

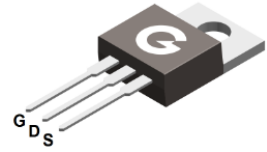
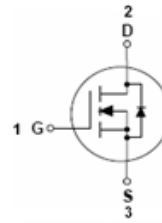
Features

- Super low $R_{DS(on)}$ and gate charge
- Advanced shielded-gate technology
- Green device available

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
BL020N04T	TO-220AB	50 pcs / Tube	020N04T

Maximum Ratings

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

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DS}	40	V
Gate-to-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current (Package limit) $T_C = 25^\circ\text{C}$	I_D *1	100	A
Continuous Drain Current (Silicon limit) $T_C = 25^\circ\text{C}$		220	A
Continuous Drain Current (Silicon limit) $T_C = 100^\circ\text{C}$		140	A
Pulsed Drain Current ($t_p < 10\mu\text{s}$)	I_{DM}	880	A
Single Pulse Avalanche Energy *3	E_{AS}	65	mJ

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation ($T_C = 25^\circ\text{C}$)	P_D	156	W
Thermal Resistance Junction-to-Case *1	$R_{\theta JC}$	0.8	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Air	$R_{\theta JA}$	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_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	40	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 40V, 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 = 20A	-	1.7	2	mΩ
		V _{GS} = 4.5V, I _D = 20A	-	2.0	2.4	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	1	1.5	2.5	V
Dynamic Characteristics						
C _{ISS}	Input Capacitance	V _{GS} = 0V	-	6269	-	pF
C _{OSS}	Output Capacitance	V _{DS} = 20V	-	2818	-	
C _{RSS}	Reverse Transfer Capacitance	f = 150kHz	-	222	-	
Q _G	Total Gate-Charge	V _{DD} = 20V	-	112	-	nC
Q _{GS}	Gate to Source Charge	V _{GS} = 10V	-	21	-	
Q _{GD}	Gate to Drain (Miller) Charge	I _D = 100A	-	14.6	-	
Switching Characteristics						
t _{d(ON)}	Turn-on Delay Time	V _{DD} = 20V	-	24	-	ns
t _r	Turn-on Rise Time	V _{GS} = 4.5V	-	84	-	
t _{d(OFF)}	Turn-Off Delay Time	R _G = 3Ω	-	62	-	
t _f	Turn-Off Fall Time	I _D = 20A	-	20	-	
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage ^{*2}	I _{SD} = 50A, V _{GS} = 0V	-	-	1.2	V
t _{rr}	Reverse Recovery Time	I _F = 20A, V _R = 30V	-	152	-	ns
Q _{rr}	Reverse Recovery Charge	di/dt = 100A/μs	-	375	-	nC

Notes:

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper
2. The data tested by pulsed , pulse width ≤ 300μs , duty cycle ≤ 2%
3. The E_{AS} data shows Max. rating. The test condition is V_{DD} = 30V, V_{GS} = 10V, L = 0.1mH
4. The data is theoretically the same as I_D and I_{DM}, in real applications , should be limited by total power dissipation

