



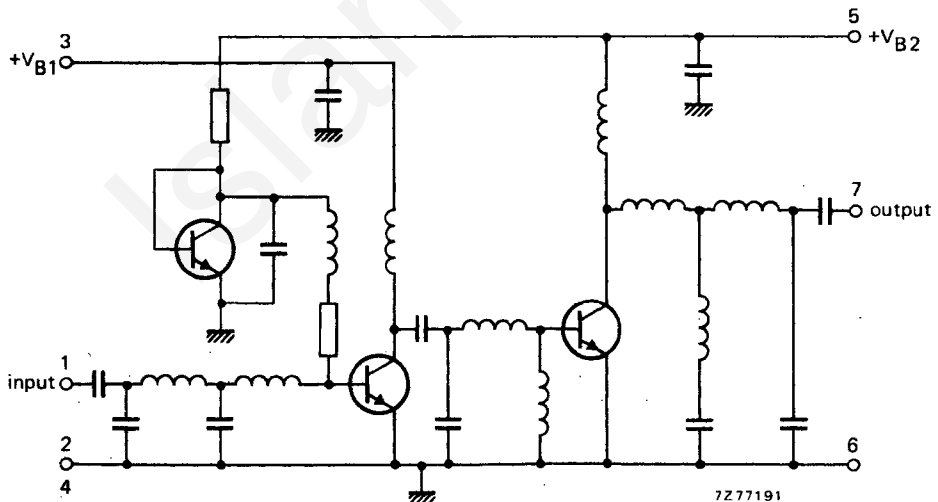
## V.H.F. POWER AMPLIFIER MODULES

A range of broadband amplifier modules designed for mobile communications equipments, operating directly from 12 V vehicle electrical systems. The devices will produce 18 W output into a 50 Ω load. The modules consist of a two stage r.f. amplifier using n-p-n transistor chips, together with lumped-element matching components.

### QUICK REFERENCE DATA

| type number  | mode of operation | frequency range<br>f (MHz) | nominal supply voltages<br>$V_{B1} = V_{B2}$ (V) | drive power<br>$P_D$ (mW) | load power<br>$P_L$ (W) | nominal input impedance<br>$z_i$ (Ω) | nominal load impedance<br>$Z_L$ (Ω) |
|--------------|-------------------|----------------------------|--|---------------------------|-------------------------|--------------------------------------|-------------------------------------|
| <b>BGY32</b> | c.w.              | 68 to 88                   | 12,5   | 100                       | > 18<br>typ 23          | 50                                   | 50                                  |
| <b>BGY33</b> | c.w.              | 80 to 108                  | 12,5   | 100                       | > 18<br>typ 22          | 50                                   | 50                                  |
| <b>BGY35</b> | c.w.              | 132 to 156                 | 12,5   | 150                       | > 18<br>typ 22          | 50                                   | 50                                  |
| <b>BGY36</b> | c.w.              | 148 to 174                 | 12,5   | 150                       | > 18<br>typ 21          | 50                                   | 50                                  |

