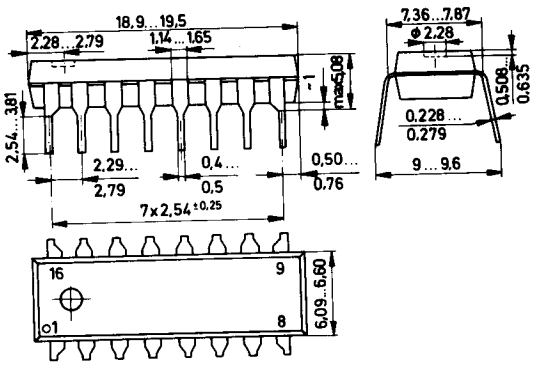
PHASE LOCKED LOOP FM STEREO MULTIPLEX DECODER

- **45 dB CHANNEL SEPARATION**
- **AUTOMATIC STEREO/MONO SWITCHING**
- **STEREO INDICATOR LAMP DRIVER WITH CURRENT LIMITING**
- **HIGH IMPEDANCE INPUT – LOW IMPEDANCE OUTPUTS**
- **70 dB SCA REJECTION**
- **ONE ADJUSTMENT FOR COMPLETE ALIGNMENT**
- **LOW NUMBER OF EXTERNAL PARTS – NO COILS**
- **10 V TO 16 V SUPPLY VOLTAGE RANGE**

GENERAL DESCRIPTION – The μA758PC is a monolithic Phase Locked Loop FM Stereo Multiplex decoder. This integrated circuit decodes an FM Stereo Multiplex Signal into Right and Left audio channels while inherently suppressing SCA information when it is contained in the composite input signal. Internal functions include automatic mono-stereo mode switching and drive for an external lamp to indicate stereo mode operation.
The μA758PC operates over a wide supply voltage range and uses a low number of external components. It has only one control to adjust: a potentiometer to set oscillator frequency. No external coils are required. The μA758PC is suitable for all line-operated and automotive FM Stereo Receivers.

