



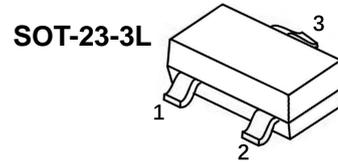
CCX3400A

30V N-Channel MOSFETs

Product data sheet

1. General description

N-channel MOS Field Effect Transistor encapsulated in a small SOT-23-3L Surface- Mounted Device (SMD) plastic package



2. Features

- High dense cell design for extremely low $R_{DS(on)}$
- Exceptional on-resistance and maximum DC current capability

3. Applications

- Load Switch for Portable Devices
- DC/DC Converter

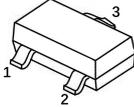
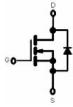
4. Quick reference data

Table 1. Quick reference data

| $V_{(BR)DSS}$ | $R_{DS(on)}$ MAX | I_D |
|---------------|---------------------|-------|
| 30V | 22m Ω @ 10V | 5.8A |
| | 25m Ω @ 4.5V | |
| | 28m Ω @ 2.5V | |

5. Pinning information

Table 2. Pinning information

| Pin | Name | SOT-23-3L Simplified outline | Graphic symbol |
|-----|--------|---|---|
| 1 | Gate |  |  |
| 2 | Source | | |
| 3 | Drain | | |

6. Ordering information

Table 3. Ordering information

| Part number | Package | Material | Packing | Quantity per reel | Flammability rating | Reel size |
|-------------|-----------|--------------|-------------|-------------------|---------------------|-----------|
| CCX3400A | SOT-23-3L | halogen free | tape & reel | 3,000pcs | UL 94V-0 | 7 inches |

7. Marking

Table 4. Marking codes

| Part number | Marking code | |
|-------------|--------------|------|
| CCX3400A | A09T | A0LA |

8. Limiting values and electrical Characteristics

Table 5. Limiting values

 $T_a=25^{\circ}\text{C}$

| Parameter | Symbol | Value | Unit |
|--|-----------------|----------|-----------------------------|
| Drain-Source Voltage | V_{DS} | 30 | V |
| Gate-Source Voltage | V_{GS} | ± 12 | V |
| Continuous Drain Current | I_D | 5.8 | A |
| Drain Current-Pulsed(note 1) | I_{DM} | 30 | A |
| Power Dissipation | P_D | 450 | mW |
| Thermal Resistance from Junction to Ambient ($t < 5s$) | $R_{\theta JA}$ | 278 | $^{\circ}\text{C}/\text{W}$ |
| Operation Junction and Storage Temperature Range | T_J, T_{STG} | -55~+150 | $^{\circ}\text{C}$ |

Table 6. Electrical characteristics

 $T_a=25^{\circ}\text{C}$

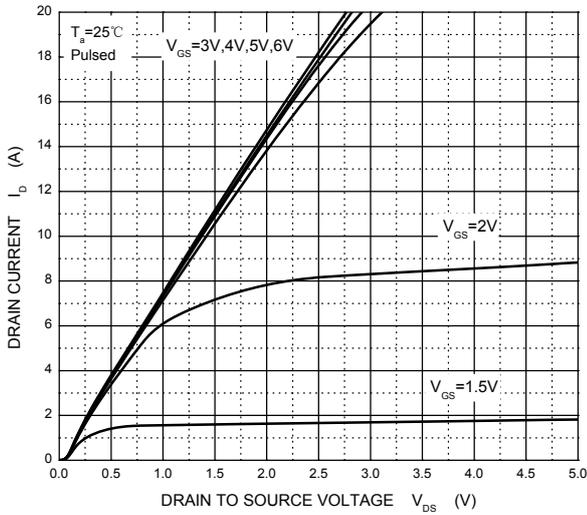
| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|---|---------------|--|-----|-----|-----------|---------------|
| Off characteristics | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = 250\mu\text{A}$ | 30 | | | V |
| Zero gate voltage drain current | I_{DSS} | $V_{DS} = 24V, V_{GS} = 0V$ | | | 1 | μA |
| Gate-source leakage current | I_{GSS} | $V_{GS} = \pm 12V, V_{DS} = 0V$ | | | ± 100 | nA |
| On characteristics | | | | | | |
| Drain-source on-resistance (note 1) | $R_{DS(on)}$ | $V_{GS} = 10V, I_D = 5.8A$ | | 25 | 32 | m Ω |
| | | $V_{GS} = 4.5V, I_D = 5A$ | | 28 | 38 | m Ω |
| | | $V_{GS} = 2.5V, I_D = 4A$ | | 30 | 45 | m Ω |
| Forward transconductance (note 1) | g_{FS} | $V_{DS} = 5V, I_D = 5A$ | 8 | | | S |
| Gate threshold voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = 250\mu\text{A}$ | 0.6 | 0.9 | 1.4 | V |
| Dynamic characteristics (note 2) | | | | | | |
| Input capacitance | C_{iss} | $V_{DS} = 15V, V_{GS} = 0V, f = 1\text{MHz}$ | | | 1155 | pF |
| Output capacitance | C_{oss} | | | 107 | | pF |
| Reverse transfer capacitance | C_{rss} | | | 84 | | pF |
| Switching characteristics (note 2) | | | | | | |
| Turn-on delay time | $t_{d(on)}$ | $V_{GS} = 10V, V_{DS} = 15V, R_L = 2.7\Omega, R_{GEN} = 3\Omega$ | | | 5 | ns |
| Turn-on rise time | t_r | | | | 7 | ns |
| Turn-off delay time | $t_{d(off)}$ | | | | 40 | ns |
| Turn-off fall Time | t_f | | | | 6 | ns |
| Drain-source diode characteristics and maximum ratings | | | | | | |
| Diode forward voltage (note 1) | V_{SD} | $I_S = 1A, V_{GS} = 0V$ | | | 1 | V |

