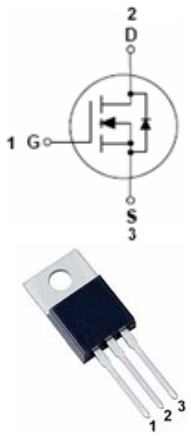
4A,600V N-Channel Power Mosfet BL4N60

FEATURES

- $R_{DS(ON)}$ =2.5Ω@ V_{GS} = 10V
- Ultra low gate charge (typical 15 nC)
- Low reverse transfer Capacitance (CRSS = typical 8.0 pF)
- Fast switching capability
- Avalanche energy specified
- Improved dv/dt capability, high ruggedness

Pb Lead-free



TO-220AB

MAXIMUM RATING @ Ta=25℃ unless otherwise specified

Symbol	Parameter	Value	Units
V_{DSS}	Drain-Source voltage	600	V
V_{GSS}	Gate -Source voltage	±30	V
I_{AR}	Avalanche Current (Note1)	4.4	A
I_D	Continuous Drain Current	4.0	A
I_{DM}	Pulsed Drain Current	16	A
E_{AS} E_{AR}	Avalanche Energy Single Pulsed(Note2) Repetitive	260 10.6	mJ
dv/dt	Peak Diode Recovery dv/dt(Note3)	4.5	V/ns
P_D	Power Dissipation	106	W
θ_{JA}	Junction-to-Ambient	62.5	℃/W
θ_{JC}	Junction-to-Case	3	℃/W
θ_{CS}	Case-to Sink	0.5	℃/W
T_J	Junction Temperature	+150	℃
Tstg	Operating and Storage Temperature	-55 to +150	℃

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Notes：

1、Absolute maximum ratings those values beyond which the device could be permanently damaged

2、Absolute maximum ratings are stress ratings only and functional device operation is not implied.

ELECTRICAL CHARACTERISTICS @ Ta=25℃ 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	600	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=600V, V_{GS}=0V	-	-	10	μA
Gate-body Leakage	I_{GSS}	V_{DS}=0V, V_{GS}=±30V	-	-	±100	nA
Breakdown Voltage Temperature Coefficient	ΔBVDSS/ΔTJ	ID =250μA, Referenced to25℃		0.6		V/℃
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=2.2A	-	-	2.5	Ω
Forward Transconductance	gFS	V_{DS}=50V, I_D=2.2A（Note4）	-	4.0	-	S
DYNAMIC CHARACTERISTICS						
Input capacitance	C_{ISS}	V_{DS}=25V,V_{GS}=0V,f=1.0MHz	-	520	670	pF
Output capacitance	C_{OSS}		-	70	90	
Reverse transfer capacitance	C_{RSS}		-	8	11	
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	$t_{D(ON)}$	V_{DD} = 300V, I_D = 4.0A, R_G= 25Ω（Note4、5）	-	13	35	ns
Rise Time	tr		-	45	100	ns
Turn-Off Delay Time	$t_{D(OFF)}$		-	25	60	ns
Fall Time	tf		-	35	80	ns
Total Gate Charge	Qg	V_{DS} = 480V I_D= 4.0A V_{GS}= 10V（Note4、5）	-	15	20	nC
Gate-Source Charge	Qgs		-	3.4	-	nC
Gate-Drain Charge	Qgd		-	7.1	-	nC
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source diode forward voltage	V_{SD}	V_{GS}=0V,I_s=4.4A	-	-	1.4	V
Maximum Continuous Drain-Source Diode Forward Current	I_S		-	-	4.4	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}		-	-	17.6	A

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Body Diode Reverse Recovery Time	trr	V_{GS}=0V ,Is=4.4A, dI/dt=100A/μs	-	250	-	nS
Body Diode Reverse Recovery Charge	Qrr		-	1.5	-	uC

Notes：

1、Repetitive Rating: Pulse width limited by Tj.

