

DATA SHEET

CR5527S

Triple video driver hybrid amplifier

Product specification

1995 Apr 05

Supersedes data of June 1993

File under Discrete Semiconductors, SC05

Philips Semiconductors



PHILIPS

Triple video driver hybrid amplifier

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FEATURES

- Typical transition times (10 to 90%) with $C_L = 10\text{ pF}$:
 - at 50 V (p-p) swing
 $t_r = 3\text{ ns}$; $t_f = 2.2\text{ ns}$
- Low power consumption
- Minimum small signal bandwidth 100 MHz
- Very fast slew rate; 12000 V/ μs
- Excellent grey-scale linearity
- Unconditional stability
- Gold metallization ensures excellent reliability.

APPLICATIONS

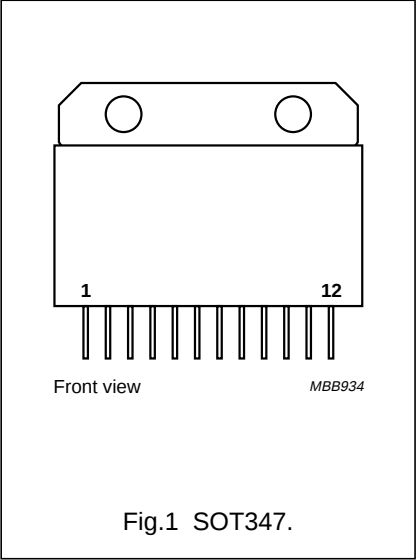
It is designed for application in cathode-ray tube (CRT) drivers in high-resolution colour monitors.

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



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; note 1	–20	+100	°C
T_{stg}	storage temperature	–40	+125	°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

$V_S = 80\text{ V}$; $T_{mb} = 25\text{ }^{\circ}\text{C}$; $C_L = 10\text{ pF}$; $R_1 = 348\text{ }\Omega$; $C_1 = 90\text{ pF}$; $R_2 = 82\text{ }\Omega$; $C_2 = 100\text{ pF}$; 50 V (p-p) output swing with 40 V DC offset (see Fig.6); unless otherwise specified.

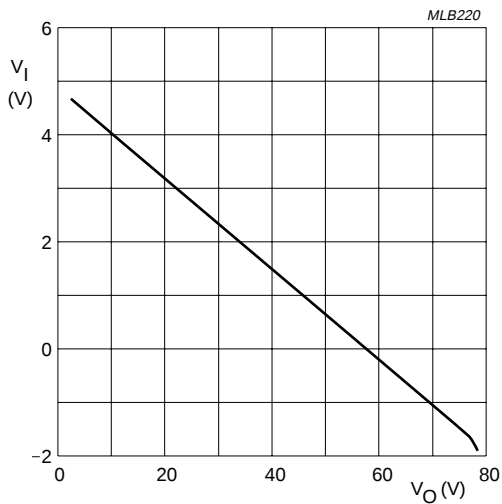
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Per amplifier						
I_S	supply current	input and output open	19	25	31	mA
P_{tot}	total power dissipation	25 MHz square wave	–	9.6	11	W
t_r	rise time transient response	10 to 90%; note 1	–	3	4	ns
t_f	fall time transient response	10 to 90%; note 1	–	2.2	3	ns
BW	small signal bandwidth	between –3 dB points; note 2	100	110	–	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	$V_O = 5\text{ to }75\text{ V}$	–	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).

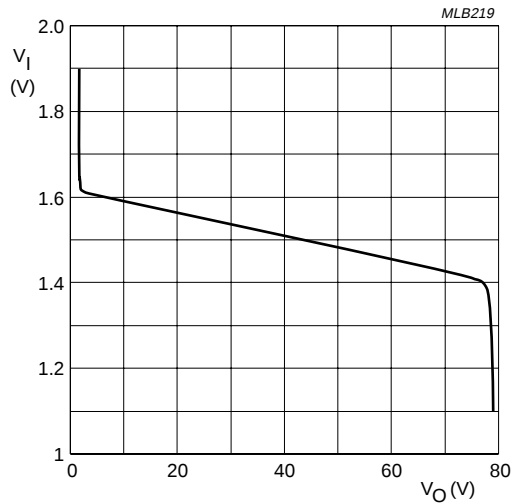
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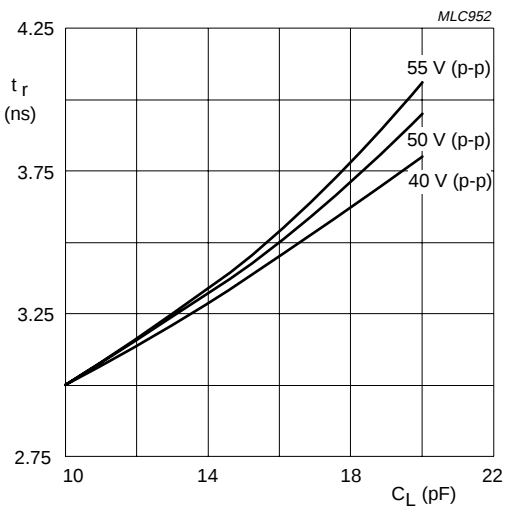
$V_S = 80\text{ V}$; $T_{mb} = 25\text{ }^\circ\text{C}$; $C_L = 10\text{ pF}$; $R_1 = 348\text{ }\Omega$; $C_1 = 90\text{ pF}$; $R_2 = 82\text{ }\Omega$; $C_2 = 100\text{ pF}$; 50 V (p-p) output swing with 40 V DC offset.

