

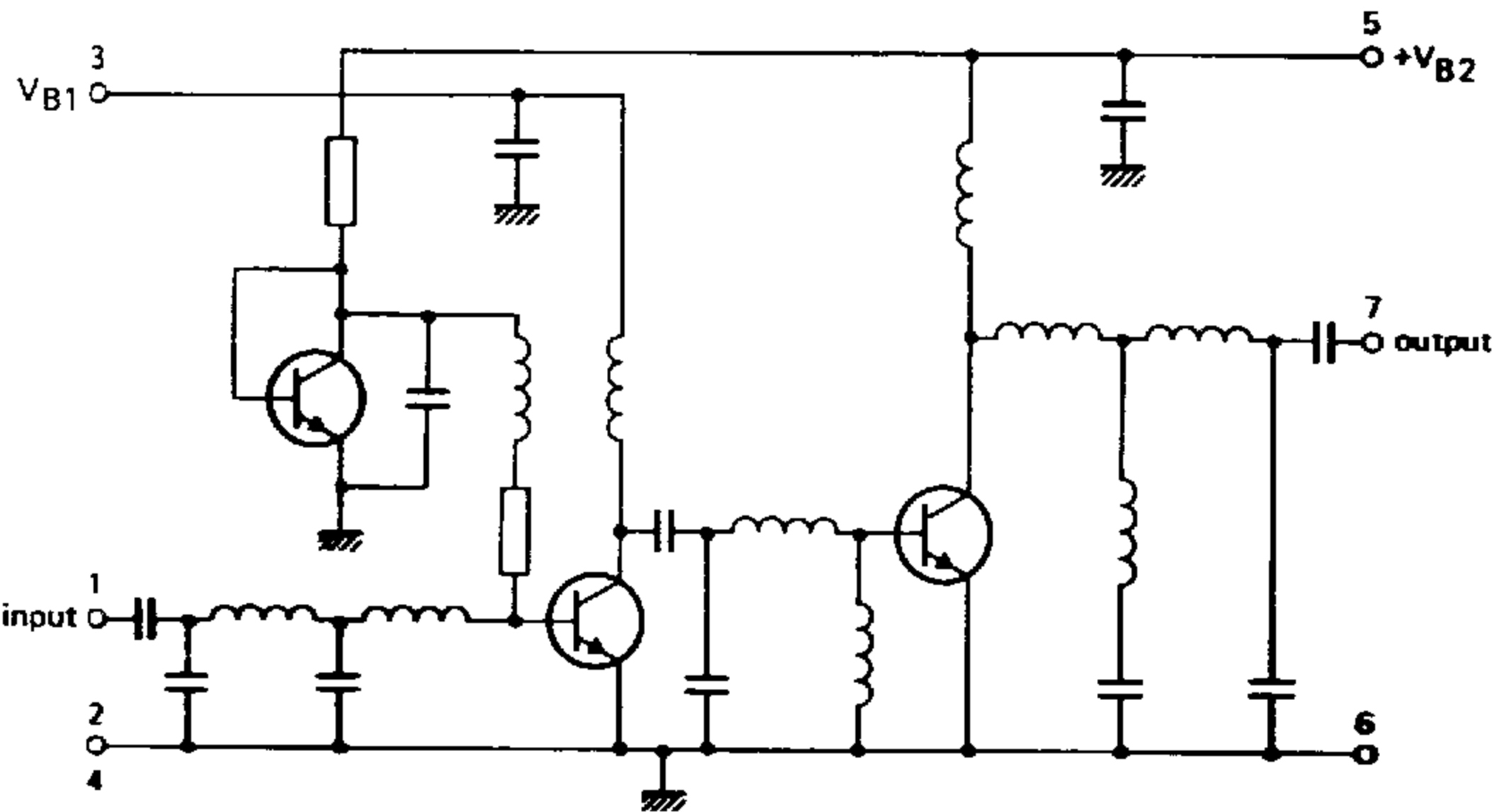
VHF POWER AMPLIFIER MODULES

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 RF amplifier using npn transistor chips, together with lumped-element matching components.

QUICK REFERENCE DATA

| type number | mode of operation | frequency range f (MHz) | nominal supply voltages $V_{B1} = V_{B2}$ (V) | drive power P_D (mW) | load power P_L (W) | nominal input impedance z_i (Ω) | nominal load impedance Z_L (Ω) |
|-------------|-------------------|----------------------------|--|---------------------------|-------------------------|--------------------------------------|-------------------------------------|
| BGY32 | cw | 68 to 88 | 12.5 | 100 | > 18 typ 23 | 50 | 50 |
| BGY33 | cw | 80 to 108 | 12.5 | 100 | > 18 typ 22 | 50 | 50 |
| BGY35 | cw | 132 to 156 | 12.5 | 150 | > 18 typ 22 | 50 | 50 |
| BGY36 | cw | 148 to 174 | 12.5 | 150 | > 18 typ 21 | 50 | 50 |

CIRCUIT DIAGRAM

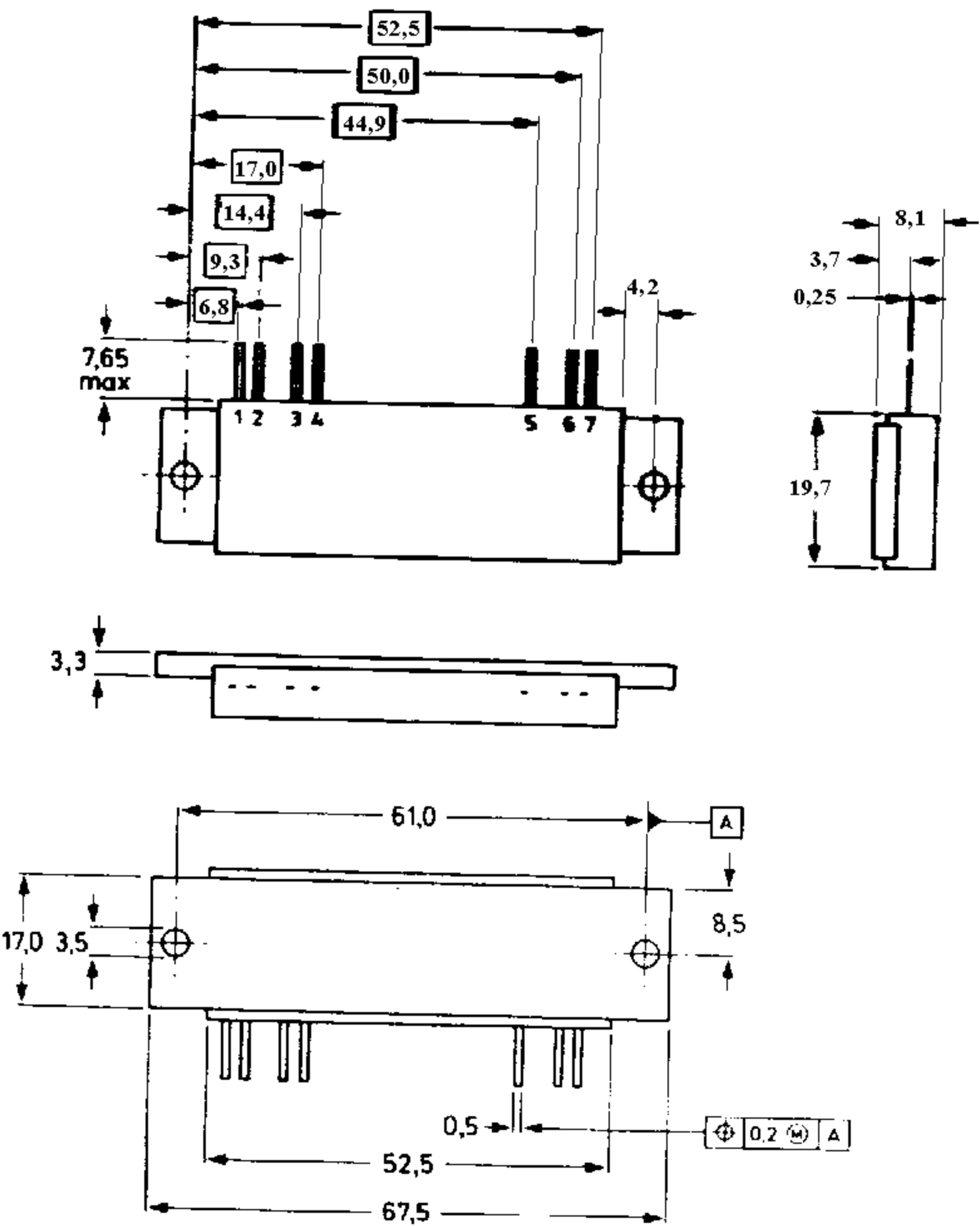


PRODUCT SAFETY This device incorporates beryllium oxide, the dust of which is toxic.
The device is entirely safe provided that the BeO disc is not damaged.

MECHANICAL DATA

Fig. 1 SOT132B

Dimentions 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.

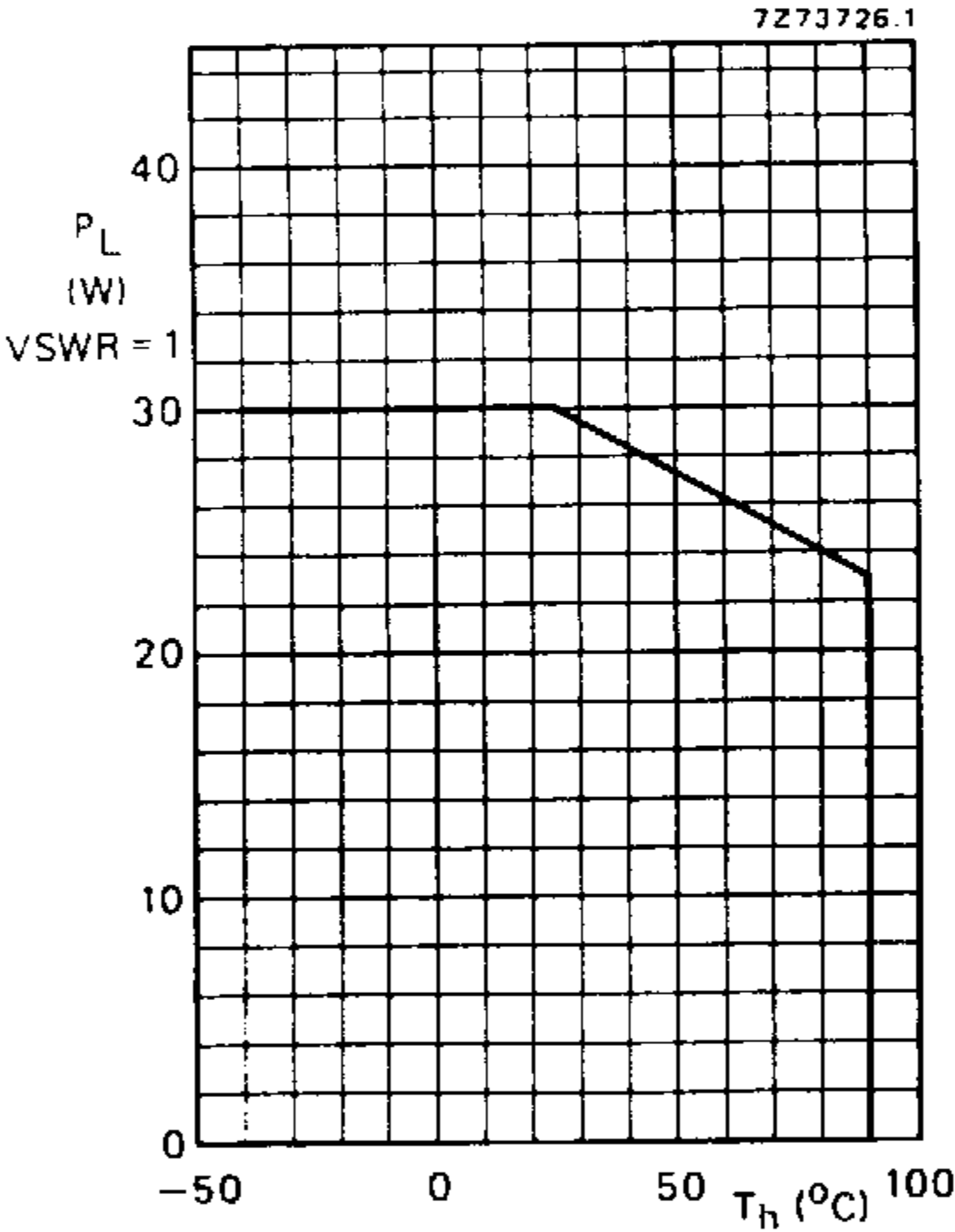
Devices may be soldered directly into a circuit with a soldering iron at maximum iron temperature of 245 °C for 10 seconds at least 1 mm from the plastic.

