

# INTEGRATED CIRCUIT TECHNICAL DATA Vol. 1

**PA****PD****PM**

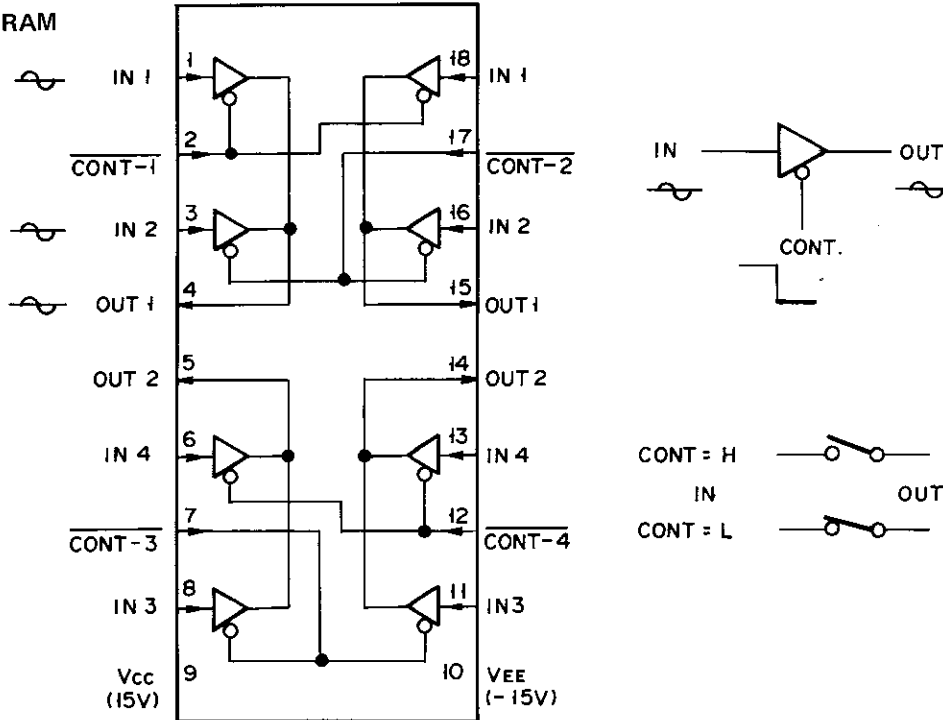
- This manual covers the following products.

NAME	MODEL	NAME	MODEL	NAME	MODEL
PA 0001	RX-70	PD 0004	RX-70	PM 1001	
PA 1001	TX-9800	PD 3001	SA-730	PM 3001	CT-7R
PA 1002	TX-9800	PD 4005	CT-A1	PM 6001	PL-630
PA 2009	CT-7R	PD 4009	CT-F1050		
PA 2010	CT-7R	PD 4010			
PA 2012	CT-720	PD 4012	CT-9R		
PA 3002	SA-5500 II	PD 6001A	PL-630		
PA 3004		PD 6003	PL-9		
PA 3010	CT-7R	PD 6005	PL-L800		
PA 3012	CT-4	PD 6006	CT-7R		
PA 4001	CT-F1000	PD 6008	CT-9R		
PA 4002		PD 8001			
PA 4004	TX-8500 II				
PA 5001	F-9				
PA 5002	F-9				

**PIONEER ELECTRONIC CORPORATION** 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan  
**PIONEER ELECTRONICS [USA] INC.** 1925 E. Dominguez St., Long Beach, California 90810 U.S.A.  
**PIONEER ELECTRONIC [EUROPE] N.V.** Keetberglaan 1, 2740 Beveren, Belgium  
**PIONEER ELECTRONICS AUSTRALIA PTY. LTD.** 178-184 Boundary Road, Braeside, Victoria 3195, Australia

APPLICATION	ELECTRONIC SWITCH	NAME	PA0001
MODEL	RX-70	TYPE	SILICON MONOLITHIC

**BLOCK DIAGRAM**

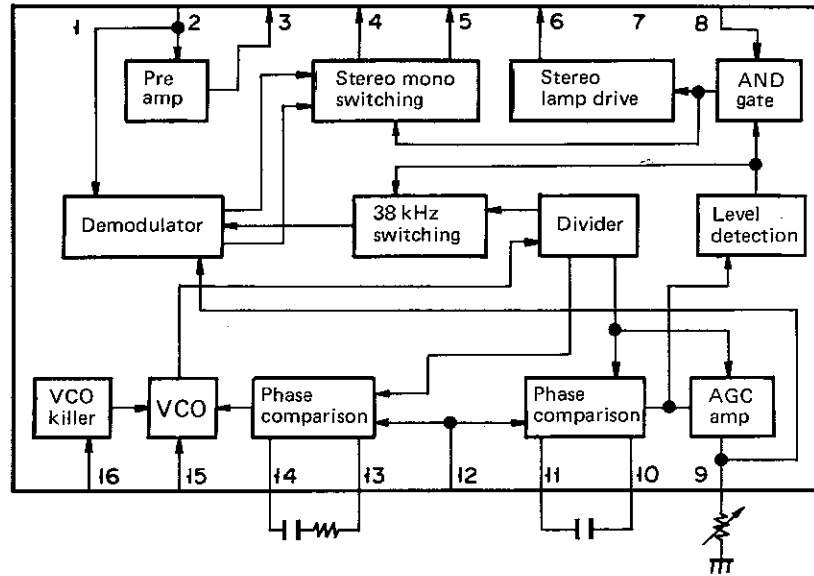


**PIN FUNCTIONS**

Pin No.	Standard voltage (V)	Pin Name
1	0	IN 1
2	5/3.1	CONT 1
3	0	IN 2
4	0	OUT 1
5	0	OUT 2
6	0	IN 4
7	5/3.1	CONT 3
8	0	IN 3
9	15	VCC
10	-15	VEE
11	0	IN 3
12	5/3.1	CONT 4
13	0	IN 4
14	0	OUT 2
15	0	OUT 1
16	0	IN 2
17	5/3.1	CONT 2
18	0	IN 1

APPLICATION	PILOT CANCELLER MPX DECODER	NAME	PA1001
MODEL	TX-9800	TYPE	SILICON MONOLITHIC

**BLOCK DIAGRAM**



**PIN FUNCTIONS**

Pin No.	Standard Voltage (V)	Pin Name	Function and Operation
1	13	VCC	
2	3.1	PRE IN	Composite signal input
3	4.9	PRE OUT	Composite signal output
4	8.85	L OUT	Lch output
5	8.85	R OUT	Rch output
6	13/1	ST IND	Stereo indicator output 1V → lighted
7	0	GND	
8	0/1.5	ST AUTO IN	Auto/mono switching 1.5V → mono
9	0.8	PILOT CANCEL	Pilot canceller
10	2.3	PILOT LEVEL	Filter
11	2.3	PILOT LEVEL	
12	2.38	PLL IN	Composite signal input
13	2.4	PLL LPF	Filter
14	2.4	PLL LPF	
15	3.4	VCO	VCO 76 kHz
16	0/more than 2V	VCO KILL	VCO KILLER IN (VCO stop → 2V in modes other than FM)

No signal voltage

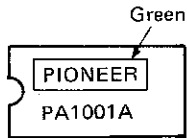
**FAMILY**

PA1001-A



PA1001 improved performance part

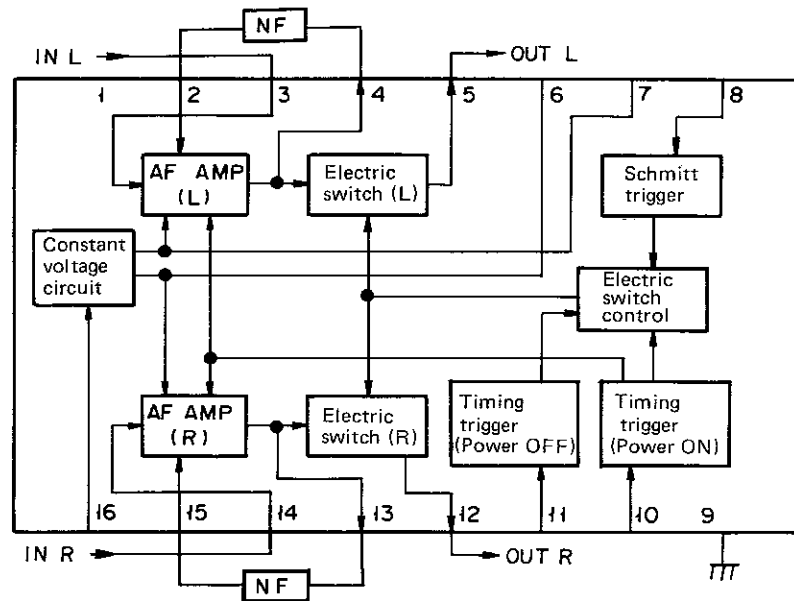
PA1001-AG



PA1001-A SN selected part

APPLICATION	AF AMP, MUTING	NAME	PA1002
MODEL	TX-9800	TYPE	C MOS

### BLOCK DIAGRAM

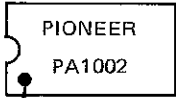
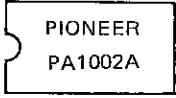
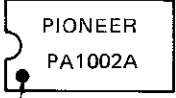
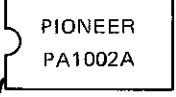


### PIN FUNCTIONS

Pin No.	Standard Voltage (V)	Pin Name	Function and Operation
1	12.2	BIAS	
2	6.45	NF IN L	NF loop input terminal
3	6.45	AUDIO IN L	Audio signal input.
4	6.45	NF OUT L	NF Loop input terminal
5	6.45	AUDIO OUT L	Audio signal output
6	6.45	V Ref R	Constant voltage output
7	6.45	V Ref L	
8	0	MUTE IN	Muting ON when 1.3 ~ 5V
9	0	GND	
10	6.2	ON C	Muting control at power ON, MUT on 4.6V or greater
11	12.2	OFF C	Muting control at power OFF
12	6.45	AUDIO OUT R	Audio signal output
13	6.45	NF OUT R	NF loop output terminal
14	6.45	AUDIO IN R	Audio signal input
15	6.45	NF IN R	NF loop input terminal
16	13	Vcc	

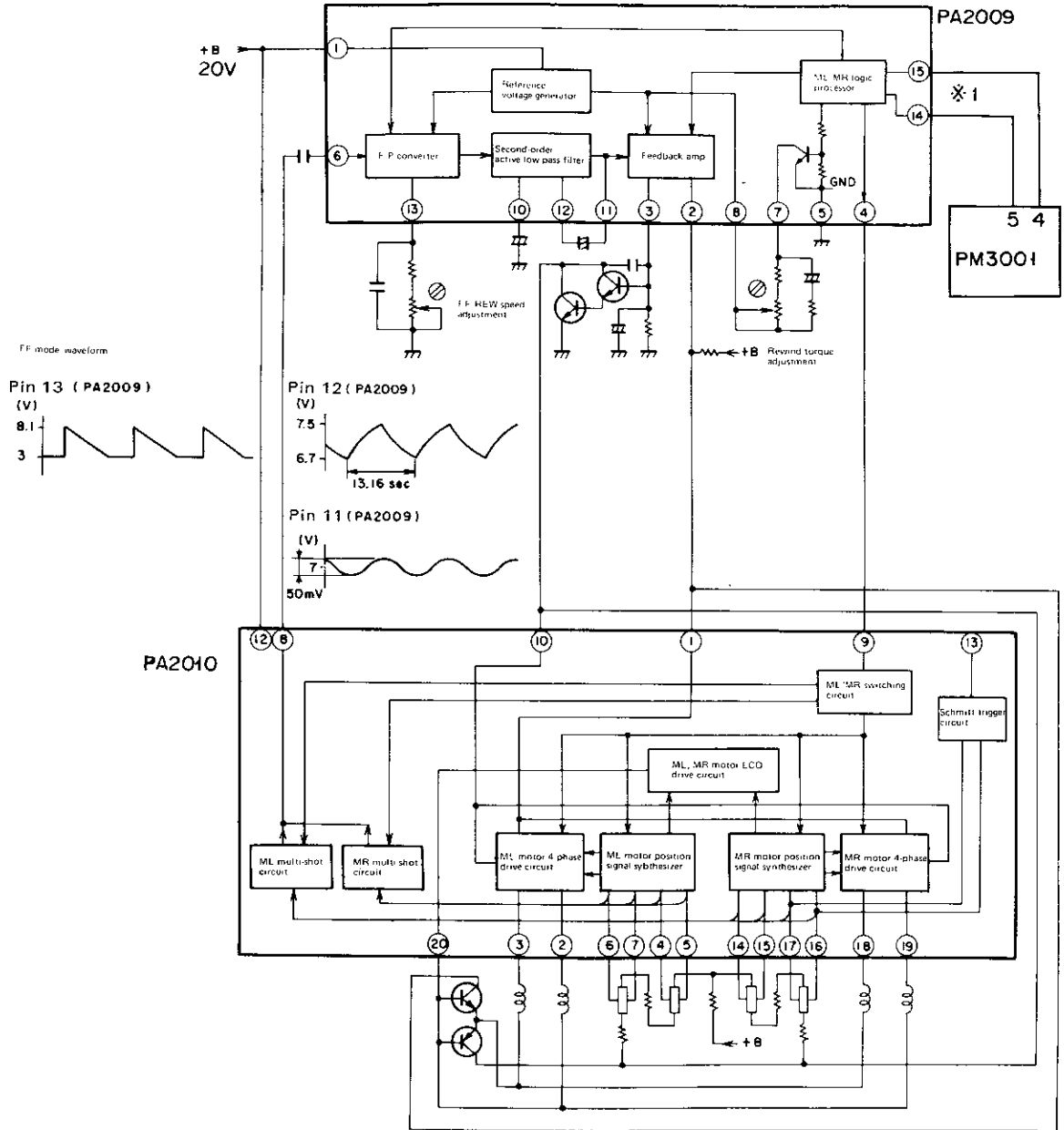
No signal voltage

**FAMILY**

PA1002Y	 Yellow dot	PA1002 SN selected part PA1002Y < PA1002
PA1002-A		PA1002 distortion, oscillation margin improved part PA1002 < PA1002-A
PA1002-AY	 Yellow dot	PA1002-A SN selected part PA1002-AY < PA1002-A
PA1002-AG	 Green mark	PA1002-A distortion, SN selected part PA1002-A < PA1002-AG

APPLICATION	MOTOR CONTROL	NAME	PA2009
MODEL	CT-7R	TYPE	BIPOLAR

CONNECTION DIAGRAM



\*1 PM3001 Output status table by mode

Pin No.	STOP		▶▶ (FF)		◀◀ (REW)		PLAY		REC/PLAY		STOP PAUSE		PLAY PAUSE		REC/PLAY PAUSE	
	FWD	REV	FWD	REV	FWD	REV	FWD	REV	FWD	REV	FWD	REV	FWD	REV	FWD	REV
4	L (OFF)	L	L	H	L	M	L	M	L	M	L	L	L	L	L	L
5	L (OFF)	H	L	L	M	L	M	L	L	L	L	L	L	L	L	L

