

DATA SHEET

CR2427S

Video driver hybrid amplifier

Product specification
File under Discrete Semiconductors, SC05

1995 Feb 09

Philips Semiconductors



PHILIPS

Video driver hybrid amplifier

CR2427S

FEATURES

- Typical transition times (10 to 90%) with $C_L = 8.5 \text{ pF}$:
 - at 35 V (p-p) swing
 $t_r = 2.2 \text{ ns}$; $t_f = 2.0 \text{ ns}$
 - at 40 V (p-p) swing
 $t_r = 2.3 \text{ ns}$; $t_f = 2.1 \text{ ns}$
 - at 50 V (p-p) swing
 $t_r = 2.5 \text{ ns}$; $t_f = 2.2 \text{ ns}$
- Low power consumption
- Minimum small signal bandwidth 130 MHz
- Very fast slew rate; 15000 V/ μs
- Excellent grey-scale linearity
- Unconditional stability
- Gold metallization ensures excellent reliability.

APPLICATIONS

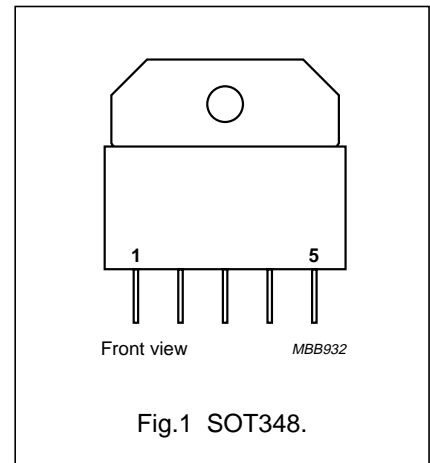
It is designed for application in cathode-ray tube (CRT) drivers in high-resolution colour and monochrome monitors.

DESCRIPTION

Hybrid amplifier module mounted in SOT348 package.

PINNING

| PIN | DESCRIPTION |
|-----|--------------------------|
| 1 | input |
| 2 | ground |
| 3 | supply voltage (V_S) |
| 4 | ground |
| 5 | output |



LIMITING VALUES

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

| SYMBOL | PARAMETER | MIN. | MAX. | UNIT |
|-----------|---|------|------|--------------------|
| V_S | supply voltage (DC) | – | 70 | V |
| T_{mb} | operating mounting base temperature; note 1 | –20 | +100 | $^{\circ}\text{C}$ |
| T_{stg} | storage temperature | –40 | +125 | $^{\circ}\text{C}$ |

Note

1. To ensure proper thermal contact, a layer of heatsink compound should be applied between module and heatsink.

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CHARACTERISTICS

$T_{mb} = 25\text{ }^{\circ}\text{C}$; $C_L = 8.5\text{ pF}$; $R1 = 215\text{ }\Omega$; $C1 = 50\text{ pF}$ (see Fig.10); unless otherwise specified.