RATINGS

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

DC voltages (with respect to flange)

| | | | |
|-----------------------------------|-----------------------|-----|--------|
| DC supply terminals | V_{B1} and V_{B2} | max | 15 V |
| RF input terminal | $\pm V_I$ | max | 25 V |
| RF output terminal | $\pm V_O$ | max | 25 V |
| 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 |



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

CHARACTERISTICS

T_h = 25 °C

Quiescent current

V_{B1} = V_{B2} = 12,5 V; P_D = 0;
R_S = R_L = 50 Ω

| | | | BGY32 | BGY33 | BGY35 | BGY36 |
|------------------|-----|--|-------|-------|-------|-------|
| I _{BQ1} | typ | | 6 | 6 | 6 | 6 mA |
| I _{BQ2} | typ | | 13 | 13 | 13 | 13 mA |

Frequency range

| | | | | | |
|---|---|----|-----|-----|---------|
| f | > | 68 | 80 | 132 | 148 MHz |
| | < | 88 | 108 | 156 | 174 MHz |

Load power

V_{B1} = V_{B2} = 12.5 V; R_S = R_L = 50 Ω
BGY32 and BGY33; P_D = 100 mW

| | | | | | | |
|---|----------------|-----|----|----|---|-----|
| { | P _L | > | 18 | 18 | — | — W |
| | | typ | 23 | 22 | — | — W |
| { | η | > | 40 | 40 | — | — % |
| | | typ | 50 | 50 | — | — % |

BGY35 and BGY36; P_D = 150 mW

| | | | | | | |
|---|----------------|-----|---|---|----|------|
| { | P _L | > | — | — | 18 | 18 W |
| | | typ | — | — | 22 | 21 W |
| { | η | > | — | — | 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 Ω

typ 1,5

Stability

The module is stable with a load VSWR up to 3 : 1 (all phases) when operated within the following conditions: V_{S1} = 6 to 15 V; V_{S2} = 10 to 15 V; V_{S1} ≤ V_{S2}; P_D = 50 to 200 mW; frequency within operating frequency range, provided the maximum ratings of the module are not exceeded.

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 RF output power rating being exceeded.

APPLICATION INFORMATION

Supply

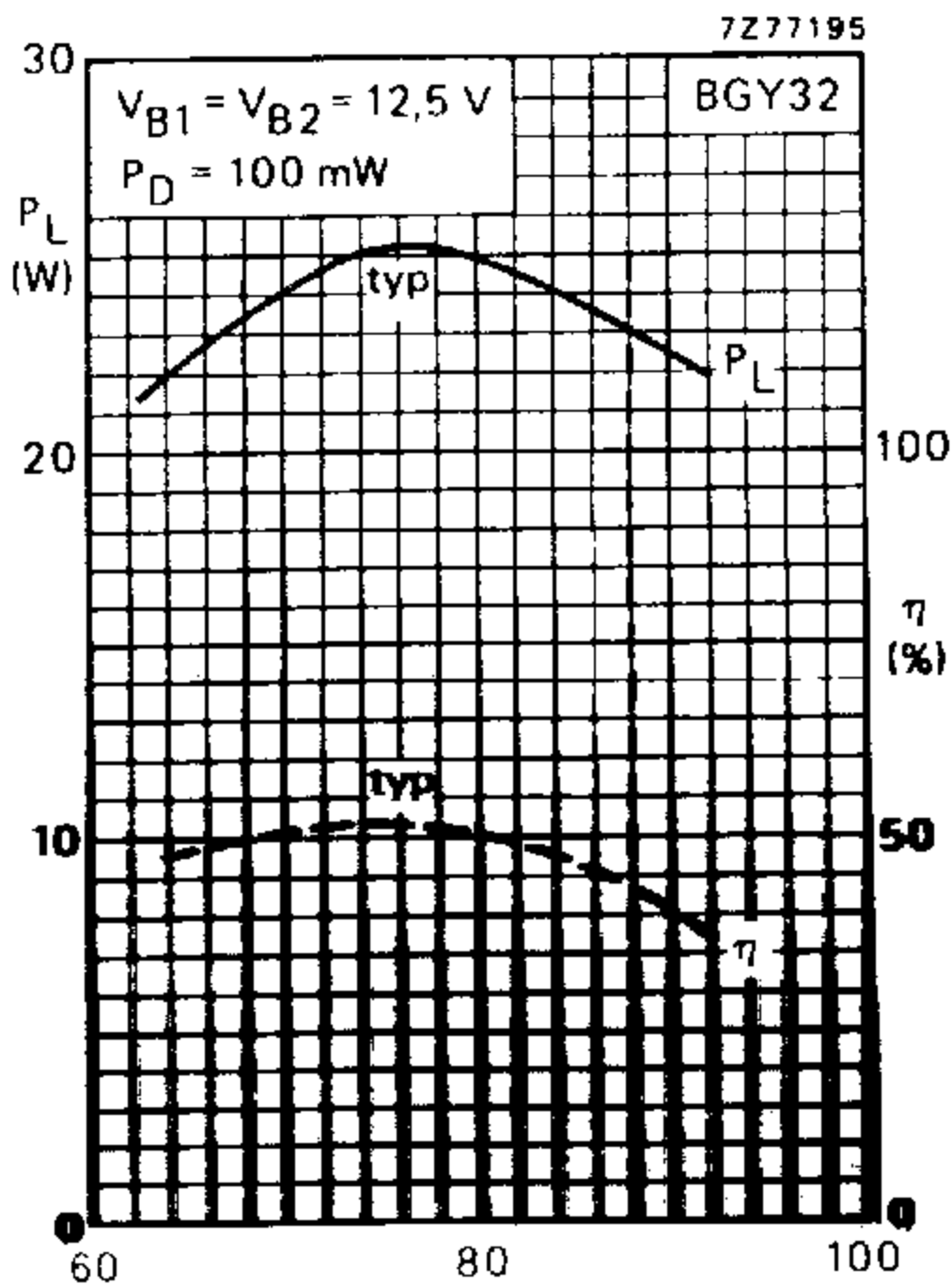
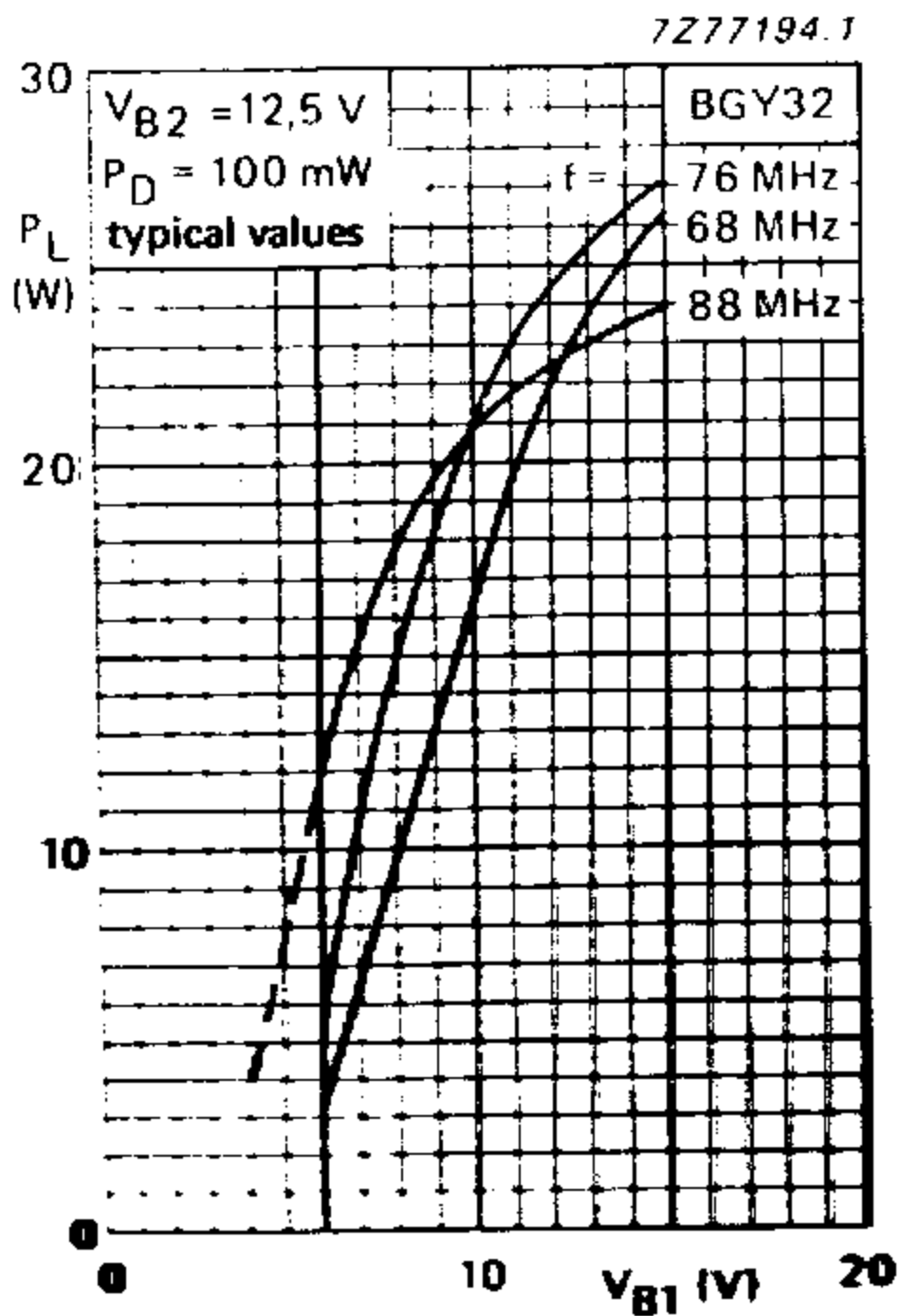
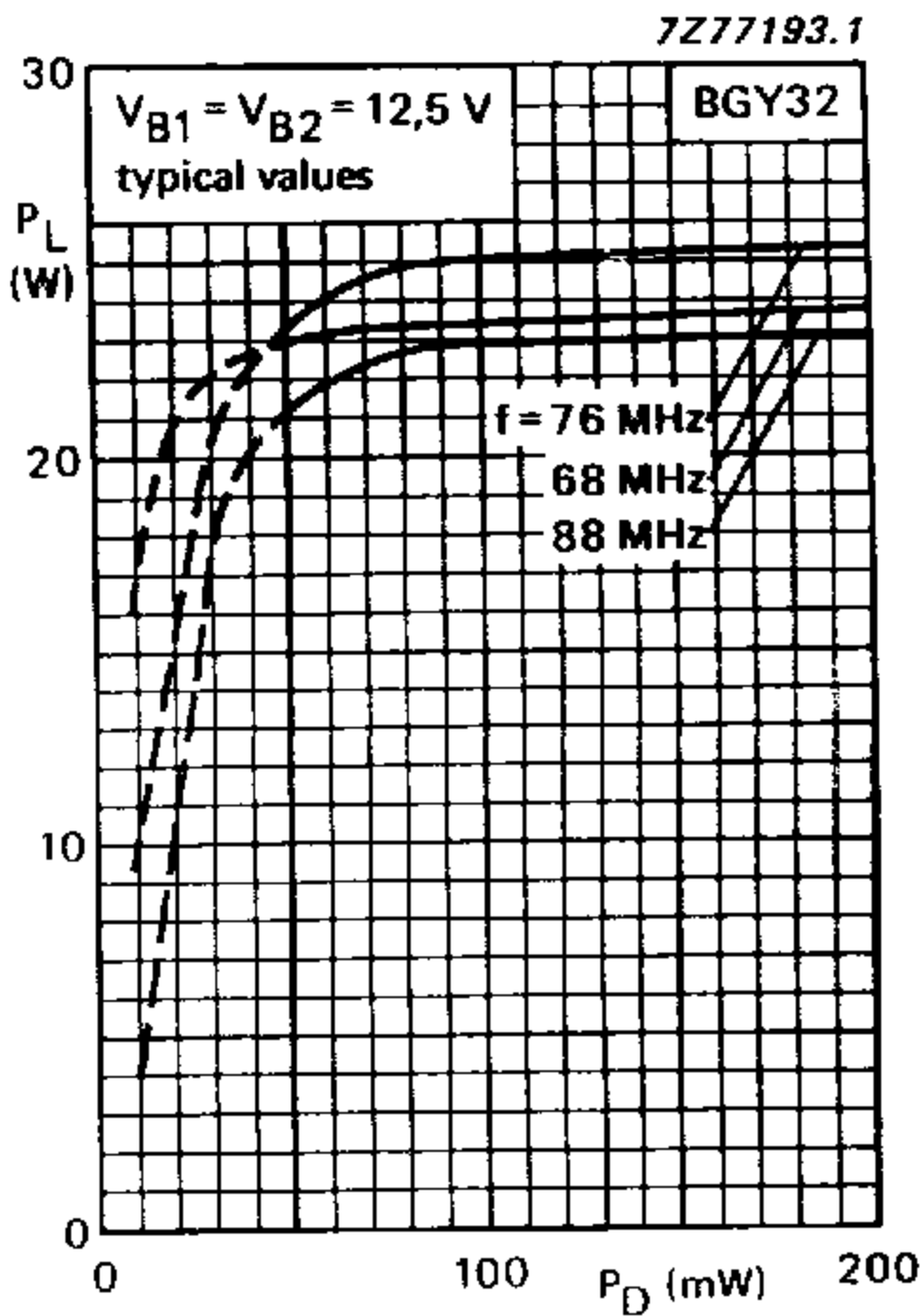
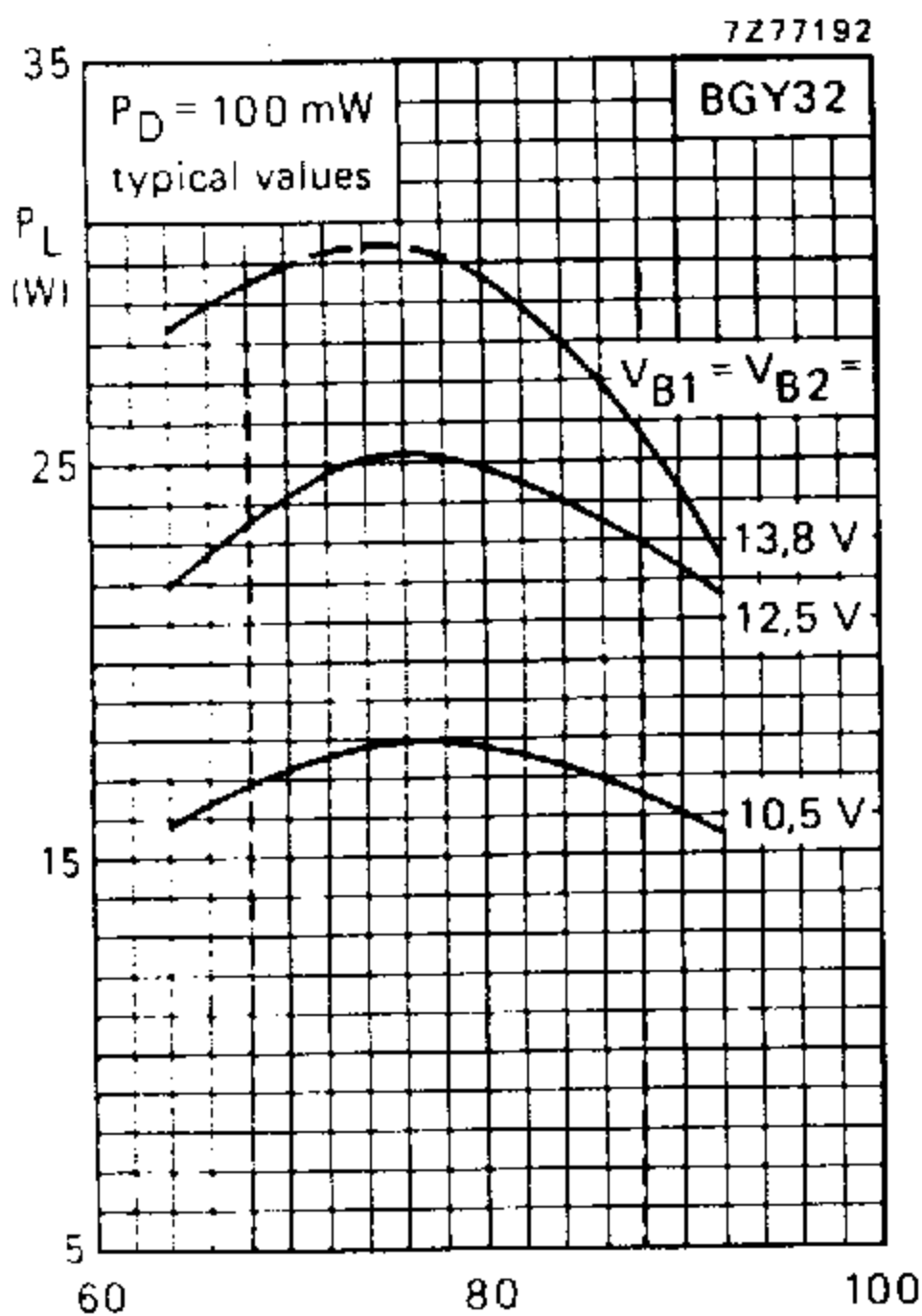
An electrolytic capacitor of 10 μF (25 V), in parallel with a polyester capacitor of 100 nF to earth, is recommended as decoupling arrangement for each power supply pin.

