DATA SHEET

CR2424S
Video driver hybrid amplifier

Product specification
Supersedes data of 1995 Apr 04
File under Discrete Semiconductors, SC05

1995 Oct 23

Philips
Semiconductors

PHILIPS

Video driver hybrid amplifier CR2424S

FEATURES

- Typical transition times (10 to 90%) with C_L at 8.5 pF:
  - 2.2 ns rise and 2.0 ns fall with 35 V (p-p) swing
  - 2.3 ns rise and 2.1 ns fall with 40 V (p-p) swing
  - 2.5 ns rise and 2.2 ns fall with 50 V (p-p) swing
- 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 SOT115L package.

PINNING

PIN	DESCRIPTION
1	input
2	ground
3	ground
5	supply voltage (V_S)
7	ground
8	ground
9	output

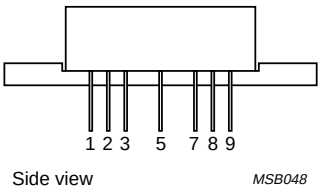


Fig.1 SOT115L.

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

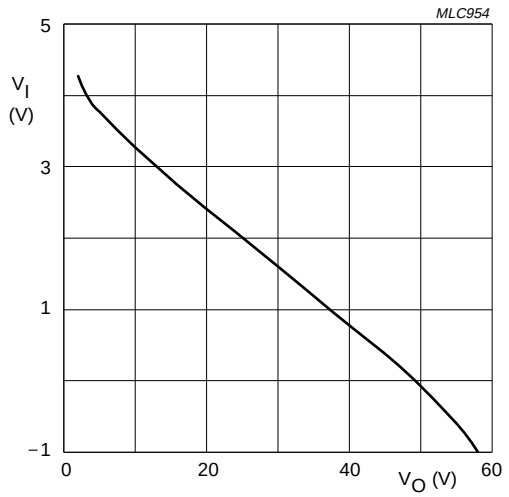
CHARACTERISTICS

T_{mb} = 25 °C; C_L = 8.5 pF; measured in test circuit (see Fig.10); unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_S = 60 V; output swing = 40 V (p-p) 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
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 V; output swing = 50 V (p-p) 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
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 or 65 V; output swing = 40 or 50 V (p-p) with 30 or 32.5 V (DC) offset; unless otherwise specified						
P_{tot}	total power dissipation	50 MHz square wave	–	4.6	6	W
BW	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 to 55 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	

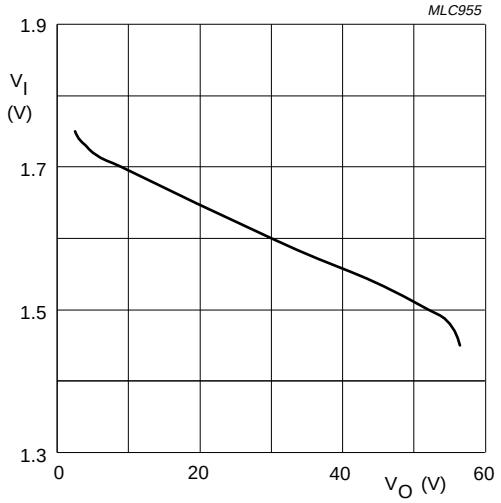
Notes

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



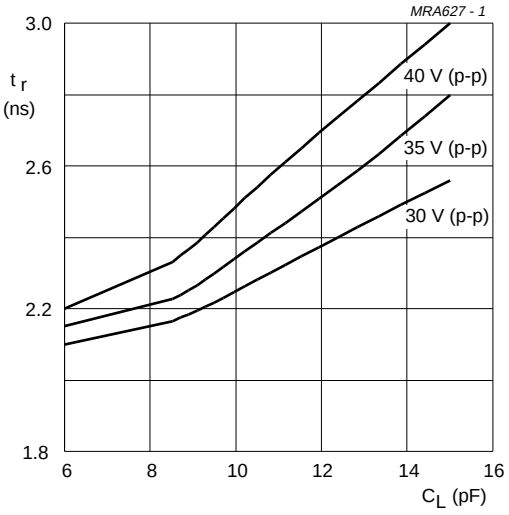
V_S = 60 V; T_{mb} = 25 °C; C_L = 8.5 pF; output swing = 40 V (p-p) with 30 V (DC) offset; measured in test circuit (see Fig.10).

