

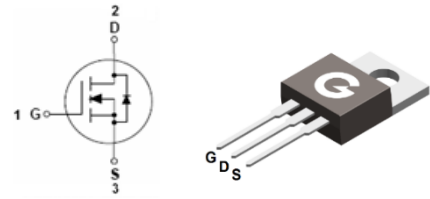
Features

- Advanced Trench technology
- Provide excellent $R_{DS(ON)}$ and low gate charge
- JESD22-A114-B ESD rating of class 1C per human body model

HF

Mechanical Data

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


TO-220AB

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
BL035N03	TO-220AB	50 pcs / Tube	035N03

Maximum Ratings

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

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DSS}	30	V
Gate-to-Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current ($T_C = 25^\circ\text{C}$, Silicon Limited)	I_D	135	A
Continuous Drain Current ($T_C = 25^\circ\text{C}$, Package Limited)	I_D	80	A
Continuous Drain Current ($T_C = 100^\circ\text{C}$)	I_D	85	A
Pulsed Drain Current ($t_p = 10\mu\text{s}$, $T_C = 25^\circ\text{C}$)	I_{DM}	540	A
Single Pulse Avalanche Energy ^{*3}	E_{AS}	77	mJ

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation ($T_C = 25^\circ\text{C}$)	P_D	104	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	1.2	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Air ^{*1}	$R_{\theta JA}$	50	$^\circ\text{C/W}$
Operating Junction Temperature Range	T_J	-55 ~ +150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +150	$^\circ\text{C}$

Electrical Characteristics (@ T_c = 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	30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 30V, V _{GS} = 0V	-	-	1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ±20V, V _{DS} = 0V	-	-	±100	nA
On Characteristics						
R _{DS(ON)}	Static Drain-Source On-resistance ^{*2}	V _{GS} = 10V, I _D = 30A	-	-	3.5	mΩ
		V _{GS} = 4.5V, I _D = 20A	-	-	6.2	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	1	1.5	2.5	V
R _G	Gate Resistance	V _{GS} = 0V, f = 1MHz	-	1.7	-	Ω
Dynamic Characteristics						
C _{ISS}	Input Capacitance	V _{GS} = 0V V _{DS} = 15V f = 1.0MHz	-	5102	-	pF
C _{OSS}	Output Capacitance		-	655	-	
C _{RSS}	Reverse Transfer Capacitance		-	551	-	
Switching Characteristics						
t _{d(ON)}	Turn-on Delay Time ^{*4}	V _{DS} = 15V R _G = 1.8Ω I _D = 60A	-	11	-	ns
t _r	Turn-on Rise Time ^{*4}		-	120	-	
t _{d(OFF)}	Turn-Off Delay Time ^{*4}		-	25	-	
t _f	Turn-Off Fall Time ^{*4}		-	60	-	
Q _G	Total Gate-Charge	V _{DS} = 15V	-	98.7	-	nC
Q _{GS}	Gate to Source Charge	V _{GS} = 10V	-	15	-	
Q _{GD}	Gate to Drain (Miller) Charge	I _D = 30A	-	18.7	-	
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage ^{*2}	I _{SD} = 20A, V _{GS} = 0V	-	0.78	1.2	V
t _{rr}	Reverse Recovery Time	I _F = 40A, V _{GS} = 0V	-	92	-	ns
Q _{rr}	Reverse Recovery Charge	dI _{SD} /dt = 100A/μs	-	80	-	nC

Notes:

- The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper
- The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%
- The E_{AS} data shows Max. rating. The test condition is V_{DD} = 15V, V_{GS} = 10V, L = 0.5mH
- Guaranteed by design, not subject to production

