

DATA SHEET

OM977

**Video preamplifier and output
amplifier**

Preliminary specification
File under Discrete Semiconductors, SC14

January 1994

Philips Semiconductors



PHILIPS

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Video preamplifier and output amplifier

OM977

FEATURES

- A fully integrated video preamplifier and output amplifier
- 0.7 V (p-p) video input signal on 75 Ω input impedance; up to 55 V (p-p) output signal for cathode drive.
- Linear DC contrast control over 50 dB range; the control operates on a DC-restored (clamped) signal and the control function has a bandwidth of 20 MHz (typ.)

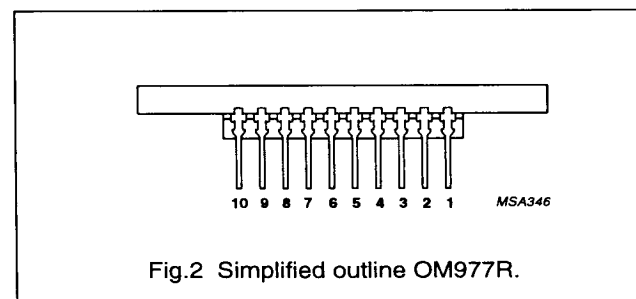
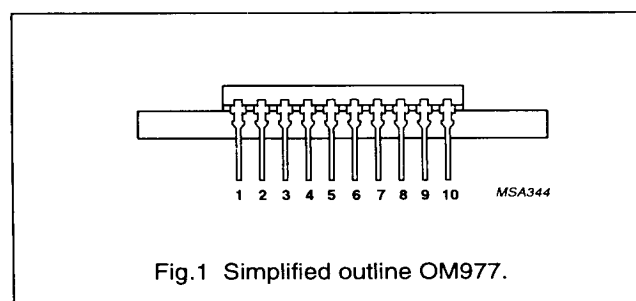
- Easy DC restoration with stable black level
- External compensation for output load capacitance.

DESCRIPTION

The OM977 is a hybrid integrated complete video amplifier circuit with DC contrast control. It is intended for use in colour or monochrome high-resolution monitors.

PINNING

PIN	DESCRIPTION
1	preamplifier supply; $V_{S1} = +5$ V
2	clamp gate (before control)
3	input
4	DC input for gain (contrast) control
5	DC input for black level restoration
6	transient compensation
7	input ground
8	output amplifier supply; $V_{S2} = +75$ V
9	output ground
10	output



QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	TYP.	UNIT
V_{S2}	supply voltage OM977/75; OM977R/75 OM977/95; OM977R/95	pin 8	75 95	V V
I_{S2}	supply current	pin 8	65	mA
$V_{i(p-p)}$	input voltage (peak-to-peak value)	pin 3	0.7	V
Z_i	input impedance	pin 3	75	Ω
$V_{o(p-p)}$	output signal (peak-to-peak value)	pin 10	40	V
B	3 dB bandwidth		250	MHz