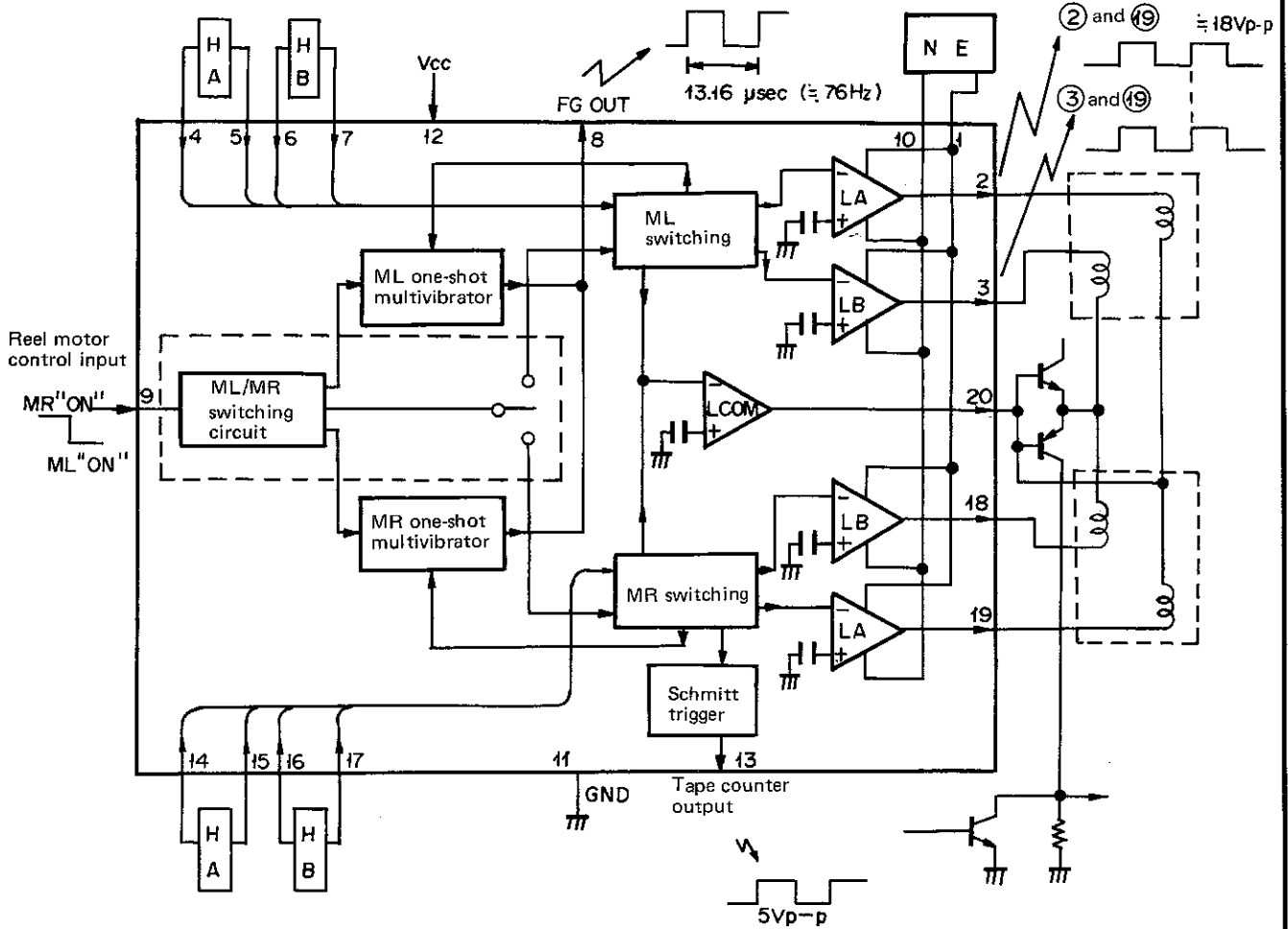
## PIN FUNCTIONS

PinNo.	Pin Name	I/O	Function and Operation
1	Vcc 1		+B supply
2	NF		Coil current control feedback resistor connection terminal
3	CONT OUT	Output	Motor current control terminal
4	L/SW	Output	Reel motor control terminal PNP open collector output
5	GND		
6	FG IN	Input	FG signal input terminal
7	TP ADJ		PLAY torque adjustment VR connection terminal "L" → PLAY
8	REF		Reference voltage (8.7 V at STOP, FF, REW)
9	Vcc 2	Output	Internal constant voltage power supply (8 V)
10	C <sub>2</sub>		Active filter capacitor connection terminal
11	C' <sub>1</sub>		
12	C <sub>1</sub>		
13	CT		F/V converter time constant capacitor connection terminal
14	MR	Input	Right reel motor control terminal
15	ML	Input	Left reel motor control terminal
16	NOP	Input	FF/REW speed switching terminal



APPLICATION	MOTOR DRIVE	NAME	PA2010
MODEL	CT-7R	TYPE	BIPOLAR

**BLOCK DIAGRAM**



**PIN FUNCTIONS**

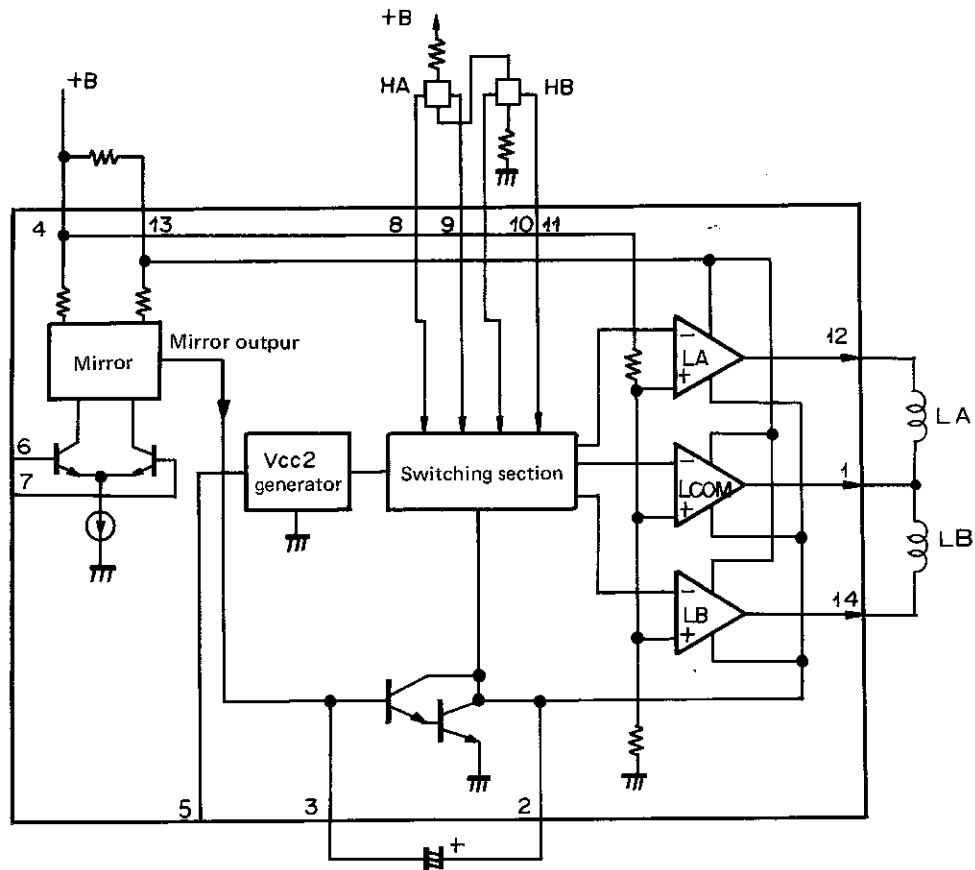
Pin No.	Pin Name	I/O	Function and Operation
1	NF		Feedback resistor connection terminal
2	ML-LA <sup>-</sup>	Output	Drive coil connection terminal
3	ML-LB <sup>-</sup>	Output	
4	HA <sup>+</sup>	Input	Hall element connection terminal
5	HA <sup>-</sup>	Input	
6	HB <sup>+</sup>	Input	
7	HB <sup>-</sup>	Input	
8	FG OUT	Output	Square wave output as rotation detection signal at FF, REW.

PA

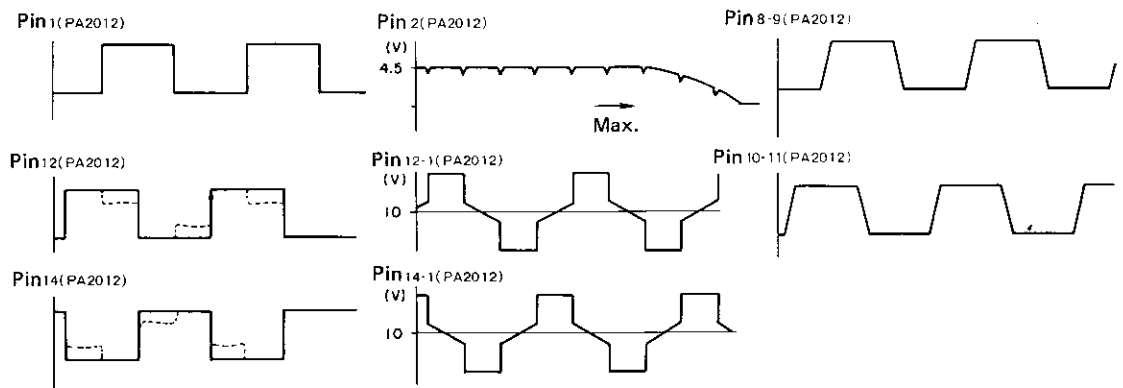
Pin No.	Pin Name	I/O	Function and Operation
9	L/R SW	Input	Reel motor (ML, MR) control input terminal
10	CG		(Coil ground terminal) External transistor ground side terminal.
11	GND		
12	Vcc		+B
13	HB OUT	Output	Tape counter output terminal, end detection
14	HA <sup>+</sup>	Input	Hall element connection terminal
15	HA <sup>-</sup>	Input	
16	HB <sup>-</sup>	Input	
17	HB <sup>+</sup>	Input	
18	MR-LB <sup>-</sup>	Input	Drive coil connection terminal
19	MR-LA <sup>-</sup>	Input	
20	Lco	Input	

APPLICATION	MOTOR DRIVE	NAME	PA2012
MODEL	CT-720	TYPE	Bipolar

**BLOCK DIAGRAM**



**WAVEFORM**

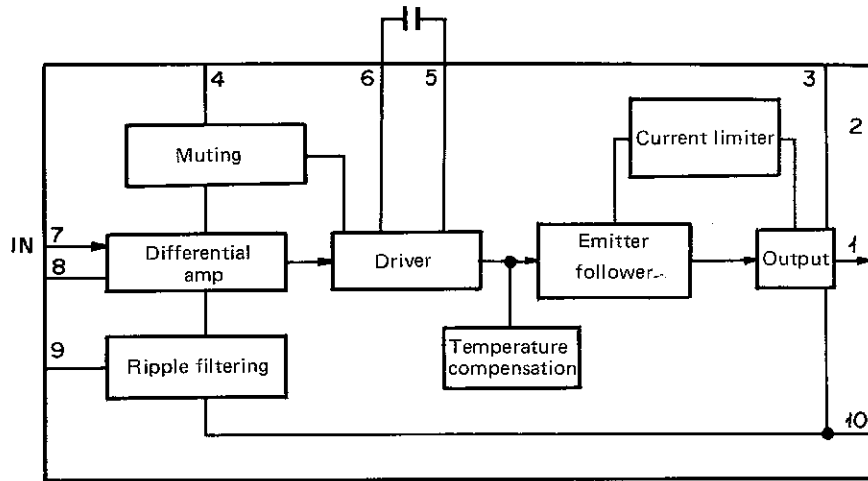


## PIN FUNCTIONS

PinNo.	Pin Name	I/O	Function and Operation
1	L COM	Output	Drive coil connection terminal.
2	CC <sub>T</sub>		Oscillation prevention capacitor connection terminal.
3	CC		
4	V <sub>cc</sub> 1		+ B1
5	V <sub>cc</sub> 2		+ B2 control IC power supply.
6	V REF	Input	Motor supply current is controlled by the input from PA2007 pins (11), (12). (Coil current increases as IN from V REF decreases.)
7	V IN	Input	
8	HA <sup>-</sup>	Input	Hall element connection terminal. (For current switching)
9	HA <sup>+</sup>	Input	
10	HB <sup>-</sup>	Input	
11	HB <sup>+</sup>	Input	
12	LA	Output	Drive coil connection terminal.
13	RF		Feedback resistor connection terminal.
14	LB	Output	Drive coil connection terminal.

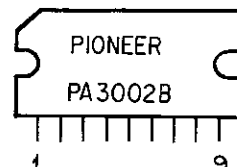
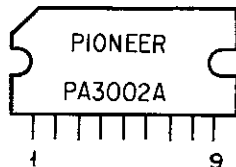
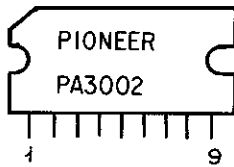
APPLICATION	AUDIO POWER AMP	NAME	PA3002
MODEL	SA-5500 II	TYPE	Silicon monolithic

**BLOCK DIAGRAM**



**PIN FUNCTIONS**

Pin No.	Standard Voltage (V)	Pin Name	Function and Operation
1	0	OUT	Output
2		NC	
3	2.5	Vcc 1	Output +B
4	2.5	Vcc 2	Muting and predriver +B
5	2.2	C <sub>EXT</sub>	Phase Compensation capacitor connection terminal
6	2.4	C <sub>EXT</sub>	
7	0	V <sub>IN(+)</sub>	Amp input
8	0	V <sub>IN(-)</sub>	NFB input
9		GND	
10	-2.5	V <sub>EE</sub>	Output, predriver -B



PA3002 enhanced characteristics type

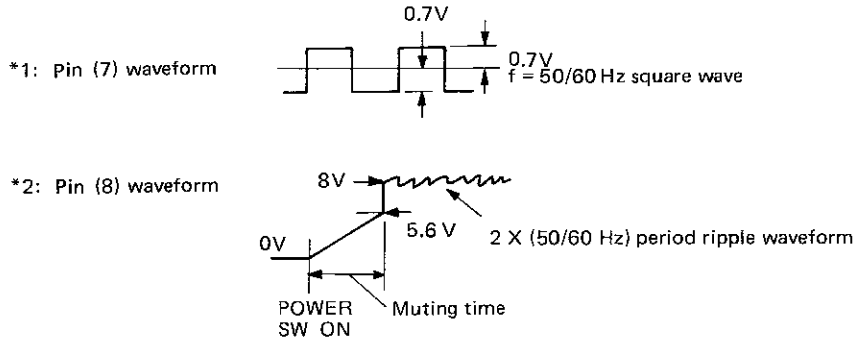
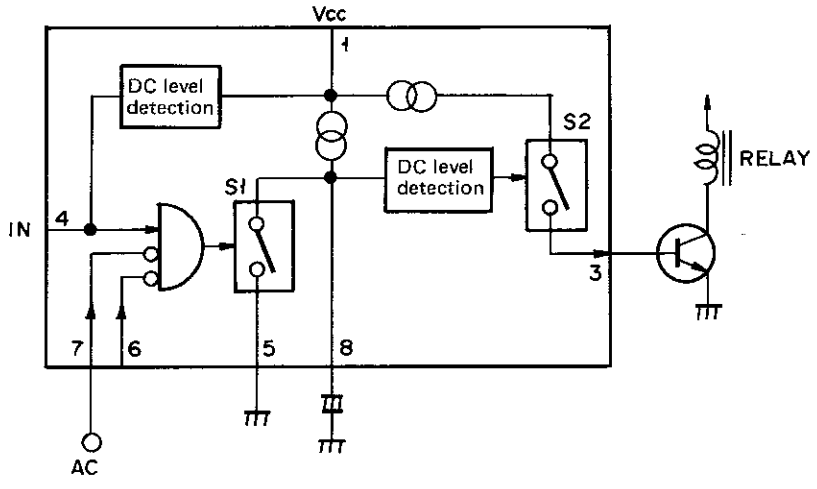
PA3002A enhanced characteristics type  
4 Ω output load guaranteed

Interchangeability PA3002 = PA3002A

When 3002 and 3002A are interchanged, normal value change is necessary.

