

Features

- $R_{DS(ON)} = 115m\Omega @ V_{GS} = 10V$
- Low gate charge

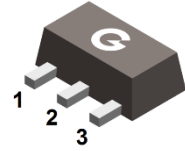
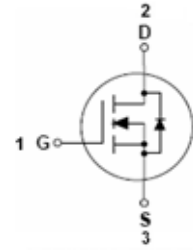
HF

Applications

- Networking DC-DC power system
- Load switch

Mechanical Data

- Case: SOT-89
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208



SOT-89

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
BL7N10E	SOT-89	1000pcs / Tape & Reel	7N10

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

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DSS}	100	V
Gate-to-Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current ($T_C = 25^\circ\text{C}$) * ¹	I_D	7	A
Continuous Drain Current ($T_C = 100^\circ\text{C}$) * ¹		5.2	A
Continuous Drain Current ($T_A = 25^\circ\text{C}$) * ¹		2	A
Continuous Drain Current ($T_A = 100^\circ\text{C}$) * ¹		1.4	A
Pulsed Drain Current * ²	I_{DM}	14	A

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation ($T_C = 25^\circ\text{C}$) * ³	P_D	22.7	W
Power Dissipation ($T_A = 25^\circ\text{C}$) * ³	P_D	2	W
Thermal Resistance Junction-to-Air	$R_{\theta JA}$	48	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	2.6	$^\circ\text{C/W}$
Operating Junction Temperature Range	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +150	$^\circ\text{C}$

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
V _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	100	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 100V, V _{GS} = 0V, T _J = 25°C	-	-	1	μA
		V _{DS} = 100V, V _{GS} = 0V, T _J = 55°C	-	-	5	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 = 7A	-	97.5	115	mΩ
		V _{GS} = 4.5V, I _D = 5A	-	98.9	125	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	1.5	1.66	2.5	V
Dynamic Characteristics						
C _{ISS}	Input Capacitance	V _{GS} = 0V V _{DS} = 15V f = 1.0MHz	-	1610	-	pF
C _{OSS}	Output Capacitance		-	70.4	-	
C _{RSS}	Reverse Transfer Capacitance		-	49.2	-	
Switching Characteristics						
t _{d(ON)}	Turn-on Delay Time	V _{DD} = 50V V _{GS} = 10V R _G = 3Ω I _D = 10A	-	4.2	-	ns
t _r	Turn-on Rise Time		-	8.2	-	
t _{d(OFF)}	Turn-Off Delay Time		-	35.6	-	
t _f	Turn-Off Fall Time		-	9.6	-	
Q _G	Total Gate-Charge	V _{DD} = 80V V _{GS} = 10V I _D = 10A	-	23.4	-	nC
Q _{GS}	Gate to Source Charge		-	2.26	-	
Q _{GD}	Gate to Drain (Miller) Charge		-	5.36	-	
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage ^{*2}	I _{SD} = 1A, V _{GS} = 0V	-	-	1.2	V
I _S	Diode Continuous Forward Current		-	-	7	A

Notes:

1. The data tested by surface mounted on a 1 inch² board with 2 OZ copper
2. The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
3. The power dissipation is limited by 150 °C Junction temperature

