

## Video driver hybrid amplifiers

## CR2424; CR2425; CR2427

N AMER PHILIPS/DISCRETE

69E D

## FEATURES

- Typical 10 to 90% transition times with  $C_L = 8.5$  pF:
  - $t_r$ : 2.2 ns;  $t_f$ : typ. 2.0 ns at 35 V(p-p) swing
  - $t_r$ : 2.3 ns;  $t_f$ : typ. 2.1 ns at 40 V(p-p) swing
  - $t_r$ : 2.5 ns;  $t_f$ : typ. 2.2 ns at 50 V(p-p) swing
- Low power consumption
- Minimum bandwidth 130 MHz
- Very fast slew rate; 15 V/ $\mu$ s
- Excellent grey-scale linearity
- Unconditional stability
- Gold metallization ensures excellent reliability.

## DESCRIPTION

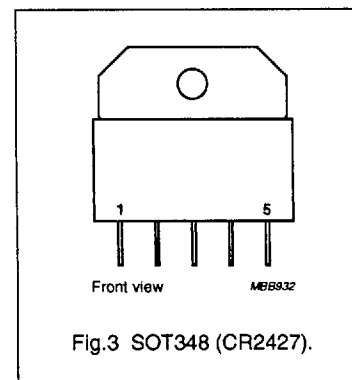
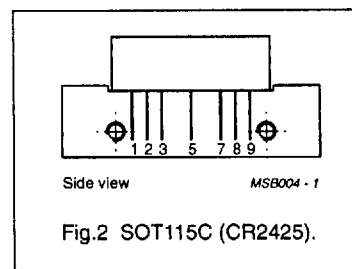
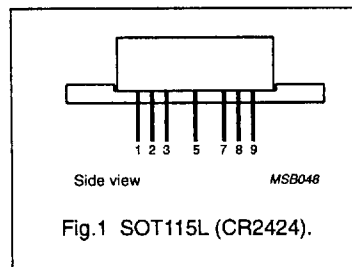
Hybrid amplifier modules mounted in SOT115 (CR2424; CR2425) and SOT348 (CR2427) packages and designed for application in cathode-ray tube (CRT) drivers in high-resolution colour and monochrome monitors.

## PINNING - SOT115

PIN	DESCRIPTION
1	input
2	ground
3	ground
5	supply voltage ( $V_{CC}$ )
7	ground
8	ground
9	output

## PINNING - SOT348

PIN	DESCRIPTION
1	input
2	ground
3	supply voltage ( $V_{CC}$ )
4	ground
5	output



## LIMITING VALUES

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

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

## Note

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

## Video driver hybrid amplifiers

CR2424; CR2425; CR2427

N AMER PHILIPS/DISCRETE

69E D

## ELECTRICAL CHARACTERISTICS

$V_{CC} = 60 \text{ V}$ ;  $T_c = 25 \text{ }^\circ\text{C}$ ;  $C_L = 8.5 \text{ pF}$ ;  $R_1 = 215 \text{ } \Omega$ ;  $C_1 = 50 \text{ pF}$ ; 40 V(p-p) output swing with 30 V DC offset, unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$I_{CC}$	supply current	input and output open	39	45	51	mA
$V_I$	DC input level	input and output open	1.2	1.5	1.8	V
$V_O$	DC output level	input and output open	26	29	32	V
$P_{tot}$	total power dissipation	50 MHz square wave	–	4.6	6	W
$t_r$	transient response rise time	10 to 90% (note 1)	–	2.3	2.9	ns
$t_f$	transient response fall time	10 to 90% (note 1)	–	2.1	2.6	ns
B	bandwidth	between –3 dB points	130	145	–	MHz
$V_{TILT}$	low frequency tilt voltage	1 kHz square wave	–	1.3	1.5	V
$\Delta V_I$	input voltage swing (rise and fall time)	varied by $C_1$ (see Fig.12)	–	3	10	%
	linearity	$V_O = 5$ to 55 V	–	2	5	%
$\Delta G$	insertion gain	50 $\Omega$ source (note 2)	160	180	200	
$\Delta G_V$	voltage gain	50 $\Omega$ source (note 3)	11.2	12.4	13.2	

$V_{CC} = 65 \text{ V}$ ;  $T_c = 25 \text{ }^\circ\text{C}$ ;  $C_L = 8.5 \text{ pF}$ ;  $R_1 = 215 \text{ } \Omega$ ;  $C_1 = 50 \text{ pF}$ ; 50 V(p-p) output swing with 32.5 V DC offset, unless otherwise specified.

