N-Channel Power Mosfet

BL20N50F

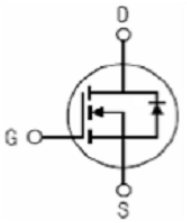
Features

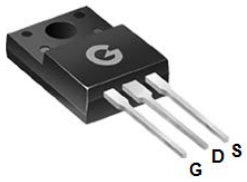
HF

- Fast Switching.
- Low ON Resistance (Rdson≤0.3Ω).
- Low Gate Charge (Typical Data: 63nC).
- Low Reverse transfer capacitances (Typical: 25pF).

Mechanical Data

- Case: ITO-220AB.
- Molding Compound, UL Flammability Classification Rating 94V-0.
- Terminals: Matte Tin Plated Leads, Solderable Per MIL-STD-202, Method 208.





ITO-220AB

Ordering Information

Part Number	Package	Shipping	Marking Code
BL20N50F	ITO-220AB	50 pcs / Tube	20N50F

Maximum Ratings (@T_C=25℃ unless otherwise specified)

Symbol	Parameter	Value	Units
V_{DSS}	Drain-Source Voltage	500	V
V_{GSS}	Gate -Source Voltage	±30	V
I_D	Continuous Drain Current Continuous Drain Current T_C=100℃	20 12.5	A
I_{DM}(Note 1)	Pulsed Drain Current	80	A
E_{AS}(Note 2)	Single Pulse Avalanche Energy	1500	mJ
E_{AR}(Note 1)	Avalanche Energy ,Repetitive	90	mJ
I_{AR}(Note 1)	Avalanche Current	4.3	A
P_D	Power Dissipation	85	W
$R_{\Theta JA}$	Junction-to- Ambient	100	℃/W
$R_{\Theta JC}$	Junction-to- Case	1.47	℃/W
T_J	Junction Temperature	150	℃
T_{STG}	Storage Temperature Range	-55 to +150	℃

Electrical Characteristics (@T_C=25℃ unless otherwise specified)

Symbol	Parameter	Test conditions	MIN	TYP	MAX	UNIT
OFF Characteristics						
V_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250uA	500	-	-	V
I_{DSS}	Drain to Source Leakage Current	V_{DS}=500V, V_{GS}=0V, T_A=25℃ V_{DS}=400V, V_{GS}=0V, T_A=125℃	-	-	1 100	uA
I_{GSS}	Gate-body Leakage	V_{GS}=±30V, V_{DS}=0V	-	-	±100	nA
ON Characteristics						
$R_{DS(ON)}$	Static Drain-Source On-resistance	V_{GS}=10V,I_D=10A	-	0.24	0.3	Ω
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D=250μA	2	-	4	V
Pulse width tp≤300μs,δ≤2%						
Dynamic Characteristics						
Ciss	Input Capacitance	V_{GS} = 0V	-	2863	-	pF
Coss	Output Capacitance	V_{DS} = 25V	-	285	-	
Crss	Reverse Transfer Capacitance	f = 1.0MHz	-	25	-	
gfs	Forward Trans conductance	V_{DS}=15V,I_D=10A	-	17	-	S
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=250V,I_D=20A R_G=25Ω	-	33	-	nS
t_r	Turn-on Rise Time		-	75	-	
$t_{d(off)}$	Turn-Off Delay Time		-	181	-	
t_f	Turn-Off Fall Time		-	83	-	
Q_g	Total Gate Charge	V_{DD}=250V, I_D=20A V_{GS}=10V	-	63	-	nC
Q_{gs}	Gate-Source Charge		-	14	-	
Q_{gd}	Gate-Drain Charge		-	24	-	
Source-Drain Diode Characteristics						
V_{SD}	Diode Forward Voltage	I_S=20A,V_{GS}=0V	-	-	1.5	V
I_S	Diode Continuous Forward Current		-	-	20	A
I_{SM}	Maximum Pulsed Current		-	-	80	A
t_{rr}	Reverse Recovery Time	I_S=20A,T_J=25°C	-	392	-	nS
Q_{rr}	Reverse Recovery Charge	d_{IF}/d_t=100A/us, V_{GS}=0V	-	3.4	-	uC

NOTE:

1、 Repetitive rating; pulse width limited by maximum junction temperature.

