

DEVELOPMENT DATA

This data sheet contains advance information and specifications are subject to change without notice.

TEA0653T

DOLBY B TYPE NOISE REDUCTION CIRCUIT

GENERAL DESCRIPTION

The TEA0653T is a monolithic bipolar IC designed for use in Dolby B type audio Noise Reduction (NR) systems. The device is a dual channel circuit.

Applications

- Automotive cassette players
- Home cassette decks
- Portable cassette players
- Video cassette recorders
- FM receivers

Features

- Dual processors provide optimum matching of channels
- No law adjustments required
- Full wave rectifier
- No capacitor required for side chain filter
- Electronic switching for NR ON/OFF
- Reference level 0 dB = 387,5 mV
- Minimum external components
- Easy to apply in 2 or 3 head systems
- Split supply operation is optional

QUICK REFERENCE DATA

Supply voltage	max.	20 V
Supply current	typ.	17 mA
Signal-to-noise ratio	typ.	90 dB
Storage temperature range		-55 to +150 °C
Operating ambient temperature range		-30 to +85 °C

PACKAGE OUTLINES

TEA0653T: 20-lead mini-pack; plastic (SO28; SOT136A).

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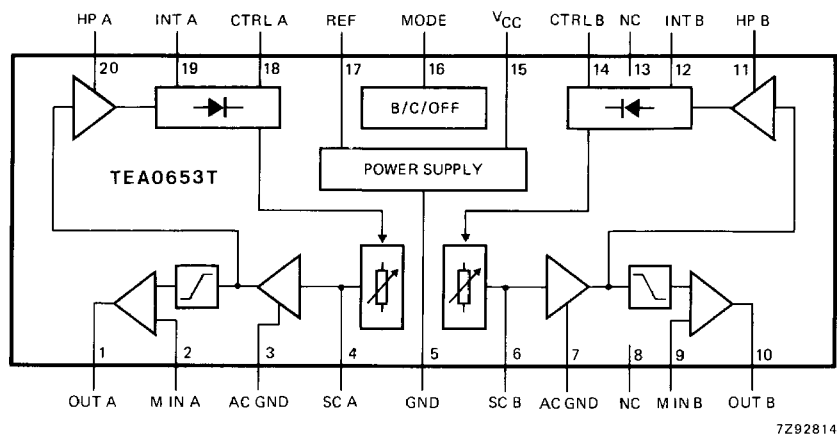


Fig. 1 Block diagram.

PINNING

1	OUT A	output channel A
2	MIN A	main chain input channel A
3	AC GND	a.c. ground channel A
4	SC A	side chain channel A
5	GND	ground
6	SC B	side chain channel B
7	AC GND	a.c. ground channel B
8	N.C.	no connection
9	MIN B	main chain input channel B
10	OUT B	output channel B
11	HP B	high-pass filter channel B
12	INT B	integrating filter channel B
13	N.C.	no connection
14	CTRL B	control voltage channel B
15	VCC	positive supply voltage
16	MODE	mode B/NR OFF switch input
17	REF	reference voltage
18	CTRL A	control voltage channel A
19	INT A	integration filter channel A
20	HP A	high-pass filter channel A

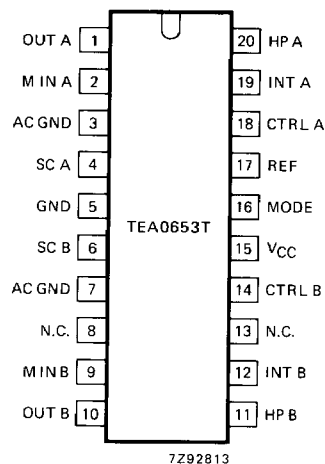


Fig. 2 Pinning diagram.

RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC 134).

Supply voltage pin 15	V_{CC}	8 to 20 V
Storage temperature range	T_{stg}	-55 to +150 °C
Operating ambient temperature range	T_{amb}	-30 to +85 °C

CHARACTERISTICS

$V_{CC} = 14$ V; $f = 20$ Hz to 15 kHz; $T_{amb} = 25$ °C; all levels with reference to 387,5 mV = 0 dB = -6 dBm at test point A or B; test circuit Fig. 4; encode mode; unless otherwise specified.

