



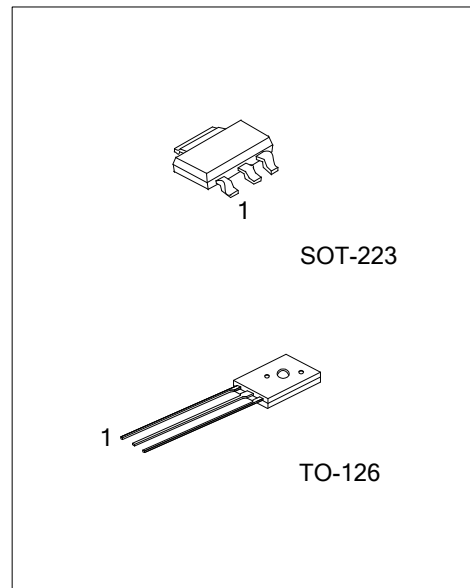
# UP1855A

## PNP SILICON TRANSISTOR

### HIGH CURRENT TRANSISTOR

■ FEATURES

- \* High current switching
- \* Low  $V_{CE(SAT)}$
- \* High  $h_{FE}$



■ ORDERING INFORMATION

| Ordering Number  |                  | Package | Pin Assignment |   |   | Packing   |
|------------------|------------------|---------|----------------|---|---|-----------|
| Lead Free        | Halogen Free     |         | 1              | 2 | 3 |           |
| -                | UP1855AG-x-AA3-R | SOT-223 | B              | C | E | Tape Reel |
| UP1855AL-x-T60-K | UP1855AG-x-T60-K | TO-126  | E              | C | B | Bulk      |

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

|   |   |
|---|---|
| <p>UP1855AG-x-AA3-R</p> <p>(1) Packing Type<br/>(2) Package Type<br/>(3) Rank<br/>(4) Green Package</p> | <p>(1) R: Tape Reel, B: Bulk<br/>(2) AA3: SOT-223, T60: TO-126<br/>(3) x: refer to Classification of <math>h_{FE3}</math><br/>(4) G: Halogen Free and Lead Free, L: Lead Free</p> |
|---|---|

■ MARKING

| SOT-223                              | TO-126  |
|--------------------------------------|---|
| <p>UP1855AG<br/>□□□□ → Data Code</p> | <p>UTC □□□□<br/>UP1855A □□□□ → Data Code<br/>L: Lead Free<br/>G: Halogen Free</p> |

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

| PARAMETER                  |         | SYMBOL    | RATINGS    | UNIT             |
|----------------------------|---------|-----------|------------|------------------|
| Collector -Base Voltage    |         | $V_{CB0}$ | -180       | V                |
| Collector -Emitter Voltage |         | $V_{CE0}$ | -170       | V                |
| Emitter -Base Voltage      |         | $V_{EBO}$ | -6         | V                |
| Collector Current (Pulse)  |         | $I_{CM}$  | -10        | A                |
| Collector Current (DC)     |         | $I_C$     | -4         | A                |
| Power Dissipation          | SOT-223 | $P_D$     | 1          | W                |
|                            | TO-126  |           | 1          |                  |
| Junction Temperature       |         | $T_J$     | +150       | $^\circ\text{C}$ |
| Storage Temperature        |         | $T_{STG}$ | -40 ~ +150 | $^\circ\text{C}$ |

Note: 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.