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CIRCUIT DIAGRAM

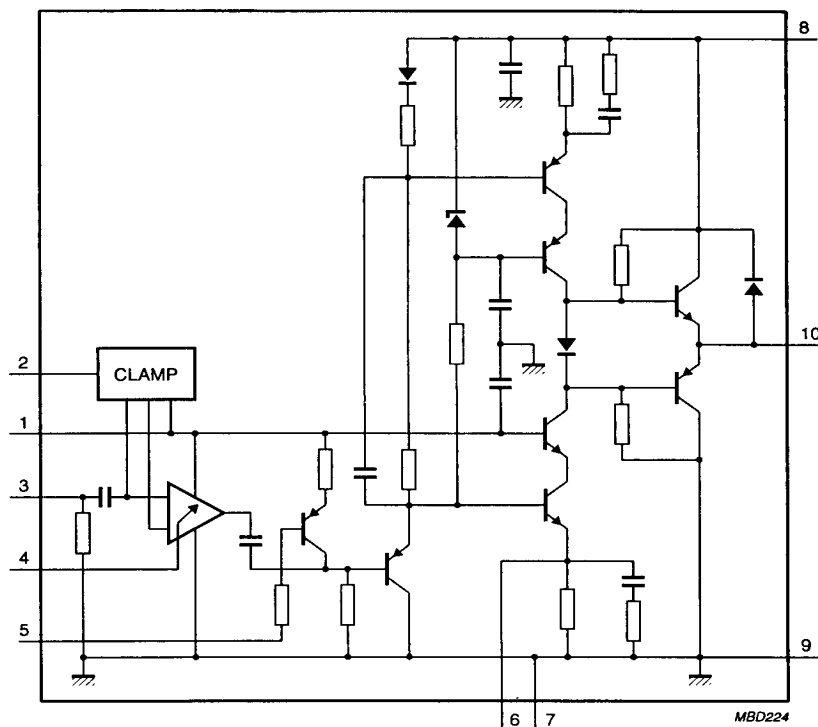


Fig.3 Simplified circuit diagram.

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{S1}	preamplifier supply voltage	pin 1	—	7	V
V_{S2}	output amplifier supply voltage OM977/75; OM977R/75 OM977/95; OM977R/95	pin 8	—	85	V
			—	98	V
T_{stg}	storage temperature		−40	+125	°C
$T_{hs\ max}$	heatsink working temperature		—	70	°C
P_{tot}	total power dissipation	$T_{hs} = T_{hs\ max}$	—	14	W

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CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{S1}	preamplifier supply voltage	pin 1	4.5	5	5.5	V
I_{S1}	supply current	pin 1	39	45	51	mA
V_{S2}	output amplifier supply voltage OM977/75; OM977R/75 OM977/95; OM977R/95	pin 8	70 85	75 95	80 98	V V
I_{S2}	supply current	pin 8; no input signal	57	65	73	mA
Z_i	input impedance	pin 3	73	75	77	Ω
$V_{i(p-p)}$	input voltage (peak-to-peak value)	pin 3	–	0.7	1	V
V_o/V_i	voltage gain		– 36	90 39	– 42	V/V dB
$V_{o(sat)maxL}$	maximum output saturation voltage low		–	–	7.5	V
$V_{o(sat)maxH}$	maximum output saturation voltage high		$V_{S2} - 7.5$	–	–	V
$V_{I(RES)}$	DC restore input voltage	pin 5	4	4.25	4.5	V
$I_{I(RES)}$	DC restore input current	pin 5	–	–5	–	nA
$I_{I(GC)}$	DC gain control input current	pin 4	–	–1	–5	nA
$V_{I(GC)max}$	DC gain control input voltage for maximum gain	pin 4	0.9	1	1.3	V
$V_{I(GC)min}$	DC gain control input voltage for minimum gain	pin 4	0	0	0	V
G_c	gain control range		50	–	–	dB
V_{cl}	clamp gate voltage	no clamping clamping	2.5 4.6	– –	4.7 5	V V
I_{cl}	clamp gate current	no clamping clamping	–0.2 0	–0.7 0	–2 0	mA mA
t_{cl}	effective clamp duration		400	–	–	ns
Switching times						
t_r	rise time	note 1	–	1.8	2	ns
t_f	fall time	note 1	–	1.7	1.9	ns

