



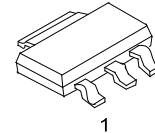
## UP1853

## PNP SILICON TRANSISTOR

### HIGH CURRENT (HIGH PERFORMANCE) TRANSISTORS

#### ■ FEATURES

- \* 5A Continuous Current , up to 10A peak current
- \* Very Low Saturation Voltages
- \* Excellent Gain Characteristics Specified up to 10A
- \*  $P_D = 3W$



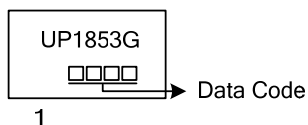
SOT-223

#### ■ ORDERING INFORMATION

| Ordering Number | Package | Pin Assignment |   |   | Packing   |
|-----------------|---------|----------------|---|---|-----------|
|                 |         | 1              | 2 | 3 |           |
| UP1853G-AA3-R   | SOT-223 | B              | C | E | Tape Reel |

|                                                                                               |                                                                                          |
|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| <p>UP1853G-AA3-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p> | <p>(1) R: Tape Reel</p> <p>(2) AA3: SOT-223</p> <p>(3) G: Halogen Free and Lead Free</p> |
|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|

#### ■ MARKING



## ■ ABSOLUTE MAXIMUM RATINGS

| PARAMETER                                    | SYMBOL    | RATINGS  | UNIT             |
|----------------------------------------------|-----------|----------|------------------|
| Collector-Base Voltage                       | $V_{CBO}$ | -140     | V                |
| Collector-Emitter Voltage                    | $V_{CEO}$ | -100     | V                |
| Emitter-Base Voltage                         | $V_{EBO}$ | -6       | V                |
| Peak Pulse Current                           | $I_{CM}$  | -10      | A                |
| Continuous Collector Current                 | $I_C$     | -5       | A                |
| Power Dissipation ( $T_A=25^\circ\text{C}$ ) | $P_D$     | 3        | W                |
| Junction Temperature                         | $T_J$     | +150     | $^\circ\text{C}$ |
| Storage Temperature                          | $T_{STG}$ | -55~+150 | $^\circ\text{C}$ |

