
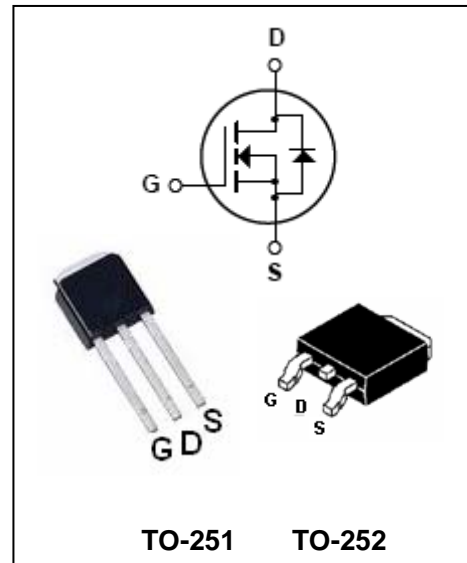


## 2 Amps, 600 Volts N-CHANNEL MOSFET

## BL2N60I/2N60D

### FEATURES

- $R_{DS(on)}=3.8\Omega@V_{GS}=10V$ .
- Ultra Low gate charge (typical 9.0nC)  Lead-free
- Low reverse transfer capacitance ( $C_{rss}$  = typical 5.0 pF)
- Fast switching capability
- Avalanche energy specified
- Improved dv/dt capability, high ruggedness



### MAXIMUM RATING operating temperature range applies unless otherwise specified

Symbol	Parameter	Value	Units
$V_{DSS}$	Drain-Source voltage	600	V
$I_D$	Drain current continuous ( $T_C=25^\circ C$ ) ( $T_C=100^\circ C$ )	2.0	A
		1.26	A
$I_{DP}$	Drain current Pulsed (Note2)	8.0	A
$V_{GSS}$	Gate -Source voltage	$\pm 30$	V
$I_{AR}$	Avalanche Current (Note2)	2.0	A
$E_{AR}$	Avalanche Energy Repetitive(Note 2)	4.5	mJ
$E_{AS}$	Avalanche Energy Single Pulse(Note 3)	140	mJ
dv/dt	Peak Diode Recovery dv/dt (Note4)	4.5	V/ns
$P_D$	Power Dissipation ( $T_C=25^\circ C$ ) Derate above $25^\circ C$	45	W
		0.36	W/ $^\circ C$
$T_J$	Junction Temperature	+150	$^\circ C$
$T_{STG}$	Storage Temperature	-55 ~ +150	$^\circ C$
$\theta_{JA}$	Thermal Resistance Junction-Ambient	112	$^\circ C/W$
$\theta_{Jc}$	Thermal Resistance Junction-Case	12	$^\circ C/W$

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Note:1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. Repetitive Rating: Pulse width limited by maximum junction temperature

3.  $L=64\text{mH}$ ,  $I_{AS}=2.0\text{A}$ ,  $V_{DD}=50\text{V}$ ,  $R_G=25\ \Omega$ , Starting  $T_J = 25^\circ\text{C}$

4.  $I_{SD} \leq 2.4\text{A}$ ,  $di/dt \leq 200\text{A}/\mu\text{s}$ ,  $V_{DD} \leq BV_{DSS}$ , Starting  $T_J = 25^\circ\text{C}$

