

3A,650V N-Channel Power Mosfet

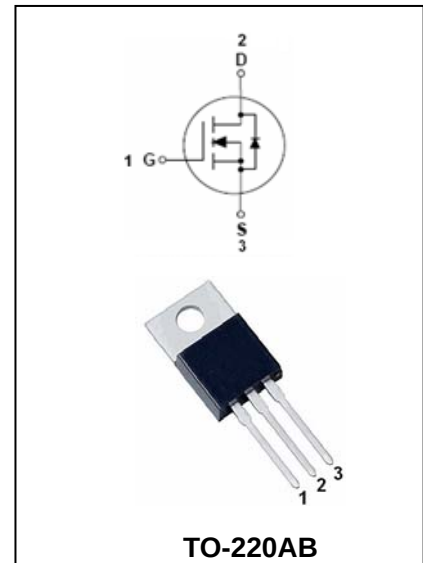
BL3N65

FEATURES

- $R_{DS(ON)} = 3.8\Omega @ V_{GS} = 10V$
- Ultra low gate charge (typical 10 nC)
- Low reverse transfer Capacitance ($CRSS = \text{typical } 5.5 \text{ pF}$)
- Fast switching capability
- Avalanche energy specified
- Improved dv/dt capability, high ruggedness



Lead-free



MAXIMUM RATING @ $T_a = 25^\circ\text{C}$ unless otherwise specified

Symbol	Parameter	Value	Units
V_{DSS}	Drain-Source voltage	650	V
V_{GSS}	Gate -Source voltage	± 30	V
I_D	Continuous Drain Current	3.0	A
I_{DM}	Pulsed Drain Current	12	A
E_{AS} E_{AR}	Avalanche Energy Single Pulsed Repetitive	200 7.5	mJ
dv/dt	Peak Diode Recovery dv/dt	4.5	V/ns
P_D	Power Dissipation	75	W
$R_{\theta JA}$	Thermal resistance, Junction-to-Ambient	62.5	$^\circ\text{C}/\text{W}$
T_J	Junction Temperature	+150	$^\circ\text{C}$
T_{OPR}, T_{stg}	Operating and Storage Temperature	-55 to +150	$^\circ\text{C}$

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ELECTRICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

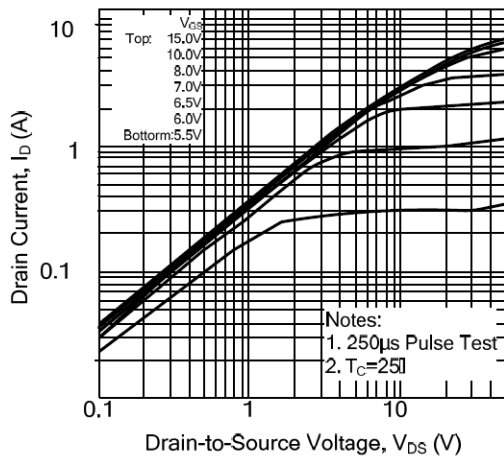
Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	650	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =650V, V _{GS} =0V	-	-	10	μA
Gate-body Leakage	I _{GSS}	V _{DS} =0V, V _{GS} = ± 30V	-	-	± 100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2.0	-	4.0	V
Static drain-Source on-resistance	R _{DS(ON)}	V _{GS} =10V, I _D =1.5A	-	2.9	3.8	Ω
DYNAMIC CHARACTERISTICS						
Input capacitance	C _{ISS}	V _{DS} =25V, V _{GS} =0V, f=1.0MHz	-	350	450	pF
Output capacitance	C _{OSS}		-	50	65	
Reverse transfer capacitance	C _{RSS}		-	5.5	7.5	
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	t _{D(ON)}	V _{DD} = 325V, I _D = 3.0A, R _G = 25Ω	-	10	30	ns
Rise Time	tr		-	30	70	ns
Turn-Off Delay Time	t _{D(OFF)}		-	20	50	ns
Fall Time	tf		-	30	70	ns
Total Gate Charge	Qg	V _{DS} = 520V	-	10	13	nC
Gate–Source Charge	Qgs	I _D = 3.0A	-	2.7	-	nC
Gate–Drain Charge	Qgd	V _{GS} = 10V,	-	4.9	-	nC
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source diode forward voltage	V _{SD}	V _{GS} =0V, I _s =3.0A	-	-	1.4	V
Maximum Continuous Drain-Source Diode Forward Current	I _S		-	-	3.0	A
Maximum Pulsed Drain-Source Diode Forward Current	I _{SM}		-	-	12	A
Body Diode Reverse Recovery Time	trr	V _{GS} =0V ,I _s =3.0A, dI/dt=100A/μ s	-	210	-	nS
Body Diode Reverse Recovery Charge	Qrr		-	1.2	-	uC