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

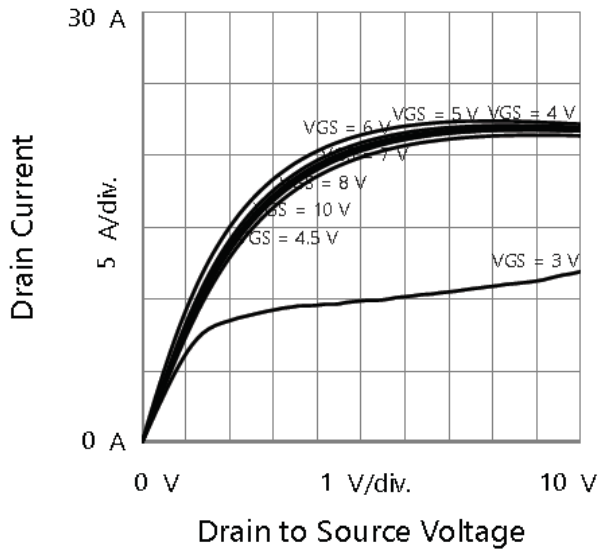


Fig. 1 On-Region Characteristics

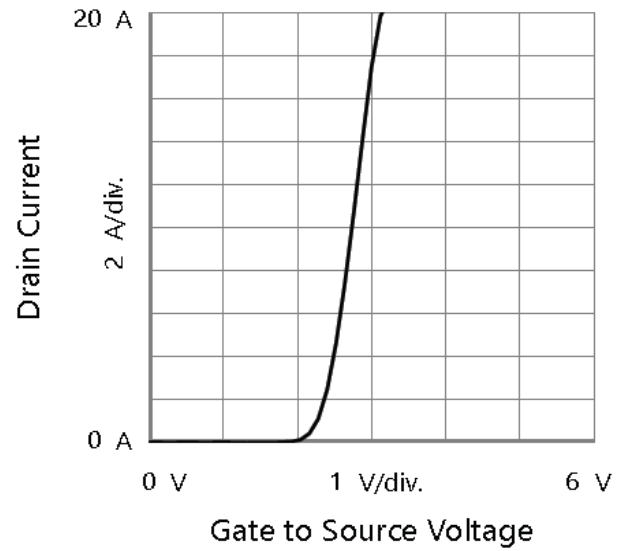


Fig. 2 Transfer Characteristics

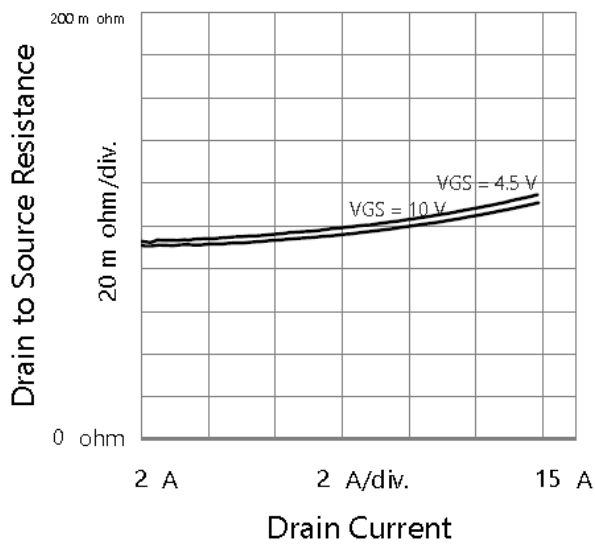


Fig. 3 On-Resistance vs. Drain Current
and Gate Voltage

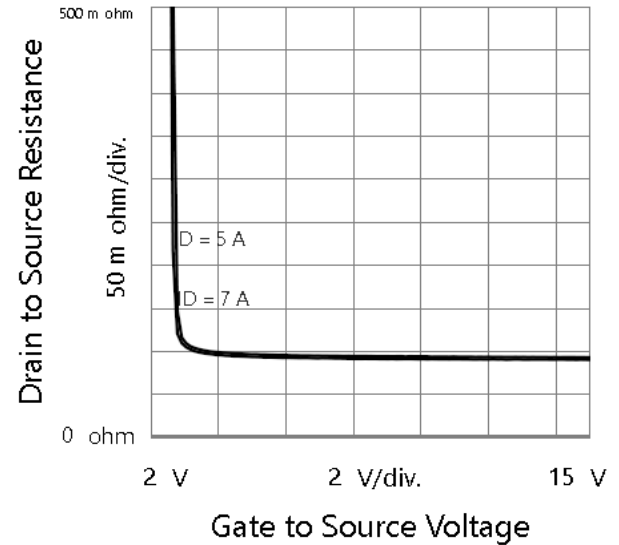


Fig. 4 On-Resistance vs. Gate-Source Voltage

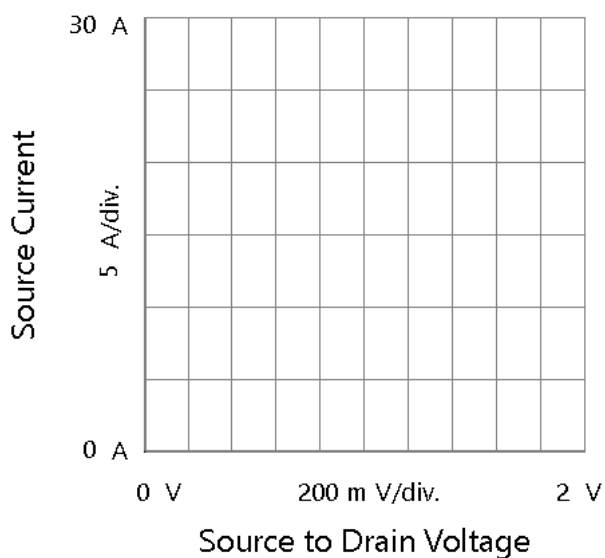


Fig. 5 Body-Diode Characteristics

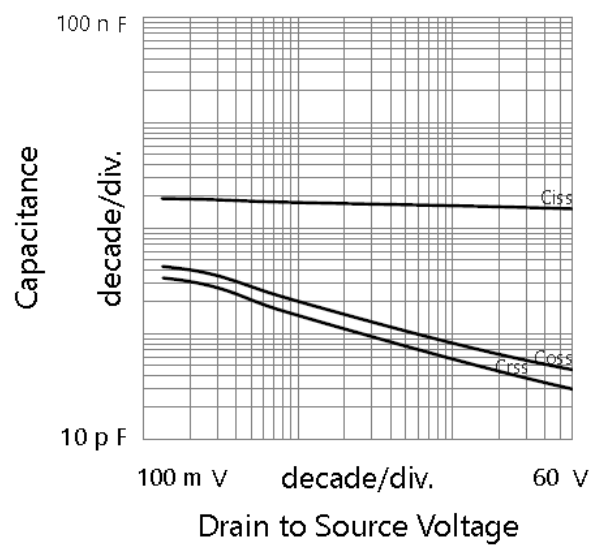


