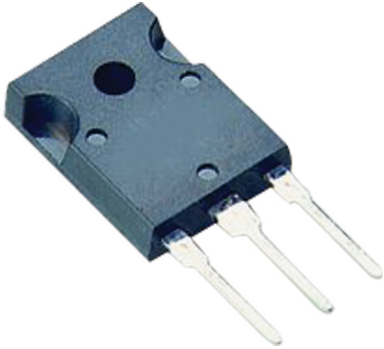


# Complementary Power Transistor **multicomp** PRO



## Description:

Complementary Silicon Power Transistors are designed for use in general purpose power amplifier and switching applications.

## Features:

- Power Dissipation- $P_D = 90W$  at  $T_C = 25^\circ C$
- DC Current Gain  $h_{FE} = 20 \sim 100$  at  $I_C = 4A$
- $V_{CE(sat)} = 1.1V$  (Max.) at  $I_C = 4A, I_B = 400mA$

## Maximum Ratings

| Characteristic   | Symbol         | Rating      | Unit               |
|--|----------------|-------------|--------------------|
| Collector-Emitter Voltage  | $V_{CEO}$      | 60          | V                  |
| Collector-Emitter Voltage  | $V_{CER}$      | 70          |                    |
| Collector-Base Voltage   | $V_{CBO}$      | 100         |                    |
| Emitter-Base Voltage   | $V_{EBO}$      | 7           |                    |
| Collector Current-Continuous   | $I_C$          | 15          | A                  |
| Base Current   | $I_B$          | 7           |                    |
| Total Power Dissipation at $T_C = 25^\circ C$<br>Derate above $25^\circ C$ | $P_D$          | 90<br>0.72  | W<br>W/ $^\circ C$ |
| Operating and Storage Junction Temperature Range                           | $T_J, T_{STG}$ | -65 to +150 | $^\circ C$         |

## Thermal Characteristics

| Characteristic                      | Symbol         | Max. | Unit         |
|-------------------------------------|----------------|------|--------------|
| Thermal Resistance Junction to Case | $R\theta_{jc}$ | 1.39 | $^\circ C/W$ |

# Complementary Power Transistor **multicomp** PRO

## Electrical Characteristics ( $T_C = 25^\circ\text{C}$ unless otherwise noted)

| Characteristic | Symbol | Min. | Max. | Unit |
|----------------|--------|------|------|------|
|----------------|--------|------|------|------|

### OFF Characteristics

|  |                |    |     |    |
|--|----------------|----|-----|----|
| Collector-Emitter Sustaining Voltage (1)<br>$I_C = 30\text{mA}, I_B = 0$       | $V_{CEO(SUS)}$ | 60 | -   | V  |
| Collector Cut off Current<br>$V_{CE} = 70\text{V}, R_{BE} = 100\Omega$         | $I_{CER}$      | -  | 1   | mA |
| Collector Cut off Current<br>$V_{CE} = 30\text{V}, I_B = 0$                    | $I_{CEO}$      | -  | 0.7 |    |
| Collector Cut off Current<br>$V_{CE} = 100\text{V}, V_{BE(off)} = 1.5\text{V}$ | $I_{CEV}$      | -  | 5   |    |
| Emitter Cut off Current<br>$V_{EB} = 7\text{V}, I_C = 0$                       | $I_{EBO}$      | -  |     |    |

### ON Characteristics (1)

|   |               |         |          |   |
|---|---------------|---------|----------|---|
| DC Current Gain<br>$I_C = 4\text{A}, V_{CE} = 4\text{V}$<br>$I_C = 10\text{A}, V_{CE} = 4\text{V}$                    | $h_{FE}$      | 20<br>5 | 100      | - |
| Collector-Emitter Saturation Voltage<br>$I_C = 4\text{A}, I_B = 0.4\text{A}$<br>$I_C = 10\text{A}, I_B = 3.3\text{A}$ | $V_{CE(sat)}$ | -       | 1.1<br>3 | V |
| Base-Emitter On Voltage<br>$I_C = 4\text{A}, V_{CE} = 4\text{V}$  | $V_{BE(on)}$  | -       | 1.8      |   |

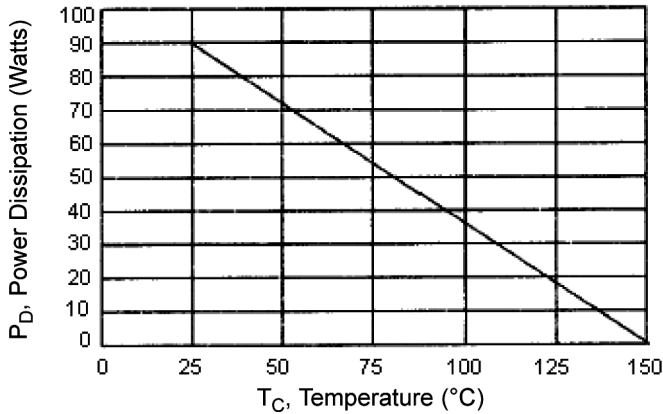
### Dynamic Characteristics

|  |          |     |   |     |
|--|----------|-----|---|-----|
| Current Gain Bandwidth Product<br>$I_C = 500\text{mA}, V_{CE} = 10\text{V}, f = 1\text{MHz}$ | $f_T$    | 2.5 | - | MHz |
| Small-Signal Current Gain<br>$I_C = 1\text{A}, V_{CE} = 4\text{V}, f = 1\text{kHz}$          | $h_{fe}$ | 15  | - | -   |

