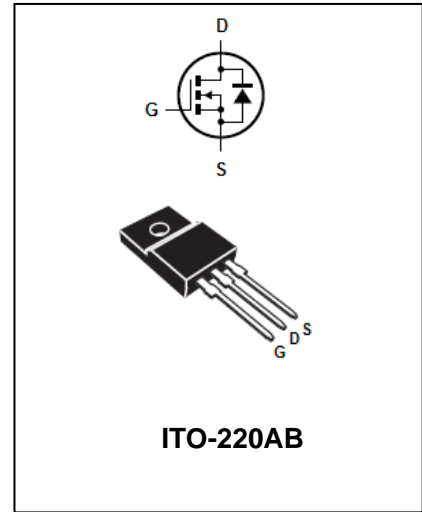


## Silicon N-Channel Power MOSFET

BL10N60F

### FEATURES

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



### APPLICATIONS

- Power switch circuit of adaptor and charger.

### MAXIMUM RATING @ Ta=25°C unless otherwise specified

Symbol	Parameter	Value	Units
V <sub>DSS</sub>	Drain-to-Source voltage	600	V
V <sub>GS</sub>	Gate -Source voltage	±30	V
I <sub>D</sub>	Continuous Drain current Continuous Drain current Tc=100°C	10 6.4	A
I <sub>DM</sub> <sup>a1</sup>	Pulsed Drain current	40	A
dv/dt <sup>a3</sup>	Peak Diode Recovery dv/dt	5.0	V/ns
P <sub>D</sub>	Power Dissipation	50	W
V <sub>ESD(G-S)</sub>	Gate source ESD(HBM-C=100pF,R=1.5kΩ)	4000	V
T <sub>J</sub> ,T <sub>stg</sub>	Operating Junction and Storage Temperature	150, -55 to +150	°C
T <sub>L</sub>	Maximum Temperature for Soldering	300	°C

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ELECTRICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

OFF Characteristics						
Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Drain-Source Breakdown Voltage	$V_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	600	-	-	V
Bvdss Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	$I_D=250\mu A, \text{Reference } 25^\circ C$	-	0.74	-	V/°C
Drain to Source Leakage Current	$I_{DSS}$	$V_{DS}=600V, V_{GS}=0V$	-	-	25	$\mu A$
Gate to Source Forward Leakage	$I_{GSS(F)}$	$V_{GS}=30V$	-	-	10	$\mu A$
Gate to Source Reverse Leakage	$I_{GSS(R)}$	$V_{GS}=-30V$	-	-	-10	$\mu A$

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	$\Omega$
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	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	$C_{iss}$	$V_{GS}=0V, V_{DS}=25V, f=1.0MHz$	-	1758	-	pF
Output Capacitance	$C_{oss}$		-	153	-	
Reserse Transfer Capacitance	$C_{rss}$		-	15	-	

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

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Total Gate Charge	Qg	I <sub>D</sub> =10.0A, V <sub>DD</sub> =300V, V <sub>GS</sub> =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 <sub>S</sub>	Ta=25°C	-	-	10	A
Maximum Pulsed Current(Body Diode))	I <sub>SM</sub>		-	-	40	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =10.0A, V <sub>GS</sub> =0V	-		1.5	V
Reserse Recovery Time	trr	I <sub>F</sub> =10.0A, T <sub>J</sub> =25°C, dI <sub>F</sub> /dt=100A/us, V <sub>GS</sub> =0V	-	434	-	ns
Reserse Recovery Charge	Qrr		-	2.6	-	nC

Parameter	Symbol	TYP	UNIT
Junction-to-Case	R <sub>θJC</sub>	2.5	°C/W
Junction-to-Ambient	R <sub>θJA</sub>	100	°C/W