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

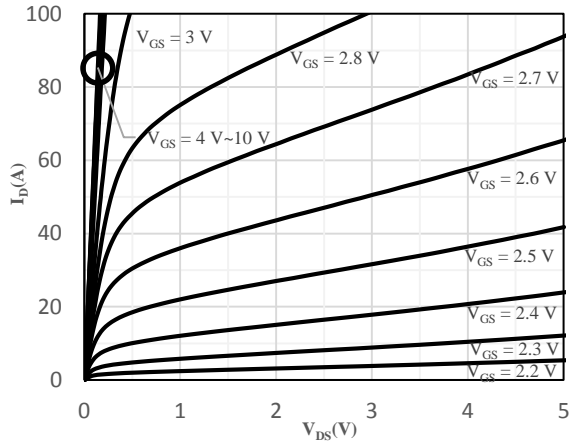


Fig 1 Output Characteristics

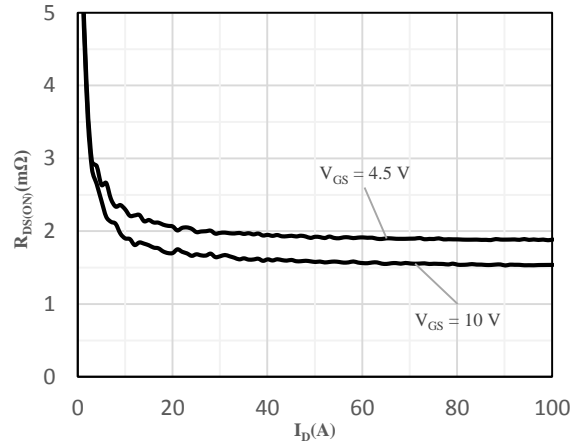


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

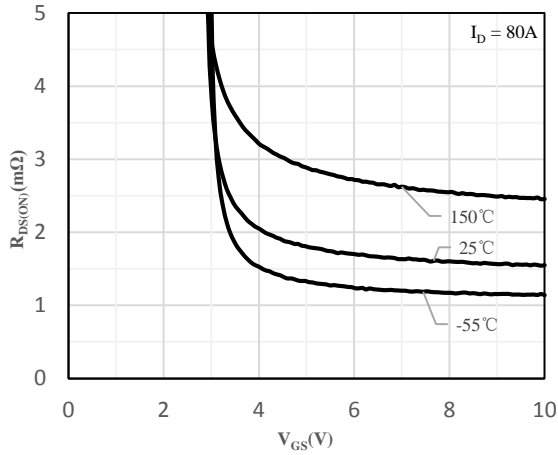


Fig 3 On-Resistance vs. Gate-Source Voltage

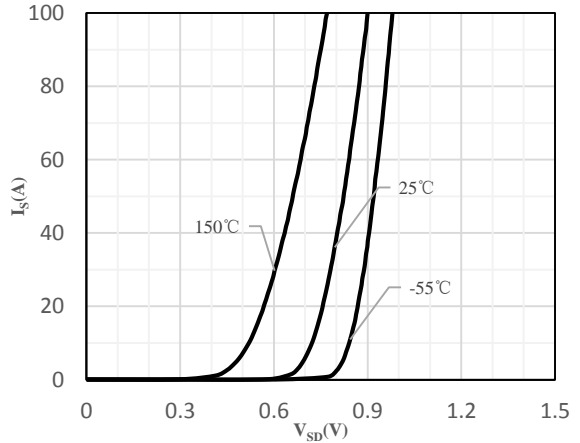


Fig 4 Body-Diode Characteristics

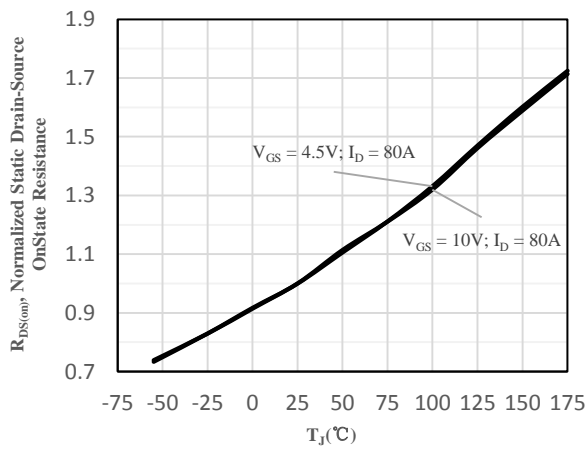