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



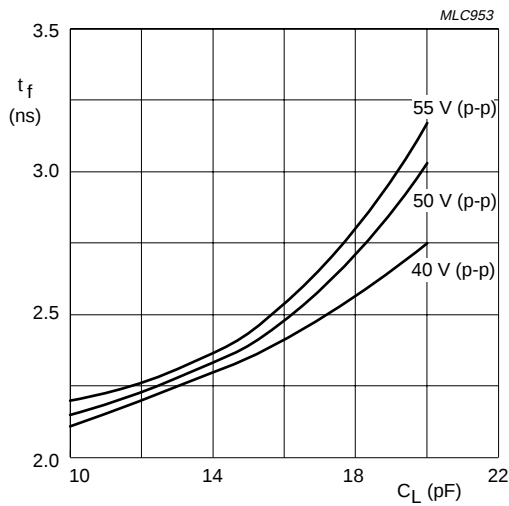
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Fig.3 Input voltage at input module as a function of output voltage; typical values.



$V_S = 80\text{ V}$; $T_{mb} = 25\text{ }^\circ\text{C}$; $C_L = 10\text{ pF}$; $R_1 = 348\text{ }\Omega$; $C_1 = 90\text{ pF}$; $R_2 = 82\text{ }\Omega$; $C_2 = 100\text{ pF}$; 55, 50, 40 V (p-p) output swing with 40 V DC offset.

