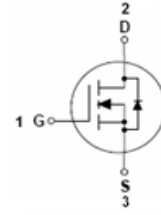


Features

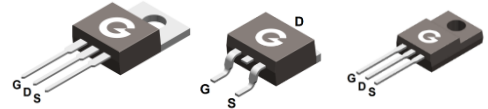
- Fast switching
- Low on resistance
- Low gate charge
- Low reverse transfer capacitances
- RoHS compliant with Halogen-free

HF



Mechanical Data

- Case: TO-220AB, TO-263, ITO-220AB
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208



TO-220AB

TO-263

ITO-220AB

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
BL14N25	TO-220AB	50 pcs / Tube	14N25
BL14N25B	TO-263	50 pcs / Tube or 800 pcs / Tape & Reel	14N25B
BL14N25F	ITO-220AB	50 pcs / Tube	14N25F

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

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V _{DSS}	250	V
Gate-to-Source Voltage	V _{GSS}	±30	V
Continuous Drain Current (T _c = 25°C)	I _D	14	A
Continuous Drain Current (T _c = 100°C)		8.4	
Pulsed Drain Current	I _{DM}	56	A
Single Pulse Avalanche Energy ^{*1}	E _{AS}	500	mJ
Power Dissipation (TO-220AB, T _c = 25°C)	P _D	100	W
Power Dissipation (TO-263, T _c = 25°C)		100	
Power Dissipation (ITO-220AB, T _c = 25°C)		36	
Operating Junction Temperature Range	T _J	-55 ~ +150	°C
Storage Temperature Range	T _{STG}	-55 ~ +150	°C

Thermal Characteristics

Parameter	Symbol	TO-220AB/TO-263	ITO-220AB	Unit
Thermal Resistance Junction-to-Case	R _{θJC}	1.25	3.5	°C/W
Thermal Resistance Junction-to-Air	R _{θJA}	50	62.5	°C/W

Electrical Characteristics (@ $T_c = 25^\circ\text{C}$ 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	250	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 250V, V _{GS} = 0V	-	-	1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ±30V, V _{DS} = 0V	-	-	±100	nA
On Characteristics						
R _{DS(ON)}	Drain-Source On-resistance *2	V _{GS} = 10V, I _D = 7A	-	-	250	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	2	-	4	V
g _{fs}	Forward Threshold Voltage	V _{DS} = 15V, I _D = 7A	-	9.2	-	S
Dynamic Characteristics						
C _{ISS}	Input Capacitance	V _{GS} = 0V	-	1080	-	pF
C _{OSS}	Output Capacitance	V _{DS} = 25V	-	156	-	
C _{RSS}	Reverse Transfer Capacitance	f = 1.0MHz	-	13	-	
Switching Characteristics						
t _{d(ON)}	Turn-on Delay Time *3	V _{DS} = 125V R _G = 10Ω I _D = 14A	-	18	-	ns
t _r	Turn-on Rise Time *3		-	27	-	
t _{d(OFF)}	Turn-Off Delay Time *3		-	37	-	
t _f	Turn-Off Fall Time *3		-	9	-	
Q _G	Total Gate-Charge	V _{DS} = 200V	-	22.7	-	nC
Q _{GS}	Gate to Source Charge	V _{GS} = 10V	-	5.7	-	
Q _{GD}	Gate to Drain (Miller) Charge	I _D = 14A	-	9.6	-	
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage *2	I _{SD} = 14A, V _{GS} = 0V	-	-	1.5	V
t _{rr}	Reverse Recovery Time	I _{SD} = 14A	-	167	-	ns
Q _{rr}	Reverse Recovery Charge	dI _{SD} /dt = 100A/μs	-	1.1	-	μC

Notes:

- The E_{AS} data shows Max. rating. The test condition is $V_{DD} = 100V, V_{GS} = 15V, L = 10mH$
- The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- Guaranteed by design, not subject to production

Ratings and Characteristics Curves (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