2、 L=10mH, I_D=17.3A, Start T_J=25℃.

Ratings and Characteristic Curves (T_A=25℃ unless otherwise noted)

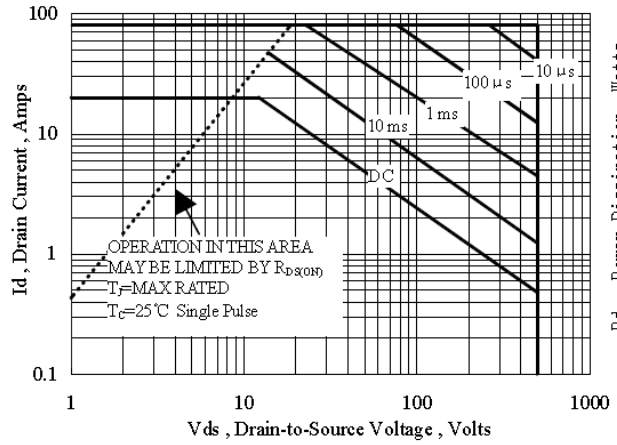


Figure 1 Maximum Forward Bias Safe Operating Area

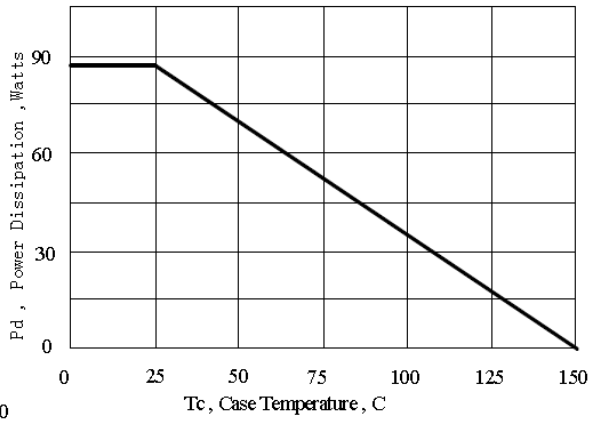


Figure 2 Maximum Power Dissipation vs Case Temperature

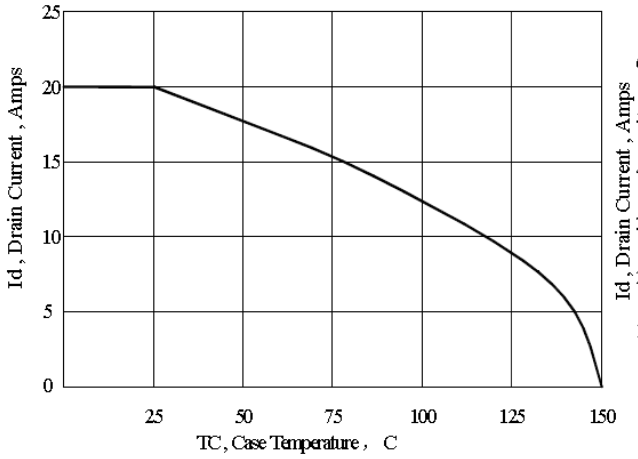


Figure 3 Maximum Continuous Drain Current vs Case Temperature

