N-Channel Enhancement Mode MOSFET

BL7N80B

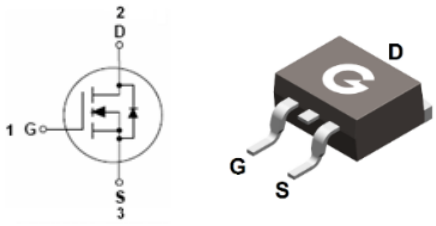
Features

HF

- Fast switching
- Low $R_{DS(ON)}$
- Low gate charge
- Low reverse transfer capacitances

Mechanical Data

- Case: TO-263
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208



TO-263

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
BL7N80B	TO-263	50 pcs / Tube & 800 pcs / Tape & Reel	7N80B

Maximum Ratings (@ T_C = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DSS}	800	V
Gate-to-Source Voltage	V_{GSS}	±30	V
Continuous Drain Current (T_C = 25°C)	I_D	7	A
Continuous Drain Current (T_C = 100°C)		4.2	A
Pulsed Drain Current	I_{DM}	28	A
Single Pulse Avalanche Energy *3	E_{AS}	235	mJ
Power Dissipation (T_C = 25°C)	P_D	133	W
Operating Junction Temperature Range	T_J	-55 ~ +150	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°C

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	-	-	0.94	°C/W
Thermal Resistance Junction-to-Air *1	$R_{\theta JA}$	-	-	62.5	°C/W

Electrical Characteristics (@ T_J = 25°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	-	-	25	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 = 3.5A	-	-	1.8	Ω
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	2	-	4	V
Dynamic Characteristics						
C_{ISS}	Input Capacitance	V_{GS} = 0V V_{DS} = 25V f = 1.0MHz	-	1443	-	pF
C_{OSS}	Output Capacitance		-	118	-	
C_{RSS}	Reverse Transfer Capacitance		-	11.2	-	
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
trr	Reverse Recovery Time	I_F = 7A, V_{GS} = 0V d_{IF}/d_t = 100A/μs	-	626	-	ns
Qrr	Reverse Recovery Charge		-	4990	-	nC

Notes:

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

Ratings and Characteristics Curves (@ T_A = 25°C unless otherwise specified)