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

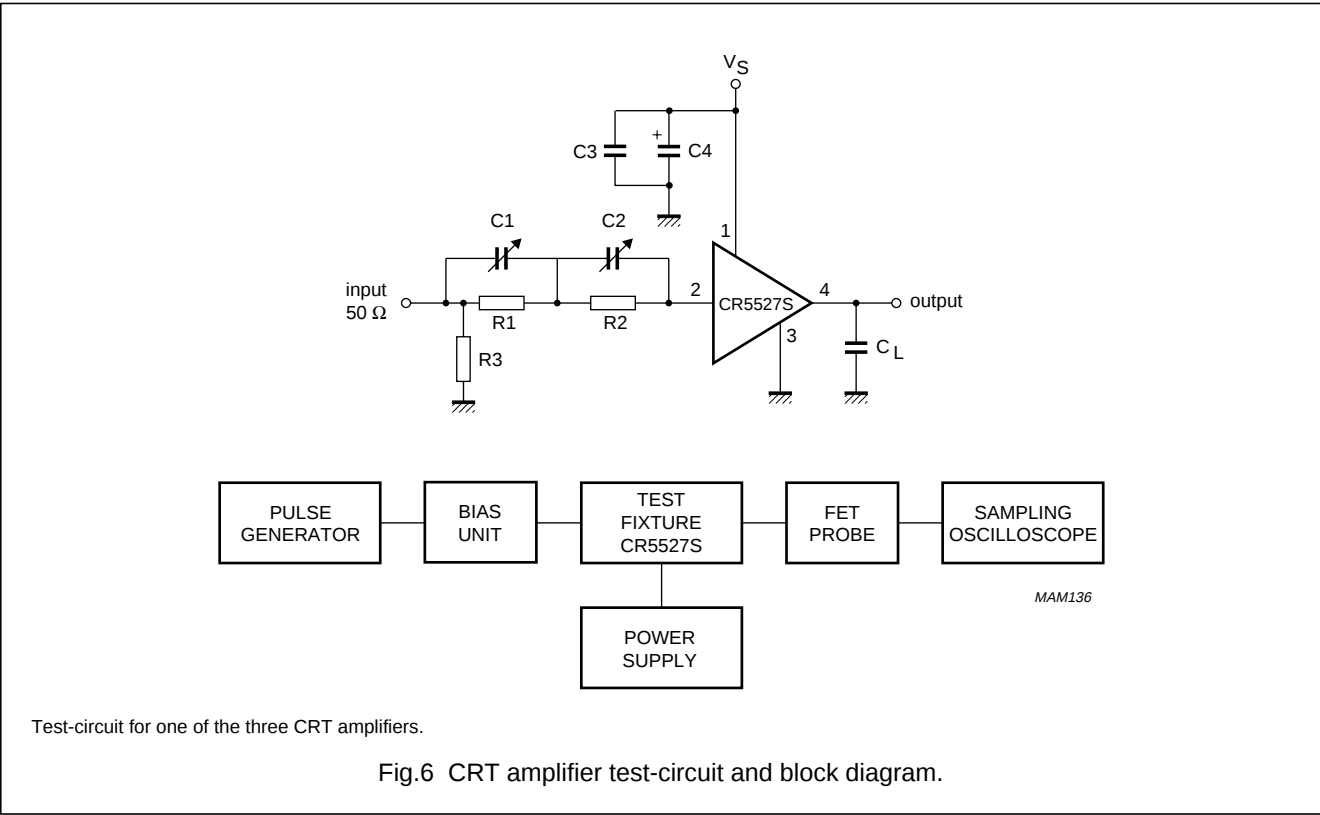


$V_S = 80\text{ V}$; $T_{mb} = 25\text{ }^\circ\text{C}$; $C_L = 10\text{ pF}$; $R_1 = 348\text{ }\Omega$; $C_1 = 90\text{ pF}$; $R_2 = 82\text{ }\Omega$; $C_2 = 100\text{ pF}$; 55, 50, 40 V (p-p) output swing with 40 V DC offset.

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

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

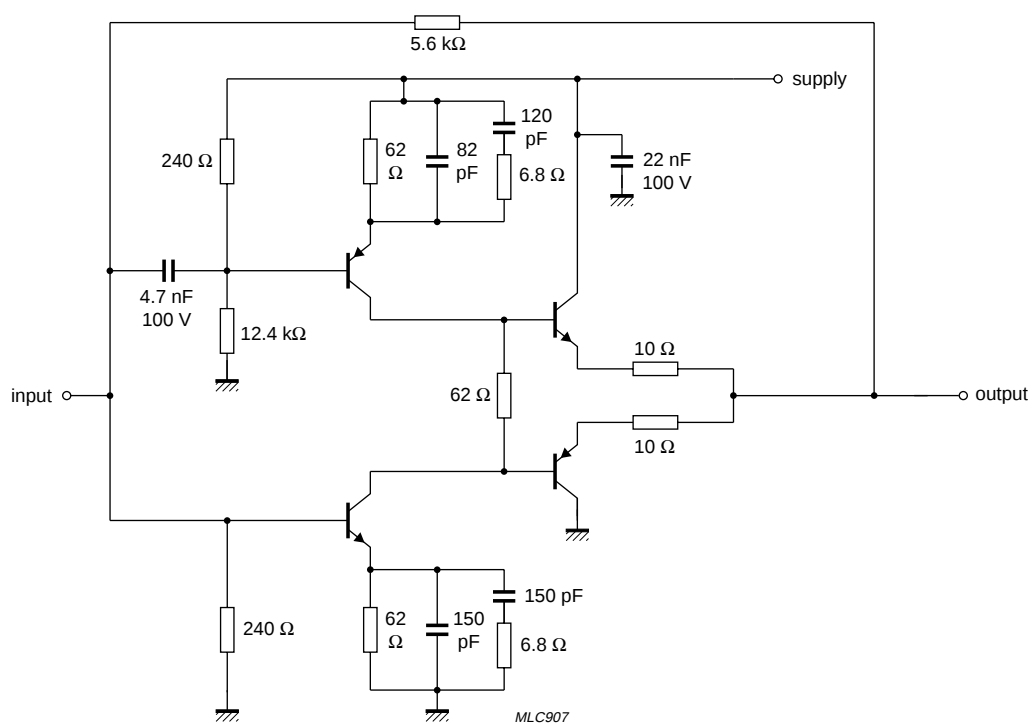
DESIGNATION	DESCRIPTION	VALUE
C ₁	variable capacitor	10 to 160 pF (typ. 90 pF)
C ₂	variable capacitor	10 to 160 pF (typ. 100 pF)
C ₃	chip capacitor	10 nF
C ₄	electrolytic capacitor	4.7 μF; 160 V
R1	resistor	typ. 348 Ω
R2	resistor	typ. 82 Ω
R3	resistor	50 Ω

