

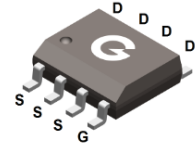
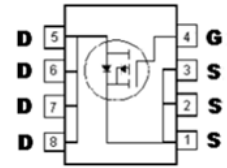
## Features

- Advanced trench technology
- Low on-resistance
- Fast switching speed
- RoHS compliant with Halogen-free

**HF**

## Mechanical Data

- Case: SOP-8
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208



**SOP-8**

## Ordering Information

| Part Number | Package | Shipping Quantity      | Marking Code |
|-------------|---------|------------------------|--------------|
| BL200P03-S8 | SOP-8   | 4000 pcs / Tape & Reel | 200P03       |

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

| Parameter                                                                 | Symbol    | Value      | Unit             |
|---------------------------------------------------------------------------|-----------|------------|------------------|
| Drain-to-Source Voltage                                                   | $V_{DS}$  | -30        | V                |
| Gate-to-Source Voltage                                                    | $V_{GS}$  | $\pm 20$   | V                |
| Continuous Drain Current ( $T_C = 25^\circ\text{C}$ )                     | $I_D$     | -14        | A                |
| Continuous Drain Current ( $T_A = 25^\circ\text{C}$ ) <sup>*1</sup>       |           | -8.8       |                  |
| Continuous Drain Current ( $T_A = 100^\circ\text{C}$ ) <sup>*1</sup>      |           | -5.6       |                  |
| Pulsed Drain Current ( $t_p = 10\mu\text{s}$ , $T_A = 25^\circ\text{C}$ ) | $I_{DM}$  | -40        | A                |
| Single Pulse Avalanche Energy <sup>*3</sup>                               | $E_{AS}$  | 45         | mJ               |
| Power Dissipation ( $T_A = 25^\circ\text{C}$ ) <sup>*1</sup>              | $P_D$     | 2.5        | W                |
| Operating Junction Temperature Range                                      | $T_J$     | -55 ~ +150 | $^\circ\text{C}$ |
| Storage Temperature Range                                                 | $T_{STG}$ | -55 ~ +150 | $^\circ\text{C}$ |

## Thermal Characteristics

| Parameter                                        | Symbol          | Min. | Typ. | Max. | Unit               |
|--------------------------------------------------|-----------------|------|------|------|--------------------|
| Thermal Resistance Junction-to-Case              | $R_{\theta JC}$ | -    | -    | 20   | $^\circ\text{C/W}$ |
| Thermal Resistance Junction-to-Air <sup>*1</sup> | $R_{\theta JA}$ | -    | -    | 50   | $^\circ\text{C/W}$ |

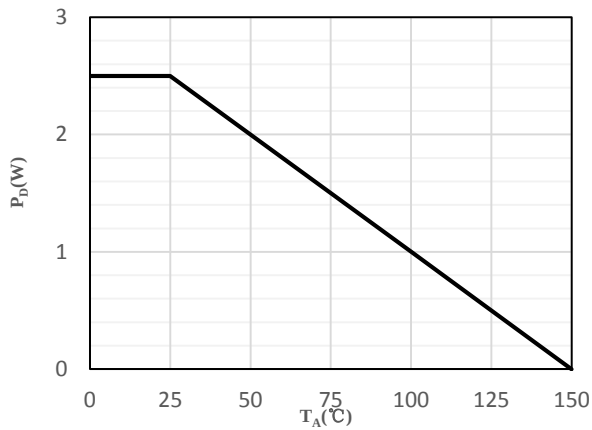
### Electrical Characteristics (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

