

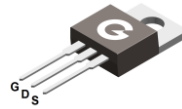
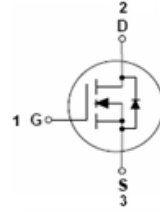
Features

- Low on-resistance
- Low gate charge
- Extremely high dv/dt capability
- RoHS compliant with Halogen-free

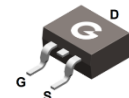
HF

Mechanical Data

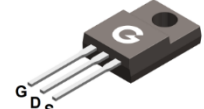
- Case: TO-220AB, TO-263, ITO-220AB
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matted-Tin plated; Solderable Per MIL-STD-202, Method 208



TO-220AB



TO-263



ITO-220AB

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
BL20N65	TO-220AB	50 pcs / Tube	20N65
BL20N65B	TO-263	50 pcs / Tube or 800 pcs / Tape & Reel	20N65B
BL20N65F	ITO-220AB	50 pcs / Tube	20N65F

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

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V _{DSS}	650	V
Gate-to-Source Voltage	V _{GSS}	±30	V
Continuous Drain Current (T _C = 25°C)	I _D	20	A
Continuous Drain Current (T _C = 100°C)		12.6	
Pulsed Drain Current (t _p = 10μs, T _C = 25°C)	I _{DM}	80	A
Single Pulse Avalanche Energy (L = 10mH) ²	E _{AS}	800	mJ
Power Dissipation (TO-220AB, T _C = 25°C)	P _D	250	W
Power Dissipation (TO-263, T _C = 25°C)		250	
Power Dissipation (ITO-220AB, T _C = 25°C)		46	
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}	0.5	2.7	°C/W
Thermal Resistance Junction-to-Air	R _{θJA}	50	62.5	°C/W

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	650	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 650V, 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 *1	V _{GS} = 10V, I _D = 10A	-	0.386	0.5	Ω
		V _{GS} = 10V, I _D = 6.5A	-	0.373	0.47	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	2	-	4	V
Dynamic Characteristics						
C _{ISS}	Input Capacitance	V _{GS} = 0V V _{DS} = 25V f = 1.0MHz	-	2983	-	pF
C _{OSS}	Output Capacitance		-	316	-	
C _{RSS}	Reverse Transfer Capacitance		-	20	-	
Switching Characteristics						
t _{d(ON)}	Turn-on Delay Time *3	V _{DD} = 250V R _G = 10Ω I _D = 20A	-	36	-	ns
t _r	Turn-on Rise Time *3		-	74.7	-	
t _{d(OFF)}	Turn-Off Delay Time *3		-	78.7	-	
t _f	Turn-Off Fall Time *3		-	58.7	-	
Q _G	Total Gate-Charge	V _{DD} = 400V V _{GS} = 10V I _D = 20A	-	58	-	nC
Q _{GS}	Gate to Source Charge		-	13.3	-	
Q _{GD}	Gate to Drain (Miller) Charge		-	22.9	-	
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage *1	I _{SD} = 20A, V _{GS} = 0V	-	-	1.4	V
t _{rr}	Reverse Recovery Time	I _{SD} = 20A, V _{GS} = 0V di/dt = 100A/μs	-	584	-	ns
Q _{rr}	Reverse Recovery Charge		-	6.8	-	μC

Notes:

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

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

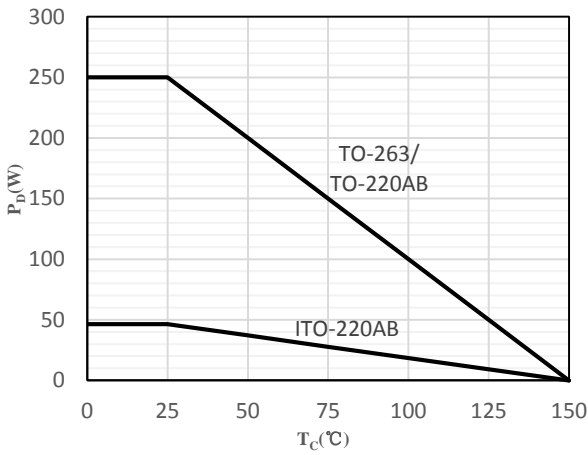


Fig 1 Power Dissipation

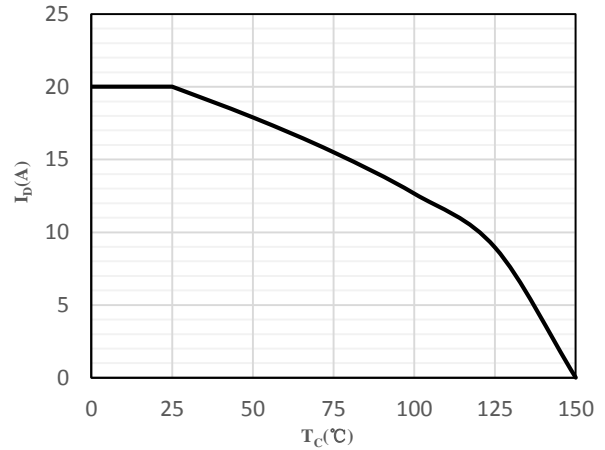


Fig 2 Drain Current

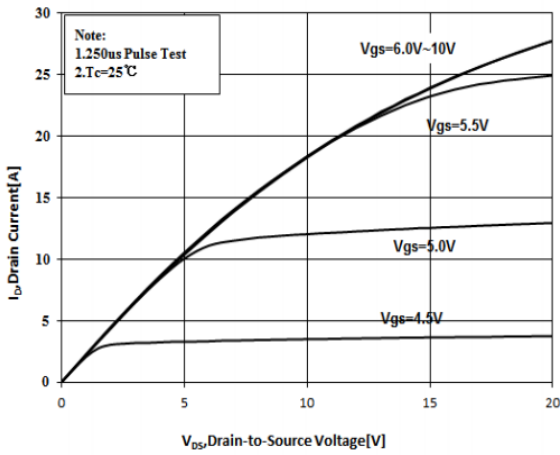


Fig 3 Typical Output Characteristics

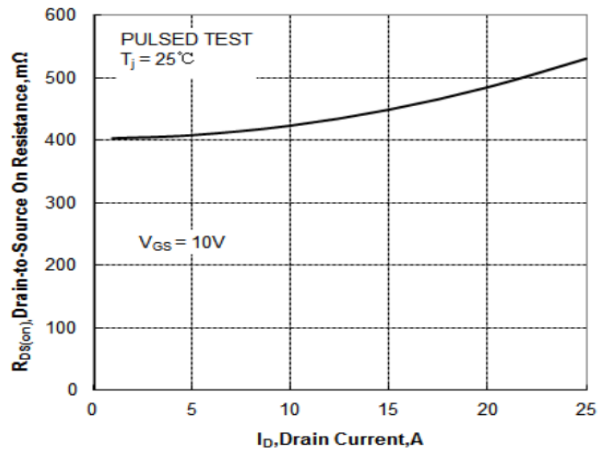


Fig 4 On-Resistance vs. Drain Current and Gate Voltage

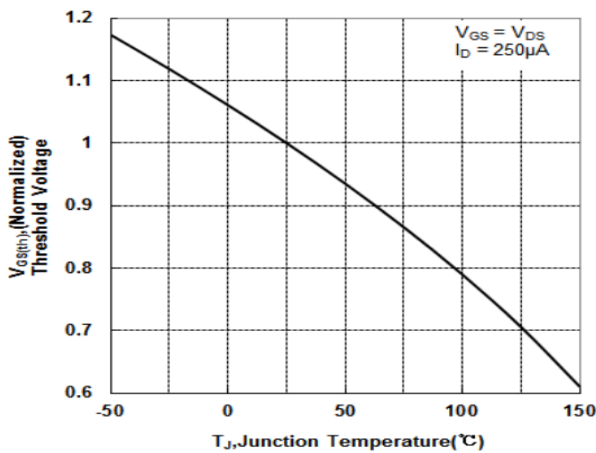


Fig 5 Normalized $V_{GS(th)}$ vs. Junction Temperature