APPLICATION	SPEAKER AND AMP PROTECTION	NAME	PA3004
MODEL	(EXCLUSIVE M10)	TYPE	SILICON MONOLITHIC

**BLOCK DIAGRAM**

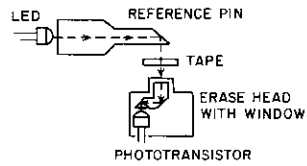
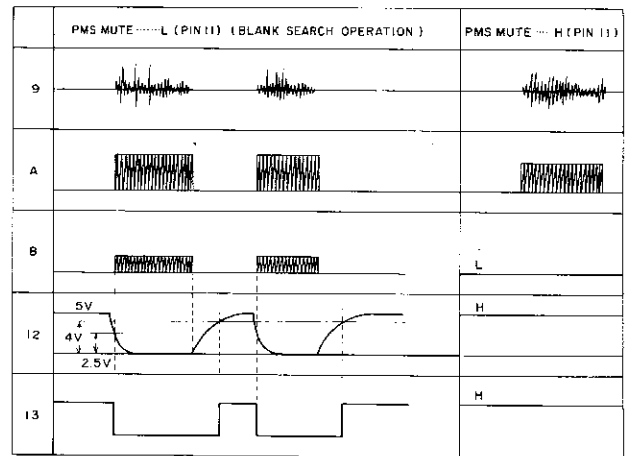
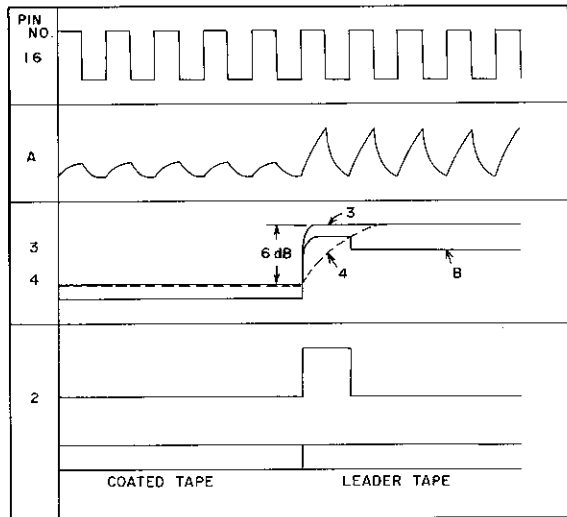
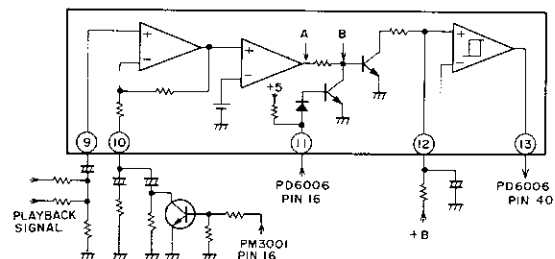
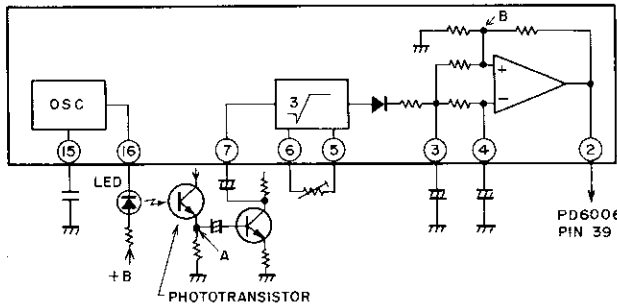


**PIN FUNCTIONS**

Pin No.	Standard Voltage (V)	Function and Operation
1	13	Vcc and +B voltage detection input (8.5 ~ 12V)
2		NC
3	0.6/0	Relay drive output (Relay ON/OFF)
4	0	IN center point voltage detection input (approx ±0.3 V)
5	0	GND
6	-7.3	VEE and -B voltage detection input (-4 ~ -6.5 V)
7	±0.7 (*1)	AC50/60 Hz MAX 0.1 mA (rms)
8	*2	Timing capacitor connection

APPLICATION	INTER-MUSIC GAP AND LEADER TAPE DETECTION	NAME	PA3010
MODEL	CT-7R	TYPE	SILICON MONOLITHIC

**BLOCK DIAGRAM**



PA

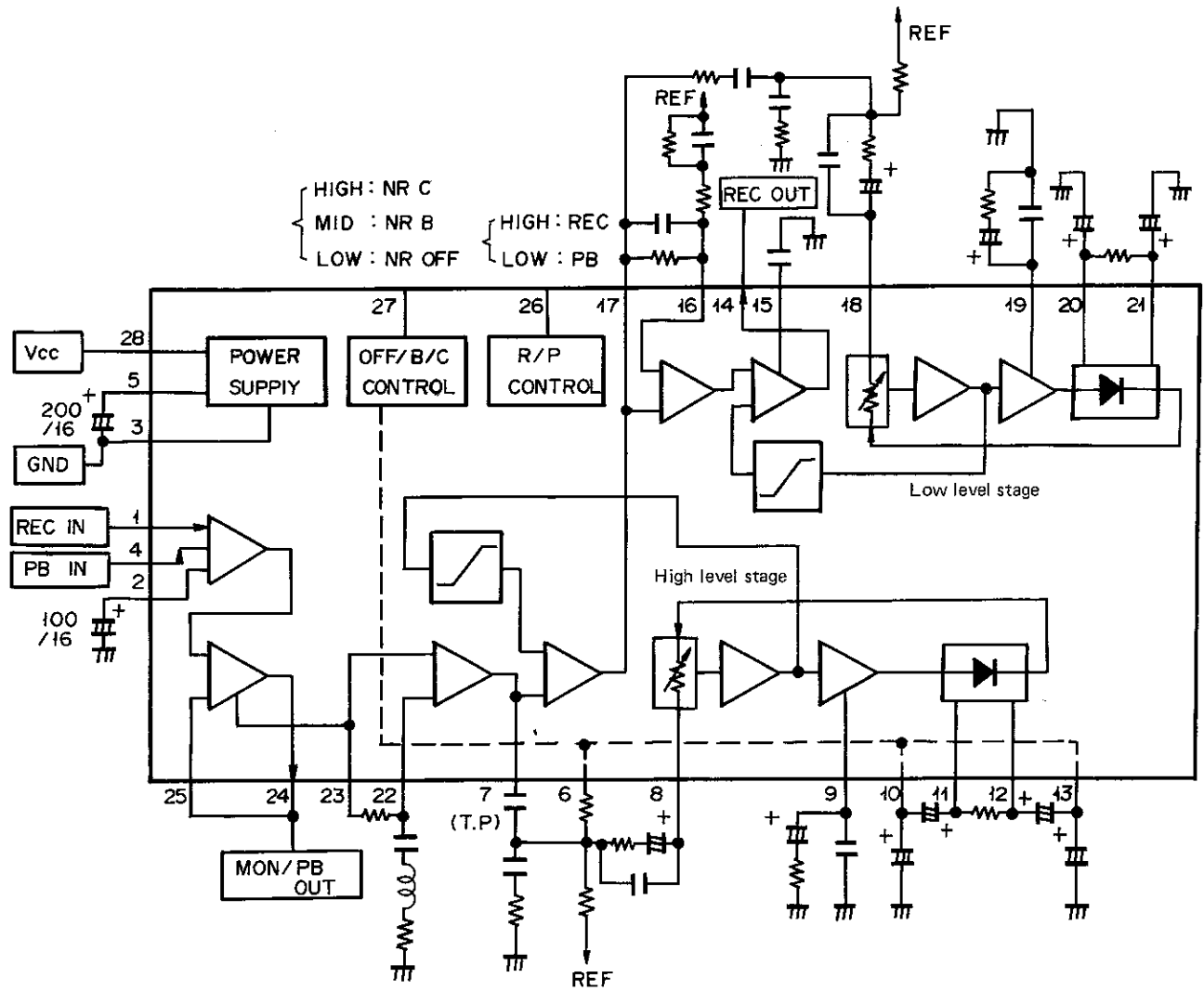
## PIN FUNCTIONS

Pin No.	Standard Voltage (V)	Pin Name	I/O	Function and Operation
1		GND		
2	0.2	SENSING OUT	Output	"L" (0.5 VMAX) at tape magnetized parts, "H" (4.9 V) at leader tape
3	1.9	SENSING T <sub>2</sub>		Pulse output at (2) by difference between time constant of capacitors connected when amount of light received at the phototransistor suddenly increases.
4	1.9	SENSING T <sub>1</sub>		
5	3.1	VR2		Connects the variable resistor which determines the leader tape detection level. (For phototransistor input compensation)
6	2	VR1		
7	5.3	SENSING IN	Input	Input from phototransistor
8	2.1	Vcc 1		
9	1.5	MS IN	Input	Inter-music gap detection input and playback signal input above -73 dB is judged as music.
10	1.5	MS GAIN		Determines the inter-music gap detection gain.
11	9.7	MS MUTE	Input	Inter-music gap not detected when muting input terminal is 1.6 V or greater.
12	5	MST		Inter-music gap detection and music detection time is determined by an external capacitor.
13	4.1	MS OUT	Output	Inter-music gap detection output H → inter-music gap detection L → music stage
14	5	Vcc 2		
15	2.1	OSC C		Frequency is determined by an external capacitor.
16	2.6	OSC OUT	Output	Output pin which drives the LED. 2 kHz pulse



APPLICATION	DOLBY B/C NOISE REDUCTION SYSTEM	NAME	PA3012
MODEL	CT-4	TYPE	SILICON MONOLITHIC

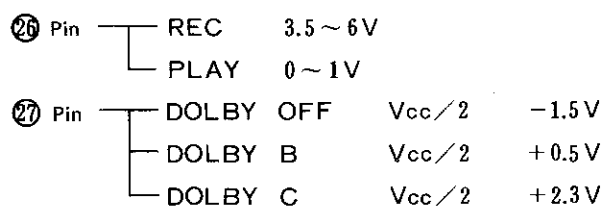
**BLOCK DIAGRAM**



**PIN FUNCTIONS**

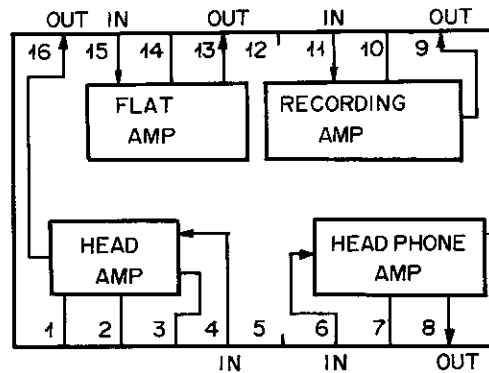
Pin No.	Standard Voltage (V)	Pin Name	I/O	Function and Operation
1	6.2	REC IN	Input	Recording system signal input
2	6.2	I A AC GND		Input amp inversion input
3		GND		
4	6.2	PB IN	Input	Playback system signal input
5	6.2	REF		Reference pin

Pin No.	Standard Voltage (V)	Pin Name	I/O	Function and Operation
6	6.2	S-1		High level stage side chain filter selector switch
7	6.2	SCF-1		High level stage side chain filter terminal
8	6.2	VCR-1		High level stage VCR terminal
9	6.2	HPA-1		High level stage high bias amp output
10	0	S-2		Time constant selector switch
11	0.9	T <sub>11</sub>		Time constant terminal
12	0.9	T <sub>12</sub>		
13	0	S-3		Time constant selector switch
14	5.5	REC OUT	Output	Encoder output
15	6.7	P.C		Phase compensation capacitor
16	6.2	AS		Antisaturation network
17	6.2	SCF-2		Low level stage side chain filter terminal
18	6.2	VCR-2		Low level stage VCR terminal
19	6.2	HPA-2	Output	Low level stage high bias amp output
20	0.9	T <sub>21</sub>		Low level stage time constant terminal
21	0.9	T <sub>22</sub>		
22	6.4	SS-2		Spectrum skewing terminal
23	6.4	SS-1		
24	6.5	MON P.B OUT	Output	Motor & decoder output
25	6.5	OA AC GND	Input	Output amp invert input
26		R/P		Record/playback mode control "H" → REC
27		OFF/BIG		Dolby NR mode control
28	1 2.4	Vcc		+B



APPLICATION	CASSETTE DECK PLAYBACK AMP IC	NAME	PA4001
MODEL	CT-F1000	TYPE	SILICON MONOLITHIC

**BLOCK DIAGRAM**



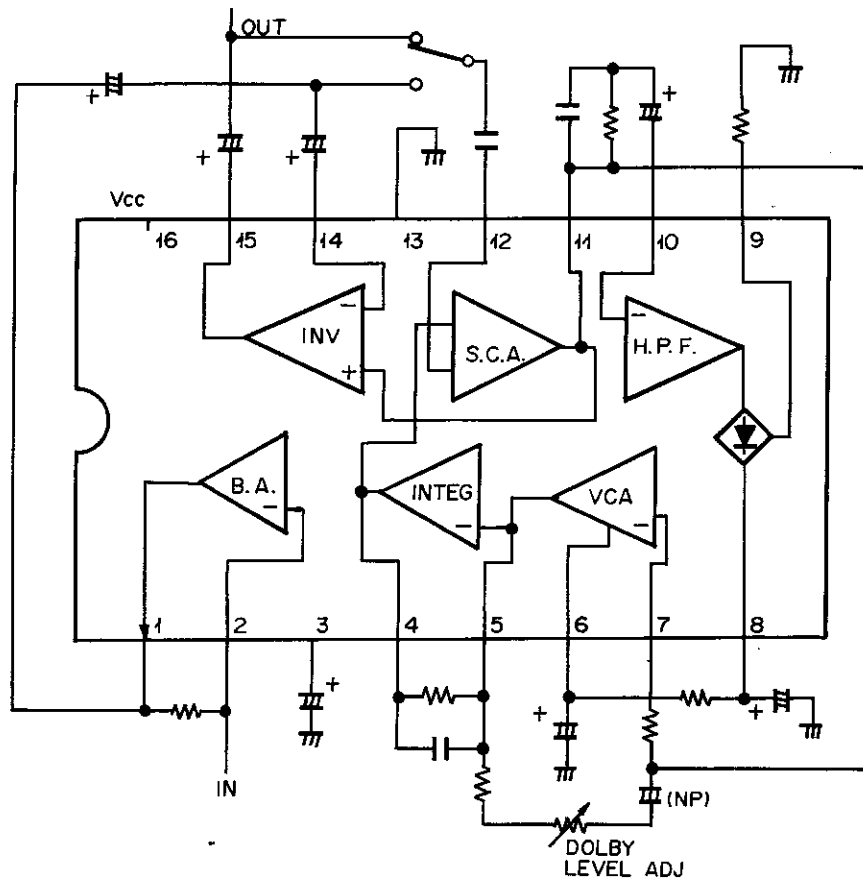
**PIN FUNCTIONS**

PinNo.	Standard Voltage (V)	Pin name	I/O	Function and Operation	
1	2 2.6	PHASE COM - 1		HEAD AMP phase compensating capacitor connection terminal	
2	1 2.2	PHASE COM - 2			
3	1 1.5	HA IN $\ominus$	Input	HEAD AMP	NFB input
4	1 1.5	HA IN $\oplus$	Input		Input terminal
5	0	GND			
6	1 1.3	HPA IN	Input	HEAD PHONE AMP	Input terminal
7	2 3.5	Vcc 2			Power supply terminal
8	1 1.5	HPA OUT	Output		Output
9	1 1.5	RA OUT	Output	REC AMP	Output
10	1 1.5	RA IN $\ominus$	Input		NFB input
11	1 0	RA IN $\oplus$	Input		Input
12	2 3.5	Vcc 1		Power supply terminal (H. A, F. A, REC A)	
13	1 1.5	FA OUT	Output	FLAT AMP	Output
14	1 1.5	FA IN $\ominus$	Input		NFB input
15	1 1.2	FA IN $\oplus$	Input		Input
16	1 1.5	HA OUT	Output	HEAD AMP output	

PA

APPLICATION	DOLBY B TYPE NOISE REDUCTION	NAME	PA4002
MODEL	(T-3050)	TYPE	SILICON MONOLITHIC IC

**BLOCK DIAGRAM**



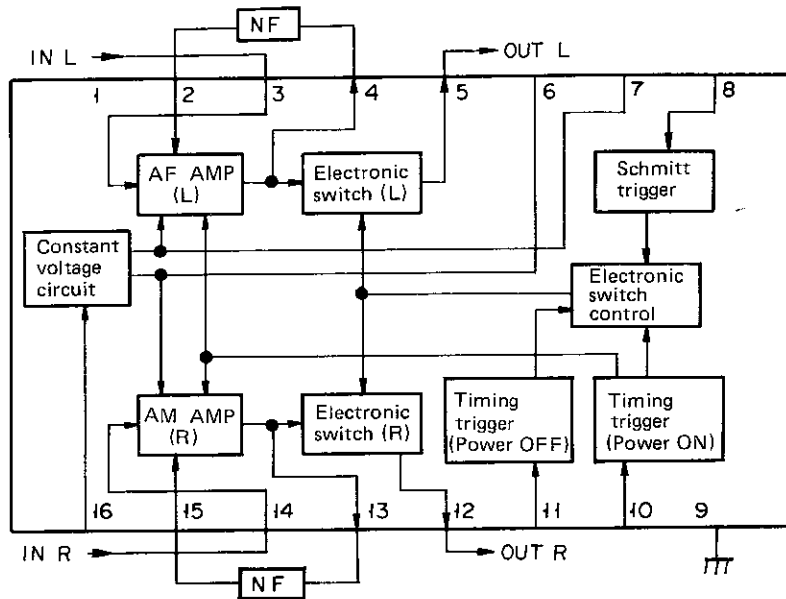
**PIN FUNCTIONS**

Pin No.	Standard Voltage (V)	Pin Name	I/O	Function and Operation
1	12.3	OUT 1	Output	Buffer amp output
2	12.3	IN 2	Input	Buffer amp input
3	12.3	REF F		Reference
4	12.3	C	Output	Integrator output (capacitor connection pin)
5	12.3	RC	Input	Integrator input (resistor, capacitor connection pin)
6		VC		Discriminator smoothing capacitor connection pin 2 (VCA control voltage)
7	12.3	R	Input	VCA input
8		VD		Discriminator smoothing capacitor connection pin 1

PinNo.	Standard Voltage (V)	Pin Name	I/O	Function and Operation
9		RD		Discriminator gain setting resistor connection pin
10	1 2.8	ZL	Input	Bypass amp input
11	1 2.3	OUT 3	Output	Side change amp output
12	1 2.3	IN3	Input	Side chain amp input
13	0	GND		
14	1 2.3	IN2	Input	Inverter amp input
15	1 2.3	OUT2	Output	Inverter amp output
16	2 4	Vcc		