2、L=25m H, I_{AS}=4.4A, V_{DD}=50V, R_G=25Ω ,Starting T_J=25℃

3、I_{SD}≤4.4A, di/dt ≤200A/us, V_{DD}≤BV_{DSS}, Starting T_J=25℃

4、Pulse test: pulse width ≤300us，duty cycle ≤2%

5、Essentially independent of operating temperature

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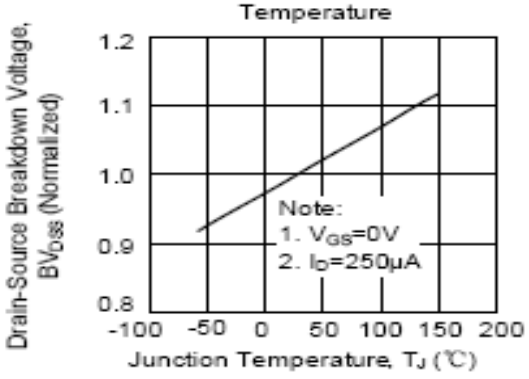
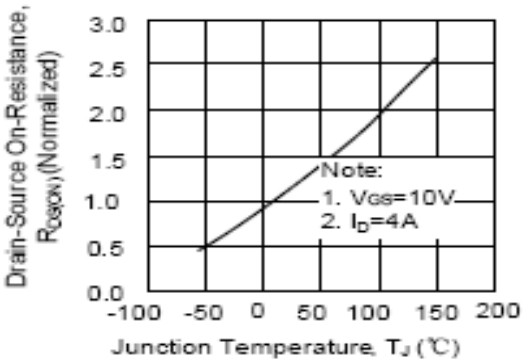
TYPICAL CHARACTERISTICS @ Ta=25℃ unless otherwise specified

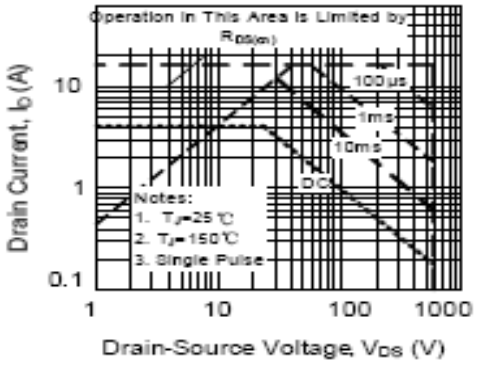
Breakdown Voltage Variation vs Temperature



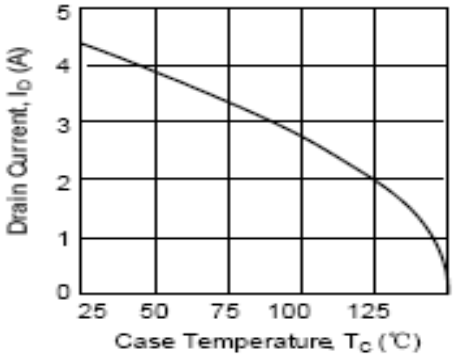
On-Resistance Junction Temperature



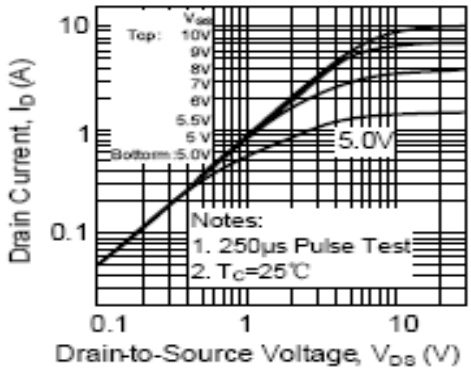
Maximum Safe Operating Area



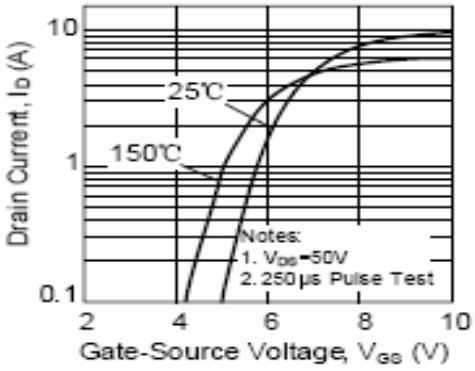
Maximum Drain Current vs. Case Temperature



On-State Characteristics



Transfer Characteristics



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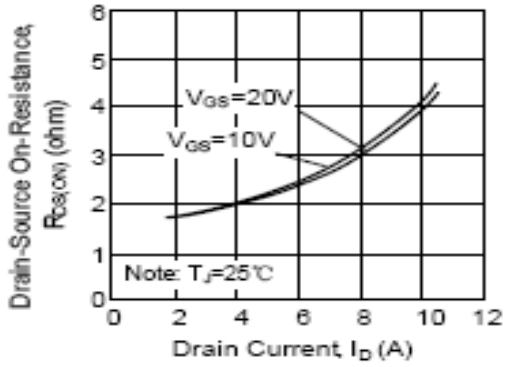
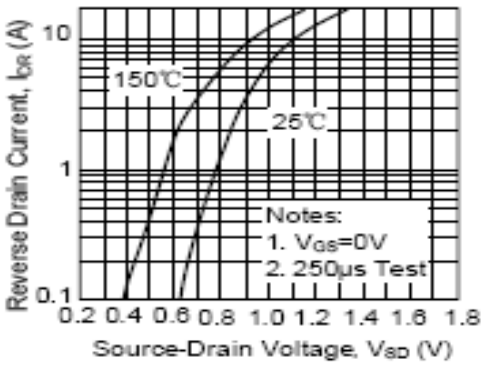
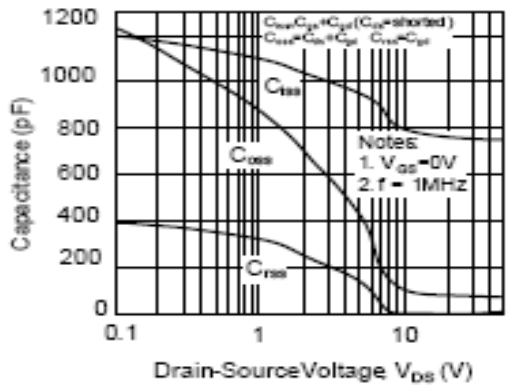
On-Resistance Variation vs Drain Current and Gate Voltage