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

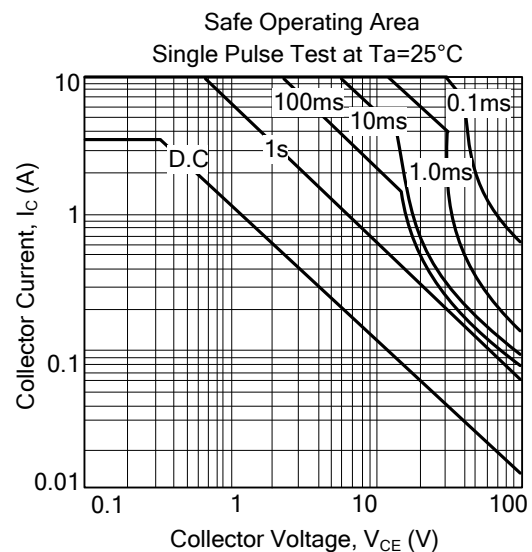
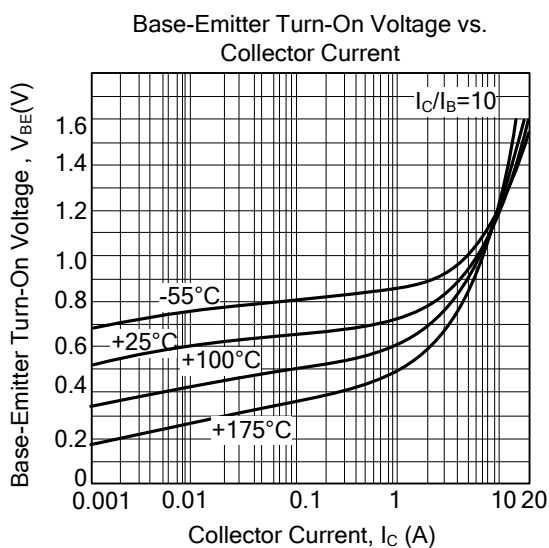
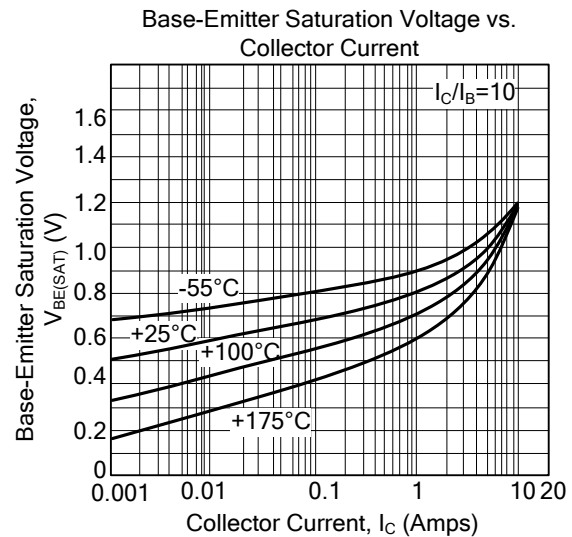
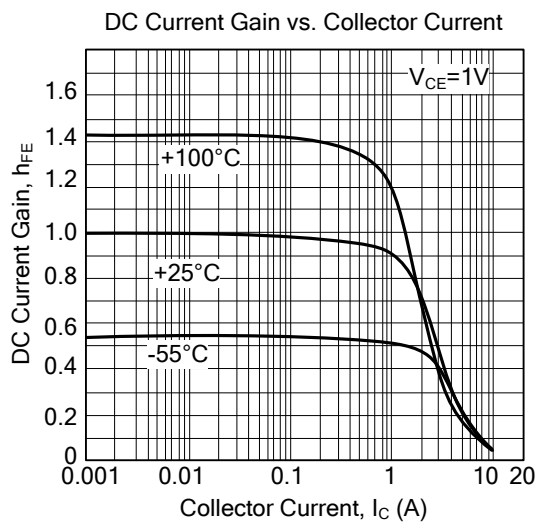
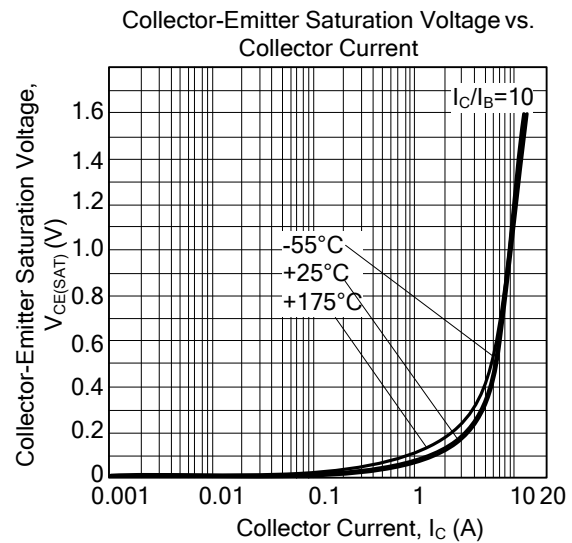
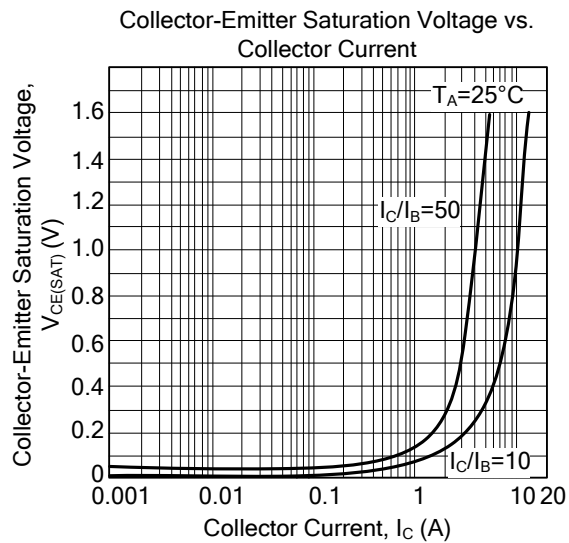
Absolute maximum ratings are stress ratings only and functional device operation is not implied.