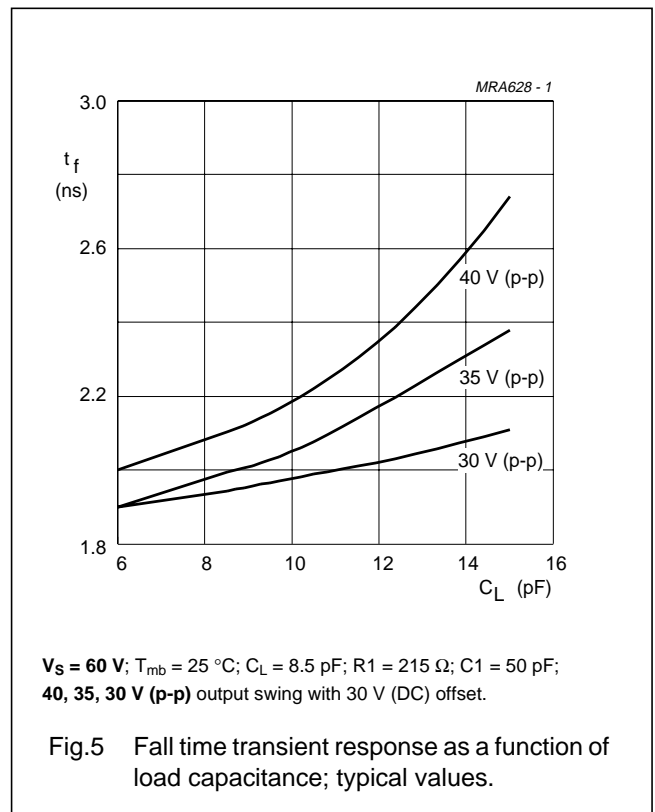
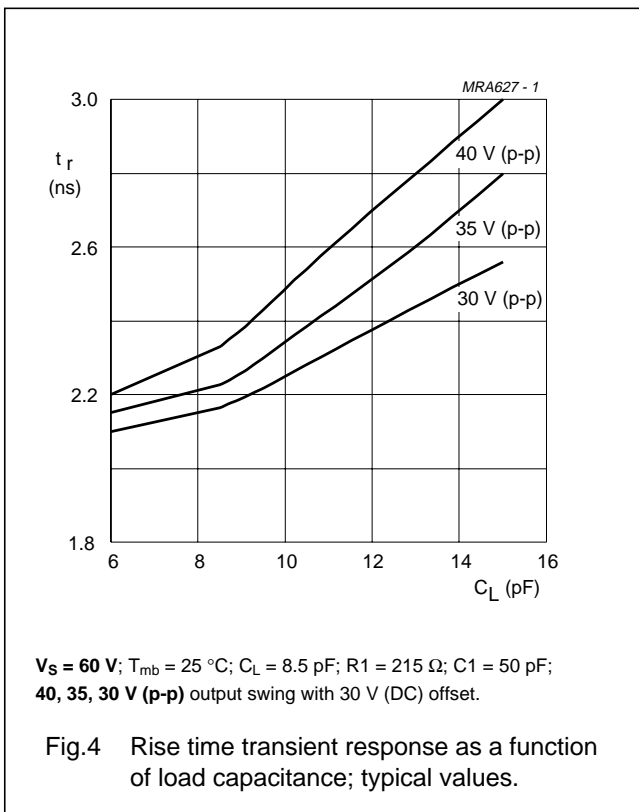
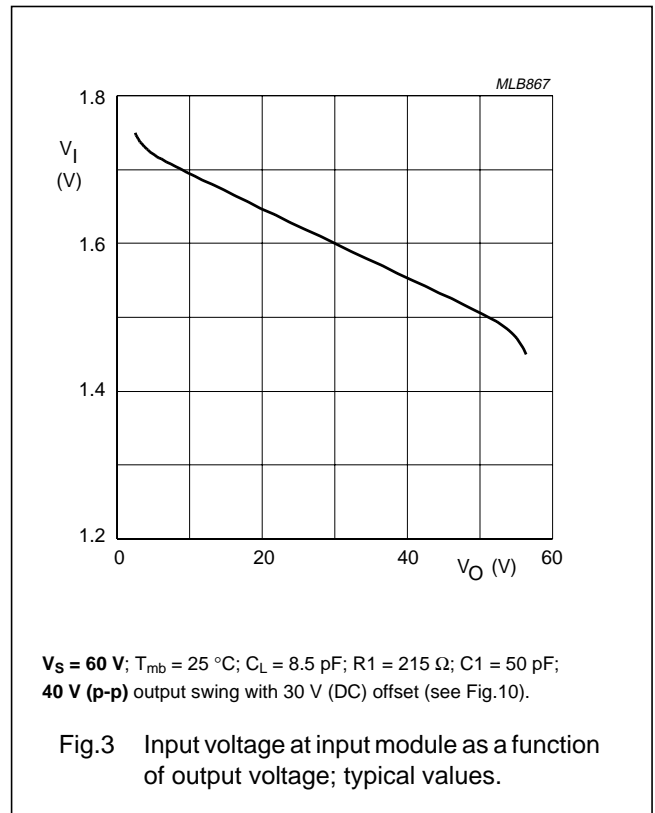
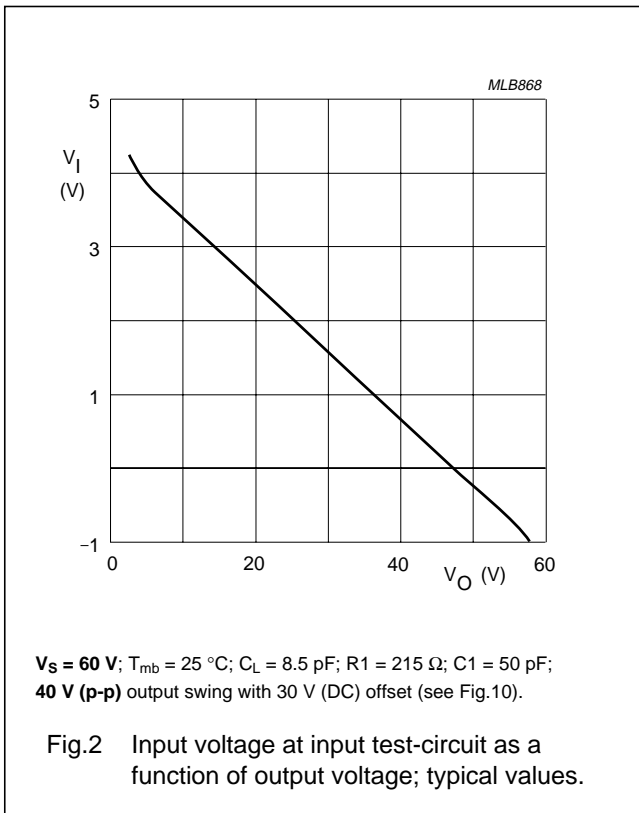
| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|--|------------------------------|---------------------------------|------|------|------|------|
| $V_S = 60\text{ V}$; 40 V (p-p) output swing with 30 V (DC) offset; unless otherwise specified | | | | | | |
| I_S | supply current | input and output open | 39 | 45 | 51 | mA |
| V_I | input voltage (DC) | input and output open | 1.3 | 1.6 | 1.9 | V |
| V_O | output voltage (DC) | input and output open | 28 | 31 | 34 | V |
| t_r | rise time transient response | 10 to 90%; note 1 | – | 2.3 | 2.9 | ns |
| t_f | fall time transient response | 10 to 90%; note 1 | – | 2.1 | 2.6 | ns |
| $V_S = 65\text{ V}$; 50 V (p-p) output swing with 32.5 V (DC) offset; unless otherwise specified | | | | | | |
| I_S | supply current | input and output open | – | 50 | 57 | mA |
