DATA SHEET

CR5627
Triple video driver hybrid amplifier

Product specification
File under Discrete Semiconductors, SC05

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Philips
Semiconductors

PHILIPS

Triple video driver hybrid amplifier CR5627

FEATURES

- Transition times (10 to 90%): 3.5 ns rise and 2.7 ns fall with 50 V (p-p) swing and C_L at 10 pF
- Low power consumption: 10 W with 25 MHz square wave
- Minimum small signal bandwidth: 85 MHz
- Very fast slew rate: 12000 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 monitors.

DESCRIPTION

Hybrid amplifier module comprising three video amplifiers in a SOT347 package.

PINNING

PIN	DESCRIPTION
1	supply voltage 1 (V_{S1})
2	input 1
3	ground
4	output 1
5	supply voltage 2 (V_{S2})
6	input 2
7	ground
8	output 2
9	supply voltage 3 (V_{S3})
10	input 3
11	ground
12	output 3

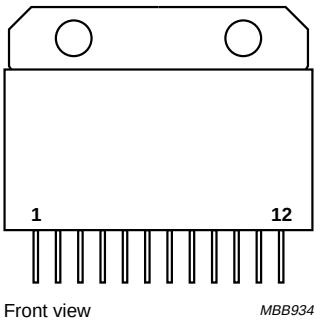


Fig.1 SOT347.

LIMITING VALUES

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

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
Per amplifier				
V_S	supply voltage (DC)	–	90	V
T_{mb}	operating mounting base temperature	–20	+100	°C
T_{stg}	storage temperature	–40	+125	°C

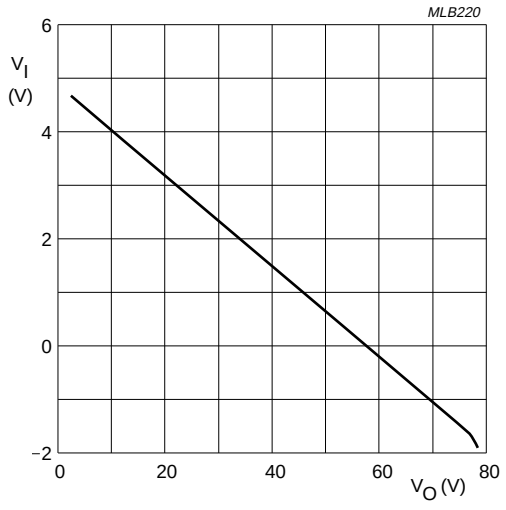
CHARACTERISTICS

V_S = 80 V; T_{mb} = 25 °C; C_L = 10 pF; output swing = 50 V (p-p) with 40 V DC offset; measured in test circuit (see Fig.6); unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_S	supply current	input and output open	57	75	91	mA
P_{tot}	total power dissipation	25 MHz square wave	–	9.6	11	W
t_r	rise time transient response	10 to 90%; note 1	–	3.5	4.1	ns
t_f	fall time transient response	10 to 90%; note 1	–	2.7	3.3	ns
BW	small signal bandwidth	between –3 dB points; note 2	85	100	–	MHz
V_{tilt}	low frequency tilt voltage	10 kHz square wave	–	1.3	1.5	V
V_{os}	overshoot voltage	varied by C1 and C2; see Fig.6	–	3	10	%
NLN	non-linearity	V_O = 5 to 75 V	–	2	5	%
A_V	DC voltage gain	50 Ω source; note 3	11	12	13	
V_G	insertion gain	50 Ω source; note 4	350	370	390	