Fig 5 On-Resistance vs. Junction Temperature

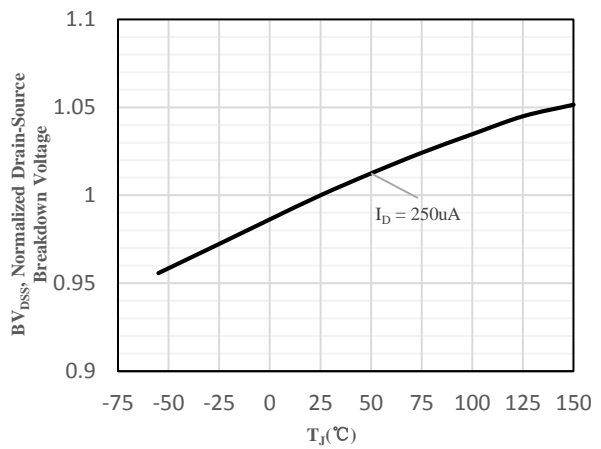


Fig 6 Drain-Source vs. Junction Temperature

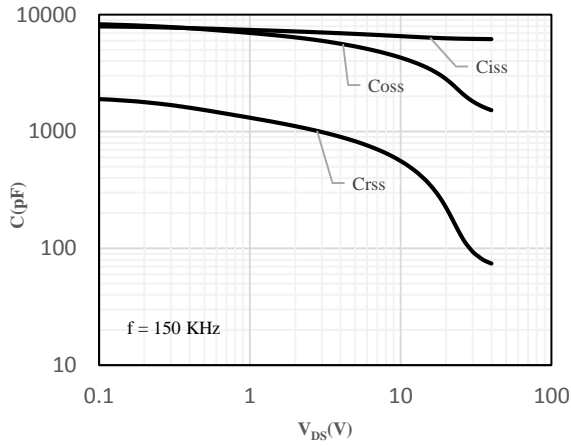


Fig 7 Capacitance Characteristics

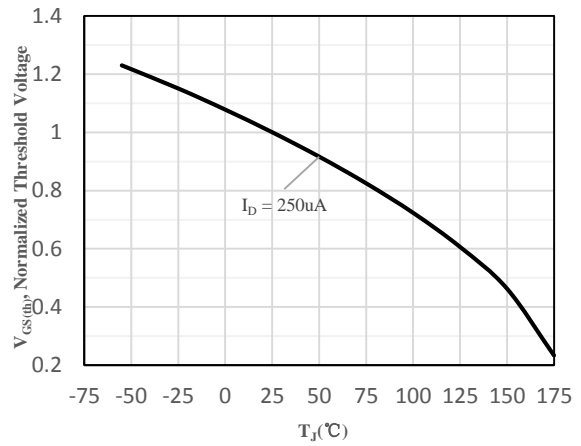


Fig 8 Gate Voltage vs. Junction Temperature

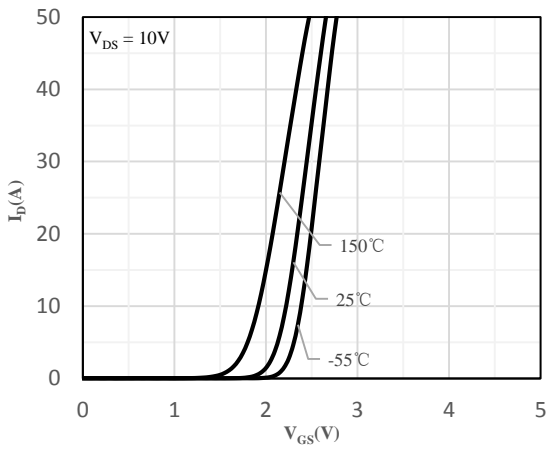


Fig 9 Transfer Characteristics

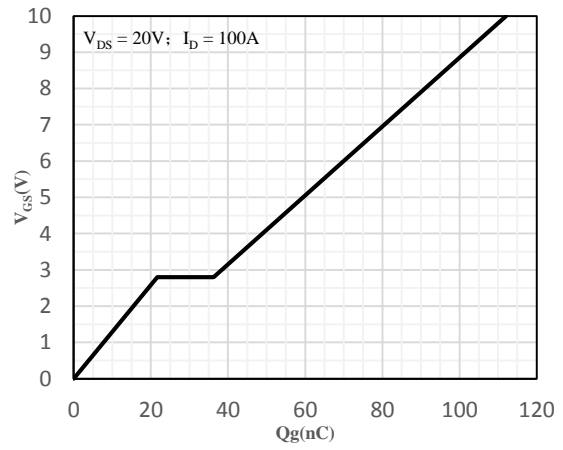