| V_I | input voltage (DC) | input and output open | 1.4 | 1.75 | 2.1 | V |
| V_O | output voltage (DC) | input and output open | 29 | 32 | 35 | V |
| t_r | rise time transient response | 10 to 90%; note 2 | – | 2.5 | 3.2 | ns |
| t_f | fall time transient response | 10 to 90%; note 2 | – | 2.2 | 3.2 | ns |
| $V_S = 60\text{ V or }65\text{ V}$; 40 V (p-p) or 50 V (p-p) output swing with 30 V (DC) or 32.5 V (DC) offset; unless otherwise specified | | | | | | |
| P_{tot} | total power dissipation | 50 MHz square wave | – | 4.6 | 6 | W |
| B_s | small signal bandwidth | between –3 dB points; note 3 | 130 | 145 | – | MHz |
| V_{tilt} | low frequency tilt voltage | 1 kHz square wave | – | 1.3 | 1.5 | V |
| V_{os} | overshoot voltage | varied by C1; see Fig.10 | – | 3 | 10 | % |
| NLN | non-linearity | $V_O = 5\text{ to }55\text{ V}$ | – | 2 | 5 | % |
| A_V | DC voltage gain | 50 Ω source; note 4 | 11.2 | 12.4 | 13.2 | |
| V_G | insertion gain | 50 Ω source; note 5 | 160 | 180 | 200 | |