### CIRCUIT DIAGRAM

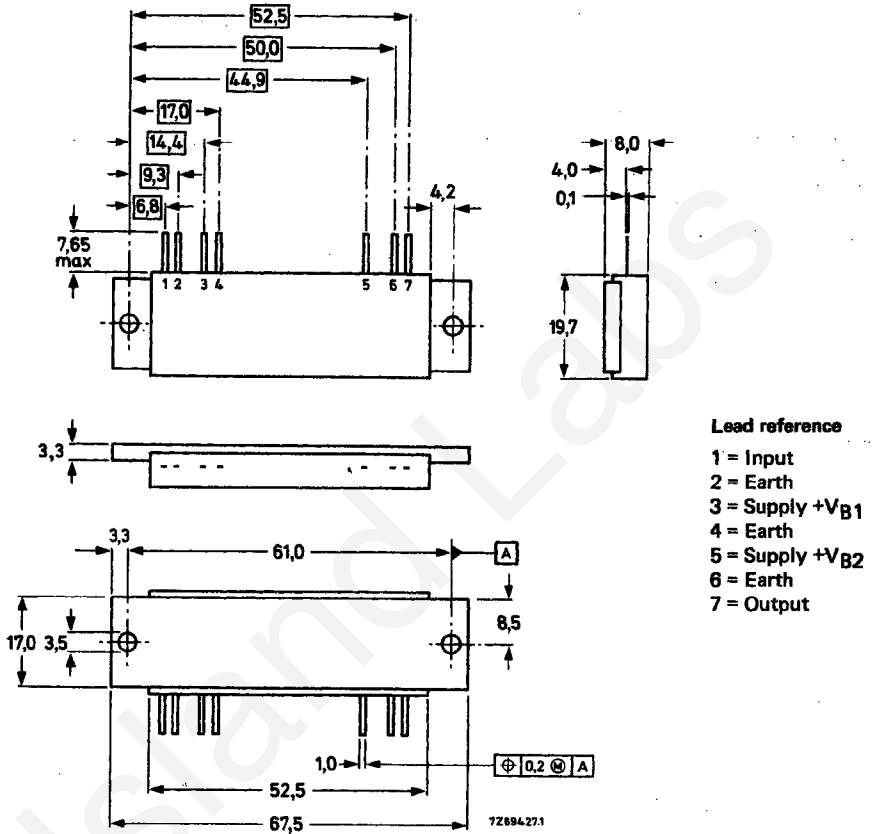


**CAUTION** These devices incorporate beryllium oxide, the dust of which is toxic. The devices are entirely safe provided that they are not dismantled.

MECHANICAL DATA

Fig. 1 SOT-132.

Dimensions in mm



Mounting and soldering recommendations

To ensure good thermal transfer the module should be mounted using heatsink compound onto a heatsink with a flat surface; if an isolation washer is used heatsink compound should be used on both sides of the insulator. Burrs and thickening of the holes in the heatsink should be removed and 3 mm bolts tightened to torques of 0,5 Nm minimum.

Devices may be soldered directly into a circuit with a soldering iron at maximum iron temperature of 245 °C for 10 seconds at least 1 mm from the plastic.

**RATINGS**

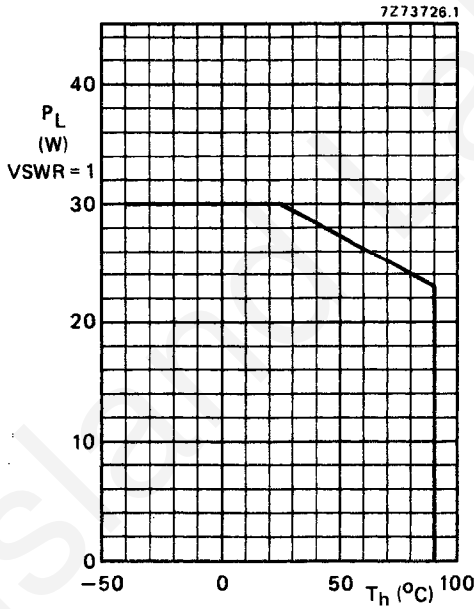
Limiting values in accordance with the Absolute Maximum System (IEC 134)

**D.C. voltages (with respect to flange)**

|                       |                       |     |      |
|-----------------------|-----------------------|-----|------|
| D.C. supply terminals | $V_{B1}$ and $V_{B2}$ | max | 15 V |
| R.F. input terminal   | $\pm V_I$             | max | 25 V |
| R.F. output terminal  | $\pm V_O$             | max | 25 V |

**Power**

|                                   |       |     |        |
|-----------------------------------|-------|-----|--------|
| Input drive power BGY32 and BGY33 | $P_D$ | max | 200 mW |
| Input drive power BGY35 and BGY36 | $P_D$ | max | 300 mW |
| Load power                        | $P_L$ | max | 30 W   |



**Temperatures**

|                                |           |               |
|--------------------------------|-----------|---------------|
| Storage temperature            | $T_{stg}$ | -40 to 100 °C |
| Operating heatsink temperature | $T_h$     | max 90 °C     |