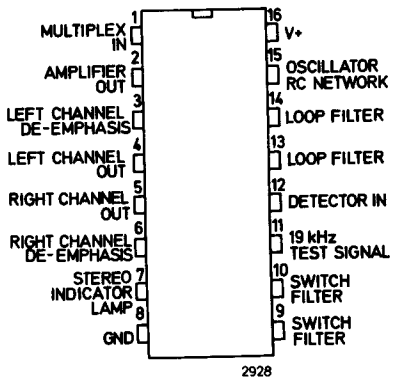
PACKAGE OUTLINE

(P) 9B 16-Lead Molded Dual In-line

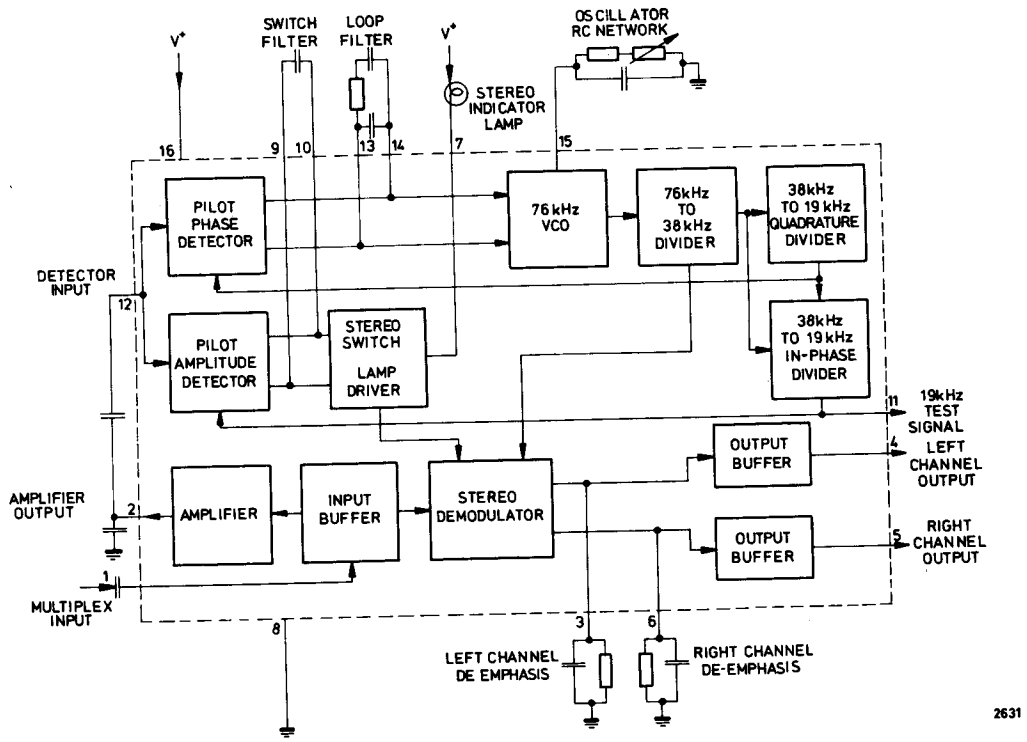


CONNECTION DIAGRAM

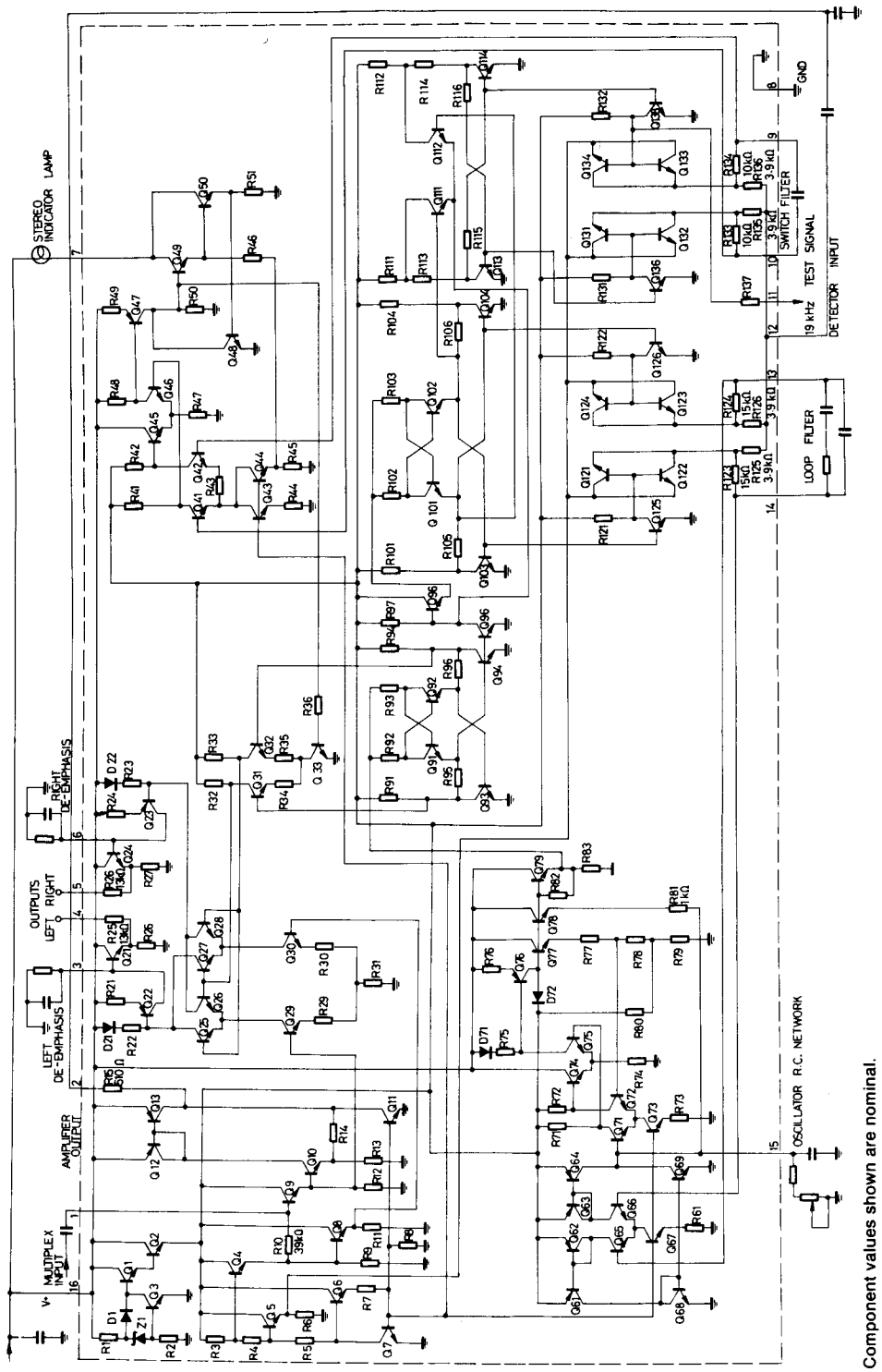
(TOP VIEW)