Notes

- Input signal is a nominal 100 kHz square wave of 3.25 V (p-p), with 1.5 V (DC) offset (50 Ω source).
- Input signal is a nominal 100 kHz square wave of 3.4 V (p-p), with 1.65 V (DC) offset (50 Ω source).
- Sine wave output signal: 1 V (p-p).
- Measured V_O/V_I (Figs 2 and 6) at input test circuit (see Fig.10).
- Measured V_O/V_I (Figs 3 and 7) at input module (see Fig.10).

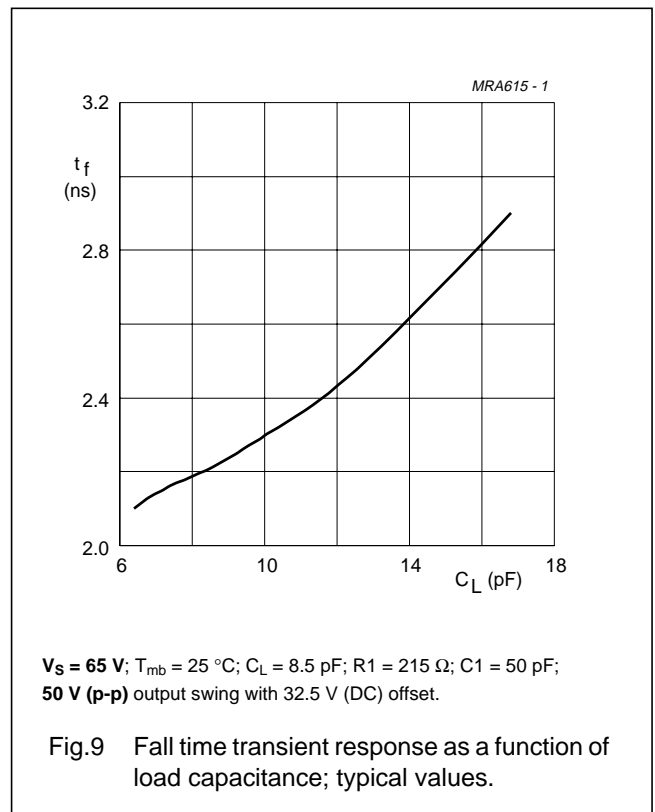