APPLICATION	AF AMP MUTING	NAME	PA4004
MODEL	TX-8500 II	TYPE	C MOS

### BLOCK DIAGRAM



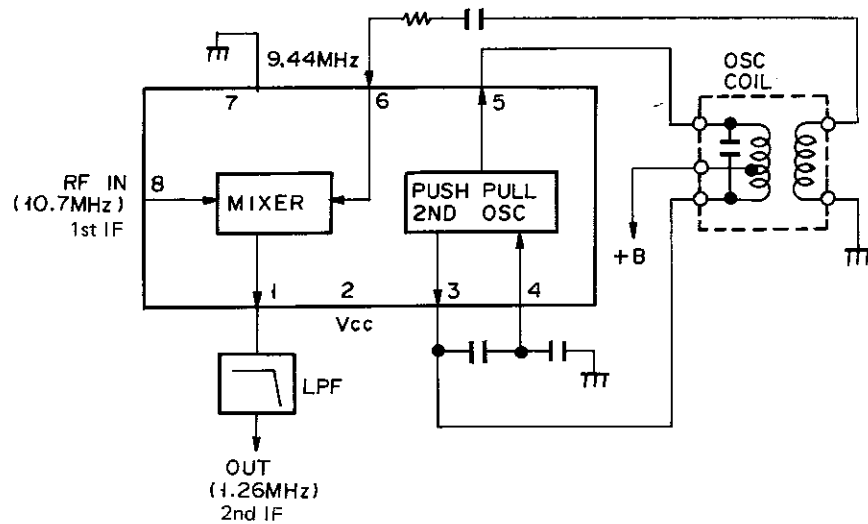
### PIN FUNCTIONS

Pin No.	Standard Voltage (V)	Pin Name	Function and Operation
1	12.2	BIAS	
2	6.45	NF IN L	NF loop input terminal
3	6.45	AUDIO IN L	Audio signal input
4	6.45	NF OUT L	NF loop output terminal
5	6.45	AUDIO OUT L	Audio signal output
6	6.45	V Ref R	Constant voltage output
7	6.45	V Ref L	
8	0	MUTE IN	MUTING ON at 1.3 ~ 5V
9	0	GND	
10	6.2	ON C	Muting control at power ON, MUT ON 4.6V or greater
11	12.2	OFF C	Muting control at power OFF
12	6.45	AUDIO OUT R	Audio signal output
13	6.45	NF OUT R	NF loop output terminal
14	6.45	AUDIO IN R	Audio signal output
15	6.45	NF IN R	NF loop input terminal
16	13	Vcc	

No signal voltage

APPLICATION	OSC, MIXER	NAME	PA5001
MODEL	F-9	TYPE	SILICON MONOLITHIC

**BLOCK DIAGRAM**

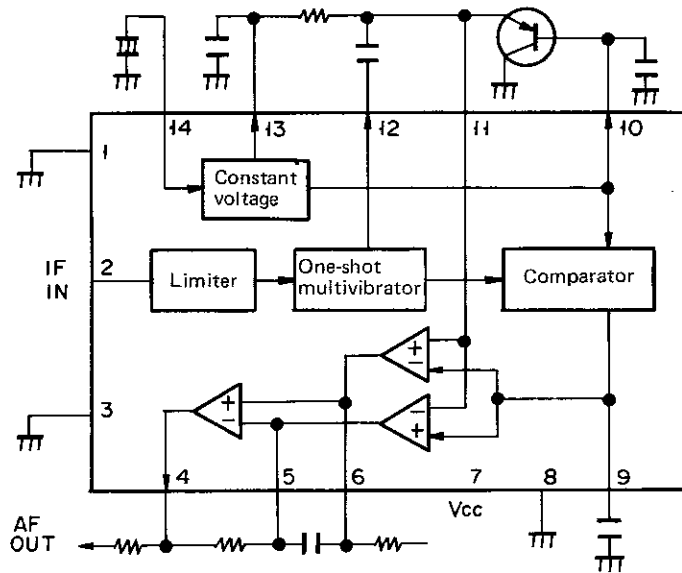


**PIN FUNCTIONS**

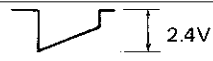

Pin No.	Standard Voltage (V)	Pin Name	Function and Operation
1	11.8	MIX OUT	10.7 MHz and 9.44 MHz differ
2	13	Vcc	
3	12.9	OSC 1 OUT	By external terminal Oscillator (9.44 MHz) formation
4	4.8	FEED BACK IN	
5	12.9	OSC 2 OUT	
6	4.8	LOCAL IN	9.44 MHz IN
7	0	GND	
8	4.8	RF IN	10.7 MHz (1st IF) IN

APPLICATION	FM PULSE COUNT DETECTION	NAME	PA5002
MODEL	F-9	TYPE	C MOS

**BLOCK DIAGRAM**



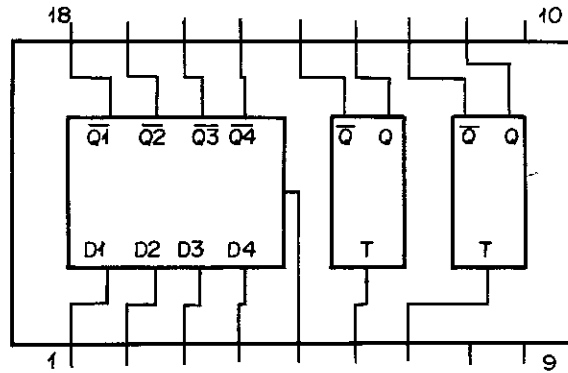
**PIN FUNCTIONS**

Pin No.	Standard Voltage (V)	Pin Name	Function and Operation
1	0	GND	
2	2.9	IF-IN	
3	0	GND	
4	6.9	AF OUT	FM detection output
5	7.1	POST AMP (-)	
6	7.1	POST AMP (+)	
7	13.7	VCC	
8	0	GND	
9	1.2	V-Ref (1)	
10	4.1	TIMING CR	
11		TIMING CR IN	
12		PULSE OUT	
13	8.5	V-Ref (2)	
14	7.6	V-Ref (3)	



APPLICATION	ELECTRONIC SWITCH DISPLAY	NAME	PD0004
MODEL	RX-70	TYPE	SILICON MONOLITHIC

**BLOCK DIAGRAM**









**PIN FUNCTIONS**

Pin No.	Pin Name	I/O	Function and Operation	
1	D <sub>1</sub>	Input	TAPE PLAY input	Active "H"
2	D <sub>2</sub>		PHONO input	
3	D <sub>3</sub>		TV/AUX input	
4	D <sub>4</sub>		TUNER	
5	EXTENSION	Input		
6	T <sub>1</sub>	Input	Not Used (GND)	
7	T <sub>2</sub>	Input		
8	V <sub>cc</sub>		+B	
9	BACK UP		Not used (NC)	
10	GND			
11	Q <sub>2</sub>	Output	Not used (NC)	
12	$\overline{Q}_2$			
13	Q <sub>1</sub>			
14	$\overline{Q}_1$			
15	$\overline{Q}_4$	Output	TUNER Output	Negative logic output
16	$\overline{Q}_3$		TV/AUX Output	
17	$\overline{Q}_2$		PHONO Output	
18	$\overline{Q}_1$		TAPE PLAY Output	

\*Pins (11) – (18) are open collector output.

TRUTH TABLE

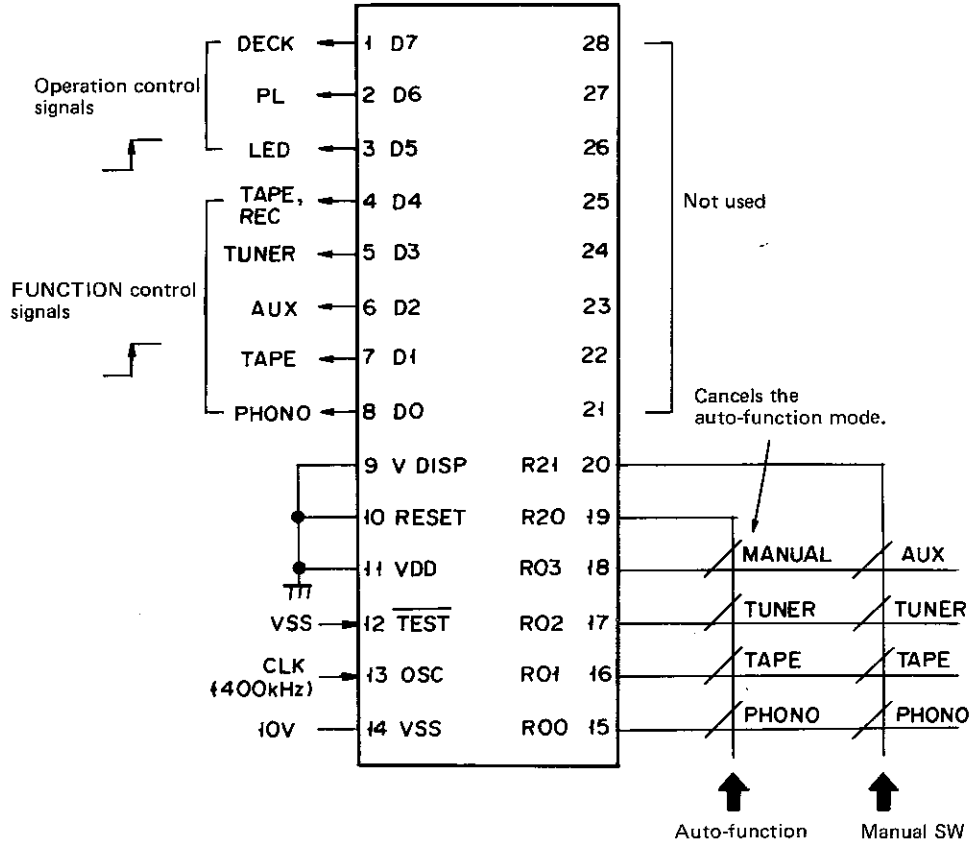
INPUT				OUTPUT			
D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	$\overline{Q_1}$	$\overline{Q_2}$	$\overline{Q_3}$	$\overline{Q_4}$
	L	L	L	L	H	H	H
L		L	L	H	L	H	H
L	L		L	H	H	L	H
L	L	L		H	H	H	L

INPUT	OUTPUT
T	$Q_n + 1$
	$\overline{Q_n}$
	$Q_n$

$\overline{Q_n}$ : Previous state is held.  
 $Q_n$ : Previous state is inverted.

APPLICATION	AMP FUNCTIONS CONTROL	NAME	PD3001
MODEL	SA-730	TYPE	P MOS 4 BIT COMPUTER

**BLOCK DIAGRAM**



FUNCTION	FUNCTION	D0	D1	D2	D3	D4	D5	D6	D7
POWER ON INITIALIZATION	FUNCTION → TUNER TAPE REC → ON	L	L	L	H	H	L	L	L
PHONO	FUNCTION → PHONO TAPE REC → ON PL CONT → ON	H	L	L	L	H	L		L
TAPE	FUNCTION → TAPE TAPE REC → ON or OFF PL CONT → OFF DECK CONT → ON	L	H	L	L	* H/L	L		H
AUX	FUNCTION → AUX TAPE REC → ON DECK CONT → OFF	L	L	H	L	H	L	L	L
TUNER	FUNCTION → TUNER TAPE REC → ON	L	L	L	H	H	L	L	L

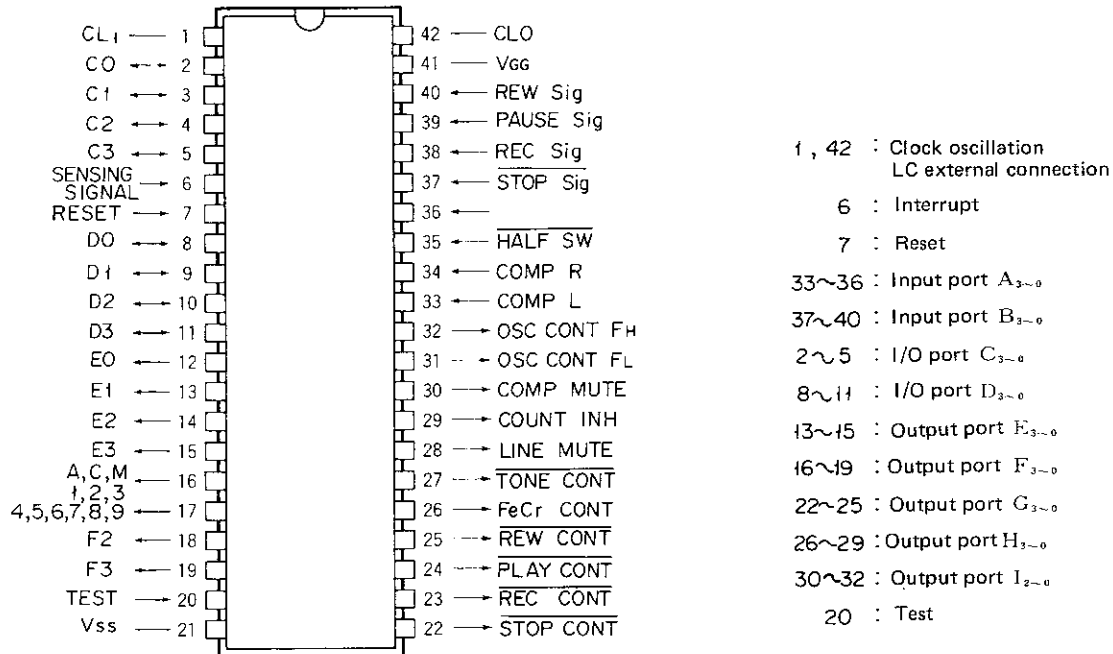
When the player is in the play state, a pulse is generated even if FUNCTION is switched from PHONO to another position.



\* Tape deck PLAY → H, other than PLAY → L

APPLICATION	AUTO-BLE	NAME	PD4005
MODEL	CT-A1	TYPE	P MOS 4 BIT $\mu$ COMPUTER

### PIN ARRANGEMENT





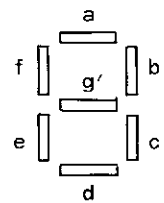
### PIN FUNCTIONS

PinNo.	Pin Name	I/O	Function and Operation
1	CL <sub>1</sub>	—	Internal clock oscillation LC external connection terminal.
2	C0	In and Output	DB (DATA BUS) 0 BIAS data, LEVEL data, EQ data, display data, external RAM address data, external RAM READ or WRITE data, and other DATA BUS.
3	C1	In and Output	
4	C2	In and Output	
5	C3	In and Output	
6	SENSING SIGNAL	Input	
7	RESET	Input	Reset input terminal. Reset when "H".
8	D0	In and Output	DB 4 and EQSW detection input, KEY scan input.
9	D1	In and Output	
10	D2	In and Output	
11	D3	In and Output	

PinNo.	Pin name	I/O	Function and Operation	
12	E 0	Output	LA (LATCH ADDRESS) 0	BIAS data, LEVEL data, EO data, display data latch address data output.
13	E 1	Output	LA 1	
14	E 2	Output	LA 2	
15	E 3	Output	LA 3	
16	A, C, M, 1, 2, 3	Output	AUTO, CALL, MEMORY, 1, 2, 3 KEY key scan output.	
17	4, 5, 6, 7, 8, 9	Output	4, 5, 6, 7, 8, 9 key signal output terminal.	
18	F 2	Output	External RAM write, read signal output terminal.	
19	F 3	Output		
20	TEST		CPU test terminal. Fixed at +5 V.	
21	V <sub>ss</sub>		+5 V supply	
22	STOP CONT	Output	STOP signal output. "L" output for 5ms at end of AUTO Operation rewind and error. Otherwise "H".	
23	REC CONT	Output	REC signal output	"L" output for 5ms at AUTO operation start.
24	PLAY CONT	Output	PLAY signal output.	
25	REW CONT	Output	REW signal output. "L" for 5ms at start of AUTO operation rewind.	
26	Fe-Cr CONT	Output	Fe-Cr signal output. "H" when Fe-Cr tape.	
27	TONE CONT	Output	TONE signal output. BIAS manual variable enable signal. Enable when "L".	
28	LINE MUTE	Output	AUTO Operation LINE MUTE signal.	
29	COUNT INH	Output	COUNT INH signal output. Auto stop operation by tape counter inhibit signal. "H" when AUTO. Otherwise Z.	
30	COMP MUTE	Output	A/D conversion comparator input signal MUTE signal output.	
31	OSC CONT F <sub>L</sub>	Output	Signal that turns on the F <sub>L</sub> signal.	
32	OSC CONT F <sub>H</sub>	Output	Signal that turns on the F <sub>H</sub> signal.	
33	COMP L	Input	A/D conversion comparator output sense input.	Lch
34	COMP R	Input		Rch
35	HALFSW	Input	Half SW signal input terminal. "L" when half.	
36	—		Not used.	
37	STOP Sig	Input	STOP signal input terminal. "L" when STOP.	
38	REC Sig	Input	REC signal input terminal. "H" when REC.	
39	PAUSE Sig	Input	PAUSE signal input terminal. "H" when PAUSE.	
40	REW Sig	Input	REW signal input terminal. "H" when REW.	
41	V <sub>GG</sub>		-5 V supply.	
42	CL 0		Internal clock oscillation LC external connection terminal.	