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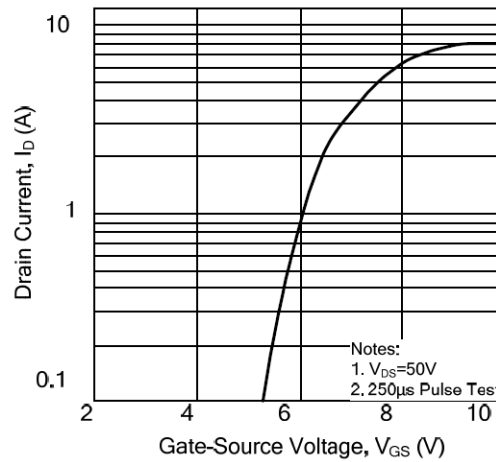
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TYPICAL CHARACTERISTICS @ $T_a=25^\circ\text{C}$ unless otherwise specified

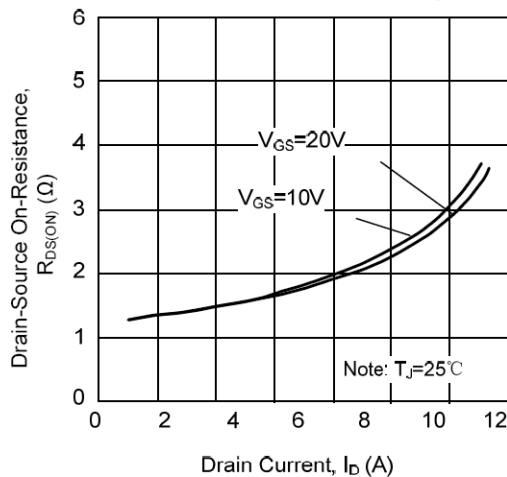
On-State Characteristics



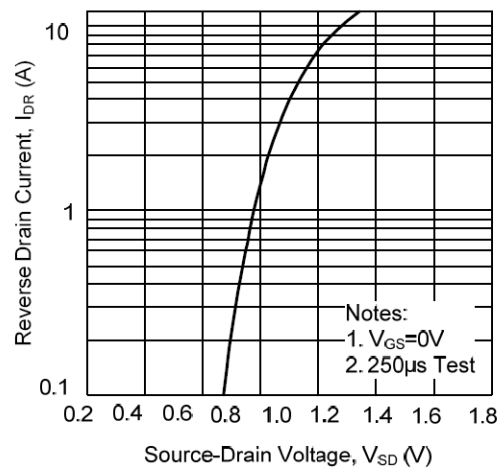
Transfer Characteristics



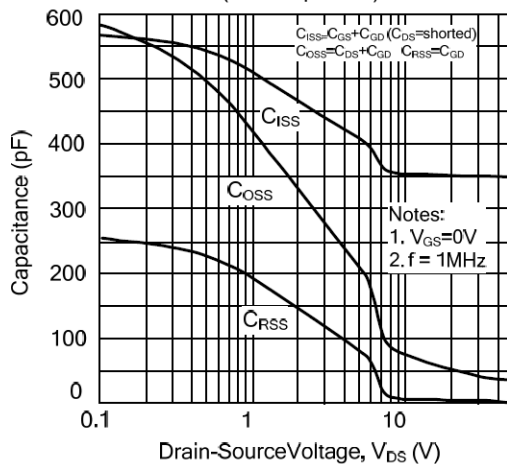
On-Resistance Variation vs.
Drain Current and Gate Voltage



