

4A,600V N-Channel Power Mosfet

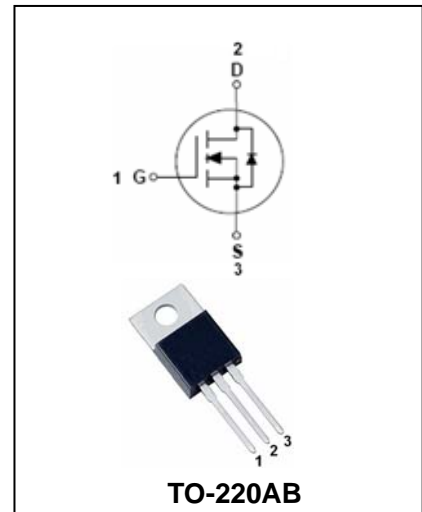
BL4N60

FEATURES

- $R_{DS(ON)} = 2.5\Omega @ V_{GS} = 10V$
- Ultra low gate charge (typical 15 nC)
- Low reverse transfer Capacitance ($CRSS = \text{typical } 8.0 \text{ pF}$)
- 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	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	$^\circ\text{C/W}$
θ_{JC}	Junction-to-Case	3	$^\circ\text{C/W}$
θ_{CS}	Case-to Sink	0.5	$^\circ\text{C/W}$
T_J	Junction Temperature	+150	$^\circ\text{C}$
Tstg	Operating and Storage Temperature	-55 to +150	$^\circ\text{C}$

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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°C unless otherwise specified

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	600	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=600V, V_{GS}=0V$	-	-	10	μA
Gate-body Leakage	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 30V$	-	-	± 100	nA
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DS} / \Delta T_J$	$I_D=250\mu A$, Referenced to 25°C		0.6		V/°C
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	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	$t_{D(ON)}$	$V_{DD} = 300V,$ $I_D = 4.0A,$ $R_G = 25\Omega$ (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	$V_{GS}=0V, I_S=4.4A,$ $di/dt=100A/\mu s$	-	250	-	nS
Body Diode Reverse Recovery Charge	Qrr		-	1.5	-	uC

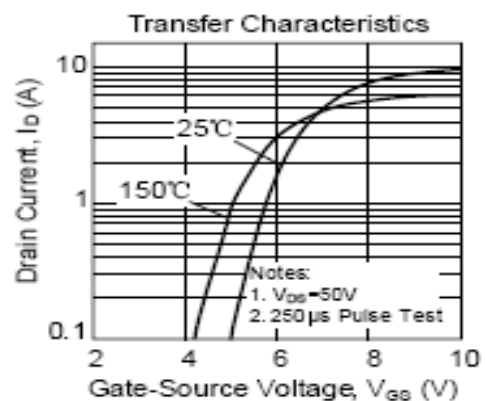
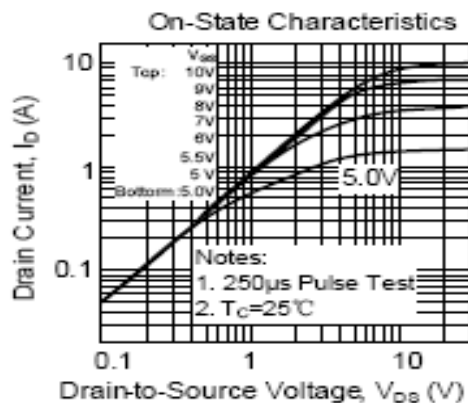
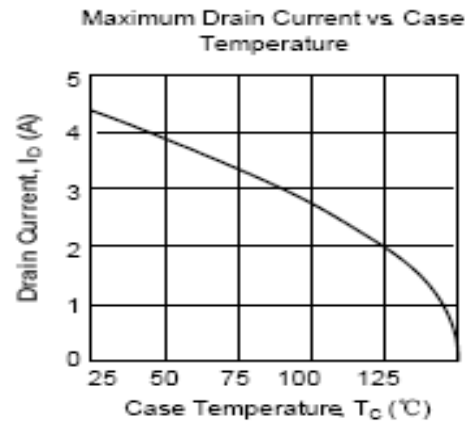
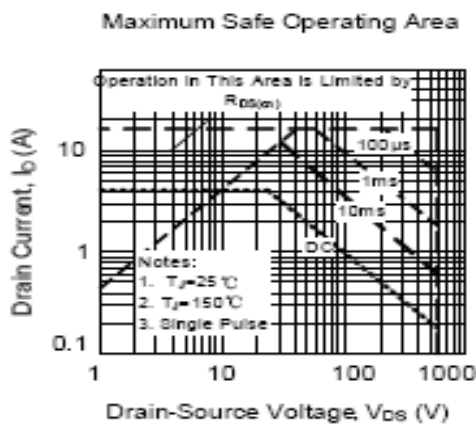
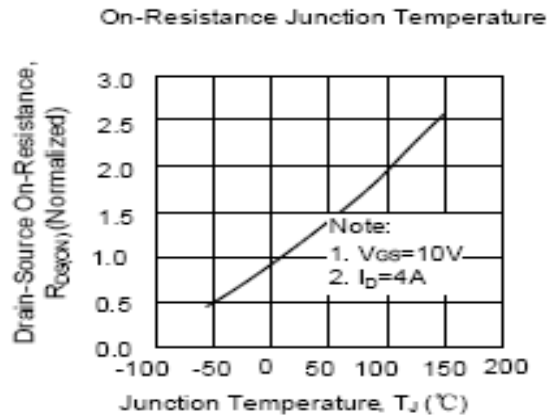
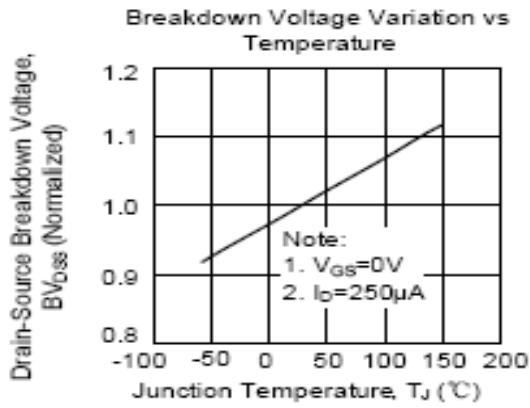
Notes:

