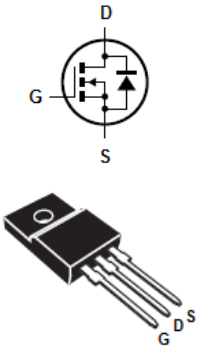
Silicon N-Channel Power MOSFET BL10N60F

FEATURES

- Fast Switching
- ESD Improved Capability
- ow Gate Charge (Typical Data:38nC)
- Low Reverse transfer capacitances(Typical:15pF)
- 100% Single Pulse avalanche energy Test

Lead-free



ITO-220AB

APPLICATIONS

- Power switch circuit of adaptor and charger.

MAXIMUM RATING @ Ta=25℃ unless otherwise specified

Symbol	Parameter	Value	Units
V_{DSS}	Drain-to-Source voltage	600	V
V_{GS}	Gate -Source voltage	±30	V
I_D	Continuous Drain current Continuous Drain current Tc=100°C	10 6.4	A
I_{DM}[a1]	Pulsed Drain current	40	A
dv/dt[a3]	Peak Diode Recovery dv/dt	5.0	V/ns
P_D	Power Dissipation	50	W
$V_{ESD(G-S)}$	Gate source ESD(HBM-C=100pF,R=1.5kΩ)	4000	V
T_J,T_{stg}	Operating Junction and StorageTemperature	150，-55 to +150	℃
T_L	Maximum Temperature for Soldering	300	℃

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ELECTRICAL CHARACTERISTICS @ Ta=25℃ unless otherwise specified

OFF Characteristics						
Parameter	**Symbol**	**Test conditions**	**MIN**	**TYP**	**MAX**	**UNIT**
Drain-Source Breakdown Voltage	V_{DSS}	V_{GS}=0V,I_D=250μA	600	-	-	V
Bvdss Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	ID=250uA,Reference25℃	-	0.74	-	V/℃
Drain to Source Leakage Current	I_{DSS}	V_{DS}=600V, V_{GS}=0V	-	-	25	uA
Gate to Sourse Forward Leakage	$I_{GSS(F)}$	V_{GS}=30V	-	-	10	uA
Gate to Sourse ReverseLeakage	$I_{GSS\ (R)}$	V_{GS}=-30V	-	-	-10	μA

ON Characteristics						
Parameter	**Symbol**	**Test conditions**	**MIN**	**TYP**	**MAX**	**UNIT**
Drain-to-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=3mA	-	0.65	0.75	Ω
Gate Threshold Voltage	$V_{GS\ (TH)}$	V_{DS} = V_{GS}, I_D = 250μA	2.0	-	4.0	V

Dynamic Characteristics						
Parameter	**Symbol**	**Test conditions**	**MIN**	**TYP**	**MAX**	**UNIT**
Forward Transconductance	gfs	V_{DS}=15V, I_D=5.0A	-	11	-	S
Input Capacitance	Ciss	V_{GS}=0V, V_{DS}=25V,f=1.0MHz	-	1758	-	pF
Output Capacitance	Coss		-	153	-	
Reserse Transfer Capacitance	Crss		-	15	-	

Resistive Switching Characteristics						
Parameter	**Symbol**	**Test conditions**	**MIN**	**TYP**	**MAX**	**UNIT**
Turn-on Delay Time	$t_{d(ON)}$	I_D=10.0A,V_{DD}=300 V, V_{GS}=10V, R_G=4.7Ω	-	20	-	ns
Rose Time	tr		-	20	-	
Turn-Off Delay Time	$t_{d(OFF)}$		-	55	-	
Fall Time	tf		-	30	-	

Total Gate Charge	Qg	I_D=10.0A,V_{DD}=300 V, V_{GS}=10V	-	38		nC
Gate to Source Charge	Qgs		-	8.7		
Gate to Drain (“Miller”) Charge	Qgd		-	15		

Source-Drain Diode Characteristics						
Parameter	**Symbol**	**Test conditions**	**MIN**	**TYP**	**MAX**	**UNIT**
Continuous Source Current(Body Diode)	I_S	Ta=25℃	-	-	10	A
Maximum Pulsed Current(Body Diode))	I_{SM}		-	-	40	A
Diode Forward Voltage	V_{SD}	I_S=10.0A, V_{GS}=0V	-		1.5	V
Reserse Recovery Time	trr	I_F=10.0A, T_j=25℃,dI_F/dt=100A /us, V_{GS}=0V	-	434	-	ns
Reserse Recovery Charge	Qrr		-	2.6	-	nC

Parameter	**Symbol**	**TYP**	**UNIT**
Junction-to-Case	$R_{\theta JC}$	2.5	℃/W
Junction-to-Ambient	$R_{\theta JA}$	100	℃/W