### PIN FUNCTIONS

Pin No.	Pin Name	I/O	Function and Operation		
1	CL0	Input	Clock input		
2	REC B	Input	REC detection	"L" → FWD direction REC possible	
3	REC A	Input		"L" → REV direction REC possible	
4	REC	Input	Memo card detection signal		
5	END PULSE	Input	TAPE END detection 		
6	COUNT	Input	Tape counter pulse input 1 count 2 pulses		
7	RES	Input	Reset terminal		
8	SENSE A		Inter-music gap detection signal judgement "L" → Music "H" → Unmagnetized part	FWD direction	
9	SENSE B			REW direction	
10	D2	Input	Key input terminal		
11	D3	Input			
12	FF	Output	Mechanism control output "H" Active		
13	PLAY	Output			
14	REW	Output			
15	DIR OUT	Output	Direction output 	"H" → REV	
16	F0		LED drive output		
17	PULSE OUT	Output	*1		
18	REC ENABLE	Output	REC ENABLE signal "H" → REC enable		
19	STOP	Output	Mechanism control output "H" Active		
20	TEST		Connects to +B		
21	Vss				
22	G0	Output	Key output terminal		
23	G1	Output			
24	G2	Output			
25	G3	Output			
26	H0	Output	Segment output	a	
27	H1	Output		b	
28	H2	Output		c	
29	H3	Output		d	
30	I0	Output		e	
31	I1	Output		f	
32	I2	Output		g'	
33	A0	Input	SELECTOR switch input		
34	A1	Input			
35	A2	Input			

PinNo.	Pin Name	I/O	Function and Operation	
36	STOP	Input	Mechanism detection signal input	"L" Active
37	FF	Input		"H" Active
38	PLAY	Input		"H" Active
39	REW	Input		"H" Active
40	DIR IN	Input	Direction switch input terminal	
41	VGG		Connects to -B	
42	CL <sub>1</sub>	Input	Clock input	

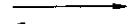


\*1 A pulse is output at the following state:

- When changed to tape running Example FF → REW
- When REW operation performed and counter reaches "0000" when tape running in FWD direction.
- When FF operation performed and counter reaches "0000" when tape running in REW direction.

Initial operation at POWER ON

- Program contents are cleared.
- Tape counter is reset to "0000".
- STOP signal is output for about 3.5 seconds.
- Tape direction is set to FWD.

#### TRUTH TABLE

Mode	PinNo.	33	34	35	Remarks
		H	H	L	Stopped by end detection.
		H	L	H	Reversed by end detection during FWD PLAY.
		H	L	L	Reversal contents repeated for one selection.
REPEAT OFF		L	H	L	Programmed contents repeated for one selection.
REPEAT ON		L	L	H	Programmed contents selected repeatedly.
PMS		L	H	H	Program heading.

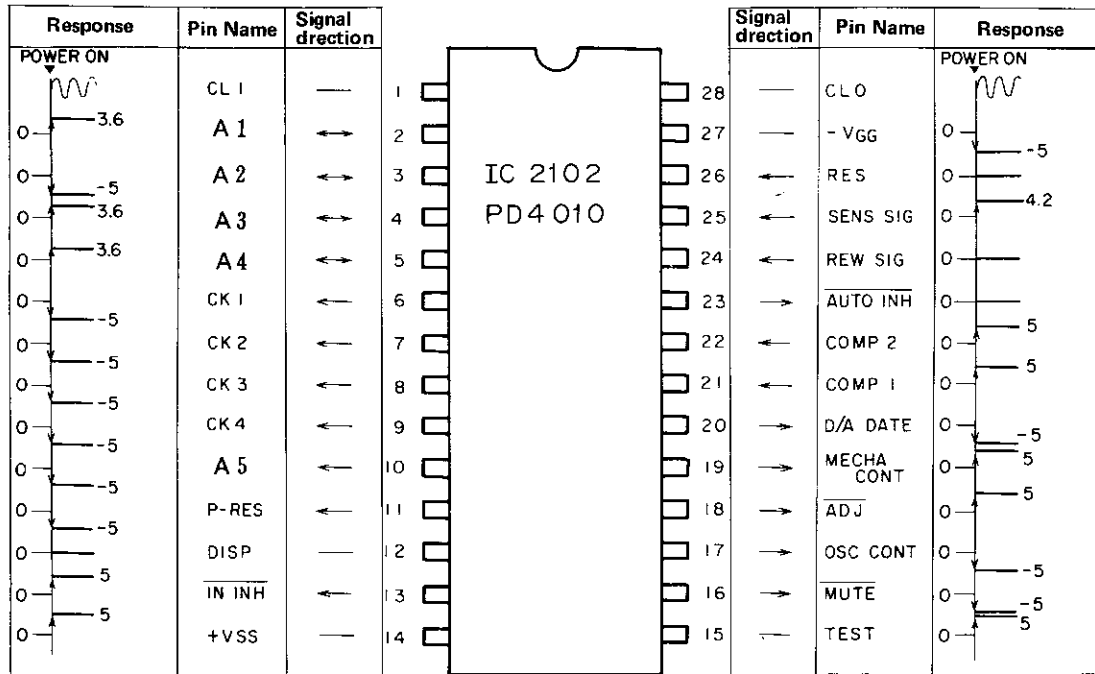
#### PINS VS MODE STATUS

Mode PinNo.	STOP	FF	REW	PLAY	REC/ PLAY	REW	STOP	PLAY	PLAY PAUSE	REC PAUSE
4	L	L	L	L	H	L	L	L	L	H
36	L	H	H	L	L	L	H	L	L	H
37	L	H	L	L	L	L	L	L	L	L
38	L	L	L	H	H	L	L	L	H	H
39	L	L	H	L	L	H	L	L	L	L



APPLICATION	AUTO BLE $\mu$ COMPUTER	NAME	PD4010
MODEL	(CT-970)	TYPE	P MOS 4 BIT $\mu$ COMPUTER

### PIN ARRANGEMENT



Note: Voltage value are approximate.

### PIN FUNCTIONS

Pin No.	Pin Name	I/O	Function and Operation
1	CL 1		Clock input
2	A/D 1	Output	AD conversion output LSB
3	A/D 2	Output	
4	A/D 3	Output	
5	A/D 4	Output	
6	CK 1	Output	
7	CK 2	Output	LEVEL clock output
8	CK 3	Output	EQ Lch clock output
9	CK 4	Output	EQ Rch clock output
10	A/D 5	Output	A/D conversion output MBS
11	P-RES	Output	A/D conversion peak hold reset pulse output. "H" → Reset

Pin No.	Pin Name	I/O	Function and Operation
12	DISP		Display output ※ 1
13	IN INH		Enables AUTO, TEST Operation input using A/D1 ~ A/D4. ※ 2
14	V <sub>SS</sub>		+B
15	TEST		CPU test pin. Usually connects to V <sub>SS</sub> .
16	MUTE	Output	Oscillation frequency control output ※ 3
17	OSC CONT	Output	
18	ADJ	Output	Shift register reset output "L" → AUTO operation, "H" → REW, AUTO cancel
19	MECHA CONT		Combined with D/A DATA output to set input to REW or STOP mode ※ 4
20	D/A DATA		
21	COMPL	Input	A/D conversion comparator input (Lch) (Rch)
22	COMPR	Input	
23	AUTO INH	Input	AUTO operation ON/OFF control input "H" → AUTO BLE ON
24	REW SIG	Input	REW control input "H" → REW
25	SEN SIG	Input	Sensing pulse input
26	RES		Reset. "H" → Reset, "L" → Start
27	V <sub>GG</sub>		-B
28	CL0		Clock input

※ 1 Display output pins

12 Pin	Contents
L	When data set at BLE and reference value.
H	BLE data is value set by AUTO.
L ↔ H	Auto operation.

※ 2 Operation specification pins

2	3	4	5	13	Contents
H	L	H	H	H	Normal input check
L	L	H	H	H	AUTO Operation
H	L	L	H	H	TEST A
H	L	H	L	H	TEST B
X	H	X	X	H	TEST C

X ..... H or L

TEST A . . . . Reference value (DC voltage corresponding to playback output 0 dB) is output at the A/D pin and the internal oscillator is made  $f_L$ .

The RAM inside the CPU is checked, and if normal, the display is turned off.

TEST B . . . . Internal oscillator is made  $f_H$ . Others are the same as TEST A.

TEST C . . . . If in the recording mode, sweep is performed from minimum to maximum in BIAS, LEVEL, EQ order. Moreover, sweep can be stopped at any position by resetting the recording mode.

If in a mode other than the recording mode, the mechanism is set to the REC mode.

When 256 sensing pulses are output, the STOP mode is set.

TEST Mode setting

TEST A

PM9001 TEST A pin (No. 36) is grounded.

TEST B

PM9001 TEST B pin (No. 35) is grounded.

TEST C

PM9001 TEST C pin (No. 34) is grounded.

TEST mode resetting

Power is turned off.

※ 3 Oscillation frequency output control

16	17	Contents
H	H	At AUTO, TEST A operation, $f_L$ (Frequ. L) is selected.
H	L	At AUTO, TEST B operation, $f_H$ (Frequ. R) is selected.

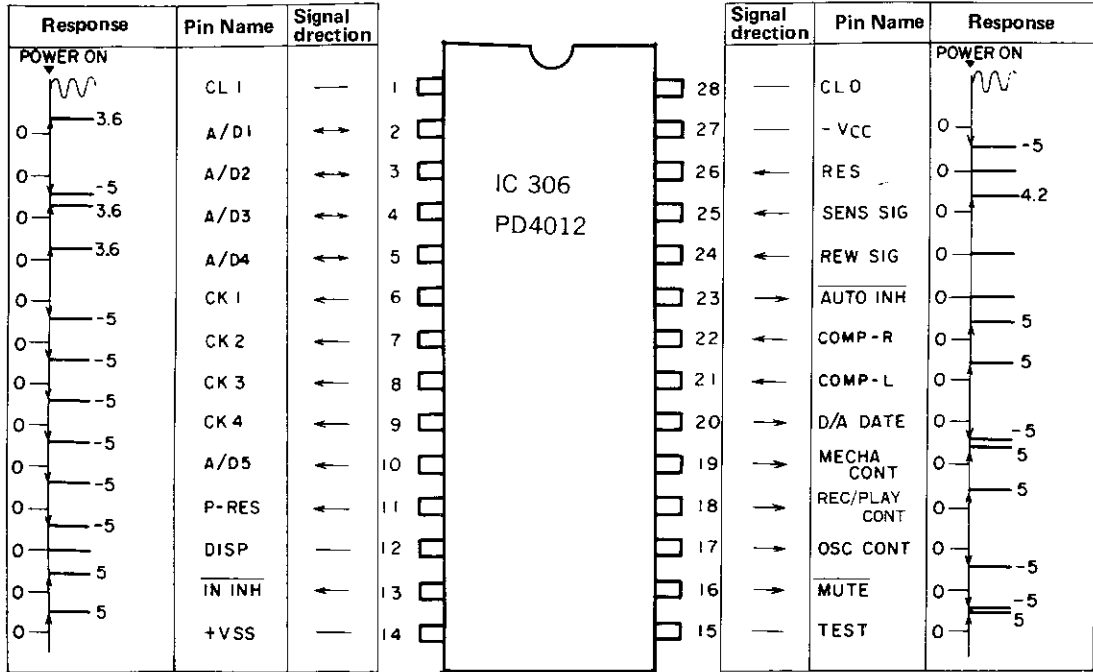
Pin 16 is "H" only at AUTO (ADJ mode) and TEST A, B.

※ 4 Mechanism control output

19	20	Contents
L	H	REW signal output
L	L	STOP signal output

APPLICATION	AUTO BLE	NAME	PD4012
MODEL	CT-9R	TYPE	P MOS 4 BIT $\mu$ COMPUTER



**PIN ARRANGEMENT**



Note: Voltage value are approximate.

**PIN FUNCTIONS**

Pin No.	Pin Name	I/O	Function and Operation
1	CL 1		Clock input
2	A/D 1	Output	A/D conversion output LSB
3	A/D 2	Output	
4	A/D 3	Output	
5	A/D 4	Output	
6	CK 1	Output	BIAS clock output
7	CK 2	Output	LEVEL clock output
8	CK 3	Output	EQ Lch clock output
9	CK 4	Output	EQ Rch clock output
10	A/D 5	Output	A/D conversion output MBS
11	P . RES	Output	A/D conversion peak hold reset pulse output "H" → Reset

PinNo.	Pin Name	I/O	Function and Operation
12	DISP	Output	Display output ※ 1
13	$\overline{\text{IN INH}}$		Enables AUTO, TEST operation input using A/D1–A/D4. ※ 2
14	V <sub>SS</sub>		+B
15	TEST		CPU test pin. Normally connects to V <sub>SS</sub> .
16	$\overline{\text{MUTE}}$	Output	Oscillation frequency control output. ※ 3
17	OSC CONT	Output	
18	REC/PLAY	Output	Outputs a pulse when AUTO operation started. 
19	$\overline{\text{MECHA CONT}}$		Outputs a pulse at the end of AUTO BLE during TIMER BLE operation. 
20	D/A DATA		
21	COMPL	Input	A/D conversion comparator input (Lch)
22	COMPR	Input	
23	$\overline{\text{AUTO INH}}$	Input	AUTO operation ON/OFF control input. "H" → AUTO BLE ON
24	REW SIG	Input	REW control input. "H" → REW
25	$\overline{\text{SEN SIG}}$	Input	Sensing pulse input.
26	RES		Reset pin. "H" → Reset "L" → Start
27	V <sub>GG</sub>		–B
28	CL0		Clock input.

※ 1 Display output pins

12 Pin	Contents
L	When data and reference value set at BLE
H	BLE data is the value set by AUTO
L → H	AUTO operation

※ 2 Operation specification input pins

2	3	4	5	13	Contents
L	X	X	X	H	AUTO operation
H	L	L	H	H	TEST mode
H	H	H	L	H	Timer BLE operation
H	L	H	X	H	Normal input check
X	X	X	X	L	TEST, BLE operation

X ..... H or L

- TEST A . . . . . The reference value (DC voltage corresponding to playback output 0 dB) is output at the A/D pin and the internal oscillator is made f<sub>L</sub>.
- TEST B . . . . . Internal oscillator is made f<sub>H</sub>. Others are the same as TEST A.
- TEST C . . . . . BIAS is in the record state.

TEST Mode setting

TEST A PM9001 TEST A pin (No. 36) is grounded.

TEST B TEST A mode performed, then REWIND key pressed, .

TEST C TEST B mode performed, REC/PLAY key pressed, then REW key pressed,  
and REC/PLAY key pressed again.

TEST mode resetting

Power set to OFF.

※ 3 Oscillation frequency control output

16	17	Contents
H	H	$f_L$ (Frequ. L) selected during AUTO, TEST A operation.
H	L	$f_H$ (Frequ. R) selected during AUTO, TEST B operation.

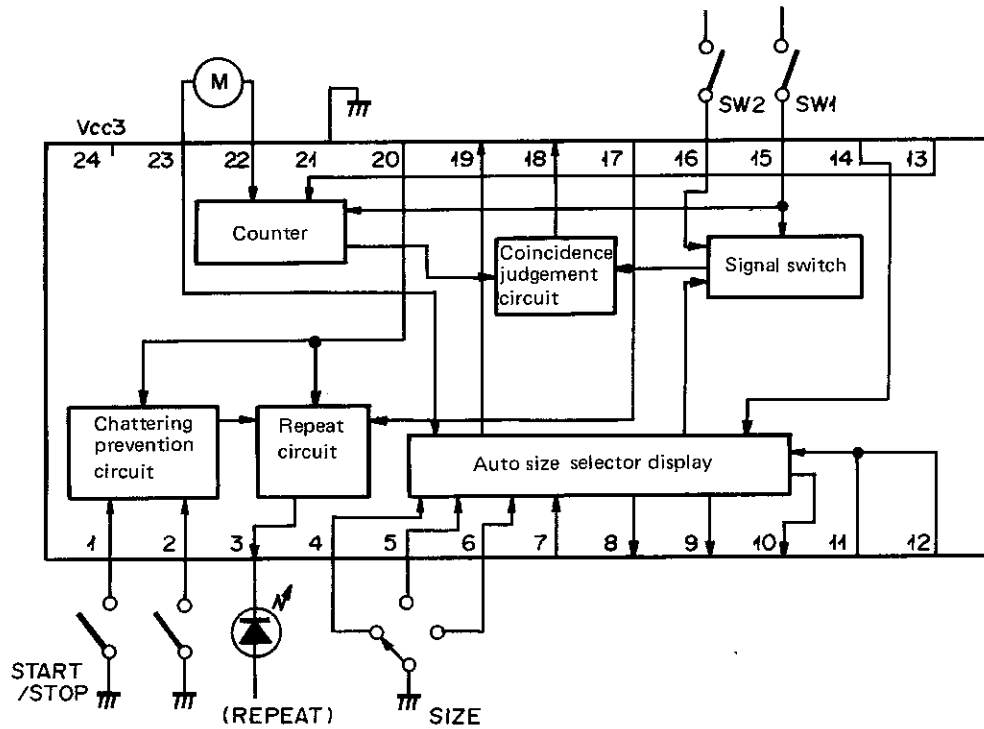
Pin 16 is "H" only at AUTO (ADJ mode) and TEST A, B.

