

## Inchange Semiconductor

## Product Specification

### Silicon NPN Power Transistors

### BUW13W BUW13AW

#### DESCRIPTION

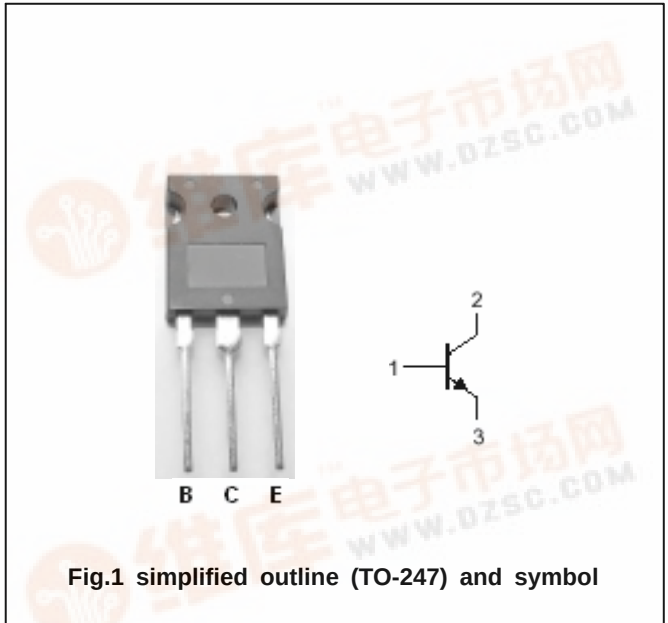
- With TO-247 package
- High voltage,high speed

#### APPLICATIONS

- Converters
- Inverters
- Switching regulators
- Motor control systems

#### PINNING (See Fig.2)

| PIN | DESCRIPTION |
|-----|-------------|
| 1   | Base        |
| 2   | Collector   |
| 3   | Emitter     |



#### Absolute maximum ratings(Ta=25°C)

| SYMBOL           | PARAMETER                 | CONDITIONS           | VALUE   | UNIT |
|------------------|---------------------------|----------------------|---------|------|
| V <sub>CBO</sub> | Collector-base voltage    | BUW13W               | 850     | V    |
|                  |                           | BUW13AW              | 1000    |      |
| V <sub>CEO</sub> | Collector-emitter voltage | BUW13W               | 400     | V    |
|                  |                           | BUW13AW              | 450     |      |
| V <sub>EBO</sub> | Emitter-base voltage      | Open collector       | 9       | V    |
| I <sub>C</sub>   | Collector current         |                      | 15      | A    |
| I <sub>CM</sub>  | Collector current-peak    |                      | 30      | A    |
| I <sub>B</sub>   | Base current              |                      | 6       | A    |
| I <sub>BM</sub>  | Base current-peak         |                      | 9       | A    |
| P <sub>T</sub>   | Total power dissipation   | T <sub>C</sub> =25°C | 175     | W    |
| T <sub>j</sub>   | Junction temperature      |                      | 150     | °C   |
| T <sub>stg</sub> | Storage temperature       |                      | -65~150 | °C   |

#### THERMAL CHARACTERISTICS

| SYMBOL               | PARAMETER                                         | MAX | UNIT |
|----------------------|---------------------------------------------------|-----|------|
| R <sub>th j-mb</sub> | Thermal resistance from junction to mounting base | 0.7 | K/W  |

## Silicon NPN Power Transistors

## BUW13W BUW13AW

## CHARACTERISTICS

T<sub>j</sub>=25°C unless otherwise specified

| SYMBOL                            | PARAMETER                            |         | CONDITIONS                                                                                                                                                     | MIN | TYP. | MAX        | UNIT |
|-----------------------------------|--------------------------------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|------|------------|------|
| V <sub>CEO(SUS)</sub>             | Collector-emitter sustaining voltage | BUW13W  | I <sub>C</sub> =0.1A ; I <sub>B</sub> =0; L=25mH                                                                                                               | 400 |      |            | V    |
|                                   |                                      | BUW13AW |                                                                                                                                                                | 450 |      |            |      |
| V <sub>CEsat</sub>                | Collector-emitter saturation voltage | BUW13W  | I <sub>C</sub> =10A; I <sub>B</sub> =2A                                                                                                                        |     |      | 1.5        | V    |
|                                   |                                      | BUW13AW | I <sub>C</sub> =8A; I <sub>B</sub> =1.6A                                                                                                                       |     |      |            |      |
| V <sub>BEsat</sub>                | Base-emitter saturation voltage      | BUW13W  | I <sub>C</sub> =10A; I <sub>B</sub> =2A                                                                                                                        |     |      | 1.6        | V    |
|                                   |                                      | BUW13AW | I <sub>C</sub> =8A; I <sub>B</sub> =1.6A                                                                                                                       |     |      |            |      |
| I <sub>CES</sub>                  | Collector cut-off current            |         | V <sub>CE</sub> =Rated V <sub>CES</sub> ; V <sub>BE</sub> =0<br>T <sub>j</sub> =125°C                                                                          |     |      | 1.0<br>4.0 | mA   |
| I <sub>EBO</sub>                  | Emitter cut-off current              |         | V <sub>EB</sub> =9V; I <sub>C</sub> =0                                                                                                                         |     |      | 10         | mA   |
| h <sub>FE-1</sub>                 | DC current gain                      |         | I <sub>C</sub> =20mA ; V <sub>CE</sub> =5V                                                                                                                     | 10  |      | 35         |      |
| h <sub>FE-2</sub>                 | DC current gain                      |         | I <sub>C</sub> =1.5A ; V <sub>CE</sub> =5V                                                                                                                     | 10  |      | 35         |      |
| Switching times    resistive load |                                      |         |                                                                                                                                                                |     |      |            |      |
| t <sub>on</sub>                   | Turn-on time                         |         | For BUW13W<br>I <sub>C</sub> =10A ; I <sub>B1</sub> =-I <sub>B2</sub> =-2A<br><br>For BUW13AW<br>I <sub>C</sub> =8A ; I <sub>B1</sub> =-I <sub>B2</sub> =-1.6A |     |      | 1.0        | μ s  |
| t <sub>s</sub>                    | Storage time                         |         |                                                                                                                                                                |     |      | 4.0        | μ s  |
| t <sub>f</sub>                    | Fall time                            |         |                                                                                                                                                                |     |      | 0.8        | μ s  |