Power rating

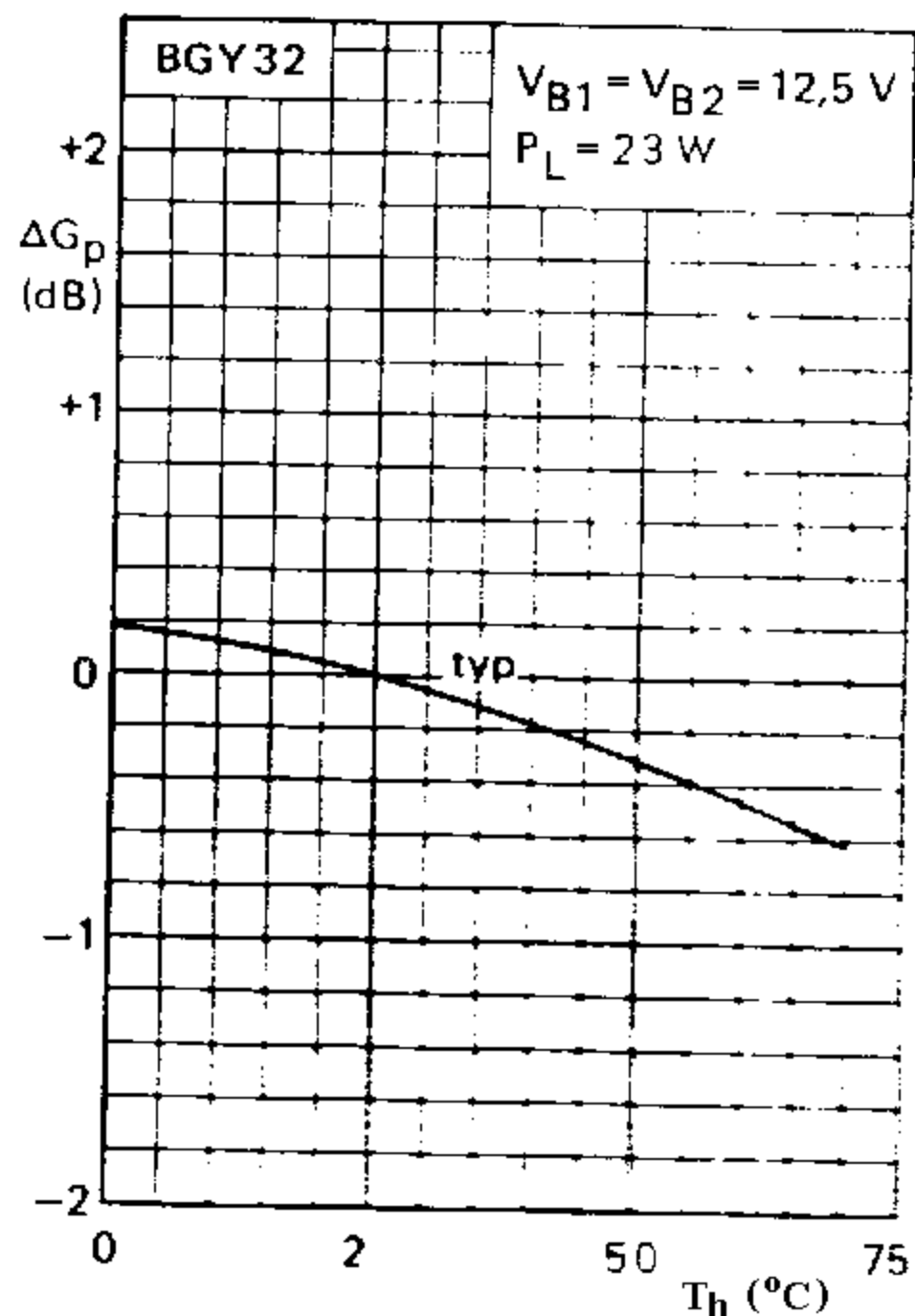
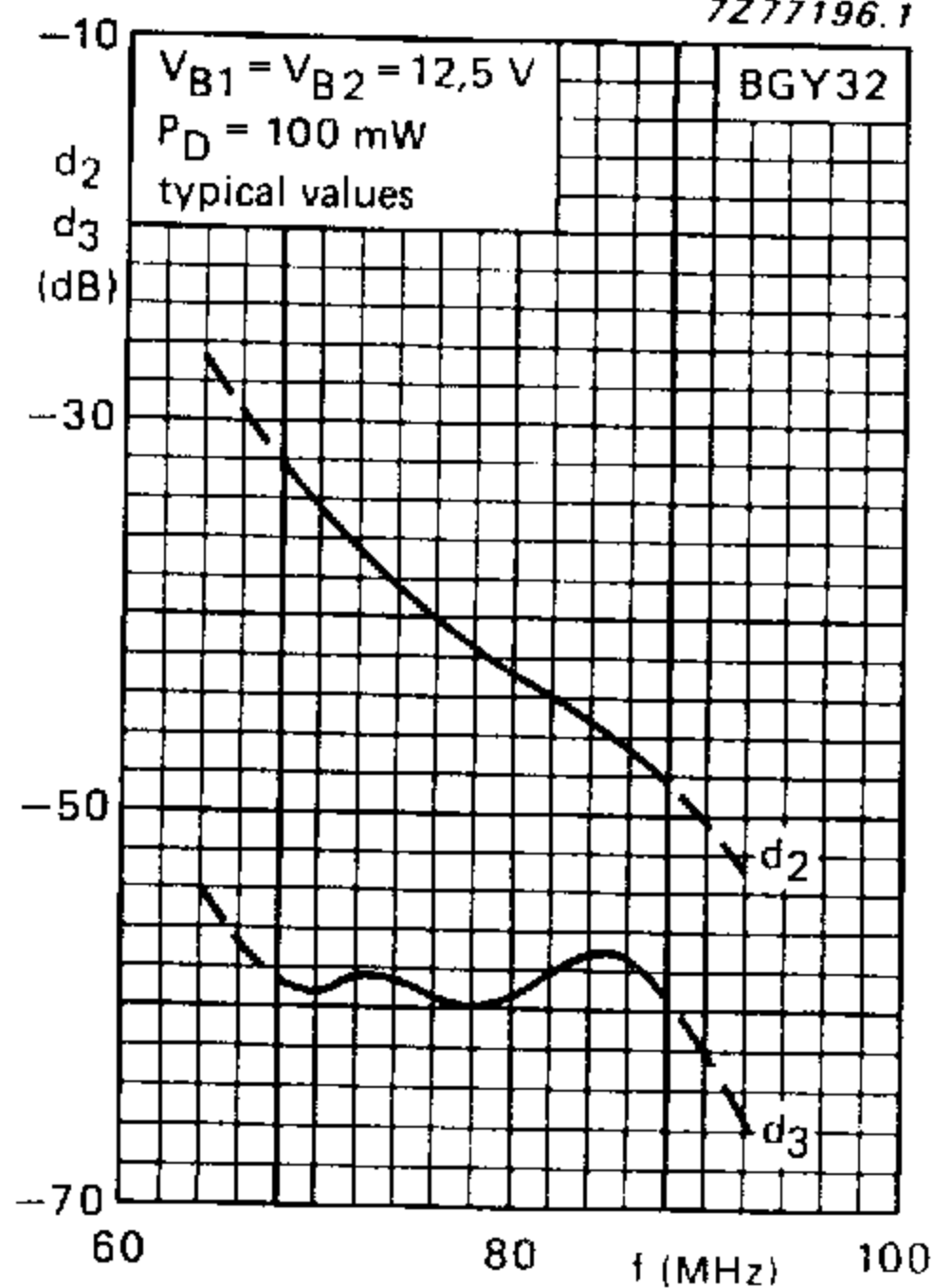
In general **it is recommended that the output power from the module under nominal design conditions should not exceed 23 W in order to provide adequate safety margin under fault conditions.**