**CHARACTERISTICS**

$T_h = 25\text{ }^\circ\text{C}$

**Quiescent current**

$V_{B1} = V_{B2} = 12,5\text{ V}; P_D = 0;$

$R_S = R_L = 50\ \Omega$

**Frequency range**

**Load power**

$V_{B1} = V_{B2} = 12,5\text{ V}; R_S = R_L = 50\ \Omega$

BGY32 and BGY33;  $P_D = 100\text{ mW}$

BGY35 and BGY36;  $P_D = 150\text{ mW}$

|                 |           | BGY32 | BGY33 | BGY35 | BGY36   |
|-----------------|-----------|-------|-------|-------|---------|
| $I_{BQ1}$       | typ       | 6     | 6     | 6     | 6 mA    |
|                 | $I_{BQ2}$ | 13    | 13    | 13    | 13 mA   |
| Frequency range | $f >$     | 68    | 80    | 132   | 148 MHz |
|                 | $f <$     | 88    | 108   | 156   | 174 MHz |
| $P_L$           | $>$       | 18    | 18    | —     | — W     |
|                 | typ       | 23    | 22    | —     | — W     |
| $\eta$          | $>$       | 40    | 40    | —     | — %     |
|                 | typ       | 50    | 50    | —     | — %     |
| $P_L$           | $>$       | —     | —     | 18    | 18 W    |
|                 | typ       | —     | —     | 22    | 21 W    |
| $\eta$          | $>$       | —     | —     | 40    | 40 %    |
|                 | typ       | —     | —     | 50    | 50 %    |

**Harmonic output**

Any single harmonic will be at least 25 dB down relative to carrier

**Input VSWR with respect to 50  $\Omega$**

typ 1,5

**Stability**

The module is stable with load VSWR up to 3 (all phases) when operated with matched output power greater than 6 W.

**Ruggedness**

The modules are capable of withstanding load mismatch of up to 50 VSWR for short period overload conditions, with  $P_D$ ,  $V_{B1}$  and  $V_{B2}$  at maximum values providing the combination does not result in the matched r.f. output power rating being exceeded.

**APPLICATION INFORMATION**

**Supply**

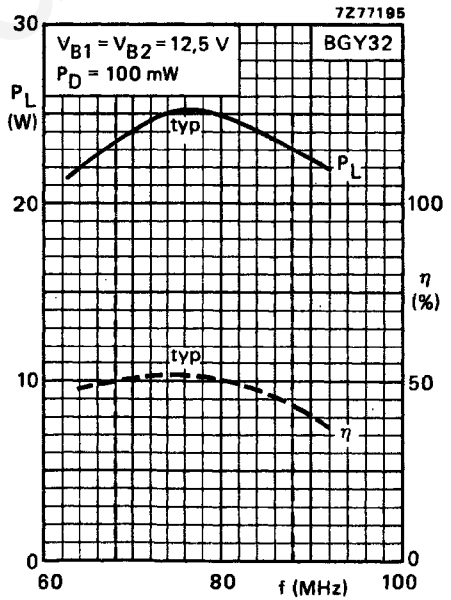
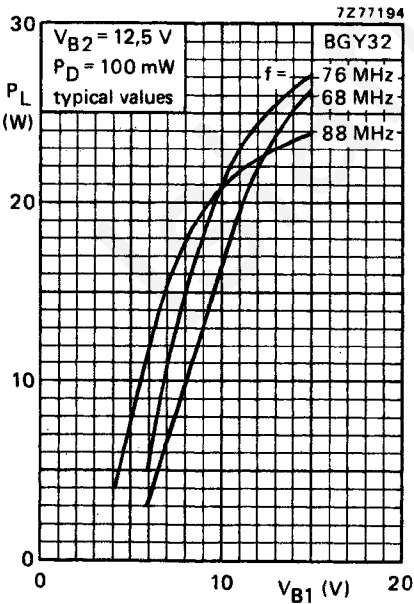
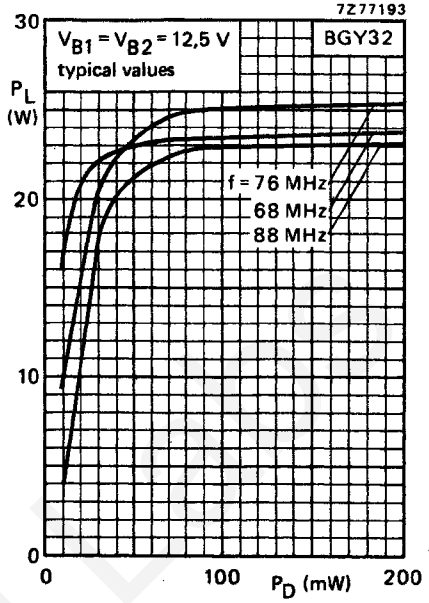
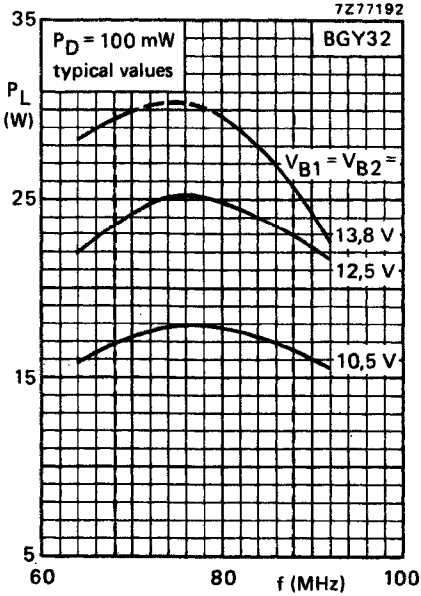
An electrolytic capacitor of 10  $\mu\text{F}$  (25 V), in parallel with a polyester capacitor of 100 nF to earth, is recommended as decoupling arrangement for each power supply pin.