BLOCK DIAGRAM



EQUIVALENT CIRCUIT



Component values shown are nominal.

ABSOLUTE MAXIMUM RATINGS

Supply Voltage (Note 1)	+18 V
Supply Voltage (≤15 s)	+22 V
Voltage at Lamp Driver Terminal (Lamp OFF)	+22 V
Internal Power Dissipation (Note 2)	730 mW
Operating Temperature Range	0°C to + 70°C
Storage Temperature Range	−55°C to +125°C
Lead Temperature (Soldering, 10 s)	260°C

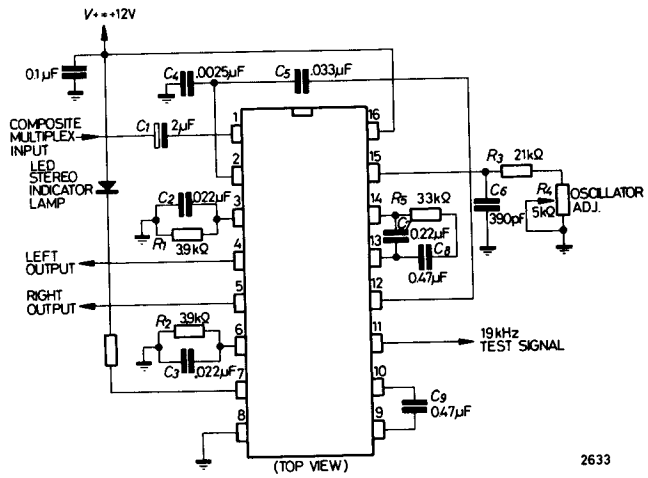
ELECTRICAL CHARACTERISTICS

[T_A = 25°C, V+ = +12 V, 19 kHz pilot level = 30 mV_{RMS}, Multiplex Signal (L = R, pilot OFF) = 300 mV_{RMS}, Modulation Frequency = 400 Hz or 1 kHz, Test Circuit 1, unless otherwise specified]

PARAMETER	TEST CONDITIONS	MIN.	TYP.	MAX.	UNITS
Supply Current	Lamp OFF		26	35	mA
Maximum Available Lamp Current		75	150		mA
Voltage at Lamp Driver Terminal	1 LAMP = 50 mA		1.3	1.8	V
DC Voltage Shift at Either Output Terminal	Stereo to Mono Operation		30	150	mV
Power Supply Ripple Rejection	200 Hz, 200 mV_{RMS}	35	45		dB
Input Resistance		20	35		kΩ
Output Resistance		0.9	1.3	2.0	kΩ
Channel Separation	100 Hz		40		dB
	400 Hz	30	45		dB
	10 kHz		45		dB
Channel Balance			0.3	1.5	dB
Voltage Gain	1 kHz	0.5	0.9	1.4	V/V
Pilot Input Level	Lamp Turn-On		15	20	mV_{RMS}
	Lamp Turn-Off	2.0	7.0		mV_{RMS}
Pilot Input Level Hysteresis	Lamp Turn-Off to Turn-On	3.0	7.0		dB
Capture Range		2.0	4.0	6.0	%
Total Harmonic Distortion	Multiplex Level = 600 mV_{RMS} Pilot OFF		0.4	1.0	%
19 kHz Rejection		25	35		dB
38 kHz Rejection		25	45		dB
SCA Rejection (Note 3)			70		dB
VCO Tuning Resistance (Note 4)		21.0	23.3	25.5	kΩ
VCO Frequency Drift	0°C ≤ T_A ≤ 25°C		+0.1	±2.0	%
	25°C ≤ T_A ≤ +70°C		−0.4	±2.0	%