$I_{CC}$	supply current	input and output open	–	50	57	mA
$V_I$	DC input level	input and output open	1.3	1.65	2	V
$V_O$	DC output level	input and output open	27	30	33	V
$t_r$	rise time transient response	10 to 90% (note 4)	–	2.5	3.2	ns
$t_f$	fall time transient response	10 to 90% (note 4)	–	2.2	3.2	ns

## Notes

- Input signal is a nominal 100 kHz square wave of 3.25 V(p-p), with 1.5 V DC offset (50  $\Omega$  source).
- Measured  $V_O/V_I$  port 1 (see voltage ratio figure).
- Measured in CRT amplifier test circuit:  $V_O/V_{RF \text{ input}}$ .
- Input signal is a nominal 100 kHz square wave of 3.4 V(p-p), with 1.65 V DC offset (50  $\Omega$  source).

## Video driver hybrid amplifiers

## CR2424; CR2425; CR2427

N AMER PHILIPS/DISCRETE

69E D

In Figs 4 to 7,  $V_{CC} = 60$  V;  $T_c = 25$  °C;  $C_L = 8.5$  pF;  $R_1 = 215$   $\Omega$ ;  $C_1 = 50$  pF; 40 V(p-p) output swing with 30 V DC offset.

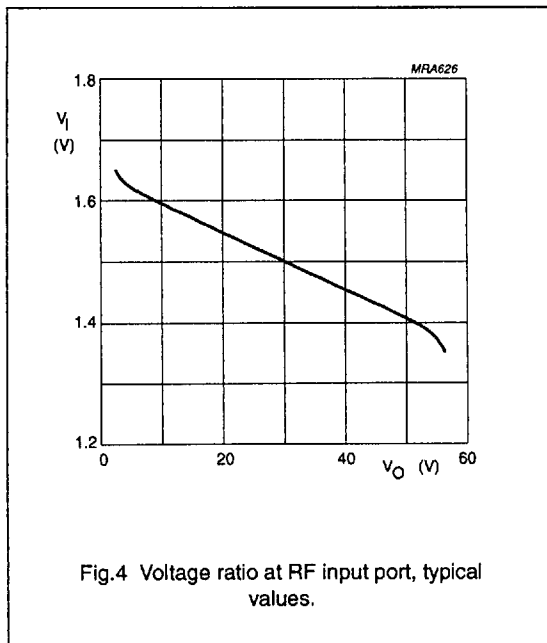


Fig.4 Voltage ratio at RF input port, typical values.

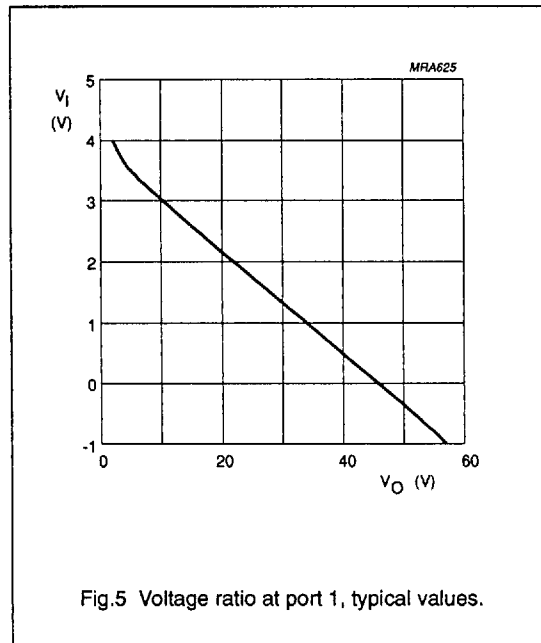


Fig.5 Voltage ratio at port 1, typical values.

