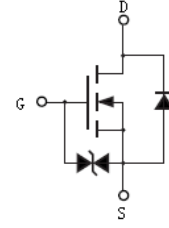


Features

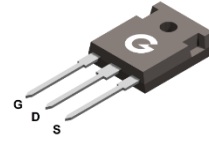
- Fast switching
- ESD improved capability
- Low gate charge
- Low reverse transfer capacitances
- RoHS compliant with Halogen-free

HF

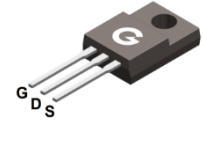


Mechanical Data

- Case: TO-247, ITO-220AB
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208



TO-247



ITO-220AB

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
BL10N80KU	TO-247	30 pcs / Tube	10N80KU
BL10N80KF	ITO-220AB	50 pcs / Tube	10N80KF

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

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V _{DSS}	800	V
Gate-to-Source Voltage	V _{GSS}	±30	V
Continuous Drain Current (T _C = 25°C)	I _D	10	A
Continuous Drain Current (T _C = 100°C)		6.4	A
Pulsed Drain Current	I _{DM}	40	A
Single Pulse Avalanche Energy ²	E _{AS}	350	mJ
Power Dissipation (TO-247, T _C = 25°C)	P _D	156	W
Power Dissipation (ITO-220AB, T _C = 25°C)		60	W
Operating Junction Temperature Range	T _J	-55 ~ +150	°C
Storage Temperature Range	T _{STG}	-55 ~ +150	°C

Thermal Characteristics

Parameter	Symbol	TO-247	ITO-220AB	Unit
Thermal Resistance Junction-to-Case	R _{θJC}	0.8	2.1	°C/W
Thermal Resistance Junction-to-Air	R _{θJA}	40	62.5	°C/W

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
V_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	800	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 800V, V_{GS} = 0V$	-	-	25	μA
I_{GSS}	Gate-Body Leakage Current	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 10	μA
On Characteristics						
$R_{DS(ON)}$	Drain-Source On-resistance *1	$V_{GS} = 10V, I_D = 5A$	-	-	0.9	Ω
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	-	4	V
Dynamic Characteristics						
C_{ISS}	Input Capacitance	$V_{GS} = 0V$	-	2900	-	pF
C_{OSS}	Output Capacitance	$V_{DS} = 25V$	-	200	-	
C_{RSS}	Reverse Transfer Capacitance	$f = 1.0\text{MHz}$	-	25	-	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time *3	$V_{DD} = 400V$	-	19	-	ns
t_r	Turn-on Rise Time *3	$V_{GS} = 10V$	-	10	-	
$t_{d(OFF)}$	Turn-Off Delay Time *3	$R_G = 4.7\Omega$	-	68	-	
t_f	Turn-Off Fall Time *3	$I_D = 10A$	-	23	-	
Q_G	Total Gate-Charge	$V_{DD} = 640V$	-	65	-	nC
Q_{GS}	Gate to Source Charge	$V_{GS} = 10V$	-	13	-	
Q_{GD}	Gate to Drain (Miller) Charge	$I_D = 10A$	-	25	-	
Source-Drain Diode Characteristics						
V_{SD}	Diode Forward Voltage *1	$I_{SD} = 10A, V_{GS} = 0V$	-	-	1.5	V
t_{rr}	Reverse Recovery Time	$I_F = 10A, V_{GS} = 0V$	-	200	-	ns
Q_{rr}	Reverse Recovery Charge	$dI_F/dt = 100A/\mu s$	-	2.2	-	μC

Notes:

1. The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
2. The E_{AS} data shows Max. rating. The test condition is $V_{DD} = 50V, V_{GS} = 15V, L = 10mH$
3. Guaranteed by design, not subject to production