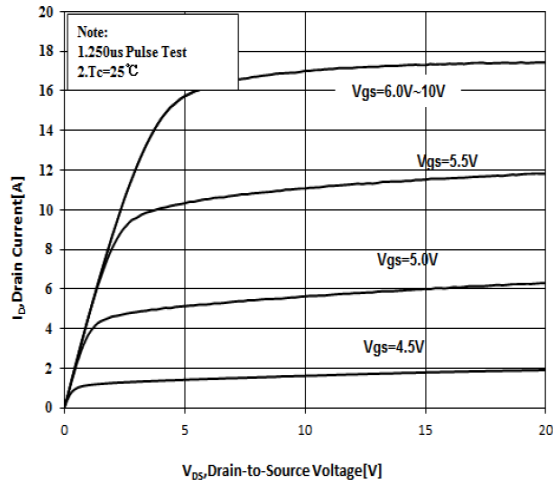


Fig 1 Typical Output Characteristics

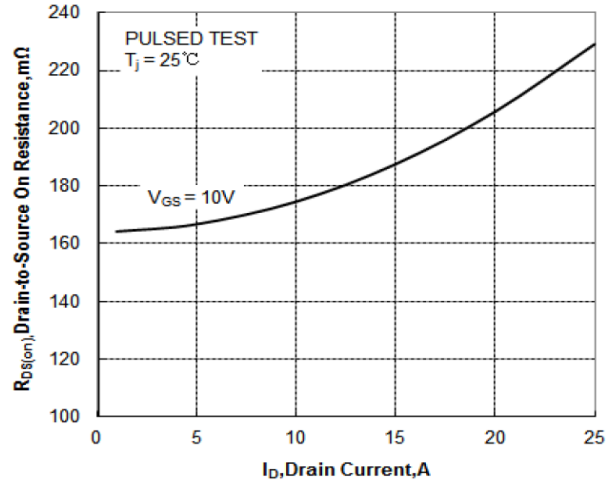


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

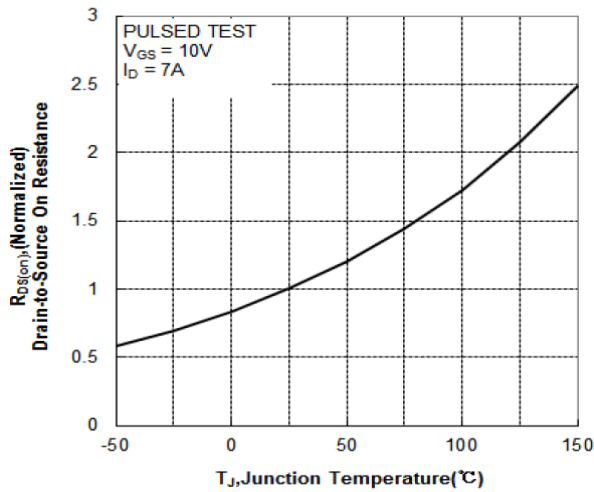


Fig 3 On-Resistance vs. Gate-Source Voltage

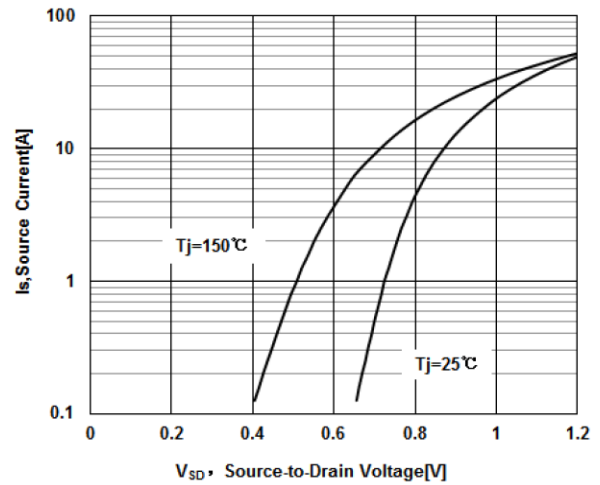


Fig 4 Body-Diode Characteristics