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parameter	conditions			min.	typ.	max.	unit
	mode	f(kHz)					
Supply							
Supply voltage range	B	—	V_{CC} (note 4)	8	14	20	V
Supply current I_{CC}	OFF	—	no input signal	—	17	25	mA
Power supply ripple rejection ratio	B	1	test circuit Fig. 3	—	60	—	dB
Voltage gain	OFF	1	note 1	-0,5	—	+0,5	dB
Signal handling at output (note 4)	B	1	$V_{CC} = 14$ V THD = 1%	—	20	—	dB
		1	$V_{CC} = 8$ V THD = 1%	12	14	—	dB
		1	$V_{CC} = 6$ V THD = 1%	—	11	—	dB
Signal-to-noise ratio (S/N)	B	—	$R_S = 10$ k Ω internal CCIR/ARM weighted	—	90	—	dB
Switching thresholds	OFF	—	voltage at pin 16	—	—	0,065 $\times V_{CC}$	V
Switching threshold for stereo B appl.	B	—	voltage at pin 16	—	0,5 $\times V_{CC}$	—	V
Channel matching	OFF	—	TPL = 0 dB notes 2, 3	-0,5	—	+0,5	dB
Channel separation	B	1	TPL = 10 dB notes 2, 3	60	70	—	dB

CHARACTERISTICS (continued)

parameter	conditions			min.	typ.	max.	unit
	mode	f(kHz)					
Total harmonic distortion (THD)	B	10	TPL = 0 dB	—	0,05	0,1	%
			TPL = +10 dB	—	0,08	0,3	%
B-mode frequency response	B	1	TPL = -20 dB	-17,3	-15,8	-14,3	dB
		2	TPL = -25 dB	-19,5	-18,0	-16,5	dB
		5	TPL = -40 dB	-30,2	-29,7	-28,2	dB
		10	TPL = -30 dB	-25,0	-23,5	-22,0	dB

Notes

1. Voltage gain is $20 \log \frac{\text{voltage at pin 1 (10)}}{\text{voltage at pin 2 (9)}}$
2. TPL is Test Point Level.
3. Test circuit Fig. 3, reference level at channel A and channel B test point.
4. Operation with minimum of 12 dB headroom; system remains functional to 6 V.

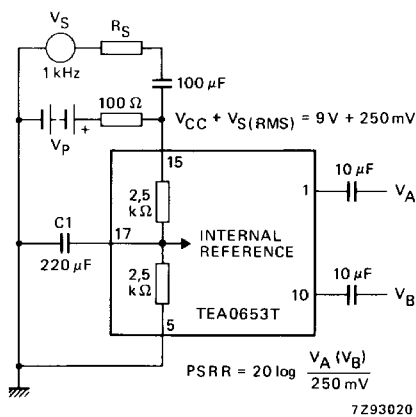


Fig. 3 Test circuit for PSSR for TEA0653T.

