

μPC1284G

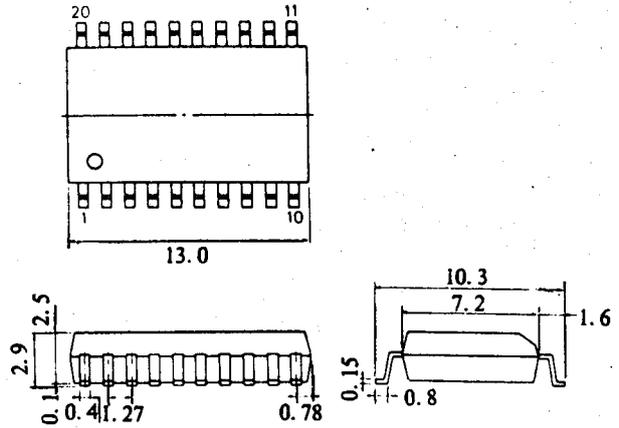
双杜比 B 型降噪处理器

简要说明

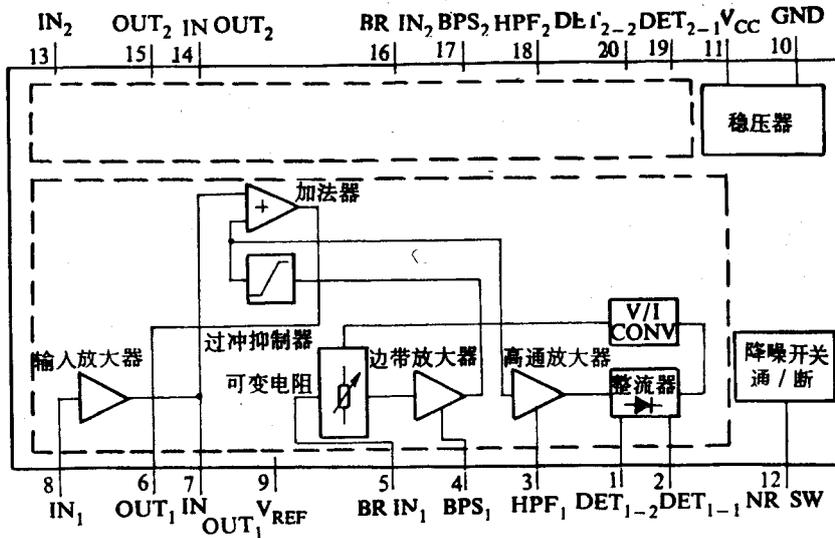
μPC1284G 是双杜比 B 型降噪系统,用于减小磁带噪声。该电路的主要特点是在单片电路中实现立体声杜比 B 型降噪,具有较高的信噪比, -90dB 解码(CCIR/ARM),电路内部设置 NR 通/断开关。该电路采用 20 脚微型扁平封装。

该电路适用于立体声收录机、音乐中心等音响设备中作杜比 B 型降噪系统。

外形图



电路框图 [V_{CC(max)} = 16V, P_{D(max)} = 350mW]