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

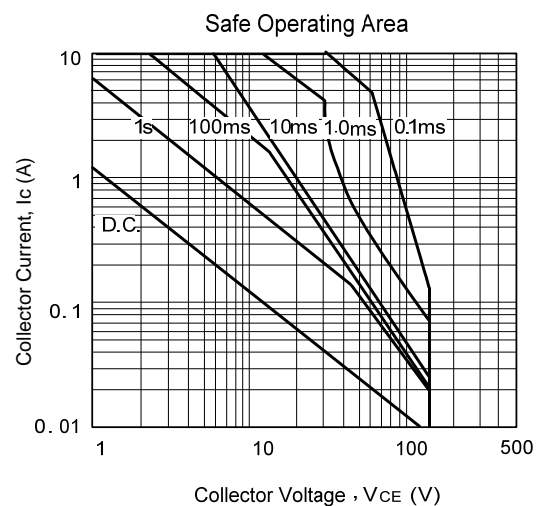
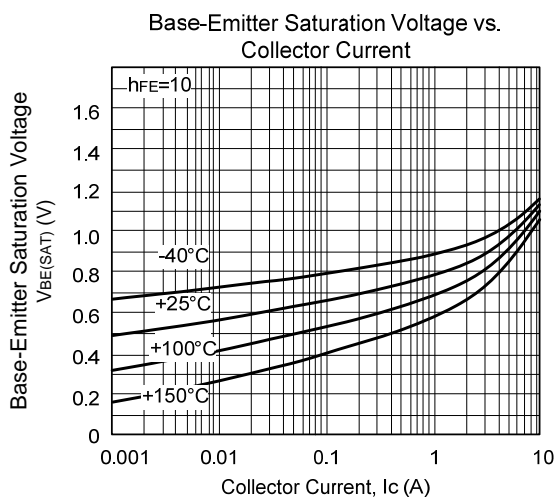
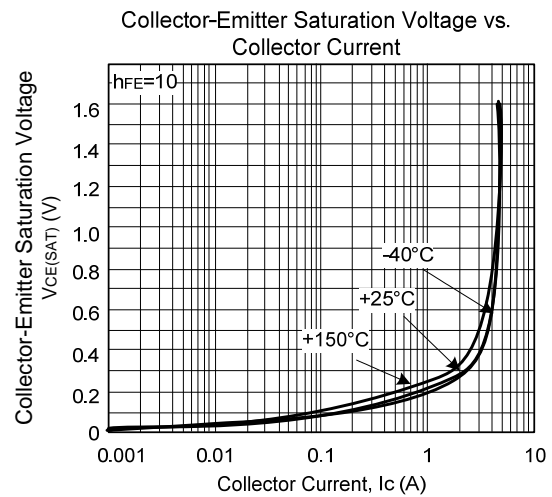
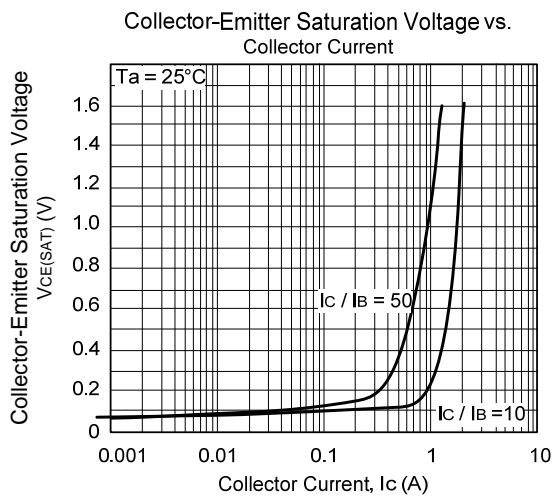
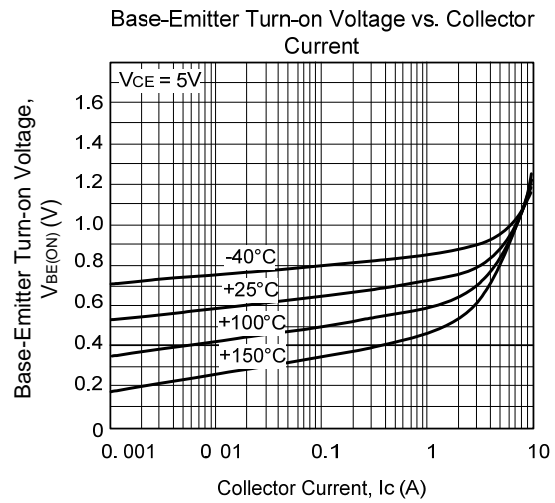
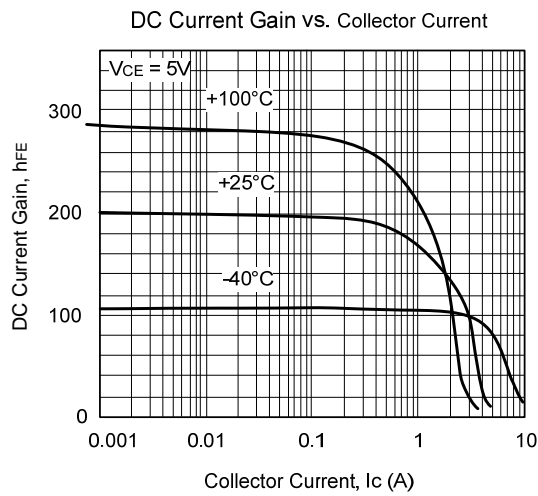
| PARAMETER                            | SYMBOL        | TEST CONDITIONS   | MIN  | TYP  | MAX   | UNIT          |
|--------------------------------------|---------------|---|------|------|-------|---------------|
| Collector-Base Breakdown Voltage     | $BV_{CB0}$    | $I_C = -100\mu\text{A}$                                 | -180 | -210 |       | V             |
| Collector-Emitter Breakdown Voltage  | $BV_{CE0}$    | $I_C = -10\text{mA}$                                    | -170 |      |       | V             |
| Emitter-Base Breakdown Voltage       | $BV_{EBO}$    | $I_E = -100\mu\text{A}$                                 | -6   | -8   |       | V             |
| Collector Cut-off Current            | $I_{CBO}$     | $V_{CB}=-150\text{V}$                                   |      |      | -50   | nA            |
|                                      |               | $V_{CB}=-150\text{V}, T_A=100^\circ\text{C}$            |      |      | -1    | $\mu\text{A}$ |
| Emitter Cut-off Current              | $I_{EBO}$     | $V_{EB}=-6\text{V}$                                     |      |      | -10   | nA            |
| Collector-Emitter Saturation Voltage | $V_{CE(SAT)}$ | $I_C=-100\text{mA}, I_B=-5\text{mA}$                    |      | -30  | -60   | mV            |
|                                      |               | $I_C=-500\text{mA}, I_B=-50\text{mA}$                   |      | -70  | -120  | mV            |
|                                      |               | $I_C=-1\text{A}, I_B=-100\text{mA}$                     |      | -110 | -150  | mV            |