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

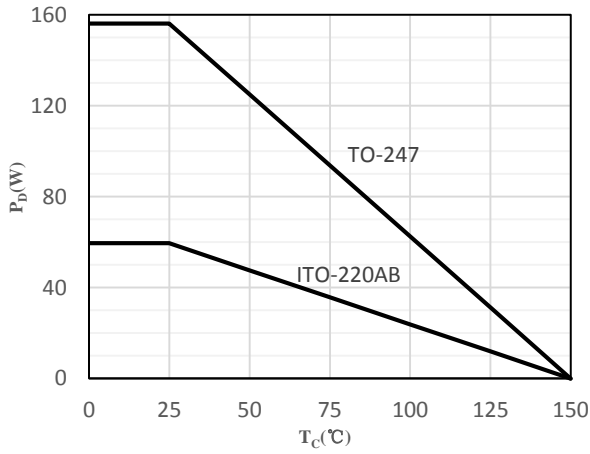


Fig 1 Power Dissipation

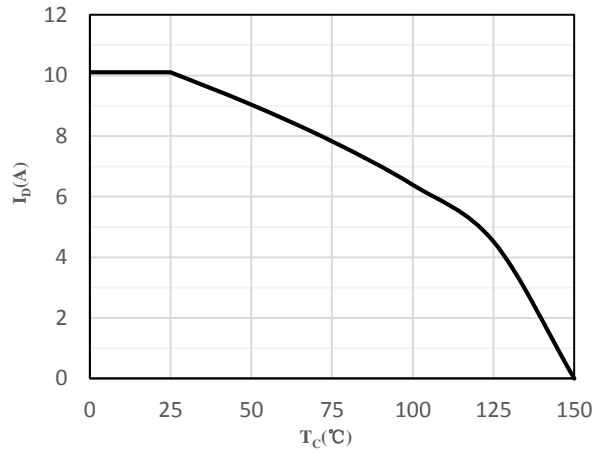


Fig 2 Drain Current

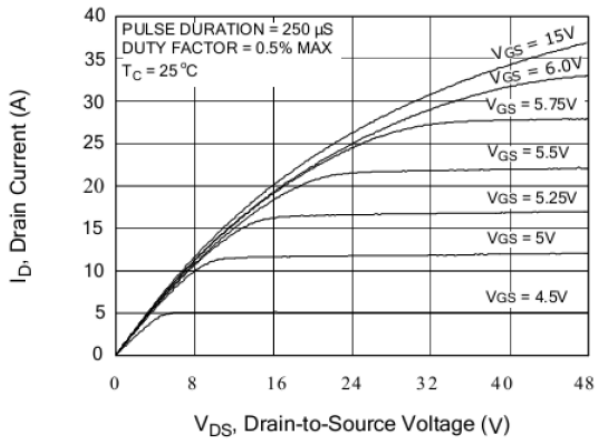


Fig 3 Typical Output Characteristics

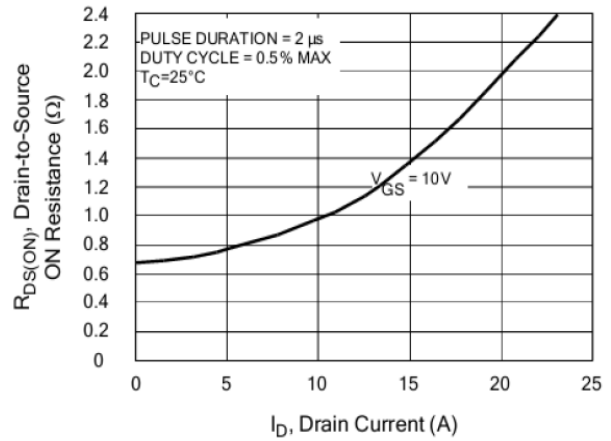


Fig 4 On-Resistance vs. Drain Current and Gate Voltage

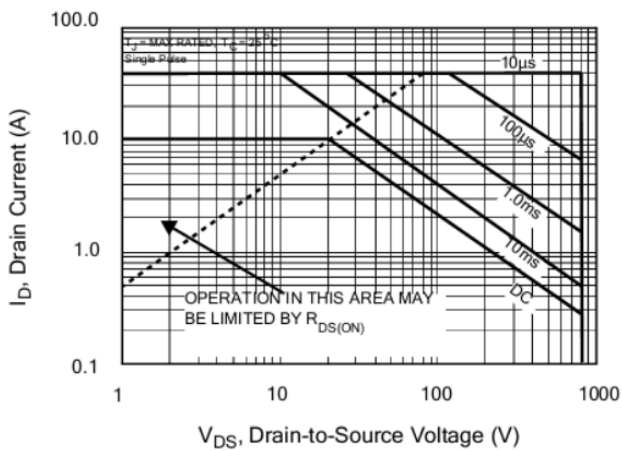


Fig 5 Safe Operating Area

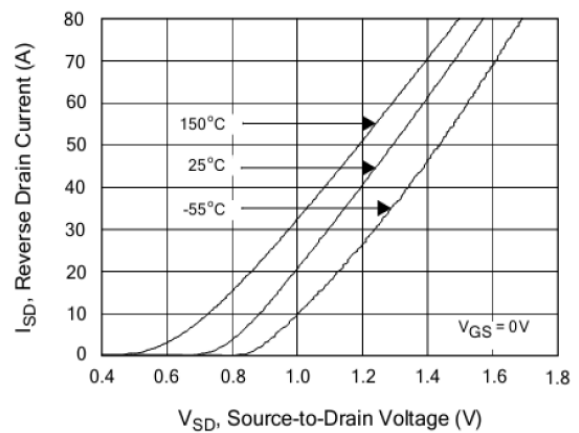


Fig 6 Body-Diode Characteristics

