



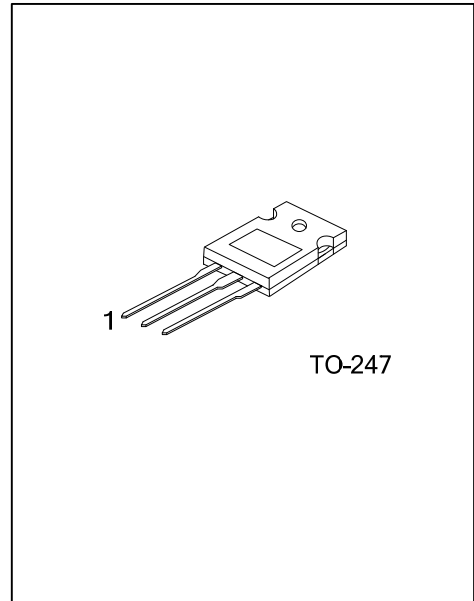
# 2N3055

## NPN SILICON TRANSISTOR

### SILICON NPN TRANSISTORS

#### DESCRIPTION

The UTC **2N3055** is a silicon NPN transistor in TO-247 metal case. It is intended for power switching circuits, series and shunt regulators, output stages and high fidelity amplifiers.



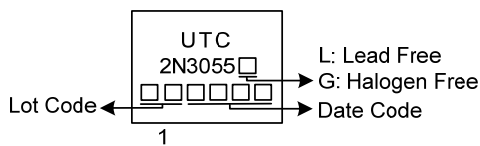
#### ORDERING INFORMATION

| Ordering Number |               | Package | Pin Assignment |   |   | Packing |
|-----------------|---------------|---------|----------------|---|---|---------|
| Lead Free       | Halogen Free  |         | 1              | 2 | 3 |         |
| 2N3055L-T47-T   | 2N3055G-T47-T | TO-247  | B              | C | E | Tube    |

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

|   |  |
|---|--|
| <p>2N3055G-T47-T</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p> | <p>(1) T: Tube</p> <p>(2) T47: TO-247</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p> |
|---|--|

#### MARKING



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

| PARAMETERS                                  | SYMBOL    | VALUE     | UNITS            |
|---|-----------|-----------|------------------|
| Collector-Base Voltage                      | $V_{CBO}$ | 100       | V                |
| Collector-Emitter Voltage                   | $V_{CEO}$ | 60        | V                |
| Emitter-Base Voltage                        | $V_{EBO}$ | 7         | V                |
| Collector-Emitter Voltage                   | $V_{CEV}$ | 70        | V                |
| Collector Current                           | $I_C$     | 15        | A                |
| Collector Peak Current (Note)               | $I_{CM}$  | 15        | A                |
| Base Current                                | $I_B$     | 7         | A                |
| Base Peak Current (Note)                    | $I_{BM}$  | 15        | A                |
| Total Dissipation at $T_A=25^\circ\text{C}$ | $P_D$     | 90        | W                |
| Max. Operating Junction Temperature         | $T_J$     | 200       | $^\circ\text{C}$ |
| Storage Temperature                         | $T_{STG}$ | -65 ~ 200 | $^\circ\text{C}$ |

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 |
|---|----------------|---|------|-----|-----|------|
| <b>OFF CHARACTERISTICS</b>                            |                |   |      |     |     |      |
| Collector-Emitter Sustaining Voltage                  | $V_{CEO(sus)}$ | $I_C=200\text{mA}$ , $I_B=0\text{V}$                      | 60   |     |     | V    |
| Collector-Emitter Sustaining Voltage                  | $V_{CER(sus)}$ | $I_C=0.2\text{A}$ , $R_{BE}=100\text{ Ohms}$              | 70   |     |     | V    |
| Collector Cut-off Current                             | $I_{CEO}$      | $V_{CE}=30\text{V}$ , $I_B=0$                             |      |     | 0.7 | mA   |
| Collector Cut-off Current ( $T_A=150^\circ\text{C}$ ) | $I_{CEX}$      | $V_{CE}=100\text{V}$ , $V_{BE(off)}=1.5\text{V}$          |      |     | 1.0 | mA   |
|   |                | $V_{CE}=100\text{V}$ , $V_{BE(off)}=1.5\text{V}$          |      |     | 5.0 | mA   |
| Emitter Cut-off Current                               | $I_{EBO}$      | $V_{BE}=7\text{V}$ , $I_C=0$                              |      |     | 5.0 | mA   |
| <b>ON CHARACTERISTICS</b>                             |                |   |      |     |     |      |
| DC Current Gain(note)                                 | $h_{FE}$       | $I_C=4\text{A}$ , $V_{CE}=4\text{V}$                      | 20   |     | 70  |      |
|   |                | $I_C=10\text{A}$ , $V_{CE}=4\text{V}$                     | 5    |     |     |      |
| Collector-Emitter Saturation Voltage                  | $V_{CE(sat)}$  | $I_C=4\text{A}$ , $I_B=400\text{mA}$                      |      |     | 1.1 | V    |
|   |                | $I_C=10\text{A}$ , $I_B=3.3\text{A}$                      |      |     | 3.0 | V    |
| Base-Emitter On Voltage                               | $V_{BE(on)}$   | $I_C=4\text{A}$ , $V_{CE}=4\text{V}$                      |      |     | 1.5 | V    |
| <b>SECOND BREAKDOWN</b>                               |                |   |      |     |     |      |
| Second Breakdown Collector with Base Forward Biased   | $I_{s/b}$      | $V_{CE}=60\text{V}$ , $T=1.0\text{s}$ , Non-repetitive    | 2.87 |     |     | A    |
| <b>DYNAMIC CHARACTERISTICS</b>                        |                |   |      |     |     |      |
| Current Gain-Bandwidth Product                        | $f_T$          | $I_C=0.5\text{A}$ , $V_{CE}=10\text{V}$ , $f=1\text{MHz}$ | 2.5  |     |     | MHz  |
| Small-Signal Current Gain                             | $h_{FE}$       | $I_C=1\text{A}$ , $V_{CE}=4\text{V}$ , $f=1\text{kHz}$    | 15   |     | 120 |      |
| Small-Signal Current Gain Cut-off Frequency           | $f_{HFE}$      | $I_C=1\text{A}$ , $V_{CE}=4\text{V}$ , $f=1.0\text{kHz}$  | 10   |     |     | kHz  |

Note: Pulse Test: Puls Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$

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