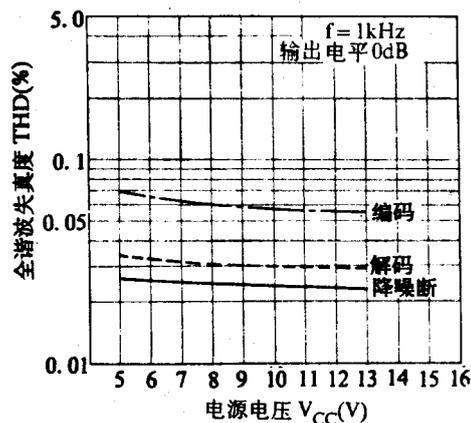
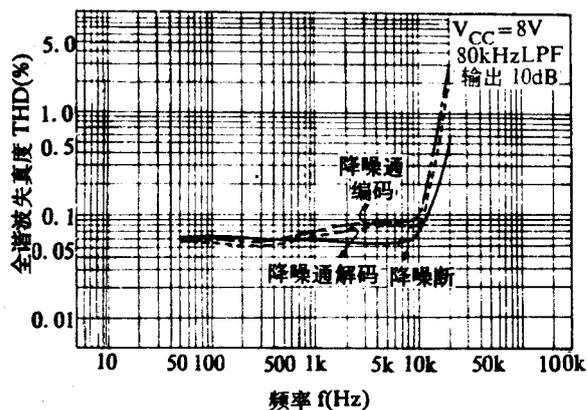
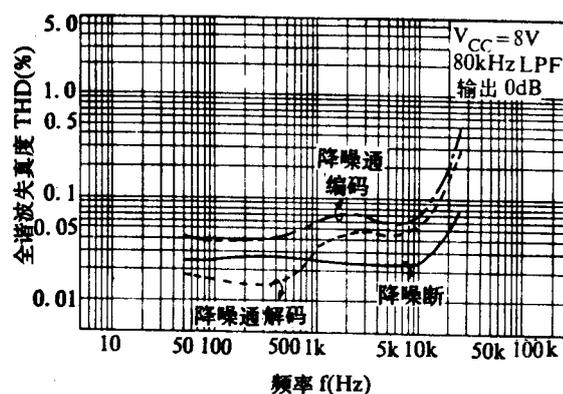
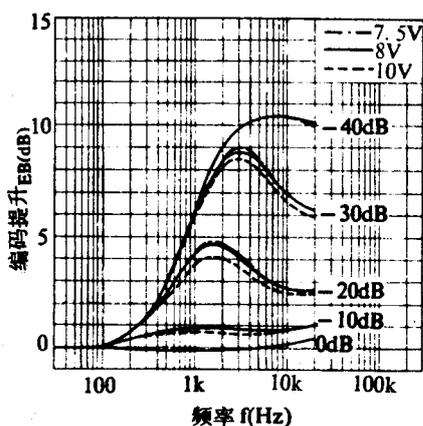
电参数 [V_{CC} = 8V, 杜比电平 = 450mV (= 0dB)]

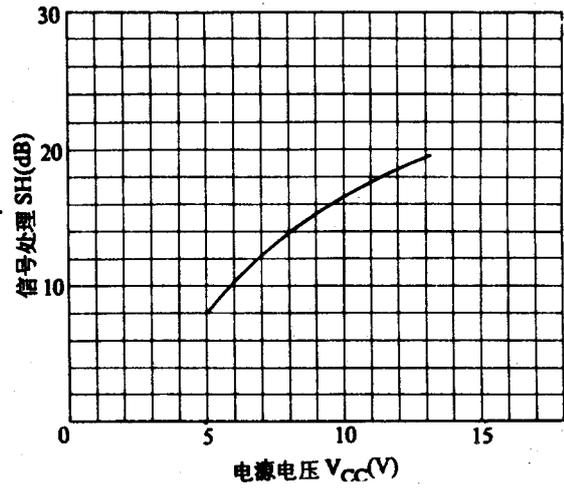
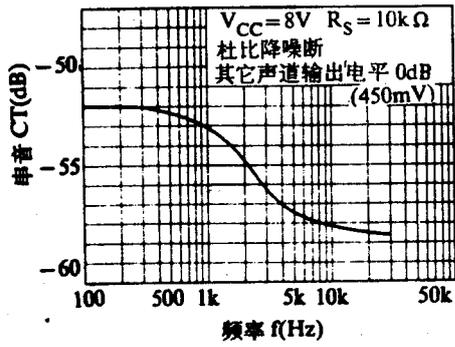
静态电源电流	I _{CC0}	无信号, NR 通	≤ 29mA
电压增益(高通放大器输入)	A _{V1}	NR 断, f = 1kHz, 0dB	26.5dB
电压增益(处理器)	A _{V2}	NR 断, f = 1kHz, 0dB	0dB
信号处理	V _{OM1}	V _{CC} = 7.5V, f = 1kHz, THD = 0.5%, 编码	≥ 12dB
	V _{OM2}	V _{CC} = 7.5V, f = 1kHz, THD = 0.5%, 解码	≥ 12dB
失真度	THD ₁	f = 1kHz, 0dB, 80kHz LPF, 编码	≤ 0.2%
	THD ₂	f = 1kHz, 0dB, 80kHz LPF, 解码	≤ 0.2%
	THD ₃	f = 10kHz, +10dB, 80kHz LPF, 编码	≤ 0.3%
	THD ₄	f = 10kHz, +10dB, 80kHz LPF, 解码	≤ 0.3%