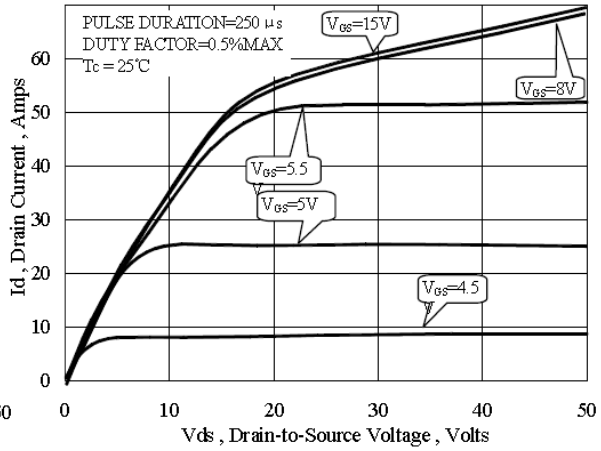


Figure 4 Typical Output Characteristics

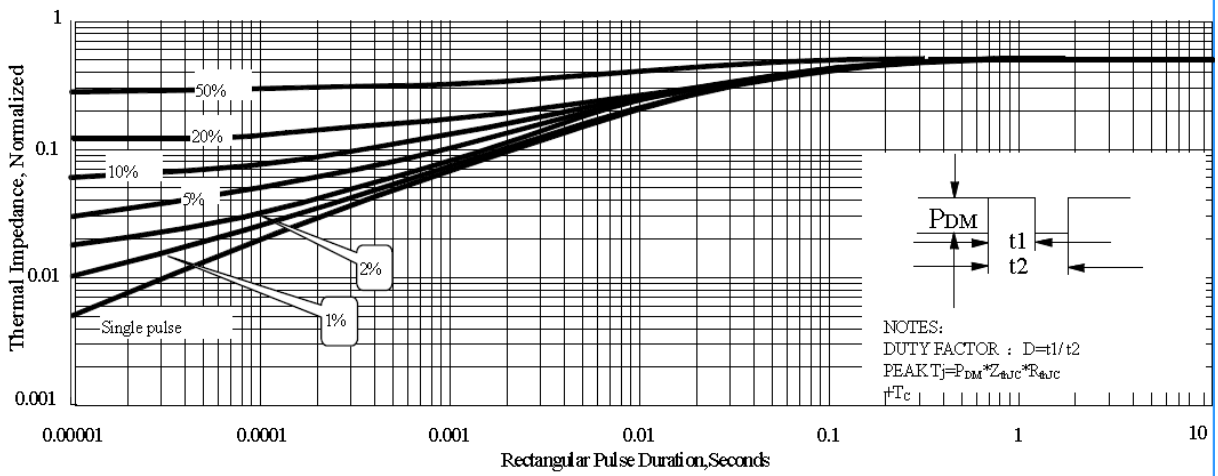


Figure 5 Maximum Effective Thermal Impendance , Junction to Case

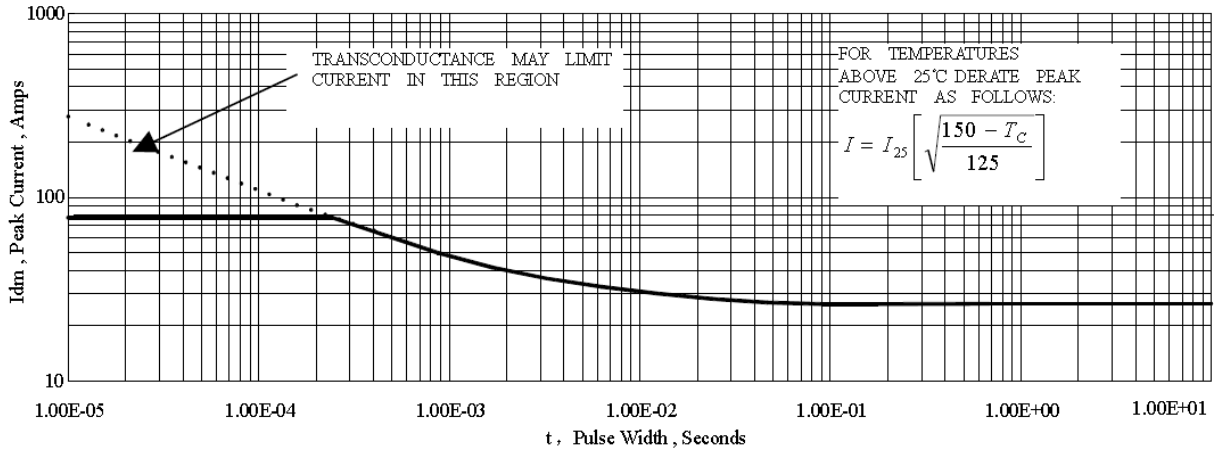


Figure 6 Maximum Peak Current Capability

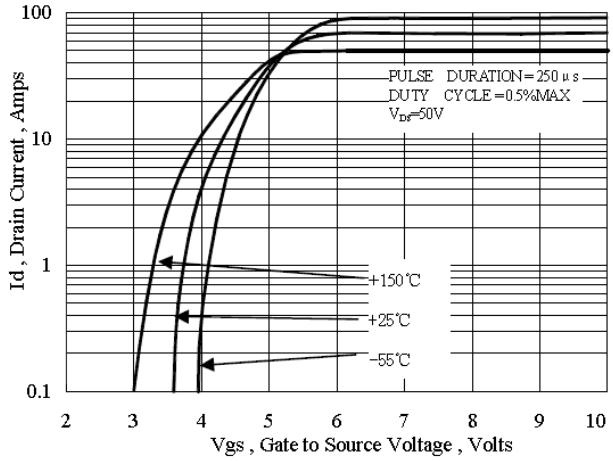


Figure 7 Typical Transfer Characteristics

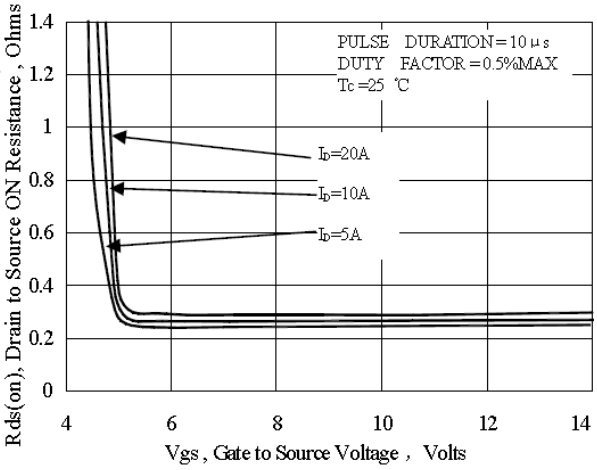


