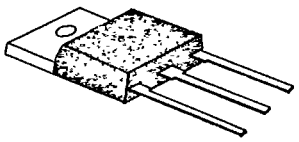
T-33-13



JUL 06 1988

SMLB

# SEMELAB

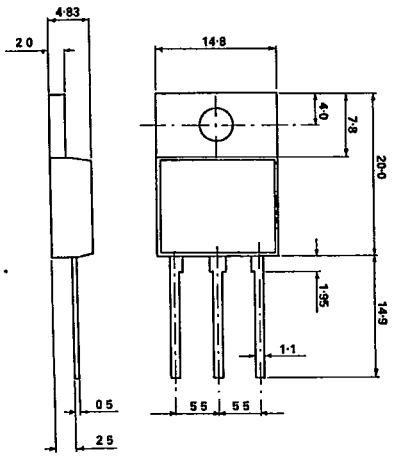
## BUX 12P

# NPN MULTI-EPITAXIAL POWER TRANSISTOR

**Suitable for high current, high speed and high power applications**

### MECHANICAL DATA

Dimensions in mm




SOT 93
(ALSO AVAILABLE IN CHIP FORM)

### FEATURES

- HIGH CURRENT
- FAST SWITCHING
- HIGH RELIABILITY

### APPLICATIONS

- POWER SWITCHING CIRCUITS
- MOTOR CONTROLS

### ABSOLUTE MAXIMUM RATINGS ($T_{CASE}$ = 25°C unless otherwise stated)

| | | |
|---|---|---|
| $V_{CBO}$ | Collector-base voltage ($I_E = 0$) | 300V |
| $V_{CEX}$ | Collector-emitter voltage ($V_{BE} = -1.5V$) | 300V |
| $V_{CEO}$ | Collector-emnitter voltage ($I_b = 0$) | 250V |
| $V_{EBO}$ | Emitter-base voltage ($I_C = 0$) | 7V |
| $I_C$ | Collector current | 20A |
| $I_{C(PK)}$ | Peak collector current ($t_p = 10ms$) | 25A |
| $I_B$ | Base current | 4A |
| $P_{tot}$ | Total dissipation at $T_{CASE} = 25°C$ | 150W |
| $T_{stg}$ | Storage temperature | −55 to 200°C |
| $T_j$ | Maximum operating junction temperature | 200°C |
| $R_{th}$ | Thermal resistance (junction-case) | Max. 1·17°C/W |



8001-8509 Editor SA

**BUX 12P**

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T-33-13

## ELECTRICAL CHARACTERISTICS ($T_{CASE}$ = 25°C unless otherwise stated)

| Parameter | | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| $V_{CEO(sus)}$ | Collector-emitter sustaining voltage | $I_B = 0$ | $I_C = 200mA$ | 250 | | | V |
| $I_{CEX}$ | Collector cut-off current | $V_{CE} = 300V$ | $V_{BE} = -1{\cdot}5V$ | | | 1·5 | mA |
| | | | $T_{CASE} = 125°C$ | | | 6·0 | mA |
| $I_{CEO}$ | Collector cut-off current | $I_B = 0$ | $V_{CE} = 200V$ | | | 1·5 | mA |
| $I_{EBO}$ | Emitter cut-off current | $I_C = 0$ | $V_{EB} = 5V$ | | | 1·0 | mA |
| $V_{EBO}$ | Emitter-base voltage | $I_C = 0$ | $I_E = 50mA$ | 7·0 | | | V |
| $V_{CE(sat)}$* | Collector-emitter saturation voltage | $I_C = 5A$ | $I_B = 0{\cdot}5A$ | | 0·22 | 1·0 | V |
| | | $I_C = 10A$ | $I_B = 1{\cdot}25A$ | | 0·5 | 1·5 | V |
| $V_{BE(sat)}$* | Emitter-base saturation voltage | $I_C = 10A$ | $I_B = 1{\cdot}25A$ | | 1·23 | 1·5 | V |
| $h_{FE}$ | DC Current gain | $I_C = 5A$ | $V_{CE} = 4V$ | 20 | | 60 | – |
| | | $I_C = 10A$ | $V_{CE} = 4V$ | 10 | | | – |
| $I_{S/B}$ | Second breakdown collector current | $V_{CE} = 30V$ | $t = 1s$ | 5·0 | | | A |
| | | $V_{CE} = 140V$ | $t = 1s$ | 0·15 | | | A |
| $f_T$ | Transition frequency | $I_C = 1A$ | $V_{CE} = 15V$ | | | | |
| | | $f = 10MHz$ | | 8·0 | | | MHz |

## SWITCHING CHARACTERISTICS ($T_{CASE}$ = 25°C unless otherwise stated)

| Parameter | | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| $t_{on}$ | On time | $I_C = 10A$ | $I_{B1} = 1{\cdot}25A$ | | | | |
| | | $V_{CC} = 150V$ | | | 0·28 | 1·0 | µs |
| $t_s$ | Storage time | $I_C = 10A$ | $I_{B1} = 1{\cdot}25A$ | | 1·45 | 2·0 | µs |
| $t_f$ | Fall time | $V_{CC} = 150V$ | $I_{B2} = 1{\cdot}25A$ | | 0·23 | 0·5 | µs |
| | Clamped $E_{S/B}$ collector current | $V_{clamp} = 205V$ | $L = 500\mu H$ | 10 | | | A |

* Pulse test $t_p = 300\mu s$ $\delta \leq 2\%$