| Symbol                             | Parameter                                   | Test Condition                                               | Min. | Typ.  | Max. | Unit |
|------------------------------------|---------------------------------------------|--------------------------------------------------------------|------|-------|------|------|
| Static Characteristics             |                                             |                                                              |      |       |      |      |
| V <sub>DSS</sub>                   | Drain-Source Breakdown Voltage              | V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA                | -30  | -     | -    | V    |
| I <sub>DSS</sub>                   | Zero Gate Voltage Drain Current             | V <sub>DS</sub> = -30V, 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   |
| On Characteristics                 |                                             |                                                              |      |       |      |      |
| R <sub>DS(ON)</sub>                | Drain-Source On-resistance *2               | V <sub>GS</sub> = -10V, I <sub>D</sub> = -10A                | -    | 14    | 20   | mΩ   |
|                                    |                                             | V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -6A                | -    | 19    | 32   |      |
| V <sub>GS(th)</sub>                | Gate Threshold Voltage                      | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250 μA | -1   | -1.4  | -2.5 | V    |
| R <sub>G</sub>                     | Gate Resistance                             | V <sub>GS</sub> = 0V, f = 1MHz                               | -    | 5.5   | -    | Ω    |
| Dynamic Characteristics            |                                             |                                                              |      |       |      |      |
| C <sub>ISS</sub>                   | Input Capacitance                           | V <sub>GS</sub> = 0V                                         | -    | 1406  | -    | pF   |
| C <sub>OSS</sub>                   | Output Capacitance                          | V <sub>DS</sub> = -15V                                       | -    | 210   | -    |      |
| C <sub>RSS</sub>                   | Reverse Transfer Capacitance                | f = 1.0MHz                                                   | -    | 142   | -    |      |
| Switching Characteristics          |                                             |                                                              |      |       |      |      |
| t <sub>d(ON)</sub>                 | Turn-on Delay Time *4                       | V <sub>DD</sub> = -15V                                       | -    | 12    | -    | ns   |
| t <sub>r</sub>                     | Turn-on Rise Time *4                        | V <sub>GS</sub> = -10V                                       | -    | 18    | -    |      |
| t <sub>d(OFF)</sub>                | Turn-Off Delay Time *4                      | I <sub>D</sub> = -20A                                        | -    | 90    | -    |      |
| t <sub>f</sub>                     | Turn-Off Fall Time *4                       | R <sub>G</sub> = 3Ω                                          | -    | 63    | -    |      |
| Q <sub>G</sub>                     | Total Gate-Charge (V <sub>GS</sub> = -4.5V) | V <sub>DD</sub> = -15V, I <sub>D</sub> = -10A                |      | 12.8  |      | nC   |
|                                    | Total Gate-Charge                           | V <sub>DD</sub> = -15V                                       | -    | 26.2  | -    |      |
| Q <sub>GS</sub>                    | Gate to Source Charge                       | V <sub>GS</sub> = -10V                                       | -    | 4.9   | -    |      |
| Q <sub>GD</sub>                    | Gate to Drain (Miller) Charge               | I <sub>D</sub> = -10A                                        | -    | 3.5   | -    |      |
| Source-Drain Diode Characteristics |                                             |                                                              |      |       |      |      |
| V <sub>SD</sub>                    | Diode Forward Voltage *2                    | I <sub>SD</sub> = -10A, V <sub>GS</sub> = 0V                 | -    | -0.86 | -1.2 | V    |
| t <sub>rr</sub>                    | Reverse Recovery Time                       | I <sub>F</sub> = -10A, V <sub>GS</sub> = 0V                  | -    | 112   | -    | ns   |
| Q <sub>rr</sub>                    | Reverse Recovery Charge                     | di/dt = 100A/μs                                              | -    | 90    | -    | nC   |

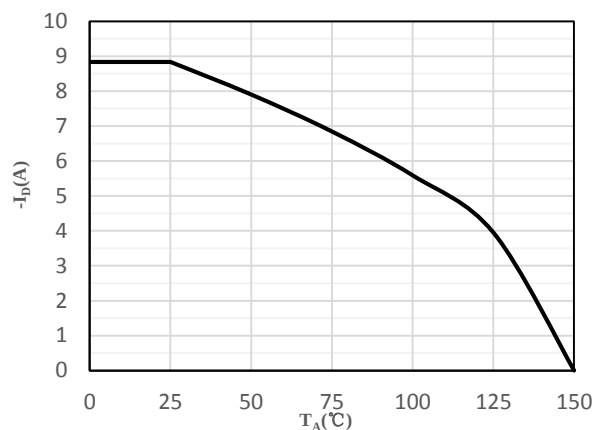
Notes:

- The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper
- The data tested by pulsed, pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$
- The  $E_{AS}$  data shows Max. rating. The test condition is  $V_{DD} = -20V, V_{GS} = -10V, L = 0.5mH$
- Guaranteed by design, not subject to production

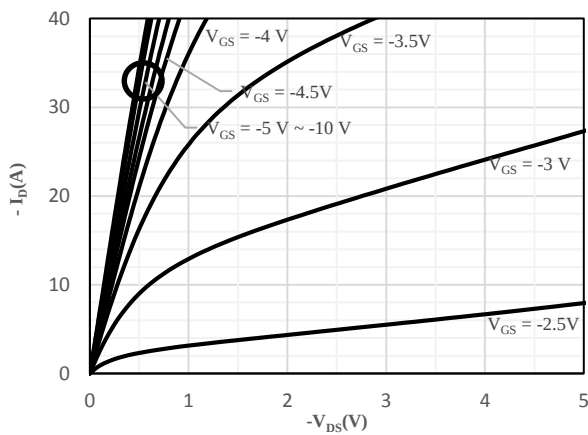
**Ratings and Characteristics Curves** (@  $T_A = 25^\circ\text{C}$  unless otherwise specified)



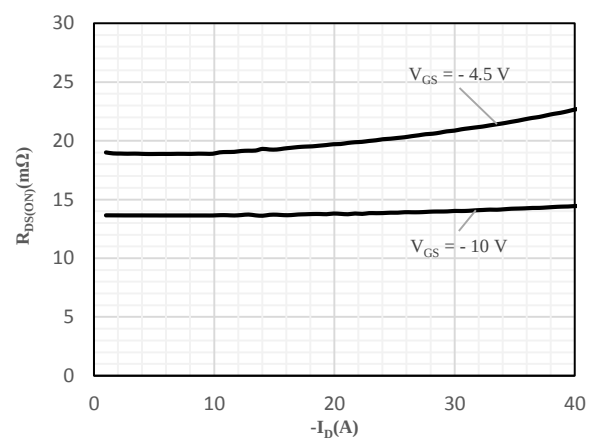
**Fig 1 Power Dissipation**



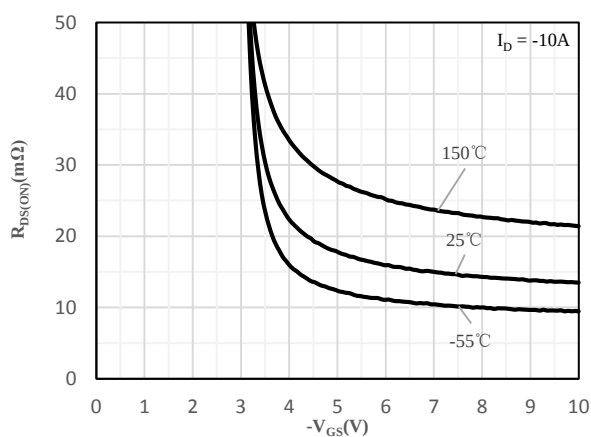
**Fig 2 Drain Current**



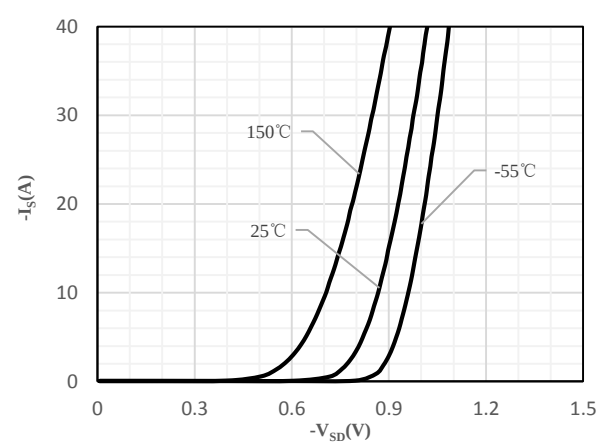
**Fig 3 Typical Output Characteristics**



