N-Channel Enhancement MOSFET

BL1N60I BL1N60D

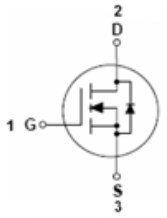
Features

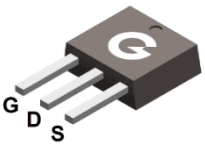
HF

- Ultra low gate charge
- Low reverse transfer capacitance
- Fast switching capability
- Avalanche energy specified
- Improved dv/dt capability, high ruggedness

Mechanical Data

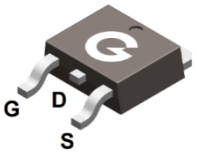
- Case: TO-251, TO-252
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matted-Tin plated; Solderable Per MIL-STD-202, Method 208





BL1N60I

TO-251



BL1N60D

TO-252

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
BL1N60I	TO-251	80 pcs / Tube	1N60I
BL1N60D	TO-252	80 pcs / Tube or 2500 pcs / Tape & Reel	1N60D

Maximum Ratings (@ T_A = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DSS}	600	V
Gate-to-Source Voltage	V_{GSS}	±30	V
Continuous Drain Current (T_C = 25°C)	I_D	1.2	A
Continuous Drain Current (T_C = 100°C)		0.66	A
Pulsed Drain Current	I_{DM}	4	A
Single Pulse Avalanche Energy *1	E_{AS}	20	mJ

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation	P_D	30	W
Thermal Resistance Junction-to-Air	$R_{\theta JA}$	62	°C/W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	4.17	°C/W
Operating Junction Temperature Range	T_J	-55 ~ +150	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°C

Electrical Characteristics (@ T_A = 25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
V_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA	600	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 600V, V_{GS} = 0V	-	-	10	μA
		V_{DS} = 480V, V_{GS} = 0V, T_A = 125°C	-	-	100	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS} = ±30V, V_{DS} = 0V	-	-	±100	nA
On Characteristics						
$R_{DS(ON)}$	Static Drain-Source On-resistance	V_{GS} = 10V, I_D = 0.6A	-	-	11.5	Ω
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	2	3.5	4	V
R_G	Gate Resistance	V_{GS} = 0V, f = 1MHz	-	5.3	-	Ω
Dynamic Characteristics						
C_{ISS}	Input Capacitance	V_{GS} = 0V V_{DS} = 25V f = 1.0MHz	-	279	-	pF
C_{OSS}	Output Capacitance		-	42	-	
C_{RSS}	Reverse Transfer Capacitance		-	9	-	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time	V_{DD} = 300V V_{GS} = 10V I_D = 1.2A	-	5	-	ns
t_r	Turn-on Rise Time		-	25	-	
$t_{d(OFF)}$	Turn-Off Delay Time		-	7	-	
t_f	Turn-Off Fall Time		-	25	-	
Q_G	Total Gate-Charge	V_{DD} = 480V I_D = 1.2A V_{GS} = 10V	-	7.3	-	nC
Q_{GS}	Gate to Source Charge		-	1.4	-	
Q_{GD}	Gate to Drain (Miller) Charge		-	4	-	
Source-Drain Diode Characteristics						
V_{SD}	Diode Forward Voltage	I_{SD} = 1.2A, V_{GS} = 0V	-	0.85	1.4	V
I_{SD}	Continuous Drain-Source Current		-	-	1.2	A
I_{SM}	Pulsed Drain-Source Current		-	-	4.8	A
trr	Reverse Recovery Time	I_{SD} = 1A, V_{GS} = 0V，V_R=30V dI/d_t = 100A/μs	-	290	-	ns
Qrr	Reverse Recovery Charge		-	850	-	nC

Note 1: The test condition is V_{DS} = 50V, V_{GS} = 10V, L = 10mH

Ratings and Characteristics Curves (@ T_A = 25°C unless otherwise specified)