Gate –source Zener Diode						
Parameter	Symbol	Test conditions	Rating			UNIT
			MIN	TYP	MAX	
Gate-source breakdown voltage	V <sub>GSO</sub>	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<sub>D</sub>=12.6A, Start T<sub>J</sub>=25°C

a3: I<sub>SD</sub> =10A, di/dt ≤100A/us, V<sub>DD</sub>≤BV<sub>DS</sub>, Start T<sub>J</sub>=25°C

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TYPICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

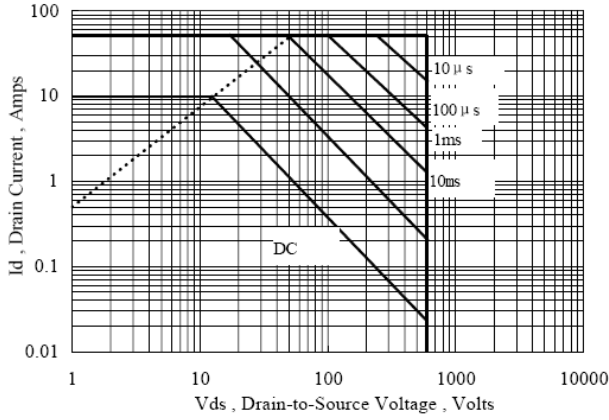


