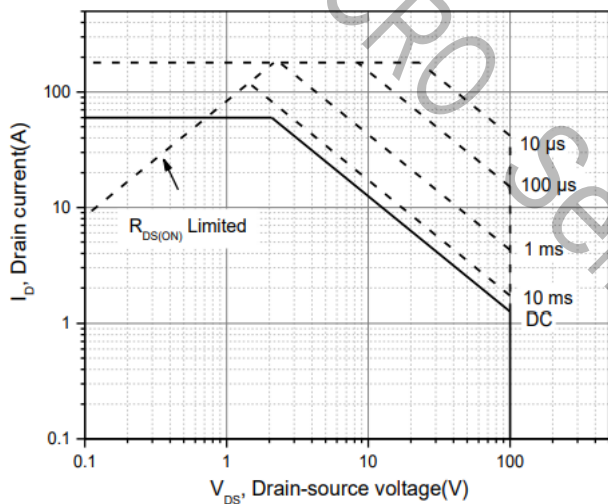
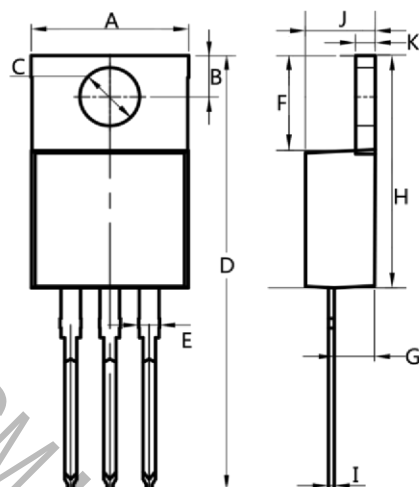
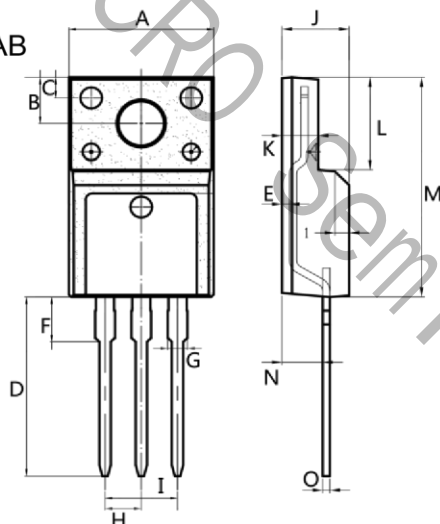


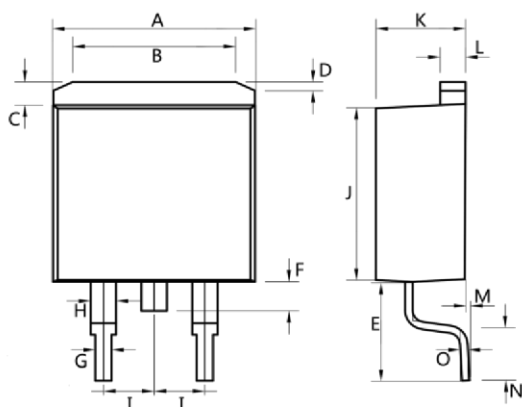
Figure 9. Safe operation area $T_C=25\text{ }^{\circ}\text{C}$

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		