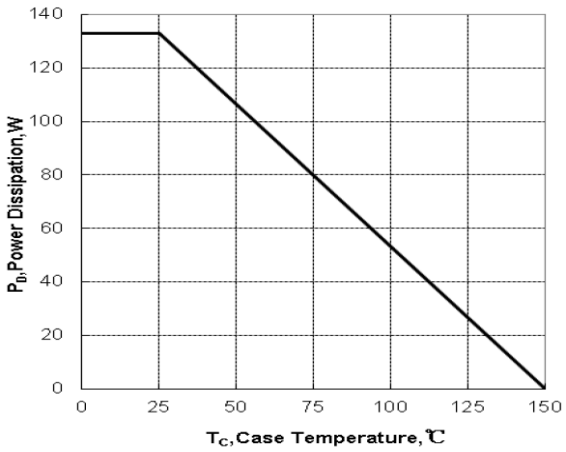


Fig 1 Power Dissipation

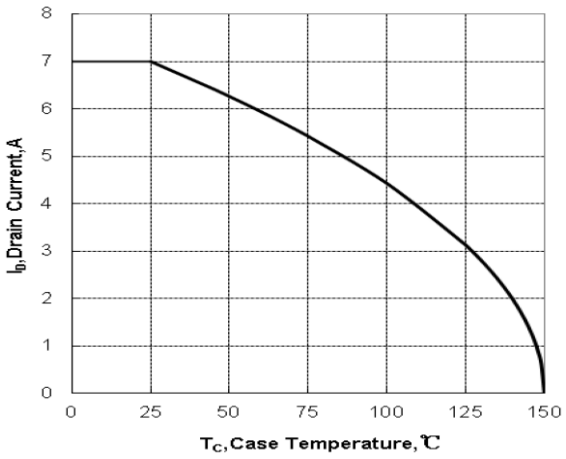


Fig 2 Drain Current

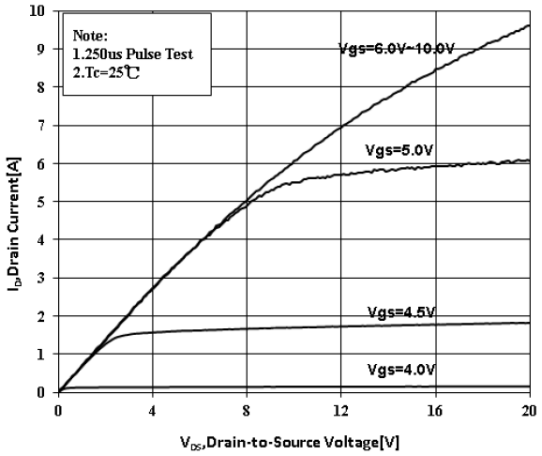


Fig 3 Typical Output Characteristics

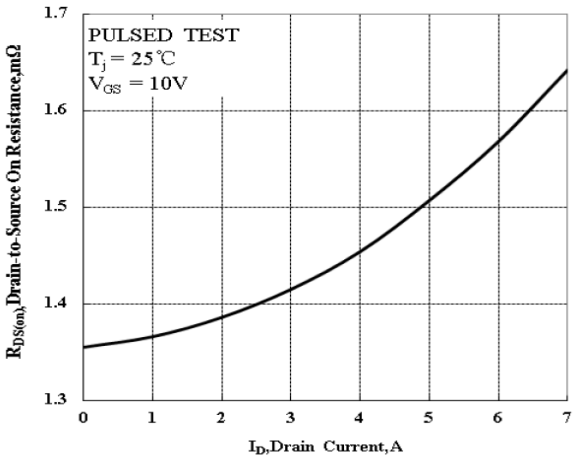


Fig 4 On-Resistance vs. Drain Current and Gate Voltage

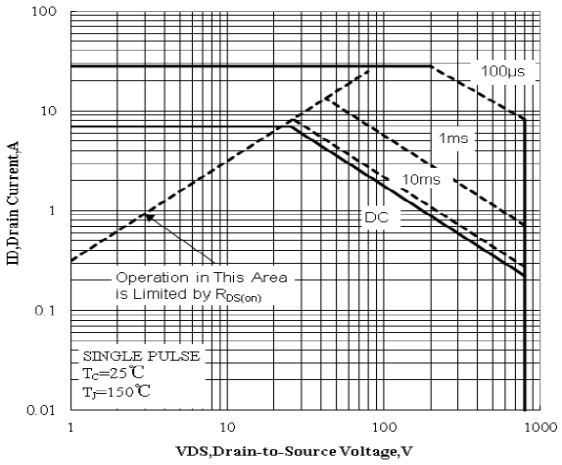


Fig 5 Safe Operation Area

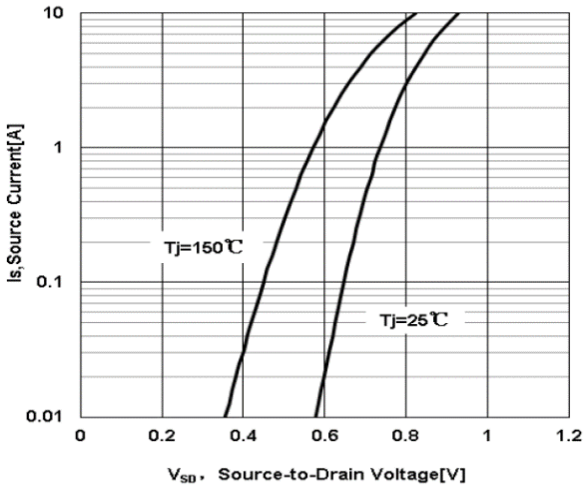


Fig 6 Body-Diode Characteristics