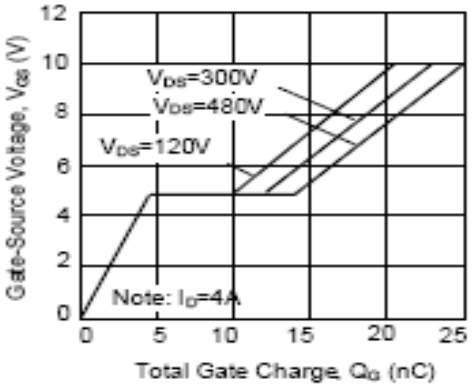
On State Current vs. Allowable Case Temperature



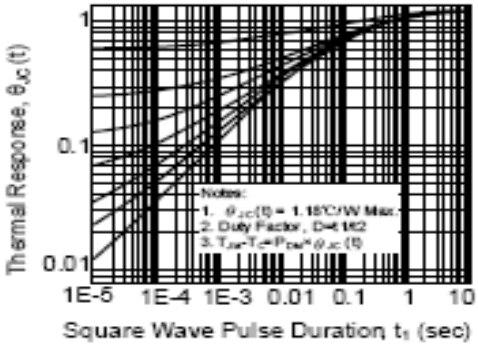
Capacitance Characteristics (Non-Repetitive)



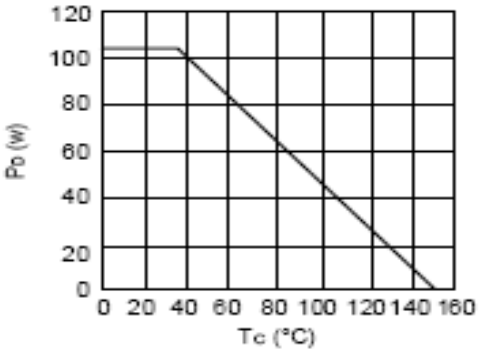
Gate Charge Characteristics



Transient Thermal Response Curve



Power Dissipation



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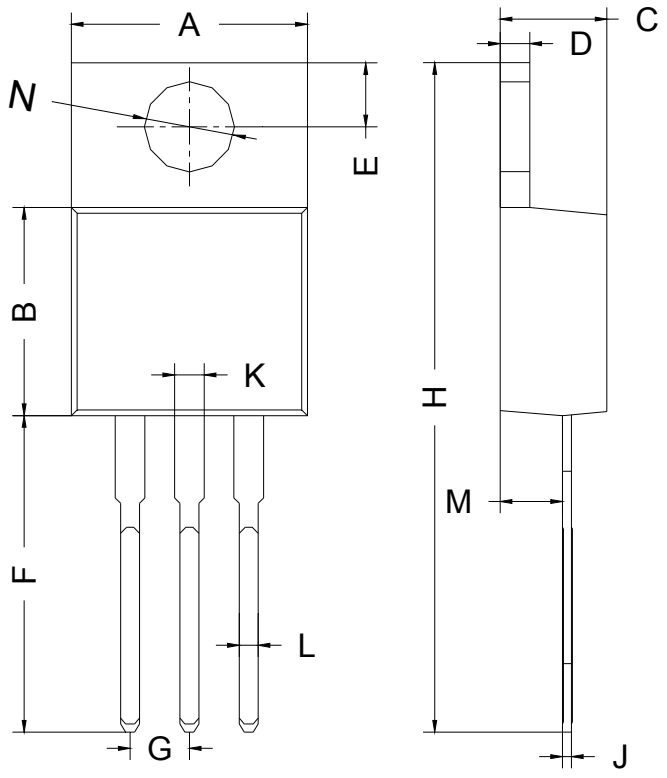
PACKAGE OUTLINE

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		