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



**Fig 5 On-Resistance vs. Gate-Source Voltage**



**Fig 6 Body-Diode Characteristics**

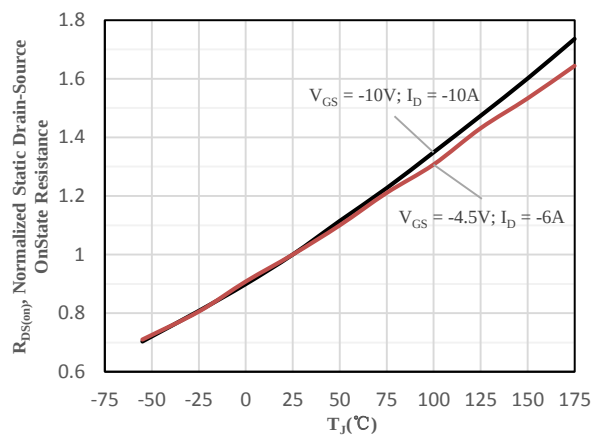


Fig 7 Normalized On-Resistance vs. Junction Temperature

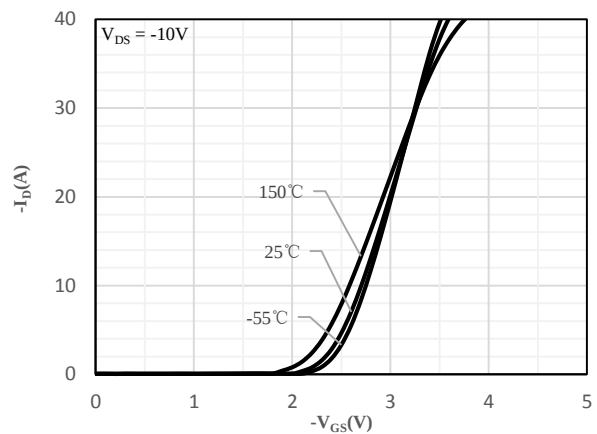


Fig 8 Transfer Characteristics

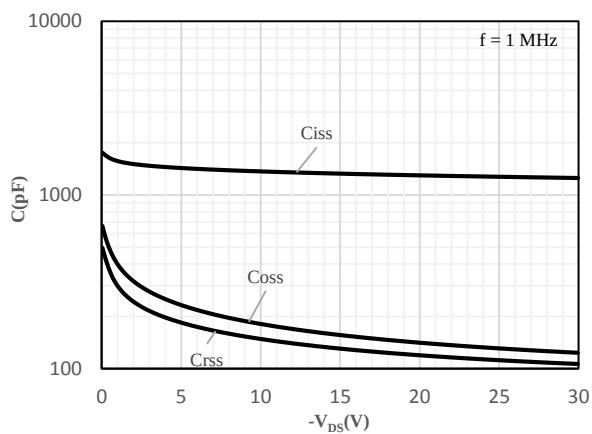


Fig 9 Capacitance Characteristics