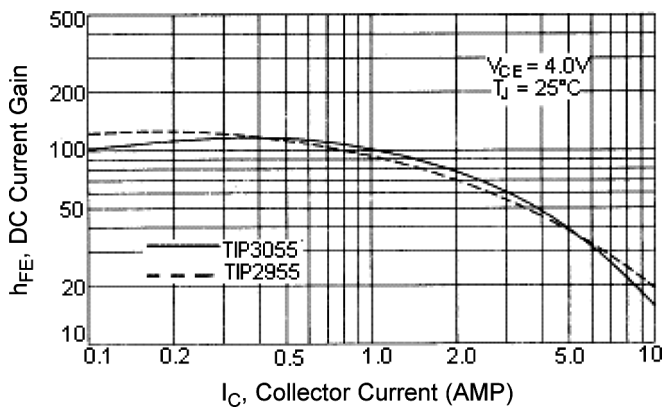
(1) Pulse Test: Pulse Width = 300 $\mu\text{s}$ , Duty Cycle  $\leq 2\%$

(2)  $f_T = |h_{fe}| \cdot f_{test}$

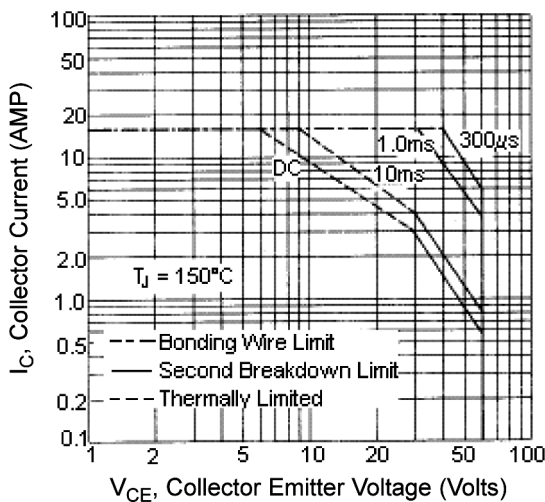
**Figure - 1 Power Derating**



**Figure - 2 DC Current Gain**

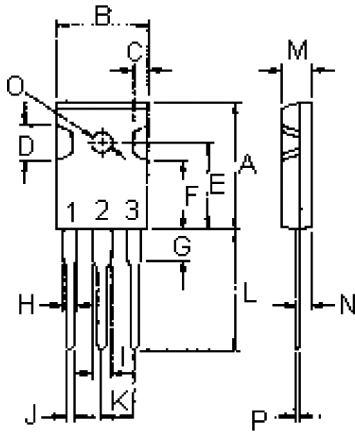


**Figure - 3 Active Region Safe Operating Area**



There are two limitations on the power handling ability of a transistor: average junction temperature and second breakdown safe operating area curves indicate  $I_C$ - $V_{CE}$  limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater dissipation than the curves indicate. The data of Figure - 3 is based on  $T_C = 150^\circ C$ ;  $T_{J(PK)}$  is variable depending on power level. Second breakdown pulse limits are valid for duty cycles to 10% but must be derated for temperature.

# Complementary Power Transistor **multicomp** PRO



## Pin Configuration:

1. Base
2. Collector
3. Emitter

| Dimensions | Min.  | Max.  |
|------------|-------|-------|
| A          | 20.63 | 22.38 |
| B          | 15.38 | 16.2  |
| C          | 1.9   | 2.7   |
| D          | 5.1   | 6.1   |
| E          | 14.81 | 15.22 |
| F          | 11.72 | 12.84 |
| G          | 4.2   | 4.5   |
| H          | 1.82  | 2.46  |
| I          | 2.92  | 3.23  |
| J          | 0.89  | 1.53  |
| K          | 5.26  | 5.66  |
| L          | 18.5  | 21.5  |
| M          | 4.68  | 5.36  |
| N          | 2.4   | 2.8   |
| O          | 3.25  | 3.65  |
| P          | 0.55  | 0.7   |

Dimensions : Millimetres

## Part Number Table

| Description             | Part Number |
|-------------------------|-------------|
| Transistor, NPN, TO-247 | TIP3055     |
| Transistor, PNP, TO-3P  | TIP2955     |

**Important Notice :** This data sheet and its contents (the "Information") belong to the members of the AVNET group of companies (the "Group") or are licensed to it. No licence is granted for the use of it other than for information purposes in connection with the products to which it relates. No licence of any intellectual property rights is granted. The Information is subject to change without notice and replaces all data sheets previously supplied. The Information supplied is believed to be accurate but the Group assumes no responsibility for its accuracy or completeness, any error in or omission from it or for any use made of it. Users of this data sheet should check for themselves the Information and the suitability of the products for their purpose and not make any assumptions based on information included or omitted. Liability for loss or damage resulting from any reliance on the Information or use of it (including liability resulting from negligence or where the Group was aware of the possibility of such loss or damage arising) is excluded. This will not operate to limit or restrict the Group's liability for death or personal injury resulting from its negligence. Multicomp Pro is the registered trademark of Premier Farnell Limited 2019.

Newark.com/multicomp-pro  
 Farnell.com/multicomp-pro  
 Element14.com/multicomp-pro

**multicomp** PRO