

| Data sheet | |
|---------------|---------------------------|
| status | Preliminary specification |
| date of issue | December 1990 |
| | |

2N2646

Silicon unijunction transistor

QUICK REFERENCE DATA

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|--------------|-----------------------------------|--|------|------|------|------|
| $-V_{EB2}$ | emitter-base 2 voltage | | - | - | 30 | V |
| I_{EM} | emitter current | peak value | - | - | 2 | A |
| P_{tot} | total power dissipation | | - | - | 300 | mW |
| T_j | junction temperature | | - | - | 125 | °C |
| R_{BB} | static inter-base resistance | $V_{B2B1} = 3\text{ V}$ $I_E = 0$ | - | 7 | - | kΩ |
| V_{EB1sat} | emitter-base 1 saturation voltage | $V_{B2B1} = 10\text{ V}$ $I_E = 50\text{ mA}$ | - | 3.5 | - | V |
| $I_{E(V)}$ | emitter valley point current | | 4 | 6 | - | mA |
| $I_{E(P)}$ | emitter peak point current | | - | 1 | 5 | μA |

PINNING - TO-18

Base 2 connected to case.

| PIN | DESCRIPTION |
|-----|-------------|
| 1 | emitter |
| 2 | base 1 |
| 3 | base 2 |

PIN CONFIGURATION

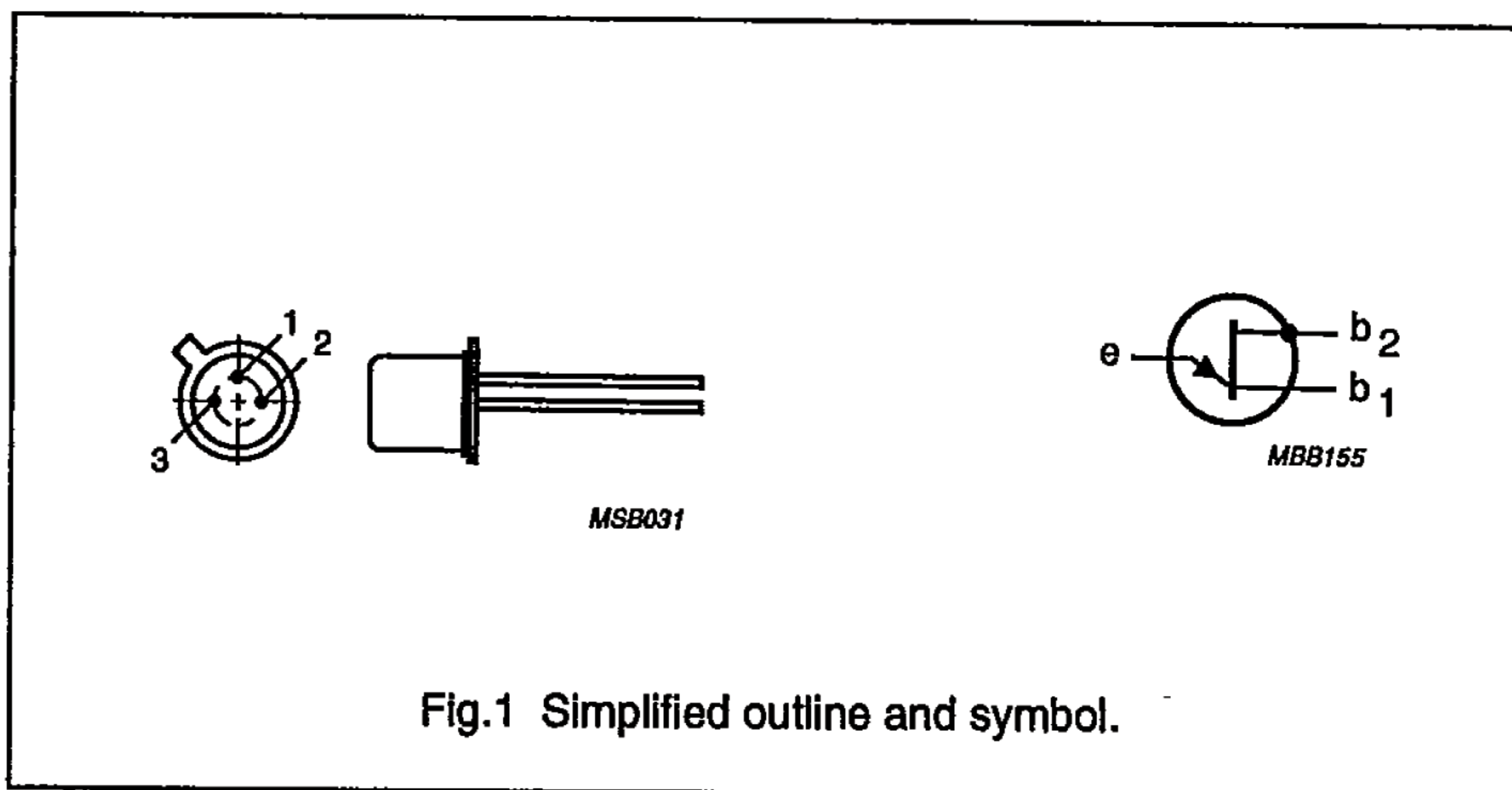


Fig.1 Simplified outline and symbol.

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LIMITING VALUES

In accordance with the Absolute Maximum System (IEC 134).

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|------------|----------------------------------|---|------|------|------------------|
| $-V_{EB2}$ | emitter-base 2 voltage | | - | 30 | V |
| V_{B2B1} | inter-base voltage | | - | 35 | V |
| I_E | emitter current | average value | - | 50 | mA |
| I_{EM} | emitter current (note 1) | peak value | - | 2 | A |
| P_{tot} | total power dissipation (note 2) | $T_{amb} \leq 25\text{ }^\circ\text{C}$ | - | 300 | mW |
| T_{stg} | storage temperature range | | -65 | 150 | $^\circ\text{C}$ |
| T_j | junction temperature | | - | 125 | $^\circ\text{C}$ |

