

DAEWOO

Service Manual

**AUTOSTOP CASSETTE
PLAYER ELECTRONIC
TUNER (FM/MW)**

Model : AKF-3805V



**DAEWOO ELECTRONICS CO., LTD.
OVERSEAS SERVICE DEPT.**

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1. GENERAL SPECIFICATIONS

GENERAL SPECIFICATIONS

POWER SUPPLY13.8V (10.8-15.6V allowable)
 SPEAKER IMPEDANCE4 or 8 ohm
 OUT POWER.....MAXIMUM 7Wx2CH

TUNER

FM

MW

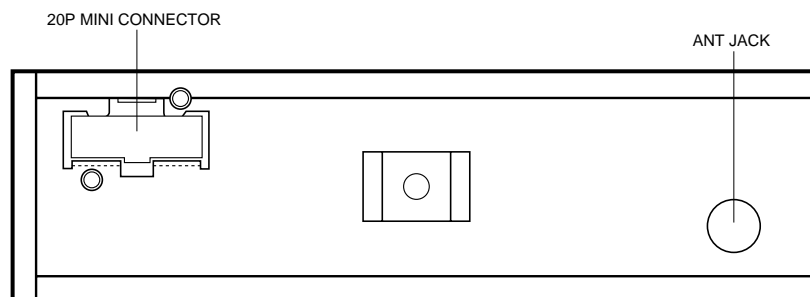
SENSITIVITY	10dB μ	25dB μ
STEREO SEPARATION.....	30dB μ	
SIGNAL TO NOISE RATIO	60dB	50dB
FREQUENCY RANGE	87.5~108MHz	522~1620KHz
INTERMEDIATE FREQUENCY.....	10.7MHz	450KHz

CASSETTE PLAYER

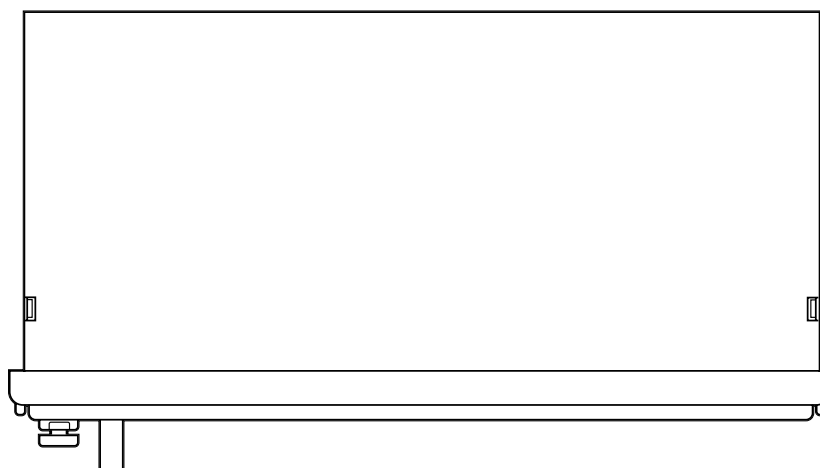
WOW AND FLUTTER0.35 (JIS RMS)
 SIGNAL TO NOISE RATIO50dB
 CHANNEL SEPARATION40dB
 FREQUENCY RESPONSE63~10KHz (\pm 3dB)
 TAPE SPEED4.75cm/sec