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

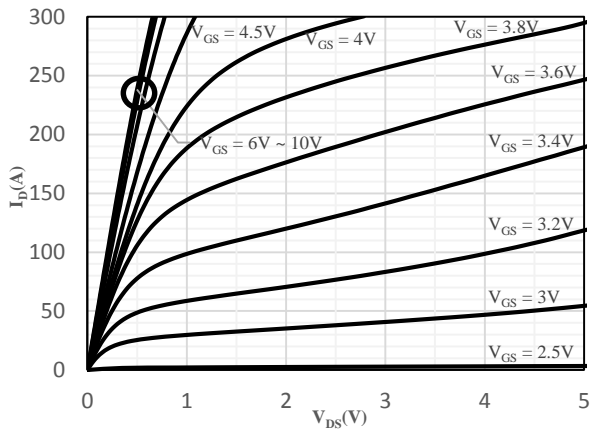


Fig 1 Typical Output Characteristics

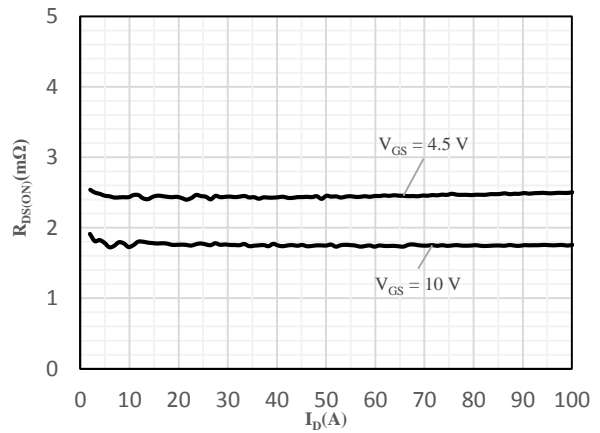


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

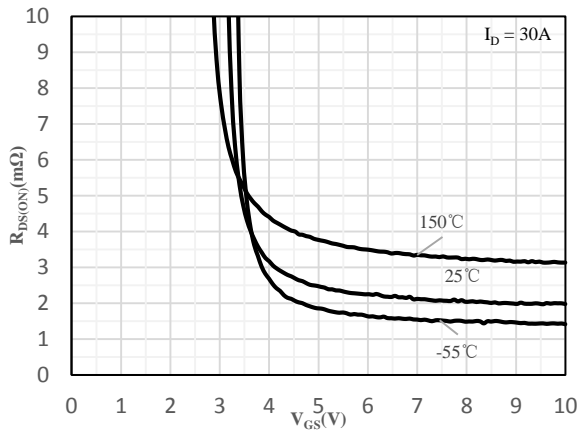


Fig 3 On-Resistance vs. Gate-Source Voltage

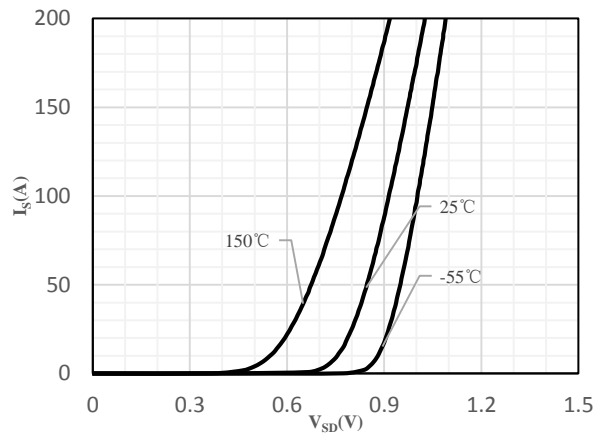


