



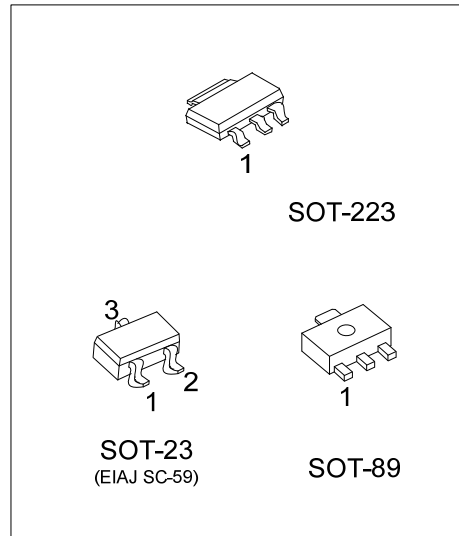
USS5350

PNP EPITAXIAL SILICON TRANSISTOR

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

FEATURES

- * Low collector-emitter saturation voltage $V_{CE(SAT)}$
- * High collector current capability: I_C and I_{CM}
- * Higher efficiency leading to less heat generation
- * Reduced printed-circuit board requirements
- * Complement: USS4350



ORDERING INFORMATION

| Ordering Number | | Package | Pin Assignment | | | Packing |
|-----------------|----------------|---------|----------------|---|---|-----------|
| Lead Free | Halogen Free | | 1 | 2 | 3 | |
| USS5350L-AA3-R | USS5350G-AA3-R | SOT-223 | B | C | E | Tape Reel |
| USS5350L-AB3-R | USS5350G-AB3-R | SOT-89 | B | C | E | Tape Reel |
| USS5350L-AE3-R | USS5350G-AE3-R | SOT-23 | B | E | C | Tape Reel |

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

| | | |
|----------------|--|---|
| USS5350G-AA3-R | (1)Packing Type (2)Package Type (3)Green Package | (1) R: Tape Reel (2) AA3: SOT-223, AB3: SOT-89, AE3: SOT-23 (3) G: Halogen Free and Lead Free, L: Lead Free |
|----------------|--|---|

MARKING

| PACKAGE | MARKING |
|---------|--|
| SOT-223 | <p>USS5350□ □□□□ 1</p> <p>L: Lead Free G: Halogen Free Date Code</p> |
| SOT-89 | <p>□□□□ USS5350□ 1</p> <p>Date Code L: Lead Free G: Halogen Free</p> |
| SOT-23 | <p>ES□ □□</p> <p>L: Lead Free G: Halogen Free</p> |

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

| PARAMETER | | SYMBOL | RATINGS | UNIT |
|--|---------|-----------|------------|------------------|
| Collector-Base Voltage | | V_{CBO} | -50 | V |
| Collector-Emitter Voltage | | V_{CEO} | -50 | V |
| Emitter-Base Voltage | | V_{EBO} | -5 | V |
| Collector Current (Note 3) | DC | I_C | -3 | A |
| | Peak | I_{CM} | -5 | A |
| Base Current (DC) | | I_B | -0.5 | A |
| Power Dissipation ($T_A \leq 25^\circ\text{C}$) (Note 2) | SOT-89 | P_D | 1.4 | W |
| | SOT-223 | | 2 | |
| | SOT-23 | | 0.35 | |
| Junction Temperature | | T_J | +150 | $^\circ\text{C}$ |
| 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; mounting pad for collector 6cm^2 .
 3. Pulse test: $t_p \leq 300 \mu\text{s}$; Duty cycle $\leq 2\%$.