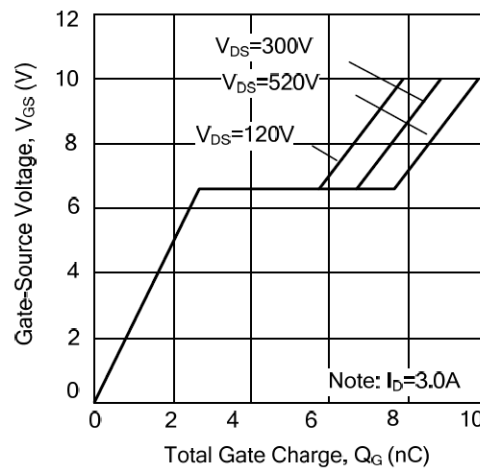
On State Current vs.
Allowable Case Temperature



Capacitance Characteristics
(Non-Repetitive)



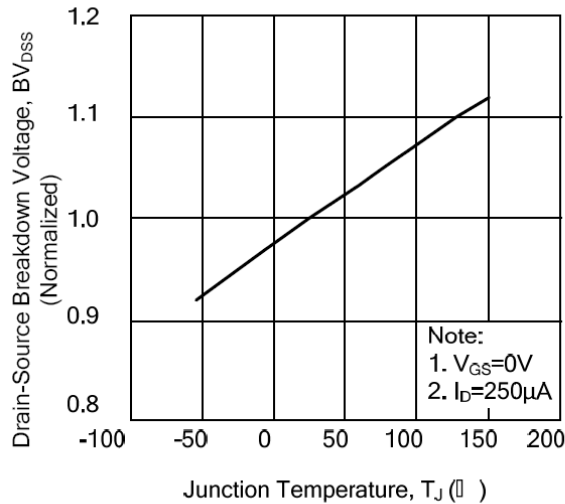
Gate Charge Characteristics



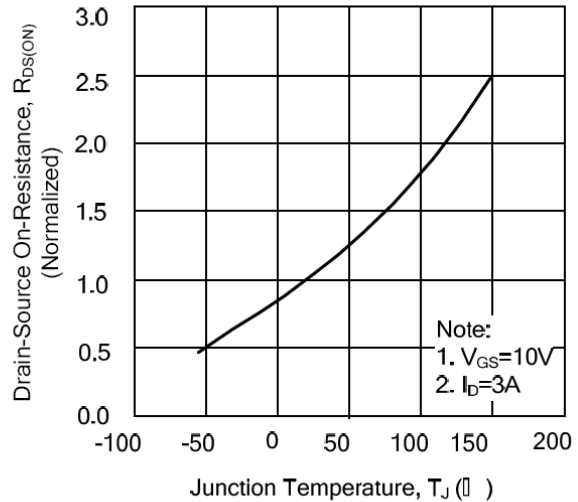
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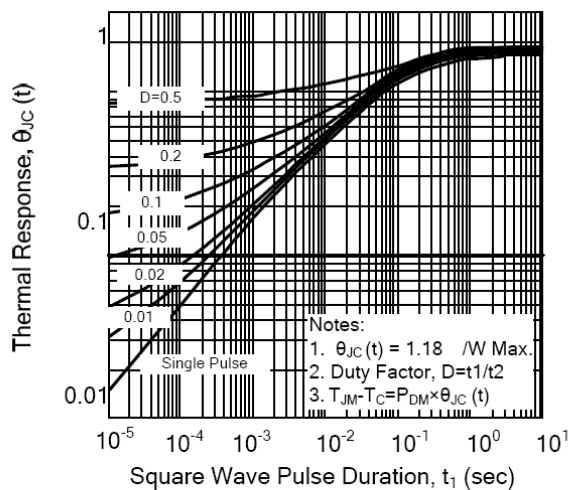
Breakdown Voltage Variation vs. Junction Temperature