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

EQUIPMENT	TYPE DESCRIPTION
Pulse generator	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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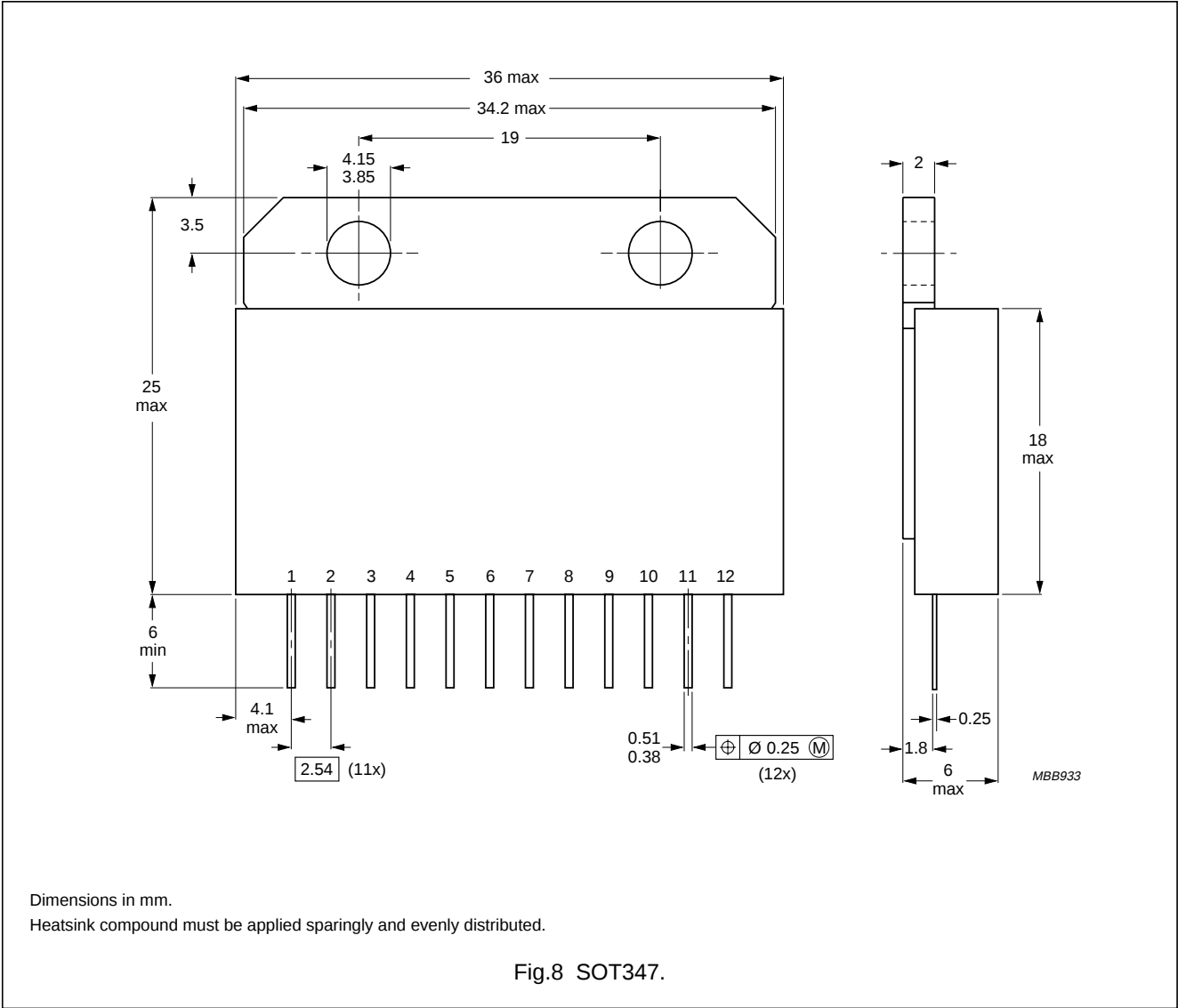
Supply voltage V_{S1} , V_{S2} and V_{S3} are internally connected.

Fig.7 Internal circuit.

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PACKAGE OUTLINE



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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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