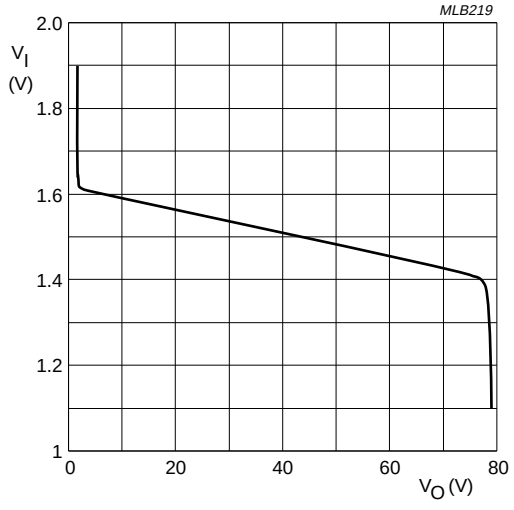
Notes

1. Input signal is a 100 kHz square wave of 4.15 V (p-p) with 1.5 V DC offset (50 Ω source).
2. Sinewave output signal: 1 V (p-p).
3. Measured V_O/V_I (Fig.2) at input test-circuit (see Fig.6).
4. Measured V_O/V_I (Fig.3) at input module (see Fig.6).



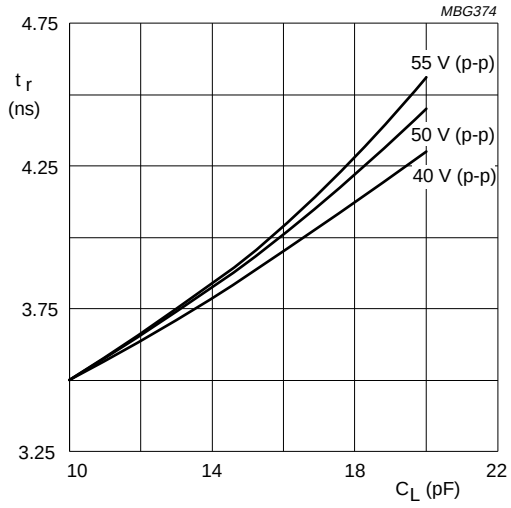
V_S = 80 V; T_{mb} = 25 °C; C_L = 10 pF; output swing = 50 V (p-p) with 40 V DC offset; measured in test circuit (see Fig.6).

Fig.2 Input voltage at input test-circuit as a function of output voltage; typical values.



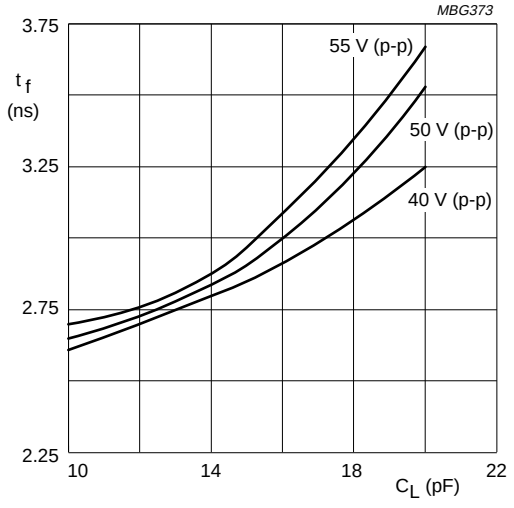
V_S = 80 V; T_{mb} = 25 °C; C_L = 10 pF; output swing = 50 V (p-p) with 40 V DC offset; measured in test circuit (see Fig.6).

Fig.3 Input voltage at input module as a function of output voltage; typical values.



