



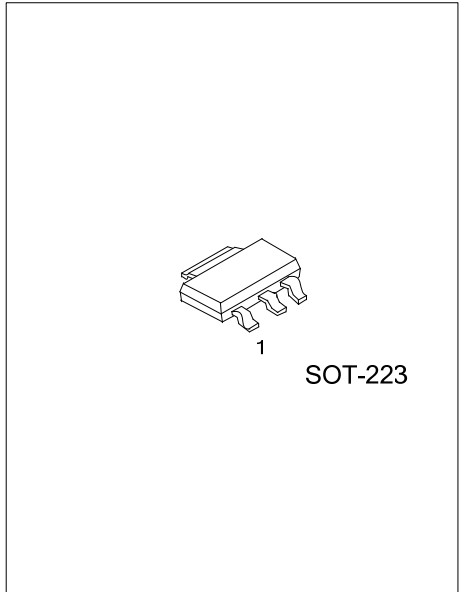
## UP1856

## 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 |           |
| UP1856L-AA3-R   | UP1856G-AA3-R | SOT-223 | B              | C | E | Tape Reel |

|   |   |
|---|---|
| <p>UP1856L-AA3-R</p> <p>(1) Packing Type<br/>(2) Package Type<br/>(3) Lead Free</p> | <p>(1) R: Tape Reel<br/>(2) AA3:SOT-223<br/>(3) G: Halogen Free, L: Lead Free</p> |
|---|---|



■ ABSOLUTE MAXIMUM RATING

| PARAMETER                                   | SYMBOL        | RATINGS    | UNIT             |
|---|---------------|------------|------------------|
| Collector-Base Voltage                      | $V_{CBO}$     | -220       | V                |
| Collector-Emitter Voltage                   | $V_{CEO}$     | -200       | V                |
| Emitter-Base Voltage                        | $V_{EBO}$     | -6         | V                |
| Peak Pulse Current                          | $I_{C(PEAK)}$ | -5         | A                |
| Continuous Collector Current                | $I_C$         | -2         | A                |
| Power Dissipation at $T_a=25^\circ\text{C}$ | $P_D$         | 1          | W                |
| Junction Temperature                        | $T_J$         | +150       | $^\circ\text{C}$ |
| Storage Temperature                         | $T_{STG}$     | -40 ~ +150 | $^\circ\text{C}$ |

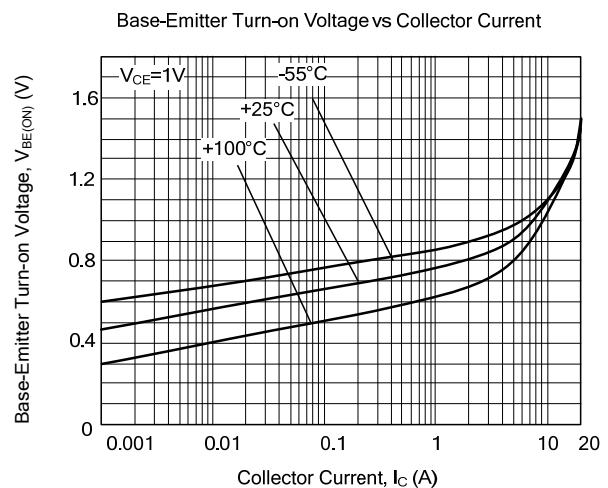
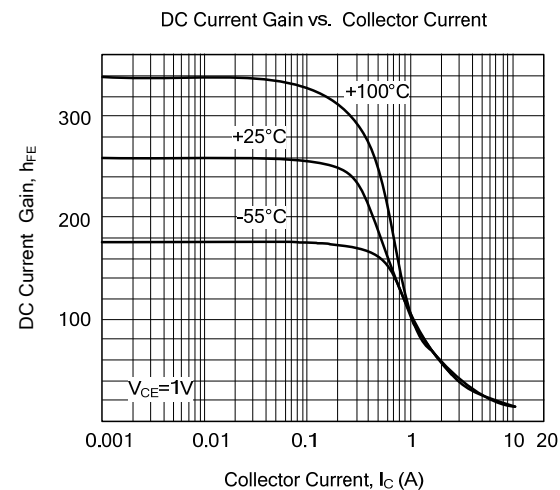
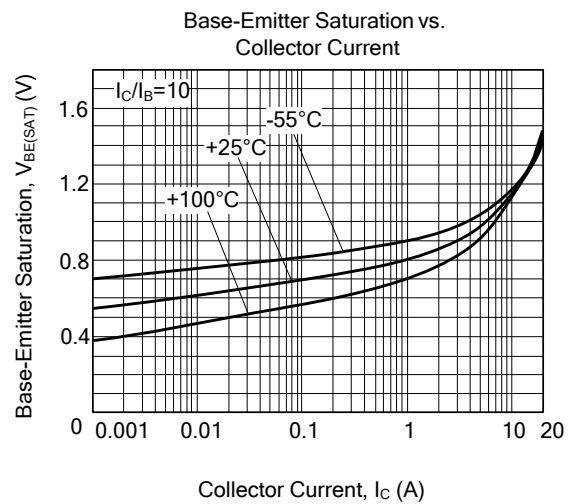
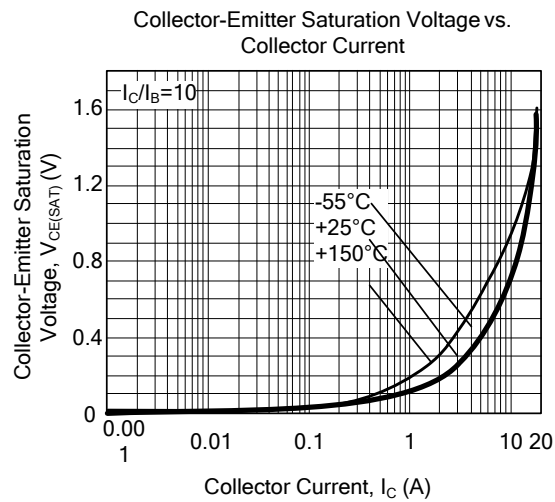
Note Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