Output power control

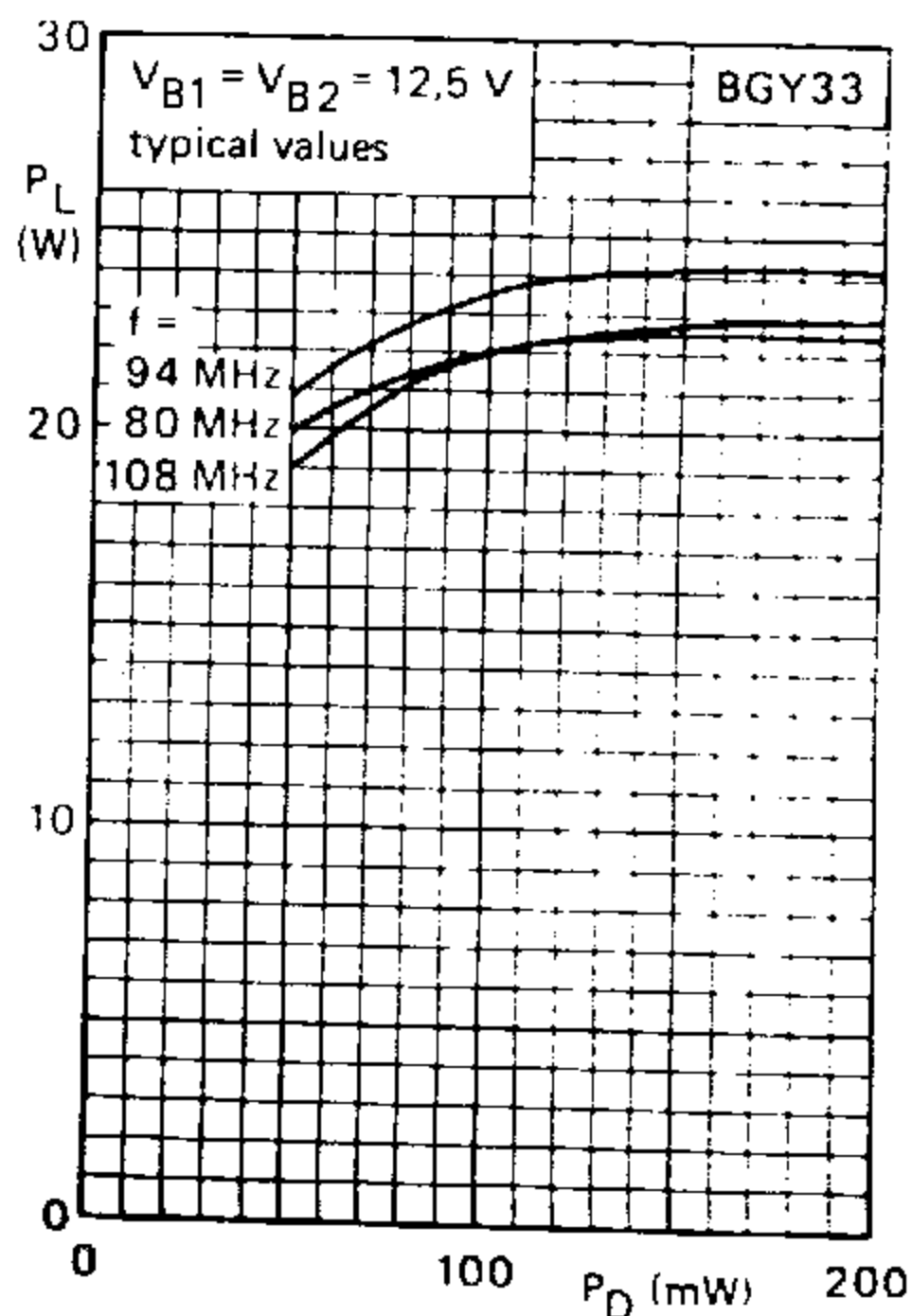
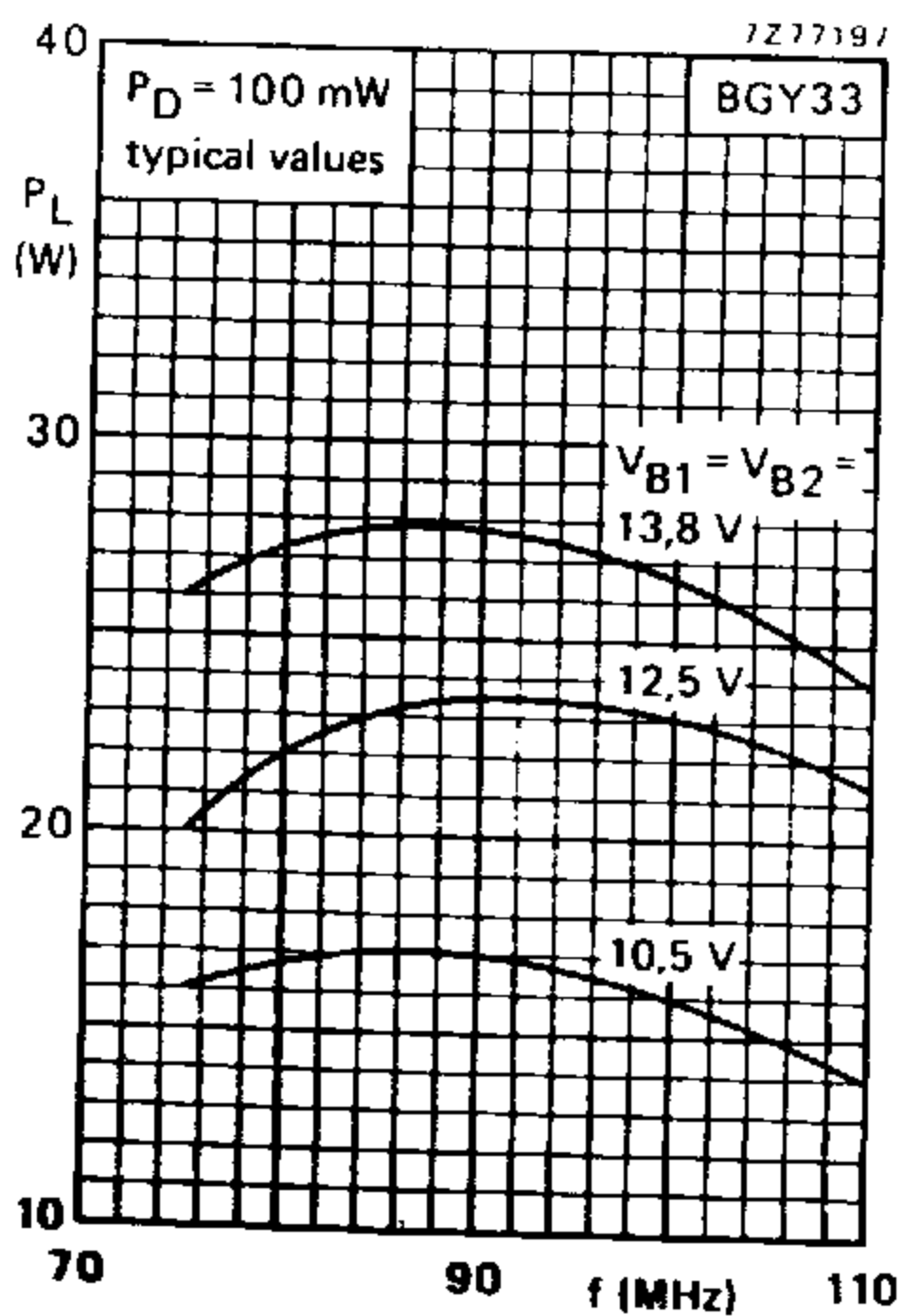
The module is not designed to be operated over a large range of output power levels. The purpose of the output power control is to set the nominal output power level. The preferred method of output power control is by varying the drive power between 50 and 200 mW. The next option is by varying V_{S1} between 6 and 12.5 V.