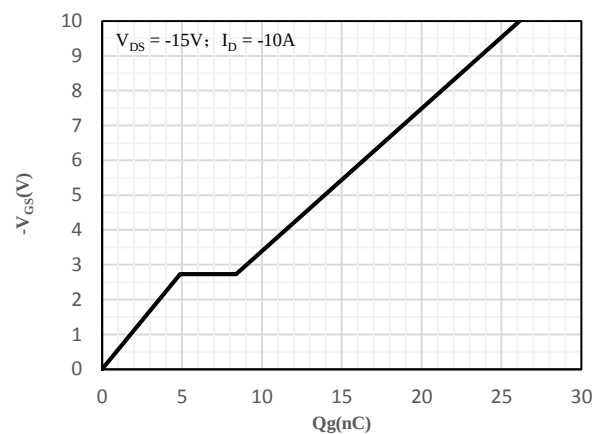


Fig 10 Gate-Charge Characteristics

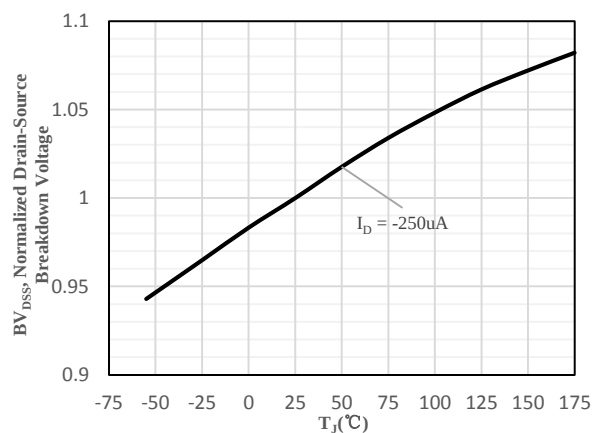


Fig 11 Normalized Breakdown Voltage vs. Junction Temperature

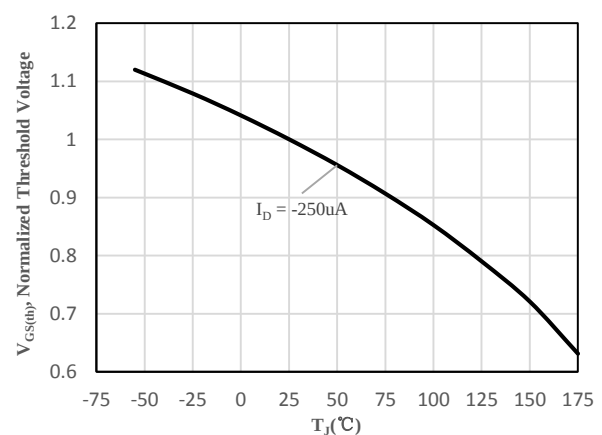
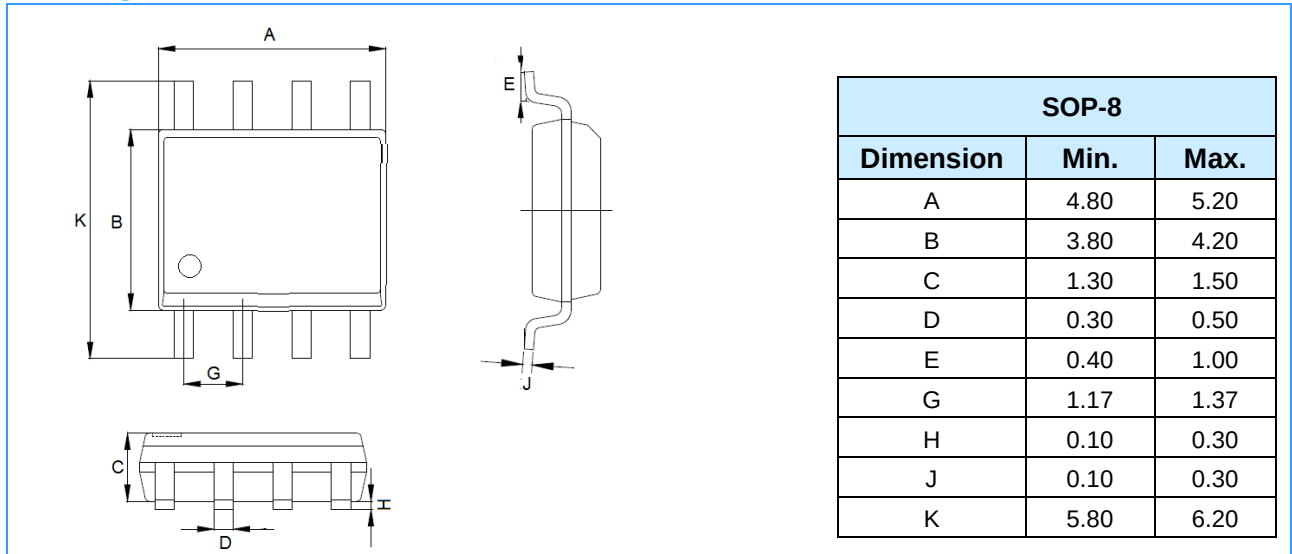


Fig 12 Normalized  $V_{GS(th)}$  vs. Junction Temperature

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



**Mounting Pad Layout** (Unit: mm)