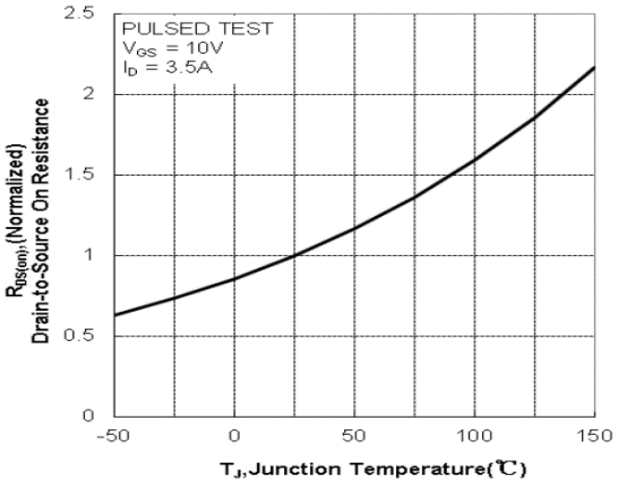


Fig 7 Normalized On-Resistance vs. Junction Temperature

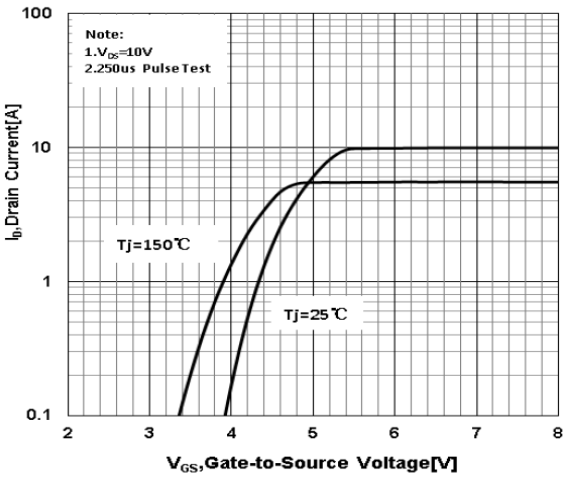


Fig 8 Transfer Characteristics

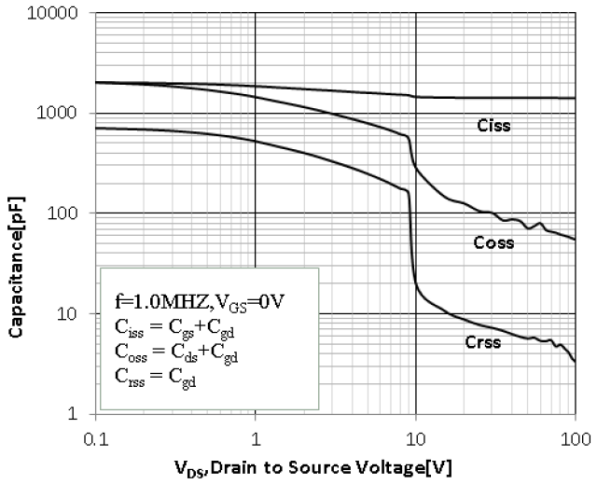


Fig 9 Capacitance Characteristics

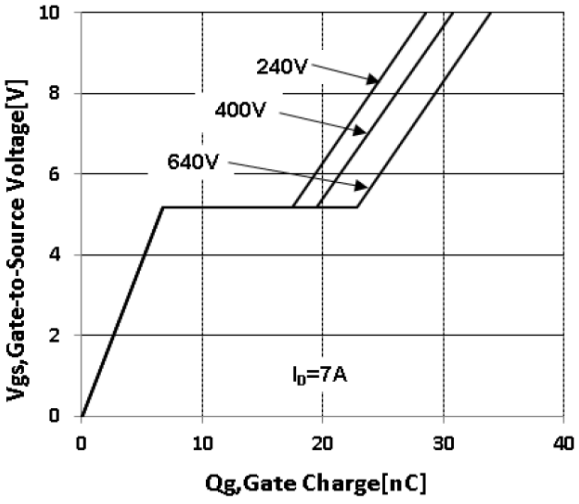


Fig 10 Gate-Charge Characteristics

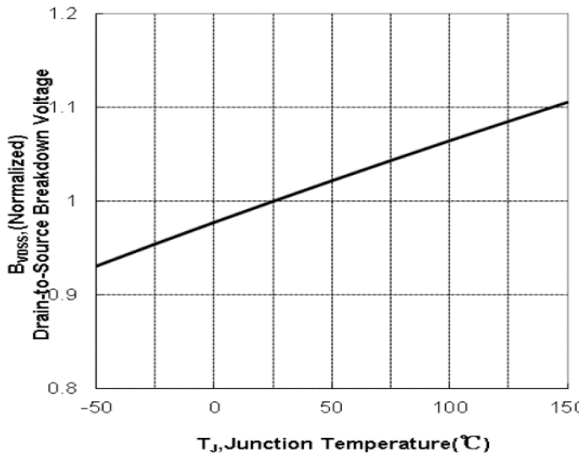


Fig 11 Normalized Breakdown Voltage vs. Junction Temperature

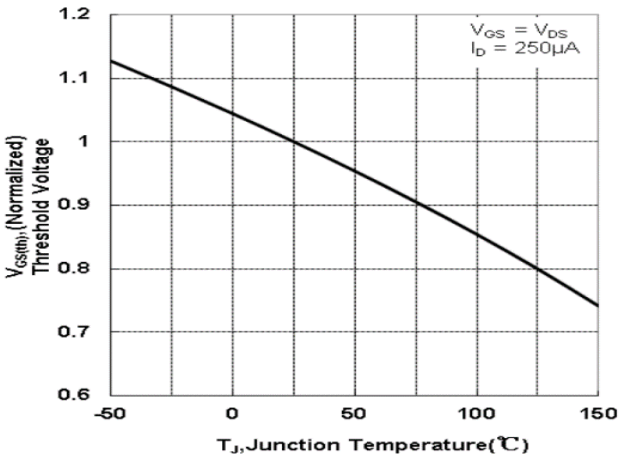
