

### Features

- $V_{DS} = -30V$
- $I_D = -1.9A$
- $R_{DS(on)}@V_{GS} = -10V < 190m\Omega$
- $R_{DS(on)}@V_{GS} = -4.5V < 330m\Omega$
- Trench Power LV MOSFET technology
- High density cell design for low  $R_{DS(ON)}$
- High Speed switching

### Applications

- Battery protection
- Load switch
- Power management

### Mechanical Data

- Case: SOT-23  
Molding compound meets UL 94V-0 flammability rating, RoHS-compliant, halogen-free
- Terminals: Solder plated, solderable per MIL-STD-750, Method 2026

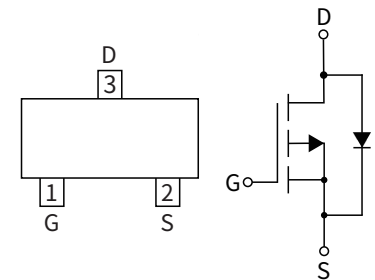
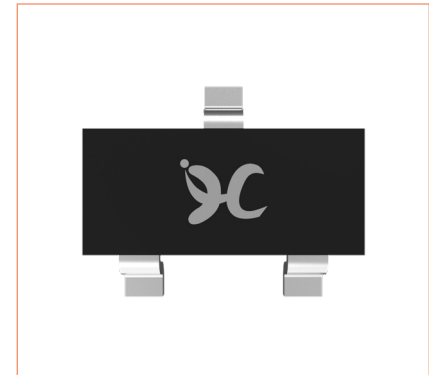
### Maximum Ratings (Ta=25°C Unless otherwise specified)

| PARAMETER                              | SYMBOL           | UNIT | VALUE      |
|--|------------------|------|------------|
| Drain-source Voltage                   | $V_{DS}$         | V    | -30        |
| Gate-source Voltage                    | $V_{GS}$         | V    | $\pm 20$   |
| Drain Current                          | $I_D$            | A    | -1.9       |
| Continuous Source-Drain Diode Current  | $I_S$            | A    | -0.83      |
| Total Power Dissipation                | $P_D$            | W    | 0.35       |
| Junction and Storage Temperature Range | $T_j$            | °C   | -55 ~ +150 |
|  | $T_{stg}$        |      | -50 ~ +150 |
| Thermal Resistance Junction-to-Ambient | $R_{\theta J-A}$ | °C/W | 357        |

### Ordering Information

| PACKAGE | PACKAGE CODE | UNIT WEIGHT(g) | REEL(pcs) | BOX(pcs) | CARTON(pcs) | DELIVERY MODE |
|---------|--------------|----------------|-----------|----------|-------------|---------------|
| SOT-23  | R1           | 0.008          | 3000      | 30000    | 120000      | 7"            |

### SOT-23



**▶ Static Parameter Characteristics (Ta=25°C Unless otherwise specified)**

| PARAMETER  | SYMBOL       | Condition                      | UNIT     | Min | Typ   | Max       |
|--|--------------|--------------------------------|----------|-----|-------|-----------|
| Drain-Source Breakdown Voltage                   | $BV_{DSS}$   | $V_{GS}=0V, I_D=-250\mu A$     | V        | -30 | —     | —         |
| Zero Gate Voltage Drain Current                  | $I_{DSS}$    | $V_{DS}=-20V, V_{GS}=0V$       | $\mu A$  | —   | —     | -1        |
| Gate-Body Leakage Current                        | $I_{GSS}$    | $V_{GS}=\pm 20V, V_{DS}=0V$    | nA       | —   | —     | $\pm 100$ |
| Gate Threshold Voltage                           | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=-250\mu A$ | V        | -1  | -1.6  | -3        |
| Static Drain-Source On-Resistance <sup>(1)</sup> | $R_{DS(on)}$ | $V_{GS}=-10, I_D=-1.9A$        | $\Omega$ | —   | 0.075 | 0.19      |
|  |              | $V_{GS}=-4.5V, I_D=-1.4A$      |          | —   | 0.115 | 0.33      |
| Forward Transconductance <sup>(1)</sup>          | $g_{fs}$     | $V_{DS}=-5V, I_D=-1.9A$        | S        | 1   | —     | —         |