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

| PARAMETER                                   | SYMBOL        | TEST CONDITIONS   | MIN  | TYP  | MAX   | UNIT |
|---|---------------|---|------|------|-------|------|
| Collector-Emitter Breakdown Voltage         | $BV_{CEO}$    | $I_C = -10\text{mA}$ , $I_B = 0$ (Note)                             | -200 | -240 |       | V    |
| Collector-Base Breakdown Voltage            | $BV_{CBO}$    | $I_C = -0.1\text{mA}$ , $I_E = 0$                                   | -220 | -300 |       | V    |
| Emitter-Base Breakdown Voltage              | $BV_{EBO}$    | $I_E = -0.1\text{mA}$ , $I_C = 0$                                   | -6   | -8   |       | V    |
| Collector-Emitter Saturation Voltage (Note) | $V_{CE(SAT)}$ | $I_C = -100\text{mA}$ , $I_B = -10\text{mA}$                        |      | -30  | -50   | mV   |
|   |               | $I_C = -1\text{A}$ , $I_B = -100\text{mA}$                          |      | -120 | -165  | mV   |
|   |               | $I_C = -2\text{A}$ , $I_B = -400\text{mA}$                          |      | -168 | -275  | mV   |
| Base-Emitter Saturation Voltage             | $V_{BE(SAT)}$ | $I_C = -2\text{A}$ , $I_B = -400\text{mA}$                          |      | -970 | -1110 | mV   |
| Base-Emitter Turn-On Voltage                | $V_{BE(ON)}$  | $V_{CE} = -5\text{V}$ , $I_C = -2\text{A}$ (Note)                   |      | -810 | -950  | mV   |
| Collector Cut-Off Current                   | $I_{CBO}$     | $V_{CB} = -200\text{V}$ , $I_E = 0$                                 |      |      | -50   | nA   |
| Emitter Cut-Off Current                     | $I_{EBO}$     | $V_{EB} = -6\text{V}$ , $I_C = 0$                                   |      |      | -10   | nA   |
| DC Current Gain (Note)                      | $h_{FE1}$     | $V_{CE} = -5\text{V}$ , $I_C = -10\text{mA}$                        | 100  | 200  |       |      |
|   | $h_{FE2}$     | $V_{CE} = -5\text{V}$ , $I_C = -1\text{A}$                          | 100  | 200  | 300   |      |
|   | $h_{FE3}$     | $V_{CE} = -5\text{V}$ , $I_C = -2\text{A}$                          | 50   | 150  |       |      |
|   | $h_{FE4}$     | $V_{CE} = -5\text{V}$ , $I_C = -5\text{A}$                          |      | 10   |       |      |
| Transition Frequency                        | $f_T$         | $V_{CE} = -10\text{V}$ , $I_C = -100\text{mA}$ , $f = 50\text{MHz}$ |      | 110  |       | MHz  |
| Output Capacitance                          | $C_{OB}$      | $V_{CB} = -20\text{V}$ , $f = 1\text{MHz}$                          |      | 32   |       | pF   |
| Turn-On Time                                | $t_{ON}$      | $I_C = -1\text{A}$ , $I_{B1} = -100\text{mA}$                       |      | 67   |       | ns   |
| Turn-Off Time                               | $t_{OFF}$     | $I_{B2} = 100\text{mA}$ , $V_{CC} = -50\text{V}$                    |      | 1140 |       | ns   |

Note: Pulsed test: duty cycle  $\leq 2\%$ ,  $t_P = 300\mu\text{s}$ .

■ TYPICAL CHARACTERISTICS



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