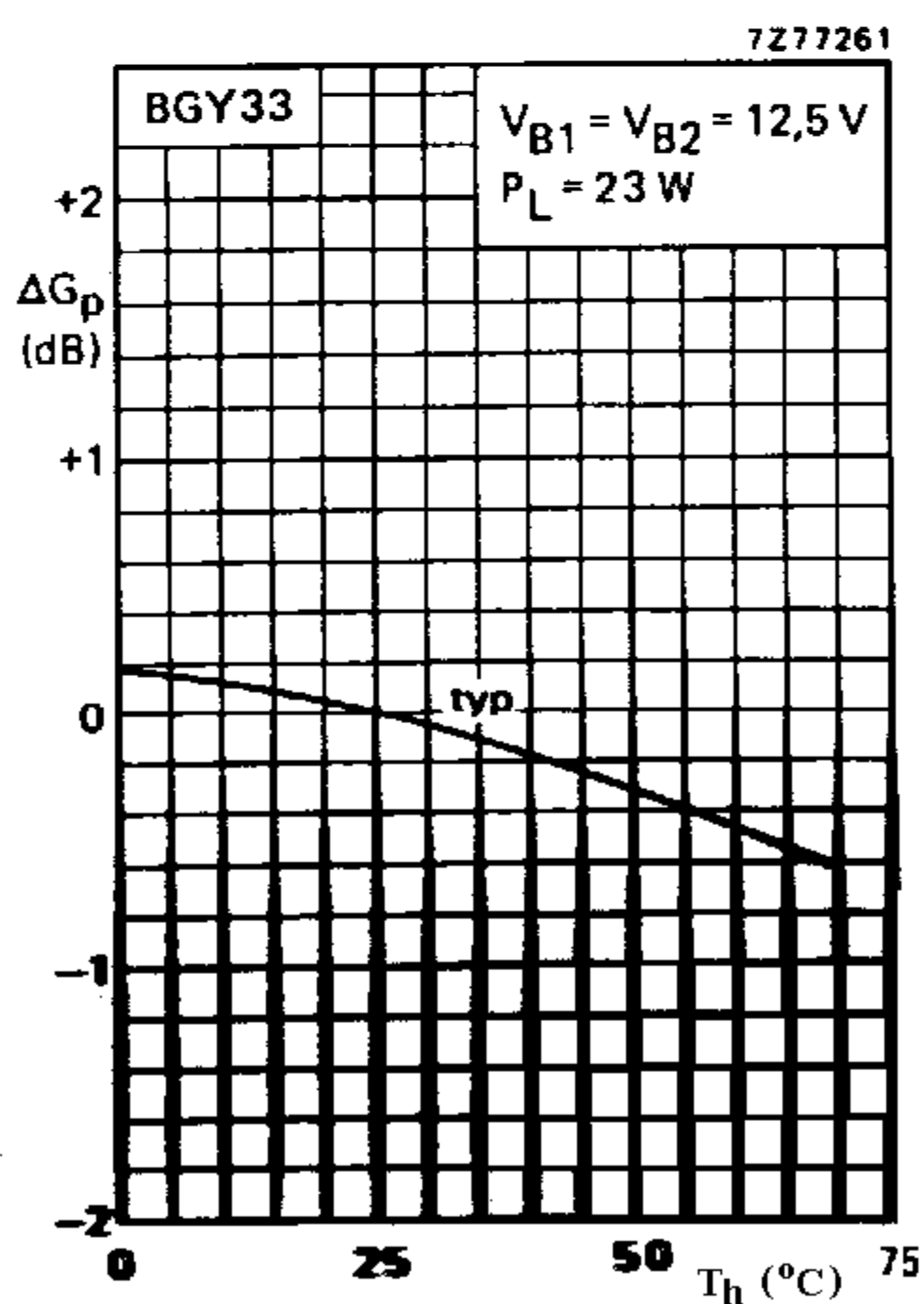
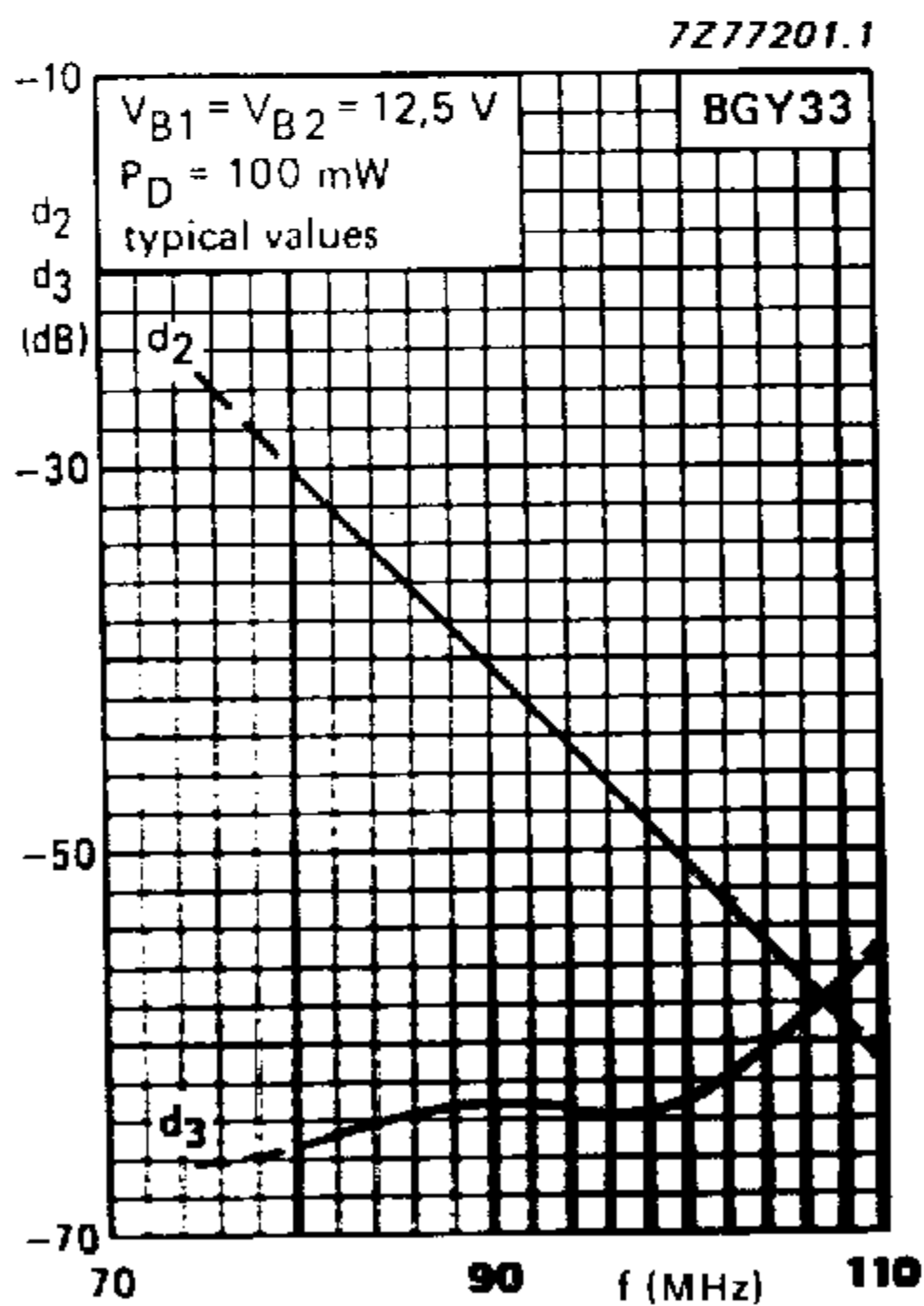
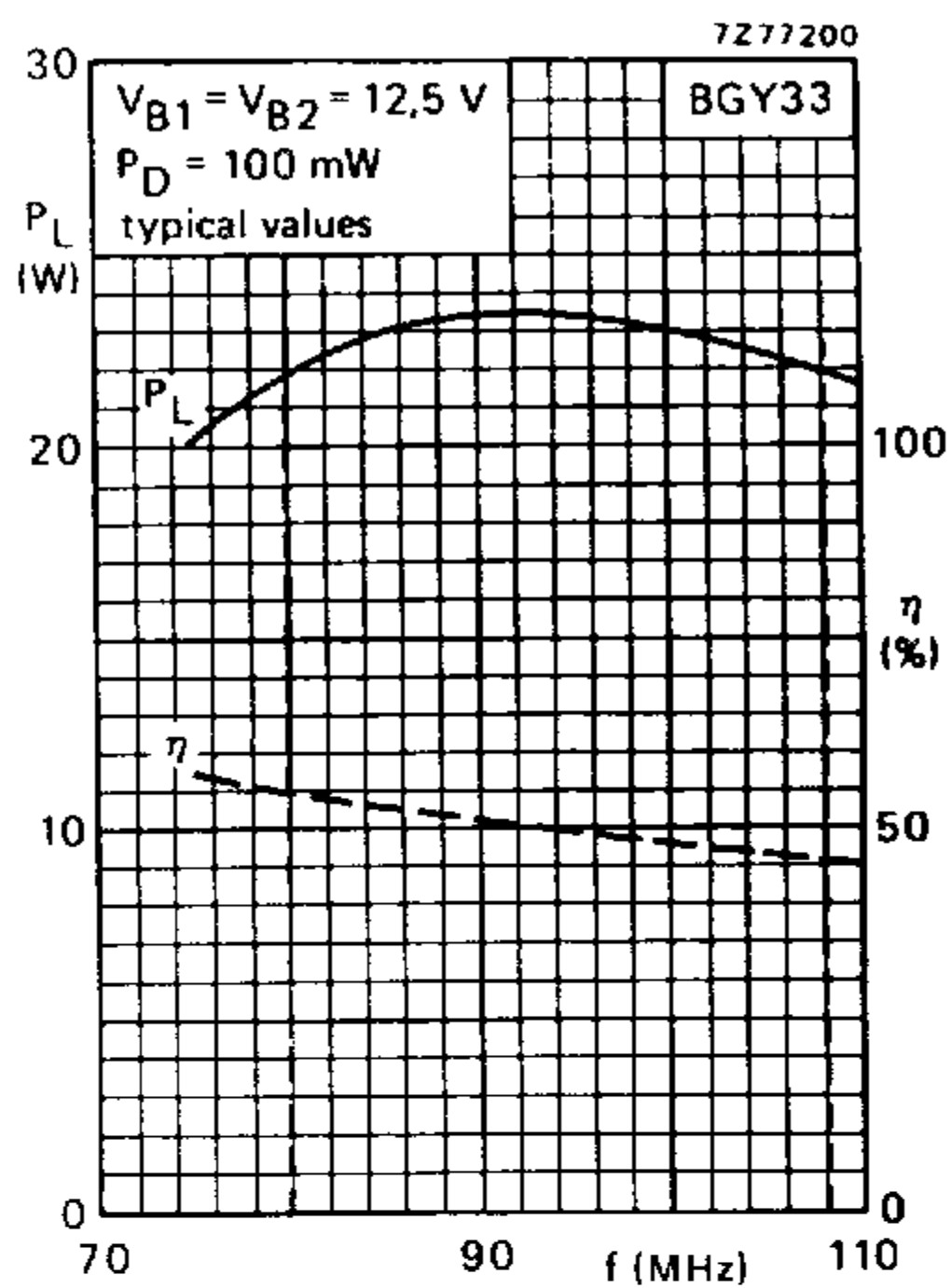
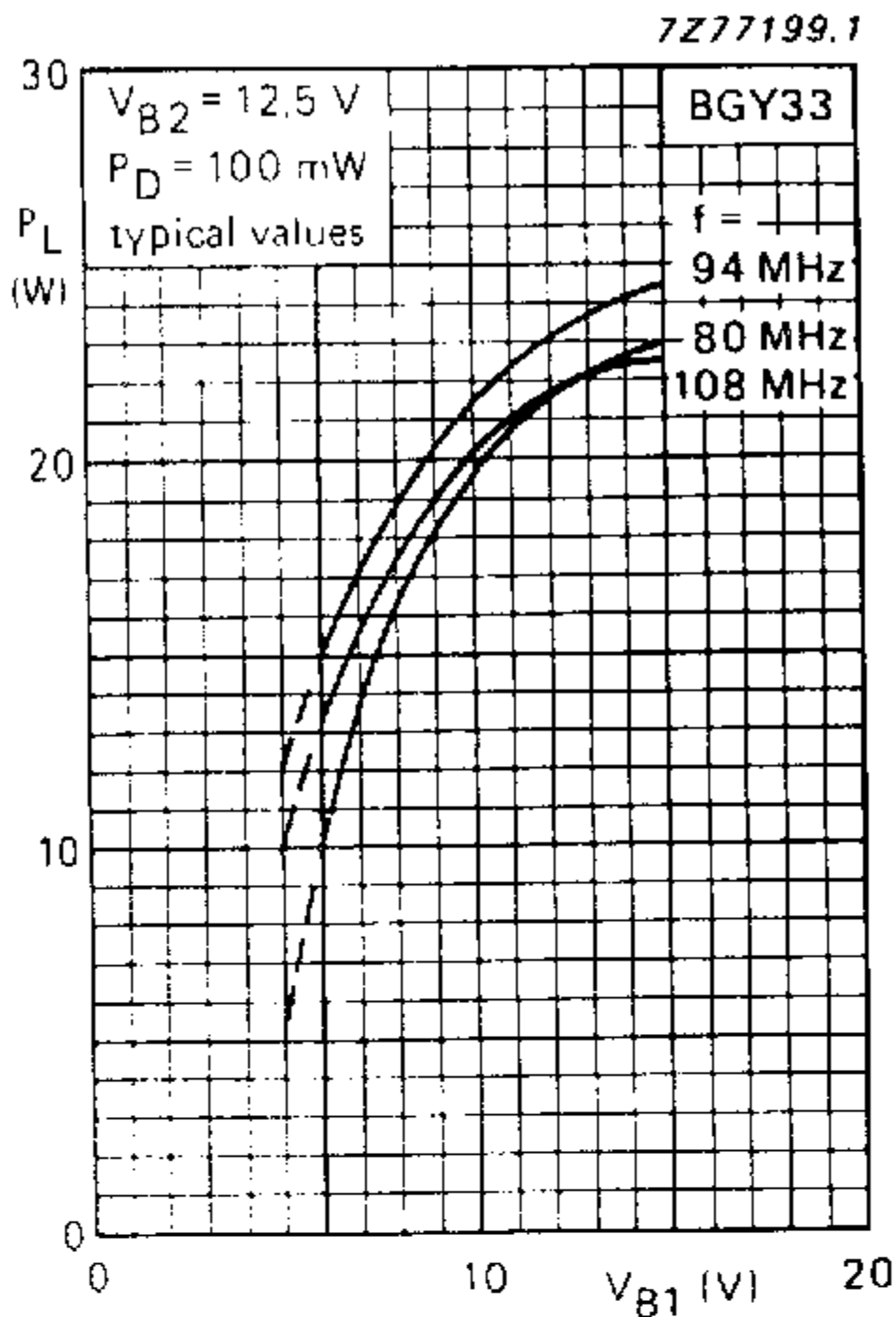