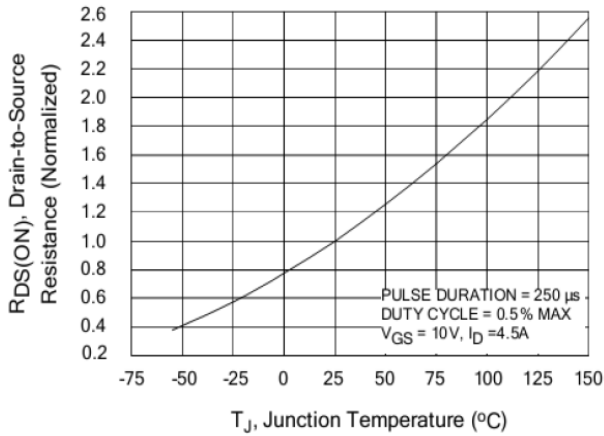


Fig 7 Normalized On-Resistance vs. Junction Temperature

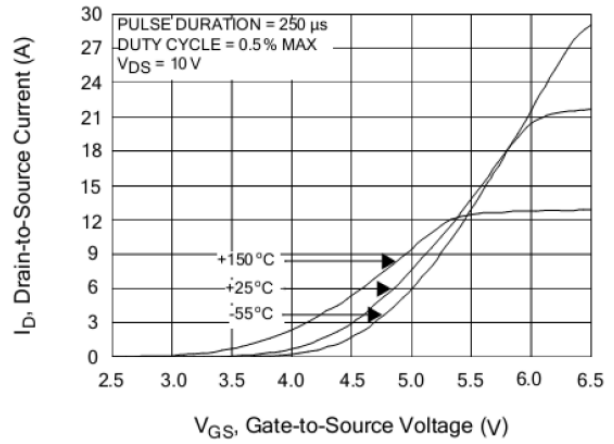


Fig 8 Transfer Characteristics

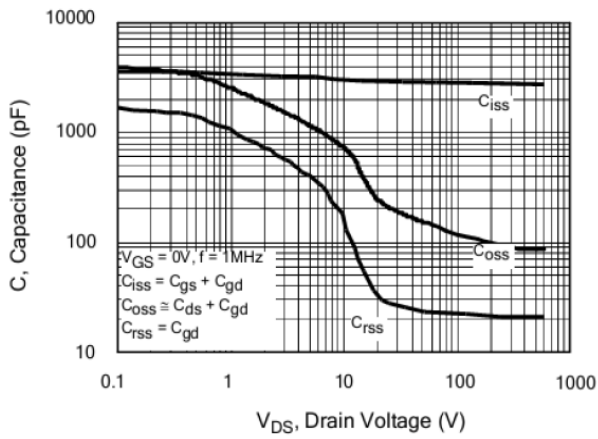


Fig 9 Capacitance Characteristics

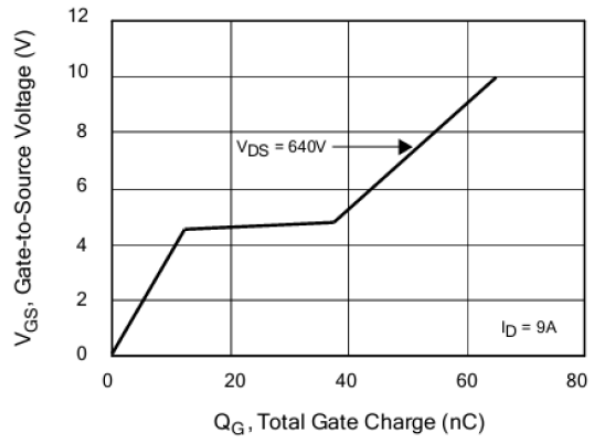


Fig 10 Gate-Charge Characteristics

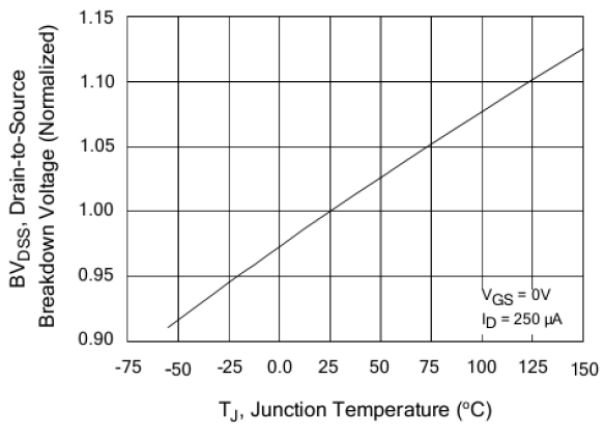


Fig 11 Normalized Breakdown Voltage vs. Junction Temperature

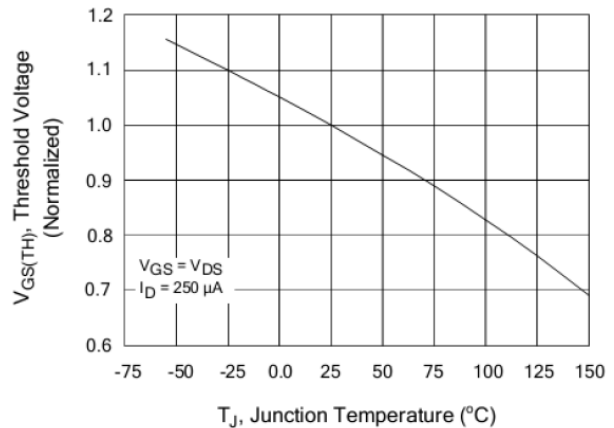