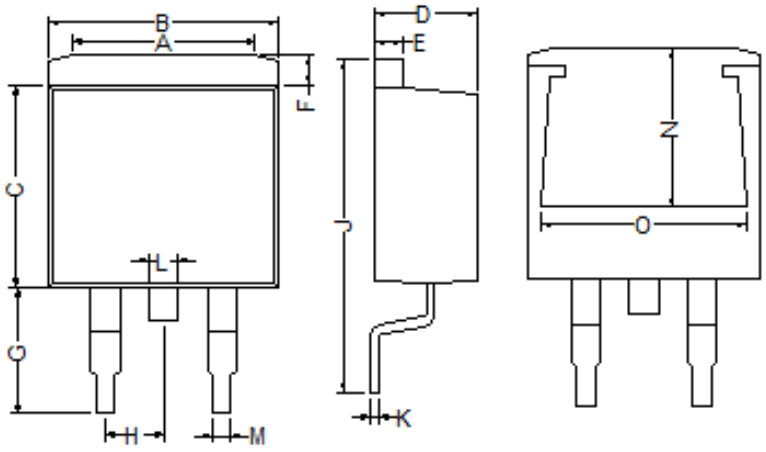


Fig 12 Normalized $V_{GS(th)}$ vs. Junction Temperature

Package Outline Dimensions (Unit: mm)



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Dimension	**Min.**	**Max.**
A	6.00	8.00
B	9.90	10.30
C	8.50	9.10
D	4.37	4.77
E	1.07	1.47
F	1.07	1.47
G	5.05	5.74
H	2.44	2.66
J	15.15	15.80
K	0.28	0.48
L	1.17	1.37
M	0.71	0.91
N	6.55	7.68
O	7.70	8.10

Mounting Pad Layout (Unit: mm)

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