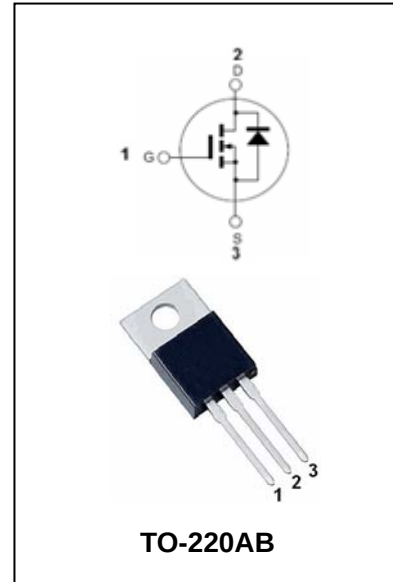


N-Channel Enhancement Mode Field Effect Transistor

BL9N20

FEATURES

- TrenchFET Power MOSFETS.
- 175°C Junction Temperature.
- New Low Thermal Resistance Package.



MAXIMUM RATING operating temperature range applies unless otherwise specified

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage	200	V
V_{GS}	Gate -Source Voltage	± 20	V
I_D	Continuous Drain Current($T_J=175^\circ\text{C}$) $T_C=25^\circ\text{C}$ $T_C=125^\circ\text{C}$	9	A
		5.2	
I_{DM}	Pulsed Drain Current	10	A
I_{AR}	Avalanche Current	7	A
P_D	Power Dissipation at $T_C=25^\circ\text{C}$ $T_A=25^\circ\text{C}$ (Note1)	60	W
		3.75	
E_{AS}	Single Pulse Avalanche Energy $L = 0.1 \text{ Mh}$ (Note2)	2.45	mJ
R_{thJA}	Junction-to-Ambient (PCB Mount) [°]	40	$^\circ\text{C}/\text{W}$
R_{thJC}	Junction-to-Case (Drain)	2.5	$^\circ\text{C}/\text{W}$
$T_J T_{stg}$	Operating Junction and Storage Tem-perature Range	-55 to +175	$^\circ\text{C}$

Note:1.When mounted on 1 “ square PCB(FR-4 material)

2.Duty cycle $\leq 1\%$.

N-Channel Enhancement Mode Field Effect Transistor

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ELECTRICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