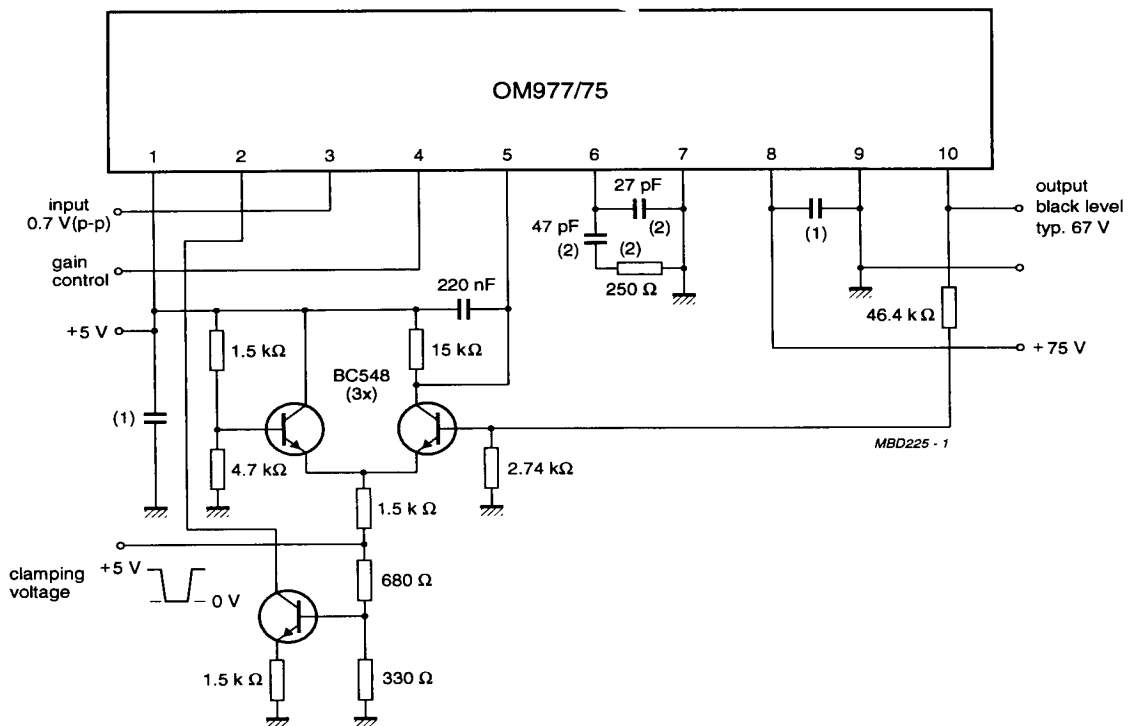
Notes to the characteristics

1. At optimum drive and compensation, with an output load capacitance of 8.5 pF and a 40 V (p-p) output signal.

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APPLICATION INFORMATION



(1) Non-critical values.