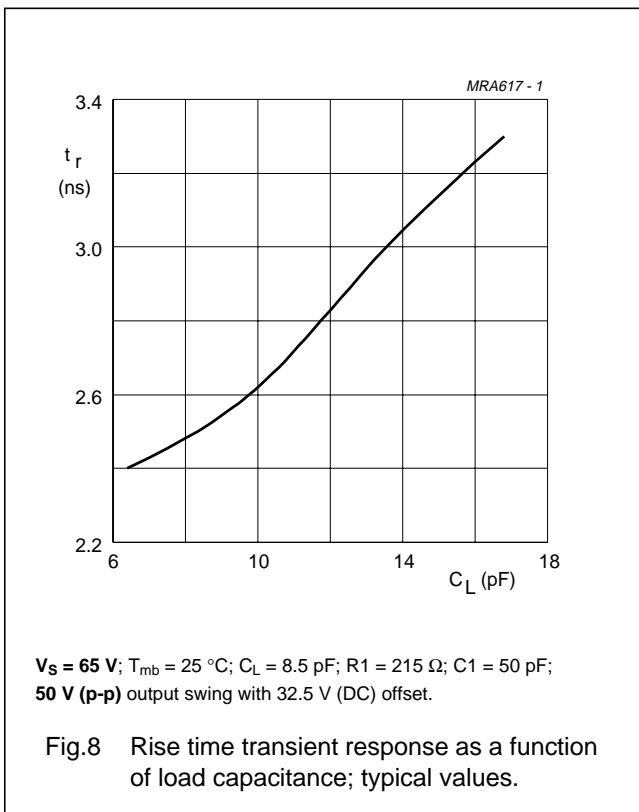
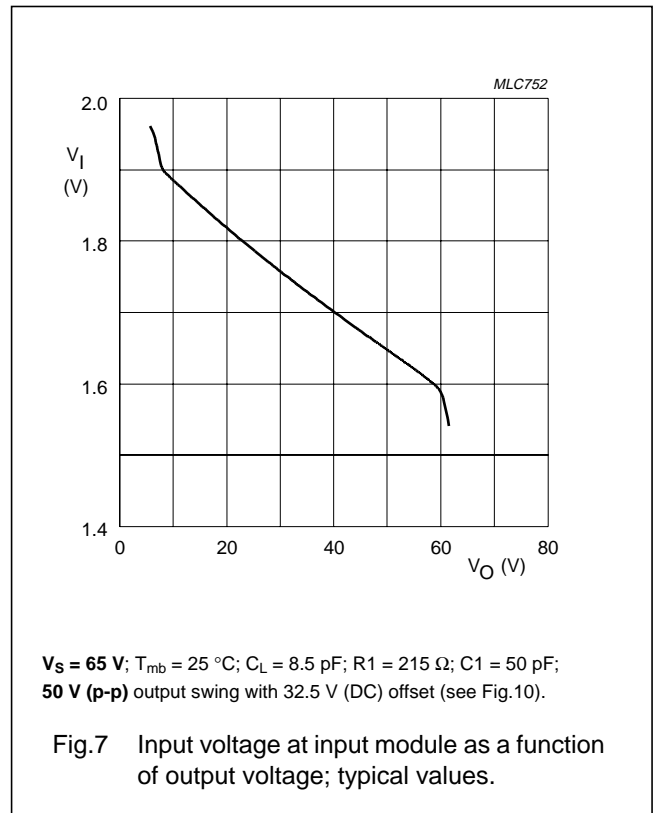
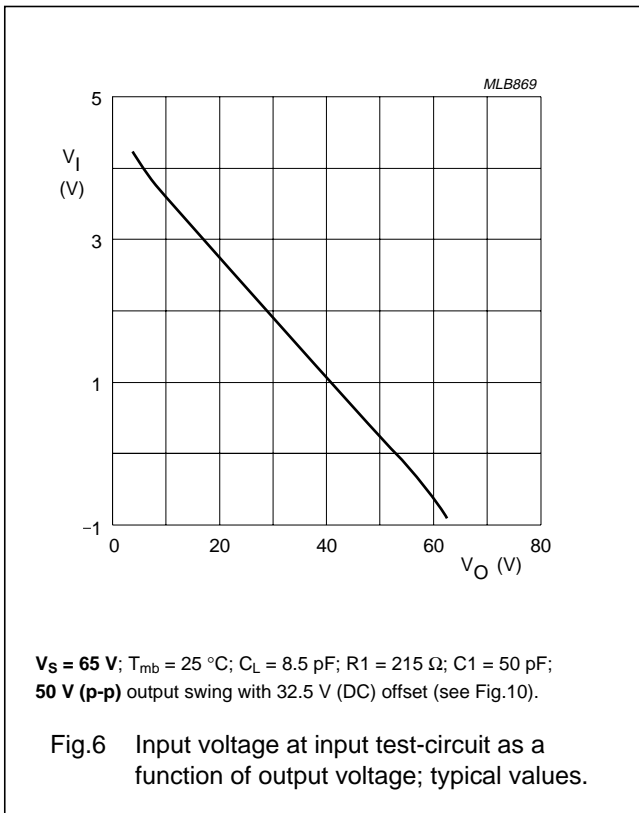
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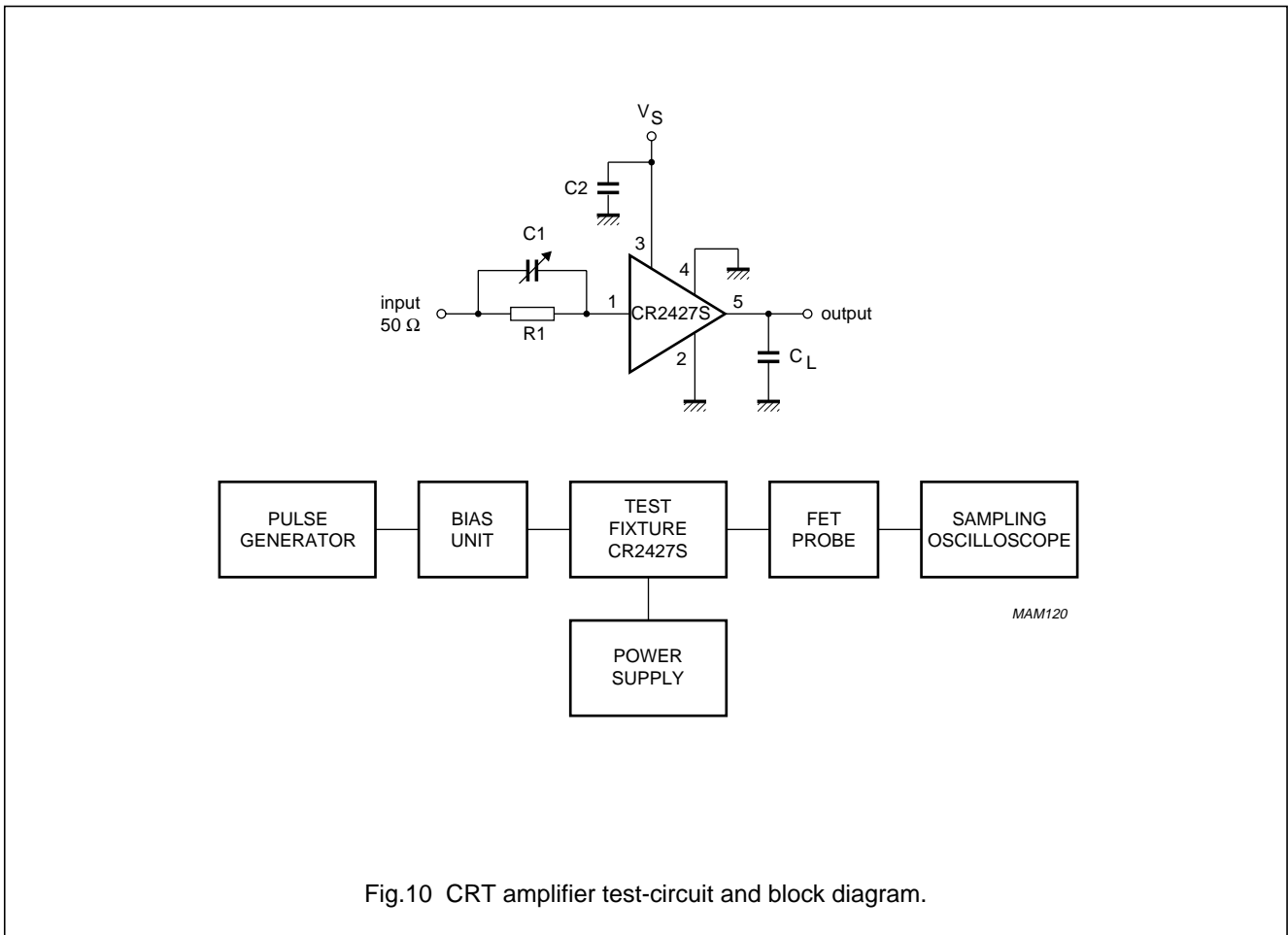