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

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0\text{V}, I_D=250\mu\text{A}$	600	-	-	V
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	$I_D=250\mu\text{A}$	-	0.4	-	$\text{V}/^\circ\text{C}$
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=600\text{V}, V_{GS}=0\text{V}$	-	-	10	$\mu\text{A}$
		$V_{DS}=480\text{V}, T_C=125^\circ\text{C}$	-	-	100	
Gate-body Leakage	$I_{GSS}$	Forward $V_{DS}=0\text{V}, V_{GS}=30\text{V}$	-	-	100	nA
		Reverse $V_{DS}=0\text{V}, V_{GS}=-30\text{V}$	-	-	-100	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	2.0	-	4.0	
Static drain-Source on-resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}, I_D=1\text{A}$ ,	-	3.8	5	$\Omega$
Forward transconductance	$g_{FS}$	$V_{DS}=50\text{V}, I_D=1\text{A}$ (Note1)	-	2.25	-	S
Input Capacitance	$C_{iss}$	$V_{DS}=25\text{V}, V_{GS}=0\text{V}, f=1.0\text{MHz}$	-	270	350	$\mu\text{F}$
Output Capacitance	$C_{oss}$		-	40	50	$\mu\text{F}$
Reverse Transfer Capacitance	$C_{rss}$		-	5	7	$\mu\text{F}$