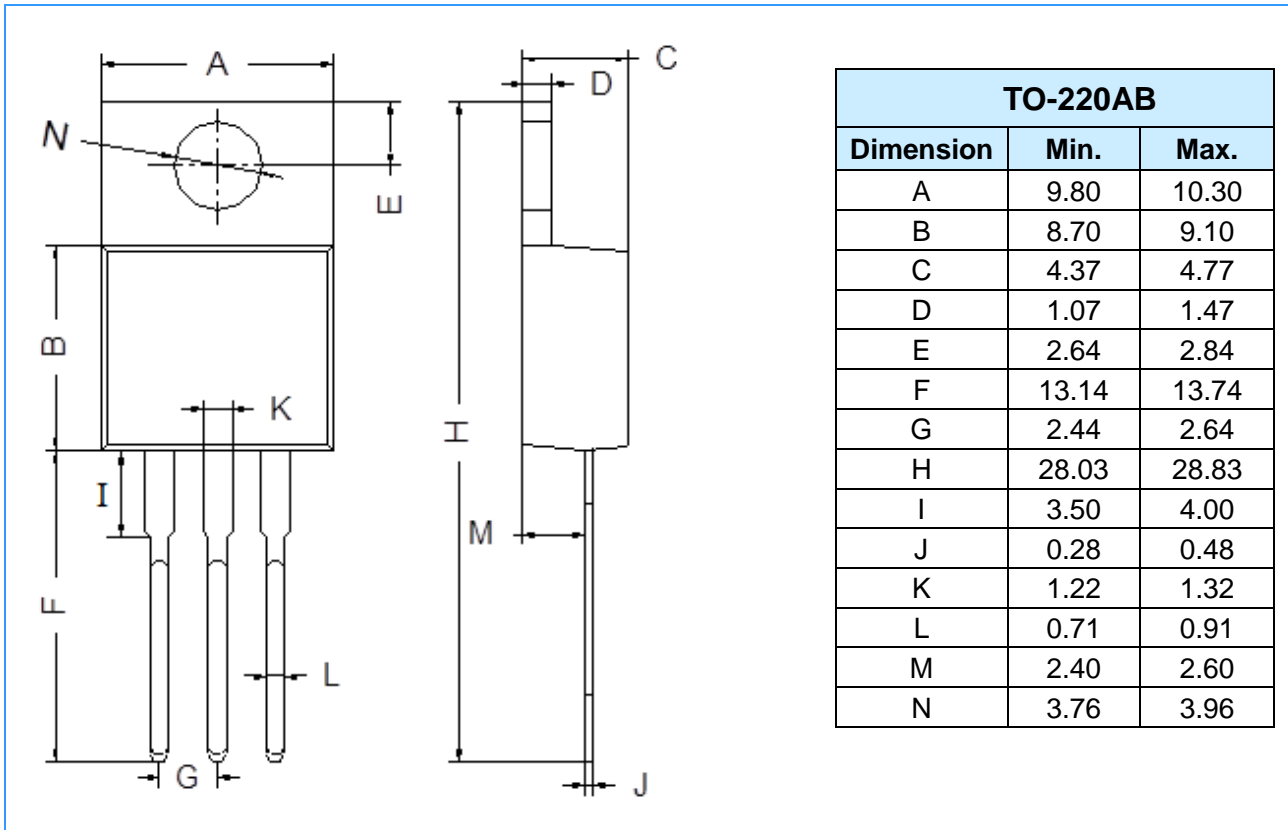


Fig 10 Gate-Charge Characteristics

Package Outline Dimensions (Unit: mm)



IMPORTANT NOTICE

Changzhou Galaxy Century Microelectronics (GME) reserves the right to make changes without further notice to any product information (copyrighted) herein to make corrections, modifications, improvements, or other changes. GME does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others.