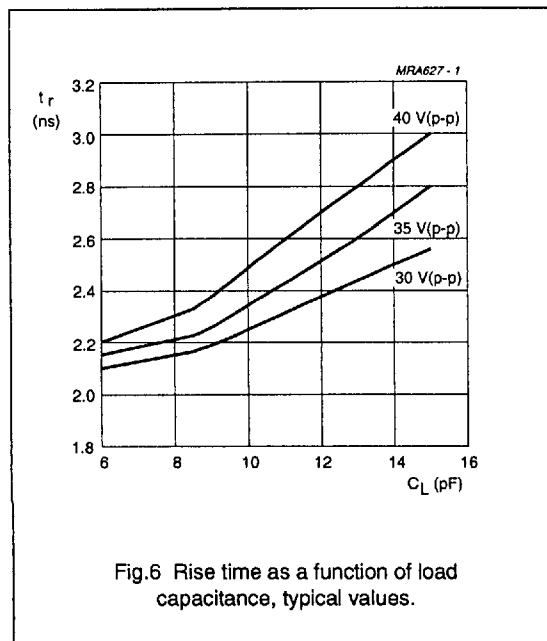


Fig.6 Rise time as a function of load capacitance, typical values.

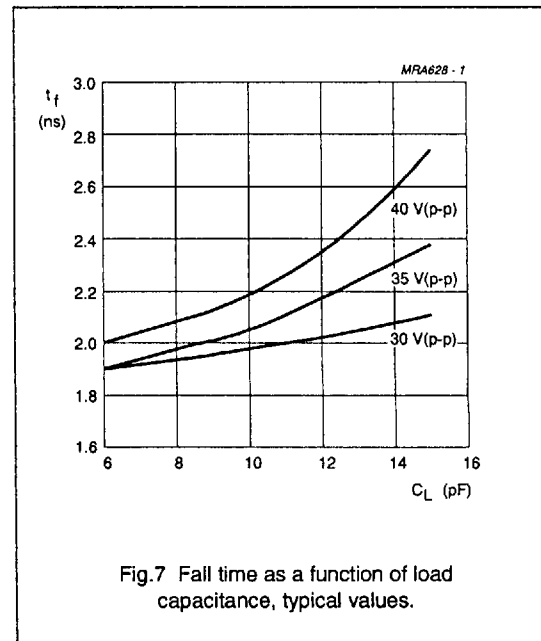


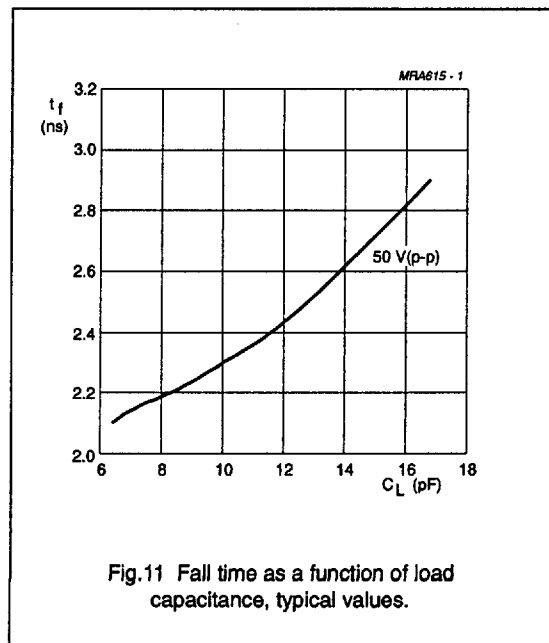
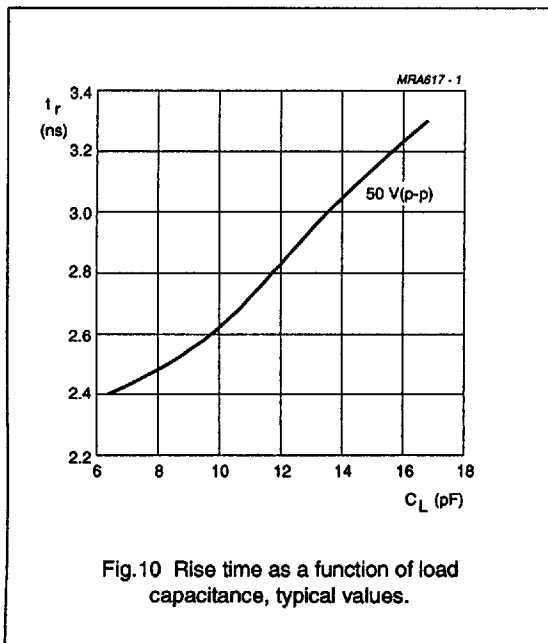
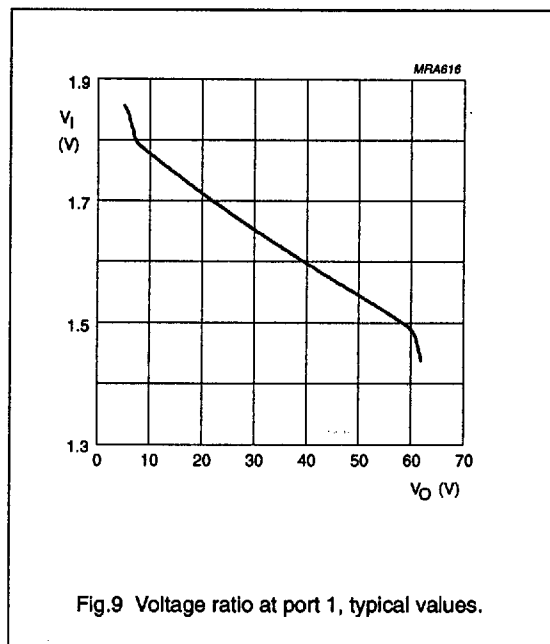
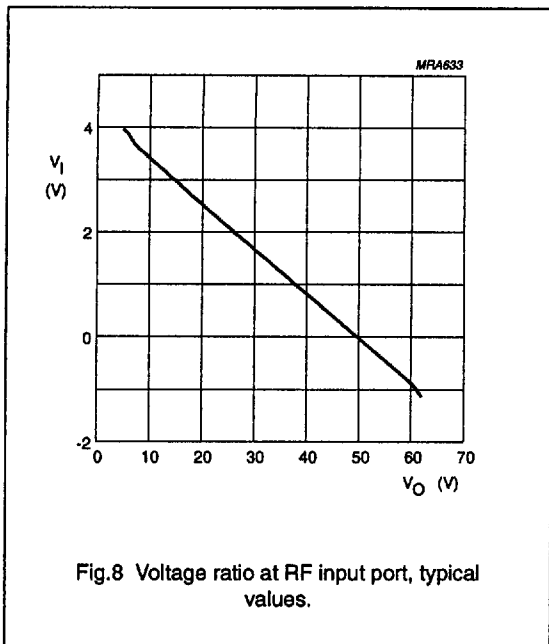
Fig.7 Fall time as a function of load capacitance, typical values.