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



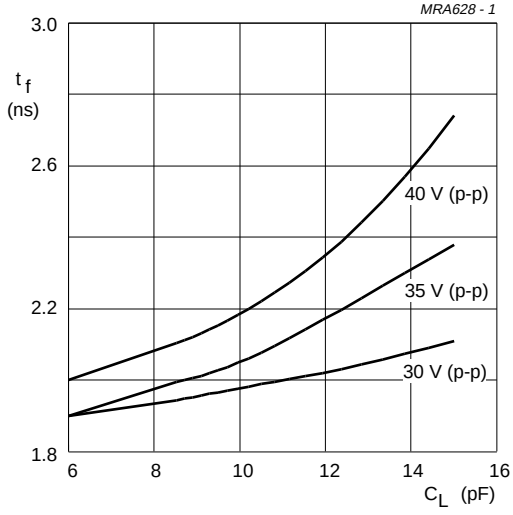
V_S = 60 V; T_{mb} = 25 °C; C_L = 8.5 pF; output swing = 40 V (p-p) with 30 V (DC) offset; measured in test circuit (see Fig.10).

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



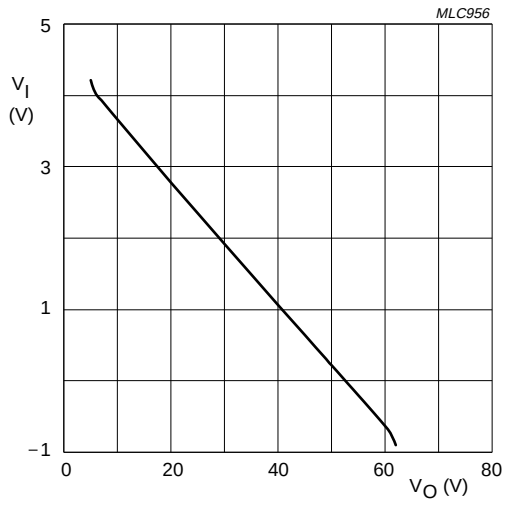
V_S = 60 V; T_{mb} = 25 °C; C_L = 8.5 pF;
output swing = 40, 35, 30 V (p-p) with 30 V (DC) offset;
measured in test circuit (see Fig.10).

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



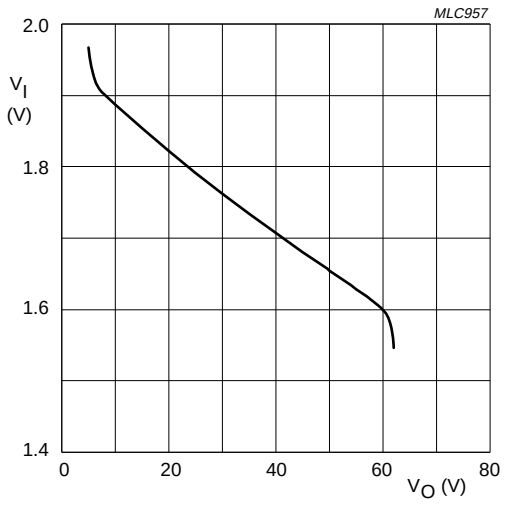
V_S = 60 V; T_{mb} = 25 °C; C_L = 8.5 pF;
output swing = 40, 35, 30 V (p-p) with 30 V (DC) offset;
measured in test circuit (see Fig.10).

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



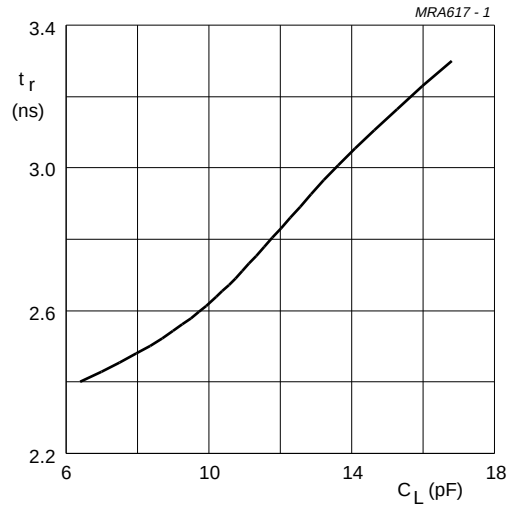
V_S = 65 V; T_{mb} = 25 °C; C_L = 8.5 pF; output swing = 50 V (p-p) with 32.5 V (DC) offset; measured in test circuit (see Fig.10).

