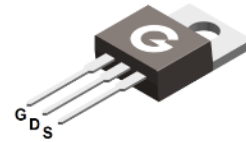
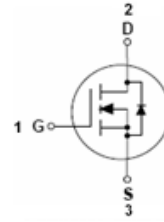


### Features

- Super low  $R_{DS(on)}$  and gate charge
- Advanced shielded-gate technology
- Green device available
- Excellent  $c_{dv}/d_t$  effect decline
- JESD22-A114-B ESD rating of class 1B per human body model

HF



TO-220AB

### 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

### Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
BL027N04T	TO-220AB	50 pcs / Tube	027N04T

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

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	$V_{DSS}$	40	V
Gate-to-Source Voltage	$V_{GSS}$	$\pm 20$	V
Continuous Drain Current ( $T_C = 25^\circ\text{C}$ , Silicon Limited)	$I_D$	160	A
Continuous Drain Current ( $T_C = 100^\circ\text{C}$ )		110	A
Continuous Drain Current ( $T_A = 25^\circ\text{C}$ ) <sup>*1</sup>		32	A
Continuous Drain Current ( $T_A = 100^\circ\text{C}$ ) <sup>*1</sup>		22	A
Pulsed Drain Current ( $t_p = 10\mu\text{s}$ , $T_C = 25^\circ\text{C}$ )	$I_{DM}$	640	A
Single Pulse Avalanche Energy <sup>*3</sup>	$E_{AS}$	102	mJ
Power Dissipation ( $T_C = 25^\circ\text{C}$ )	$P_D$	150	W
Operating Junction Temperature Range	$T_J$	-55 ~ +175	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55 ~ +175	$^\circ\text{C}$

### Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	-	-	1	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction-to-Air <sup>*1</sup>	$R_{\theta JA}$	-	-	30	$^\circ\text{C}/\text{W}$

### Electrical Characteristics (@ T<sub>A</sub> = 25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
V <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	40	-	-	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> = 40V, V <sub>GS</sub> = 0V	-	-	1	μA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V	-	-	±100	nA
<b>On Characteristics</b>						
R <sub>DS(ON)</sub>	Static Drain-Source On-resistance <sup>*2</sup>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 30A	-	-	2.7	mΩ
		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 30A	-	-	3.6	mΩ
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	1	-	2.5	V
R <sub>G</sub>	Gate Resistance	V <sub>GS</sub> = 0V, f = 1MHz	-	2.2	-	Ω
<b>Dynamic Characteristics</b>						
C <sub>ISS</sub>	Input Capacitance	V <sub>GS</sub> = 0V V <sub>DS</sub> = 20V f = 1.0MHz	-	2815	-	pF
C <sub>OSS</sub>	Output Capacitance		-	1100	-	
C <sub>RSS</sub>	Reverse Transfer Capacitance		-	13	-	
<b>Switching Characteristics</b>						
t <sub>d(ON)</sub>	Turn-on Delay Time	V <sub>DD</sub> = 20V V <sub>GS</sub> = 10V R <sub>G</sub> = 3Ω I <sub>D</sub> = 20A	-	4	-	ns
t <sub>r</sub>	Turn-on Rise Time		-	5	-	
t <sub>d(OFF)</sub>	Turn-Off Delay Time		-	35	-	
t <sub>f</sub>	Turn-Off Fall Time		-	11	-	
Q <sub>G</sub>	Total Gate-Charge	V <sub>DD</sub> = 20V V <sub>GS</sub> = 10V I <sub>D</sub> = 20A	-	50	-	nC
Q <sub>GS</sub>	Gate to Source Charge		-	8.3	-	
Q <sub>GD</sub>	Gate to Drain (Miller) Charge		-	8.2	-	
<b>Source-Drain Diode Characteristics</b>						
V <sub>SD</sub>	Diode Forward Voltage <sup>*2</sup>	I <sub>SD</sub> = 1A, V <sub>GS</sub> = 0V	-	-	1.2	V
t <sub>rr</sub>	Reverse Recovery Time	I <sub>F</sub> = 20A, V <sub>GS</sub> = 0V di/dt = 100A/μs	-	63	-	ns
Q <sub>rr</sub>	Reverse Recovery Charge		-	73	-	nC

Notes:

1. The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper
2. The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%
3. The E<sub>AS</sub> data shows Max. rating. The test condition is V<sub>DD</sub> = 30V, V<sub>GS</sub> = 10V, L = 0.1mH
4. Guaranteed by design, not subject to production

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

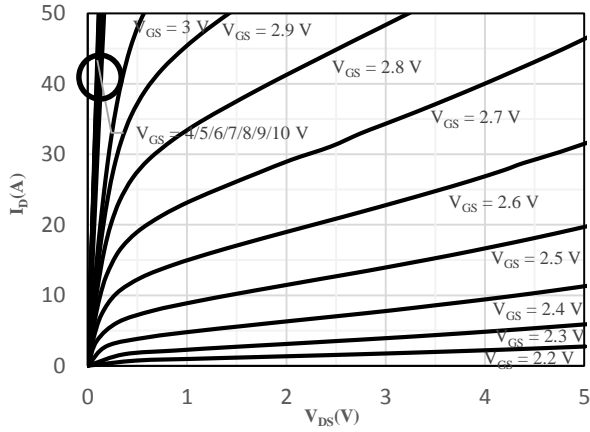


Fig 1 Typical Output Characteristics

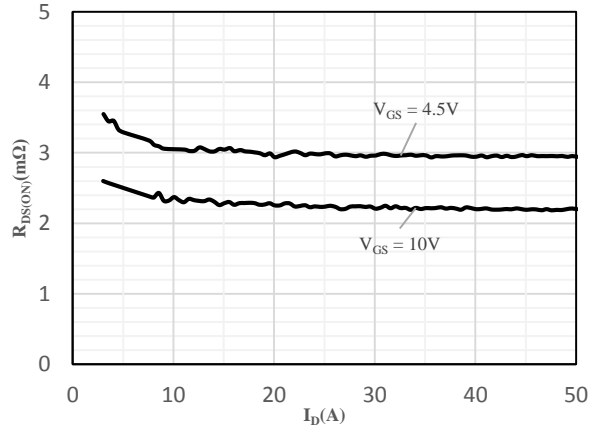