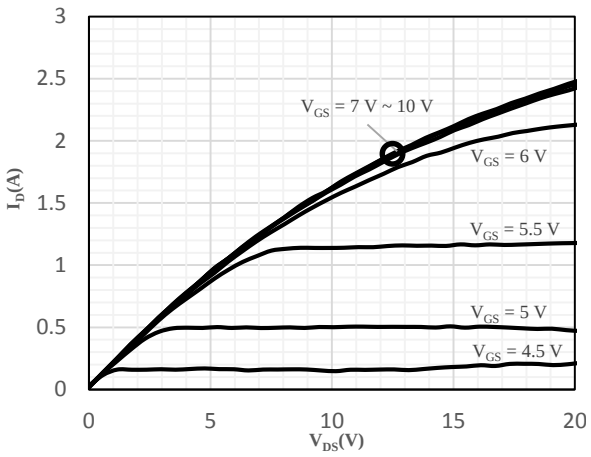


Fig 1 Typical Output Characteristics

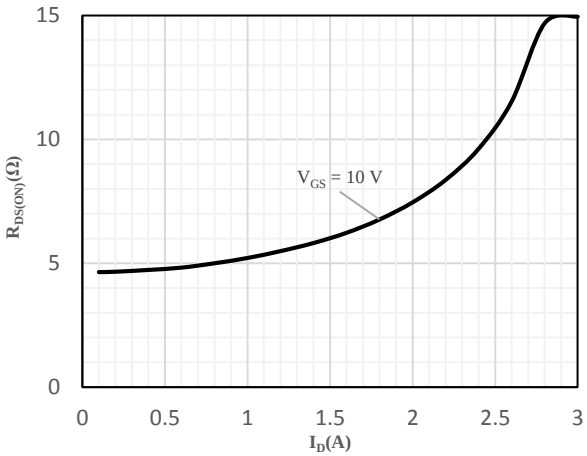


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

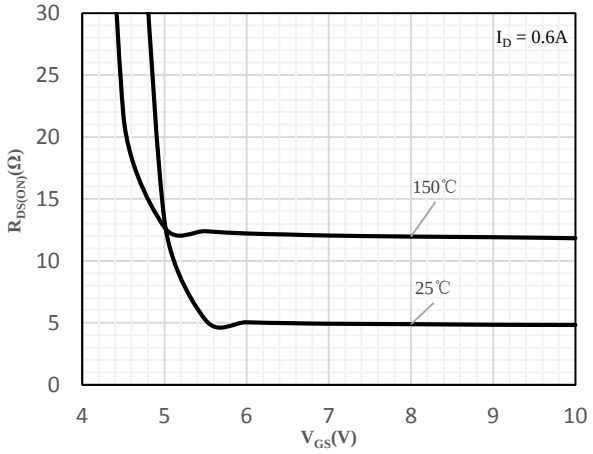


Fig 3 On-Resistance vs. Gate-Source Voltage

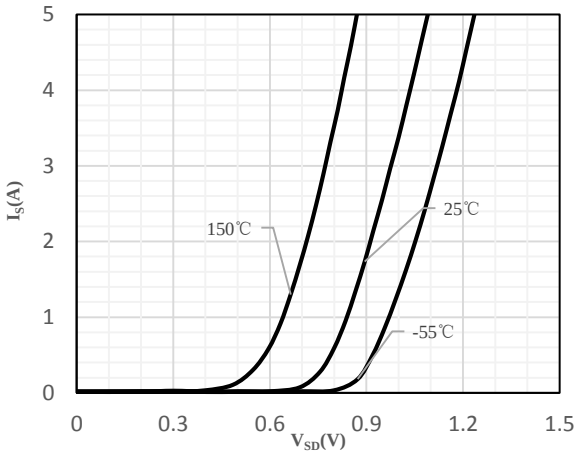


Fig 4 Body-Diode Characteristics

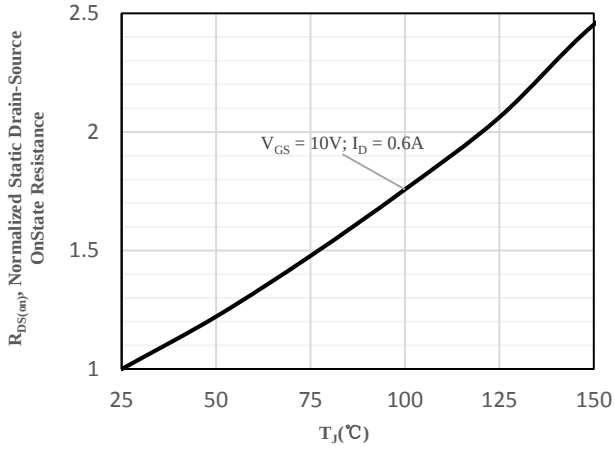


Fig 5 Normalized On-Resistance vs. Junction Temperature

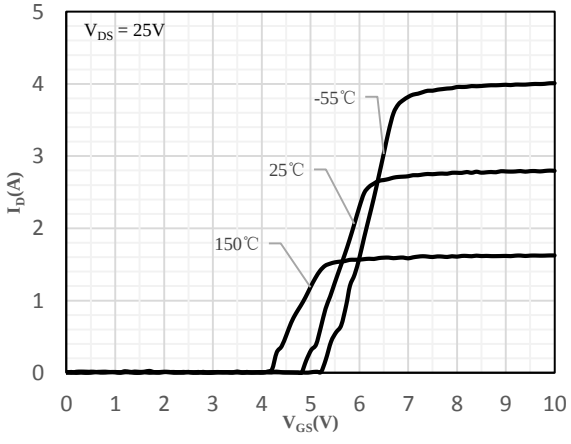