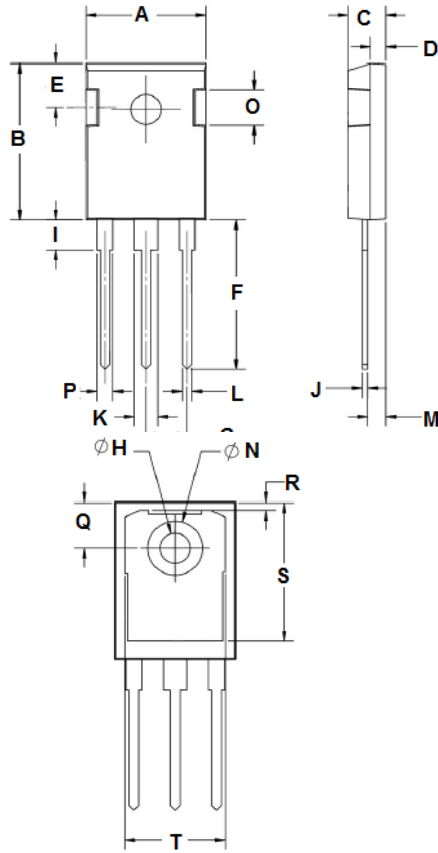
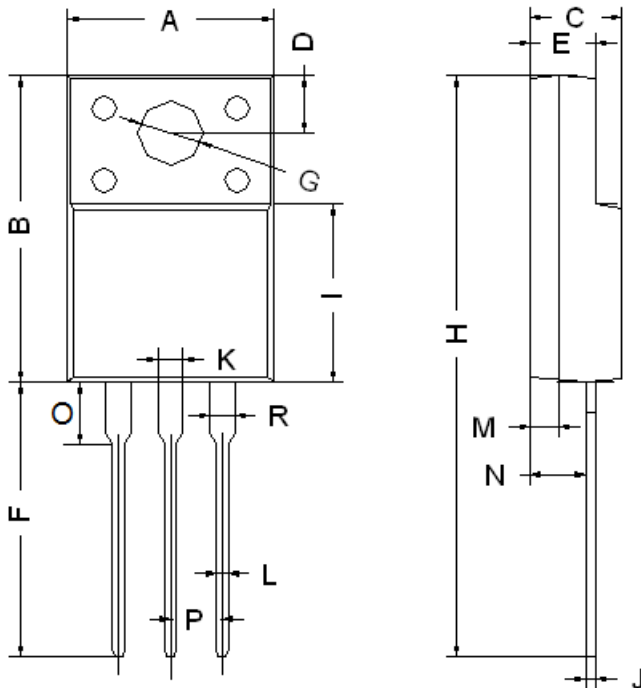


Fig 12 Normalized V_{GS(th)} vs. Junction Temperature

Package Outline Dimensions (Unit: mm)



TO-247		
Dimension	Min.	Max.
A	15.50	16.10
B	20.70	21.30
C	4.70	5.30
D	1.80	2.20
E	5.20	5.80
F	19.70	20.30
G	5.20	5.60
H	3.30	3.70
I	3.90	4.30
J	0.50	0.70
K	2.80	3.20
L	1.00	1.40
M	2.20	2.60
N	7.00	7.20
O	4.90	5.30
P	1.80	2.20
Q	5.70	5.90
R	0.80	1.20
S	17.00	17.80
T	13.60	14.20



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