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

| PARAMETER                            | SYMBOL                  | TEST CONDITIONS                                                     | MIN  | TYP   | MAX   | UNIT |
|--------------------------------------|-------------------------|---------------------------------------------------------------------|------|-------|-------|------|
| Collector-Base Breakdown Voltage     | $BV_{CBO}$              | $I_C=-100\mu\text{A}$                                               | -140 | -170  |       | V    |
| Collector-Emitter Breakdown Voltage  | $BV_{CER}$              | $I_C=-1\mu\text{A}$ , $R_B\leq 1\text{k}\Omega$                     | -140 | -170  |       | V    |
| Collector-Emitter Breakdown Voltage  | $BV_{CEO}$              | $I_C=-10\text{mA}$ (Note)                                           | -100 | -120  |       | V    |
| Emitter-Base Breakdown Voltage       | $BV_{EBO}$              | $I_E=-100\mu\text{A}$                                               | -6   | -8    |       | V    |
| Collector Cut-Off Current            | $I_{CBO}$               | $V_{CB}=-100\text{V}$                                               |      |       | -200  | nA   |
| Collector Cut-Off Current            | $I_{CER}$               | $V_{CB}=-100\text{V}$ , $R\leq 1\text{k}\Omega$                     |      |       | -200  | nA   |
| Emitter Cut-Off Current              | $I_{EBO}$               | $V_{EB}=-6\text{V}$                                                 |      |       | -50   | nA   |
| Collector-Emitter Saturation Voltage | $V_{CE(SAT)}$<br>(Note) | $I_C=-100\text{mA}$ , $I_B=-10\text{mA}$                            |      | -20   | -50   | mV   |
|                                      |                         | $I_C=-1\text{A}$ , $I_B=-100\text{mA}$                              |      | -90   | -115  |      |
|                                      |                         | $I_C=-2\text{A}$ , $I_B=-200\text{mA}$                              |      | -160  | -220  |      |
|                                      |                         | $I_C=-4\text{A}$ , $I_B=-400\text{mA}$                              |      | -300  | -420  |      |
| Base-Emitter Saturation Voltage      | $V_{BE(SAT)}$           | $I_C=-4\text{A}$ , $I_B=-400\text{mA}$ (Note)                       |      | -1010 | -1170 | mV   |
| Base-Emitter Turn-On Voltage         | $V_{BE(ON)}$            | $I_C=-4\text{A}$ , $V_{CE}=-1\text{V}$ (Note)                       |      | -925  | -1160 | mV   |
| DC Current Gain                      | $h_{FE}$<br>(Note)      | $I_C=-10\text{mA}$ , $V_{CE}=-1\text{V}$                            | 100  | 200   |       |      |
|                                      |                         | $I_C=-1\text{A}$ , $V_{CE}=-1\text{V}$                              | 100  | 200   | 300   |      |
|                                      |                         | $I_C=-3\text{A}$ , $V_{CE}=-1\text{V}$                              | 50   | 90    |       |      |
|                                      |                         | $I_C=-4\text{A}$ , $V_{CE}=-1\text{V}$                              | 30   | 50    |       |      |
|                                      |                         | $I_C=-10\text{A}$ , $V_{CE}=-1\text{V}$                             |      | 15    |       |      |
| Transition Frequency                 | $f_T$                   | $I_C=-100\text{mA}$ , $V_{CE}=-10\text{V}$ $f=50\text{MHz}$         |      | 125   |       | MHz  |
| Output Capacitance                   | $C_{OB}$                | $V_{CB}=-10\text{V}$ , $f=1\text{MHz}$                              |      | 65    |       | pF   |
| Switching Times                      | $t_{ON}$                | $I_C=-2\text{A}$ , $I_{B1}=-200\text{mA}$ , $I_{B2}=200\text{mA}$ , |      | 110   |       | ns   |
|                                      | $t_{OFF}$               | $V_{CC}=-10\text{V}$                                                |      | 460   |       |      |

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

## ■ TYPICAL CHARACTERISTICS



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