续表

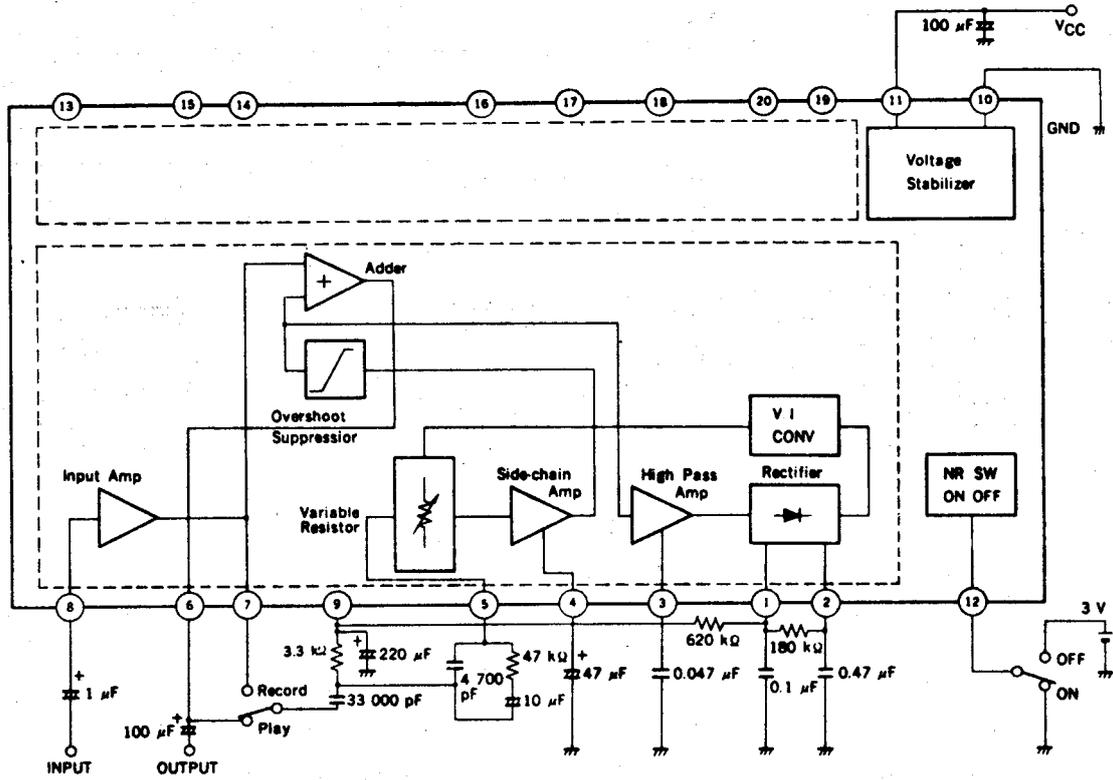
信噪比	S/N_1	NR 断, $R_S = 10k\Omega$ (CCIR/ARM)	80dB
	S/N_2	$R_S = 10k\Omega$ (CCIR/ARM)编码	≥ 65 dB
	S/N_3	$R_S = 10k\Omega$ (CCIR/ARM)解码	90dB
频率响应	FR	$f = 20\text{Hz} \sim 20\text{kHz}$, 录放频响	0dB
声道平衡度	CB	$f = 1\text{kHz}$, 0dB, NR 断	0dB
串音	CT	$f = 1\text{kHz}$, 0dB, $R_S = 10k\Omega$	≥ 50 dB
编码特性	ER_1	$f = 1.4\text{kHz}$, -20dB	-15.6dB
	ER_2	$f = 1.4\text{kHz}$, -30dB	-22.5dB
	ER_3	$f = 5\text{kHz}$, -20dB	-16.8dB
	ER_4	$f = 5\text{kHz}$, -30dB	-21.8dB
	ER_5	$f = 10\text{kHz}$, 0dB	0.4dB
	ER_6	$f = 10\text{kHz}$, -40dB	-29.6dB
输入电阻	R_I	$f = 1\text{kHz}$	$\geq 50k\Omega$
电源电压抑制比	SVR	$f_{rp} = 100\text{Hz}$, $R_S = 10k\Omega$, NR 断	34dB

特点与性能





典型应用



6427525 N E C ELECTRONICS INC

05E 22852 D

BIPOLAR ANALOG INTEGRATED CIRCUIT

μ PC1284G

DUAL DOLBY B-TYPE NOISE REDUCTION PROCESSOR

T-77-05-07

DESCRIPTION

The μ PC1284G is a monolithic integrated circuit specifically designed to realize the Dual Dolby B-Type Noise Reduction System. This device is used to reduce the hiss noise on magnetic tape.