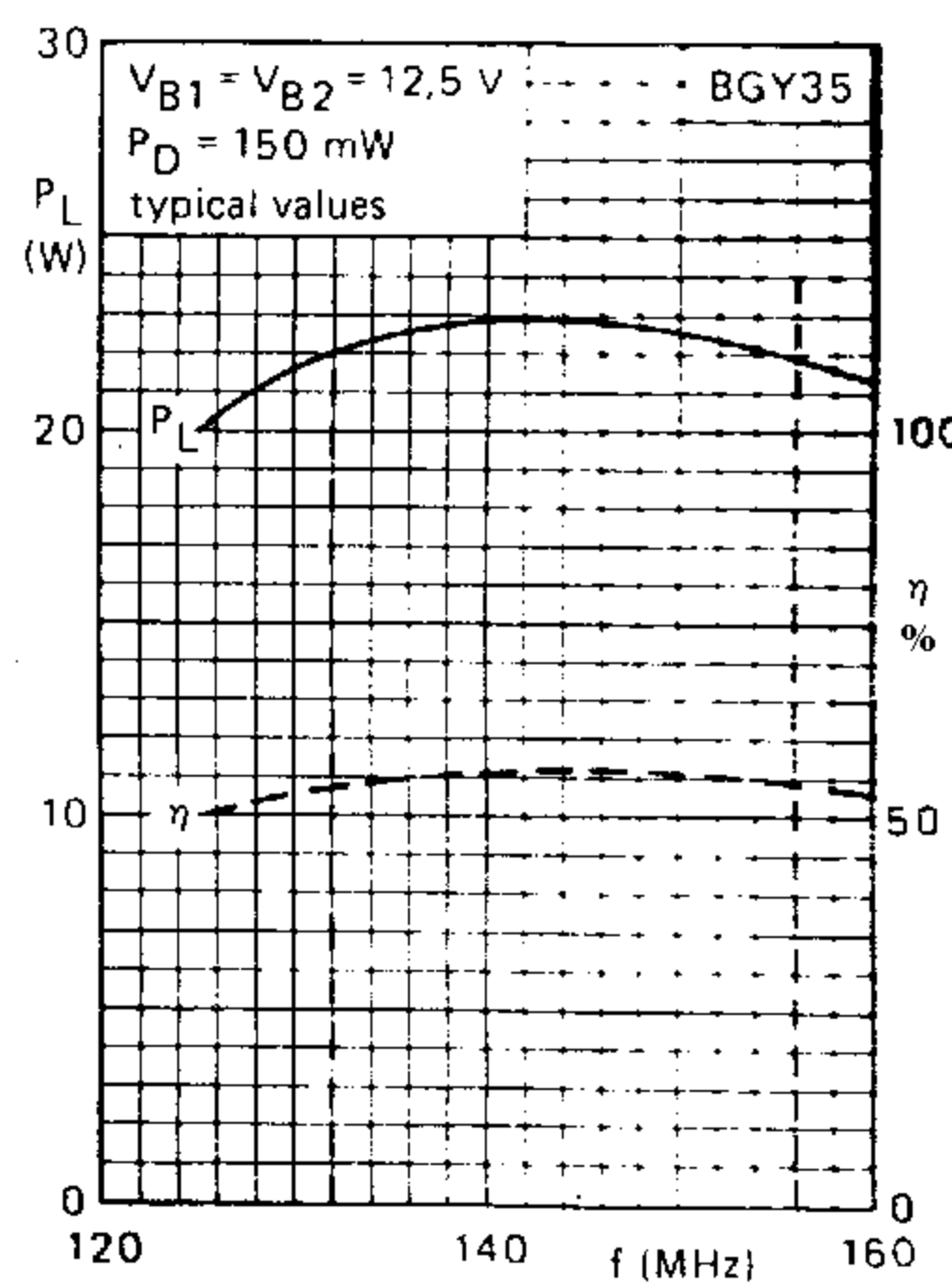
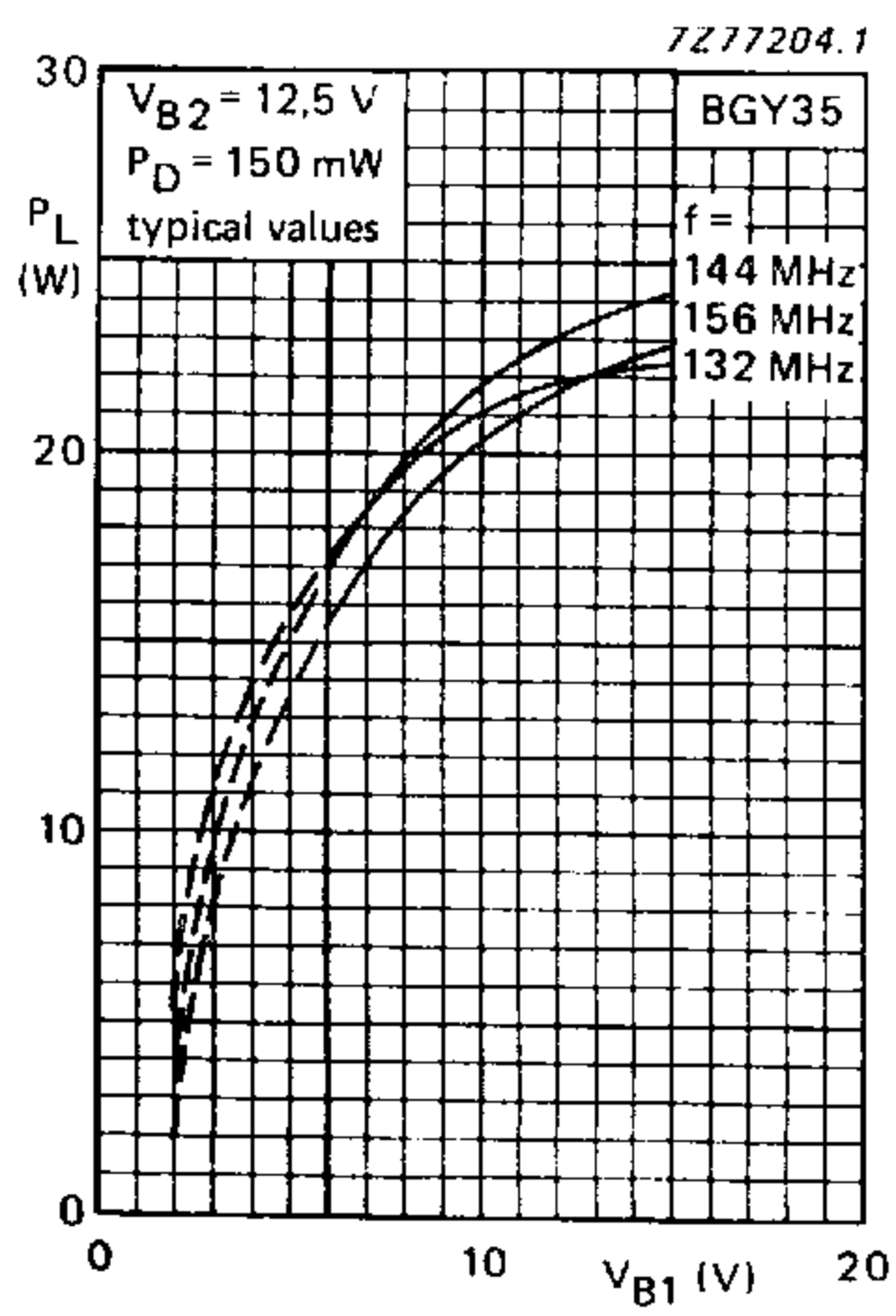
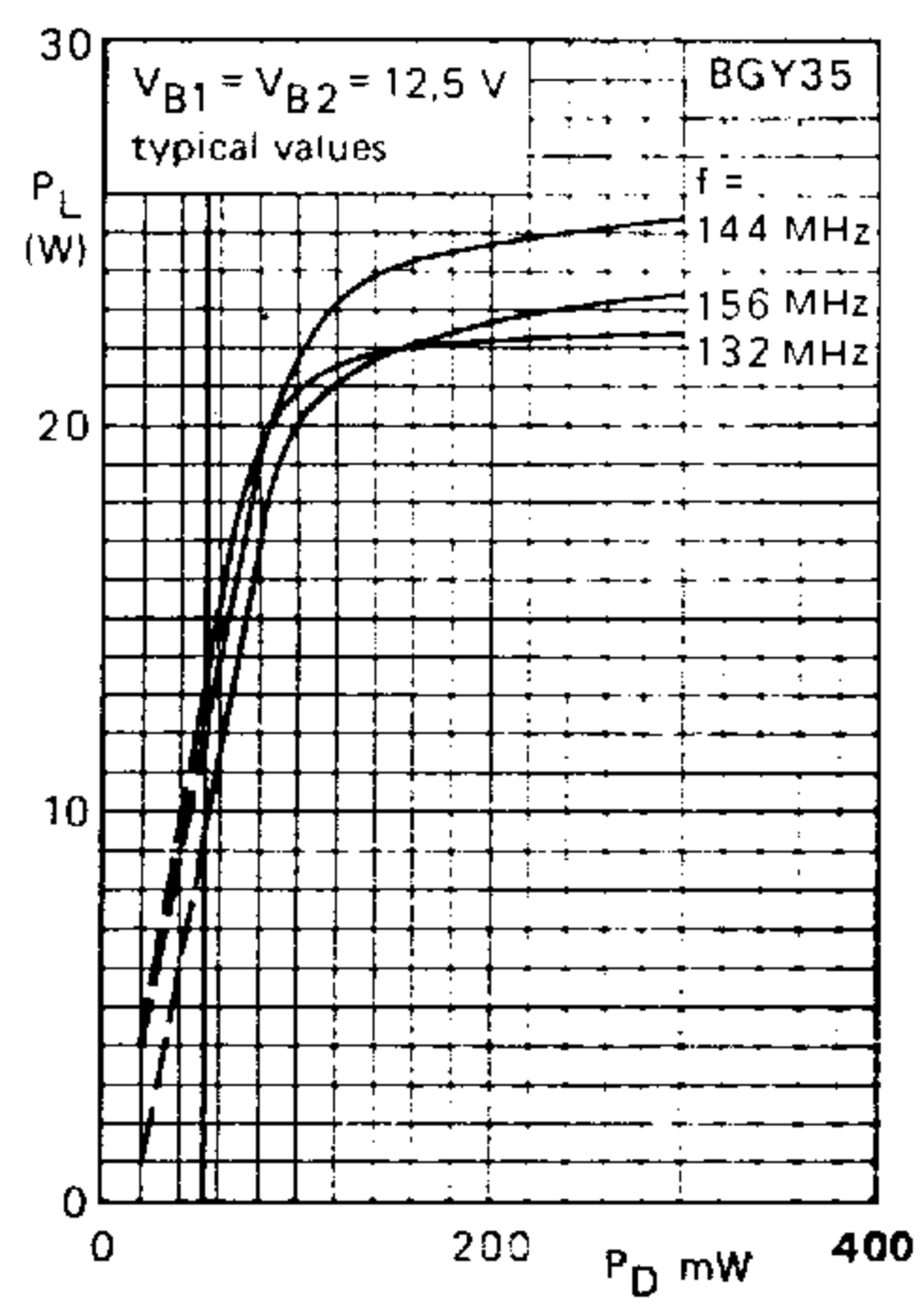
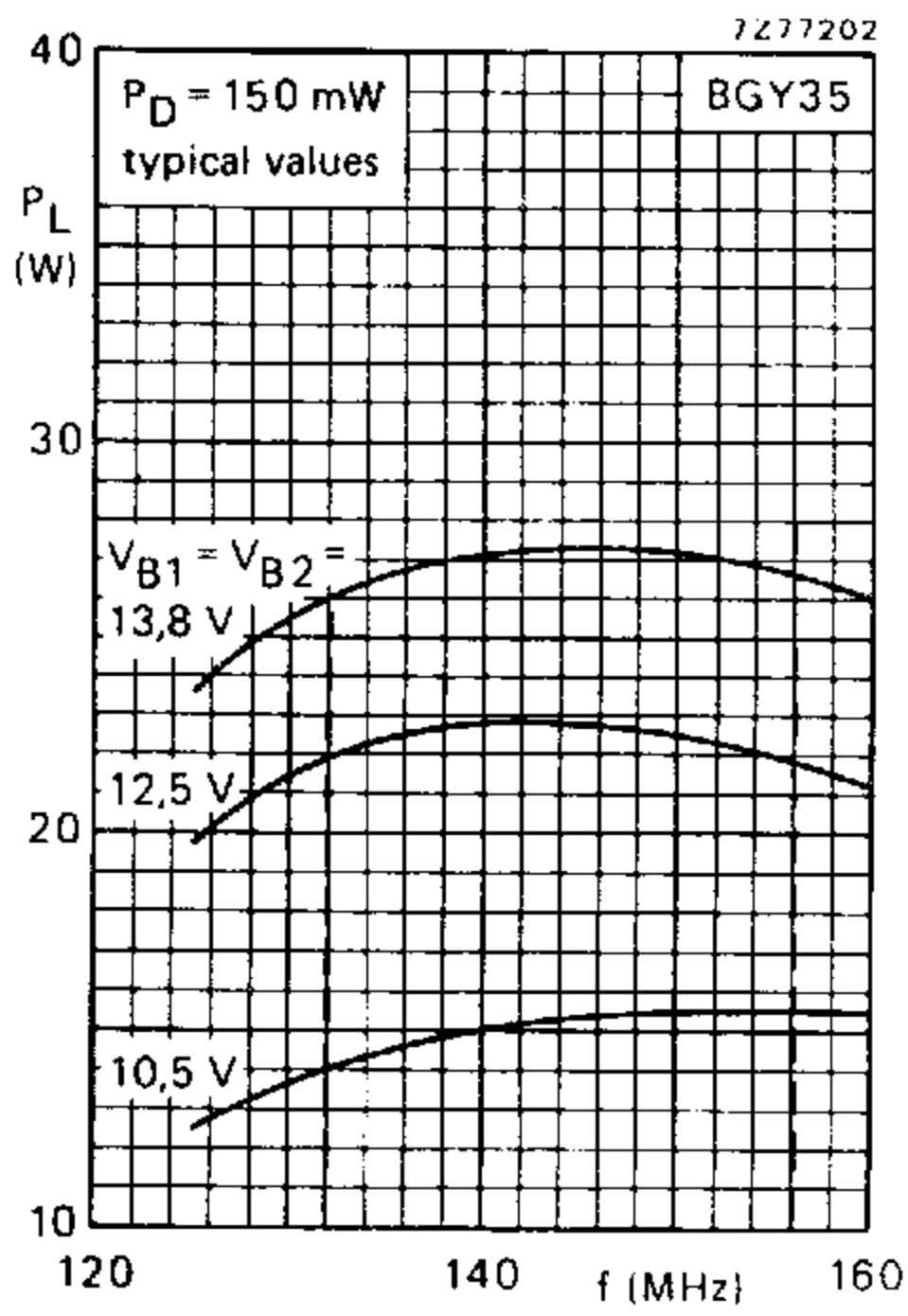