- 1、Repetitive Rating: Pulse width limited by Tj.
- 2、L=25m H, $I_{AS}=4.4A$, $V_{DD}=50V$, $R_G=25\Omega$, Starting $T_J=25^\circ C$
- 3、 $I_{SD}\leq 4.4A$, $di/dt \leq 200A/us$, $V_{DD}\leq BV_{DSS}$, Starting $T_J=25^\circ C$
- 4、Pulse test: pulse width $\leq 300us$, duty cycle $\leq 2\%$
- 5、Essentially independent of operating temperature

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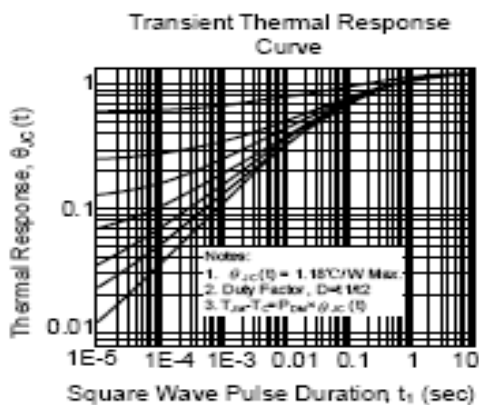
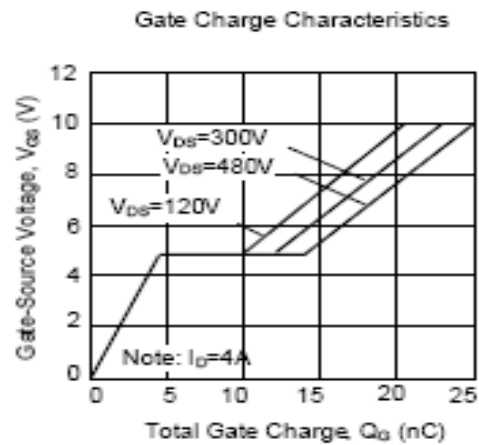
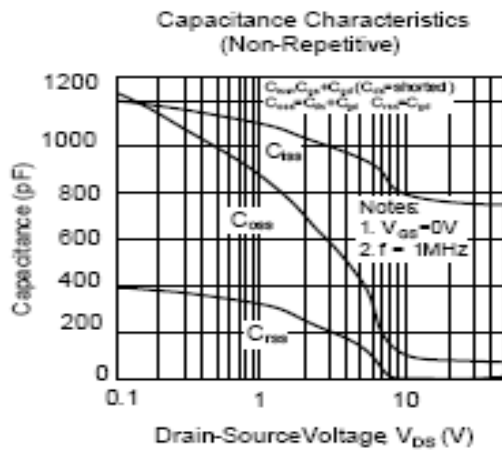
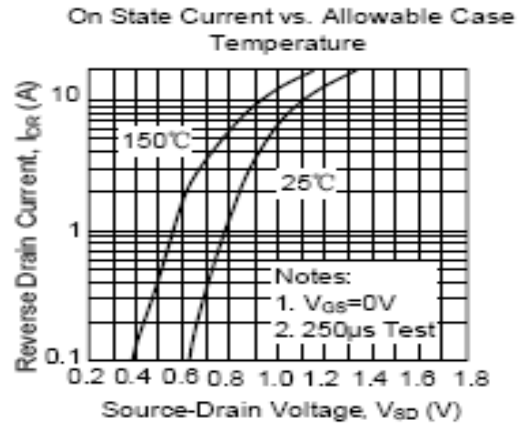
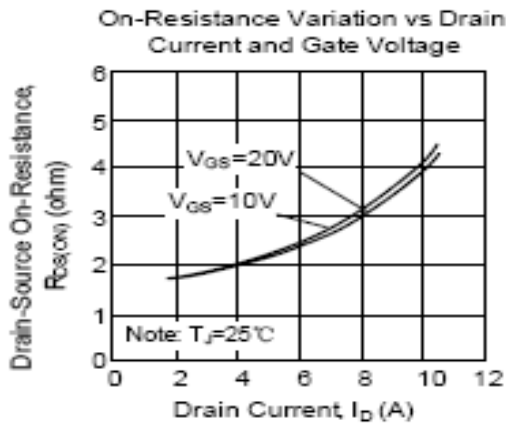
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TYPICAL CHARACTERISTICS @ $T_a=25^\circ\text{C}$ unless otherwise specified



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PACKAGE OUTLINE

Plastic surface mounted package

TO-220AB