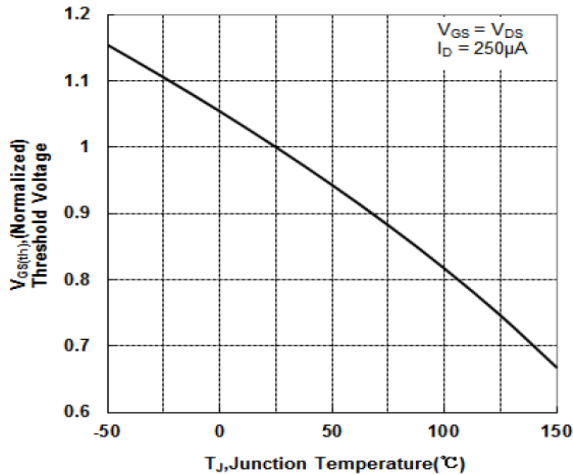


Fig 5 Theshold Voltage vs Junction Temperature

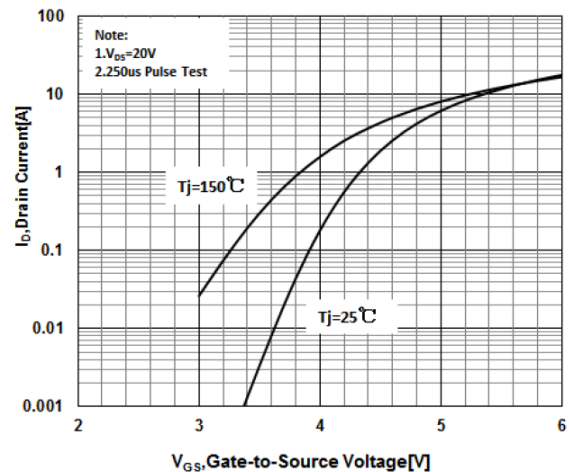


Fig 6 Transfer Characteristics

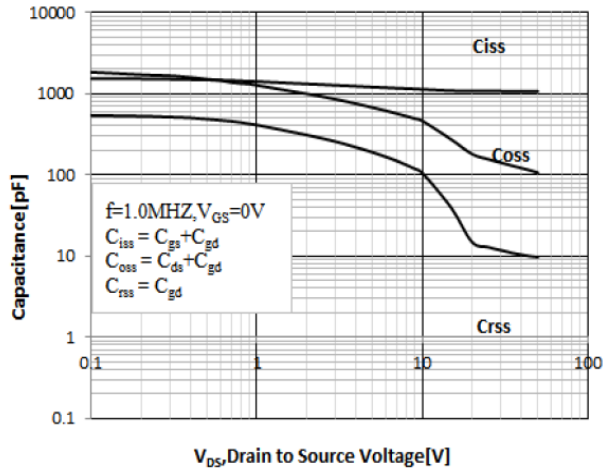


Fig 7 Capacitance Characteristics

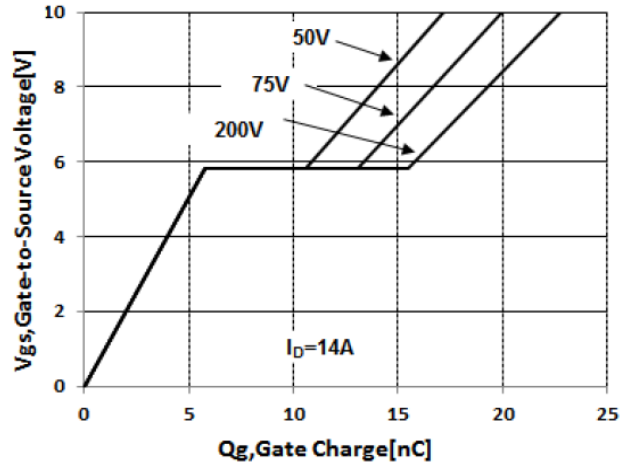


Fig 8 Gate-Charge Characteristics

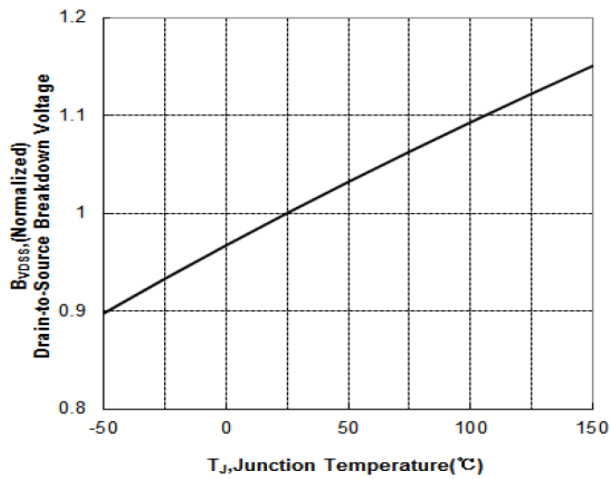