**▶ Dynamic Parameters (Ta=25°C Unless otherwise specified)**

| PARAMETER                    | SYMBOL    | Condition                        | UNIT | Min | Typ | Max |
|------------------------------|-----------|----------------------------------|------|-----|-----|-----|
| Input Capacitance            | $C_{iss}$ | $V_{DS}=-15V, V_{GS}=0V, f=1MHz$ | pF   | —   | 155 | —   |
| Output Capacitance           | $C_{oss}$ |                                  |      | —   | 35  | —   |
| Reverse Transfer Capacitance | $C_{rss}$ |                                  |      | —   | 25  | —   |

**▶ Switching Parameters (Ta=25°C Unless otherwise specified)**

| PARAMETER               | SYMBOL       | Condition  | UNIT     | Min | Typ  | Max |
|-------------------------|--------------|--|----------|-----|------|-----|
| Total Gate Charge       | $Q_g$        | $V_{GS}=-10V, V_{DS}=-15V, I_D=-1.9A$                                  | nC       | —   | 4    | 8   |
|                         |              | $V_{GS}=-4.5V, V_{DS}=-15V, I_D=-1.9A$                                 |          | —   | 2    | 4   |
| Gate-Source Charge      | $Q_{gs}$     |  |          | —   | 0.6  | —   |
| Gate-Drain Charge       | $Q_{gd}$     | —  | 1        | —   |      |     |
| Reverse Recovery Charge | $Q_{rr}$     | $I_f=-3A, di/dt=100A/us$   | nC       | —   | 4    | —   |
| Reverse Recovery Time   | $t_{rr}$     |  | ns       | —   | 24.5 | —   |
| Gate Resistance         | $R_g$        | $f=1MHz$   | $\Omega$ | 1.7 | 8.5  | 17  |
| Turn-on Delay Time      | $t_{D(on)}$  | $V_{GS}=-15V, V_{GEN}=-4.5V, I_D=-1.5A$<br>$R_L=10\Omega, R_g=1\Omega$ | ns       | —   | 36   | 44  |
| Turn-on Rise Time       | $t_r$        |  |          | —   | 37   | 45  |
| Turn-off Delay Time     | $t_{D(off)}$ |  |          | —   | 12   | 18  |
| Turn-off fall Time      | $t_f$        |  |          | —   | 9    | 14  |