Notes

1. Capacitor discharge $\leq 10\text{ }\mu\text{F}$ at $\leq 30\text{ V}$.
2. Must be limited by external circuit.

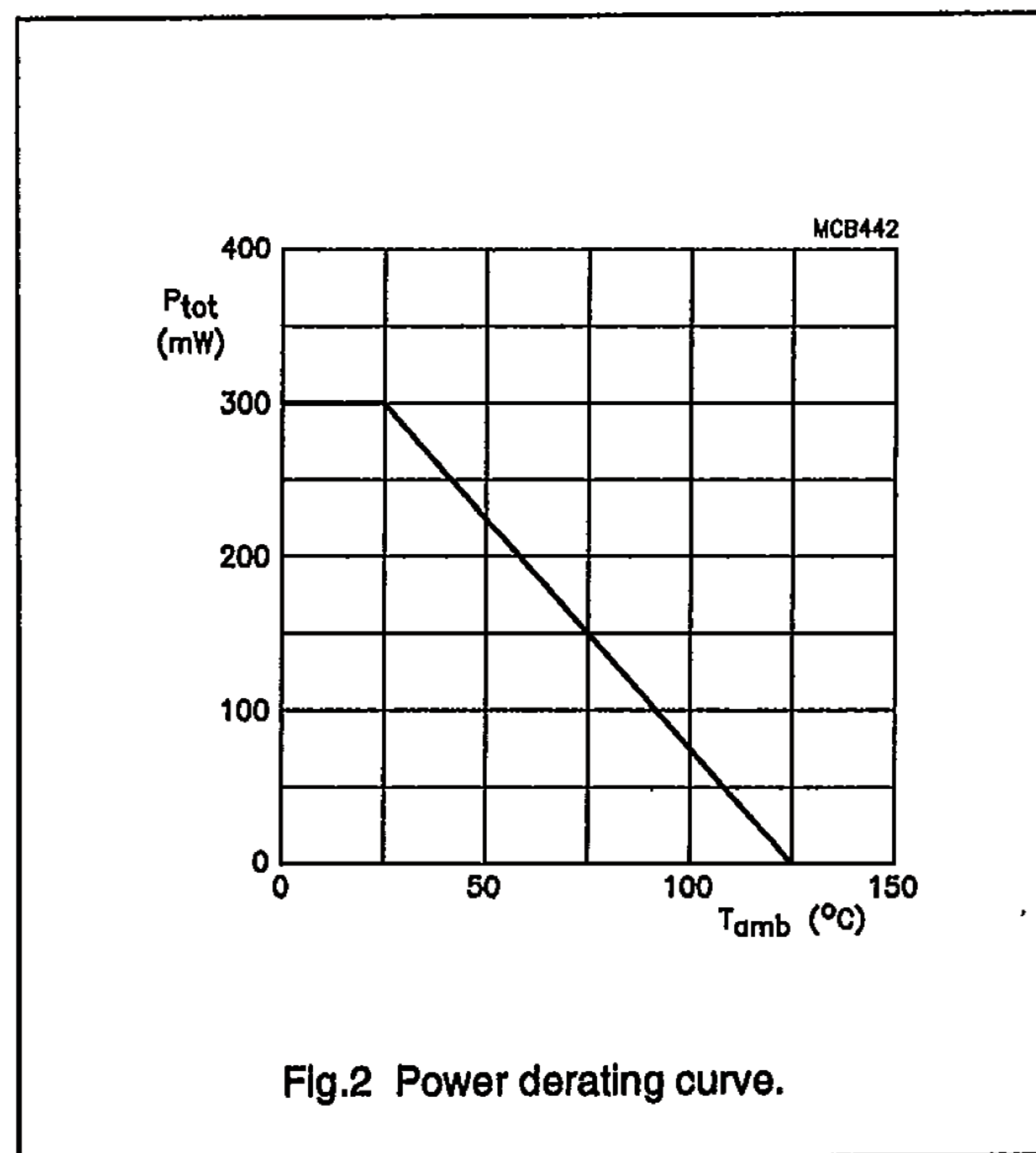


Fig.2 Power derating curve.

THERMAL RESISTANCE

| SYMBOL | PARAMETER | VALUE | UNIT |
|---------------|--------------------------|-------|------|
| $R_{th\ j-a}$ | from junction to ambient | 300 | K/W |