Gate –source Zener Diode						
Parameter	**Symbol**	**Test conditions**	**Rating**			**UNIT**
			MIN	**TYP**	**MAX**	
Gate-source breakdown voltage	V_{GSO}	IGS=±1mA(Open Drain)	20	-	-	V

The built-in-back-to-back Zener diodes have specifically been designed to enhance not only the device’s ESD capability,but also to make them safely absorb possible voltage transients that may occasionally be applied from gate to source. In this respect the Zener voltage is appropriate to achieve an efficient and cost-effective intervention to protect the device’s integrity. These integrated Zener diodes thus avoid the usage of external components.

a1: Repetitive rating; pulse width limited by maximum junction temperature

a2: L=10.0mH, I_D=12.6A, Start T_J=25℃

a3： I_{SD} =10A,di/dt ≤100A/us,V_{DD}≤BV_{DS}, Start T_J=25℃

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TYPICAL CHARACTERISTICS @ Ta=25℃ unless otherwise specified

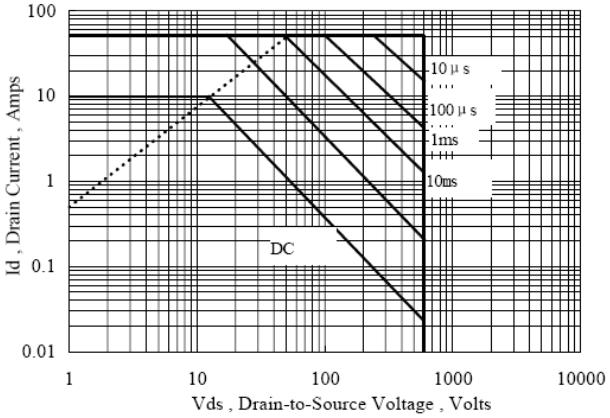

Figure 1 Maximun Forward Bias Safe Operating Area

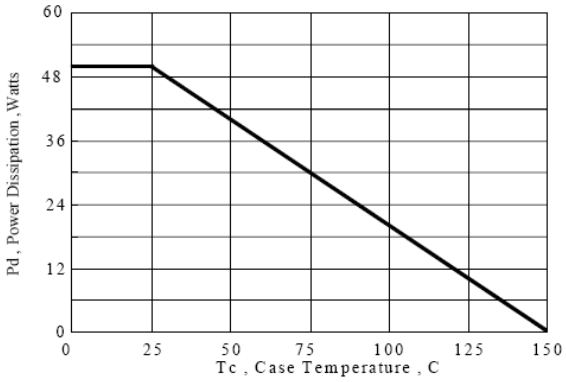

Figure 2 Maximun Power Dissipation vs Case Temperature

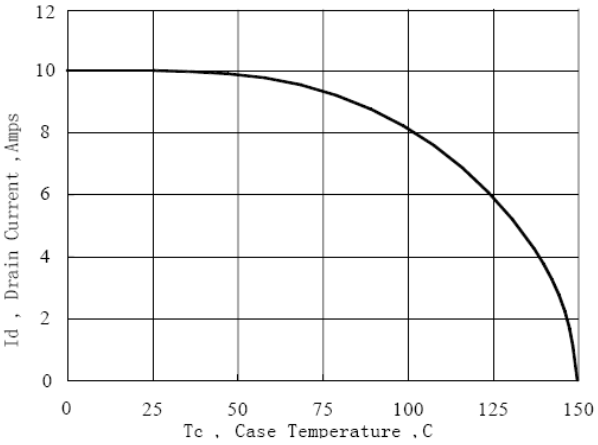

Figure 3 Maximum Continuous Drain Current vs Case Temperature

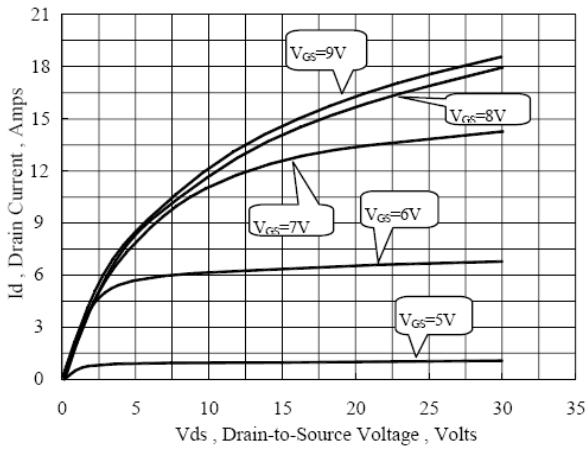

Figure 4 Typical Output Characteristics

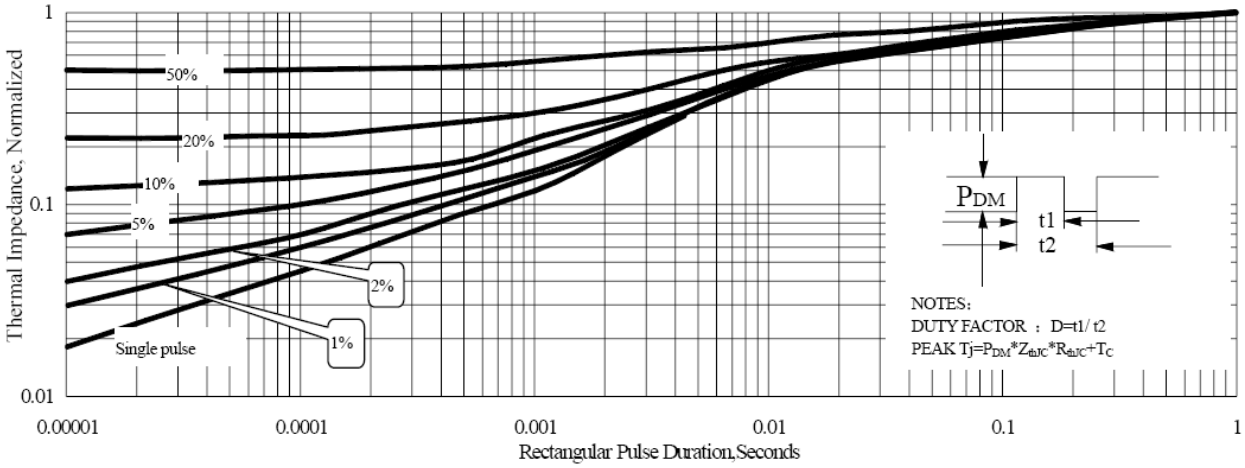

Figure 5 Maximum Effective Thermal Impendance , Junction to Case

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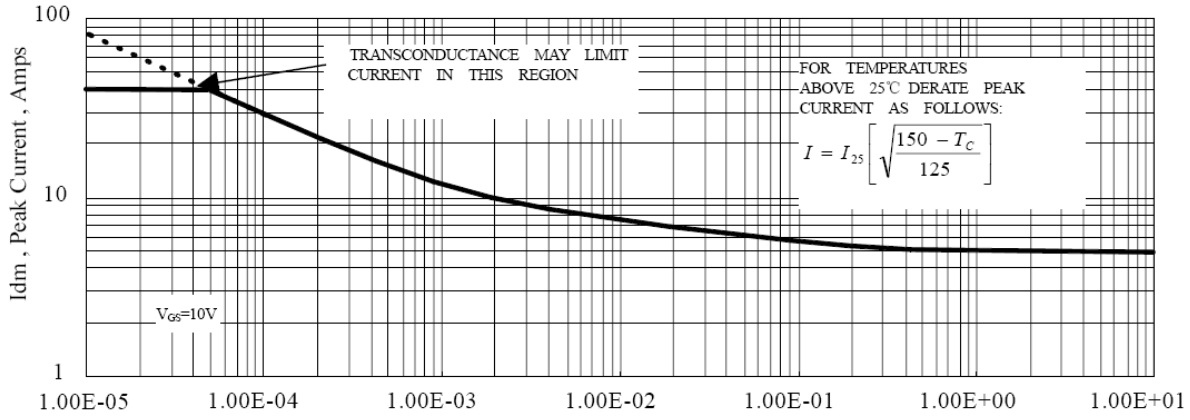