Figure 1 Maximum Forward Bias Safe Operating Area

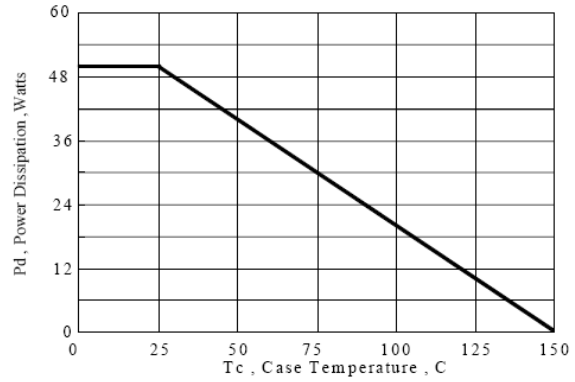


Figure 2 Maximum Power Dissipation vs Case Temperature

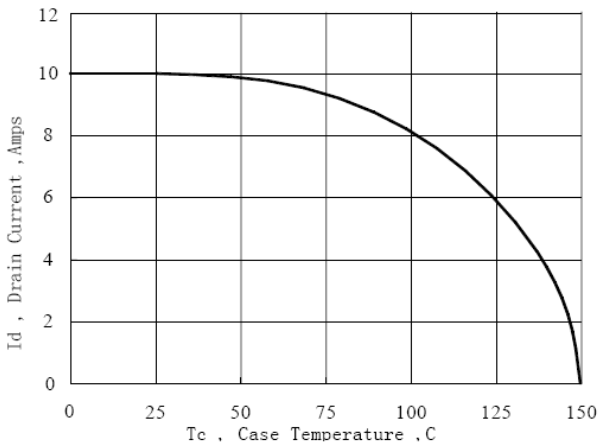


Figure 3 Maximum Continuous Drain Current vs Case Temperature

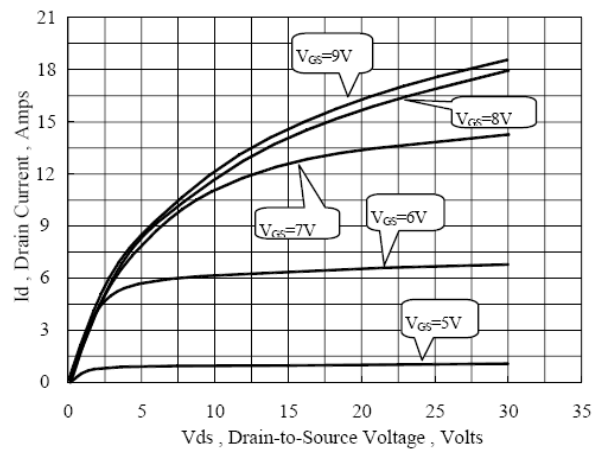


Figure 4 Typical Output Characteristics

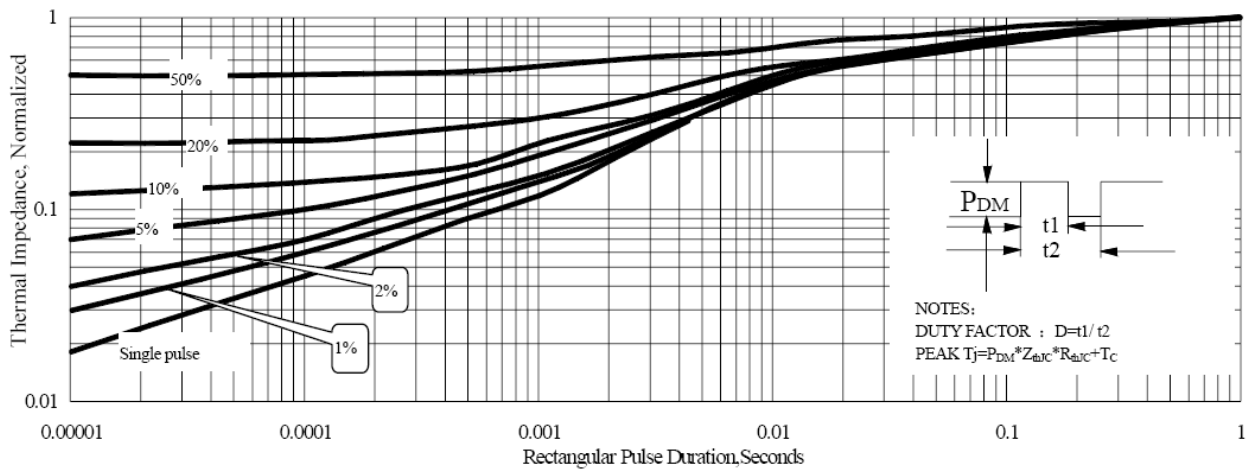


Figure 5 Maximum Effective Thermal Impedance, Junction to Case

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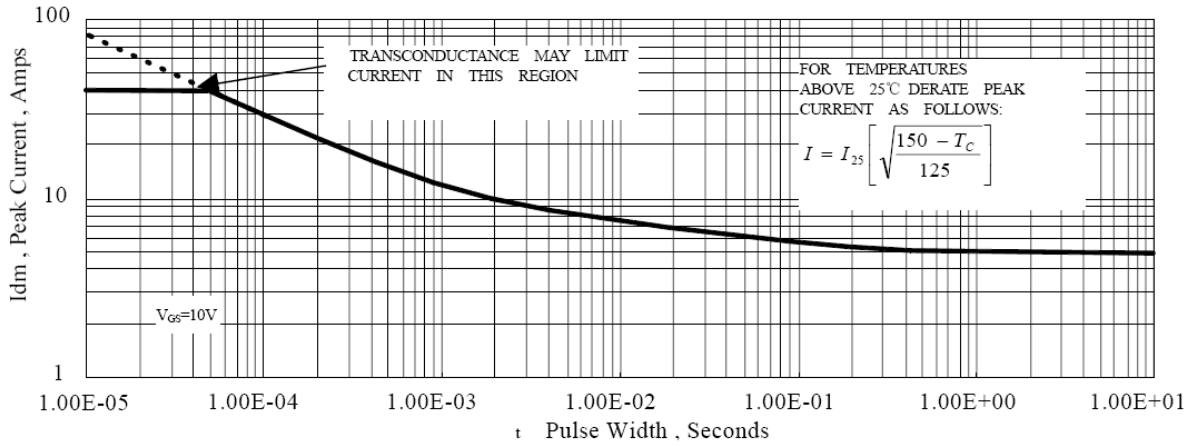