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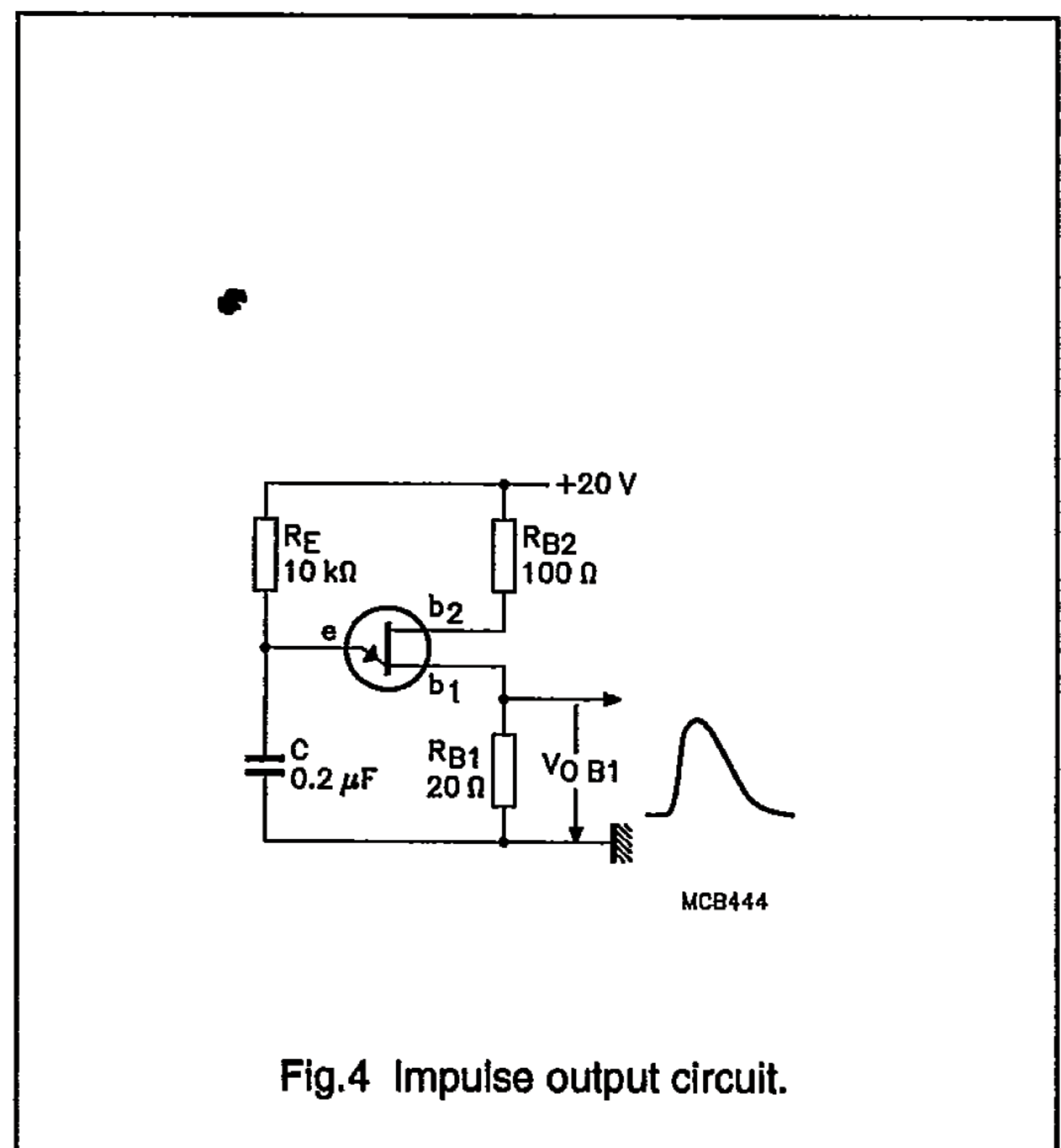