Fig. 6 Capacitance Characteristics

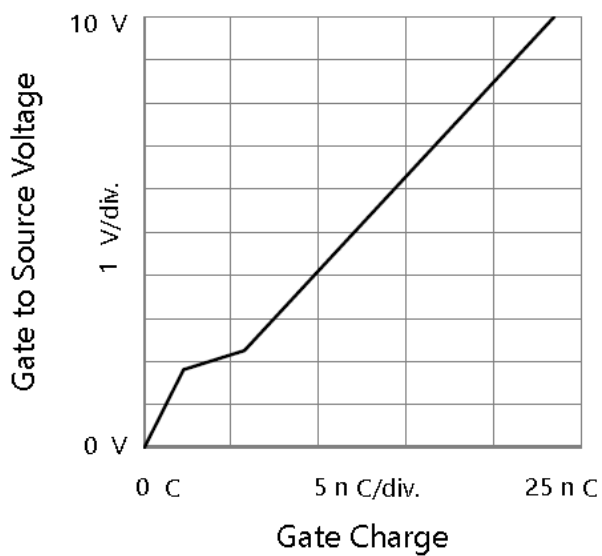
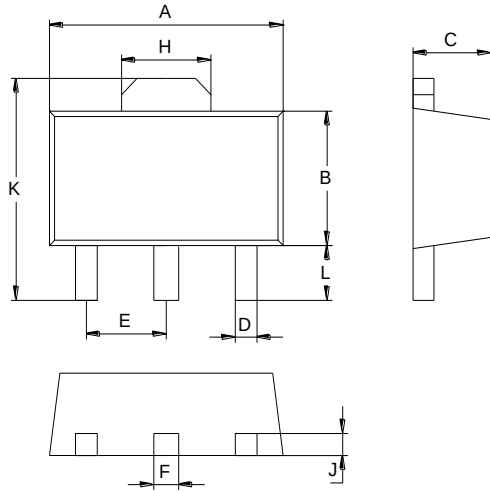


Fig. 7 Gate-Charge Characteristics

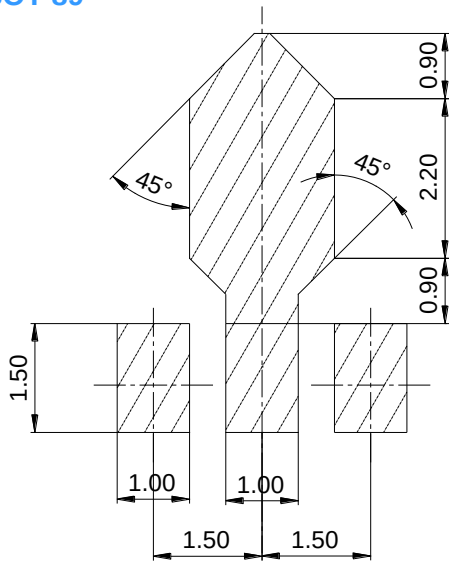
Package Outline Dimensions (Unit: mm)



SOT-89		
Dimension	Min.	Max.
A	4.30	4.70
B	2.25	2.65
C	1.30	1.70
D	0.30	0.50
E	1.40	1.60
F	0.38	0.58
H	1.60	1.80
J	0.30	0.50
L	0.90	1.10
K	3.95	4.35

Mounting Pad Layout (Unit: mm)

SOT-89



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.