Fig.6 Input voltage at input test circuit as a function of output voltage; typical values.



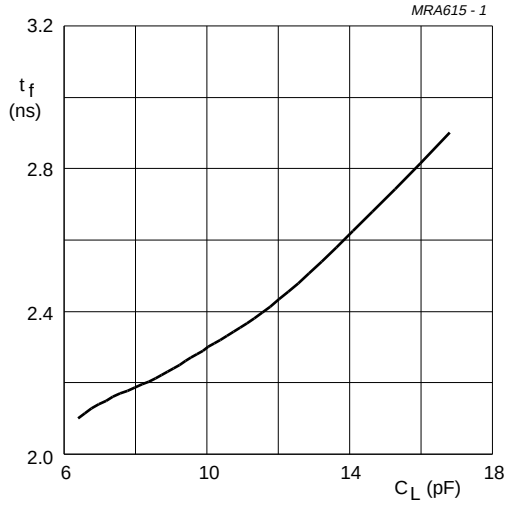
V_S = 65 V; T_{mb} = 25 °C; C_L = 8.5 pF; output swing = 50 V (p-p) with 32.5 V (DC) offset; measured in test circuit (see Fig.10).

Fig.7 Input voltage at input module as a function of output voltage; typical values.



V_S = 65 V; T_{mb} = 25 °C; C_L = 8.5 pF; output swing = 50 V (p-p) with 32.5 V (DC) offset; measured in test circuit (see Fig.10).

Fig.8 Rise time transient response as a function of load capacitance; typical values.



V_S = 65 V; T_{mb} = 25 °C; C_L = 8.5 pF; output swing = 50 V (p-p) with 32.5 V (DC) offset; measured in test circuit (see Fig.10).

Fig.9 Fall time transient response as a function of load capacitance; typical values.

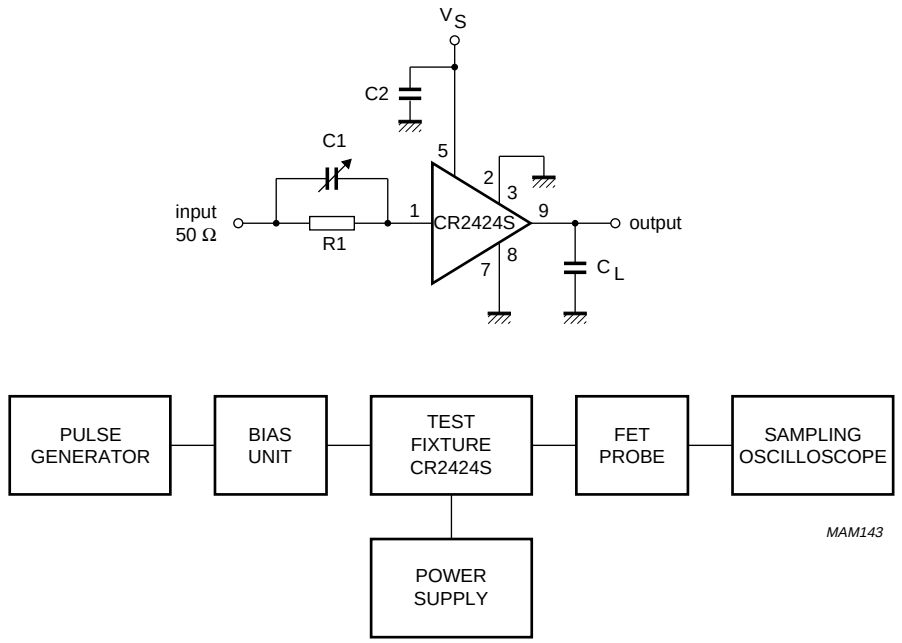


Fig.10 CRT amplifier test circuit and block diagram.