DEVELOPMENT DATA

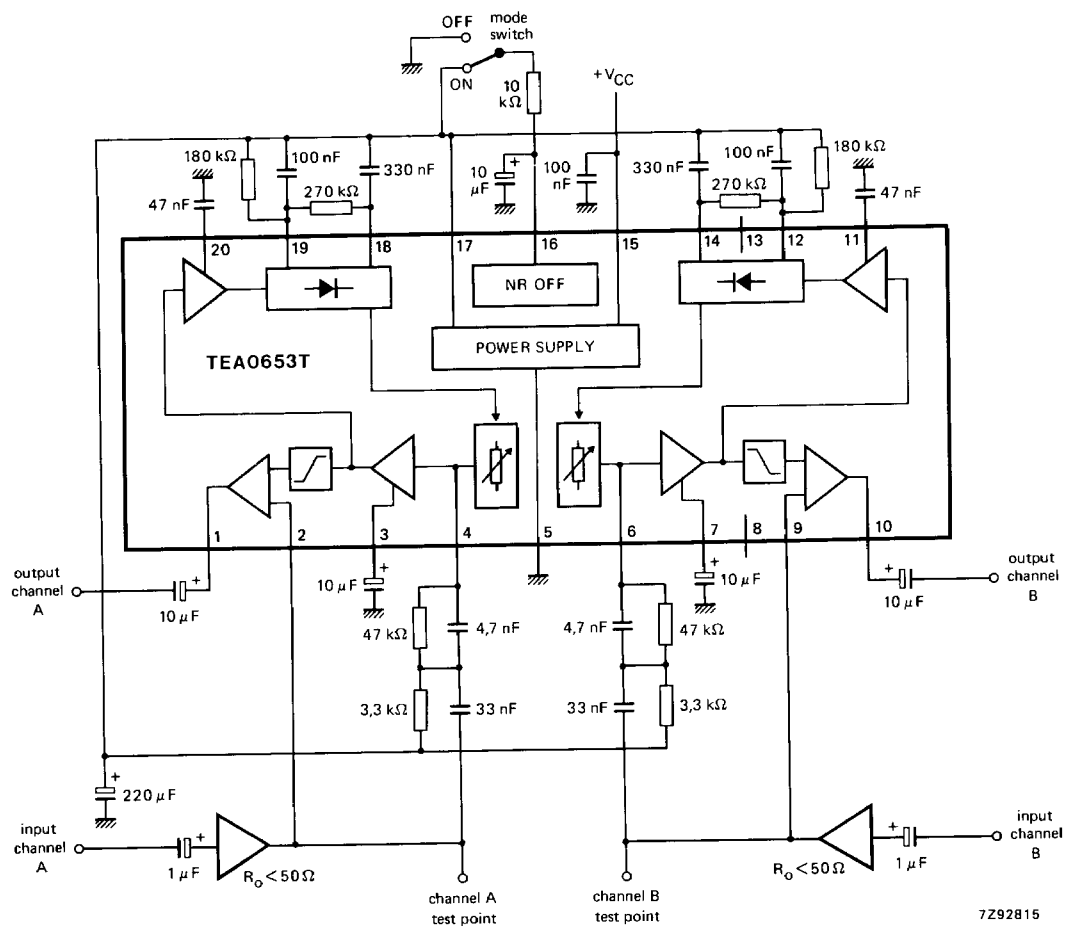


Fig. 4 Test and application circuit for stereo Dolby B, shown in encode mode.

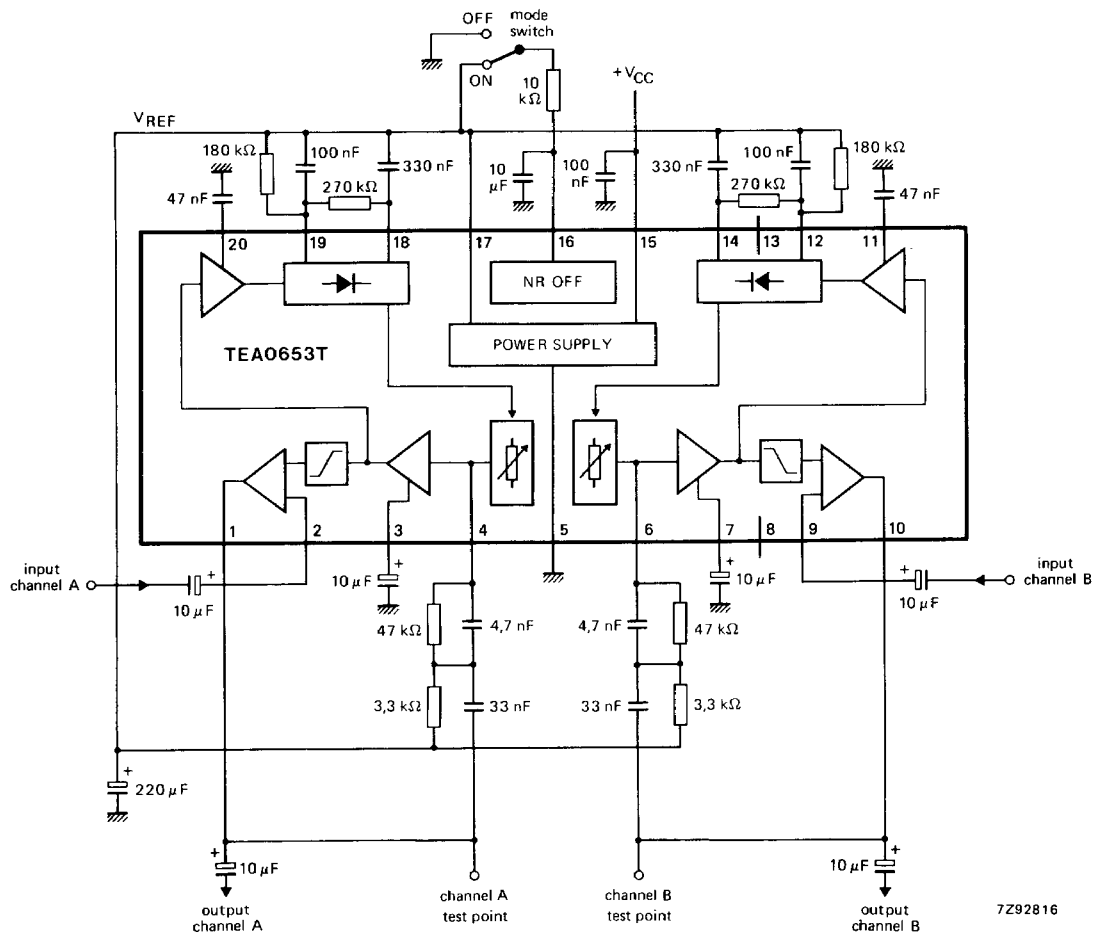


Fig. 5 Application circuit for stereo Dolby B, shown in decode mode.