■ THERMAL CHARACTERISTICS

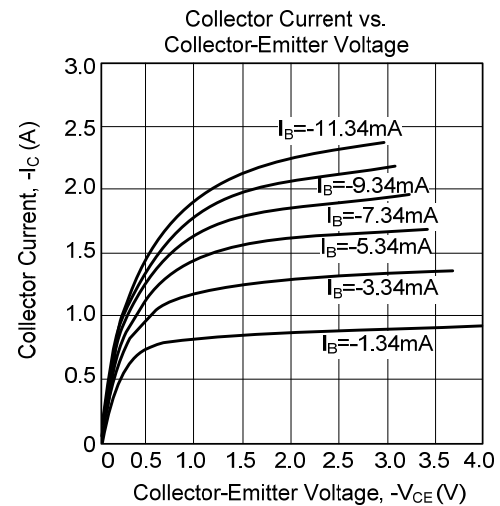
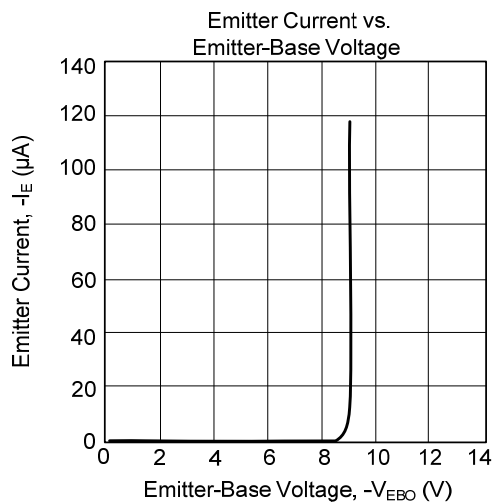
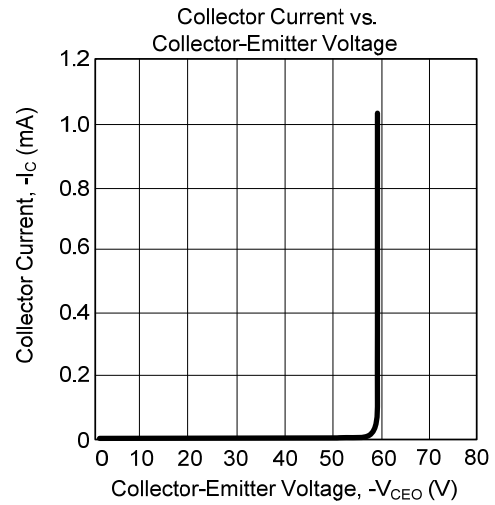
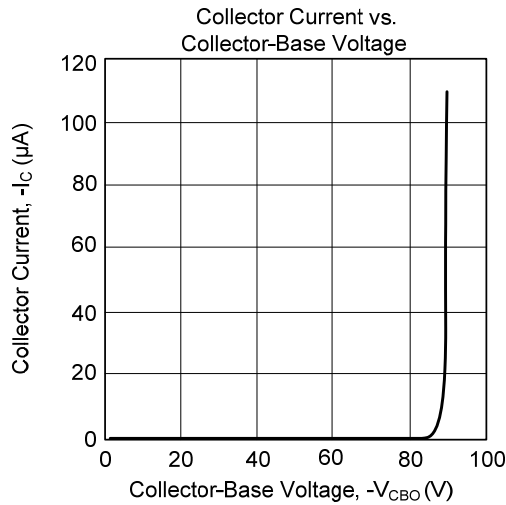
| PARAMETER | | SYMBOL | RATINGS | UNIT |
|------------------------------|---------|---------------|---------|--------------------|
| Junction To Ambient (Note 2) | SOT-89 | θ_{JA} | 90 | $^\circ\text{C/W}$ |
| | SOT-223 | | 62.5 | |
| | SOT-23 | | 357.1 | |

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

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--|---------------|---|------|-----|------|---------------|
| Collector to Base Breakdown Voltage | BV_{CBO} | $I_C = -100 \mu\text{A}$, $I_E = 0$ | -50 | | | V |
| Collector to Emitter Breakdown Voltage | BV_{CEO} | $I_C = -1\text{mA}$, $I_B = 0$ | -50 | | | V |
| Emitter to Base Breakdown Voltage | BV_{EBO} | $I_E = -100 \mu\text{A}$, $I_C = 0$ | -5 | | | V |
| Collector Cut-Off Current | I_{CBO} | $V_{CB} = -50\text{V}$, $I_E = 0$ | | | -100 | nA |
| | | $V_{CB} = -50\text{V}$, $I_E = 0$, $T_J = 150^\circ\text{C}$ | | | -50 | μA |
| Collector Cutoff Current | I_{CEO} | $V_{CE} = -50\text{V}$ | | | -10 | μA |
| Collector Cut-Off Current | I_{CES} | $V_{CE} = -50\text{V}$, $V_{BE} = 0$ | | | -100 | nA |
| Emitter Cut-Off Current | I_{EBO} | $V_{EB} = -5\text{V}$, $I_C = 0$ | | | -100 | nA |
| Collector-Emitter Saturation Voltage | $V_{CE(SAT)}$ | $I_C = -0.5\text{A}$, $I_B = -50\text{mA}$ | | | -90 | mV |
| | | $I_C = -1\text{A}$, $I_B = -50\text{mA}$ | | | -180 | mV |
| | | $I_C = -2\text{A}$, $I_B = -100\text{mA}$ | | | -320 | mV |
| | | $I_C = -2\text{A}$, $I_B = -200\text{mA}$ (Note) | | | -270 | mV |
| | | $I_C = -3\text{A}$, $I_B = -300\text{mA}$ (Note) | | | -390 | mV |
| Base-Emitter Saturation Voltage | $V_{BE(SAT)}$ | $I_C = -2\text{A}$, $I_B = -100\text{mA}$ | | | -1.1 | V |
| | | $I_C = -3\text{A}$, $I_B = -300\text{mA}$ (Note) | | | -1.2 | V |
| Base-Emitter Turn-On Voltage | $V_{BE(ON)}$ | $V_{CE} = -2\text{V}$, $I_C = -1\text{A}$ | -1.1 | | | V |
| Dc Current Gain | h_{FE} | $V_{CE} = -2\text{V}$, $I_C = -0.1\text{A}$ | 200 | | | |
| | | $V_{CE} = -2\text{V}$, $I_C = -0.5\text{A}$ | 200 | | | |
| | | $V_{CE} = -2\text{V}$, $I_C = -1\text{A}$ (Note) | 200 | | 450 | |
| | | $V_{CE} = -2\text{V}$, $I_C = -2\text{A}$ (Note) | 130 | | | |
| | | $V_{CE} = -2\text{V}$, $I_C = -3\text{A}$ (Note) | 80 | | | |
| Equivalent On-Resistance | $R_{CE(SAT)}$ | $I_C = -2\text{A}$, $I_B = -200\text{mA}$ (Note) | | 90 | 135 | m Ω |
| Transition Frequency | f_T | $V_{CE} = -5\text{V}$, $I_C = -100\text{mA}$, $f = 100\text{MHz}$ | 100 | | | MHz |
| Collector Capacitance | C_C | $V_{CB} = -10\text{V}$, $I_E = I_C = 0$, $f = 1\text{MHz}$ | | | 35 | pF |

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

■ TYPICAL CHARACTERISTICS



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