TBA530

RGB MATRIX PRE-AMPLIFIER

The TBA530 is an integrated R–G–B matrix pre-amplifier for colour television receivers incorporating a matrix pre-amplifier for R–G–B cathode or grid drive of the picture tube without clamping circuits. The chip layout has been designed to ensure tight thermal coupling between all transistors in each channel to minimise thermal drifts between channels. Also, each channel follows an identical layout to ensure equal frequency behaviour of the three channels.

This integrated circuit has been designed to be driven from the TBA520 synchronous demodulator integrated circuit.

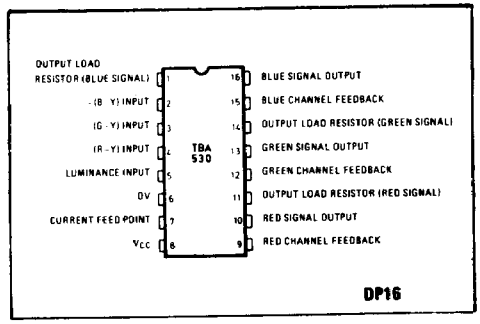

Fig. 1 Pin connections

ABSOLUTE MAXIMUM RATINGS

Supply voltage, V_{CC}	13.2V
Supply currents:–	
$I_1 = I_{11} = I_{14}$ max	10mA
$I_{10} = I_{13} = I_{16}$ max	50mA*
Total power dissipation at $T_{amb} = 60°C$, P_{TOT}	400mW*
Storage temperature	−55 to +125°C
Operating ambient temperature	−10 to +60°C

At increased voltages due to external failures (e.g., collector-base breakdown in the output transistors) a maximum current of 50mA is permitted between pins 16 and 8, 13 and 8, 10 and 8. The maximum permissible power dissipation is then 500mW.

QUICK REFERENCE DATA

- Supply Voltage (Nominal) 12V
- Total Supply Current (Nominal) 30mA
- Operating Ambient Temperature Range −10 to +60°C
- Gain of Luminance and Colour-difference Channels (Typ.) 100

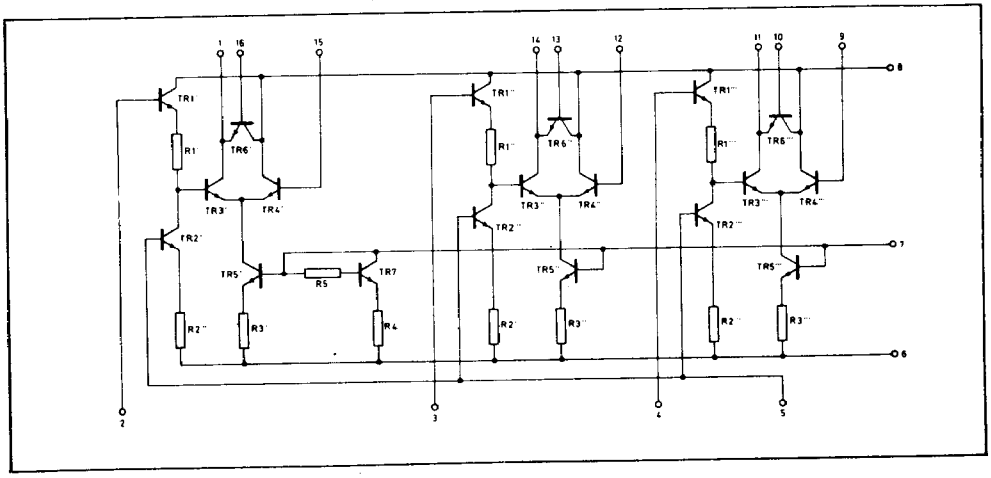

Fig. 2 TBA530 block diagram

ELECTRICAL CHARACTERISTICS

Test conditions (unless otherwise stated):–
V_{CC} = +12V, T_{amb} = +25°C
Black level: $V_{R-Y} = V_{G-Y} = V_{B-Y}$ = 7.5V
V_Y = 1.5V
Reference = pin 6