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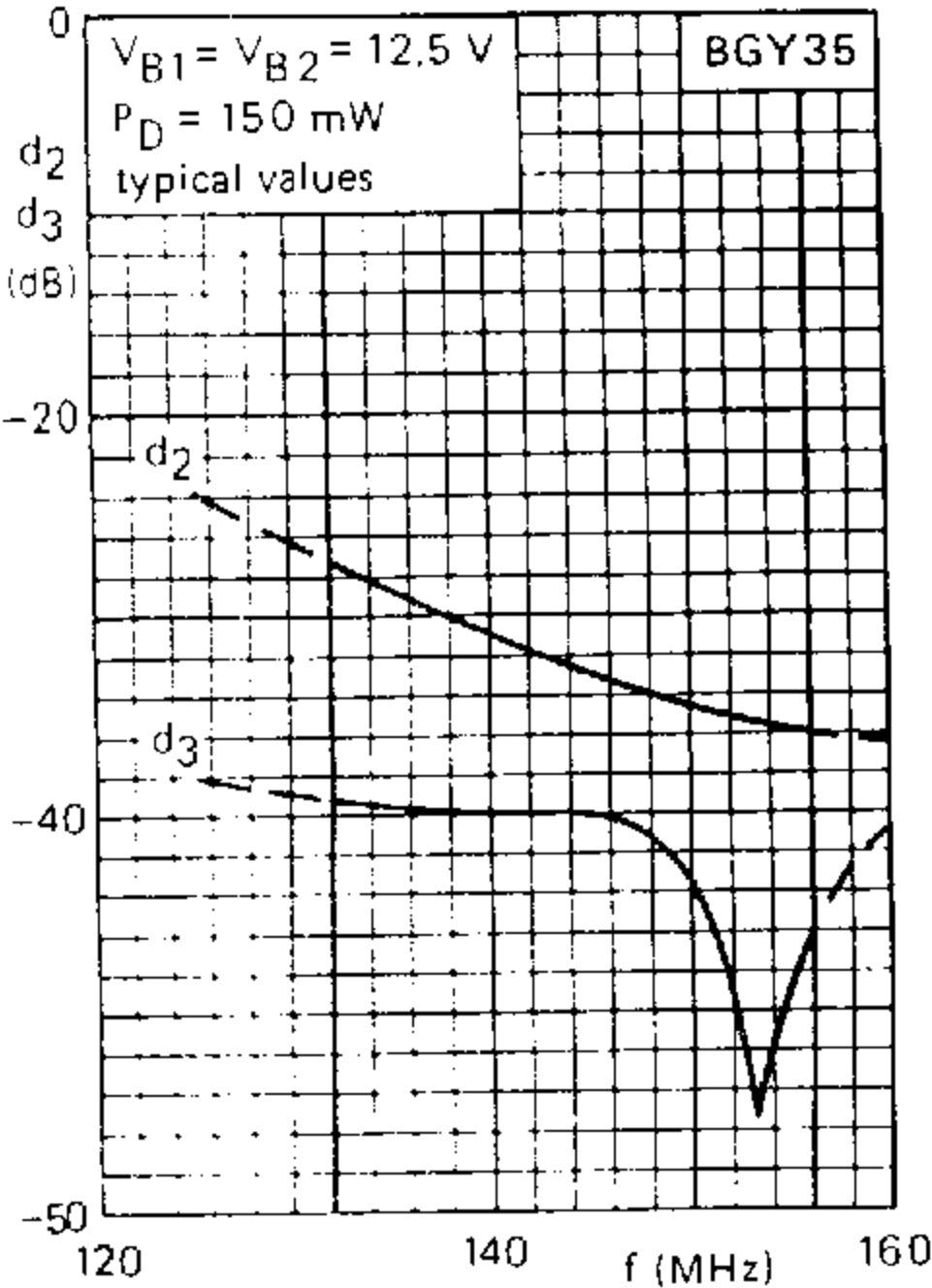
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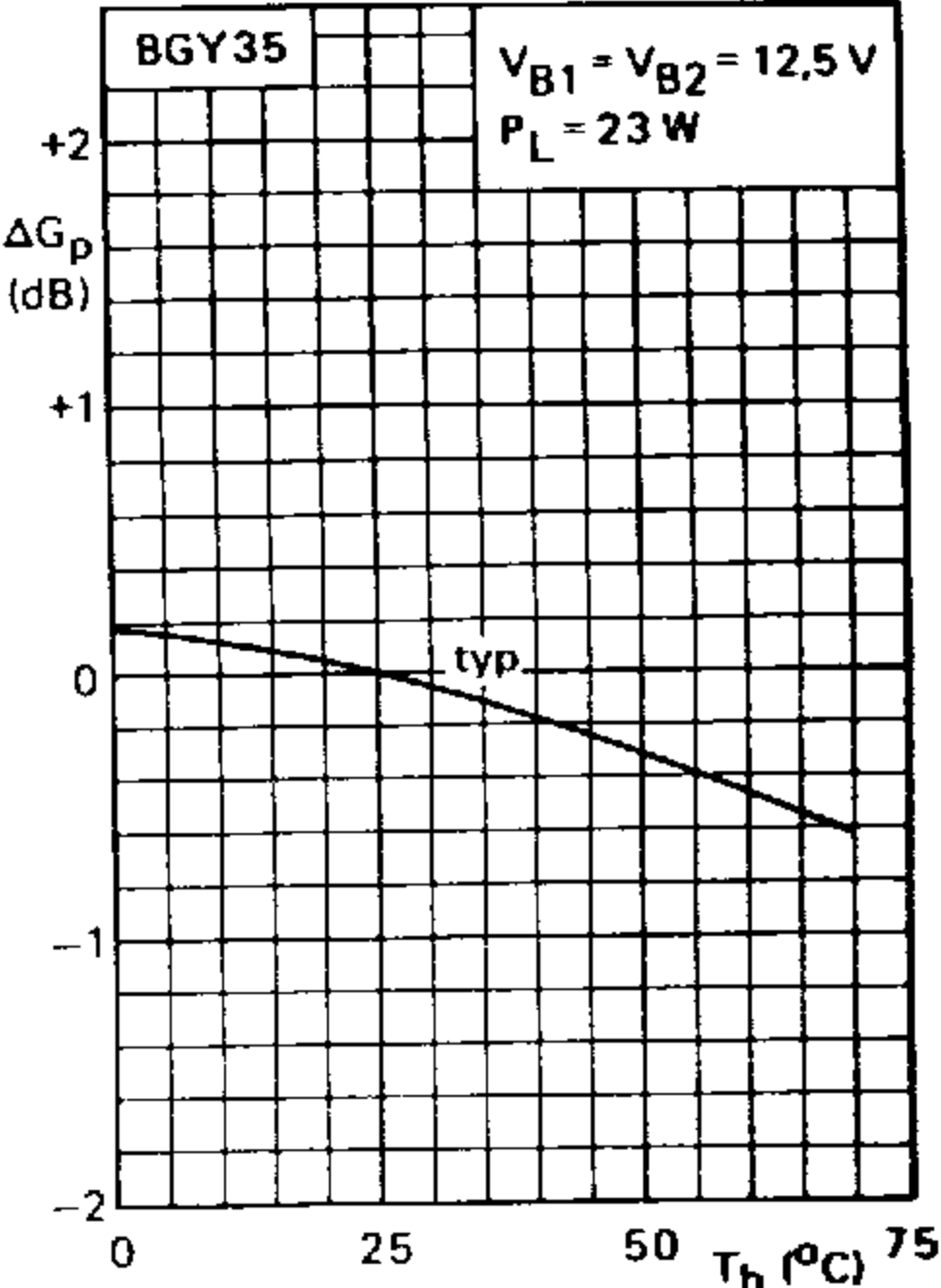