Fig 9 Normalized Breakdown Voltage
vs. Junction Temperature

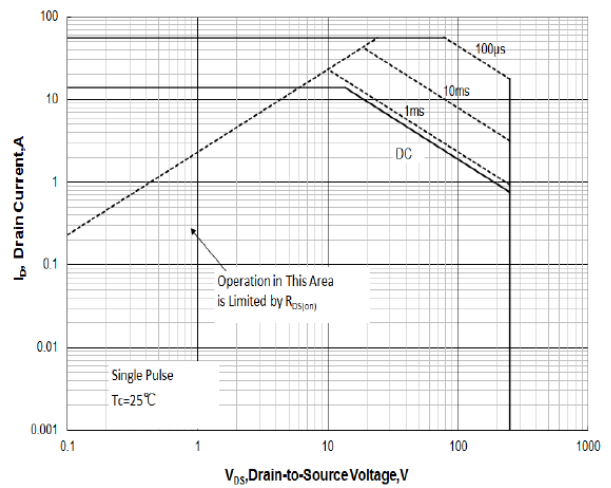


Fig 10 Maximum Safe Operating Area

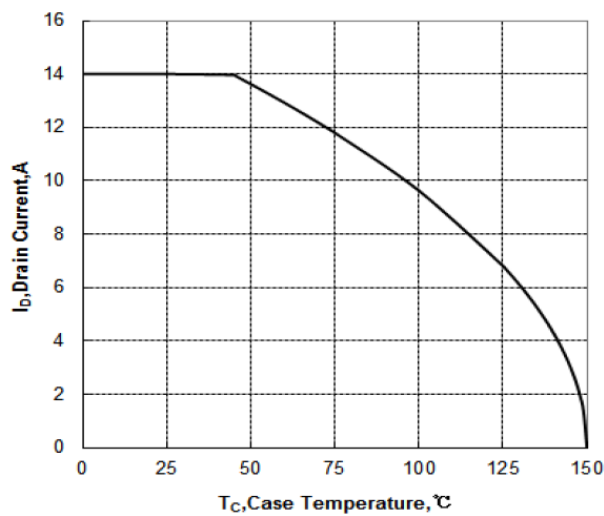


Figure 11 Maximum Continuous Drain Current
vs. Case Temperature

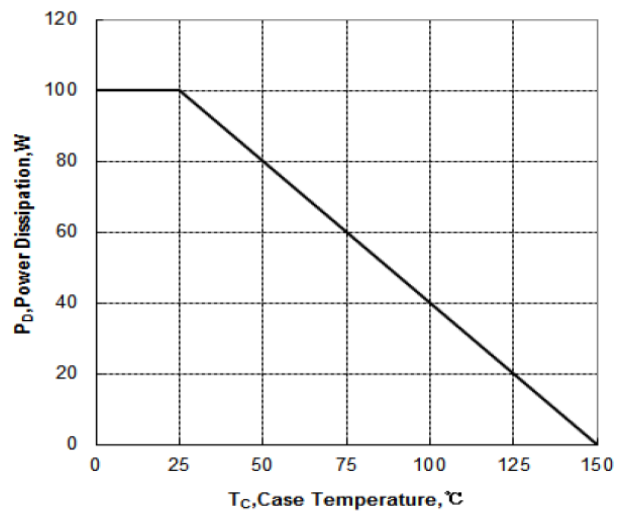
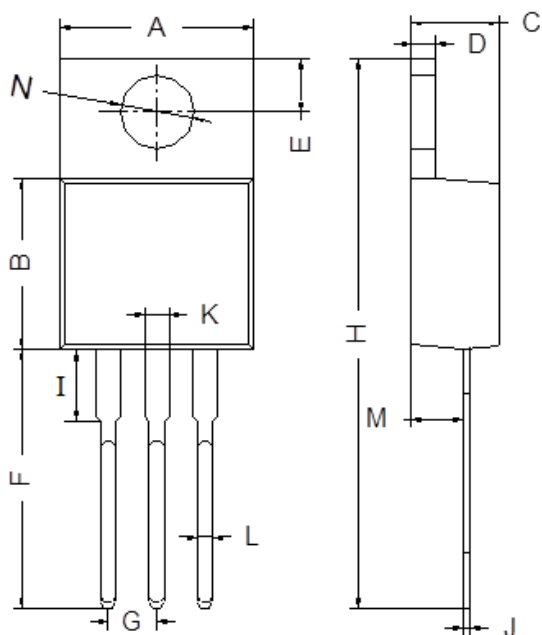
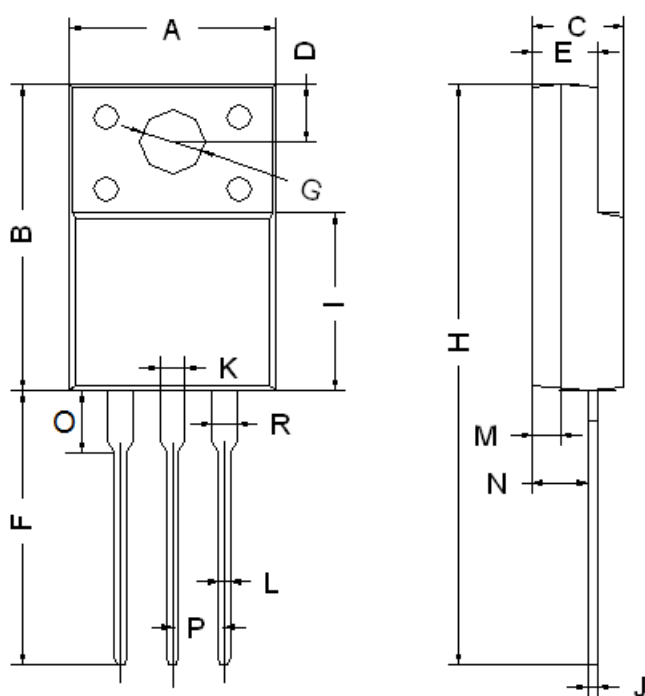