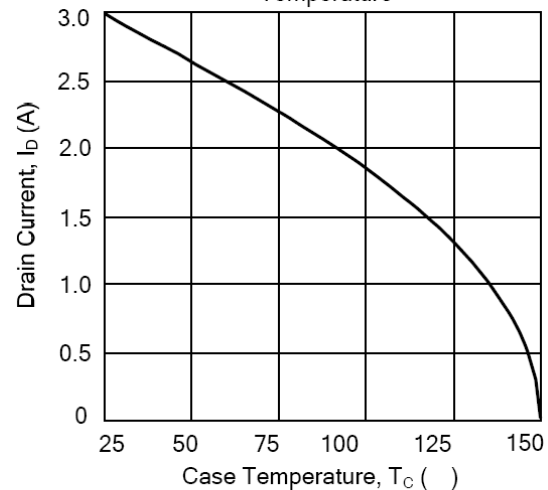
On-Resistance Variation vs. Junction Temperature



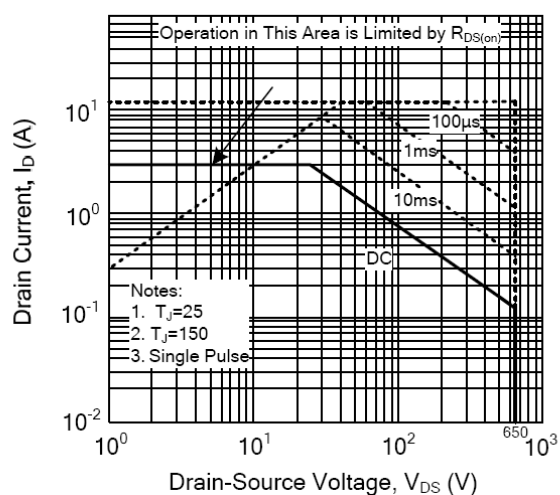
Transient Thermal Response Curve



Maximum Drain Current vs. Case Temperature



Safe Operating Area



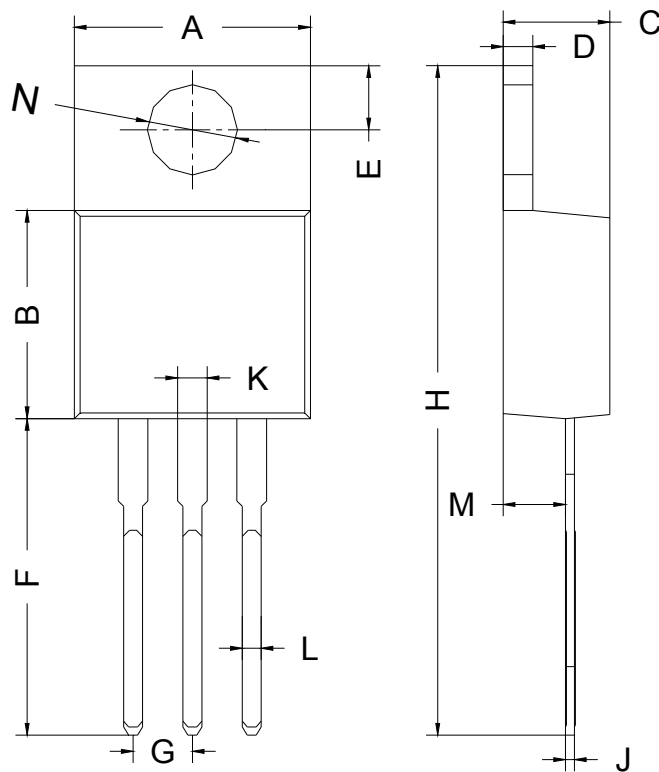
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PACKAGE OUTLINE

Plastic surface mounted package

TO-220AB



TO-220AB		
Dim	Min	Max
A	9.80	10.30
B	8.70	9.10
C	4.57 Typical	
D	1.27 Typical	
E	2.64	2.84
F	13.14	13.74
G	2.44	2.64
H	28.03	28.83
J	0.38 Typical	
K	1.22	1.32
L	0.71	0.91
M	2.50 Typical	
N	3.86 Typical	
All Dimensions in mm		