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=300\text{V}, I_D=2.4\text{A}, R_G=25\Omega$ (Note1,2)	-	10	30	ns
Turn-On Rise Time	$t_R$		-	25	60	ns
Turn-Off Delay Time	$t_{d(off)}$		-	20	50	ns
Turn-Off Fall Time	$t_f$		-	25	60	ns
Total Gate Charge	$Q_g$	$V_{DS}=480\text{V}, I_D=2.4\text{A}, V_{GS}=10\text{V}$ (Note1,2)	-	9.0	11	nC
Gate-Source Charge	$Q_{gs}$		-	1.6	-	nC
Gate-Drain Charge	$Q_{gd}$		-	4.3	-	nC
Maximum Continuous Drain-Source Diode Forward Current	$I_{SD}$		-	-	2.0	A
Maximum Pulsed Drain-Source Diode Forward Current	$I_{SM}$		-	-	8.0	A
Drain-Source Recovery Charge	$V_{SD}$	$V_{GS}=0\text{V}, I_{SD}=2.0\text{A}$	-	-	1.4	V
Reverse Recovery Time	$t_{rr}$	$V_{GS}=0\text{V}, I_{SD}=2.4\text{A}$ , $di_F/dt=100\text{A}/\mu\text{s}$ (Note1)	-	180	-	ns
Reverse Recovery Charge	$Q_{rr}$		-	0.72	-	$\mu\text{C}$

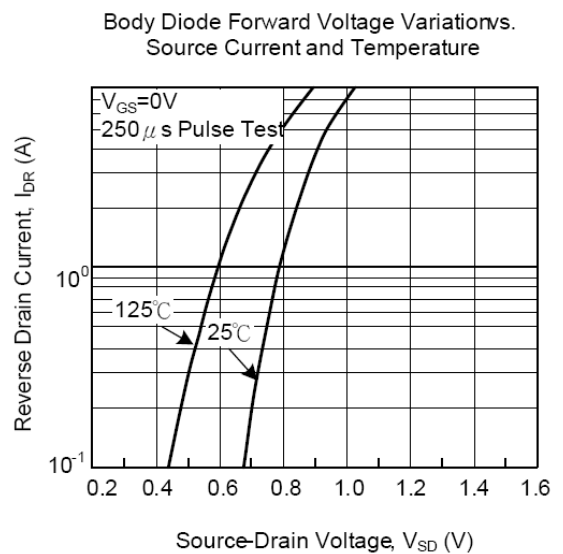
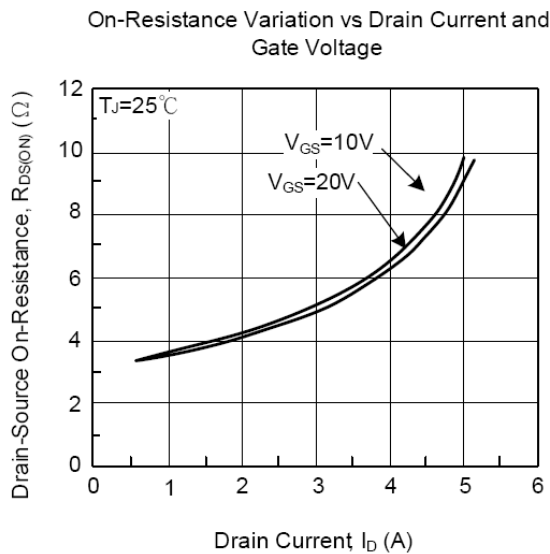
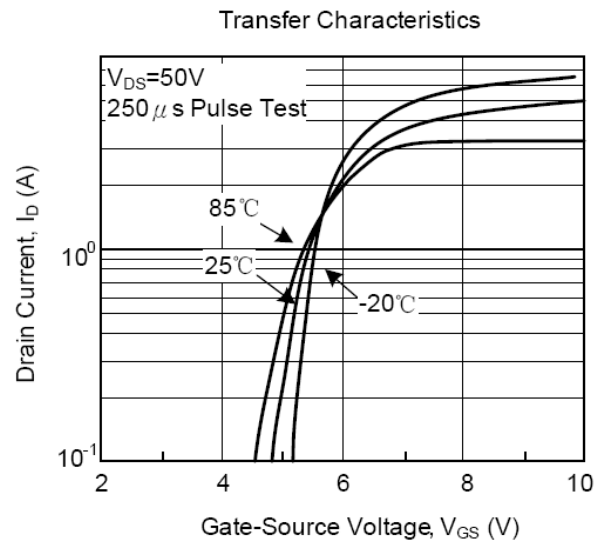
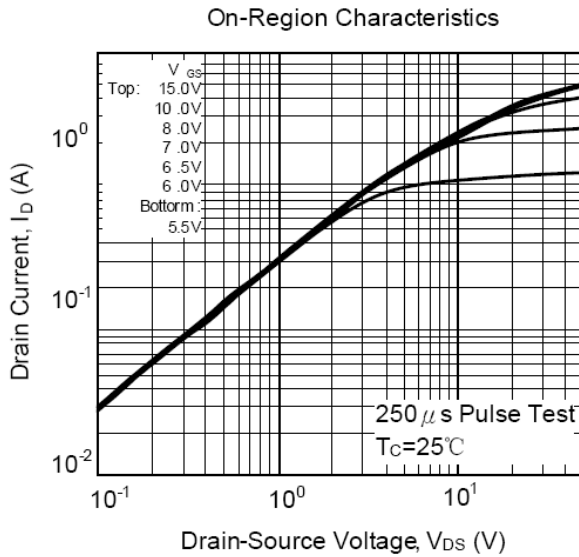
Notes:

1. Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$

2. Essentially Independent of Operating Temperature

## 2 Amps, 600 Volts N-CHANNEL MOSFET **BL2N60I/2N60D**

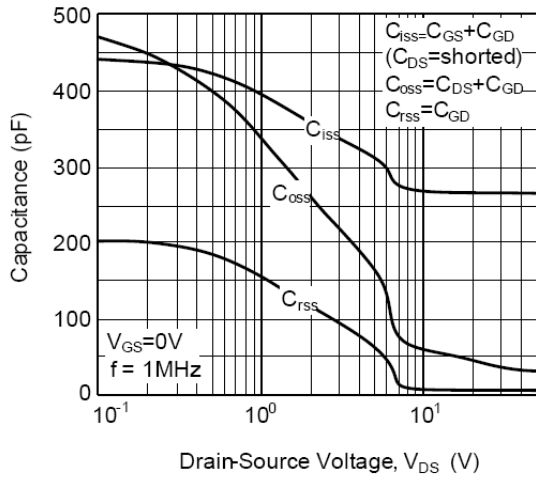
TYPICAL CHARACTERISTICS @  $T_a=25^\circ\text{C}$  unless otherwise specified



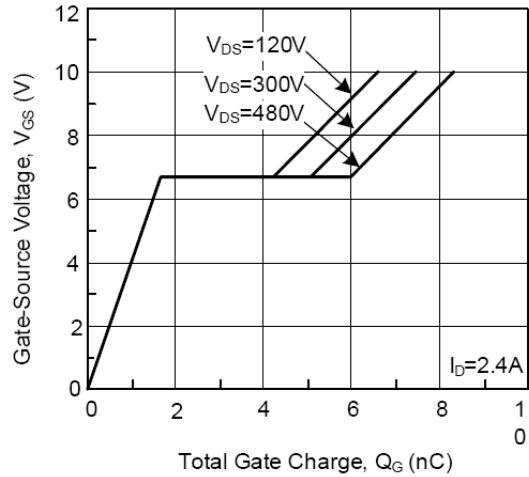
## 2 Amps, 600 Volts N-CHANNEL MOSFET

## BL2N60I/2N60D

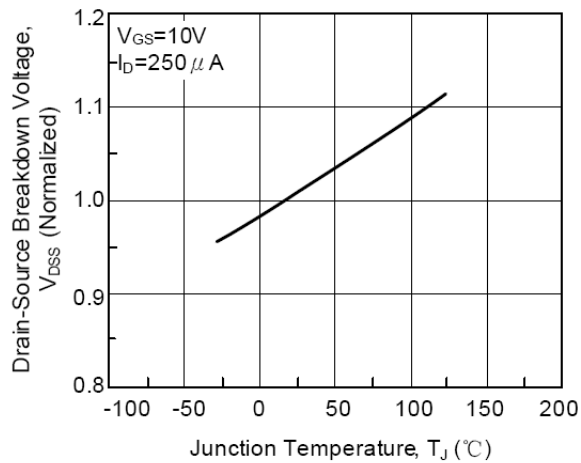
Capacitance vs. Drain-Source Voltage



