

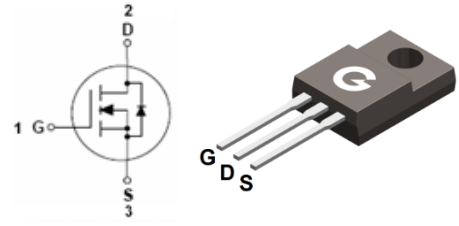
Features

- Fast switching
- Low gate charge
- Low reverse transfer capacitances

HF

Mechanical Data

- Case: ITO-220AB
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208



ITO-220AB

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
BL7N80F	ITO-220AB	50 pcs / Tube	7N80F

Maximum Ratings (@ $T_c = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DS}	800	V
Gate-to-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current ($T_c = 25^\circ\text{C}$)	I_D	7	A
Continuous Drain Current ($T_c = 100^\circ\text{C}$)		4.2	A
Pulsed Drain Current	I_{DM}	28	A
Single Pulse Avalanche Energy ^{*3}	E_{AS}	120	mJ
Power Dissipation ($T_c = 25^\circ\text{C}$)	P_D	48	W
Operating Junction Temperature Range	T_J	$-55 \sim +150$	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	$-55 \sim +150$	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	-	2.6	3.8	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Air ^{*1}	$R_{\theta JA}$	-	-	62.5	$^\circ\text{C/W}$

Electrical Characteristics (@ $T_J = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
V _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	800	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 800V, V _{GS} = 0V, T _J = 25°C	-	-	10	μA
		V _{DS} = 640V, V _{GS} = 0V, T _J = 125°C	-	-	250	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ±30V, V _{DS} = 0V	-	-	±100	nA
On Characteristics						
R _{DS(ON)}	Drain-Source On-resistance *2	V _{GS} = 10V, I _D = 3.3A	-	-	1.9	Ω
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	2	-	4	V
R _G	Gate Resistance	V _{GS} = 0V, f = 1MHz	-	3	-	Ω
Dynamic Characteristics						
g _{fs}	Forward Transconductance	V _{DS} = 15V, I _D = 3.5A	-	7	-	S
C _{ISS}	Input Capacitance	V _{GS} = 0V V _{DS} = 25V f = 1.0MHz	-	1290	-	pF
C _{OSS}	Output Capacitance		-	120	-	
C _{RSS}	Reverse Transfer Capacitance		-	10	-	
Switching Characteristics						
t _{d(ON)}	Turn-on Delay Time *4	V _{DD} = 400V V _{GS} = 10V R _G = 10Ω I _D = 7A	-	20.5	-	ns
t _r	Turn-on Rise Time *4		-	17	-	
t _{d(OFF)}	Turn-Off Delay Time *4		-	49.4	-	
t _f	Turn-Off Fall Time *4		-	21	-	
Q _G	Total Gate-Charge	V _{DD} =640V V _{GS} = 10V I _D = 7A	-	33.9	-	nC
Q _{GS}	Gate to Source Charge		-	6.7	-	
Q _{GD}	Gate to Drain (Miller) Charge		-	16.2	-	
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage *2	I _{SD} = 7A, V _{GS} = 0V	-	-	1.5	V
t _{rr}	Reverse Recovery Time	I _F = 7A, V _{GS} = 0V	-	626	-	ns
Q _{rr}	Reverse Recovery Charge	dI _F /dI _t = 100A/μs	-	4990	-	nC

Notes:

- The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper
- The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- The E_{AS} data shows Max. rating. The test condition is $V_{DD} = 50V, V_{GS} = 15V, L = 10mH$
- Guaranteed by design, not subject to production

Ratings and Characteristics Curves (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