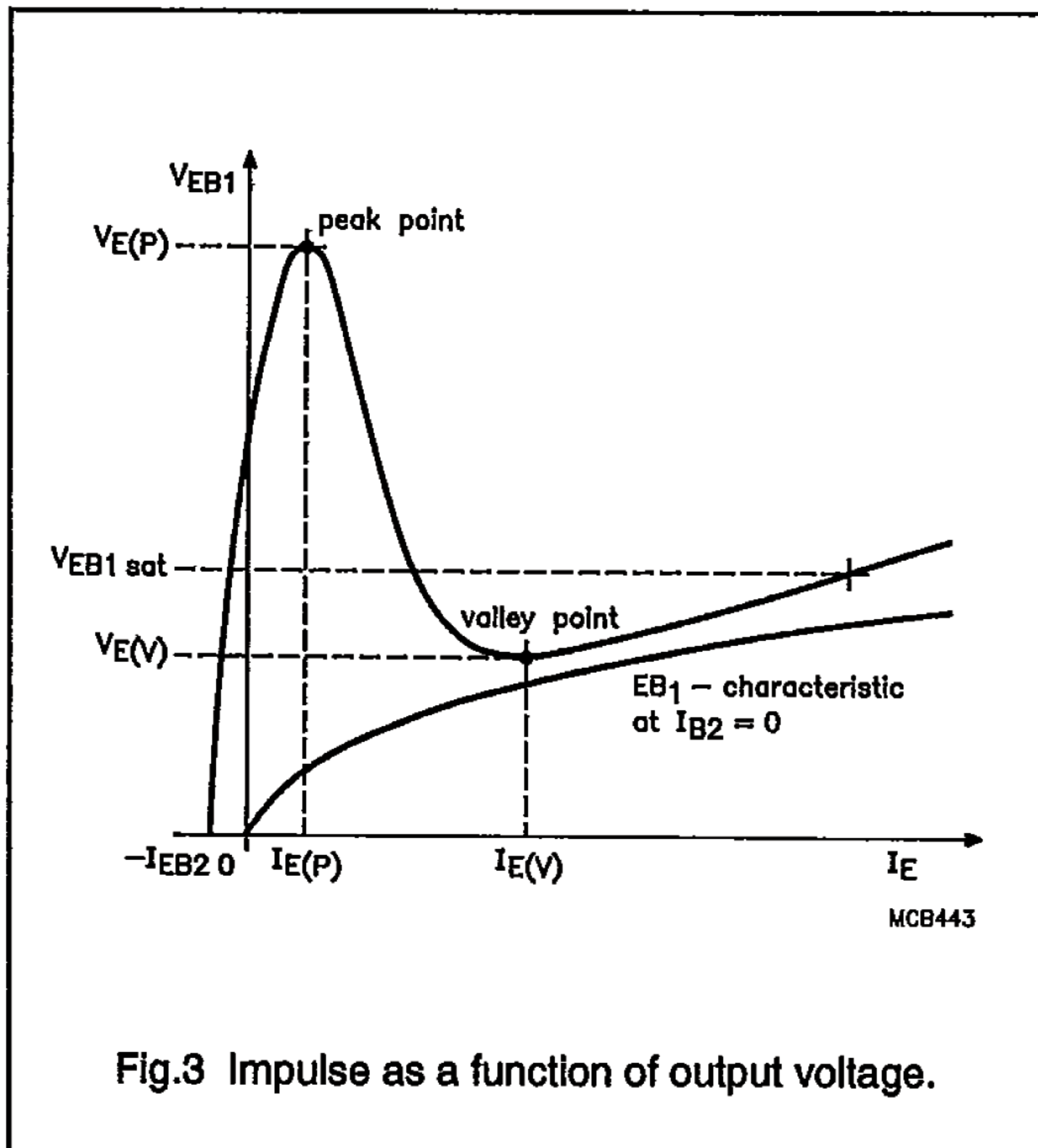
CHARACTERISTICS