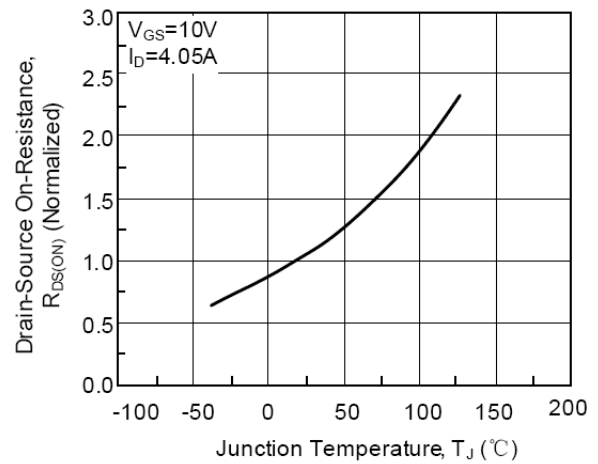
Gate Charge vs. Gate Charge Voltage



Breakdown Voltage vs Temperature



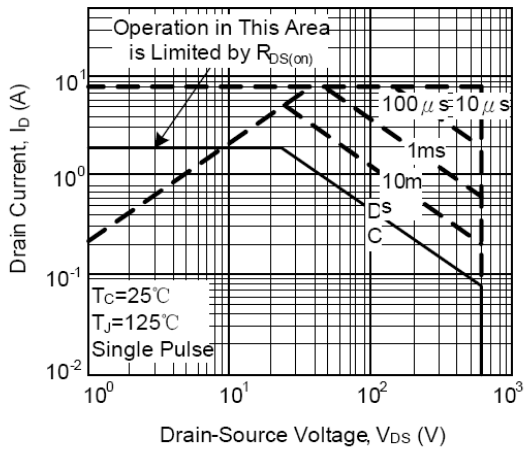
On-Resistance vs. Temperature



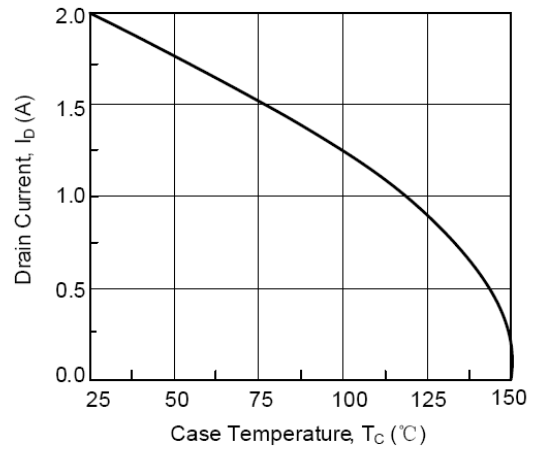
**2 Amps, 600 Volts N-CHANNEL MOSFET**

**BL2N60I/2N60D**

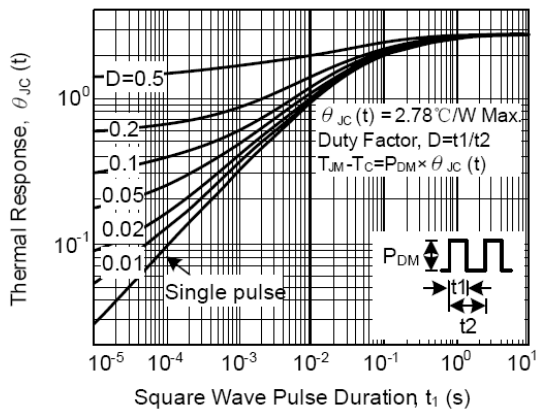
Max. Safe Operating Area



Max. Drain Current vs. Case Temperature



Thermal Response



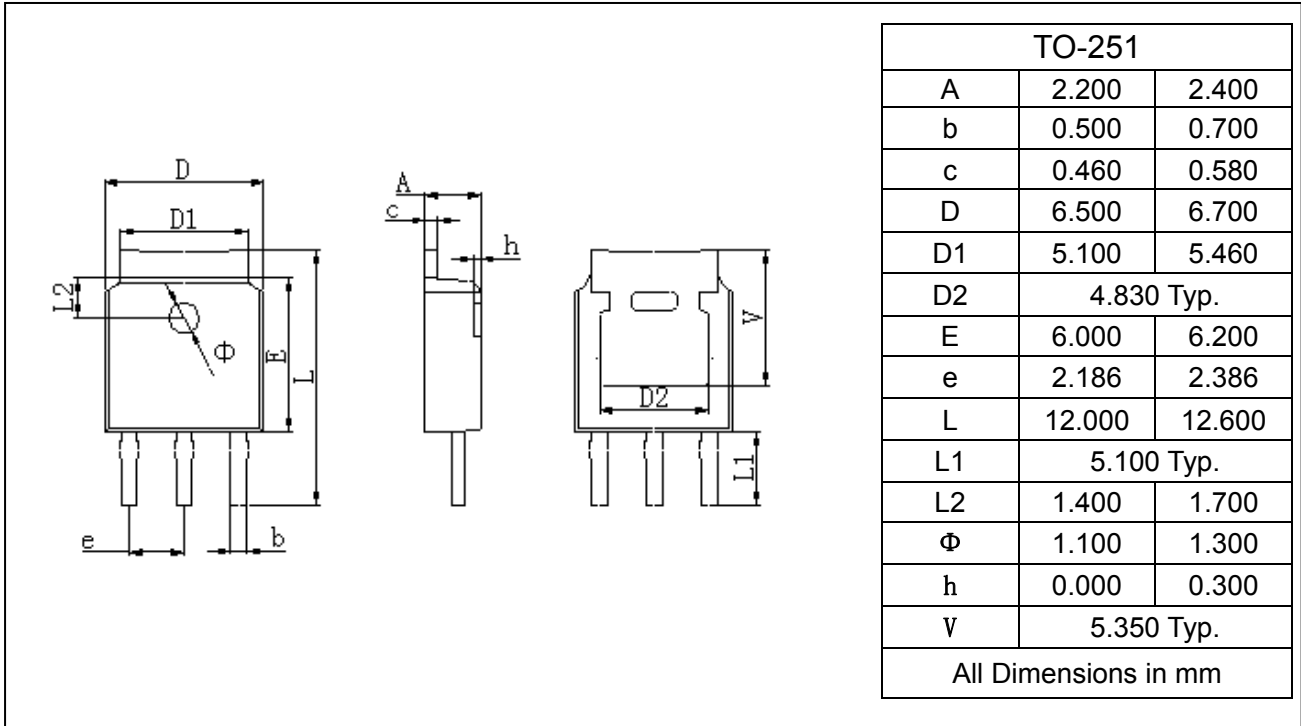