※ 4 Mechanism control output

19	20	Contents
L	H	REW signal output
L	L	STOP signal output

APPLICATION	NUMBER OF SELECTIONS CONTROL	NAME	PD6001A
MODEL	PL-630	TYPE	BIPOLAR I <sup>2</sup> L

**BLOCK DIAGRAM**



**PIN FUNCTIONS**

Pin No.	Pin Name	I/O	Function and Operation
1	I <sub>11</sub>	Input	Start-stop switch input
2	I <sub>12</sub>	Input	Repeat switch input
3	O <sub>5</sub>	Output	Repeat display output  Lighted
4	I <sub>2</sub>	Input	30 cm size select input
5	I <sub>3</sub>	Input	25 cm size select input
6	I <sub>4</sub>	Input	17 cm size select input
7			Not used
8			
9			
10			
11	C <sub>1</sub>	Input	Operation mode select input
12	C <sub>2</sub>	Input	Operation mode select input
13	I <sub>1</sub>	Input	Lowering position sensor input  (During read-in only)

PinNo.	Pin Name	I/O	Function and Operation	
14			Not used	
15	I 9	Input	SW1 input	Mechanism position detection
16	I 10	Input	SW2 input	
17	I 13	Input	Rest sensor input	
18	O 4	Output	Down position output	
19	O 6	Output	No record output	
20	RESET		Power ON initial reset	
21	GND			
22	I 8	Input	CW input	"H" → 22, "L" → 23
23	I 7	Input	CCW input	"H" → 23, "L" → 22
24	Vcc 3			

### PINS VS MODE STATUS

Mode PinNo.	POWER ON	ARM UP	LEAD IN	ARM DOWN	PLAY	END ZOOM	ARM UP	RETURN	ARM DOWN
13	H	H	H		H	H	H	H	H
17	L	L		H	H	H	H	H	
18	H	H	H		H	H	H	H	H

### DOWN POSITION

	30cm	25cm	17cm
4	L	H	H
5	H	L	H
6	H	H	L

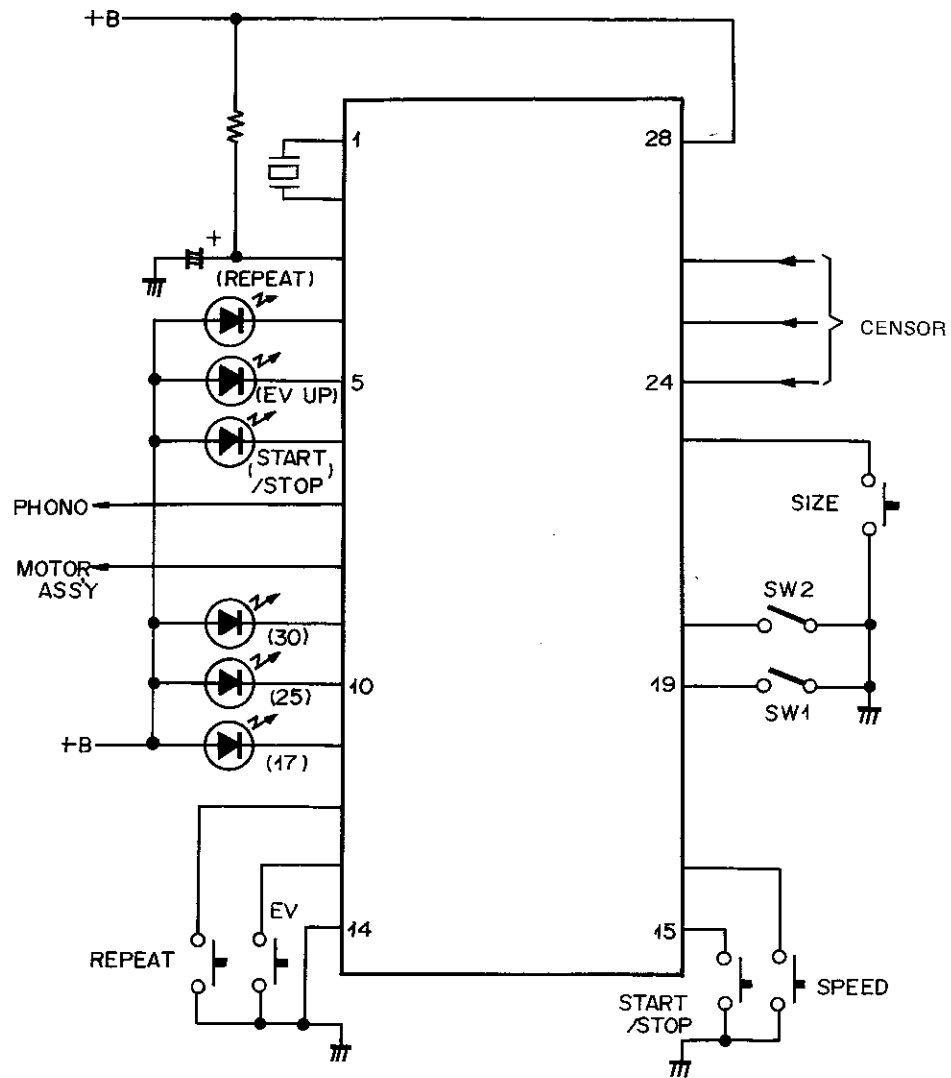
### AUTO/MANUAL SWITCHING

Mode PinNo.	AUTO	MANUAL
11	H	L
12	H	L

















APPLICATION	FULL AUTO PLAYER CONTROL	NAME	PD6003
MODEL	PL-9	TYPE	N MOS




















CONNECTION DIAGRAM



## PIN FUNCTIONS

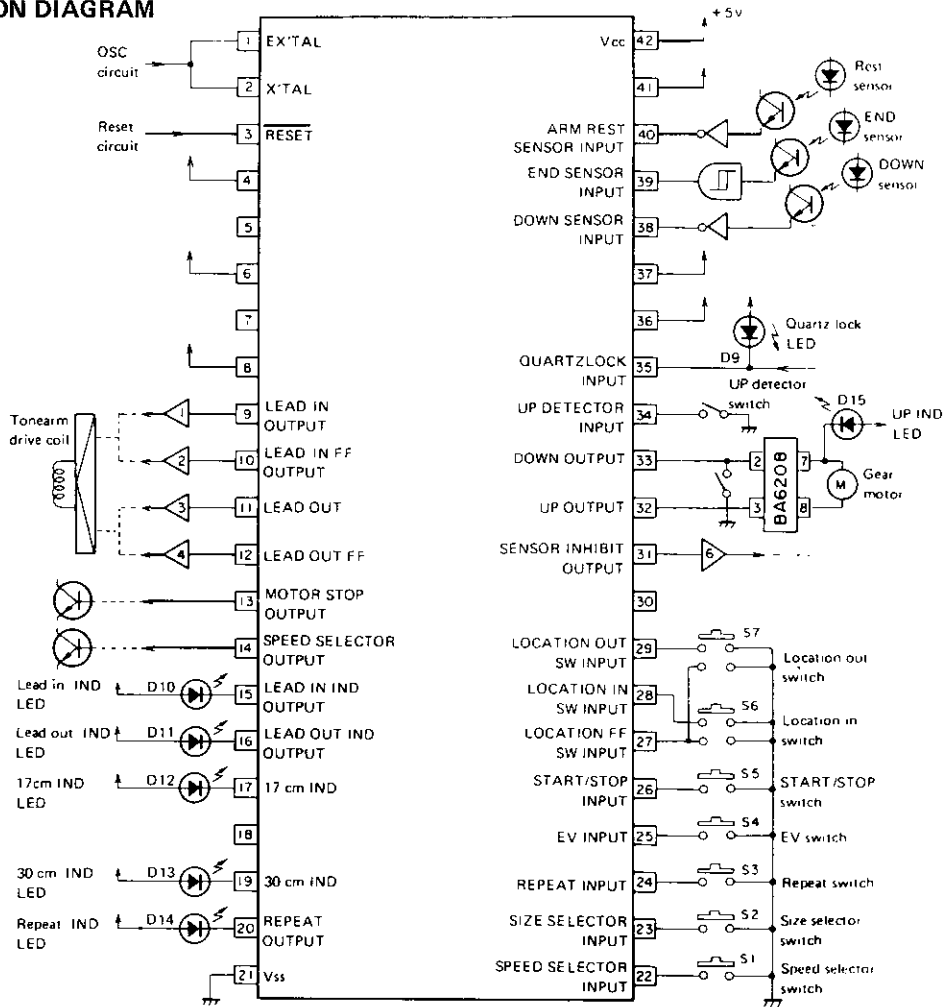
Pin No.	Pin Name	I/O	Function and Operation
1	EXTAL		External oscillator 3 MHz
2	XTAL		
3	RESET		Power ON initial reset
4	O <sub>0</sub>	Output	Repeat indication output 
5	O <sub>1</sub>	Output	Elevator UP display output 
6	O <sub>2</sub>	Output	Start-stop display output 
7	O <sub>3</sub>	Output	Speed switching output "H" → 33 rpm, "L" → 45 rpm
8	O <sub>4</sub>	Output	Phono motor stop output "H" → STOP, "L" → START
9	O <sub>5</sub>	Output	30 cm display output 
10	O <sub>6</sub>	Output	25 cm display output 
11	O <sub>7</sub>	Output	17 cm display output 
12	R <sub>0</sub>	Input	Repeat switch input 
13	R <sub>1</sub>	Input	Elevation switch input 
14	V <sub>SS</sub>		GND
15	R <sub>2</sub>	Input	Start-stop switch input 
16	R <sub>3</sub>	Input	Speed selector switch input 
17	R <sub>4</sub>	Output	CCW output 
18	R <sub>5</sub>	Output	CW output 
19	R <sub>6</sub>	Input	SW 1 input } mechanism position detection (See the timing chart.)
20	R <sub>7</sub>	Input	
21	R <sub>8</sub>		Not used.
22	R <sub>9</sub>		
23	R <sub>10</sub>	Input	Size selector switch input 
24	K <sub>0</sub>	Input	End B sensor input
25	K <sub>1</sub>	Input	End A sensor input
26	K <sub>2</sub>	Input	Down position sensor input 
27	K <sub>3</sub>		Auto/manual switching "H" → MANUAL, "L" → AUTO
28	V <sub>CC</sub>		

PINS VS MODE STATUS

Mode PinNo.	Power On	Arm Up	Lead In	Arm Down	Play	End Zoon	Arm Up	Auto Return	Arm Down
3		H	H	H	H	H	H	H	H
5	H	L	L	H	H	H	L	L	H
6	H	L	L	L	H	H	H	H	H
8	H		L	L	L	L	L	L	
12		H	H	H	H	H	H		H
15	H		H	H	H	H	H	H	H
17	H	H	L	H	H	H	H	H	
18	H	H	H	L	H	H		L	
19	L	L	H		L	L	H	H	
20	L	H	H	H	L	L	L	L	L
24	L	L		H	H		H		L
25	L	L		H	H		H		L
26	L	L		L	H	H	H		H





















APPLICATION	FULL AUTO PLAYER CONTROL	NAME	PD6005
MODEL	PL-L800	TYPE	N MOS

**CONNECTION DIAGRAM**



**PIN FUNCTIONS**

Pin No.	Pin Name	I/O	Function and Operation
1	EXTAL		External oscillator (3 MHz)
2	XTAL		
3	RESET		Power ON initial reset
4			Not used.
5			
6			
7			
8			

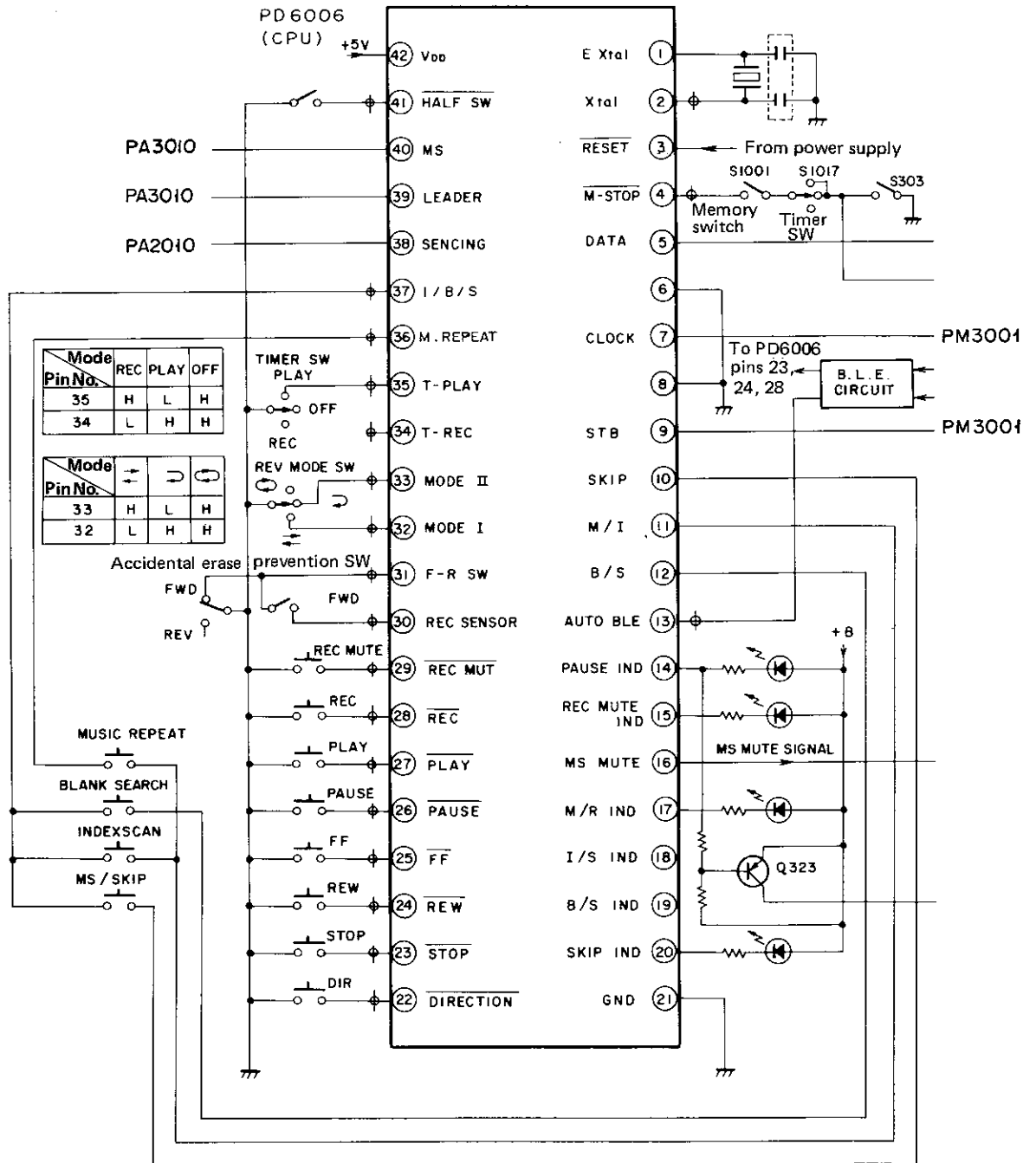
Pin No.	Pin Name	I/O	Function and Operation
9	P <sub>0</sub>	Output	Read in 
10	P <sub>1</sub>	Output	Read in FF 
11	P <sub>2</sub>	Output	Read out 
12	P <sub>3</sub>	Output	Read out FF 
13	O <sub>0</sub>	Output	Phono motor STOP H → STOP, L → START
14	O <sub>1</sub>	Output	Speed switching H → 33 rpm, L → 45 rpm
15	O <sub>2</sub>	Output	Read in display 
16	O <sub>3</sub>	Output	Read out display 
17	O <sub>4</sub>	Output	17 cm display 
18			Not used.
19	C <sub>6</sub>	Output	30 cm display 
20	O <sub>7</sub>	Output	Repeat display 
21	V <sub>SS</sub>		GND
22	R <sub>0</sub>	Input	Speed selector switch 
23	R <sub>1</sub>	Input	Size selector switch 
24	R <sub>2</sub>	Input	Repeat switch 
25	R <sub>3</sub>	Input	Elevation switch 
26	R <sub>4</sub>	Input	Start-stop switch 
27	R <sub>5</sub>	Input	Locate FF switch 
28	R <sub>6</sub>	Input	Locate in switch 
29	R <sub>7</sub>	Input	Locate out switch 
30			Not used.
31	R <sub>9</sub>	Output	Tracking sensor inhibit
32	R <sub>10</sub>	Output	Up output
33	R <sub>11</sub>	Output	Down output
34	R <sub>12</sub>	Input	Up detection switch 
35	R <sub>13</sub>	Input	Quartz lock input 
36			Not used.
37			Not used.
38	K <sub>0</sub>	Input	30 cm down position sensor 
39	K <sub>1</sub>	Input	End sensor
40	K <sub>2</sub>	Input	Reset sensor H → Rest, L → Not rest
41	K <sub>3</sub>		2/3 size switching H → 2, L → 3
42	V <sub>CC</sub>		+B supply