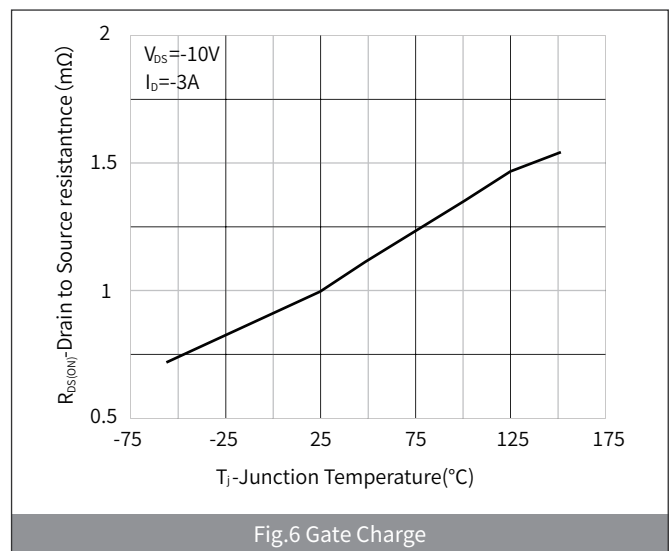
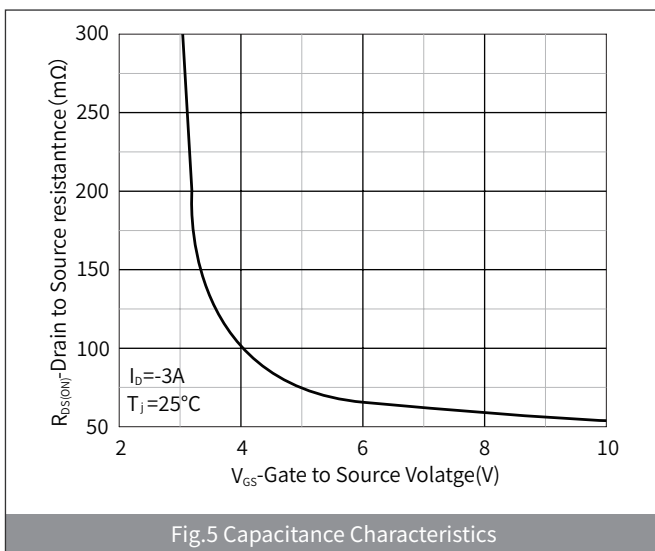
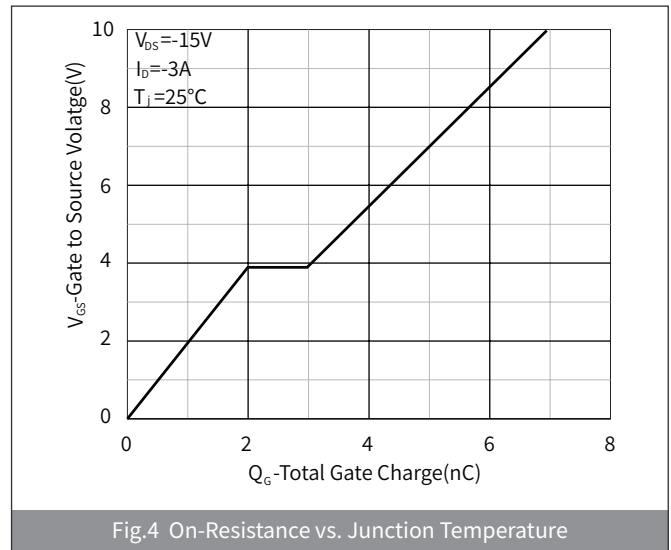
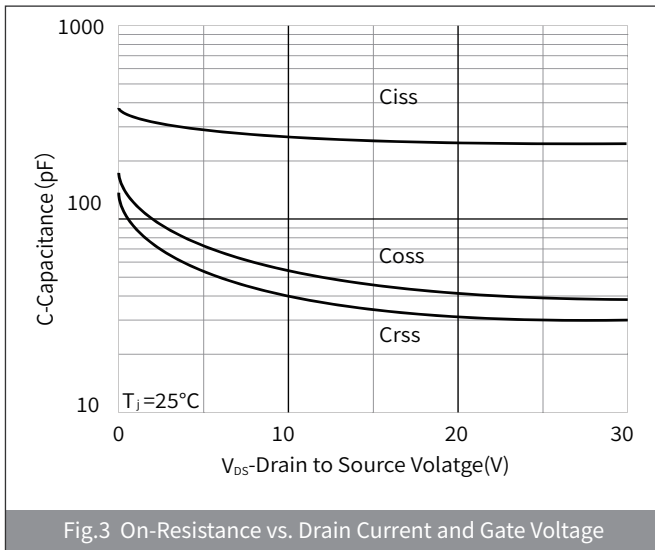
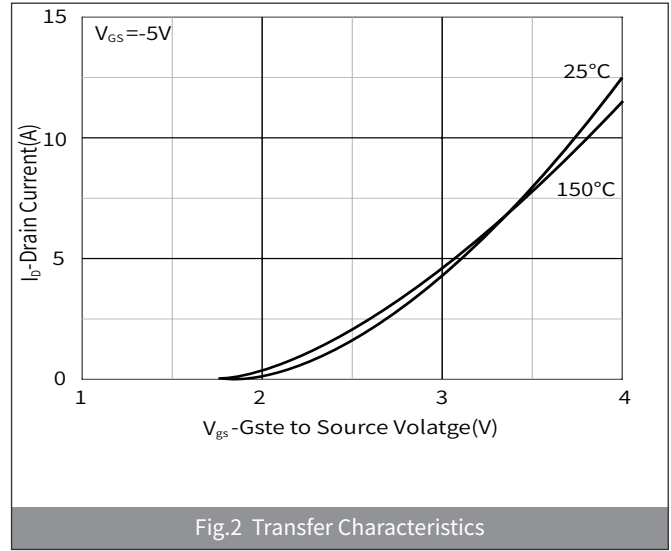
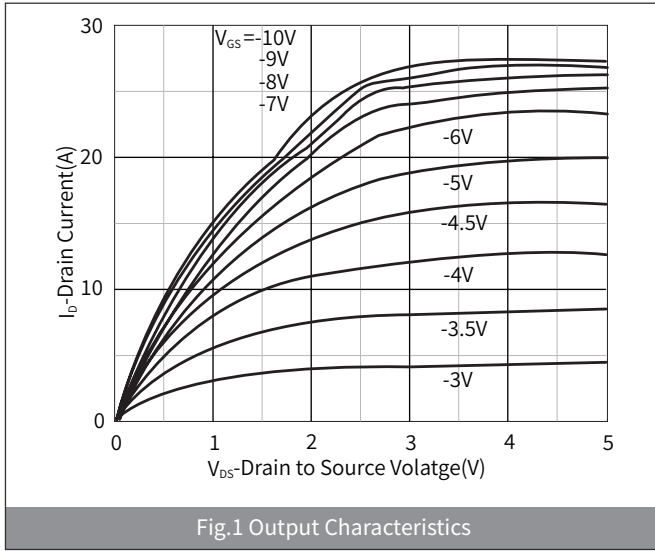
**▶ Drain-source Body diode characteristics (Ta=25°C Unless otherwise specified)**

