

Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)MAX}$ | I_D |
|---------------|-----------------|-------|
| -20V | 36mΩ@-4.5V | -5.6A |
| | 49mΩ@-2.5V | |
| | 69mΩ@-1.8V | |

Feature

- Advanced trench process technology
- High density cell design for ultra low on-resistance
- ESD Protected Up to 2.0KV (HBM)

Application

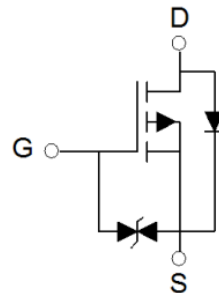
- Load Switch for Portable Devices
- DC/DC Converter

Package

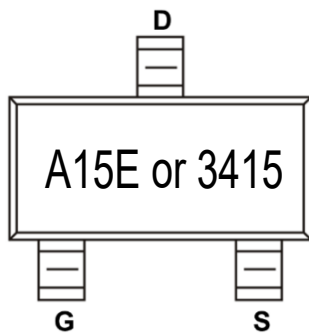


SOT-23

Circuit diagram



Marking



Absolute maximum ratings (Ta=25°C unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|--------------------------|-----------|------------|------|
| Drain-Source Voltage | V_{DS} | -20 | V |
| Gate-Source Voltage | V_{GS} | ±12 | V |
| Continuous Drain Current | I_D | -5.6 | A |
| Pulsed Drain Current | I_{DM} | -23 | A |
| Power Dissipation | P_D | 1.3 | W |
| Junction Temperature | T_J | 150 | °C |
| Storage Temperature | T_{STG} | -55 ~ +150 | °C |

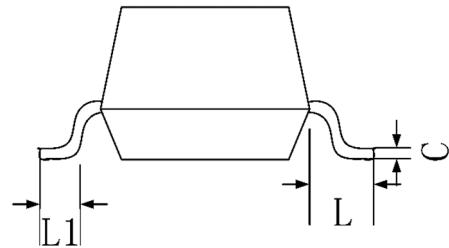
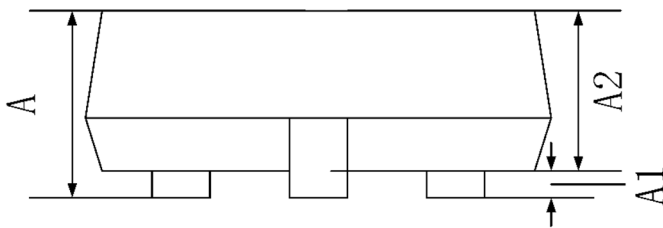
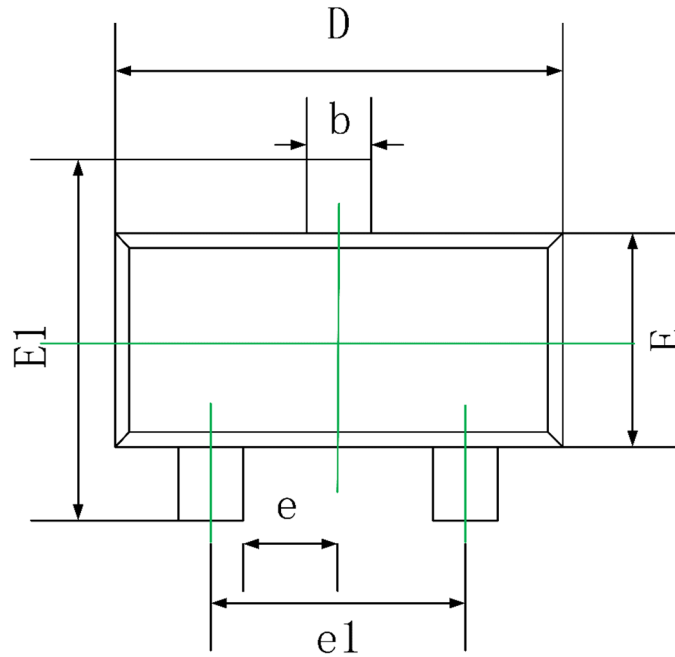
Electrical characteristics (TA=25 °C, unless otherwise noted)