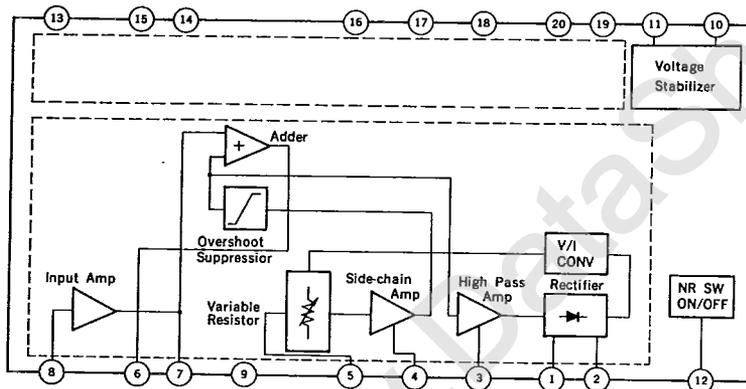
The IC is encapsulated in 20 PIN MINI FLAT plastic package.

Available only to licensees of Dolby Laboratories Licensing Corporation, San Francisco, from whom licensing and application information must be obtained.

"Dolby" and the Double-D symbol are trade marks of Dolby Laboratories Licensing Corporation.

FEATURES

- Stereo Dolby noise reduction with one IC.
- Very high signal/noise ratio. -90 dB decode (CCIR/ARM)
- NR ON/OFF switching are provided internally.
- Small package (20 PIN MINI FLAT).

BLOCK DIAGRAM

6427525 N E C ELECTRONICS INC

μ PC1284G
05E 22853 D

TERMINAL CONNECTION DIAGRAM

T-77-05-07

NO.	CONNECTION	NO.	CONNECTION
1	DET ₁₋₂	11	VCC
2	DET ₁₋₁	12	NR SW
3	HPF ₁	13	INPUT ₂
4	BY PASS ₁	14	IN OUT ₂
5	BR IN ₁	15	OUTPUT ₂
6	OUTPUT ₁	16	BR IN ₂
7	IN OUT ₁	17	BY PASS
8	INPUT ₁	18	HPF ₂
9	VREF	19	DET ₁₋₁
10	GND	20	DET ₂₋₂

5

μPC1284G
6427525 N E C ELECTRONICS INC

05E 22854 D

T-77-05-07

ABSOLUTE MAXIMUM RATINGS (T_a = 25 °C)

Supply Voltage	V _{CC}	16	V
Power Dissipation	P _D	350*	mW
Operating Temperature Range	T _{opt}	-20 to +70	°C
Storage Temperature Range	T _{stg}	-55 to +150	°C

* Value at T_a = 70 °C

RECOMMENDED OPERATING CONDITIONS (T_a = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage (Enable functional op)	V _{CC1}	7	8	13	V
Supply Voltage (Gurantee the Dolby Spec)	V _{CC2}	7.5	8	10	V
Dolby Level	V _{DL}		450		mV _{r.m.s.}

ELECTRICAL CHARACTERISTICS [T_a = 25 °C, V_{CC} = 8 V, Dolby Level = 450 mV_{r.m.s.} (= 0 dB)]

