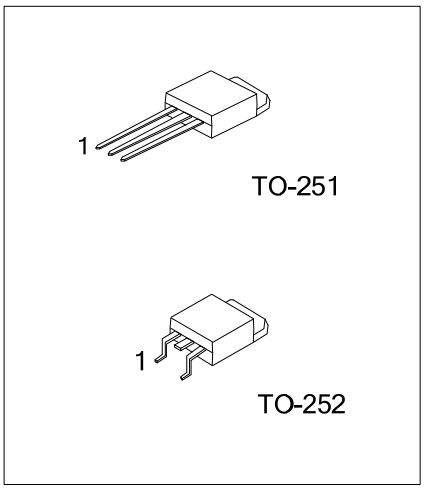
# T2096

**NPN SILICON TRANSISTOR**

## HIGH VOLTAGE TRANSISTOR




### ■ DESCRIPTION

The T2096 is a NPN Silicon Planar Transistors in TO-251 package. It is intended for high voltage, switching power supply and industrial applications.

### ■ FEATURES

* Pb-free package is available
* Collector-Emitter voltage: $V_{CEO}$ = 400V
* Pulse collector current to 4A

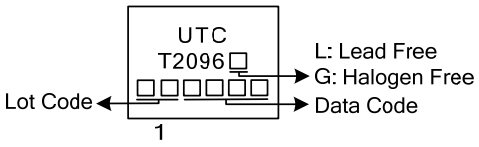
### ■ ORDERING INFORMATION

| Ordering Number | | Package | Pin Assignment | | | Packing |
|---|---|---|---|---|---|---|
| Lead Free | Halogen Free | | 1 | 2 | 3 | |
| T2096L-TM3-T | T2096G-TM3-T | TO-251 | B | C | E | Tube |
| T2096L-TN3-R | T2096G-TN3-R | TO-252 | B | C | E | Tape Reel |

Note: Pin Assignment: G: Gate D: Drain S: Source

| | |
|---|---|
| T2096L-TM3-T<br>(1)Packing Type<br>(2)Package Type<br>(3)Green Package | (1) T: Tube, R: Tape Reel<br>(2) TM3: TO-251, TN3: TO-252<br>(3) L: Lead Free, G: Halogen Free and Lead Free |

### ■ MARKING



## ■ ABSOLUATE MAXIUM RATINGS ($T_A$=25°C, unless otherwise specified)

| PARAMETER | | SYMBOL | RATINGS | UNIT |
|---|---|---|---|---|
| Collector-Base Voltage | | $V_{CBO}$ | 800 | V |
| Collector-Emitter Voltage | | $V_{CES}$ | 800 | V |
| Collector-Emitter Voltage | | $V_{CEO}$ | 400 | V |
| Emitter-Base Voltage | | $V_{EBO}$ | 8 | V |
| Base Current | | $I_B$ | 1 | A |
| DC Collector Current | | $I_C$ | 2 | A |
| Pulse Collector Current (Note 2) | | $I_{CP}$ | 4 | A |
| Collector Dissipation | $T_A$=25°C | $P_C$ | 1 | W |
| | $T_C$=25°C | | 15 | |
| Junction Temperature | | $T_J$ | 150 | °C |
| Storage Temperature | | $T_{STG}$ | -55 ~ +150 | °C |

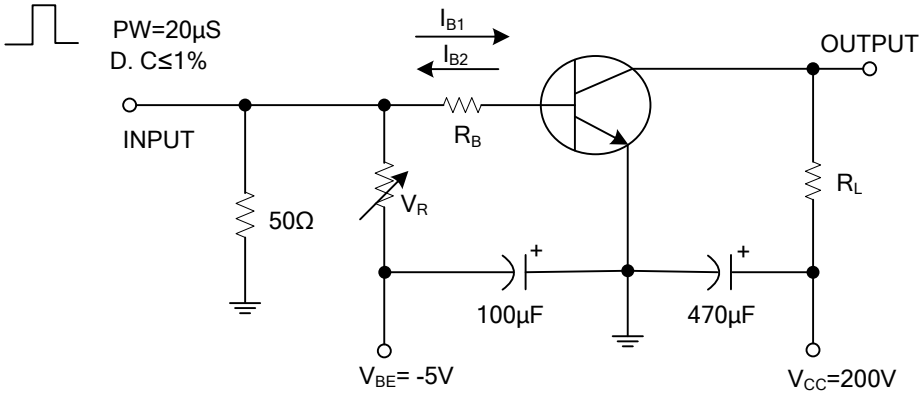
Note:1.Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. Pulse Test: Pulse Width ≤300μS, Duty Cycle≤10%