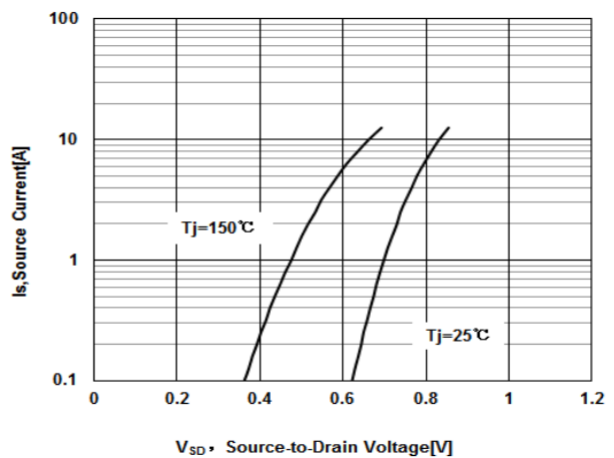


Fig 6 Body-Diode Characteristics

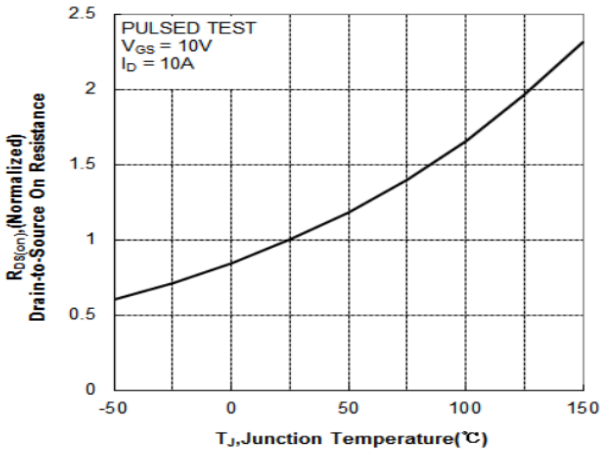


Fig 7 Normalized On-Resistance vs. Junction Temperature

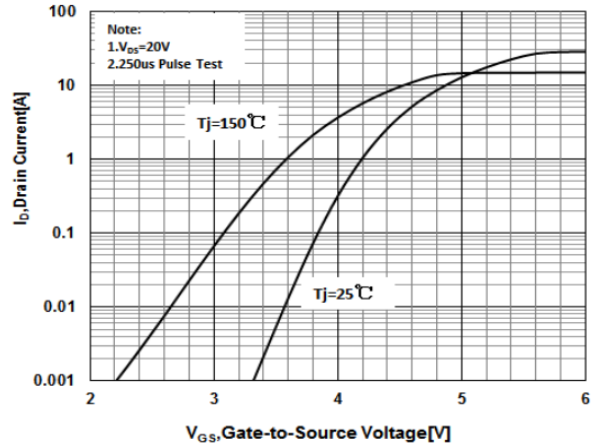


Fig 8 Transfer Characteristics

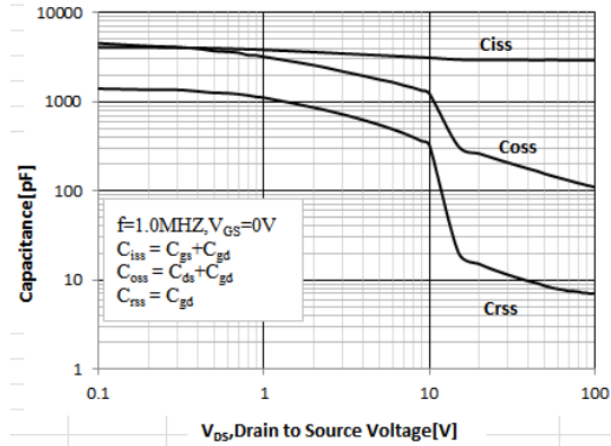


Fig 9 Capacitance Characteristics

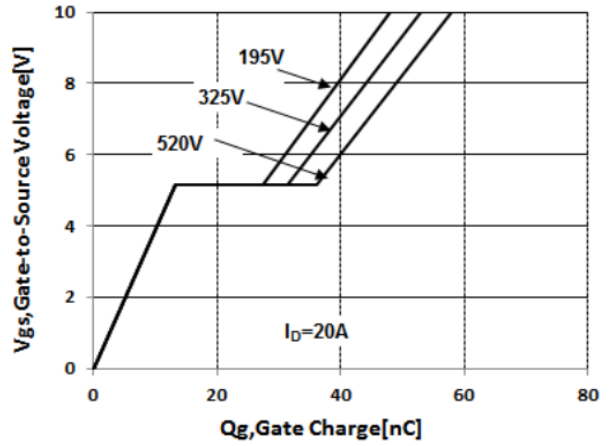


Fig 10 Gate-Charge Characteristics

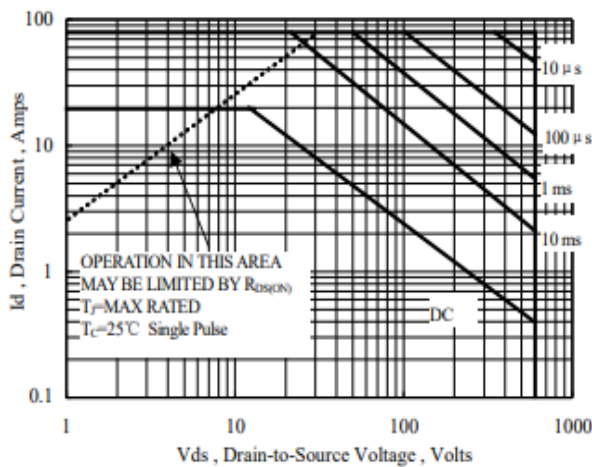


Fig 11 Safe Operation Area (TO-220AB / TO-263)