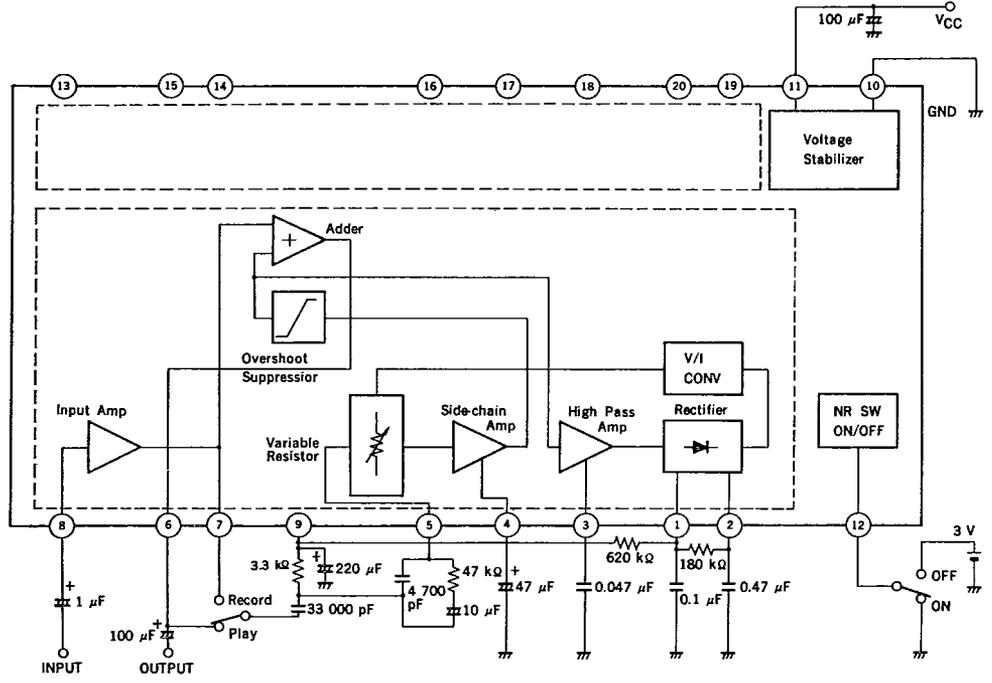
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Supply Current	I _{CC}		20	29	mA	No Signal, NR ON
Voltage Gain (Input AHP)	A _{v1}	25.0	26.5	28.0	dB	NR OFF, f = 1 kHz, 0 dB
Voltage Gain (Processor)	A _{v2}		0		dB	NR OFF, f = 1 kHz, 0 dB
Signal Handling	V _{om1}	12	13		dB	V _{CC} = 7.5 V, f = 1 kHz, THD = 0.5 %, Encode
	V _{om2}	12	13		dB	V _{CC} = 7.5 V, f = 1 kHz, THD = 0.5 %, Decode
Distortion	THD ₁		0.05	0.2	%	f = 1 kHz, 0 dB, 80 kHz LPF, Encode
	THD ₂		0.05	0.2	%	f = 1 kHz, 0 dB, 80 kHz LPF, Decode
	THD ₃		0.1	0.3	%	f = 10 kHz, +10 dB, 80 kHz LPF, Encode
	THD ₄		0.1	0.3	%	f = 10 kHz, +10 dB, 80 kHz LPF, Decode
Signal to Noise Ratio	S/N ₁		80		dB	NR OFF, R _S = 10 kΩ (CCIR/ARM)
	S/N ₂	65	70		dB	R _S = 10 kΩ (CCIR/ARM) Encode
	S/N ₃		90		dB	R _S = 10 kΩ (CCIR/ARM) Decode
Frequency Response	FR	-1.5	0	+1.5	dB	f = 20 Hz to 20 kHz, Back to Back
Channel Balance	CB	-1.0	0	+1.0	dB	f = 1 kHz, 0 dB, NR OFF
Crosstalk	CT	50	53		dB	f = 1 kHz, 0 dB, R _S = 10 kΩ
Input Resistance	R _{IN}	50	65		kΩ	f = 1 kHz
Encode Characteristics	ER ₁	-17.1	-15.6	-14.1	dB	f = 1.4 kHz, -20 dB
	ER ₂	-24.0	-22.5	-21.0	dB	f = 1.4 kHz, -30 dB
	ER ₃	-18.3	-16.8	-15.3	dB	f = 5 kHz, -20 dB
	ER ₄	-23.3	-21.8	-20.3	dB	f = 5 kHz, -30 dB
	ER ₅	-0.6	0.4	1.4	dB	f = 10 kHz, 0 dB
	ER ₆	-30.6	-29.6	-28.6	dB	f = 10 kHz, -40 dB
Variation in Encode Characteristics with Temperature	ERT	-2.5	0	+2.5	dB	T _a = -20 to +70 °C
Variation in Encode Characteristics with Supply Voltage	ERV	-1.0	0	+1.0	dB	V _{CC} = 7.5 to 10 V
Switching Transient Noise	St		10		mV _{p-p}	NR ON/OFF/ON
Control Voltage for NR ON	V _{C(ON)}		0	1.5	V	NR SW
Control Voltage for NR OFF	V _{C(OFF)}	3			V	NR SW
Supply Voltage Rejection Ratio	SVR		34		dB	f _{rip} = 100 Hz, R _S = 10 kΩ, NR OFF

