



USS4350

NPN SILICON TRANSISTOR

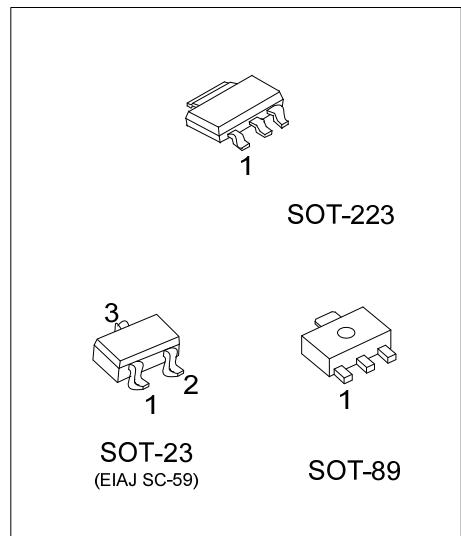
50V, 3A NPN LOW $V_{CE(SAT)}$ TRANSISTOR

DESCRIPTION

The **UTC USS4350** is a low $V_{CE(SAT)}$ NPN transistor designed for applications, such as: DC/DC converter, supply line switching, battery charger, linear voltage regulation, driver in low supply voltage applications and inductive load driver.

FEATURES

- * Collector-emitter saturation voltage:50V
- * High collector current gain (h_{FE}) under high I_C conditions
- * High collector current capability
- * Higher efficiency resulting in less heat generation
- * Complementary to UTC USS5350



ORDERING INFORMATION

| Ordering Number | | Package | Pin Assignment | | | Packing |
|-----------------|----------------|---------|----------------|---|---|-----------|
| Lead Free | Halogen Free | | 1 | 2 | 3 | |
| USS4350L-AA3-R | USS4350G-AA3-R | SOT-223 | B | C | E | Tape Reel |
| USS4350L-AB3-R | USS4350G-AB3-R | SOT-89 | B | C | E | Tape Reel |
| USS4350L-AE3-R | USS4350G-AE3-R | SOT-23 | B | E | C | Tape Reel |

Note: Pin Assignment: B: Base C: Collector E: Emitter

| | |
|-----------------------|--|
| <p>USS4350G-AA3-R</p> | <p>(1) R: Tape Reel</p> <p>(2) AA3: SOT-223, AB3: SOT-89, AE3: SOT-23</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p> |
|-----------------------|--|

MARKING

| PACKAGE | MARKING |
|---------|---|
| SOT-223 | <p>L: Lead Free G: Halogen Free Date Code</p> |
| SOT-89 | <p>Date Code L: Lead Free G: Halogen Free</p> |
| SOT-23 | <p>L: Lead Free G: Halogen Free</p> |

■ ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$, unless otherwise specified)

| PARAMETER | | SYMBOL | RATINGS | UNIT |
|---|---------|-----------|------------|------------------|
| Collector-Base Voltage | | V_{CB0} | 60 | V |
| Collector-Emitter Voltage | | V_{CEO} | 50 | V |
| Emitter-Base Voltage | | V_{EBO} | 6 | V |
| Collector Current | DC | I_C | 3 | A |
| | Peak | I_{CM} | 5 | A |
| Peak Base Current | | I_{BM} | 1 | A |
| Power Dissipation ($T_C=25^\circ\text{C}$) (Note 2) | SOT-89 | P_D | 1.4 | W |
| | SOT-223 | | 2 | |
| | SOT-23 | | 0.35 | |
| Junction Temperature | | T_J | 150 | $^\circ\text{C}$ |
| Operating Temperature | | T_{OPR} | -65 ~ +150 | $^\circ\text{C}$ |
| Storage Temperature | | T_{STG} | -65 ~ +150 | $^\circ\text{C}$ |

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. Device mounted on a printed-circuit board; single sided copper; tinplated; mounting pad for collector 6 cm²

■ THERMAL CHARACTERISTICS

| PARAMETER | | SYMBOL | RATINGS | UNIT |
|----------------------------|---------|---------------|---------|--------------------|
| Junction to Ambient (Note) | SOT-89 | θ_{JA} | 90 | $^\circ\text{C/W}$ |
| | SOT-223 | | 62.5 | |
| | SOT-23 | | 357.1 | |

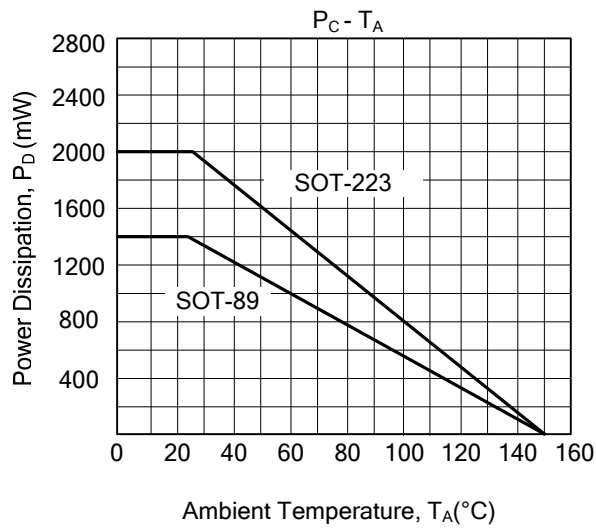
Note: Device mounted on FR-4 substrate P_C board, 2oz copper, with 1inch square copper plate.

■ ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$, unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--------------------------------------|---------------|--|-----|-----|------|------------|
| Collector Cut-off Current | I_{CB0} | $V_{CB}=50\text{ V}$, $I_E=0$ | | | 100 | nA |
| Emitter Cut-off Current | I_{EBO} | $V_{EB}=5\text{ V}$, $I_C=0$ | | | 100 | nA |
| Collector-Emitter Saturation Voltage | $V_{CE(SAT)}$ | $I_C=500\text{ mA}$, $I_B=50\text{ mA}$ | | | 90 | mV |
| | | $I_C=1\text{ A}$, $I_B=50\text{ mA}$ | | | 170 | mV |
| | | $I_C=2\text{ A}$, $I_B=200\text{ mA}$ (Note) | | | 290 | mV |
| Base-Emitter Saturation Voltage | $V_{BE(SAT)}$ | $I_C=2\text{ A}$, $I_B=200\text{ mA}$ (Note) | | | 1.2 | V |
| Base-Emitter Turn-On Voltage | $V_{BE(ON)}$ | $V_{CE}=2\text{ V}$; $I_C=1\text{ A}$ (Note) | | | 1.1 | V |
| DC Current Gain | h_{FE1} | $V_{CE}=2\text{ V}$, $I_C=500\text{ mA}$ | 200 | | | |
| | h_{FE2} | $V_{CE}=2\text{ V}$, $I_C=1\text{ A}$ (Note) | 200 | | | |
| | h_{FE3} | $V_{CE}=2\text{ V}$, $I_C=2\text{ A}$ (Note) | 100 | | | |
| Equivalent On-Resistance | $R_{CE(SAT)}$ | $I_C=2\text{ A}$, $I_B=200\text{ mA}$ (Note) | | 110 | <145 | m Ω |
| Transition Frequency | f_T | $I_C=100\text{ mA}$, $V_{CE}=5\text{ V}$, $f=100\text{ MHz}$ | 100 | | | MHz |
| Collector Capacitance | C_C | $V_{CB}=10\text{ V}$; $I_E=I_e=0$; $f=1\text{ MHz}$ | | | 30 | pF |

Note: Pulse test: $t_p \leq 300\ \mu\text{s}$; Duty cycle $\leq 2\%$.

■ TYPICAL CHARACTERISTIC



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