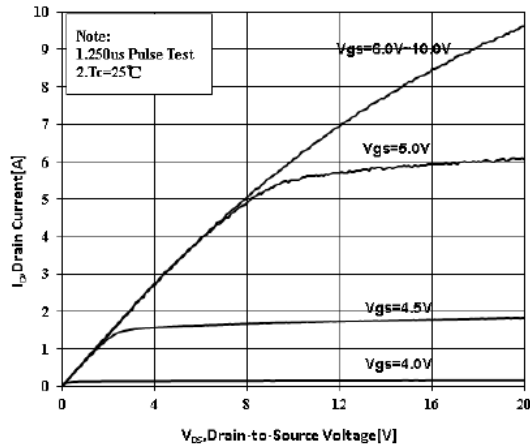


Fig 1 Typical Output Characteristics

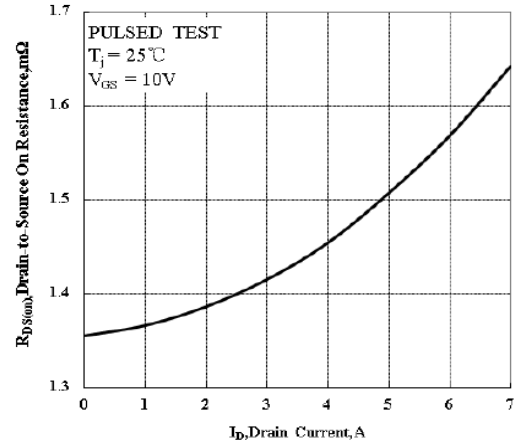


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

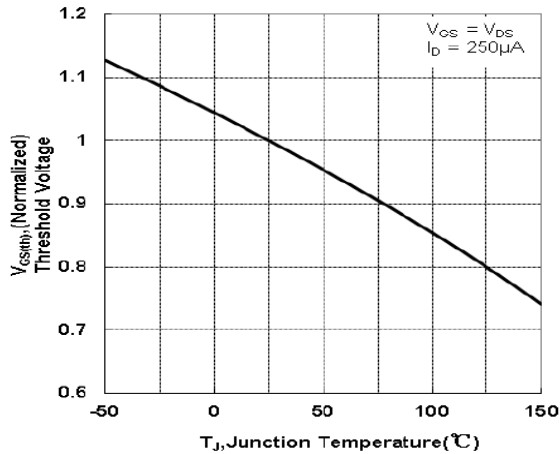


Fig 3 On-Resistance vs. Gate-Source Voltage

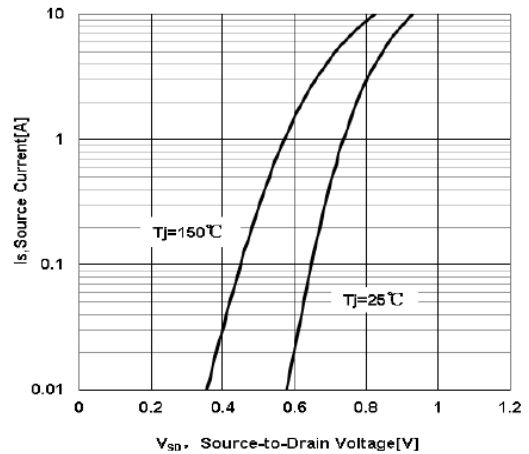


Fig 4 Body-Diode Characteristics

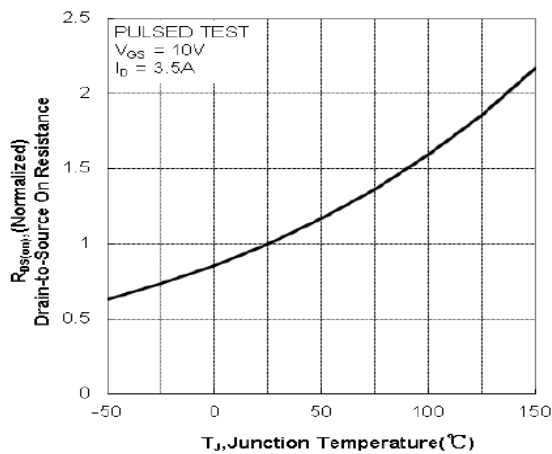


Fig 5 Normalized On-Resistance vs. Junction Temperature

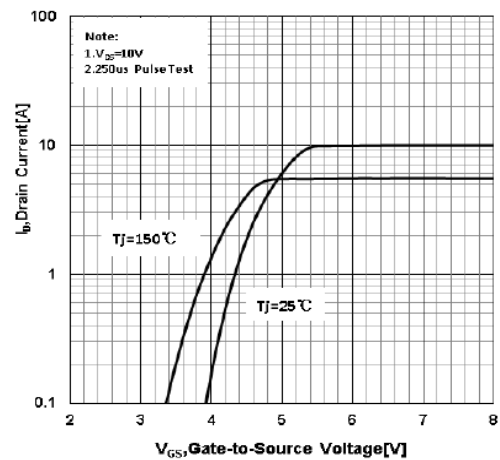