6427525 N E C ELECTRONICS INC

μ PC1284G
05E 22855 D

TEST CIRCUIT

T-77-05-07



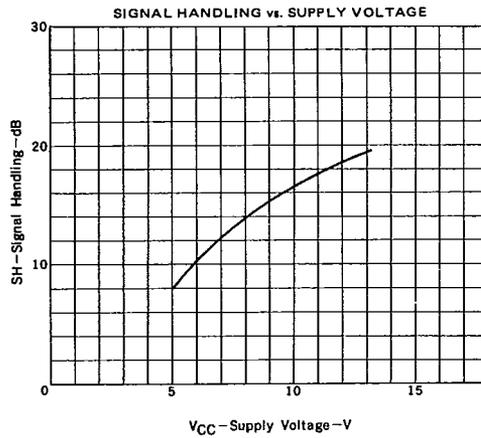
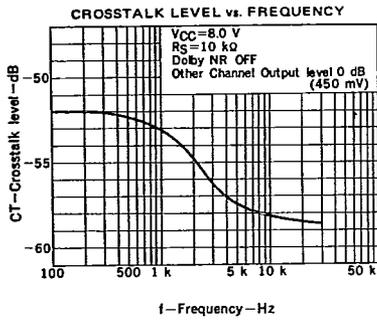
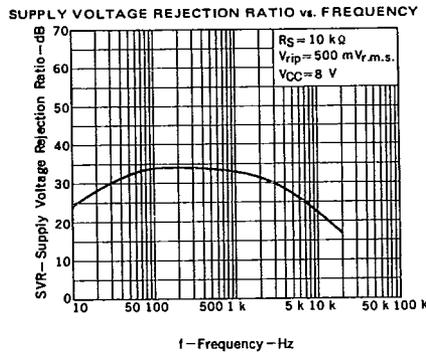
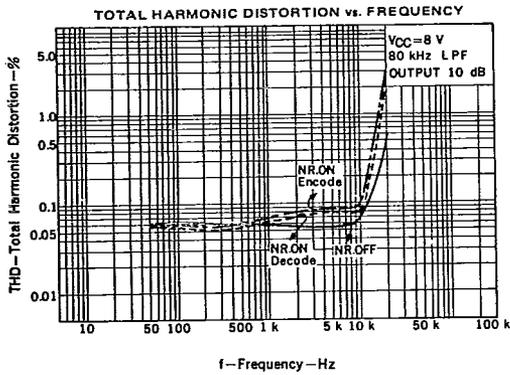
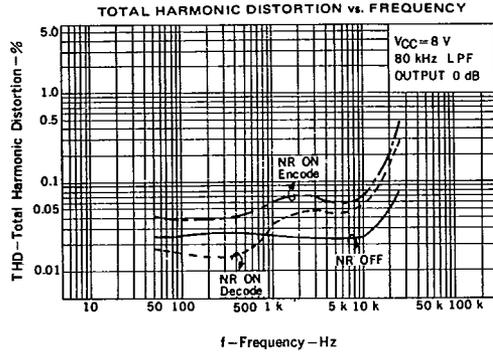
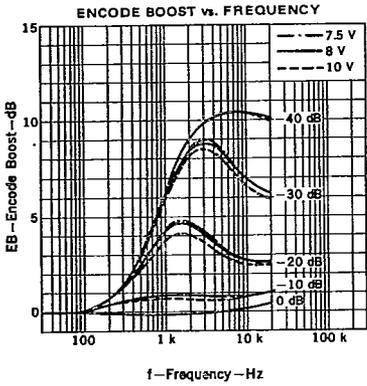
5