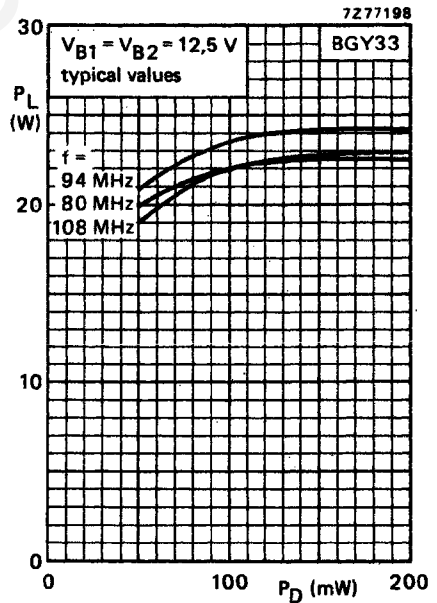
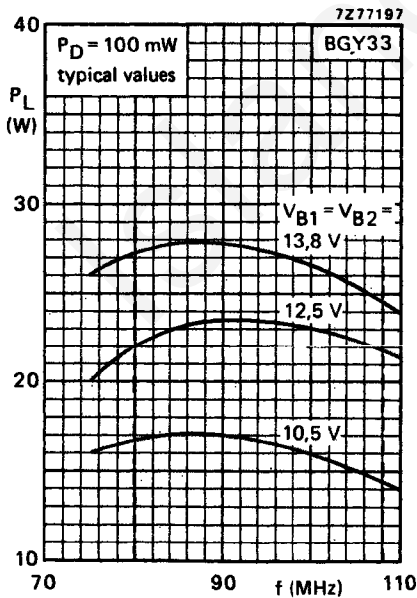
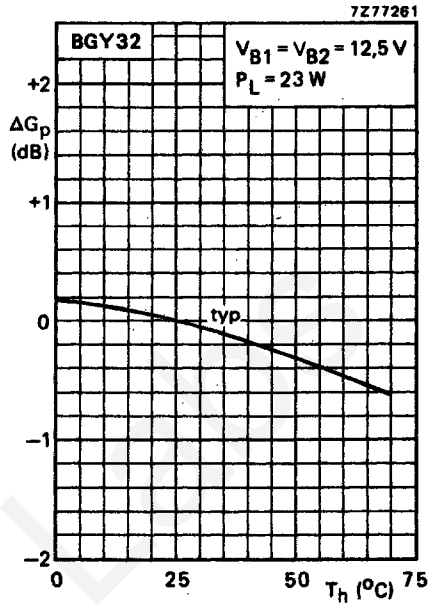
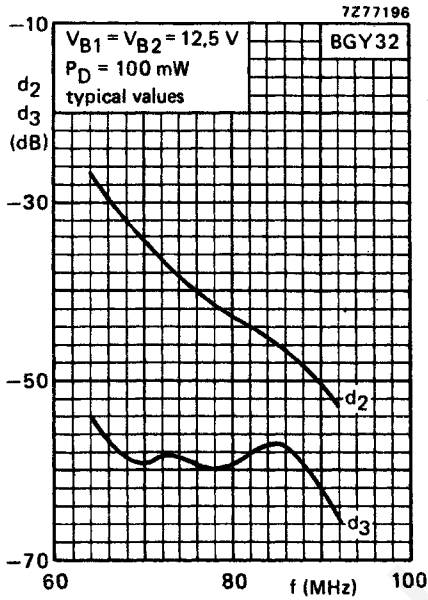
**Power rating**