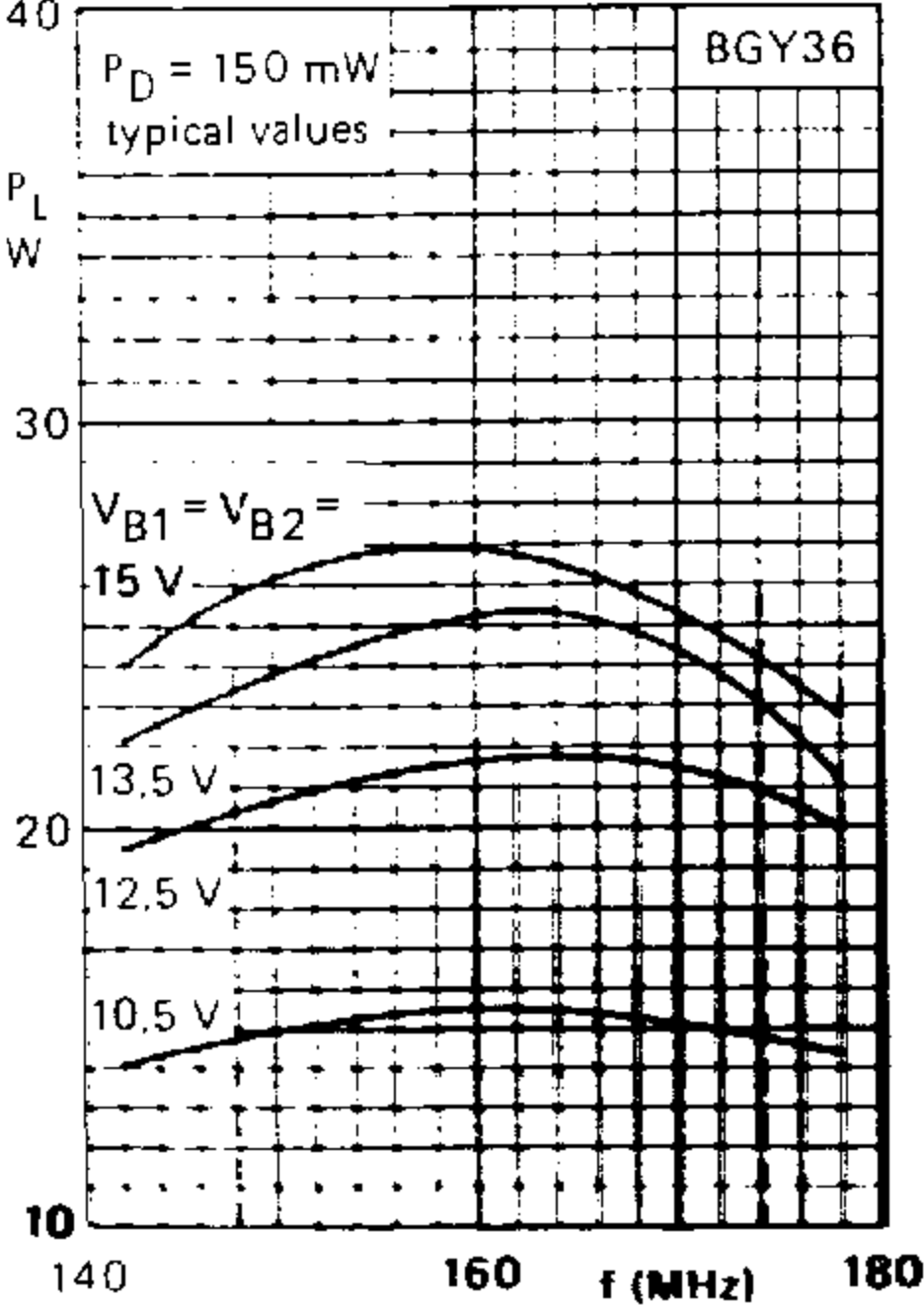
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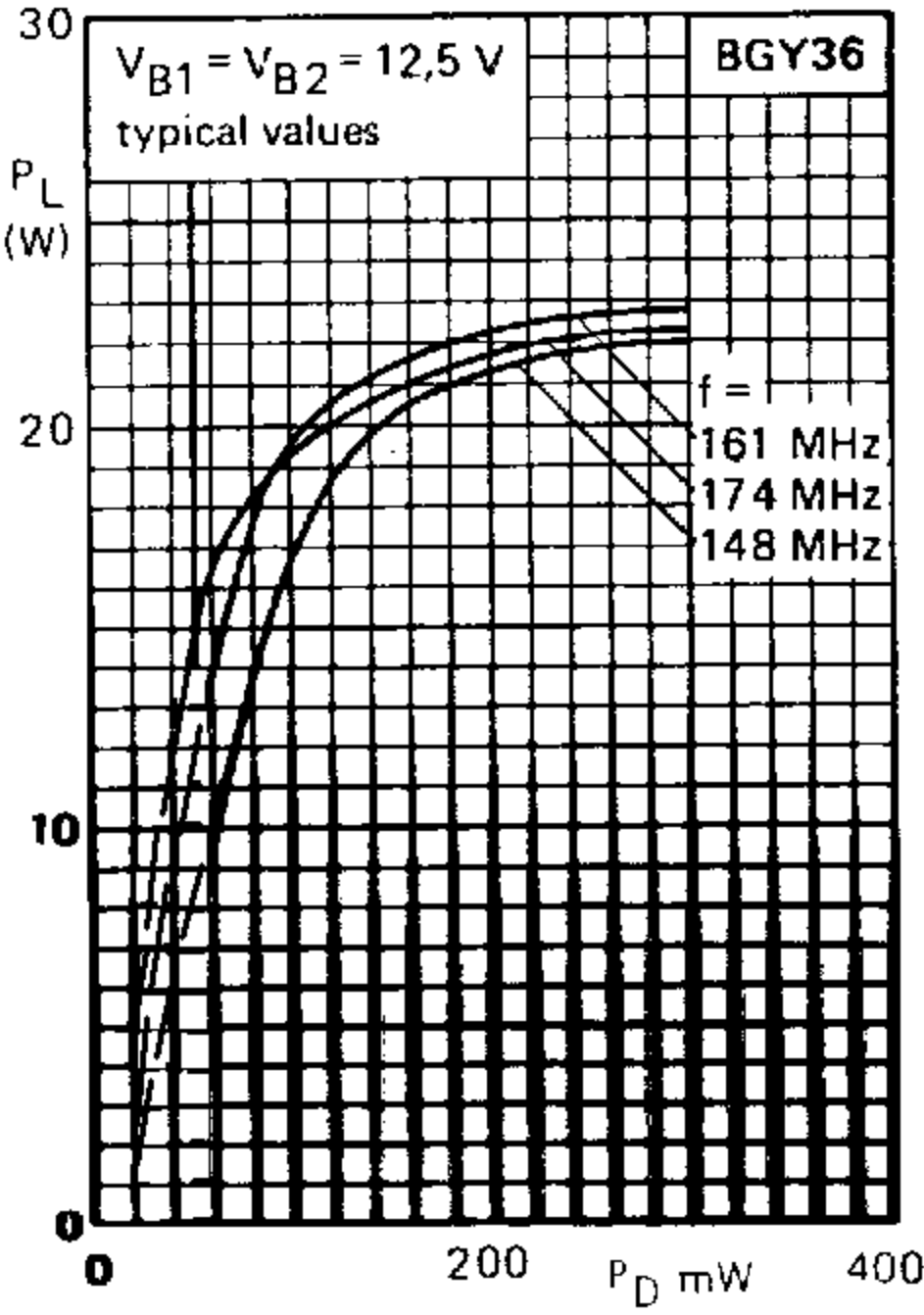
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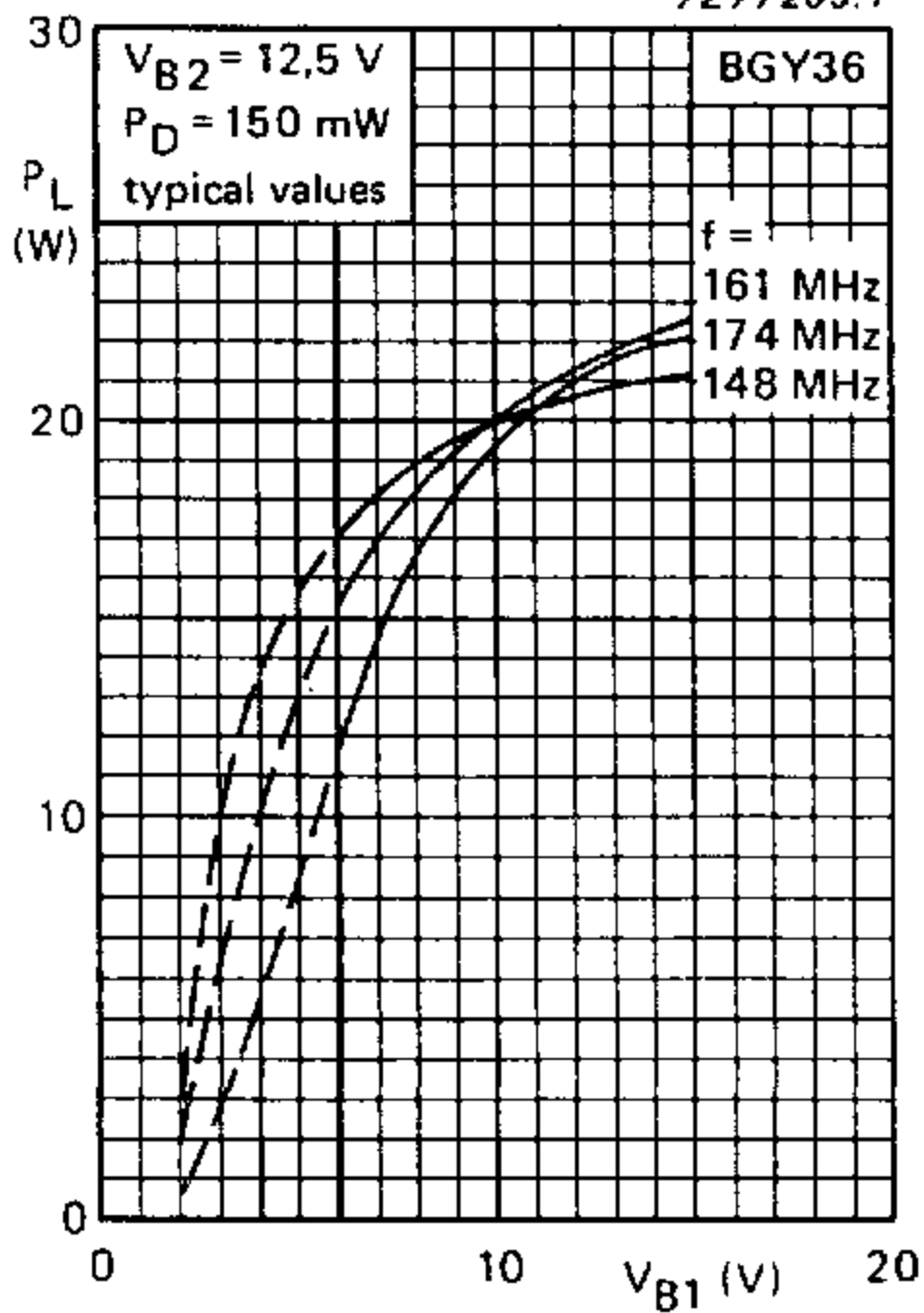
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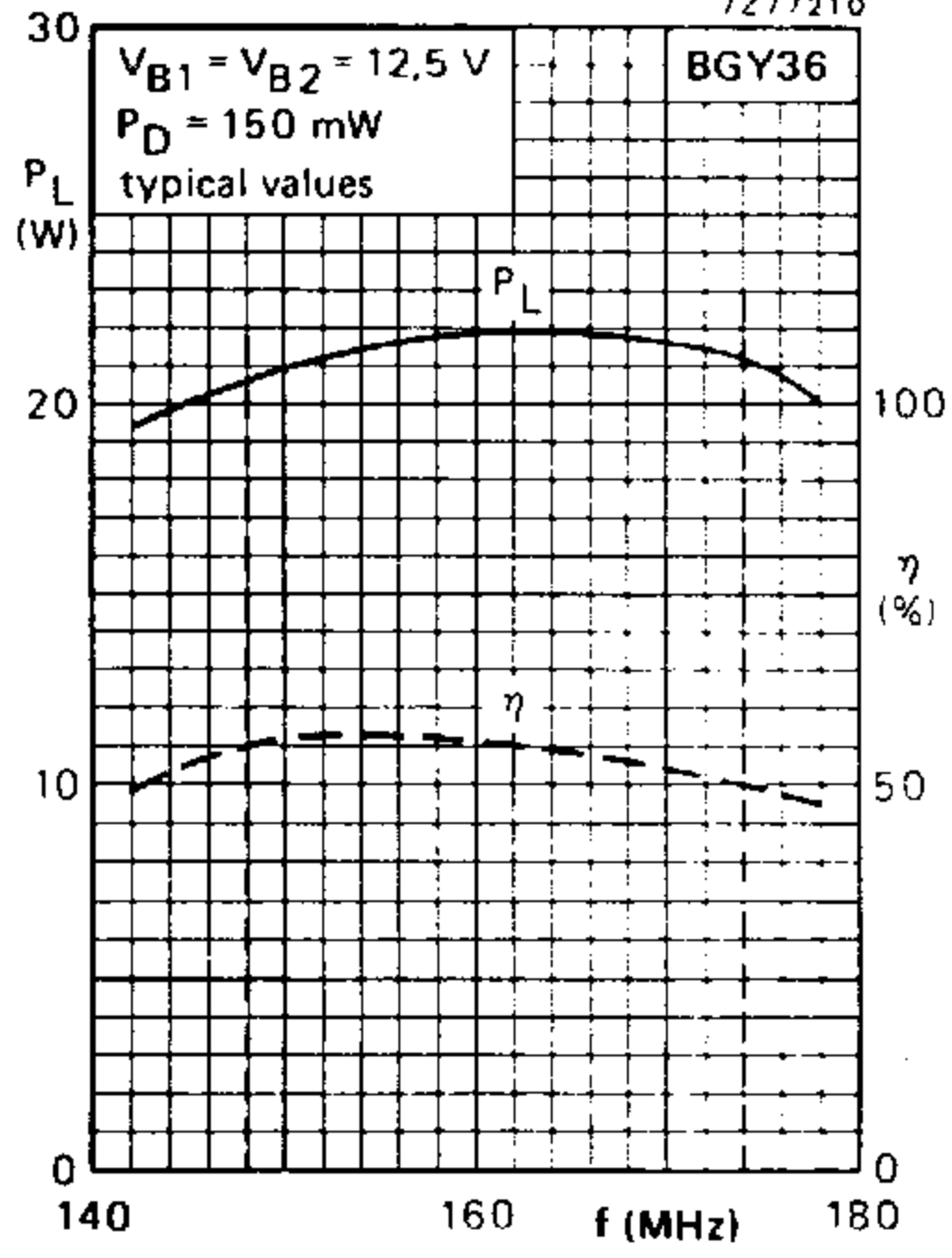
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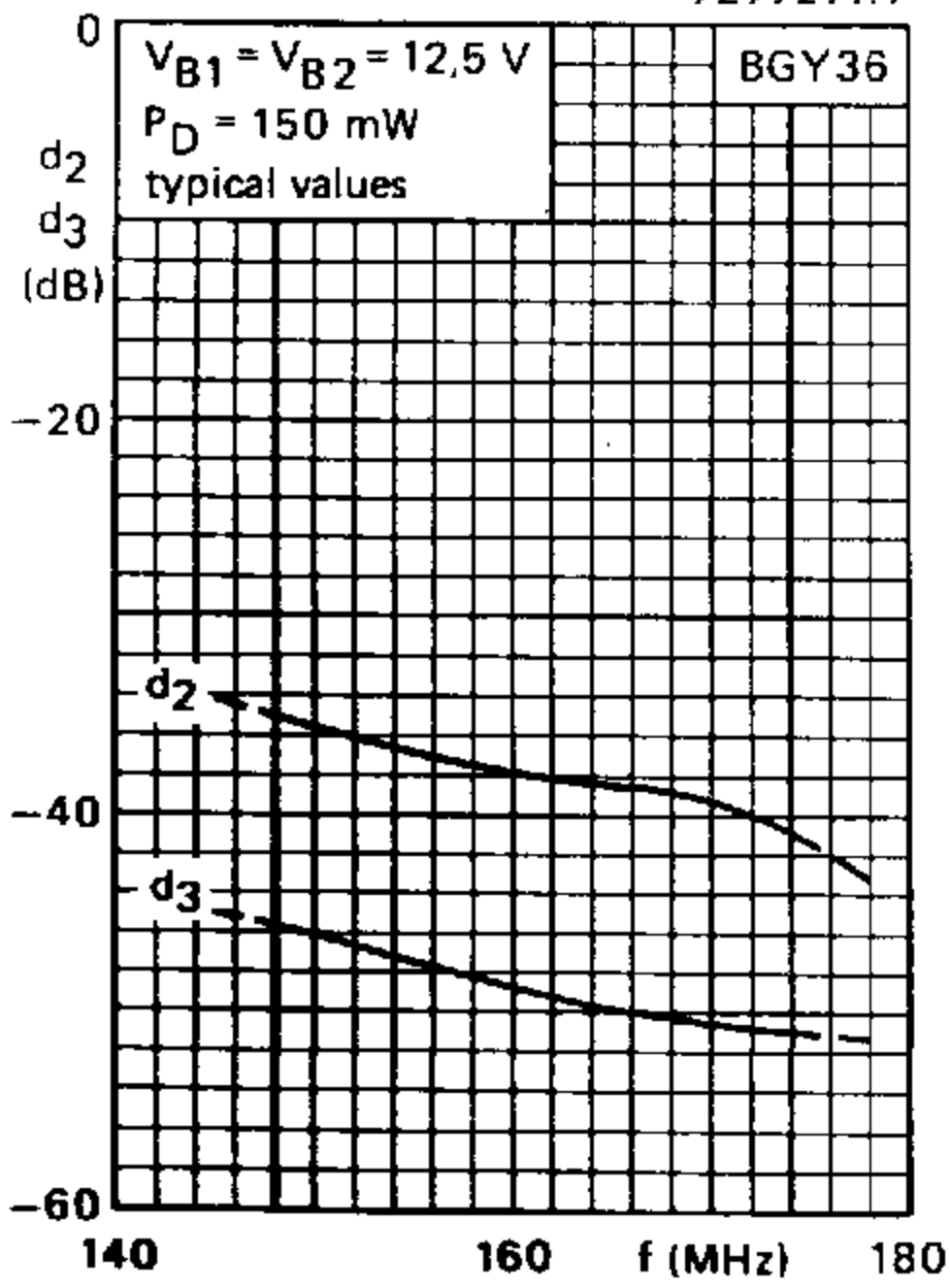
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