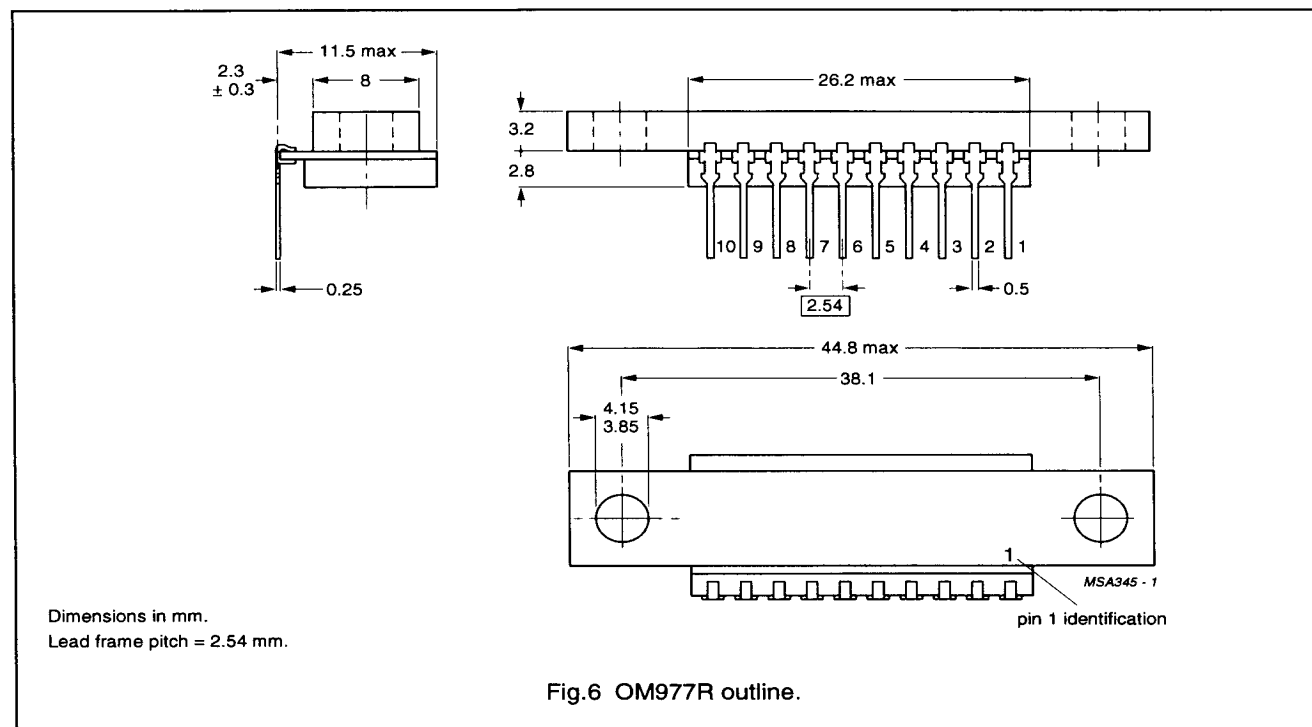
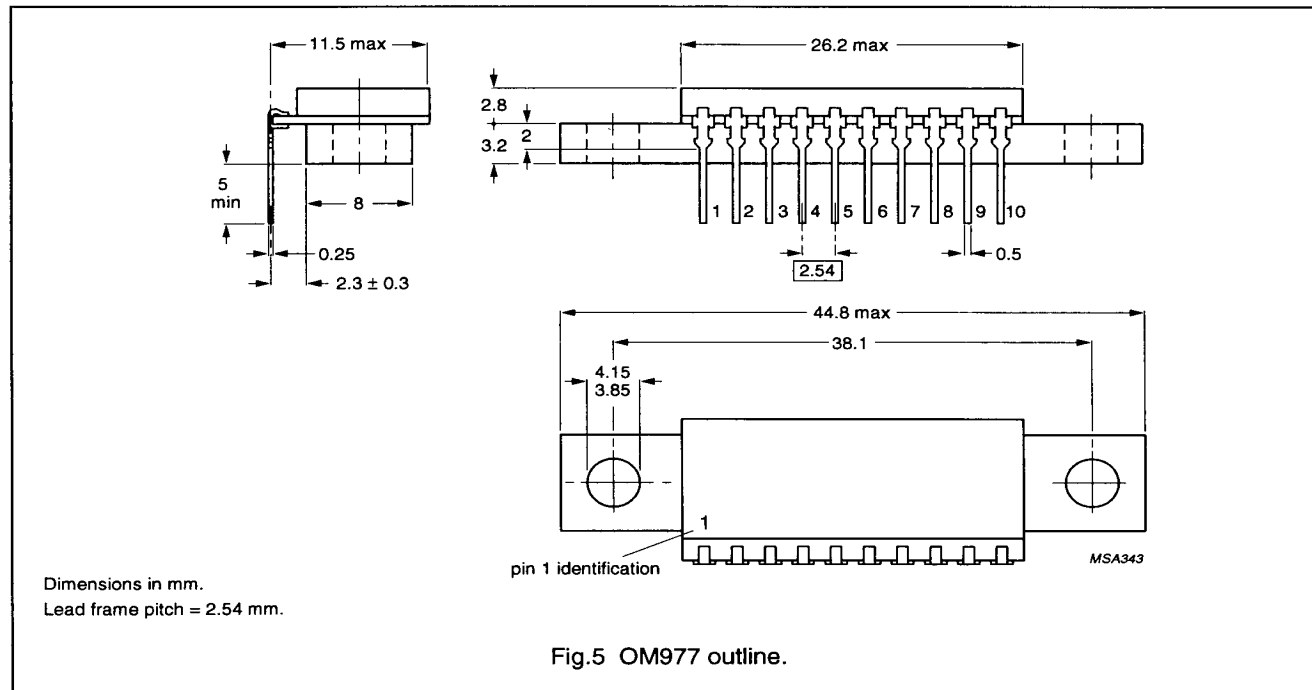
(2) Load compensation (typically used values).

Fig.4 Typical application example.

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PACKAGE OUTLINES



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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.	

LIFE SUPPORT APPLICATIONS

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