



NPN BUW13 - BUW13A

HIGH VOLTAGE, HIGH SPEED POWER TRANSISTOR

The BUW13-A are silicon NPN power transistor in TO3PN package. They are intended for use in switching regulators, motor control systems, inverters and converters.
Compliance to RoHS.

ABSOLUTE MAXIMUM RATINGS

| Symbol | Ratings | | Value | | Unit |
|-----------|---------------------------|--------------------|------------|--------|------------------|
| | | | BUW13 | BUW13A | |
| V_{CE0} | Collector-Emitter Voltage | $I_B = 0$ | 400 | 450 | V |
| V_{CBO} | Collector-Base Voltage | $I_E = 0$ | 850 | 1000 | V |
| V_{EBO} | Emitter-Base Voltage | $I_C = 0$ | 9 | | V |
| I_C | Collector Current | | 15 | | A |
| I_{CM} | Collector Current Peak | | 30 | | A |
| I_B | Base Current | | 6 | | A |
| I_{BM} | Base Current Peak | | 9 | | A |
| P_t | Total Power Dissipation | @ $T_C = 25^\circ$ | 175 | | Watts |
| T_J | Junction Temperature | | 150 | | $^\circ\text{C}$ |
| T_{Stg} | Storage Temperature | | -65 to 175 | | $^\circ\text{C}$ |

THERMAL CHARACTERISTICS

| Symbol | Ratings | Value | Unit |
|------------|--------------------------------------|-------|--------------------|
| R_{thJC} | Thermal Resistance, Junction to Case | 0.7 | $^\circ\text{C/W}$ |

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ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

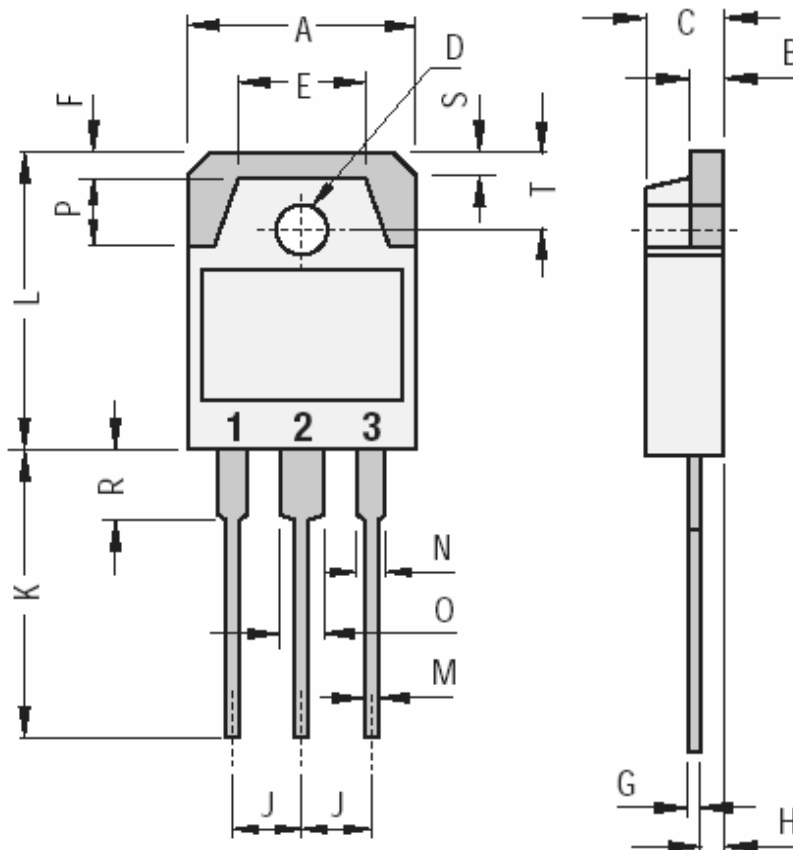
| Symbol | Ratings | Test Condition(s) | Min | Typ | Mx | Unit | |
|----------------|--------------------------------------|---|--------|-----|----|------|----|
| $V_{CEO(SUS)}$ | Collector-Emitter Sustaining Voltage | $I_C = 100 \text{ mA}$, $I_B = 0 \text{ A}$ $L = 25 \text{ mH}$ | BUW13 | 400 | - | - | V |
| | | | BUW13A | 450 | - | - | |
| I_{CES} | Collector Cutoff Current | $V_{CE} = V_{CEMax}$ $V_{BE} = 0 \text{ V}$ | BUW13 | - | - | 1 | mA |
| | | | BUW13A | | | | |
| | | $V_{CE} = V_{CEMax}$, $V_{BE} = 0 \text{ V}$ $T_{case} = 125^\circ\text{C}$ | BUW13 | - | - | 4 | |
| | | | BUW13A | | | | |
| I_{EBO} | Emitter Cutoff Current | $V_{EB} = 9 \text{ V}$, $I_C = 0 \text{ A}$ | BUW13 | - | - | 10 | mA |
| | | | BUW13A | | | | |
| $V_{CE(SAT)}$ | Collector-Emitter saturation Voltage | $I_C = 10 \text{ A}$, $I_B = 2 \text{ A}$ | BUW13 | - | - | 1.5 | V |
| | | $I_C = 8 \text{ A}$, $I_B = 1.6 \text{ A}$ | BUW13A | | | | |
| $V_{BE(SAT)}$ | Base-Emitter saturation Voltage | $I_C = 10 \text{ A}$, $I_B = 2 \text{ A}$ | BUW13 | - | - | 1.6 | |
| | | $I_C = 8 \text{ A}$, $I_B = 1.6 \text{ A}$ | BUW13A | | | | |
| h_{FE} | DC Current Gain | $I_C = 20 \text{ mA}$, $V_{CE} = 5 \text{ V}$ | BUW13 | 10 | - | 35 | - |
| | | | BUW13A | | | | |
| | | $I_C = 1.5 \text{ A}$, $V_{CE} = 5 \text{ V}$ | BUW13 | 10 | - | 35 | |
| | | | BUW13A | | | | |

SWITCHING TIMES

| Symbol | Ratings | Test Condition(s) | Min | Typ | Mx | Unit |
|----------|--------------|--|-----|------|------|---------------|
| t_{on} | Turn-on time | For BUW13 $I_C = 10 \text{ A}$, $I_{B1} = -I_{B2} = 2 \text{ A}$ | - | 1.2 | 1.5 | μs |
| t_s | Storage time | | - | 0.6 | 1.1 | |
| t_f | File time | For BUW13A $I_C = 8 \text{ A}$, $I_{B1} = -I_{B2} = 1.6 \text{ A}$ | - | 0.17 | 0.25 | |

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MECHANICAL DATA CASE TO3PN Non Isolated Plastic Package



| DIMENSIONS (mm) | | |
|-----------------|-------|-------|
| | Min. | Max. |
| A | 15.20 | 1600 |
| B | 1.90 | 2.10 |
| C | 4.60 | 5.00 |
| D | 3.10 | 3.30 |
| E | | 9.60 |
| F | | 2.00 |
| G | 0.35 | 0.55 |
| H | | 1.40 |
| J | 5.35 | 5.55 |
| K | 20.00 | |
| L | 19.60 | 20.20 |
| M | 0.95 | 1.25 |
| N | | 2.00 |
| O | | 3.00 |
| P | | 4.00 |
| R | | 4.00 |
| S | | 1.80 |
| T | 4.80 | 5.20 |

| | |
|---------|-----------|
| Pin 1 : | Base |
| Pin 2 : | Collector |
| Pin 3 : | Emitter |

Revised August 2012

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