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

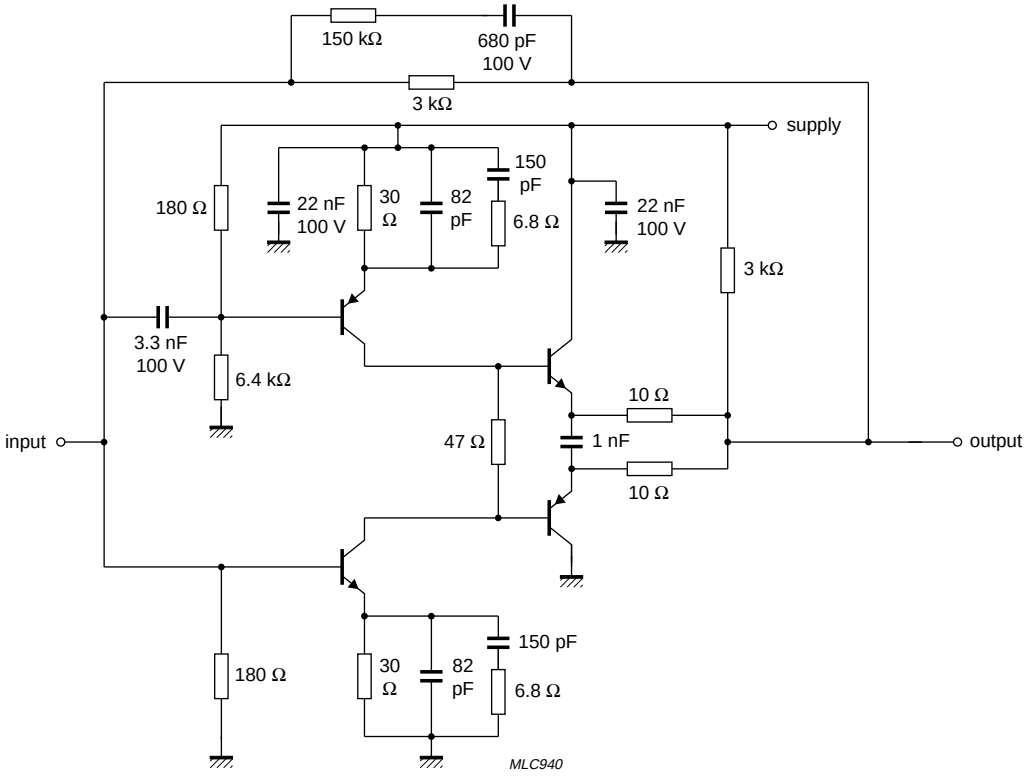
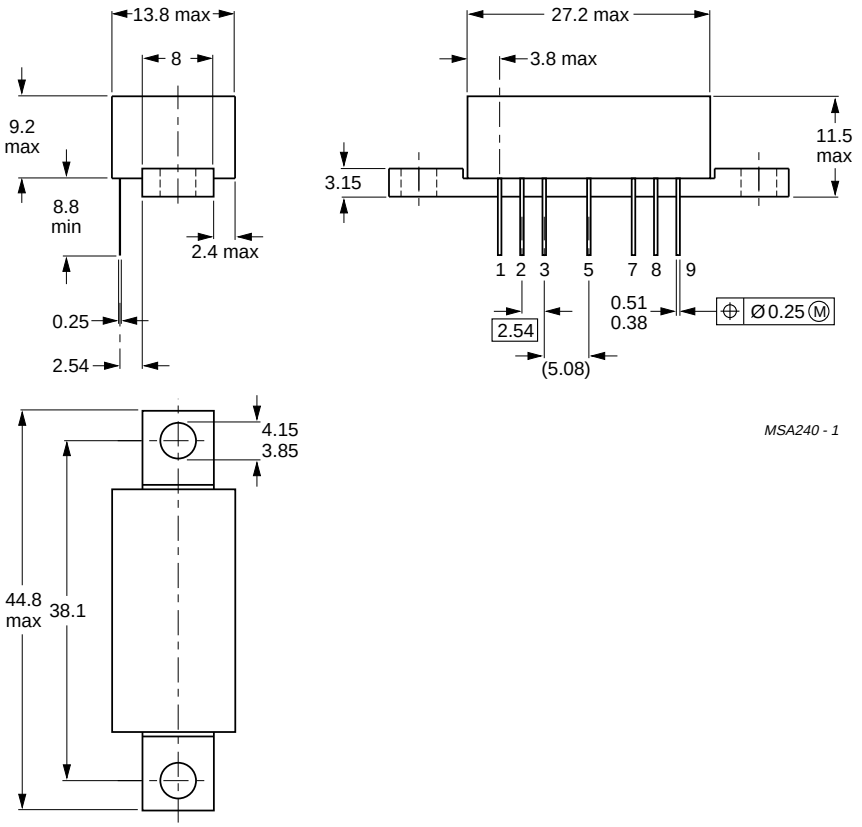


Fig.11 Internal circuit.

PACKAGE OUTLINE



Dimensions in mm.

Heatsink compound must be applied sparingly and evenly distributed.

Fig.12 SOT115L.

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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