Figure 6 Maximum Peak Current Capability

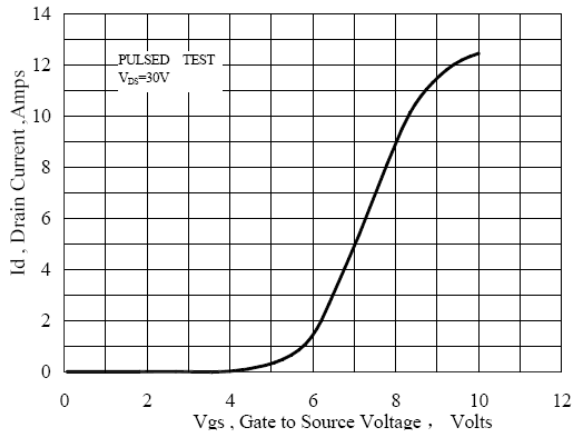


Figure 7 Typical Transfer Characteristics

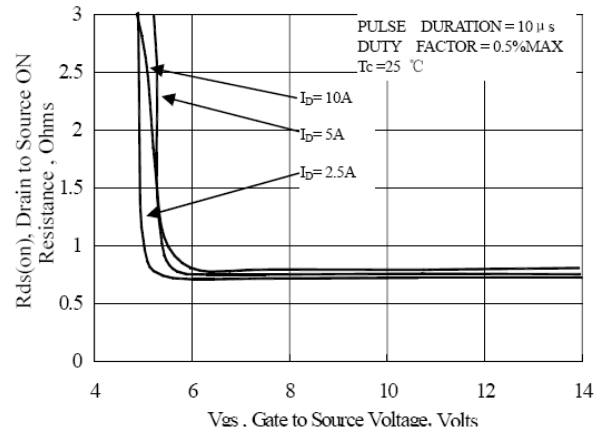


Figure 8 Typical Drain to Source ON Resistance vs Gate Voltage and Drain Current

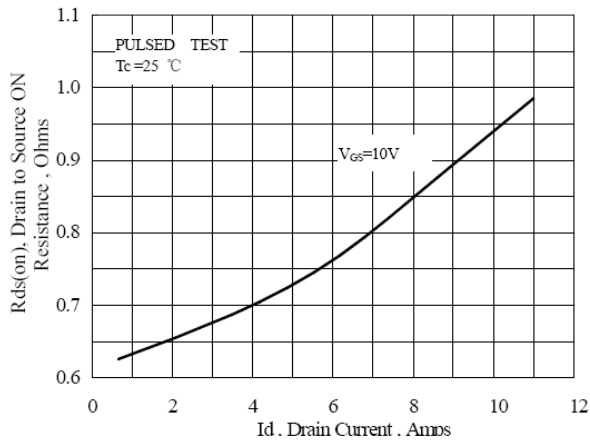


Figure 9 Typical Drain to Source ON Resistance vs Drain Current

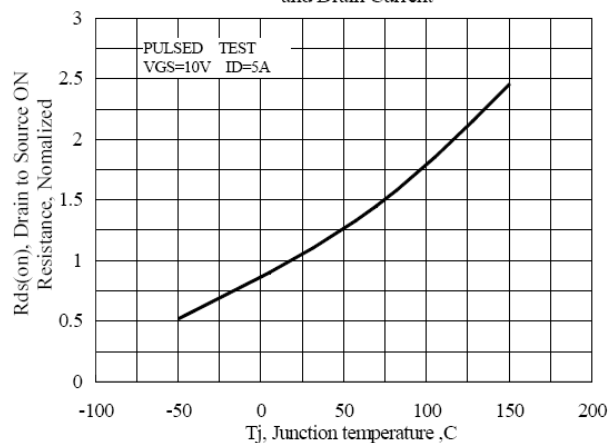


Figure 10 Typical Drain to Source ON Resistance vs Junction Temperature

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PACKAGE OUTLINE

Plastic surface mounted package

ITO-220AB