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

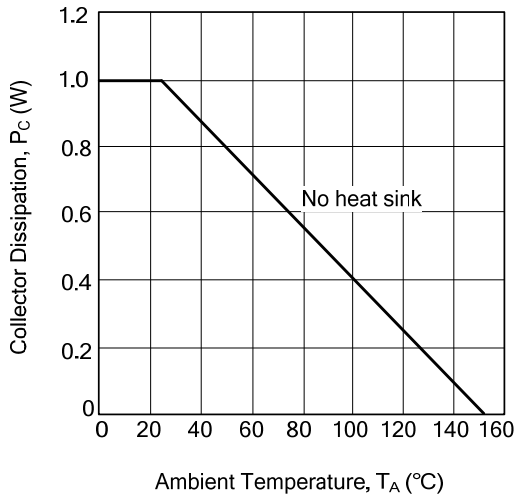
| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Collector-Base Breakdown Voltage | $BV_{CBO}$ | $I_C$ =1mA, $I_E$ =0 | 800 | | | V |
| Collector-Emitter Breakdown Voltage | $BV_{CEO}$ | $I_C$ =5mA, $R_{BE}$=∞ | 400 | | | V |
| Emitter-Base Breakdown Voltage | $BV_{EBO}$ | $I_E$ =1mA, $I_C$ =0 | 8 | | | V |
| Collector-Emitter Saturation Voltage | $V_{CE(SAT)}$ | $I_C$ =1A, $I_B$ =0.2A | | | 0.8 | V |
| Base-Emitter Saturation Voltage | $V_{BE(SAT)}$ | $I_C$ =1A, $I_B$ =0.2A | | | 1.5 | V |
| Collector Cutoff Current | $I_{CBO}$ | $V_{CB}$ =400V, $I_E$ =0 | | | 10 | μA |
| Emitter Cutoff Current | $I_{EBO}$ | $V_{EB}$ =5V, $I_C$ =0 | | | 10 | μA |
| DC Current Gain | $h_{FE\ 1}$ | $V_{CE}$ =5V, $I_C$ =1mA | 45 | | | |
| | $h_{FE\ 2}$ | $V_{CE}$ =5V, $I_C$ =0.2A | 120 | | 180 | |
| Current Gain-Bandwidth Product | $f_T$ | $V_{CE}$ =10V, $I_C$ =0.2A | | 20 | | MHz |
| Output Capacitance | Cob | $V_{CB}$ =10V, f =1MHz | | 20 | | pF |
| Turn-on Time | $t_{ON}$ | $I_C$ =1.0A, $I_{B1}$ =0.05A | | | 0.5 | μs |
| Storage Time | $t_{STG}$ | $I_{B2}$ = -0.5A, $R_L$ =200Ω | | | 2.5 | μs |
| Fall Time | $t_F$ | $V_{CC}$=200V | | | 0.3 | μs |

## ■ SWITCHING TIME TEST CIRCUIT

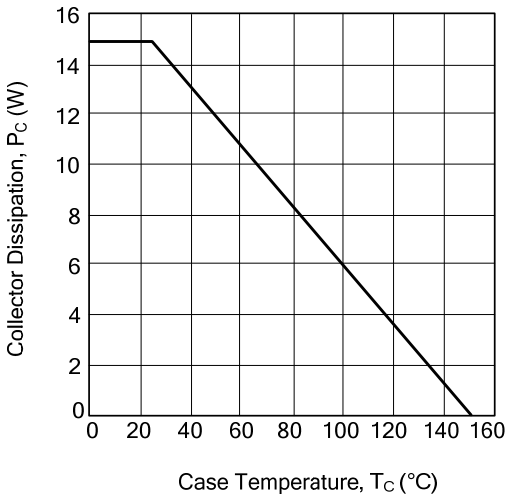


## ■ TYPICAL CHARACTERISTICS

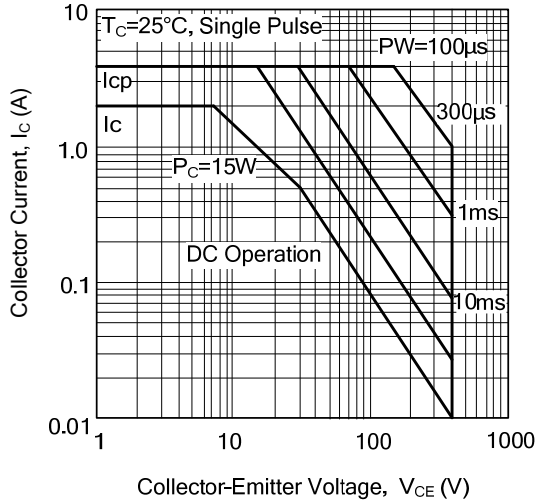
$P_C$ vs. $T_A$




$P_C$ vs. $T_C$




$I_C$ vs. $V_{CE}$
Forward Bias ASO




$I_C$ vs. $V_{CE}$
Reverse Bias ASO