Figure 8 Typical Drain to Source ON Resistance vs Gate Voltage and Drain Current

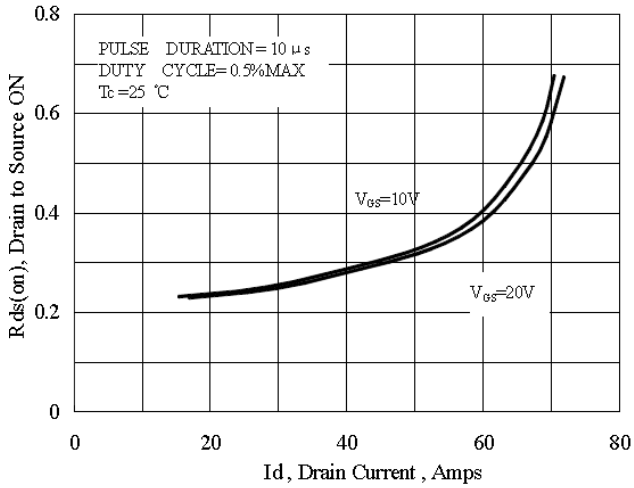


Figure 9 Typical Drain to Source ON Resistance vs Drain Current

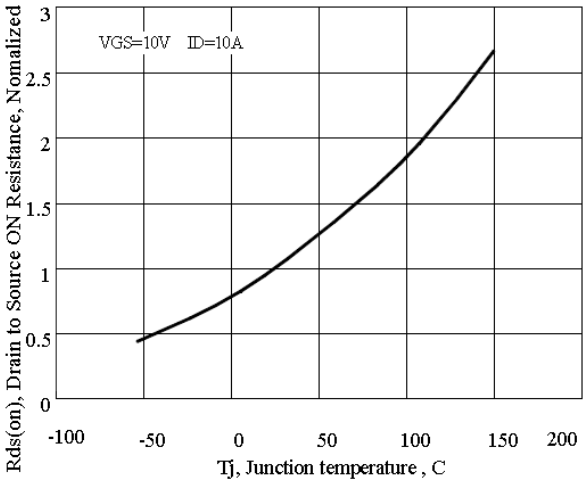


Figure 10 Typical Drian to Source on Resistance vs Junction Temperature

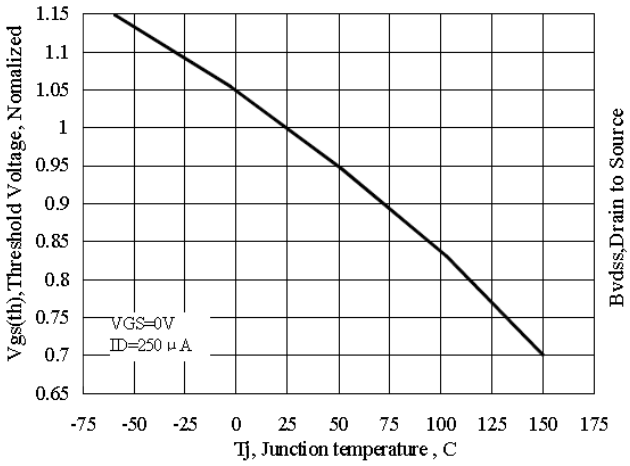


Figure 11 Typical Theshold Voltage vs Junction Temperature