Fig.10 CRT amplifier test-circuit and block diagram.

Components used in test-circuit (see Fig.10)

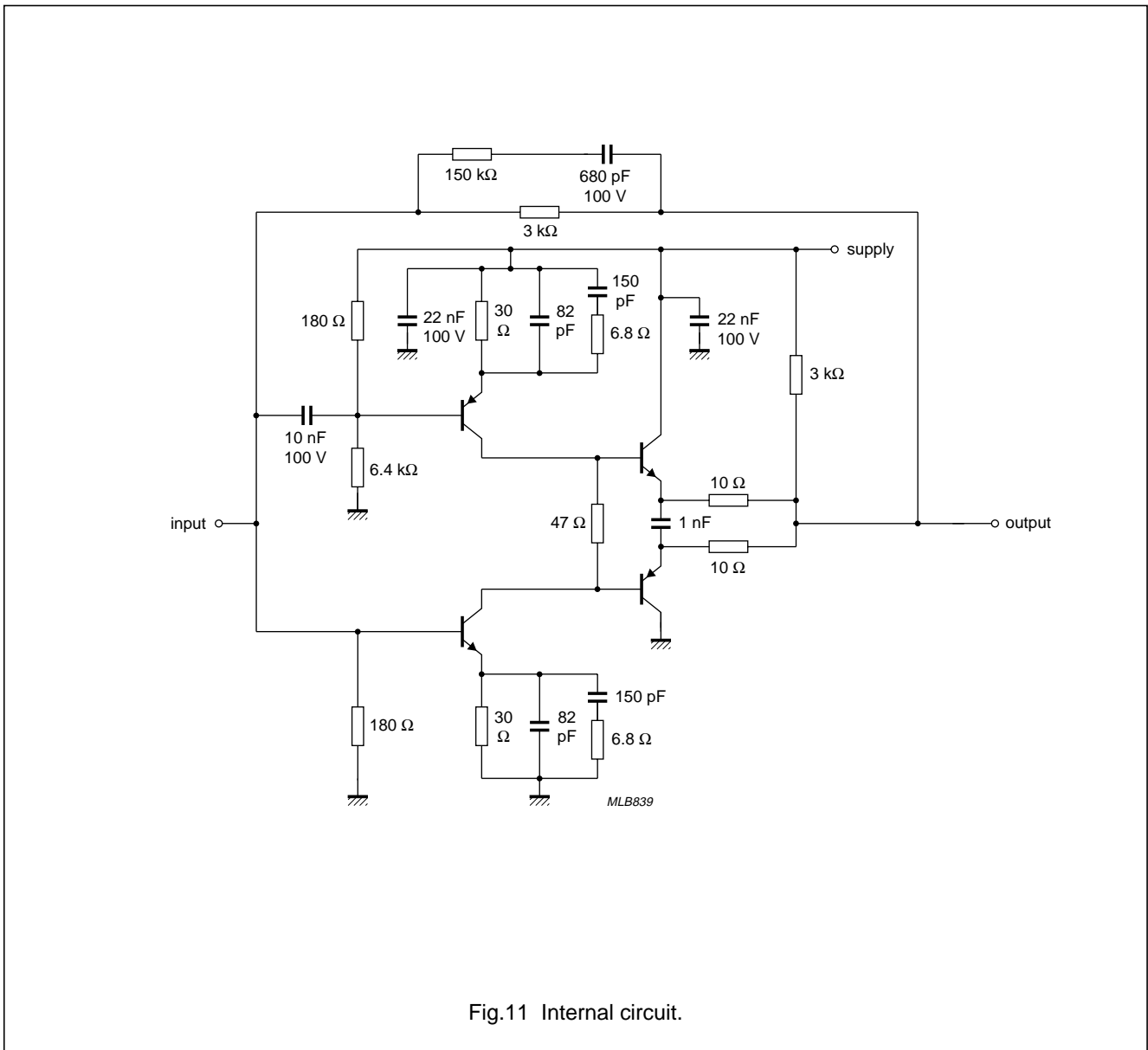
| DESIGNATION | DESCRIPTION | VALUE |
|----------------|--------------------|---------------------------|
| C ₁ | variable capacitor | 10 to 120 pF (typ. 50 pF) |
| C ₂ | chip capacitor | 10 nF |
| R1 | resistor | typ. 215 Ω |