### PINS VS MODE STATUS


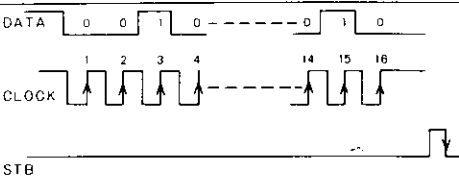
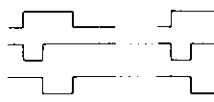
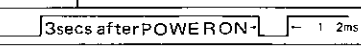

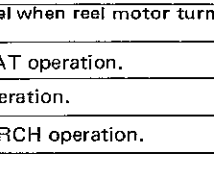
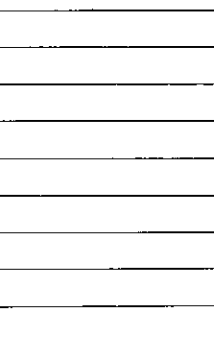

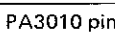
Mode PinNo.	Power On	Lead In	Arm Down	Play	End Zoon	Arm Up	Auto Return
9	H		H	H	H	H	H
10	H		H	H	H	H	H
11	H	H	H	H	H		
12	H	H	H	H	H		
13	H	L	L	L	L	L	
15	H	L	H	H	H	H	H
16	H	H	H	H	H	L	
31	H		H	H	H	H	
32	H	H	H	L	L	H	H
33	H	H	H	L	L	L	H
34	L	L	H	H	H	H	L
35	H		L	L	L	L	
38	L				L	L	
39	H		L	L		L	
40	H		L	L	L	L	

APPLICATION	3DD MECHANISM CONTROL MULTI-FUNCTION $\mu$ COMPUTER	NAME	PD6006
MODEL	CT-7R	TYPE	N MOS 4 BIT $\mu$ COMPUTER

CONNECTION DIAGRAM



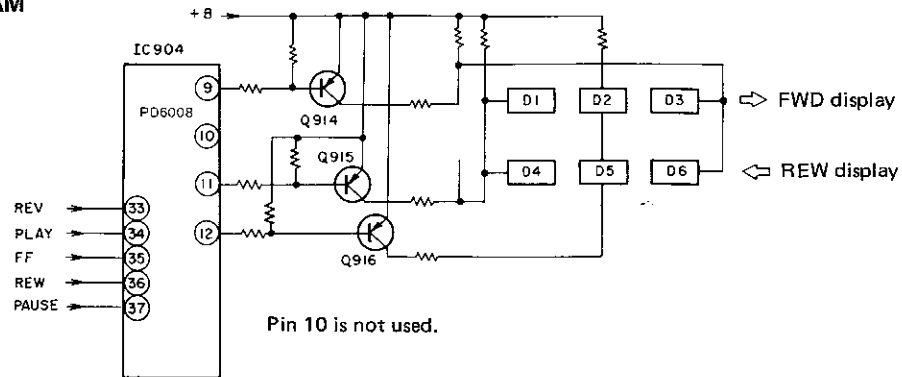
## PIN FUNCTIONS

Pin No.	Pin Name	I/O	Function and Operation		
1	Extal		Internal clock oscillator external circuit terminal f=3.58MHz  Pin 2-GND waveform		
2	Xtal				
3	RESET	Input	CPU reset input. Reset at L level, Normally H.		
4	M-STOP	Input	Memory STOP input. Memory stop operation at L level.		
5	DATA	Output	Data output to PM3001.		Serial output to PM3001.
6			Not used.		
7	CLOCK	Output	CLOCK output to PM3001.		
8			Not used.		
9	STB	Output	STB output to PM3001.		
10	SKIP	Output	SKIP key scan output		KEY SCAN output
11	M/R	Output	MUSIC REPEAT INDEX SCAN key scan output		
12	B/S	Output	BLANK SEARCH key scan output		
13	AUTO BLE	Output	AUTO BLE start output 		
14	PAUSE IND	Output	PAUSE display output. L level at PAUSE.		Display output
15	REC MUTE IND	Output	REC MUTE display output. L level at REC MUTE.		
16	MS MUTE	Output	MS MUTE output. PA3010 MS signal MUTE output. L level when reel motor turning during inter-music gap detection function operation.		
17	M/R IND	Output	MUSIC REPEAT display output. L level at MUSIC REPEAT operation.		Display output
18	I/S IND	Output	INDEX SCAN display output. L level at INDEX SCAN operation.		
19	B/S IND	Output	BLANK SEARCH display output. L level at BLANK SEARCH operation.		
20	SKIP IND	Output	SKIP display output. L level at SKIP operation.		
21	GND		GND		
22	DIRECTION	Input	DIR (direction) KEY input		Operation key input
23	STOP	Input	STOP key input		
24	REW	Input	REW key input		
25	FF	Input	FF key input		
26	PAUSE	Input	PAUSE key input		
27	PLAY	Input	PLAY key input		
28	REC	Input	REC/PLAY key input		
29	REC MUT	Input	REC MUTE key input		
30	REC detection	Input	REC detection switch input. REC enable when L level. REC not enable when H level.		Mechanism SW input
31	F-R SW	Input	FWD/REV detection switch input. FWD when L level. REV when H level.		
32	MODE I	Input	Mode selector switch input		Mode selector SW input
33	MODE II	Input			
34	T-REC	Input	Timer REC switch input		Timer mode SW input
35	T-PLAY	Input	Timer PLAY switch input		
36	M REPEAT	Input	MUSIC REPEAT key input		Key matrix input
37	I/B/S	Input	INDEX SCAN, BLANK SEARCH, SKIP key input		
38	SENCING	Input	Sensing pulse input. Input from PA2010 pin.  : When reel base rotating.		
39	LEADER	Input	Leader tape detection pulse input. Input from PA3010 pin 2.  : When leader tape detected.		
40	MS	Input	Inter-music signal input. H level when between music at PLAY, FF, REW while between music function operating.		
41	HALF SW	Input	Cassette half switch input. Half when L level. No half when H level.		
42	VDD		+5 V power supply.		



APPLICATION	REALTIME COUNTER	NAME	PD6008
MODEL	CT-9R	TYPE	N MOS 4 BIT $\mu$ COMPUTER

### BLOCK DIAGRAM



### TIMING CHART

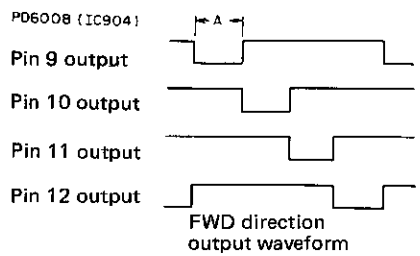


Fig. 1 Output signal (FWD)

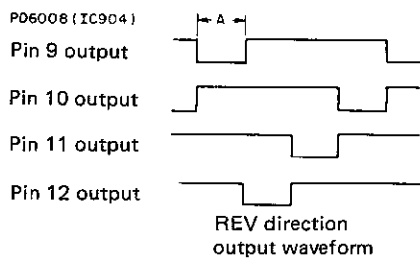

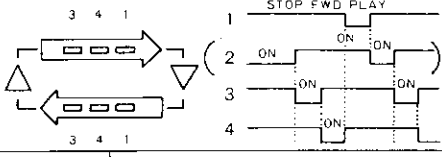

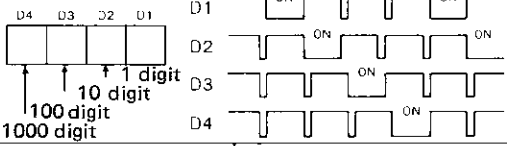
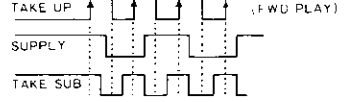




Fig. 2 Output signals (REV)

### TRUTH TABLE

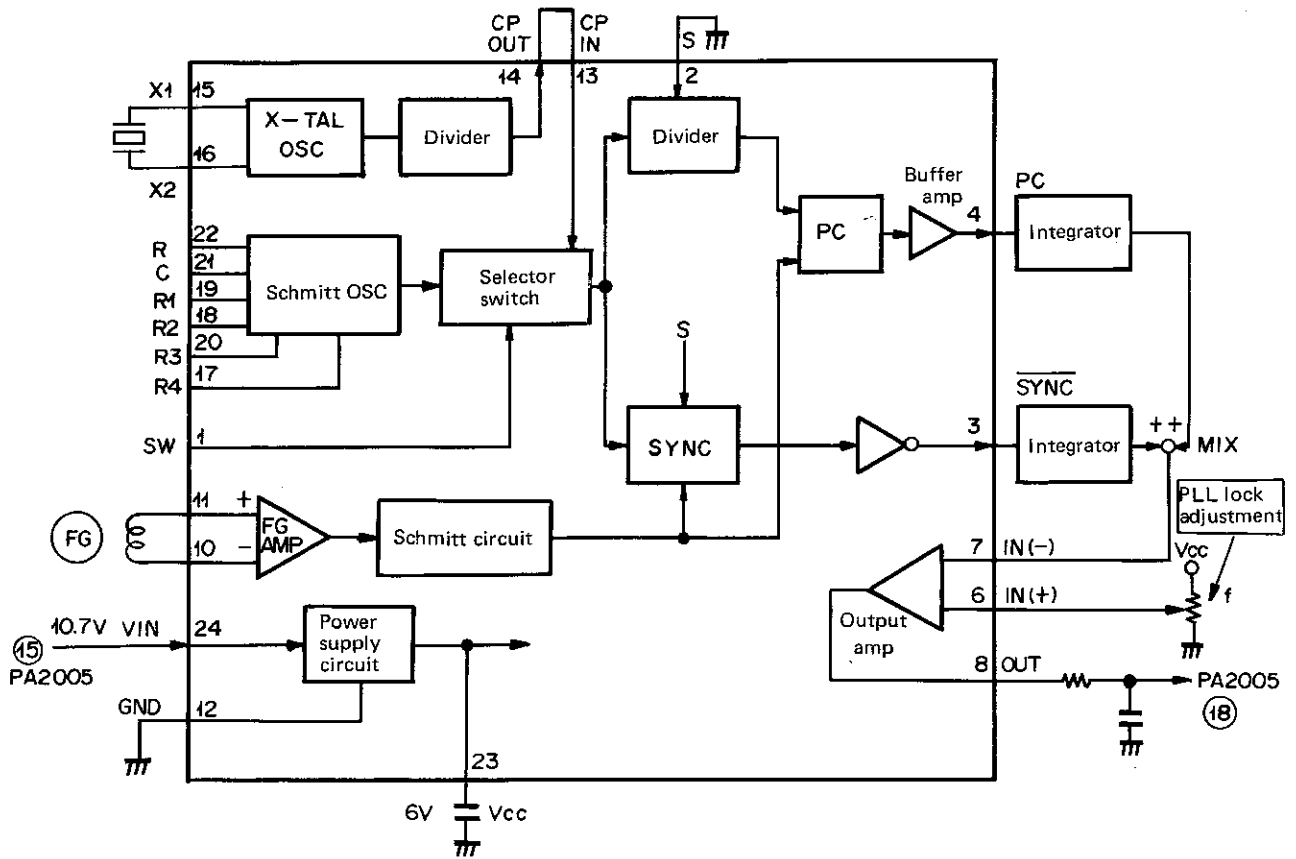
Input mode	PD6008 PIN No.					Output pin		
	33	34	35	36	37	9	11	12
FWD	STOP	L	H	H	H	H	H	H
	» (FF)	L	H	L	H	H	Fig. 1	A=60mS
	« (REW)	L	H	H	L	H	Fig. 2	A=60mS
	PLAY	L	L	H	H	H	Fig. 1	A=500mS
	REC	L	L	H	H	H		
	PLAY PAUSE	L	L	H	H	L		
	REC PAUSE	L	L	H	H	L	H	H
PAUSE	L	H	H	H	L			
REV	STOP	H	H	H	H	H	H	H
	» (FF)	H	H	L	H	H	Fig. 1	A=60mS
	« (REW)	H	H	H	L	H	Fig. 2	A=60mS
	PLAY	H	L	H	H	H	Fig. 2	A=500mS
	PLAY PAUSE	H	L	H	H	L		
	PAUSE	H	H	H	H	L	H	H

# PIN FUNCTIONS

Pin No.	Pin Name	I/O	Function and Operation																	
1	Extal		Internal clock oscillator external circuit terminal f=3.5 MHz  Pin 2 - GND waveform																	
2	Xtal																			
3	RESET	Input	CPU reset input. Reset at L level. Normally H.																	
4	IRQ		Not used.																	
5	S0																			
6	S1																			
7	SG/TO																			
8	TC																			
9	TAPE RUN OUT 1	Output	Tape running display1, Lighted when L		Tape running direction display output															
10	TAPE RUN OUT 2	Output	Tape running display2, Lighted when L																	
11	TAPE RUN OUT 3	Output	Tape running display3, Lighted when L																	
12	TAPE RUN OUT 4	Output	Tape running display4, Lighted when L																	
13	SEGMENT DATA a	Output	Segment data output a, ON when H.		Segment data output															
14	SEGMENT DATA b	Output	Segment data output b, ON when H.																	
15	SEGMENT DATA c	Output	Segment data output c, ON when H.																	
16	SEGMENT DATA d	Output	Segment data output d, ON when H.																	
17	SEGMENT DATA e	Output	Segment data output e, ON when H.																	
18	SEGMENT DATA f	Output	Segment data output f, ON when H.																	
19	SEGMENT DATA g	Output	Segment data output g, ON when H.																	
20	SEGMENT DATA DOT	Output	Segment data output DOT, ON when H.																	
21	GND		GND																	
22	R <sub>a</sub>		Not used.																	
23	R <sub>i</sub>	Input	CPU test program input. Fixed at H.																	
24	TAPE RUN SELECT	Input	Tape running display speed switching. H: Low speed, L: High speed Fixed at H.																	
25	TAPE COUNTER Q-PULSE	Output	L output when tape counter 0000. Normally H. Output regardless of the display mode. (Realtime, tape counter)																	
26	DIGIT 1	Output	Digit output 1		Digit output															
27	DIGIT 2	Output	Digit output 2																	
28	DIGIT 3	Output	Digit output 3																	
29	DIGIT 4	Output	Digit output 4																	
30	TAKE UP	Input	Reel motor R HA Hall element input		Hall element input															
31	SUPPLY	Input	Reel motor L HA Hall element input																	
32	TAKE SUB	Input	Reel motor R HB Hall element input																	
33	REV	Input	H when mechanism mode is REV. L when mechanism mode is FWD.	Mechanism mode input																
34	PLAY	Input	L when mechanism mode is PLAY, REC, PLAY/PAUSE, REC PAUSE.																	
35	FF	Input	L when mechanism mode is FF.																	
36	REW	Input	L when mechanism mode is REW.																	
37	PAUSE	Input	L when mechanism mode is PLAY PAUSE, REC/PAUSE.																	
38	TAPE SELECTOR 1	Input	Tape time selector SW input 1	<table border="1"> <tr> <td></td> <td>C-46L</td> <td>C-46</td> <td>C-60</td> <td>C-90</td> </tr> <tr> <td>Pin 38</td> <td>L</td> <td>L</td> <td>H</td> <td>H</td> </tr> <tr> <td>Pin 39</td> <td>L</td> <td>H</td> <td>L</td> <td>H</td> </tr> </table>		C-46L	C-46	C-60	C-90	Pin 38	L	L	H	H	Pin 39	L	H	L	H	Selector SW input
	C-46L	C-46	C-60		C-90															
Pin 38	L	L	H	H																
Pin 39	L	H	L	H																
39	TAPE SELECTOR 2	Input	Tape time selector SW input 2																	
40	DISPLAY MODE	Input	Counter display mode selector SW input. "L" at SW ON. R  Realtime counter  Tape counter																	
41	COUNTER RESET	Input	Tape counter reset SW input. "L" at SW ON.																	
42	V <sub>CC</sub>		+5 V power supply.																	

