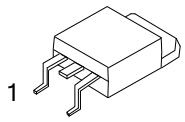
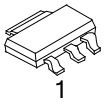
# UP1753

**NPN SILICON TRANSISTOR**

## HIGH CURRENT LOW $V_{CE(SAT)}$ TRANSISTOR




TO-252




SOT-223

## ■ DESCRIPTION

The UTC **UP1753** is specially designed to have high current and low $V_{CE(SAT)}$ to suit for power amplifier application and power switching application.

## ■ FEATURES

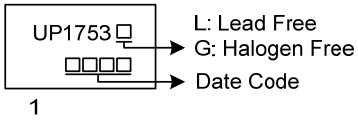
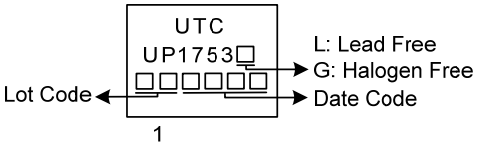
*$V_{CE(SAT)}$ typ is below 300mV at 5A
* Max continuous current 6 A
* $BV_{CEO}$ is 100V minimum

## ■ ORDERING INFORMATION

| Ordering Number | | Package | Pin Assignment | | | Packing |
|---|---|---|---|---|---|---|
| Lead Free | Halogen Free | | 1 | 2 | 3 | |
| UP1753L-AA3-R | UP1753G-AA3-R | SOT-223 | B | C | E | Tape Reel |
| UP1753L-TN3-T | UP1753G-TN3-T | TO-252 | B | C | E | Tube |
| UP1753L-TN3-R | UP1753G- TN3-R | TO-252 | B | C | E | Tape Reel |

| | |
|---|---|
| UP1753G-AA3-R<br>(1)Packing Type<br>(2)Package Type<br>(3)Green Package | (1) R: Tape Reel, T: Tube<br>(2) AA3: SOT-223, TN3: TO-252<br>(3) G: Halogen Free and Lead Free, L: Lead Free |

## ■ MARKING

| SOT-223 | TO-252 |
|---|---|
|  |  |

## ■ ABSOLUTE MAXIMUM RATINGS

| PARAMETER | | | SYMBOL | RATINGS | UNIT |
|---|---|---|---|---|---|
| Collector-Base Voltage | | | $V_{CBO}$ | 200 | 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 | | | $I_C$ | 6 | A |
| Collector Power Dissipation | $T_A$=25°C | SOT-223 | $P_C$ | 0.8 | W |
| | | TO-252 | | 1 | W |
| | $T_C$=25°C (Note) | SOT-223 | | 2 | W |
| | | TO-252 | | 25 | W |
| Junction Temperature | | | $T_J$ | +150 | °C |
| Storage Temperature | | | $T_{STG}$ | -55 ~ +150 | °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 FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