Figure 12 Maximum Power Dissipation
vs. Case Temperature

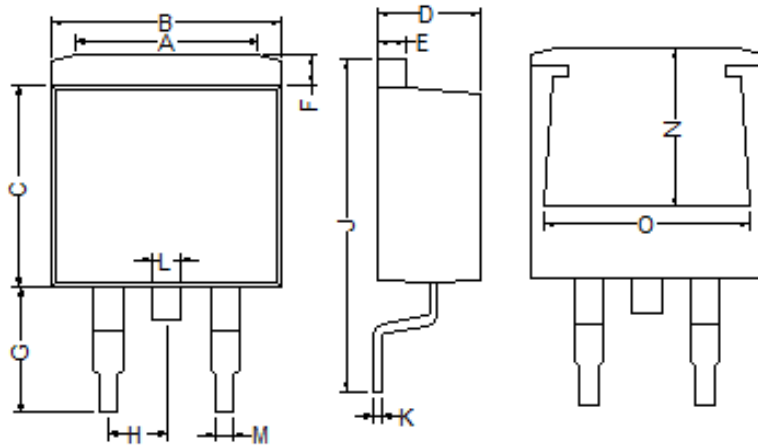
Package Outline Dimensions (Unit: mm)



TO-220AB		
Dimension	Min.	Max.
A	9.80	10.30
B	8.70	9.10
C	4.37	4.77
D	1.07	1.47
E	2.64	2.84
F	13.14	13.74
G	2.44	2.64
H	28.03	28.83
I	3.50	4.00
J	0.28	0.48
K	1.22	1.32
L	0.71	0.91
M	2.40	2.60
N	3.76	3.96



ITO-220AB		
Dimension	Min.	Max.
A	9.90	10.30
B	14.80	15.20
C	4.30	4.70
D	2.50	2.90
E	2.80	3.30
F	13.00	13.60
G	3.10	3.30
H	28.00	28.60
I	7.90	8.90
J	0.40	0.60
L	0.70	0.90
M	1.30	1.50
N	2.60	2.80
O	2.60	3.10
P	2.45	2.65
K/R	1.10	1.30



TO-263		
Dimension	Min.	Max.
A	6.00	8.00
B	9.90	10.30
C	8.50	9.10
D	4.37	4.77
E	1.07	1.47
F	1.07	1.47
G	5.05	5.74
H	2.44	2.66
J	15.15	15.80
K	0.28	0.48
L	1.17	1.37
M	0.71	0.91
N	6.55	7.68
O	7.70	8.10

Mounting Pad Layout (Unit: mm)

TO-263