$T_{amb} = 25\text{ }^\circ\text{C}$ unless otherwise specified.

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|--------------|---|---|------|------|------|---------------|
| R_{BB} | static inter-base resistance | $V_{B2B1} = 3\text{ V}$ $I_E = 0$ | 4.7 | 7 | 9.1 | $k\Omega$ |
| TC_{RBB} | inter-base resistance temperature coefficient | $V_{B2B1} = 3\text{ V}$ $I_E = 0$ $T_{amb} = -55\text{ to }125\text{ }^\circ\text{C}$ | 0.1 | — | 0.9 | %/K |
| $-I_{EB20}$ | emitter cut-off current | $-V_{EB2} = 30\text{ V}$ $I_{B1} = 0$ | — | — | 12 | V |
| V_{EB1sat} | emitter-base 1 saturation voltage | $V_{B2B1} = 10\text{ V}$ $I_E = 50\text{ mA}$ | — | 3.5 | — | V |
| I_{B2mod} | inter-base current modulation | $V_{B2B1} = 10\text{ V}$ $I_E = 50\text{ mA}$ | — | 15 | — | mA |
| η | input/output ratio (note 1) | $V_{B2B1} = 10\text{ V}$ | 0.56 | — | 0.75 | |
| $I_{E(V)}$ | emitter valley point current | $V_{B2B1} = 20\text{ V}$ $R_{B2} = 100\ \Omega$ | 4 | 6 | — | mA |
| $I_{E(P)}$ | emitter peak point current | $V_{B2B1} = 25\text{ V}$ | — | 1 | 5 | μA |
| V_{OB1M} | base 1 impulse/output voltage | | 3 | 5 | — | V |