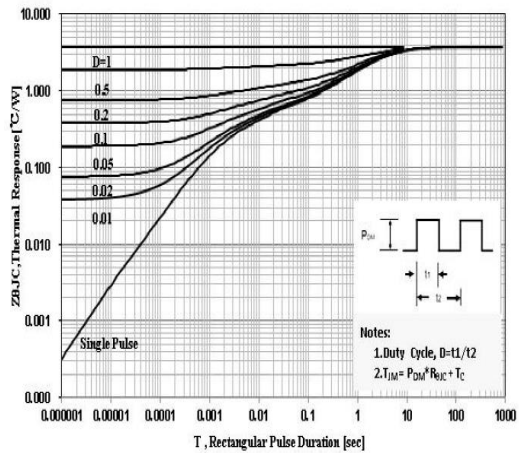
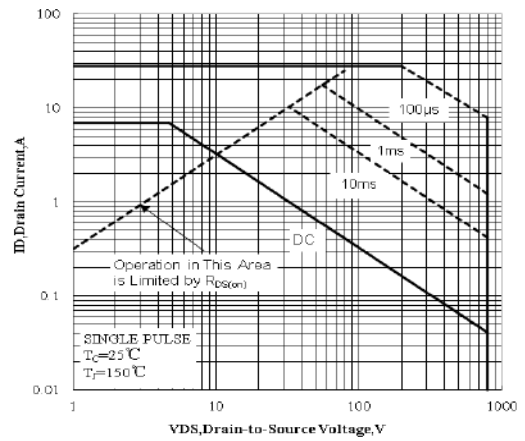
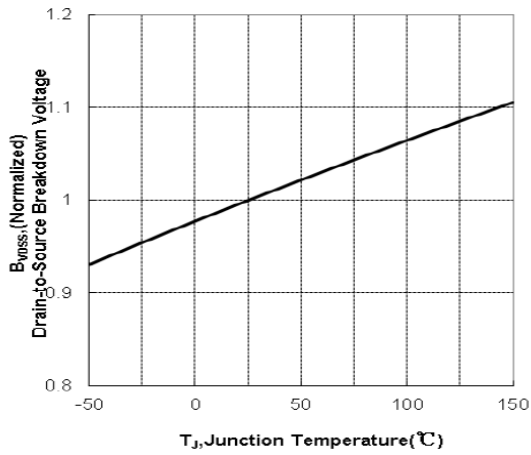
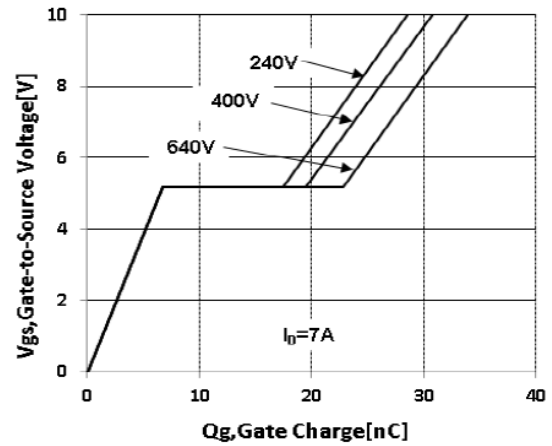
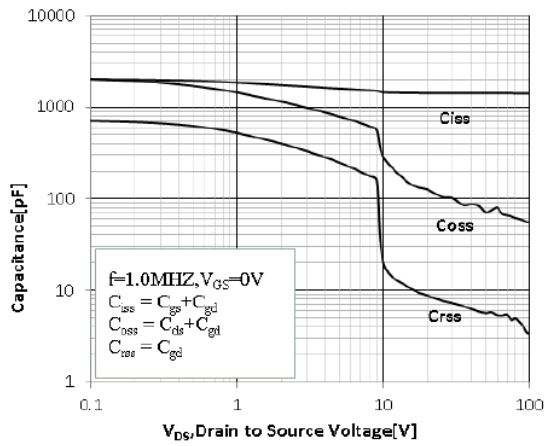
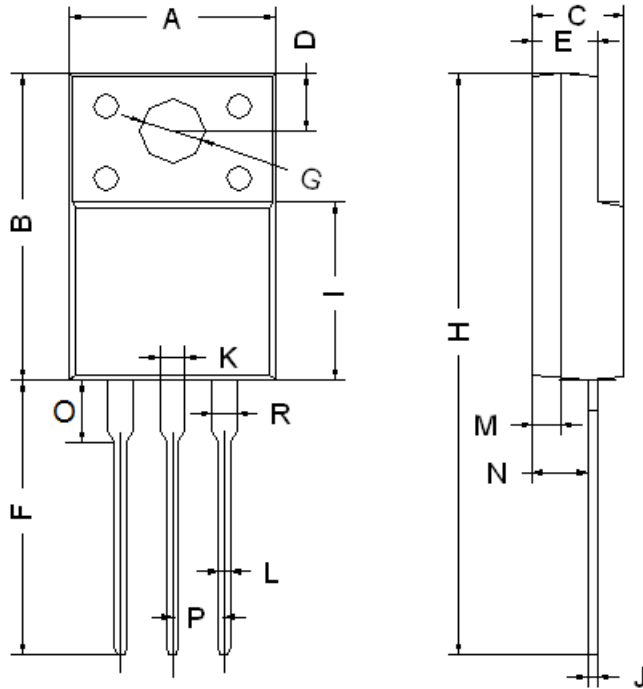


Fig 6 Transfer Characteristics



Package Outline Dimensions (Unit: mm)



ITO-220AB		
Dimension	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

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