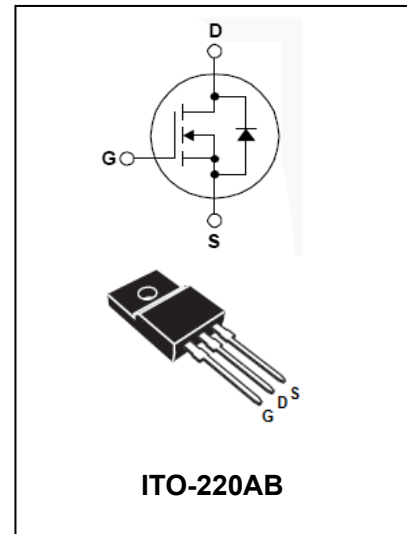


N-Channel MOSFET 300V,9A,450mΩ

BL9N30F

FEATURES

- 9.0 A, 300 V, $R_{DS(on)} = 450 \text{ m}\Omega$ (Max.)
@ $V_{GS} = 10 \text{ V}$, $I_D = 4.5 \text{ A}$
- Low Gate Charge (Typ. 17 nC)
- Low Crss (Typ. 16 pF)
- 100% Avalanche Tested



Applications

- Power switch circuit of adaptor and charger.

MAXIMUM RATING operating temperature range applies unless otherwise specified

Symbol	Parameter	Value	Units
V_{DS}	Drain-Source voltage	300	V
V_{GS}	Gate -Source voltage	± 30	V
I_D	Continuous Drain current	9.0	A
	Continuous Drain current $T_C=100^\circ\text{C}$	5.7	A
$I_{DM}(\text{Note1})$	Pulsed Drain current	36	A
$E_{AS}(\text{Note2})$	Single Pulse Avalanche Energy	420	mJ
$E_{AR}(\text{Note1})$	Avalanche Energy, Repetitive	9.8	mJ
$I_{AR}(\text{Note1})$	Avalanche Current	9.0	A
$dv/dt(\text{Note3})$	Peak Diode Recovery dv/dt	4.5	V/ns
P_D	Power Dissipation	98	W
	Derating Fcator above 25°C	0.78	W/ $^\circ\text{C}$
$R_{\theta JC}$	Junction-to-Case	1.28	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Junction-to-Ambient	6.5	$^\circ\text{C}/\text{W}$
T_J, T_{stg}	Junction and Storage Temperature	-55 to +150	$^\circ\text{C}$
T_L	Maximum Temperature for Soldering	300	$^\circ\text{C}$

Note:1. Repetitive rating; pulse width limited by maximum junction temperature.

2. $L=10\text{mH}$, $I_D=9\text{A}$, Start $T_J=25^\circ\text{C}$

3. $I_{SD}=9\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, Start $T_J=25^\circ\text{C}$

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ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Off Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	300	-	-	V
Bvdss Temperature Coefficient	$\triangle BV_{DSS}/\triangle T_J$	$I_D=250\mu A$, Reference 25℃	-	0.28	-	V/℃
Drain to Source Leakage Current	I_{DSS}	$V_{DS}=300V, V_{GS}=0V$ $T_a=25^{\circ}C$	-	-	1	μA
		$V_{DS}=240V, V_{GS}=0V$ $T_a=125^{\circ}C$			10	
Gate-body Leakage Forward Reverse	I_{GSS}	$V_{GS}=\pm 30V$			± 100	nA
On Characteristics						
Static drain-Source on-resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=4.5A$	-	0.35	0.45	Ω
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	3	-	5	V
Forward Transconductance	gfs	$V_{DS}=50V, I_D=4.5A$	-	4.9	-	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=25V$ $f=1.0MHz$	-	570	740	pF
Output Capacitance	C_{oss}		-	120	155	
Reverse Transfer Capacitance	C_{rss}		-	16	20	
Switching Characteristics						
Turn-on Delay Time	$td_{(ON)}$	$I_D=9A, V_{DD}=150V$ $R_G=25\Omega$	-	16	40	ns
Rise Time	tr		-	120	250	
Turn-Off Delay Time	$td_{(OFF)}$		-	27	65	
Fall Time	tf		-	48	110	
Total Gate Charge	Q_g	$I_D=9A, V_{DD}=240V$ $V_{GS}=10V$	-	17	22	nC
Gate to Source Charge	Q_{gs}		-	3.9	-	
Gate to Drain (“Miller”)Charge	Q_{gd}		-	9.2	-	
Drain-Source Diode Characteristics and Maximum Ratings						
Drain-Source diode forward voltage	V_{SD}	$V_{GS}=0V, I_S=9A$	-	-	1.5	V
Maximum Continuous Drain-Source Diode Forward Current	I_S		-	-	9.0	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}		-	-	36	A