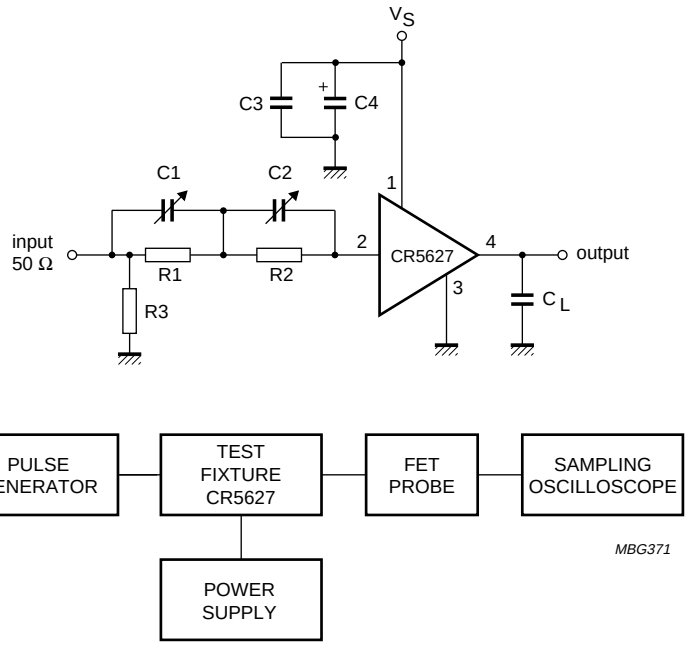
V_S = 80 V; T_{mb} = 25 °C; C_L = 10 pF; output swing = 55, 50, 40 V (p-p) with 40 V DC offset; measured in test circuit (see Fig.6).

Fig.4 Rise time transient response as a function of load capacitance; typical values.



V_S = 80 V; T_{mb} = 25 °C; C_L = 10 pF; output swing = 55, 50, 40 V (p-p) with 40 V DC offset; measured in test circuit (see Fig.6).

Fig.5 Fall time transient response as a function of load capacitance; typical values.



Test-circuit for one of the three CRT amplifiers.

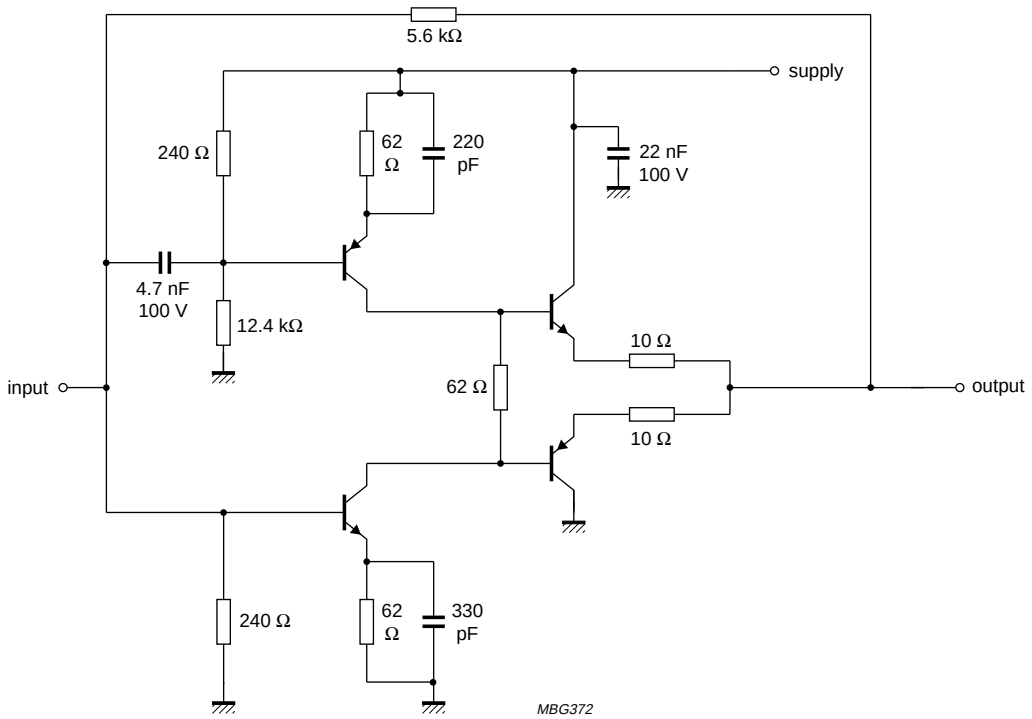
Fig.6 CRT amplifier test-circuit and block diagram.