Equipment used in test-circuit (see Fig.10)

| EQUIPMENT | TYPE DESCRIPTION |
|-----------------------|--|
| Pulse generator | Pico Second; Model 2600B |
| Bias unit | Pico Second; Model 5555 |
| Power supply | Philips; Model PE1541, 80 V |
| FET probe | Philips; Model PM8943, attenuation 100 : 1 |
| Sampling oscilloscope | Tektronix; Model 11803, sampling head SD24 |

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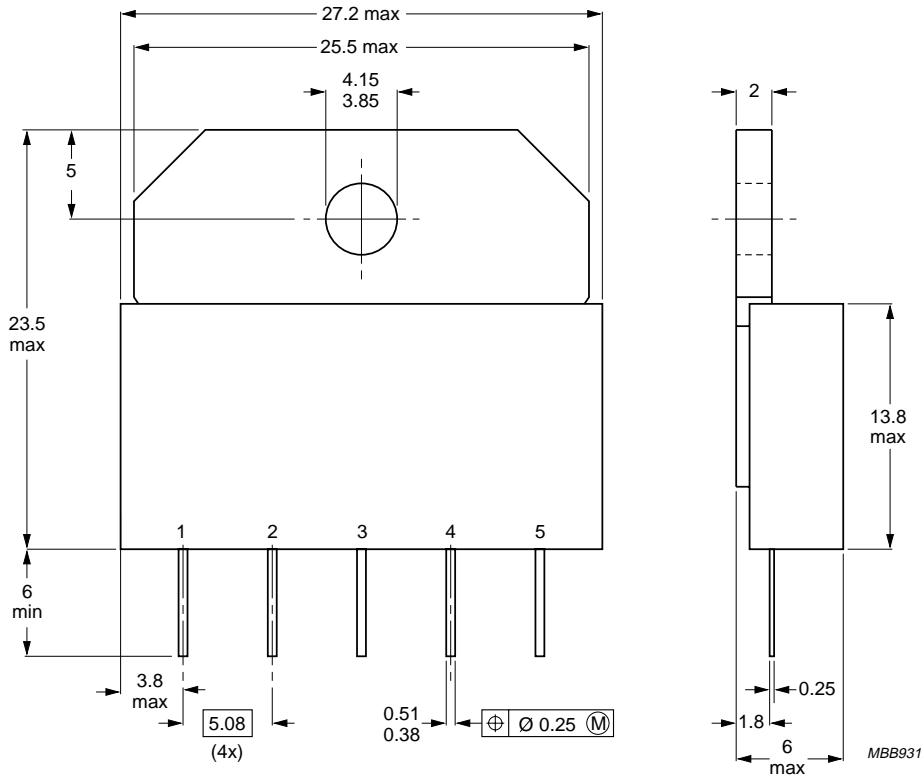
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PACKAGE OUTLINE



Dimensions in mm.

Heatsink compound must be applied sparingly and evenly distributed.

Fig.12 SOT348.

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DEFINITIONS

| | |
|---|---|
| Data sheet status | |
| Objective specification | This data sheet contains target or goal specifications for product development. |
| Preliminary specification | This data sheet contains preliminary data; supplementary data may be published later. |
| Product specification | This data sheet contains final product specifications. |
| Limiting values | |
| Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability. | |
| Application information | |
| Where application information is given, it is advisory and does not form part of the specification. | |

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NOTES

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NOTES

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