Fig 4 Body-Diode Characteristics

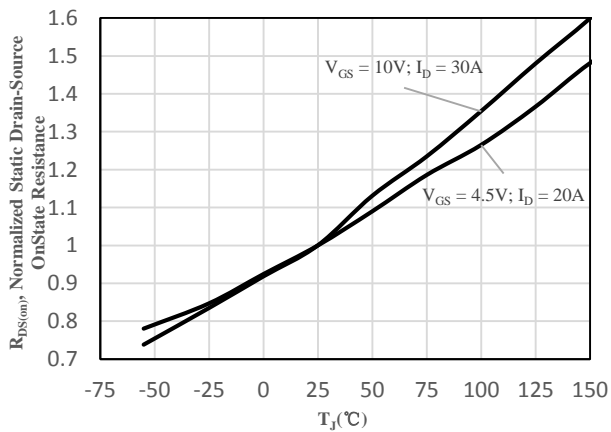


Fig 5 Normalized On-Resistance vs. Junction Temperature

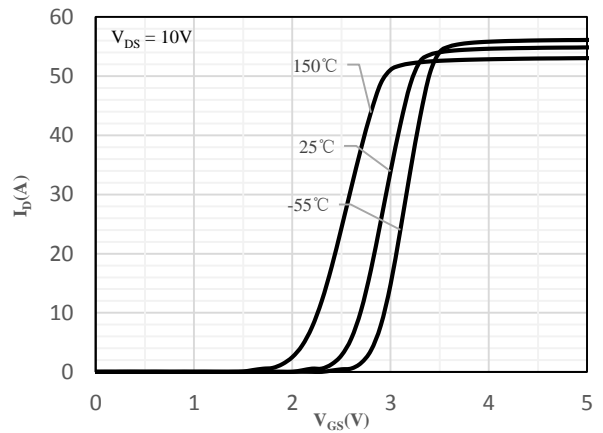


Fig 6 Transfer Characteristics

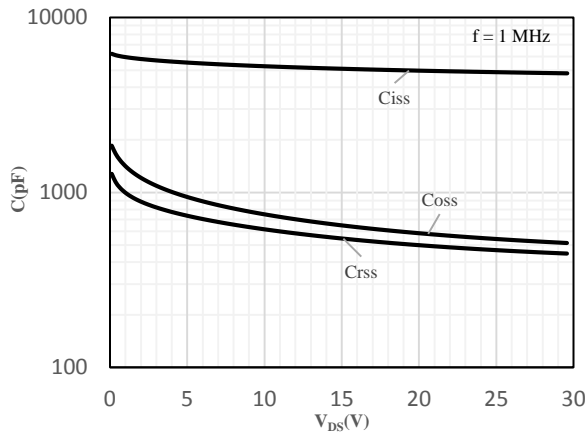


Fig 7 Capacitance Characteristics

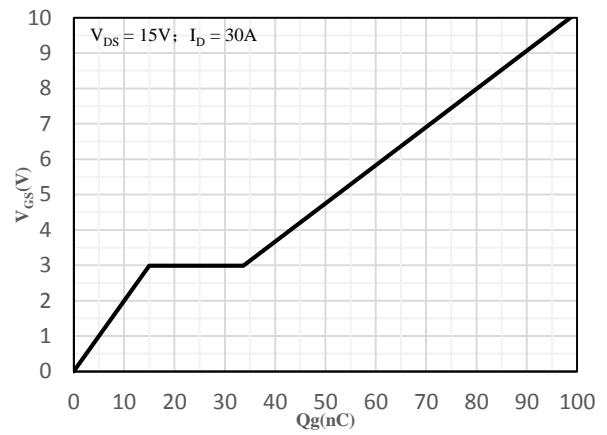