Characteristic	Symbol	Value			Units	Conditions
		Min.	Typ.	Max.		
Gain of colour channels (B–Y, G–Y, R–Y)	G_2		100		–	
	G_3		100		–	f = 0.5MHz (see note 1)
	G_4		100		–	
Ratio of gain of luminance amplifier to colour amplifiers		0.9		1.1	–	
DC output voltages	V_R		140		V	
	V_G		140		V	See note 2
	V_B		140		V	
Input resistance of colour difference amplifiers	R_2		60		kΩ	
	R_3		60		kΩ	f = 1kHz
	R_4		60		kΩ	
Input capacitance of colour difference amplifiers	C_2		3		pF	
	C_3		3		pF	f = 1MHz
	C_4		3		pF	
Input resistance of luminance amplifier	R_5		20		kΩ	f = 1kHz
Input capacitance of luminance amplifier	C_5		10		pF	f = 1MHz
3dB bandwidth of all channels	B		6		MHz	
Total current drain	I_{TOT}		30		mA	

NOTES
1. G is defined as the voltage ratio between the input signals at the pins 2, 3, 4 and the output signals at the collectors of the output transistors.
2. At the collectors of the output transistors. The value of this voltage is also dependent on the external circuitry.

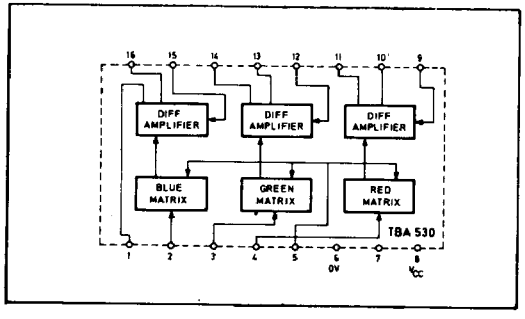

Fig. 3 TBA530 circuit diagram

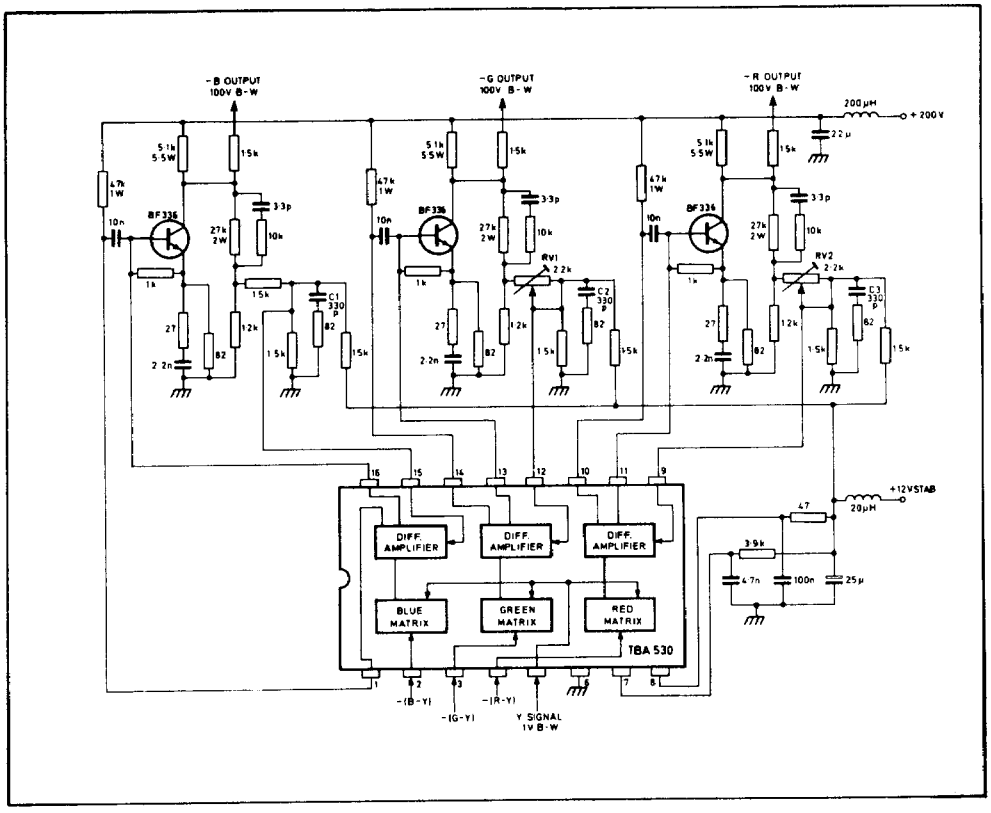

Fig. 4 Typical application diagram

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