| PARAMETER                             | SYMBOL   | Condition        | UNIT | Min | Typ  | Max   |
|---------------------------------------|----------|------------------|------|-----|------|-------|
| Continuous Source-Drain Diode Current | $I_S$    | $T_C=25^\circ C$ | A    | —   | —    | -1.75 |
| Pulse Diode Forward Current           | $I_{SM}$ | —                |      | —   | —    | -10   |
| Body Diode Voltage                    | $V_{SD}$ | $I_S=-1.5A$      | V    | —   | -0.8 | -1.2  |

Note :

 (1) Pulse Test : Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .

► Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)



**Package Outline Dimensions (SOT-23)**

| Symbol   | Dimensions  |      |          |       |
|----------|-------------|------|----------|-------|
|          | Millimeters |      | Inches   |       |
|          | Min.        | Max. | Min.     | Max.  |
| A        | 0.90        | 1.15 | 0.035    | 0.045 |
| A1       | -           | 0.10 | -        | 0.004 |
| A2       | 0.90        | 1.05 | 0.035    | 0.041 |
| b        | 0.30        | 0.50 | 0.012    | 0.020 |
| c        | 0.10        | 0.20 | 0.004    | 0.008 |
| D        | 2.80        | 3.00 | 0.110    | 0.118 |
| E        | 1.20        | 1.40 | 0.047    | 0.055 |
| E1       | 2.25        | 2.55 | 0.089    | 0.100 |
| e        | 0.950TYP    |      | 0.037TYP |       |
| e1       | 1.80        | 2.00 | 0.071    | 0.079 |
| L        | 0.550REF    |      | 0.022REF |       |
| L1       | 0.30        | 0.50 | 0.012    | 0.020 |
| $\theta$ | -           | 8°   | -        | 8°    |

**Suggested Pad Layout**

| Symbol | Dimensions  |      |        |       |
|--------|-------------|------|--------|-------|
|        | Millimeters |      | Inches |       |
|        | Min.        | Max. | Min.   | Max.  |
| J      | 0.80        | -    | 0.031  | -     |
| K      | -           | 0.90 | -      | 0.035 |
| M      | 2.00        | -    | 0.078  | -     |
| N      | -           | 1.90 | -      | 0.074 |