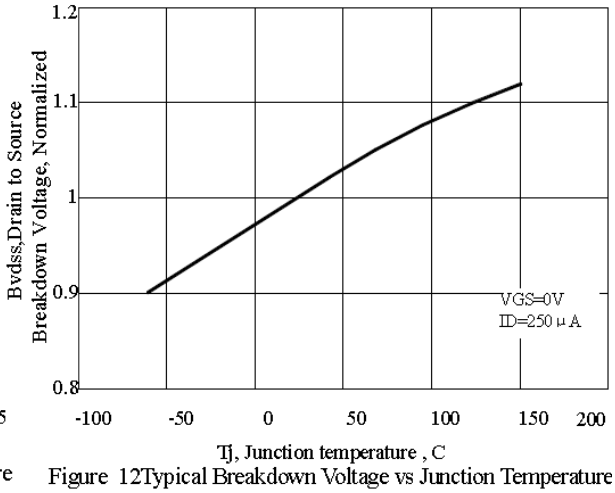


Figure 12Typical Breakdown Voltage vs Junction Temperature

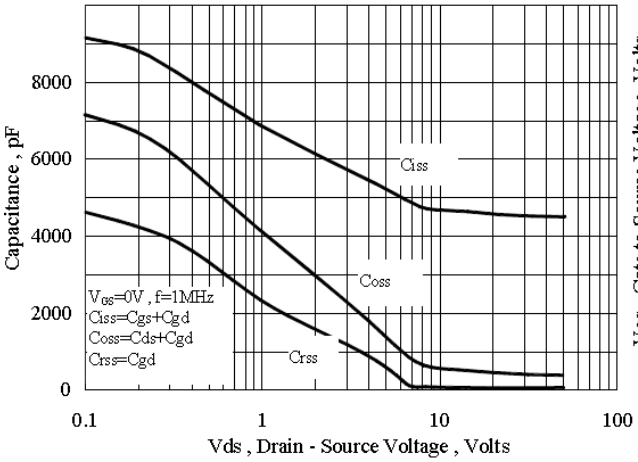


Figure 13 Typical Capacitance vs Drain to Source Voltage

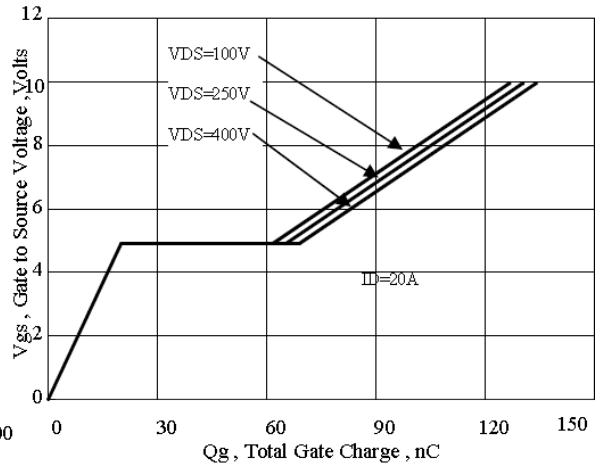


Figure 14 Typical Gate Charge vs Gate to Source Voltage

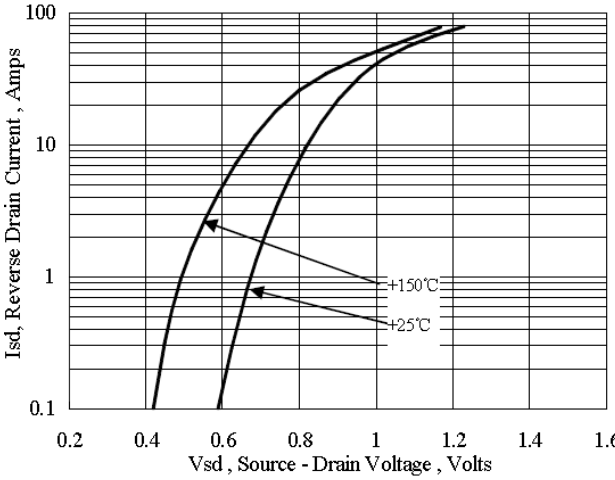


Figure 15 Typical Body Diode Transfer Characteristics