## 2 Amps, 600 Volts N-CHANNEL MOSFET

## BL2N60I/2N60D

### PACKAGE OUTLINE

Plastic surface mounted package

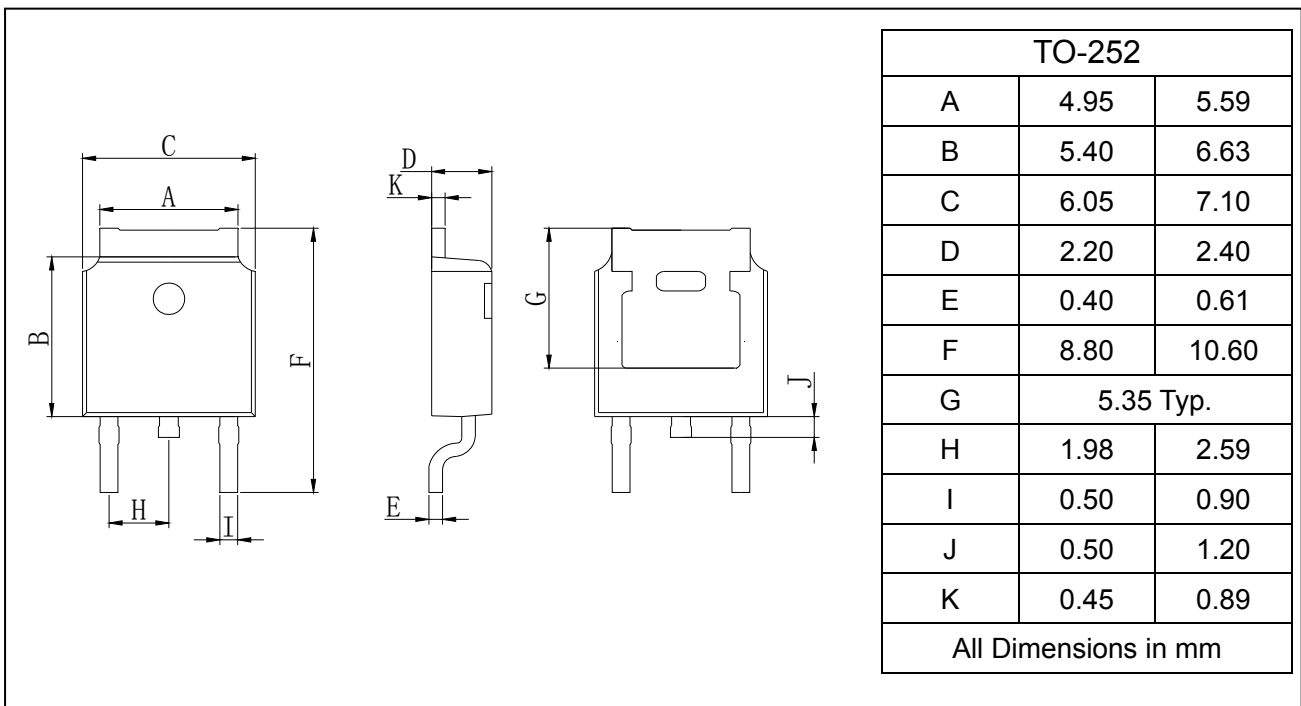
TO-251



### PACKAGE OUTLINE

Plastic surface mounted package

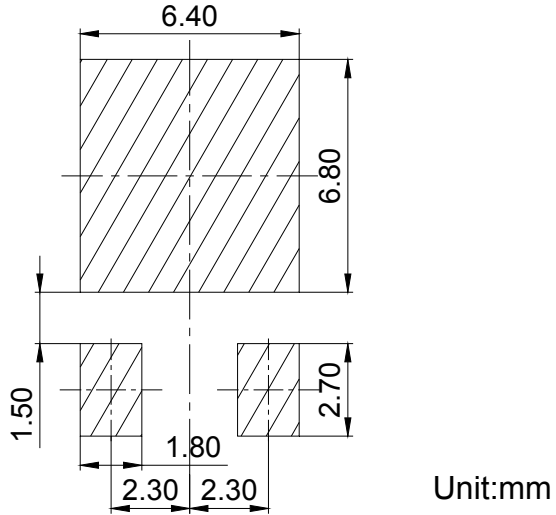
TO-252



**2 Amps, 600 Volts N-CHANNEL MOSFET**

**BL2N60I/2N60D**

**SOLDERING FOOTPRINT**



**PACKAGE INFORMATION**

Device	Package	Shipping
BL2N60I/2N60D	TO-251/252	80PCS/Tube
	TO-252	2500PCS/Tape&Reel