Note :

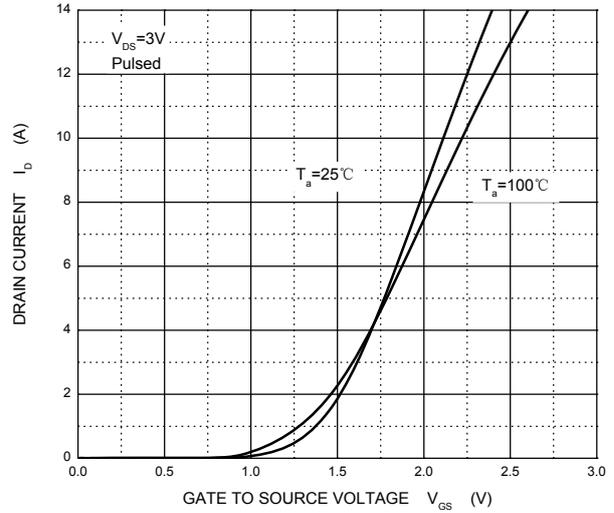
1. Pulse Test : Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
2. These parameters have no way to verify.

9. Typical characteristics

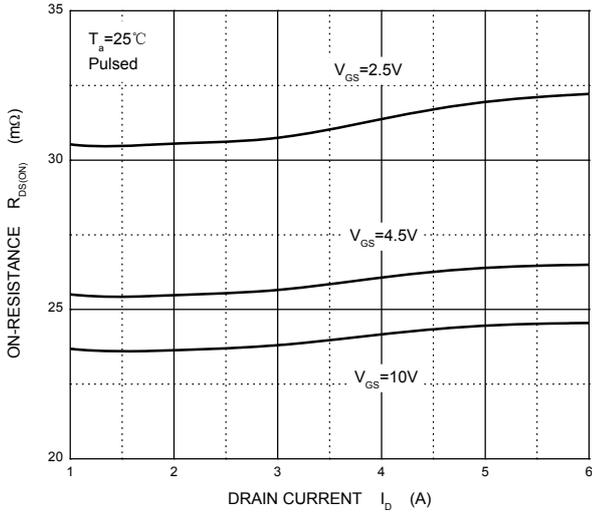
Output Characteristics



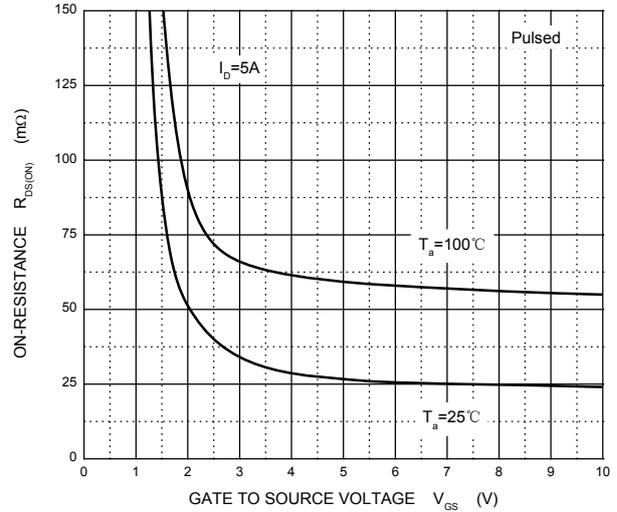
Transfer Characteristics



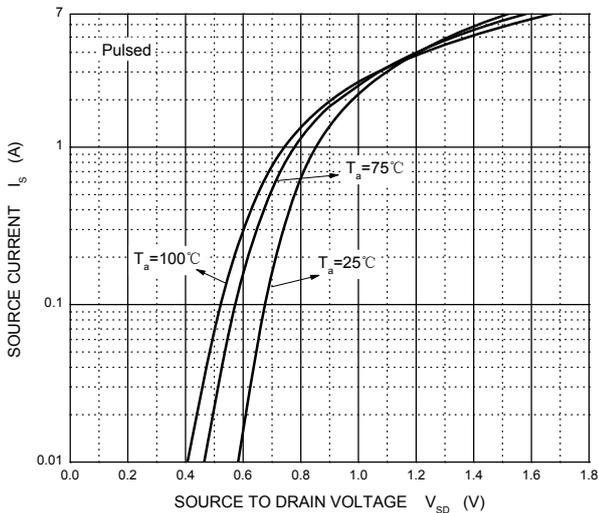
$R_{DS(ON)}$ — I_D



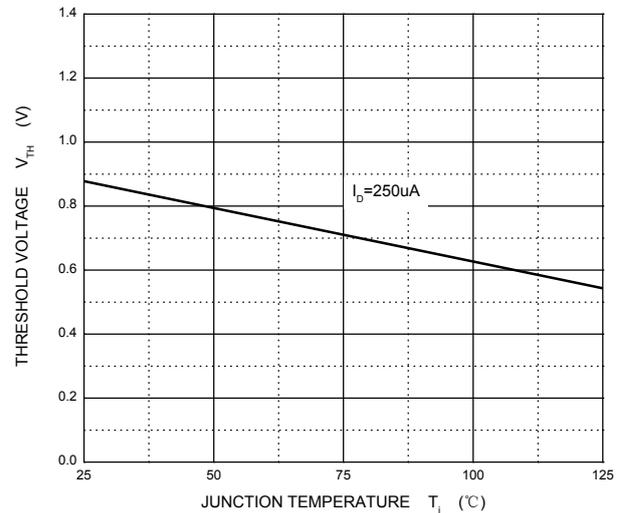
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}

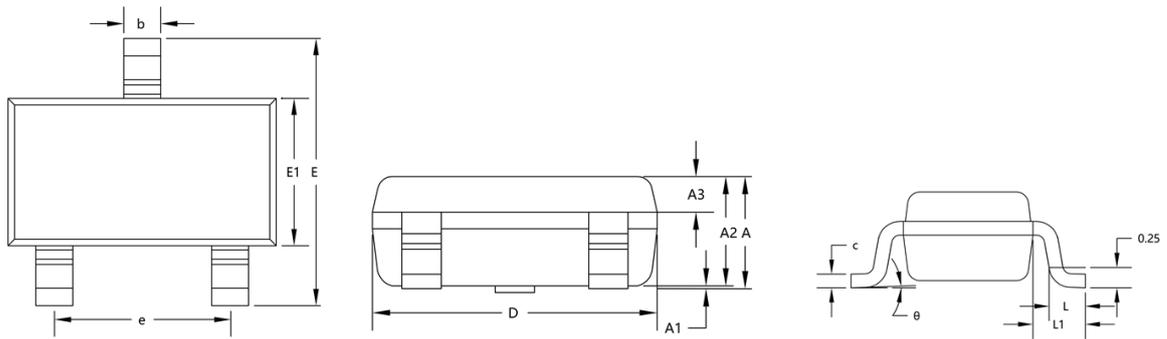


Threshold Voltage



10. Package outline

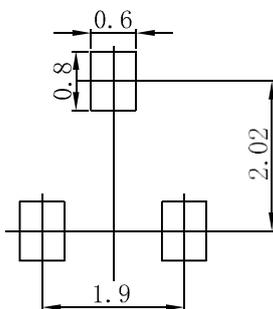
Table 7. SOT-23-3L Package outline



| Symbol | Dimension in millimeter | | |
|----------|-------------------------|-------|------|
| | Min | Nom | Max |
| A | 1.0 | 1.15 | 1.3 |
| A1 | 0.0 | 0.05 | 0.1 |
| A2 | 1.0 | 1.10 | 1.20 |
| A3 | 0.40 | 0.45 | 0.50 |
| b | 0.35 | 0.425 | 0.50 |
| c | 0.10 | 0.175 | 0.25 |
| D | 2.70 | 2.90 | 3.1 |
| E | 2.60 | 2.80 | 3.00 |
| E1 | 1.5 | 1.65 | 1.80 |
| e | 1.7 | 1.9 | 2.1 |
| L | 0.35 | 0.45 | 0.55 |
| L1 | 0.55 | 0.625 | 0.70 |
| θ | 0° | 3° | 8° |

11. Suggested pad layout

Table 8. Suggested pad layout



Note:

1. Controlling dimension: in millimeters
2. General tolerance: $\pm 0.05\text{mm}$
3. The pad layout is for reference purposes only

12. Disclaimer

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