Fig 8 Gate-Charge Characteristics

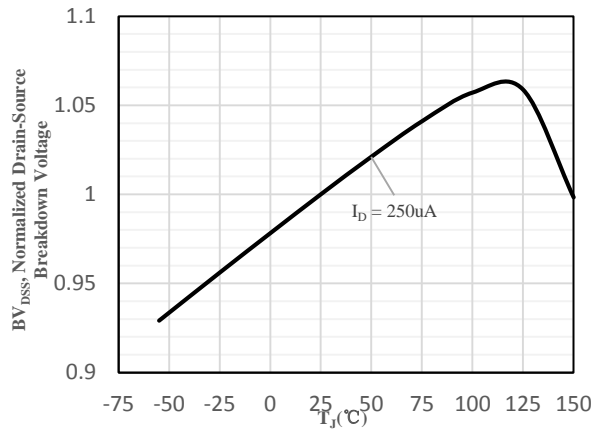


Fig 9 Normalized Breakdown Voltage vs. Junction Temperature

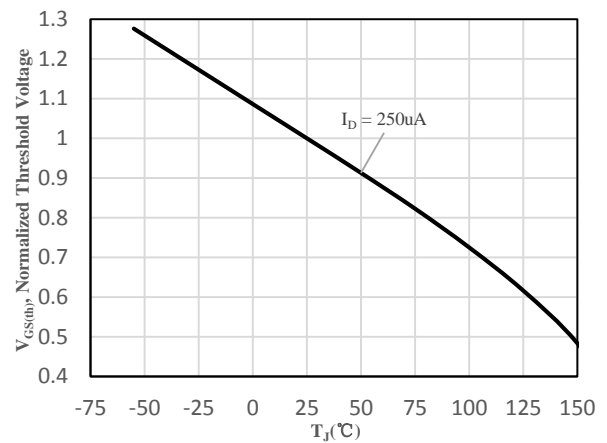
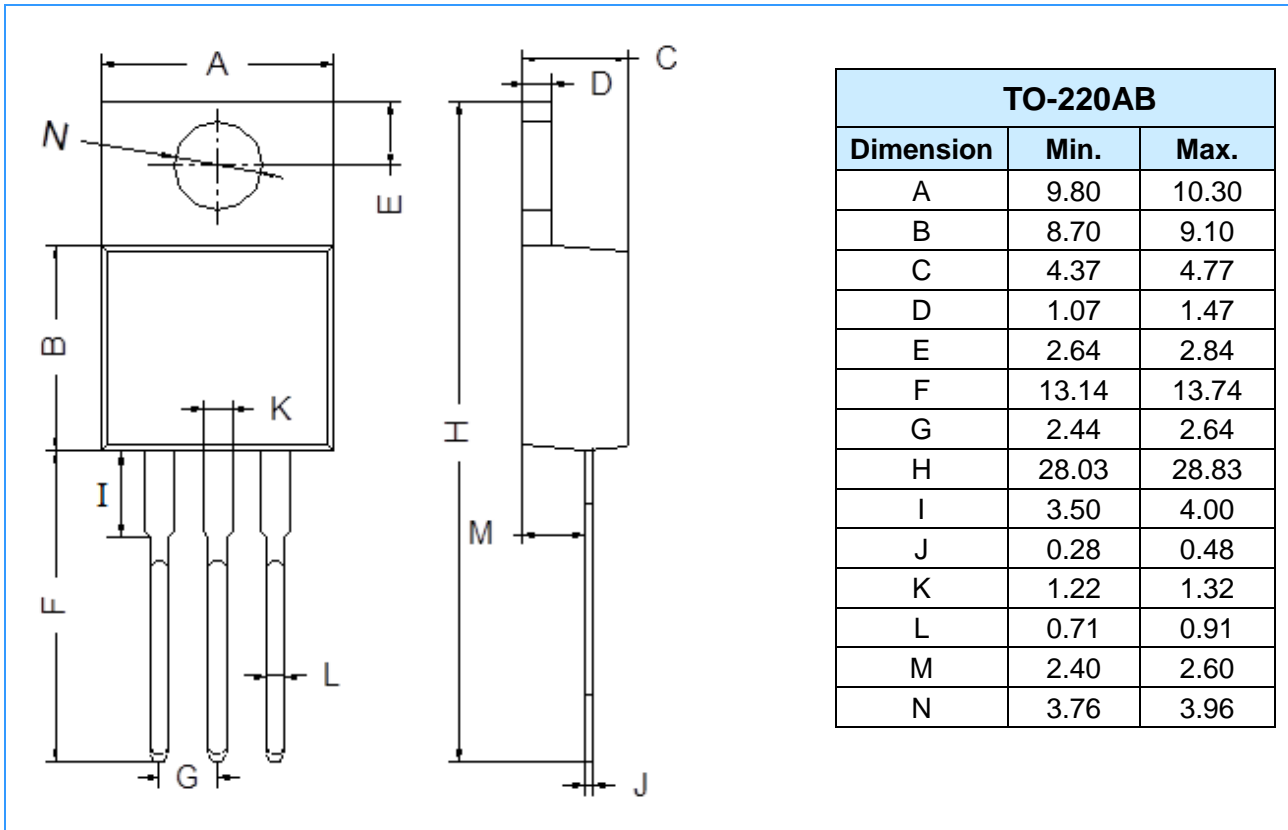


Fig 10 Normalized V_{GS(th)} vs. Junction Temperature

Package Outline Dimensions (Unit: mm)



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