APPLICATION	MOTOR CONTROL	NAME	PD8001
MODEL	(CT-970)	TYPE	I <sup>2</sup> L

**BLOCK DIAGRAM**



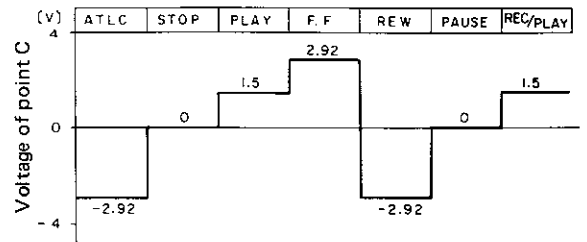
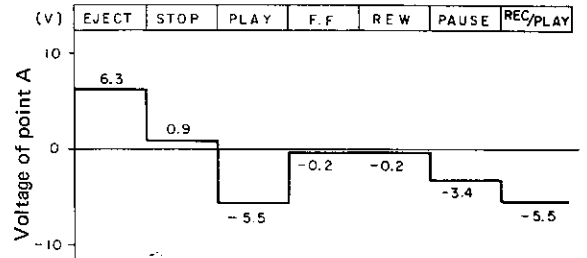
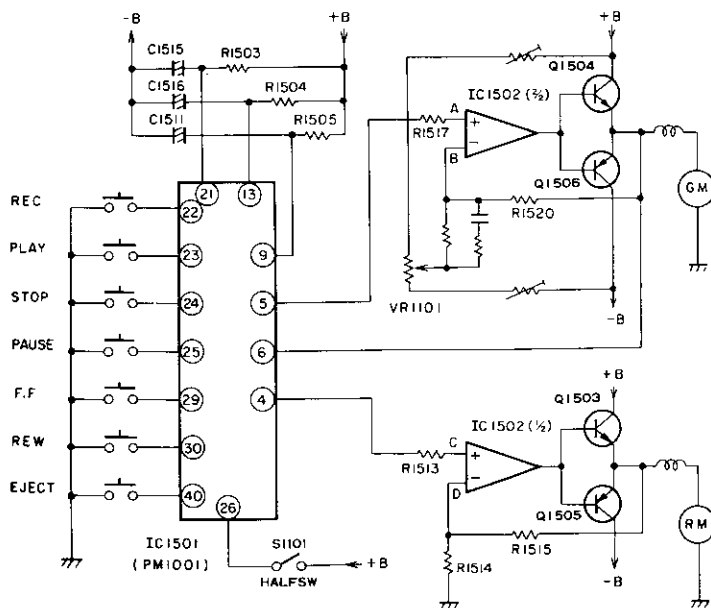
**PIN FUNCTIONS**

Pin No.	Voltage (V)	Pin Name	I/O	Function and Operation
1	(2.3)	SW	Input	X-Tal OSC and CR OSC selector SW
2	1	S	Input	Divider selector SW
3		SYNC	Output	F/V converter output
4		PC	Output	Phase comparator output
5	(0)	NC	—	Not used.
6	3.5	OP IN <sup>+</sup>	Input	SYNC, PC, mixing, integration
7	3.5 5	OP IN <sup>-</sup>	Input	OUTPUT AMP INPUT
8	4	OPOUT	Output	Output amp input
9	(0)	NC	—	Not used.

Pin No.	Voltage (V)	Pin Name	I/O	Function and Operation
10		FG <sup>-</sup>	Input	FG (frequency generator) input
11	0	FG <sup>+</sup>	Input	
12	0	GND	—	
13		CP IN	Input	
14		CPOUT	Output	
15	0.5	X1	Input	X-Tal OSC input
16	0.4	X2	Input	
17	(0)	R4	—	CROSC external terminal for pitch control
18	(0)	R2	—	
19	(0)	R1	—	
20	(0)	R3	—	
21	(0)	C	—	
22	(0)	R	—	
23	6	V <sub>CC</sub>	Output	Internal constant voltage output
24	1 0.5	V <sub>IN</sub>	Input	Power supply input

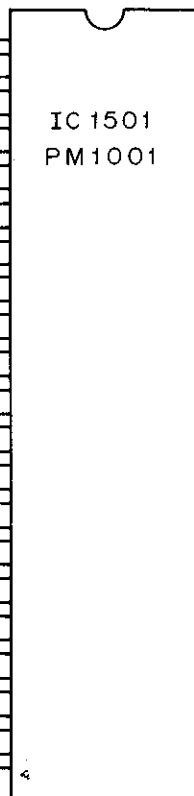
APPLICATION	TAPE DECK CONTROL	NAME	PM1001
MODEL	(CT-970)	TYPE	MONOLITHIC I <sup>2</sup> L

### CONNECTION DIAGRAM



### PIN ARRANGEMENT

Response	Pin Name	Signal direction
POWER ON		
0	-9 -B	-Vcc
0	9 +B	+Vcc
	GND	
0	3S ATLC	RM D/A
0	1	GM D/A
		INH IN
		REEL SIG
	+B	AUTO RWD
0	-2	MM CR2
0	9	PB MUTE
0	9	LINE MUTE
0	9	REC MUTE
0	-2	MM CR3
0	9	FF/CUE
0		REW/REV
0		PLAY
0		CUE/REV
0		REC
0		PAUSE
0		GND



Signal direction	Pin Name	Response
		POWER ON
←	EJECT	0
←	TIMER REC	
←	TIMER PLAY	
←	SIG IN	
←	GAIN ADJ	
←	PMS DELAY	
←	PMS DET C	
←	REPEAT	
←	CUE/REV	
←	PMS CONT	
←	REW	0
←	F.F.	0
←	REC PIN	H when cassette half tab. L when no cassette half tab.
←	RST	2.25
←	HALF	L if cassette half entered. H if cassette half not entered.
←	PAUSE	0
←	STOP	0
←	PLAY	0
←	REC	0
←	MM.CR1	-2

Note: Voltage value are approximate.

PM















## PIN FUNCTIONS

PinNo.	Pin Name	I/O	Function and Operation
1	-Vcc		- 9V
2	Vcc		+ 9V
3	GND		0V
4	RM DIA	Output	Reel motor drive D/A voltage output
5	GM DIA	Output	Gear motor drive D/A voltage output
6	INH IN		Inhibits pin (4) output while gear motor is moving. *1
7	REEL SIG	Input	Reel base rotation detection pulse is input.
8	AUTO REW		When "L", automatically reversed when auto operation stopped by tape end.
9	MM CR2		AUTO STOP time constant setting terminal
10	PB MUTE	Output	3 head muting output
11	LINE MUTE	Output	2 head muting output
12	REC MUTE	Output	2, 3 head recording muting output
13	MM CR3		MUTE TIMING time constant setting terminal
14	FF/CUE IND	Output	Mode display outputs
15	REW/REV IND	Output	
16	PLAY IND	Output	
17	CUE/REV IND	Output	
18	REC IND	Output	
19	PAUSE IND	Output	
20	GND		
21	MM CR1		Inter-mode delay time constant setting constant
22	REC	Input	Operation button input terminals
23	PLAY	Input	
24	STOP	Input	
25	PAUSE	Input	
26	HALF		Cassette half switch connection terminal "H" → No cassette half
27	RST		Reset input terminal "L" → Reset
28	REC PIN		Accidental erase prevention switch connection terminal "H" → Tab
29	FF	Input	Operation button input terminals
30	RWD	Input	
31	PMS		PMS terminal. PMS performed by FF, REW.
32	CUE/REV CONT		Not used.
33	REPEAT		One selection repeat at PMS.
34	PMS DETC		PMS detection time setting terminal
35	PMS DELAY		PMS operating time delay terminal

Pin No.	Pin Name	I/O	Function and Operation
36	GAIN ADJ		PMS sensitivity setting terminal
37	SIG IN		PMS input terminal
38	TIMER PLAY		Timer play terminal
39	TIMER REC		Timer record terminal
40	EJECT		Operation button input terminal

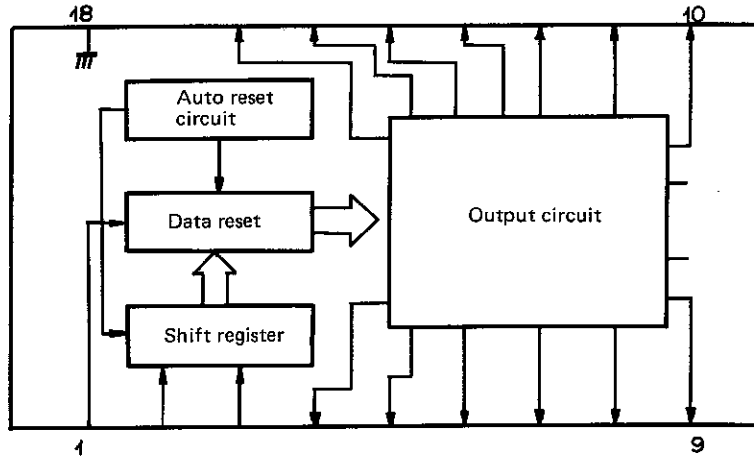
※ 1 When pin (6) exceeds  $\pm 3.4$  V, pin (4)  $\rightarrow$  0 V.

#### PINS VS MODE STATUS

Mode Pin No.	STOP	PLAY	PLAY PAUSE	STOP	FF	REW	PLAY	STOP	EJECT	REC PLAY	REC PAUSE
7	L		L	L		H		L	L		L
10	H		H	H	H	H		H	H		L
11	H		L	H	H	H		H	H		
12	H	L	L	H	H	H	L	H	H		L
18	L	L	L	L	L	L	L	L	L		H
23	H	L	H	H	H	H	L	H	H	L	H
25	H	H	L	H	H	H	H	H	H	H	L
29	H	H	H	H	L	H	H	H	H	H	H
30	H	H	H	H	H	L	H	H	H	H	H
40	L	L	L	L	L	L	L	L		L	L

APPLICATION	3DD MECHANISM $\mu$ COMPUTER OUTPUT EXPANSION	NAME	PM3001
MODEL	CT-7R	TYPE	SILICON MONOLITHIC I <sup>2</sup> L

**BLOCK DIAGRAM**



















**PIN FUNCTIONS**

Pin No.	Pin Name	I/O	Function and Operation
1	STB	Input	Serial data strobe input
2	CLOCK	Input	Clock input
3	DATA	Input	Serial data input
4	ML	Output	L reel motor control output
5	MR	Output	R reel motor control output
6	HEAD	Output	2 head use head switching relay drive output.
7	SOL - L	Output	Solenoid L drive output.
8	SOL - R	Output	Solenoid R drive output.
9	P-B MUTE	Output	3 head PLAY BACK MUTE control output.
10	LINE MUTE	Output	2 head LINE MUTE control output.
11	REC MUTE	Output	REC MUTE control output.
12	BIAS	Output	Bias oscillation control output.
13	REC	Output	2 head REC/PB switching output and REC LED drive output.
14	REW	Output	REW running display output.
15	FF	Output	FF running display output.
16	PLAY	Output	PLAY running display output.
17	Vcc		Power supply
18	GND		



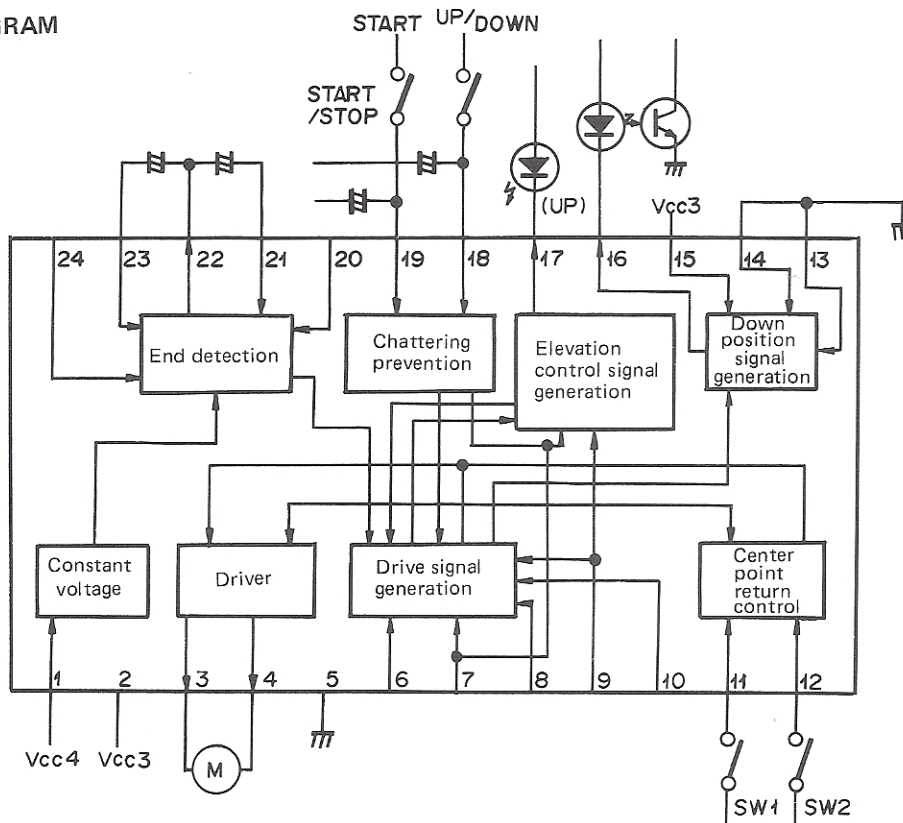
PINS VS MODE STATUS

MODE PIN No.	STOP	FF	STOP	REW	STOP	PLAY	STOP	PLAY PAUSE	STOP	REC PLAY	REC PAUSE
4	L	L	L		L	L	L	L	L	L	L
5	L		L	L	L	<sup>M</sup> 	L	L	L	<sup>M</sup> 	M
6	L	L	L	L	L	L	L	L	L		H
7	H	H	H	H	H		H	H	H		H
8	H	L	H	L	H	L	H	L	H	L	L
9	H	H	H	H	H		H	H	H		H
10	H	H	H	H	H		H	H	H		
11	H	H	H	H	H	H	H	H	H		H
12	L	L	L	L	L	L	L	L	L	H	
13	L	L	L	L	L	L	L	L	L		

M: 2.5V

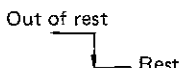
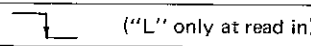
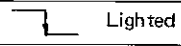



APPLICATION	RECORD PLAYER ELECTRONIC RETURN	NAME	PM6001
MODEL	PL-630	TYPE	Bipolar I <sup>2</sup> L

**BLOCK DIAGRAM**










**PIN FUNCTIONS**

Pin No.	Pin Name	I/O	Function and Operation	
1	V <sub>cc</sub> 4			
2	V <sub>cc</sub> 3			
3	O <sub>3</sub>	Output	CCW output	"H" → 3, "L" → 4
4	O <sub>2</sub>	Output	CW output	"H" → 4, "L" → 3
5	GND			
6	C <sub>1</sub>	Input	Auto/manual switching input	"H" auto "L" MANUAL
7	RESET		Power ON initial reset	
8	I <sub>8</sub>	Input	No record input	Yes No
9	I <sub>4</sub>	Input	Down position input	

PinNo.	Pin Name	I/O	Function and Operation
10	I <sub>3</sub>	Input	Rest sensor input 
11	I <sub>2</sub>	Input	SW 1 input } mechanism position detection
12	I <sub>1</sub>	Input	
13			Not used.
14			
15	F-I <sub>1</sub>		Vcc 3 pull-up
16	F-O <sub>1</sub>	Output	Down sensor output 
17	O <sub>4</sub>	Output	Arm UP display output 
18	I <sub>7</sub>	Input	UP/DOWN switch input 
19	I <sub>6</sub>	Input	Start-stop switch input 
20	TIMING SIG IN	Input	Phono motor FG signal input
21	CAP 2		End detection (voltage hold) capacitor terminal
22	COM		COM terminal
23	CAP 1		Same as CAP 2.
24	SIG IN		End detection signal input (4 ~ 6 V) 

PM

**PINS VS MODE STATUS**

MODE PinNo.	POWER ON	ARM UP	LEAD IN	ARM DOWN	PLAY	END ZOOM	ARM UP	RETURN	ARM DOWN
9	H	H	H		H	H	H	H	H
10	L	L		H	H	H	H	H	
16	H		L		H	H	H	H	H
24	L	L	L	L	L			L	L