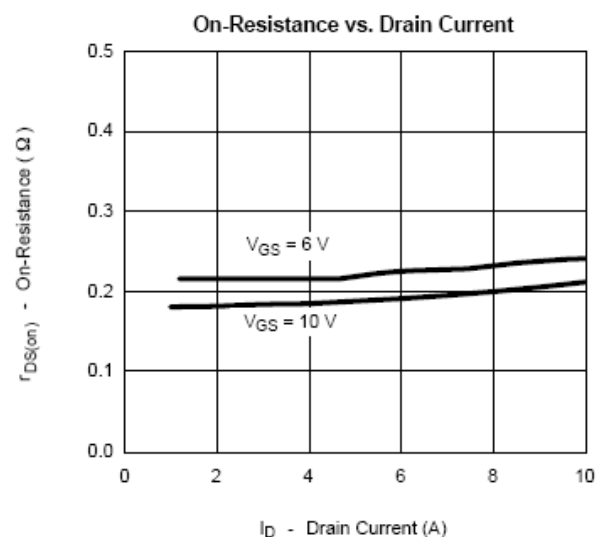
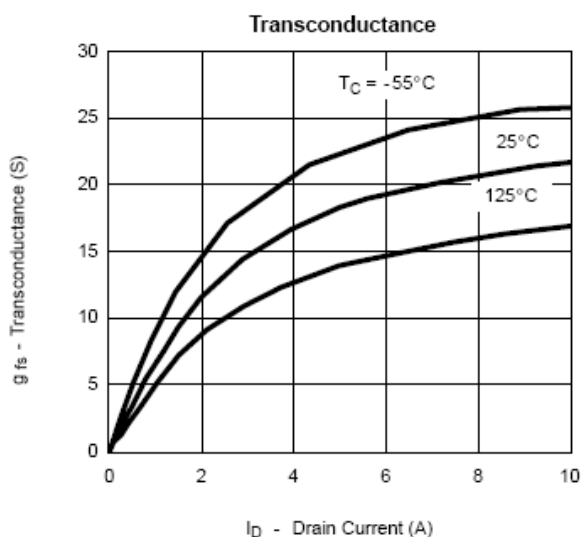
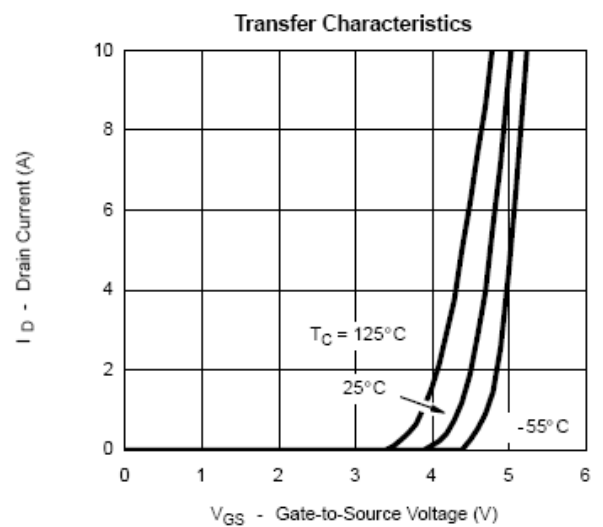
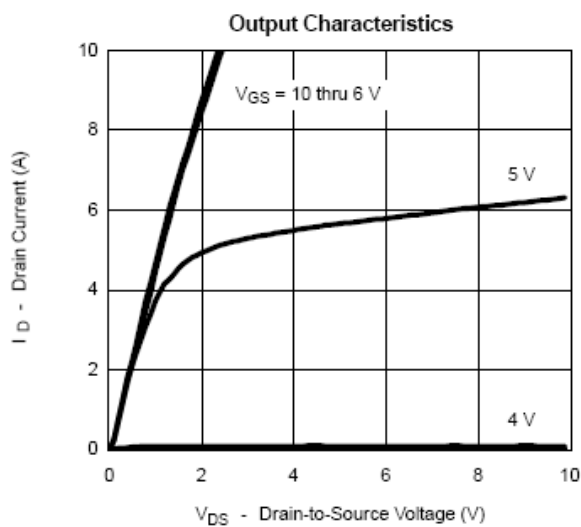
Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{DS}=0V, I_D=250\mu A$	200	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=160V, V_{GS}=0V$	-	-	1	μA
		$V_{DS}=160V, V_{GS}=0V, T_J=125^\circ C$			50	
		$V_{DS}=160V, V_{GS}=0V, T_J=175^\circ C$			250	
Gate-body Leakage	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2	-	4	V
On-State Drain Currenta	$I_{D(on)}$	$V_{DS} \geq 5V, V_{GS}=10V$	10	-	-	A
Static drain-Source On-resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=5A$	-	0.216	0.270	Ω
		$V_{GS}=10V, I_D=5A, T_J=125^\circ C$	-	-	0.54	
		$V_{GS}=10V, I_D=5A, T_J=175^\circ C$	-	-	0.71	
		$V_{GS}=6V, I_D=5A$	-	0.24	0.3	
Forward Transconductance	g_{fs}	$V_{DS}=15V, I_D=5A$	-	15	-	S
Input Capacitance	C_{ISS}	$V_{DS}=25V, V_{GS}=0V, f=1MHz$	-	580	-	pF
Output Capacitance	C_{OSS}		-	75	-	
Reverse Transfer Capacitance	C_{RSS}		-	30	-	
Turn-On Delay Time	$t_{D(ON)}$	$V_{DD}=100V, I_D=10A$ $R_L=10\Omega, R_G=2.5\Omega, V_{GEN}=10V$	-	10	15	ns
Rise Time	t_R		-	35	55	
Turn-Off Delay Time	$t_{D(OFF)}$		-	25	40	
Fall Time	t_F		-	40	60	
Total Gate Charge	Q_g	$V_{DS}=100V, V_{GS}=10V$ $I_D=10A$	-	11	70	nC
Gate-source Charge	Q_{gs}		-	2.7	-	nC
Gate-drain Charge	Q_{gd}		-	4	-	nC
Reverse Recovery Time	T_{rr}	$I_F=10A$ $dI_F/dt=100A/\mu s$	-	100	150	ns
Reverse Recovery Charge	Q_{rr}		-	0.25	0.6	μC
Reverse Recovery Current	I_{RM}		-	5	8	A
Continuous Current	I_S		-	-	9	A