Components used in test-circuit (see Fig.6)

DESIGNATION	DESCRIPTION	VALUE
C1	variable capacitor	10 to 160 pF (typ. 90 pF)
C2	variable capacitor	10 to 160 pF (typ. 100 pF)
C3	chip capacitor	10 nF
C4	electrolytic capacitor	4.7 μF; 160 V
R1	resistor	typ. 348 Ω
R2	resistor	typ. 82 Ω
R3	resistor	50 Ω

Equipment used in test-circuit (see Fig.6)

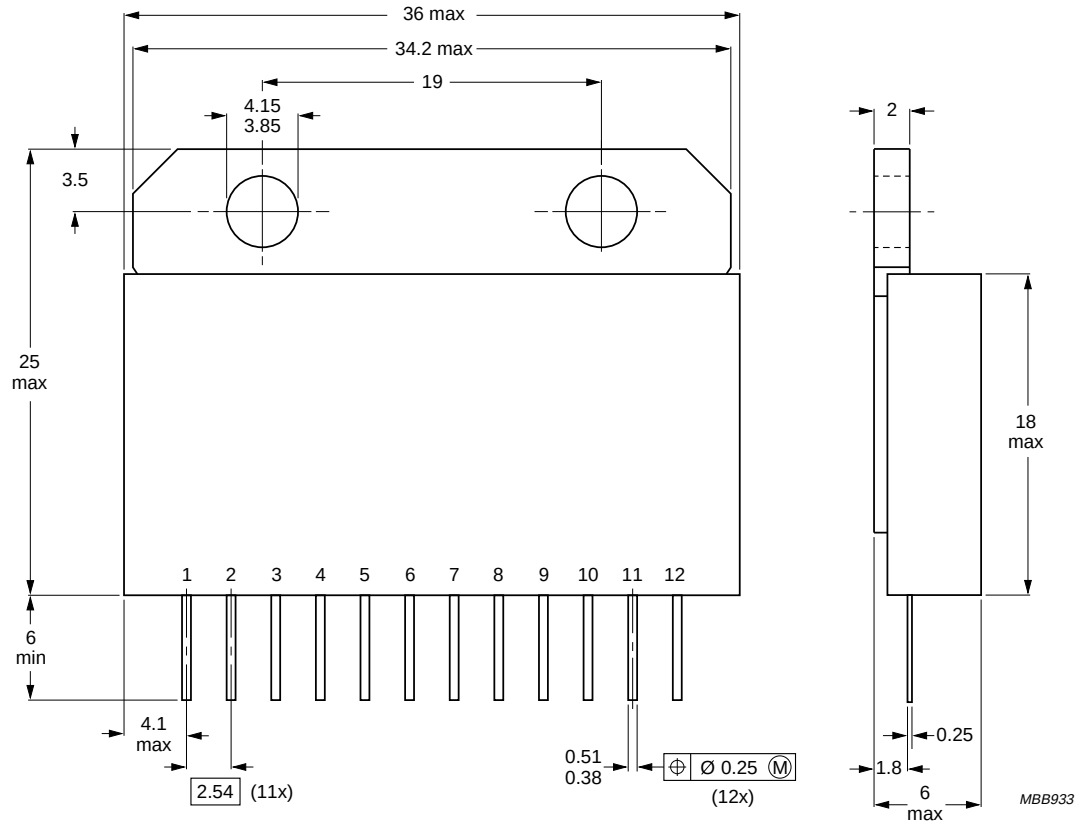
EQUIPMENT	TYPE DESCRIPTION
Pulse generator	Le Croy; Model 9210 with unit 9212
	Philips; Model PM5785B (125 MHz) with internal DC offset
Power supply	Philips; Model PE1541, 80 V
FET probe	Philips; Model PM8943, attenuation 100 : 1
Sampling oscilloscope	Tektronix; Model 11803, sampling head SD24



Supply voltage V_{S1}, V_{S2} and V_{S3} are internally connected.

Fig.7 Internal circuit, single amplifier.

PACKAGE OUTLINE



Dimensions in mm.

Heatsink compound must be applied sparingly and evenly distributed.

Fig.8 SOT347.

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.	

LIFE SUPPORT APPLICATIONS

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