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

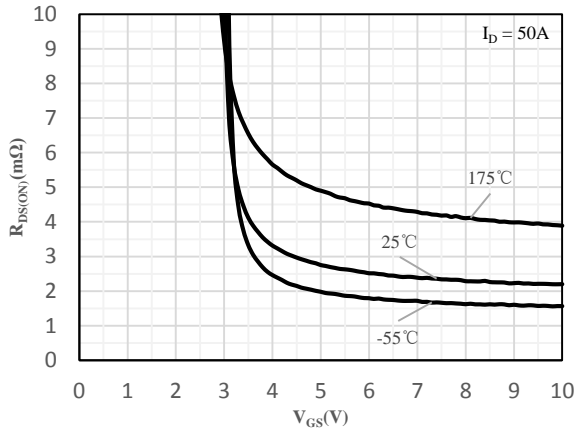


Fig 3 On-Resistance vs. Gate-Source Voltage

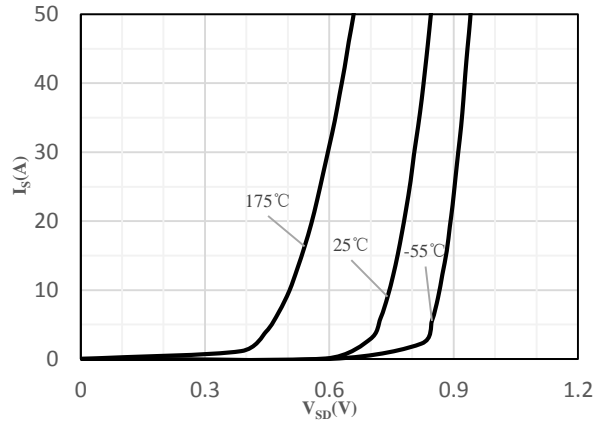


Fig 4 Body-Diode Characteristics

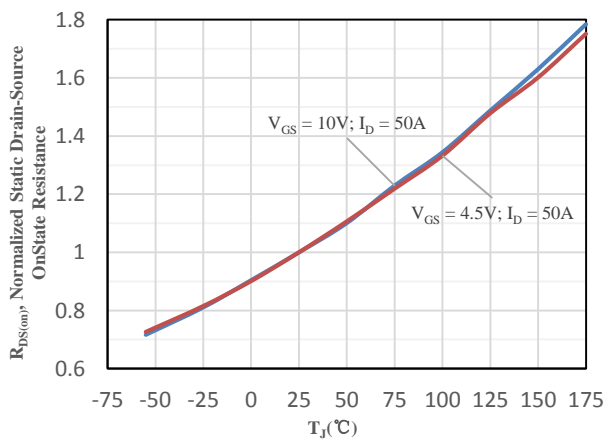


Fig 5 Normalized On-Resistance vs. Junction Temperature

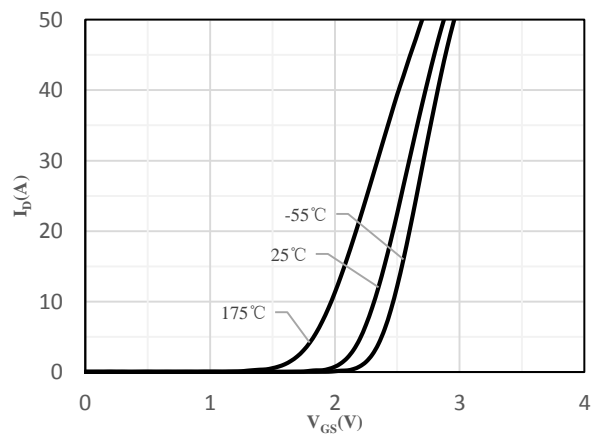


Fig 6 Transfer Characteristics

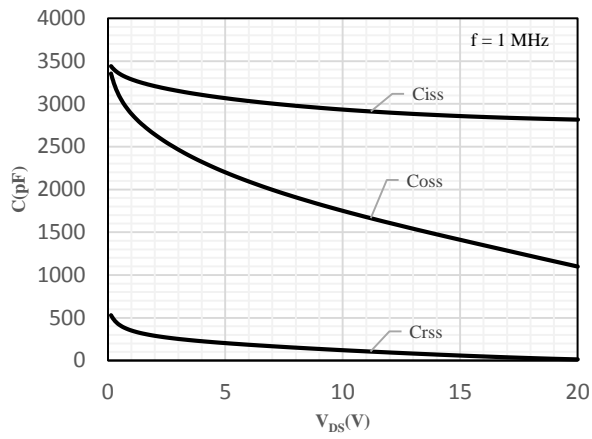