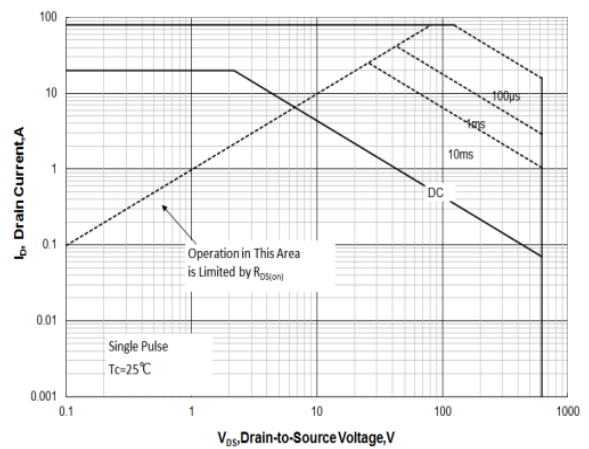
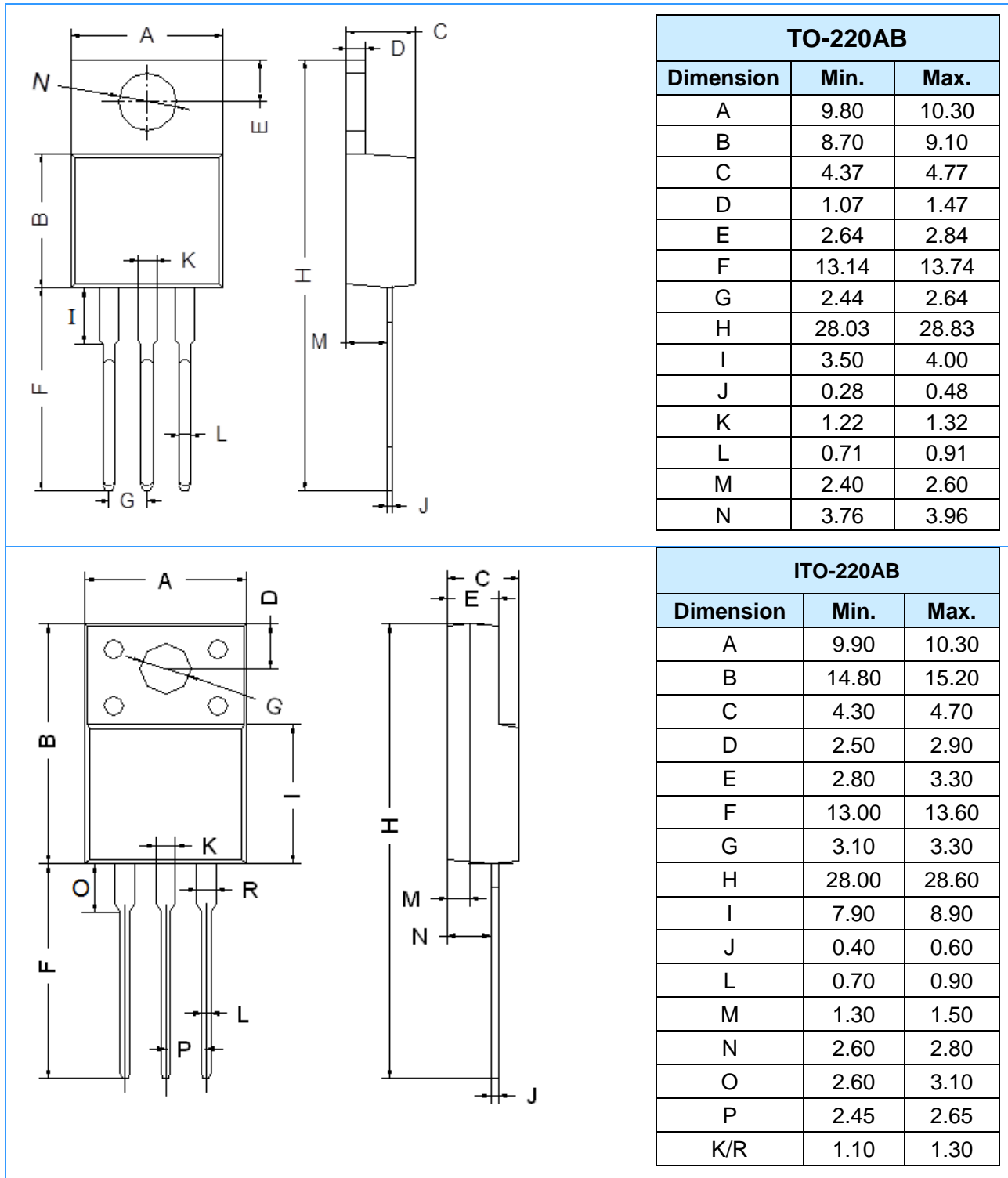
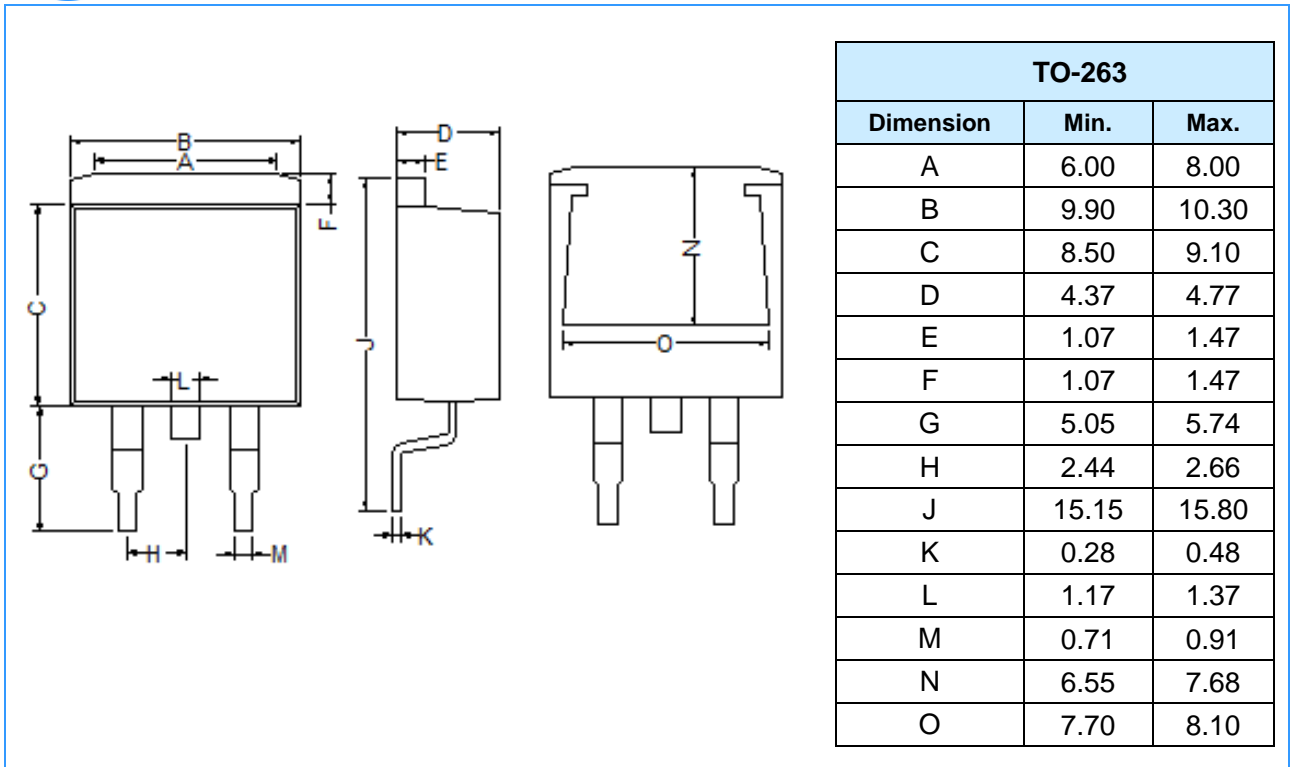


Fig 12 Safe Operation Area (ITO-220AB)

Package Outline Dimensions (Unit: mm)





Mounting Pad Layout (Unit: mm)