Note

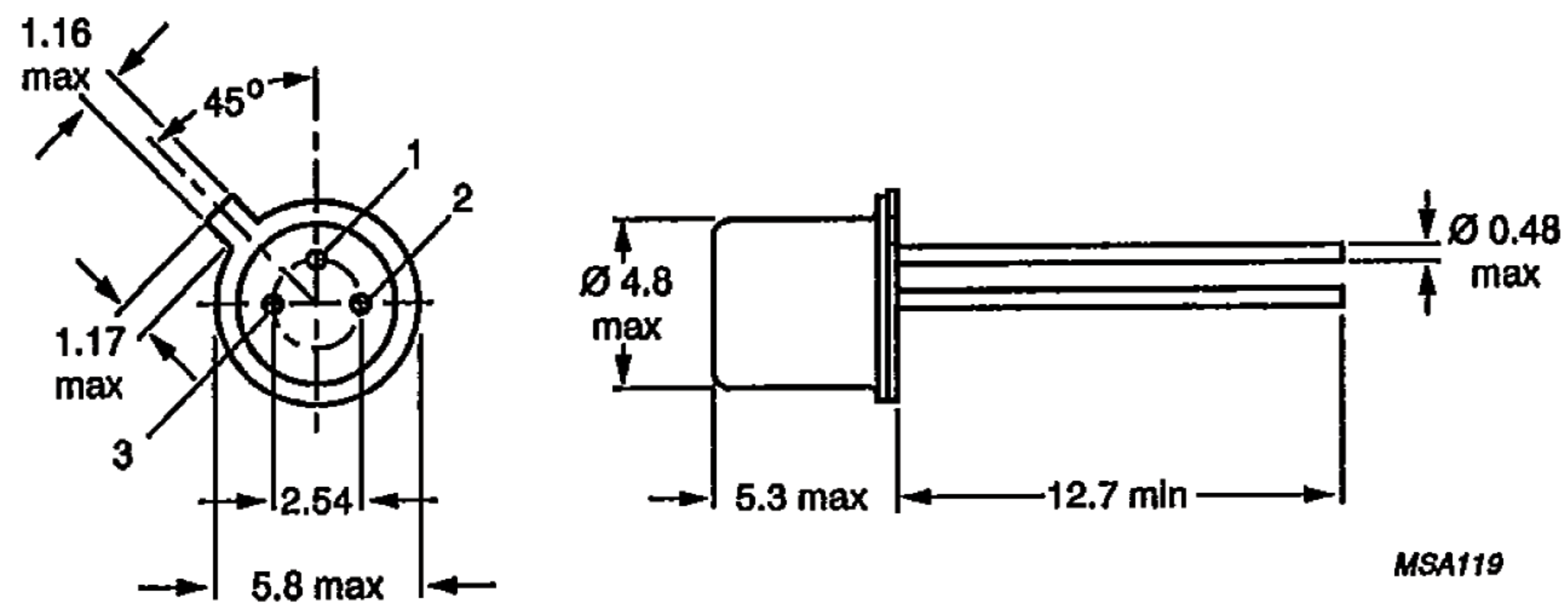
- $\eta = \frac{(V_{E(P)} - V_{EB1})}{V_{B2B1}}$, when $V_{E(P)}$ = emitter peak point voltage, V_{EB1} = emitter-base 1 breakdown voltage, (approximately 0.5 V at 10 μA), and V_{B2B1} = inter-base voltage.



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PACKAGE OUTLINE



Dimensions in mm.

Fig.5 TO-18.