Video driver hybrid amplifiers

CR2424; CR2425; CR2427

N AMER PHILIPS/DISCRETE 69E D

In Figs 8 to 11,  $V_{CC} = 65\text{ V}$ ;  $T_c = 25\text{ }^\circ\text{C}$ ;  $C_L = 8.5\text{ pF}$ ;  $R_1 = 215\text{ }\Omega$ ;  $C_1 = 50\text{ pF}$ ; 50 V(p-p) output swing with 32.5 V DC offset.



## Video driver hybrid amplifiers

CR2424; CR2425; CR2427

N AMER PHILIPS/DISCRETE

69E D

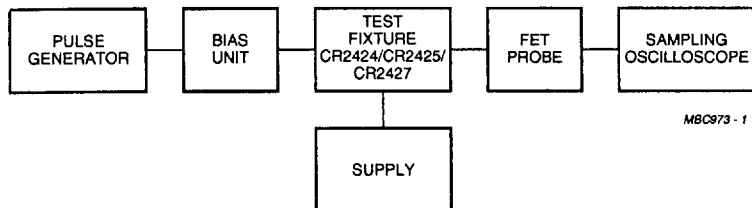
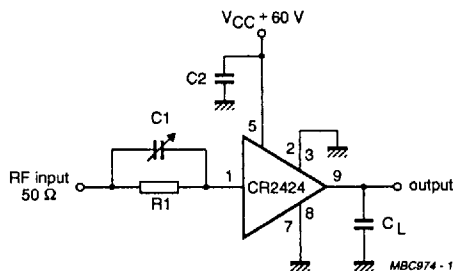


Fig.12 CRT amplifier test circuit and block diagram.

## List of components (see test circuit)

DESIGNATION	DESCRIPTION	VALUE
C1	capacitor	10 to 120 pF (typically 50 pF)
C2	chip capacitor	10 nF
R1	resistor	typically 215 Ω

## Equipment used in test circuit

Pulse generator	Pico Second, model 2600B, rise time 350 ps
Bias unit	Pico Second, model 5555
Power supply	Philips, model PE1541, 75 V
FET probe	Philips, model PM8943, attenuation 100:1
Sampling oscilloscope	Tektronix, model 11803, sampling head SD24