



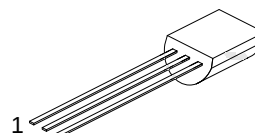
## 2N4403-Q

PNP SILICON TRANSISTOR

### PNP GENERAL PURPOSE AMPLIFIER

#### DESCRIPTION

The UTC **2N4403-Q** is designed for use as a general purpose amplifier and switch requiring collector currents up to 500mA.



TO-92

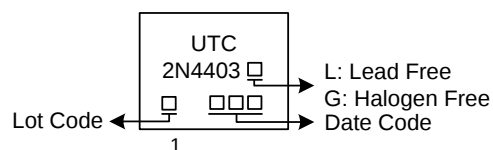
#### ORDERING INFORMATION

| Ordering Number |                 | Package | Pin Assignment |   |   | Packing  |
|-----------------|-----------------|---------|----------------|---|---|----------|
| Lead Free       | Halogen Free    |         | 1              | 2 | 3 |          |
| 2N4403L-Q-T92-B | 2N4403G-Q-T92-B | TO-92   | E              | B | C | Tape Box |
| 2N4403L-Q-T92-K | 2N4403G-Q-T92-K | TO-92   | E              | B | C | Bulk     |

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

|                                                                                                 |                                                                                                              |
|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| <p>2N4403G-Q-AE3-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p> | <p>(1) B: Tape Box, K: Bulk</p> <p>(2) T92: TO-92</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)

| PARAMETER                         | SYMBOL    | RATINGS    | UNIT                   |
|-----------------------------------|-----------|------------|------------------------|
| Collector-Base Voltage            | $V_{CBO}$ | -40        | V                      |
| Collector-Emitter Voltage         | $V_{CEO}$ | -40        | V                      |
| Emitter-Base Voltage              | $V_{EBO}$ | -5         | V                      |
| Collector Current-Continuous      | $I_C$     | -600       | mA                     |
| Total Device Dissipation          | $P_C$     | 625        | mW                     |
| Derate above $25^{\circ}\text{C}$ |           | 5.0        | mW/ $^{\circ}\text{C}$ |
| Junction Temperature              | $T_J$     | +150       | $^{\circ}\text{C}$     |
| Storage Temperature               | $T_{STG}$ | -55 ~ +150 | $^{\circ}\text{C}$     |

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. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

■ **THERMAL DATA** ( $T_A=25^{\circ}\text{C}$ , unless otherwise specified)

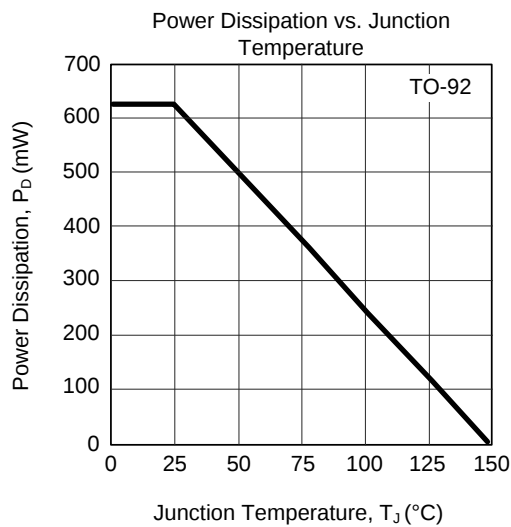
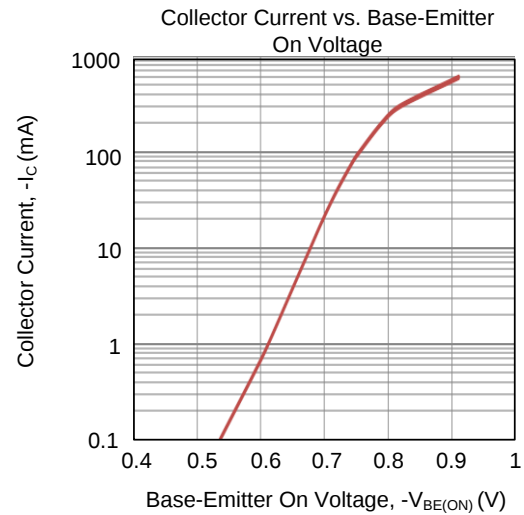
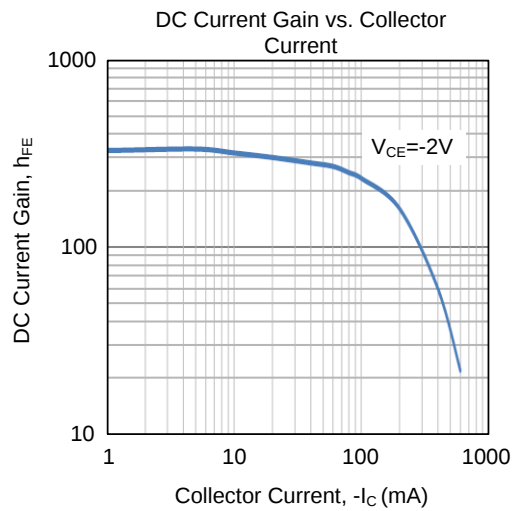
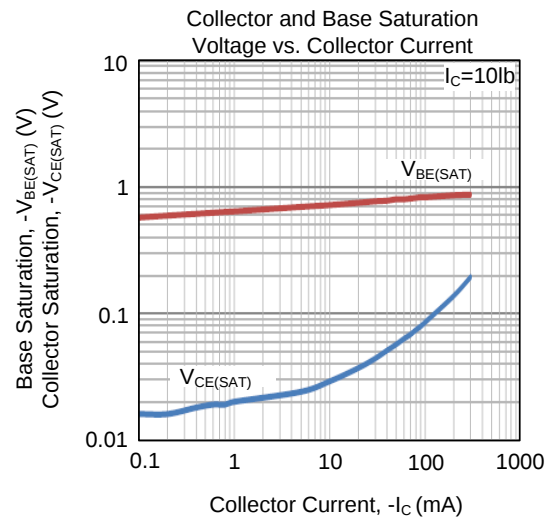
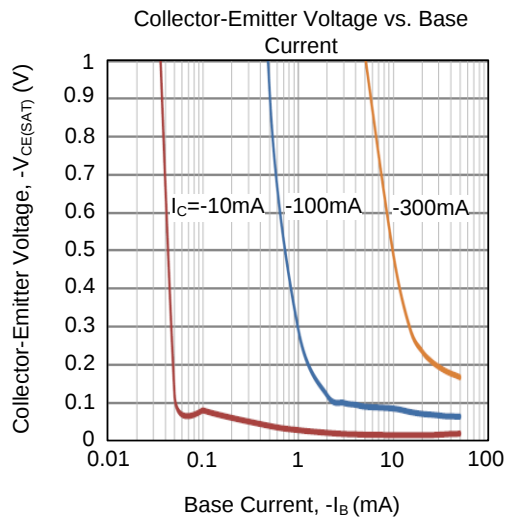
| CHARACTERISTIC      | SYMBOL        | RATINGS | UNIT                        |
|---------------------|---------------|---------|-----------------------------|
| Junction to Ambient | $\theta_{JA}$ | 200     | $^{\circ}\text{C}/\text{W}$ |
| Junction to Case    | $\theta_{JC}$ | 83.3    | $^{\circ}\text{C}/\text{W}$ |