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

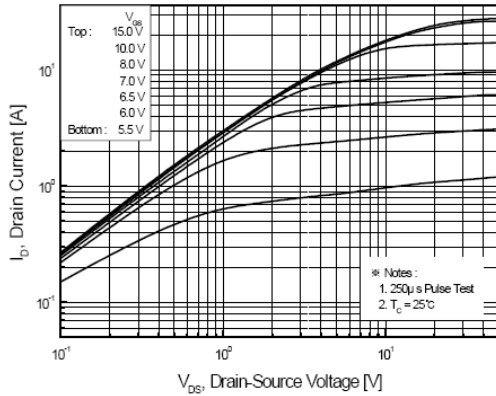


Figure 1. On-Region Characteristics

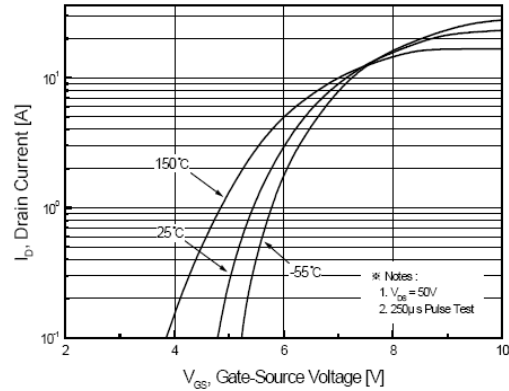


Figure 2. Transfer Characteristics

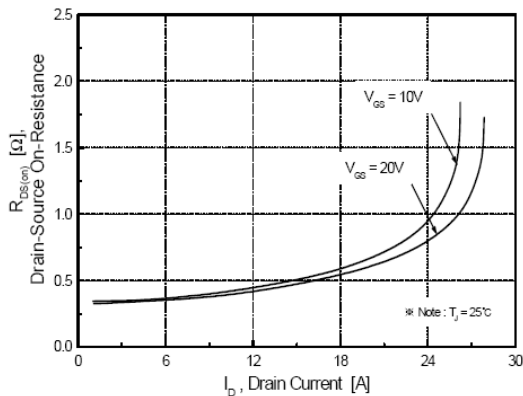


Figure 3. On-Resistance Variation vs. Drain Current and Gate Voltage

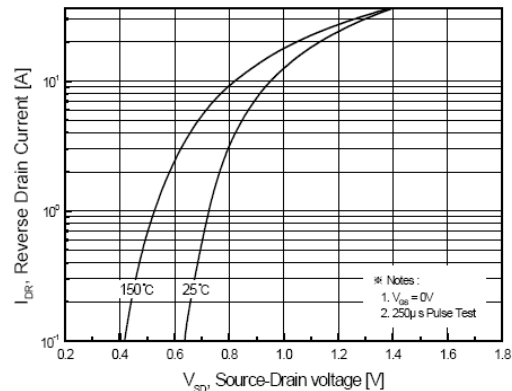


Figure 4. Body Diode Forward Voltage Variation vs. Source Current and Temperature