Fig 6 Transfer Characteristics

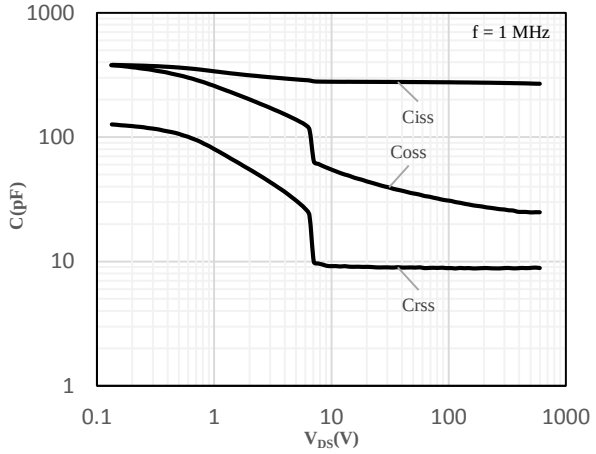


Fig 7 Capacitance Characteristics

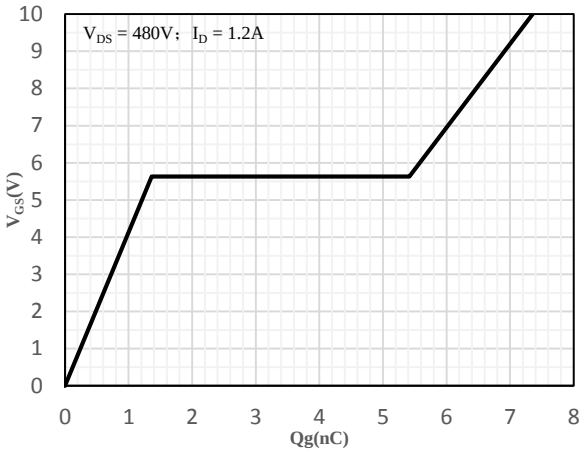


Fig 8 Gate-Charge Characteristics

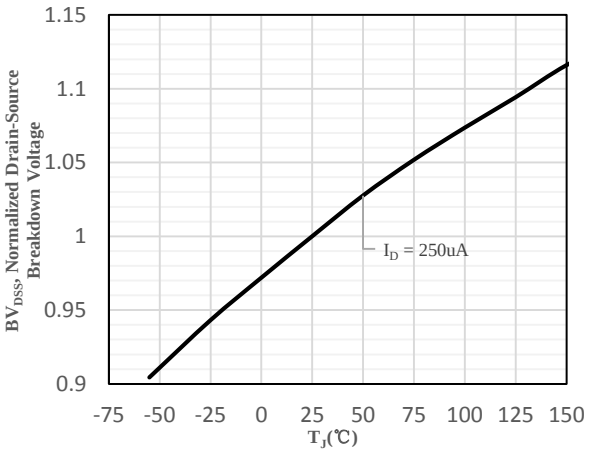


Fig 9 Normalized Breakdown Voltage vs. Junction Temperature

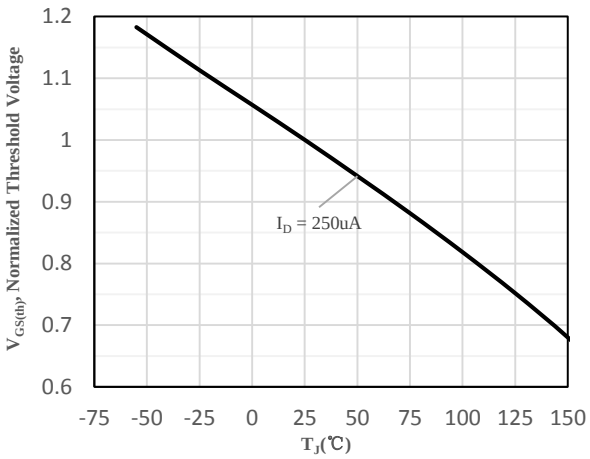
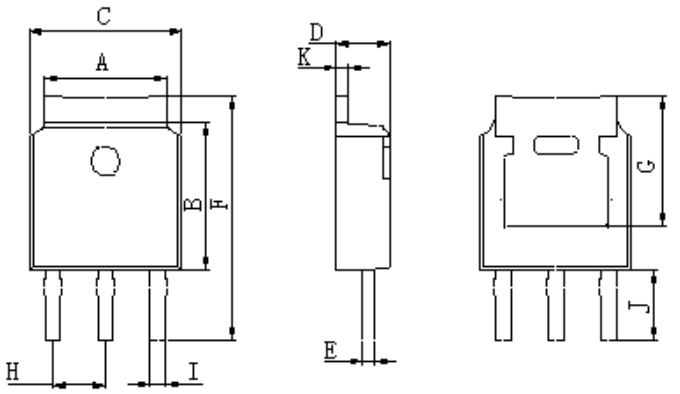
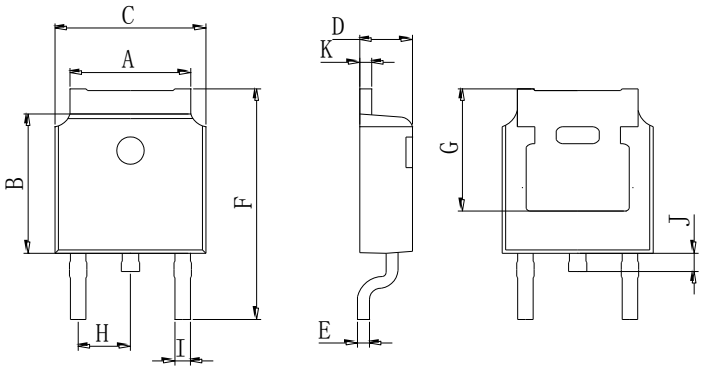


Fig 10 Normalized $V_{GS(th)}$ vs. Junction Temperature

Package Outline Dimensions (Unit: mm)



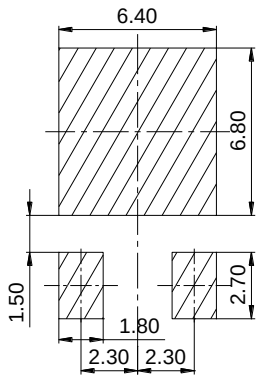
TO-251		
Dimension	**Min.**	**Max.**
A	5.05	5.65
B	5.80	6.40
C	6.25	6.85
D	2.20	2.40
E	0.40	0.60
F	12.00	12.60
G	5.05	5.65
H	2.10	2.50
I	0.70	0.90
J	4.90	5.50
K	0.40	0.60



TO-252		
Dimension	**Min.**	**Max.**
A	5.05	5.65
B	5.80	6.40
C	6.25	6.85
D	2.20	2.40
E	0.40	0.60
F	9.71	10.31
G	5.05	5.65
H	2.10	2.50
I	0.70	0.90
J	0.50	0.70
K	0.40	0.60

Mounting Pad Layout (Unit: mm)

TO-252



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