Fig 7 Capacitance Characteristics

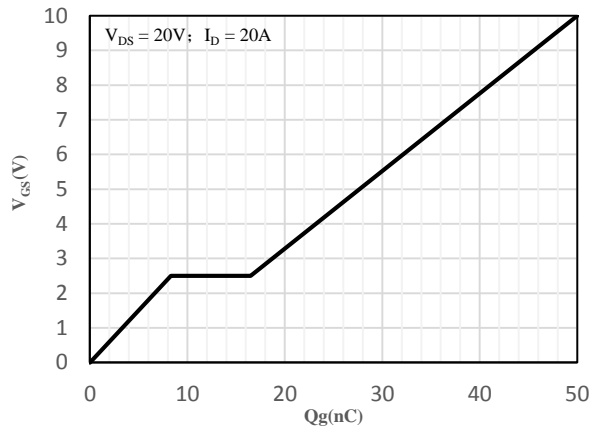


Fig 8 Gate-Charge Characteristics

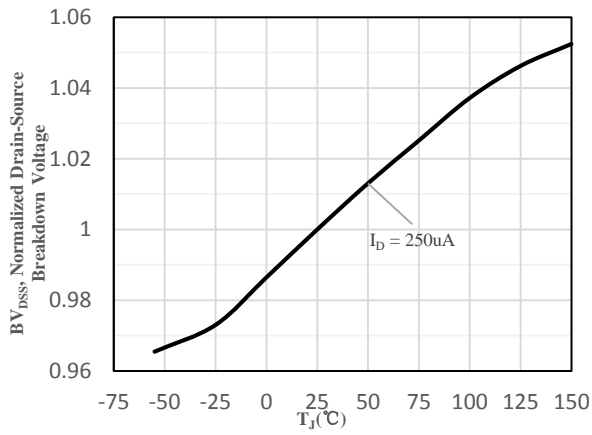


Fig 9 Normalized Breakdown Voltage  
vs. Junction Temperature

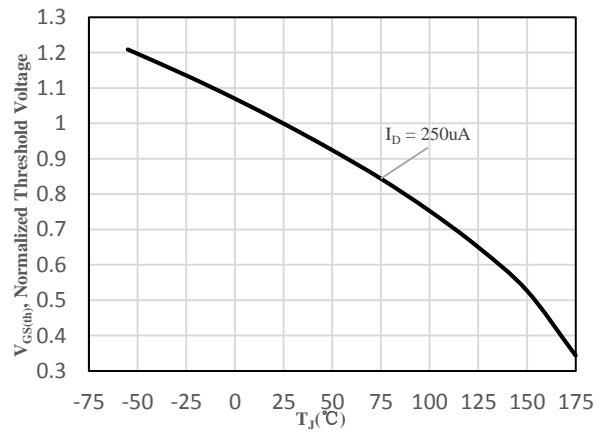
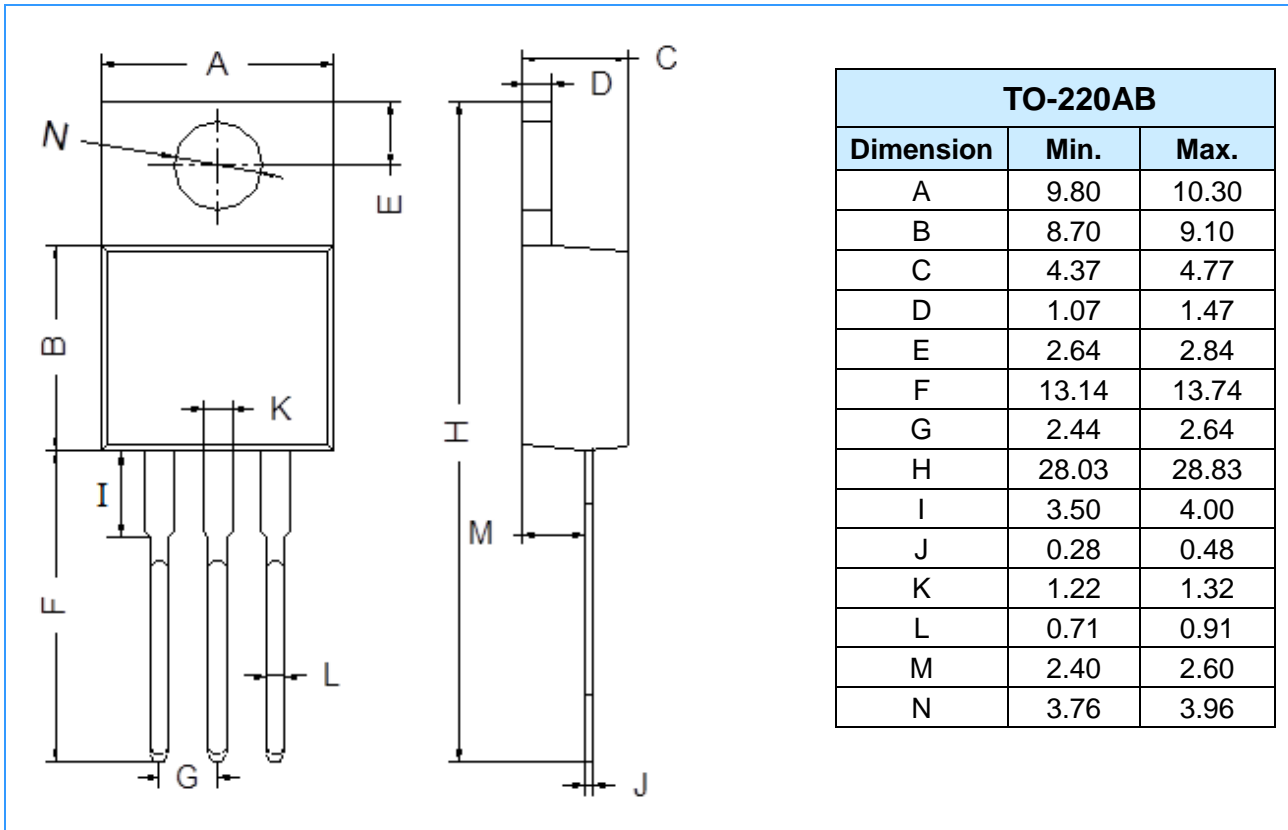


Fig 10 Normalized  $V_{GS(th)}$  vs. Junction Temperature

**Package Outline Dimensions** (Unit: mm)



**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.