NOTES
(1) Voltage is with respect to the ground pin.
(2) Rating applied for ambient temperatures to 70°C.
(3) Measured with a stereo composite signal consistency of 80% stereo, 10% pilot and 10% SCA as defined in the FCC Rules on Broadcasting.
(4) Total resistance from pin 15 to ground, in test circuit 1, required to set reference frequency at pin 11 to 19 kHz ± 10 Hz.

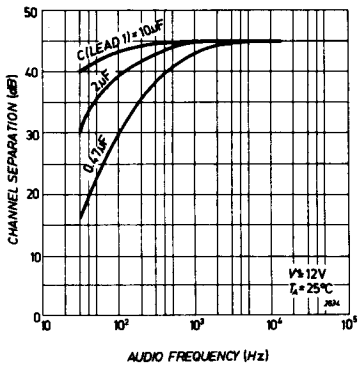
TEST CIRCUIT 1 AND TYPICAL APPLICATION



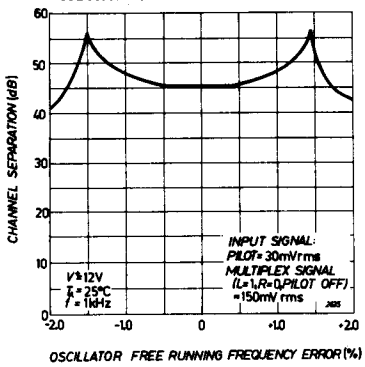
NOTE
Tolerance on resistors is ±5% and tolerance on capacitors is ±20% unless otherwise specified.
C_1 Tolerance = +100%, −20%
C_6 Tolerance = ±1% in test circuit and ±5% in typical application
R_3 Tolerance = ±1%
R_4 Tolerance = ±10%
R_1 and R_2 Tolerances = ±1% in test circuit and ±5% in typical application.

TYPICAL PERFORMANCE CURVES (Test Circuit 1 unless otherwise specified)

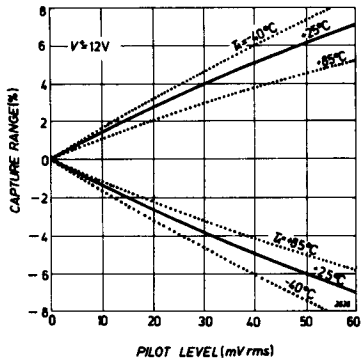
CHANNEL SEPARATION AS A FUNCTION OF AUDIO FREQUENCY



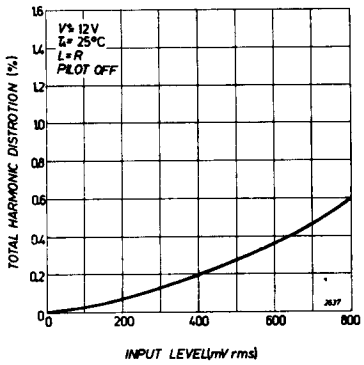
CHANNEL SEPARATION AS A FUNCTION OF OSCILLATOR FREE RUNNING FREQUENCY ERROR



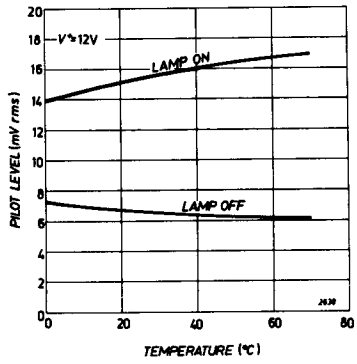
CAPTURE RANGE AS A FUNCTION OF PILOT LEVEL



TOTAL HARMONIC DISTORTION AS A FUNCTION OF INPUT LEVEL



LAMP TURN ON AND TURN OFF SENSITIVITY AS A FUNCTION OF AMBIENT TEMPERATURE



OSCILLATOR FREE RUNNING FREQUENCY ERROR AS A FUNCTION OF AMBIENT TEMPERATURE