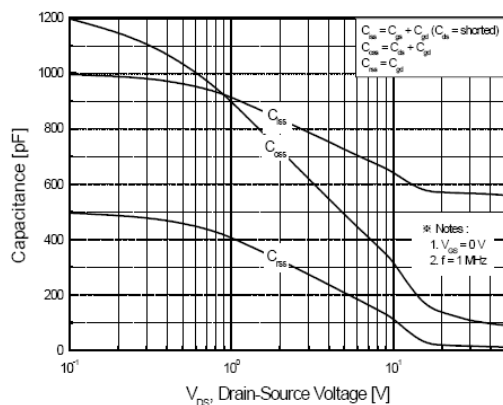


Figure 5. Capacitance Characteristics

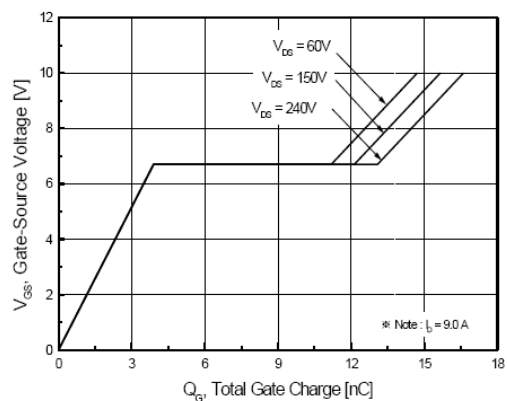


Figure 6. Gate Charge Characteristics

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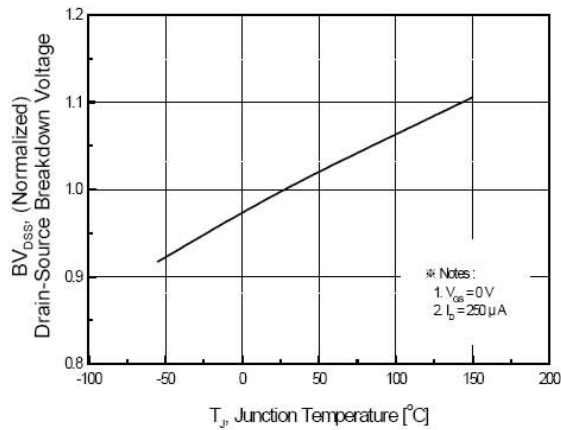


Figure 7. Breakdown Voltage Variation vs. Temperature

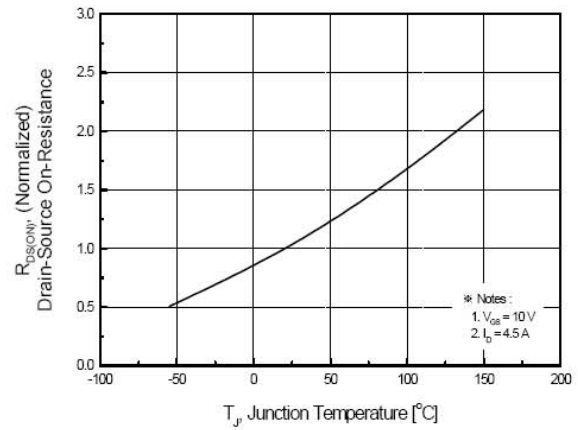


Figure 8. On-Resistance Variation vs. Temperature

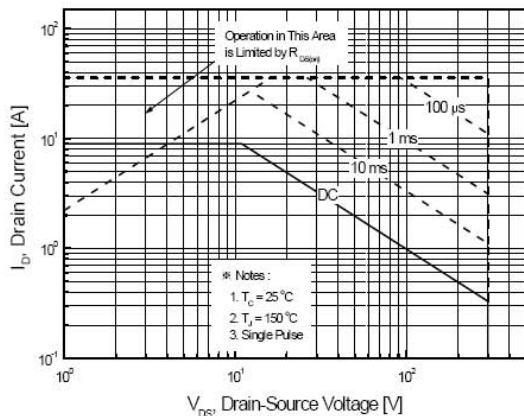


Figure 9. Maximum Safe Operating Area

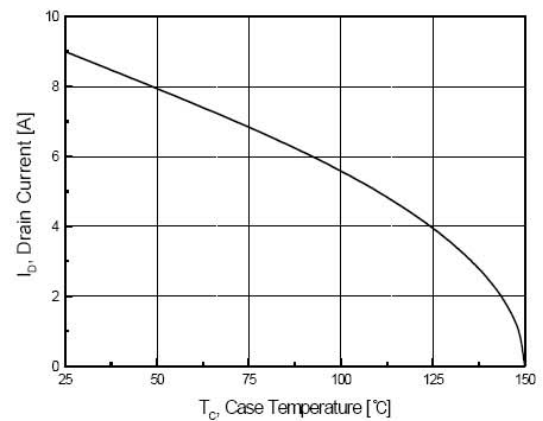


Figure 10. Maximum Drain Current vs. Case Temperature

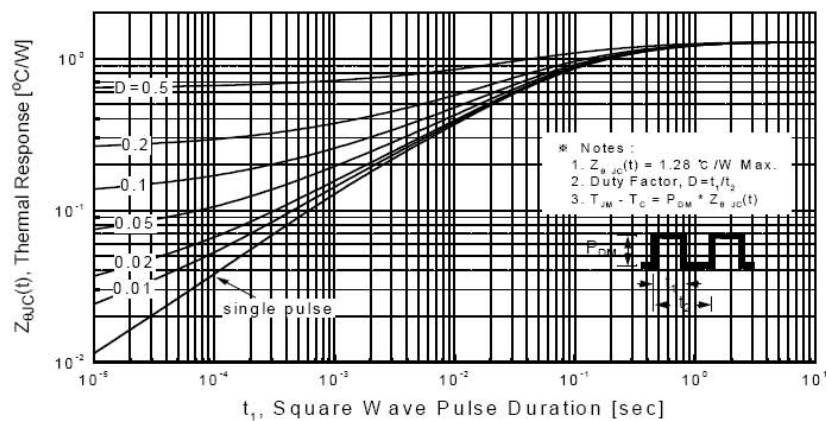


Figure 11. Transient Thermal Response Curve

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PACKAGE OUTLINE

Plastic surface mounted package

ITO-220AB