N-Channel Enhancement Mode Field Effect Transistor

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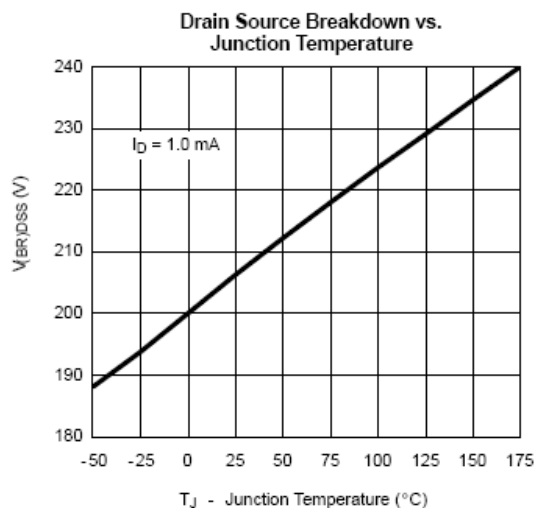
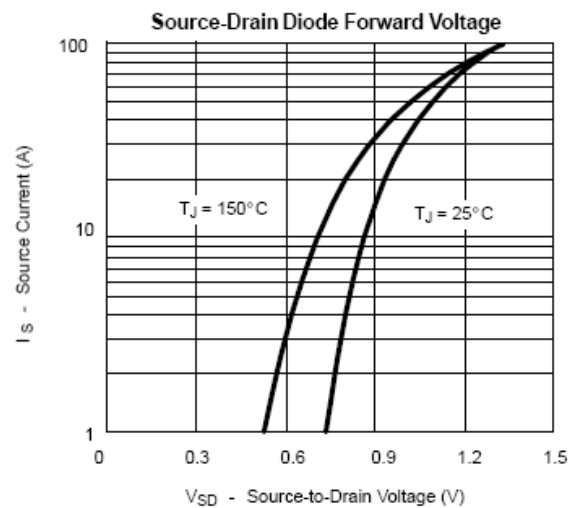
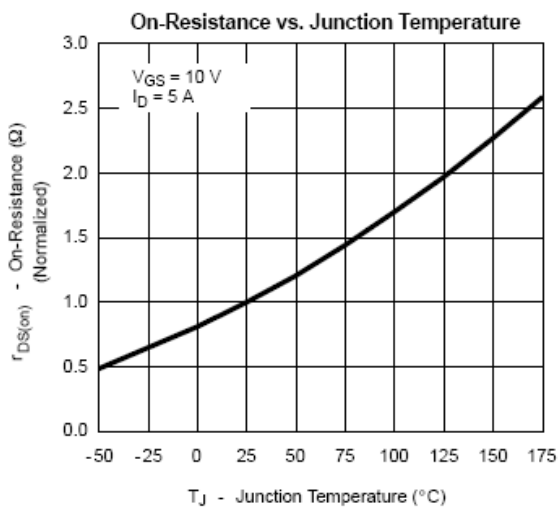
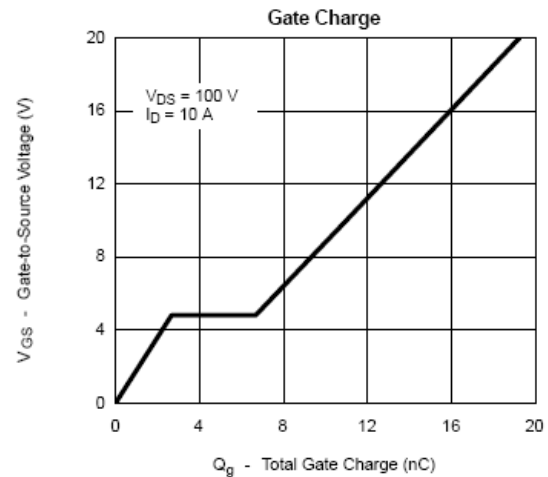
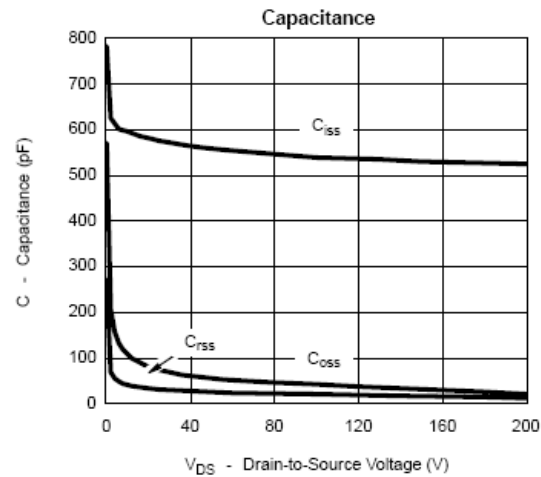
Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Pulsed Current	I_{SM}				10	A
Forward Voltagea	V_{SD}	$I_F = 10\text{ A}$, $V_{GS} = 0\text{ V}$		0.9	1.5	V