μPC1284G
6427525 N E C ELECTRONICS INC

05E 22856 D

T-77-05-07

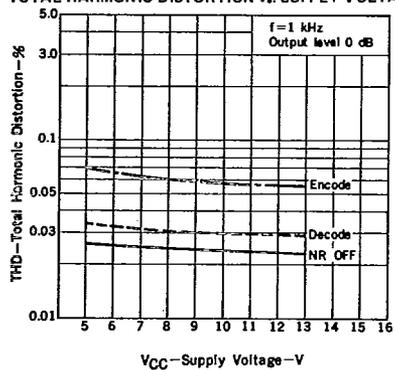
TYPICAL CHARACTERISTICS (T_a = 25°C)



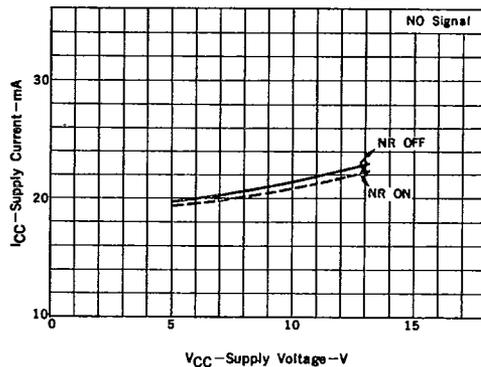
6427525 N E C ELECTRONICS INC

μPC1284G
 05E 22857 D
 T-77-05-07

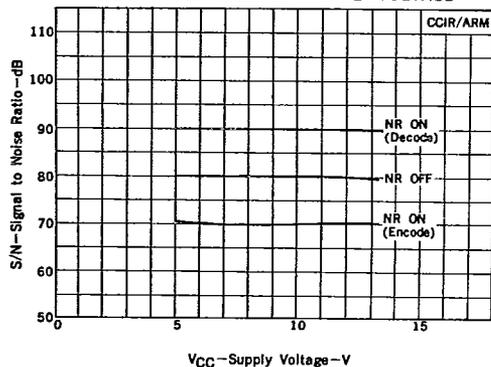
TOTAL HARMONIC DISTORTION vs. SUPPLY VOLTAGE



SUPPLY CURRENT vs. SUPPLY VOLTAGE



SIGNAL TO NOISE RATIO vs. SUPPLY VOLTAGE



5

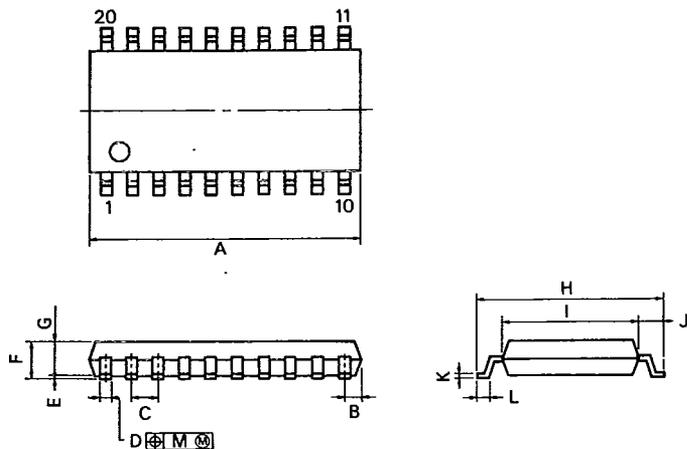
μPC1284G

6427525 N E C ELECTRONICS INC

05E 22858 D

T-77-05-07

20PIN PLASTIC SOP (300 mil)



P20GM-50-300B

NOTE

Each lead centerline is located within 0.12 mm (0.005 inch) of its true position (T.P.) at maximum material condition.

ITEM	MILLIMETERS	INCHES
A	13.00 MAX.	0.512 MAX.
B	0.78 MAX.	0.031 MAX.
C	1.27 (T.P.)	0.050 (T.P.)
D	0.40 ^{+0.10}	0.016 ^{+0.004}
E	0.1 ^{±0.1}	0.004 ^{±0.004}
F	1.8 MAX.	0.071 MAX.
G	1.55	0.061
H	7.7 ^{±0.3}	0.303 ^{±0.012}
I	5.6	0.220
J	1.1	0.043
K	0.20 ^{+0.10}	0.008 ^{+0.004}
L	0.6 ^{±0.2}	0.024 ^{±0.008}
M	0.12	0.005