Figure 6 Maximun Peak Current Capability

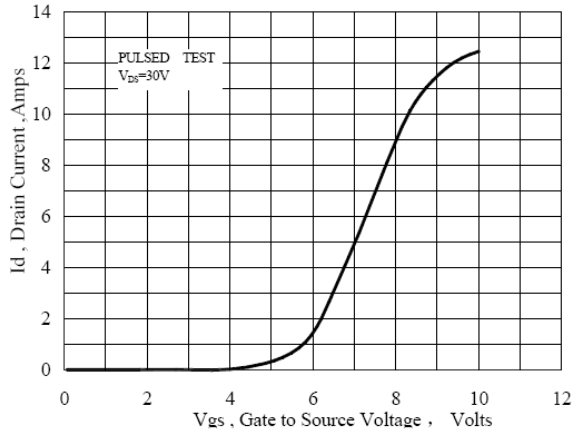

Figure 7 Typical Transfer Characteristics

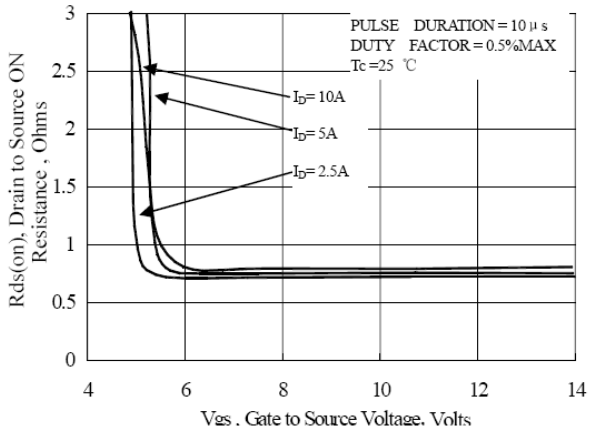

Figure 8 Typical Drain to Source ON Resistance vs Gate Voltage and Drain Current

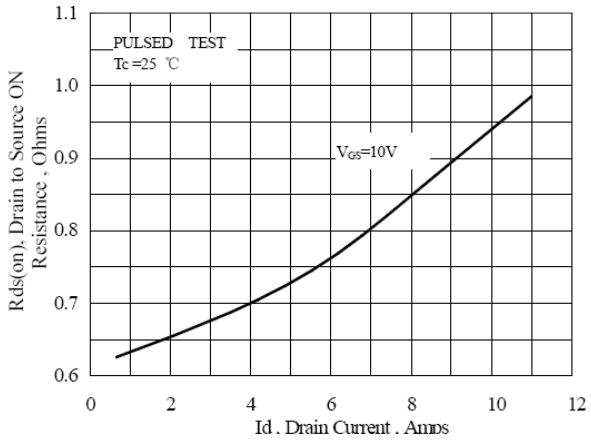

Figure 9 Typical Drain to Source ON Resistance vs Drain Current

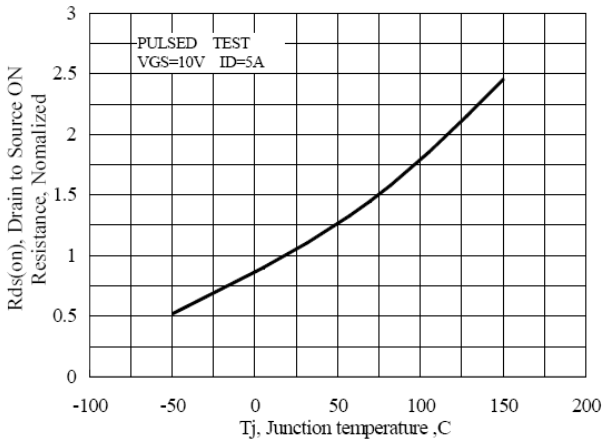

Figure 10 Typical Drian to Source on Resistance vs Junction Temperature

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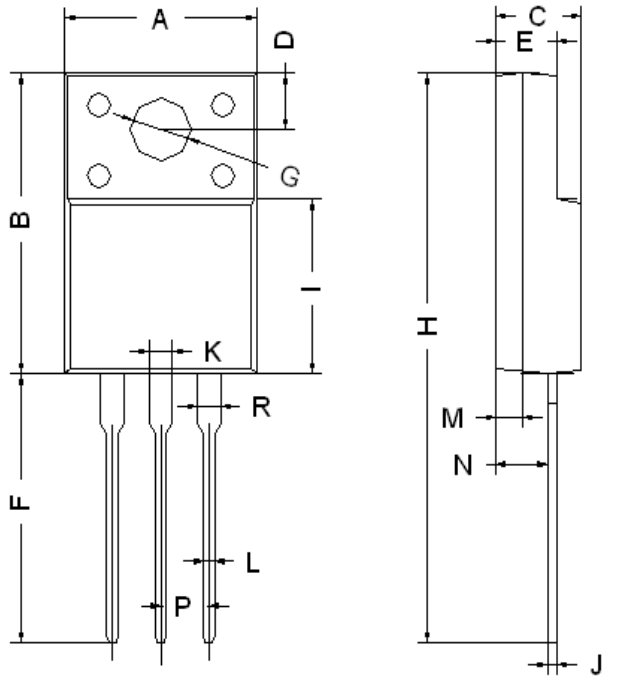
PACKAGE OUTLINE

Plastic surface mounted package ITO-220AB



ITO-220AB		
Dim	Min	Max
A	9.90	10.30
B	14.80	15.20
C	4.50 Typical	
D	2.70 Typical	
E	2.80	3.30
F	13.00	13.60
G	3.2 Typical	
H	28.00	28.60
I	7.90	8.90
J	0.50 Typical	
L	0.70	0.90
M	1.40 Typical	
N	2.60	2.80
P	2.45	2.65
K/R	1.20 Typical	
All Dimensions in mm		