| Parameter | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|---|---------------|---|-------|------|------|------|
| Static Characteristics | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = -250\mu A$ | -20 | | | V |
| Zero gate voltage drain current | I_{DSS} | $V_{DS} = -20V, V_{GS} = 0V$ | | | -1 | μA |
| Gate-body leakage current | I_{GSS} | $V_{GS} = \pm 12V, V_{DS} = 0V$ | | | ±15 | μA |
| Gate threshold voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = -250\mu A$ | -0.35 | | -1 | V |
| Drain-source on-resistance ¹⁾ | $R_{DS(on)}$ | $V_{GS} = -4.5V, I_D = -5.6A$ | | | 36 | mΩ |
| | | $V_{GS} = -2.5V, I_D = -4.3A$ | | | 49 | |
| | | $V_{GS} = -1.8V, I_D = -3.0A$ | | | 69 | |
| Dynamic characteristics²⁾ | | | | | | |
| Input Capacitance | C_{iss} | $V_{DS} = -10V, V_{GS} = 0V, f = 1MHz$ | | 940 | | pF |
| Output Capacitance | C_{oss} | | | 219 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 116 | | |
| Total Gate Charge | Q_g | $V_{DS} = -10V, V_{GS} = -4.5V, I_D = -4A$ | | 7.2 | | nC |
| Gate-Source Charge | Q_{gs} | | | 1.2 | | |
| Gate-Drain Charge | Q_{gd} | | | 1.6 | | |
| Turn-on delay time | $t_{d(on)}$ | $V_{DD} = -10V, V_{GS} = -4.5V, R_{GEN} = 3\Omega, R_L = 2.5\Omega$ | | 15 | | nS |
| Turn-on rise time | t_r | | | 63 | | |
| Turn-off delay time | $t_{d(off)}$ | | | 21 | | |
| Turn-off fall time | t_f | | | 12 | | |
| Source-Drain Diode characteristics | | | | | | |
| Diode Forward Current ¹⁾ | I_S | | | | -5.6 | A |
| Diode Forward voltage | V_{DS} | $V_{GS} = 0V, I_S = -5.6A$ | | | -1.2 | V |

Notes:

- 1) Pulse Test: Pulse Width < 300μs, Duty Cycle ≤2%.
- 2) Guaranteed by design, not subject to production testing.

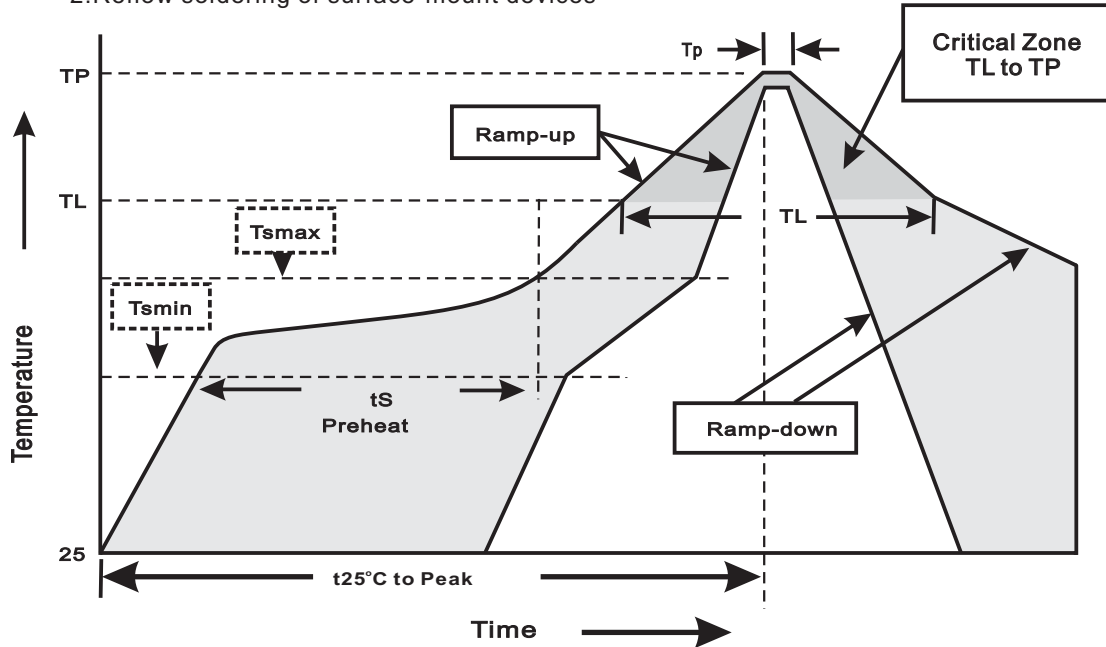
SOT-23 Package Information



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 0.900 | 1.150 | 0.035 | 0.045 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.900 | 1.050 | 0.035 | 0.041 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.080 | 0.150 | 0.003 | 0.006 |
| D | 2.800 | 3.000 | 0.110 | 0.118 |
| E | 1.200 | 1.400 | 0.047 | 0.055 |
| E1 | 2.250 | 2.550 | 0.089 | 0.100 |
| e | 0.950 TYP. | | 0.037 TYP. | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.550 REF. | | 0.022 REF. | |
| L1 | 0.300 | 0.500 | 0.012 | 0.020 |

Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices



3.Reflow soldering

| Profile Feature | Soldering Condition |
|--|-----------------------------|
| Average ramp-up rate(TL to TP) | <3°C/sec |
| Preheat -Temperature Min(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(ts) | 150°C 200°C 60~120sec |
| Tsmax to TL -Ramp-upRate | <3°C/sec |
| Time maintained above: -Temperature(TL) -Time(tL) | 217°C 60~260sec |
| Peak Temperature(TP) | 255°C-0/+5°C |
| Time within 5°C of actual Peak Temperature(tp) | 10~30sec |
| Ramp-down Rate | <6°C/sec |
| Time 25°C to Peak Temperature | <6minutes |

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