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



N-Channel Enhancement Mode Field Effect Transistor

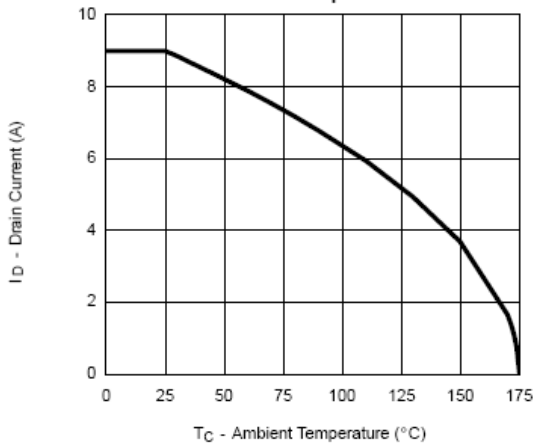
BL9N20



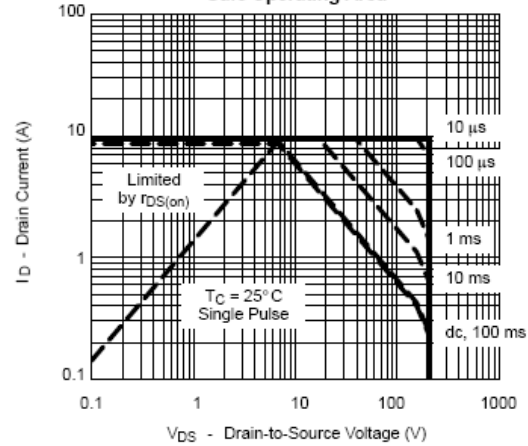
N-Channel Enhancement Mode Field Effect Transistor

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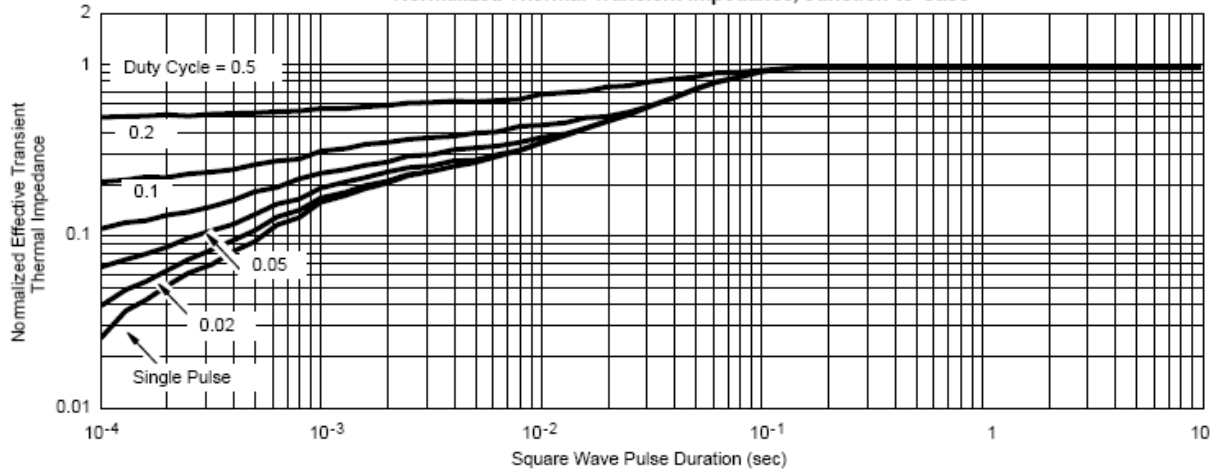
Maximum Avalanche and Drain Current
vs. Case Temperature



Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Case



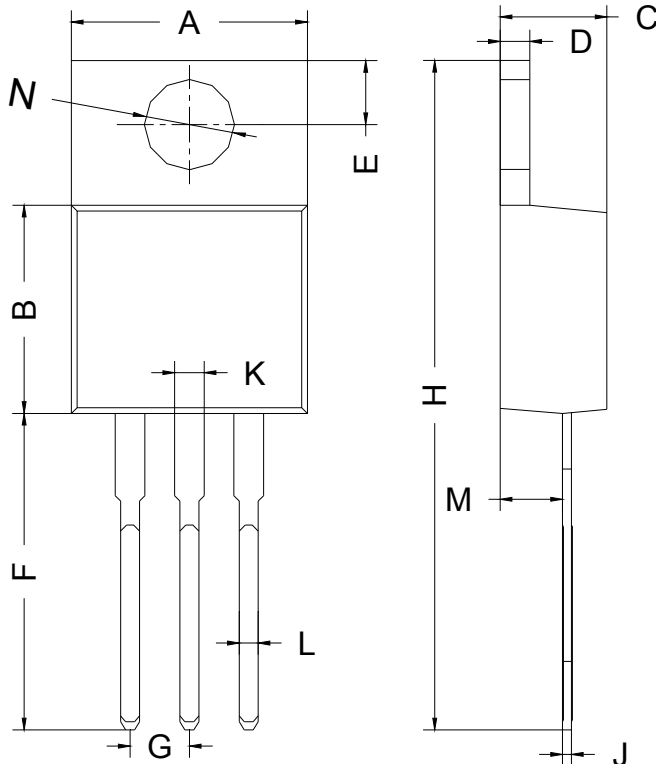
N-Channel Enhancement Mode Field Effect Transistor

BL9N20

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		