|                                      |               | $I_C=-3\text{A}, I_B=-300\text{mA}$                     |      | -275 | -550  | mV            |
| Base-Emitter Saturation Voltage      | $V_{BE(SAT)}$ | $I_C=-3\text{A}, I_B=-300\text{mA}$                     |      | -970 | -1110 | mV            |
| Base-Emitter Turn-On Voltage         | $V_{BE(ON)}$  | $I_C=-3\text{A}, V_{CE}=-5\text{V}$                     |      | -830 | -950  | mV            |
| DC Current Gain                      | $h_{FE1}$     | $I_C=-10\text{mA}, V_{CE}=-5\text{V}$                   | 100  | 200  |       |               |
|                                      |               | $I_C=-1\text{A}, V_{CE}=-5\text{V}$                     | 100  |      | 300   |               |
|                                      |               | $I_C=-3\text{A}, V_{CE}=-5\text{V}$                     | 28   | 140  |       |               |
|                                      |               | $I_C=-10\text{A}, V_{CE}=-5\text{V}$                    |      | 10   |       |               |
| Transition Frequency                 | $f_T$         | $I_C=-100\text{mA}, V_{CE}=-10\text{V}, f=50\text{MHz}$ |      | 110  |       | MHz           |
| Output Capacitance                   | $C_{ob}$      | $V_{CB}=-20\text{V}, f=1\text{MHz}$                     |      | 40   |       | pF            |
| Switching Times                      | $t_{ON}$      | $I_C=-1\text{A}, V_{CC}=-50\text{V}$                    |      | 68   |       | ns            |
|                                      | $t_{OFF}$     | $I_{B1}=-100\text{mA}, I_{B2}=100\text{mA}$             |      | 1030 |       | ns            |

Note: Pulse test:  $t_P \leq 300\mu\text{s}$ , Duty cycle  $\leq 2\%$

■ CLASSIFICATION OF  $h_{FE3}$

| RANK  | A     | B        |
|-------|-------|----------|
| RANGE | 28~75 | 75(MIN.) |

## TYPICAL CHARACTERISTICS



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