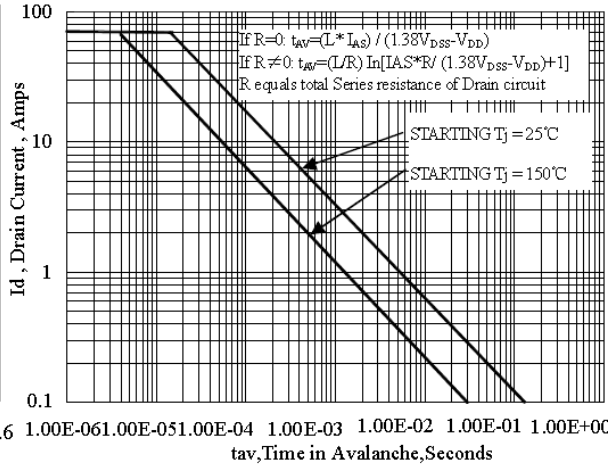
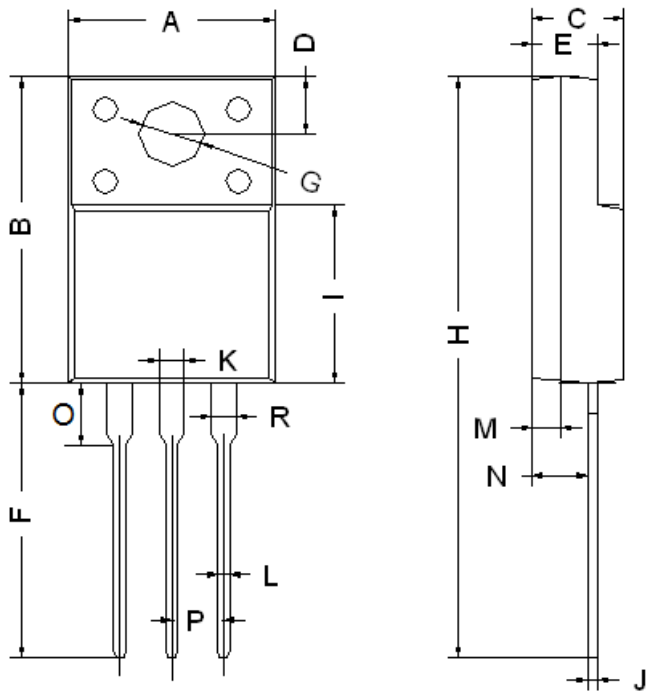


Figure 16 Unclamped Inductive Switching Capability

Package Outline Dimensions(unit:mm)

ITO-220AB



ITO-220AB		
Dim	Min	Max
A	9.90	10.30
B	14.80	15.20
C	4.30	4.70
D	2.50	2.90
E	2.80	3.30
F	13.00	13.60
G	3.10	3.30
H	28.00	28.60
I	7.90	8.90
J	0.40	0.60
L	0.70	0.90
M	1.30	1.50
N	2.60	2.80
O	2.60	3.10
P	2.45	2.65
K/R	1.10	1.30

IMPORTANT NOTICE