■ **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 Breakdown Voltage (Note) | $BV_{CEO}$     | $I_C=-1\text{mA}$ , $I_B=0$                      | -40   |     |       | V             |
| Collector-Base Breakdown Voltage           | $BV_{CBO}$     | $I_C=-0.1\text{mA}$ , $I_E=0$                    | -40   |     |       | V             |
| Emitter-Base Breakdown Voltage             | $BV_{EBO}$     | $I_E=-0.1\text{mA}$ , $I_C=0$                    | -5    |     |       | V             |
| Collector-Base Cutoff Current              | $I_{CBO}$      | $V_{CE}=-40\text{V}$ , $I_E=0$                   |       |     | -0.1  | $\mu\text{A}$ |
| Collector-Emitter Cutoff Current           | $I_{CEO}$      | $V_{CE}=-40\text{V}$ , $I_B=0$                   |       |     | -0.1  | $\mu\text{A}$ |
| Emitter-Base Cutoff Current                | $I_{EBO}$      | $V_{EB}=-5\text{V}$ , $I_C=0$                    |       |     | -0.1  | $\mu\text{A}$ |
| <b>ON CHARACTERISTICS*</b>                 |                |                                                  |       |     |       |               |
| DC Current Gain                            | $h_{FE1}$      | $V_{CE}=-1\text{V}$ , $I_C=-0.1\text{mA}$        | 30    |     |       |               |
|                                            | $h_{FE2}$      | $V_{CE}=-1\text{V}$ , $I_C=-1\text{mA}$          | 60    |     |       |               |
|                                            | $h_{FE3}$      | $V_{CE}=-1\text{V}$ , $I_C=-10\text{mA}$         | 100   |     |       |               |
|                                            | $h_{FE4}$      | $V_{CE}=-2\text{V}$ , $I_C=-150\text{mA}$ (Note) | 100   |     | 300   |               |
|                                            | $h_{FE5}$      | $V_{CE}=-2\text{V}$ , $I_C=-500\text{mA}$ (Note) | 20    |     |       |               |
| Collector-Emitter Saturation Voltage       | $V_{CE(SAT1)}$ | $I_C=-150\text{mA}$ , $I_B=-15\text{mA}$         |       |     | -0.4  | V             |
|                                            | $V_{CE(SAT2)}$ | $I_C=-500\text{mA}$ , $I_B=-50\text{mA}$         |       |     | -0.75 |               |
| Base-Emitter Saturation Voltage            | $V_{BE(SAT1)}$ | $I_C=-150\text{mA}$ , $I_B=-15\text{mA}$ (Note)  | -0.75 |     | -0.95 | V             |
|                                            | $V_{BE(SAT2)}$ | $I_C=-500\text{mA}$ , $I_B=-50\text{mA}$         |       |     | -1.3  |               |

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

## TYPICAL CHARACTERISTICS



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