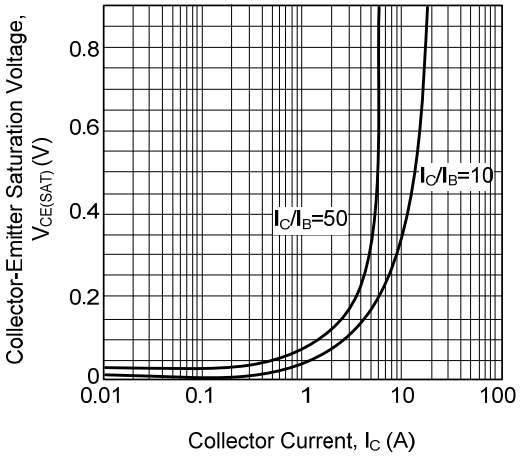
## ■ ELECTRICAL CHARACTERISTICS ($T_A$= 25°C, unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Collector-Base Breakdown Voltage | $BV_{CBO}$ | $I_C$=100μA | 200 | 300 | | V |
| Collector-Emitter Breakdown Voltage | $BV_{CEO}$ | $I_C$=10mA (Note1) | 100 | 120 | | V |
| Emitter-Base Breakdown Voltage | $BV_{EBO}$ | $I_E$=100μA | 6 | 8 | | V |
| Collector Cut-Off Current | $I_{CBO}$ | $V_{CB}$=150V | | | 10 | nA |
| Collector Cut-Off Current | $I_{CER}$ | $V_{CE}$=150V, R≤1KΩ | | | 10 | nA |
| Emitter Cut-Off Current | $I_{EBO}$ | $V_{EB}$=6V | | | 10 | nA |
| Collector-Emitter Saturation Voltage | $V_{CE(SAT)}$ | $I_C$=0.1A, $I_B$=5mA (Note1) | | | 50 | mV |
| | | $I_C$=2A, $I_B$=100mA (Note1) | | | 150 | |
| | | $I_C$=5A, $I_B$=500mA (Note1) | | | 330 | |
| Base-Emitter Saturation Voltage | $V_{BE(SAT)}$ | $I_C$=5A, $I_B$=500mA (Note1) | | | 1250 | mV |
| Base-Emitter Turn-On Voltage | $V_{BE(ON)}$ | $I_C$=5A, $V_{CE}$ =2V (Note1) | | | 1100 | mV |
| Static Forward Current Transfer Ratio | $h_{FE}$ | $I_C$=10mA, $V_{CE}$ =2V | 100 | 200 | | |
| | | $I_C$=2A, $V_{CE}$ =2V (Note1) | 100 | 200 | 300 | |
| | | $I_C$=4A, $V_{CE}$ =2V (Note1) | 50 | 100 | | |
| | | $I_C$=10A, $V_{CE}$ =2V (Note1) | 20 | | | |
| Output Capacitance | $C_{OB}$ | $V_{CB}$=10V, f=1MHz | | 38 | | pF |
| Rise Time | $t_R$ | $I_C$≤-500mA, $I_{B1}$=$I_{B2}$=10mA | | 60 | | ns |
| Storage Time | $t_S$ | | | 2000 | | ns |
| Fall Time | $t_F$ | | | 70 | | ns |

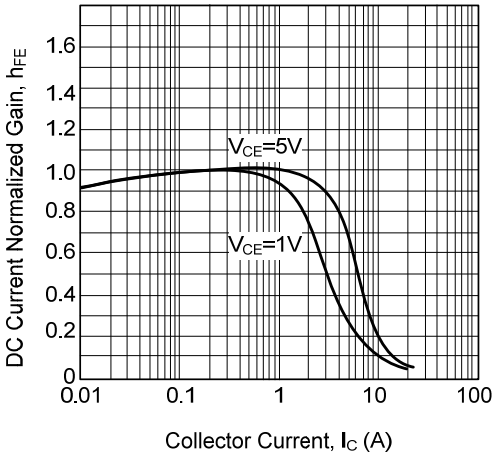
Note: 1.Measured under pulsed conditions. Pulse width=300μs. Duty cycle ≤2%,

## ■ TYPICAL CHARACTERISTICS

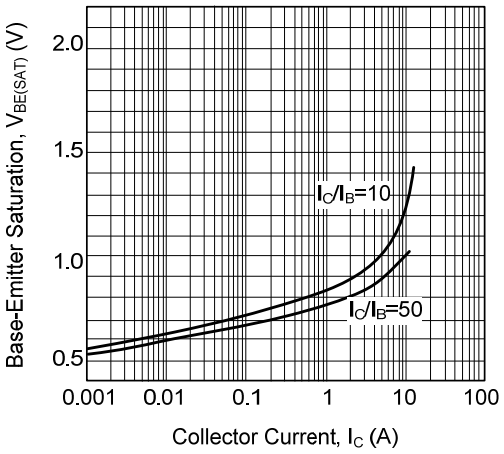
Collector-Emitter Saturation Voltage vs. Collector Current



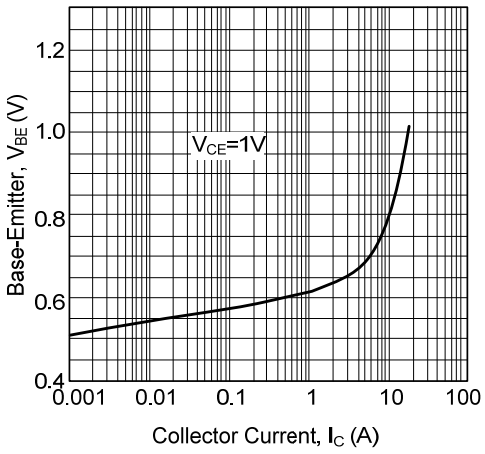

DC Current Gain vs. Collector Current




Base-Emitter Saturation vs. Collector Current




Base-Emitter Turn-On Voltage vs. Collector Current




Safe Operating Area