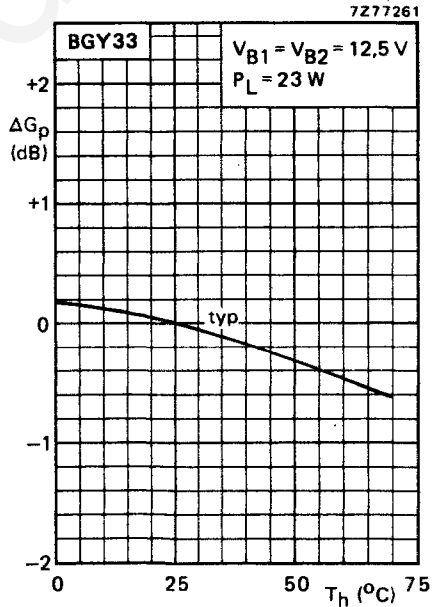
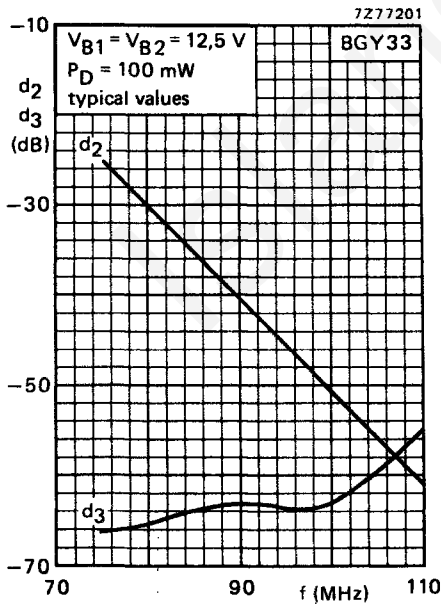
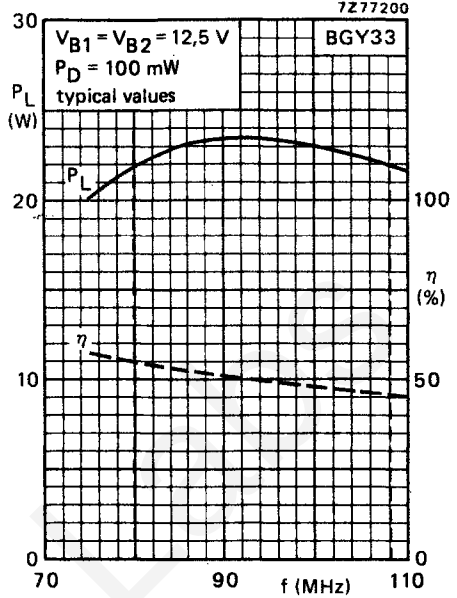
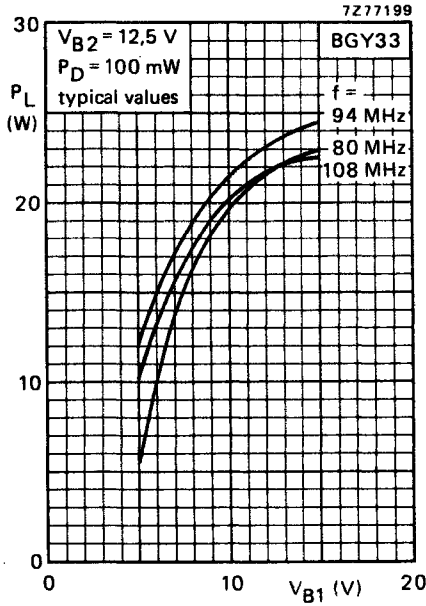
In general it is recommended that the output power from the module under nominal design conditions should not exceed 23 W in order to provide adequate safety margin under fault conditions.

**Gain control**

Power output can be controlled by variation of the driver stage supply voltage  $V_{B1}$ . The supply required is a voltage regulator with a current rating of 0,75 A, and an output voltage range of 3 V to 12 V.







BGY32 BGY33  
BGY35 BGY36