2. LINE DRAWING

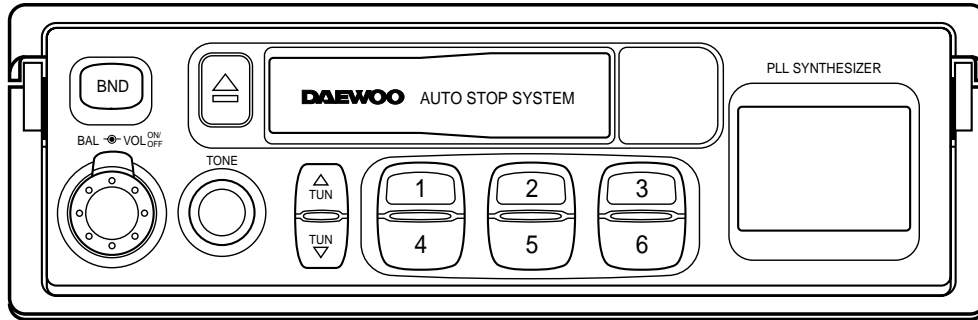
REAR SIDE



TOP SIDE

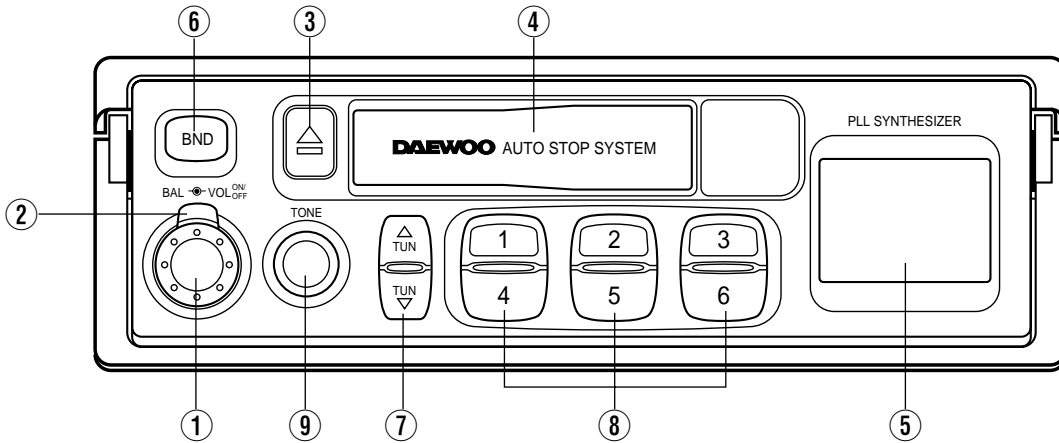


FRONT SIDE



3. PANEL INFORMATION

PANEL

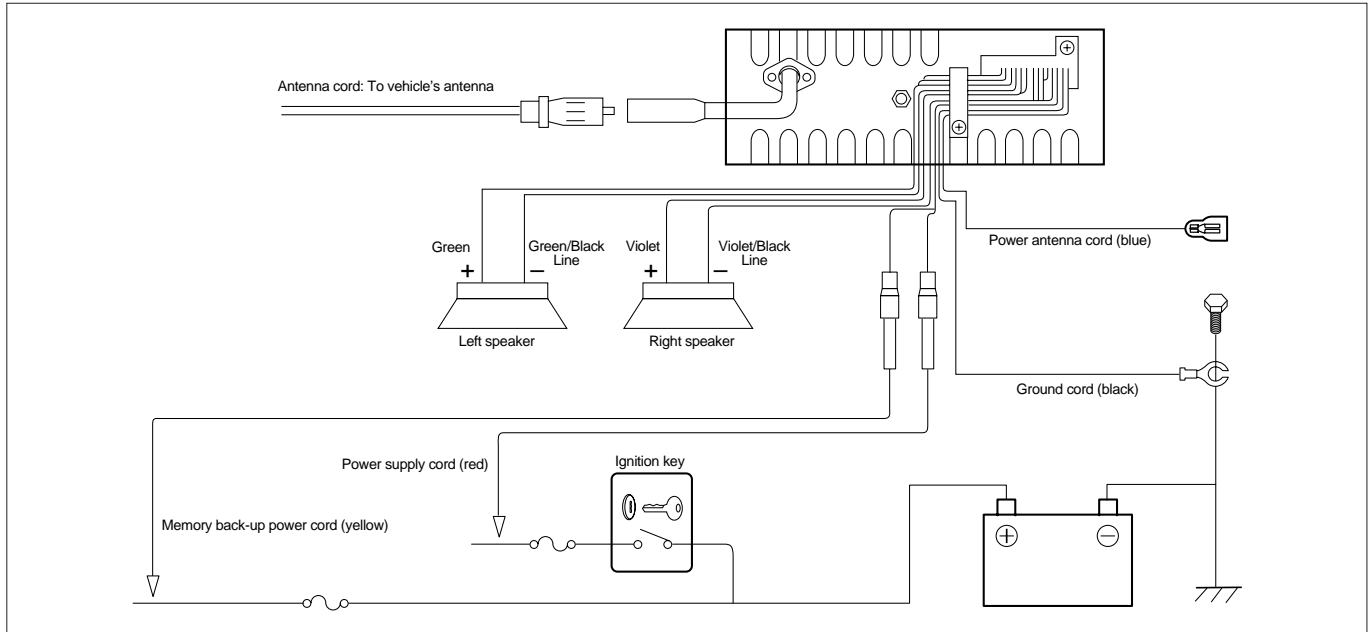


DISPLAY



PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
COM1	/	COM1	AM2	LW	FM2	1AD EG	1C	2B	2G	2C	COL	3B	3G	3C	P
COM2	COM2	/	AM1	MW	FM1	/	1B	2F	2E	2D	2A	3F	3E	3D	3A
PIN	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
COM1	4B	4G	4C	LOU	50	CH	PM	/	5B	5G	5C	/	MO	/	/
COM2	4F	4E	4D	4A	/	/	AM	5A	5F	5E	5D	LOC	MO	/	/

4. CONNECTIONS



5. OPERATIONS

1. OFF/VOL (Volume)

Power ON/OFF : The power is turned OFF when the control is rotated counterclockwise as far as it will go ; it is turned ON when the control is rotated clockwise.

Volume adjustment : When the control is rotated clockwise past the point at which the power is turned on, the volume will be increased. Conversely, when it is rotated counterclockwise, it will be reduced.

2. BALANCE Control

Balance adjustment : The volume balance between the left and right channels can be adjusted. Rotate it counterclockwise then the volume at the right is low or rotate it clockwise when the volume at the left is low and adjust the balance between the left and right channels. Normally the control is kept at its center(clickstop) position. After having performed the adjustment, release the control.

3. EJECT/Fast Forward Switch

Pressing this switch sets the tape to the fast forward mode, the tape run in the same direction quickly. To release, press this switch and this will return the tape to normally play back. Pressing this switch more will cause the tape to be ejected from the loading slot.

4. Tape Loading Slot

Load the cassette tape with the side of the tape visible to the right. Once you insert the tape it will automatically start playing.

5. LCD

6. BAND Switch (FM1, FM2, MW)

Push this button to select desired Radio band FM1, FM2, MW.

7. Manual tuning UP/DOWN

Use manual tuning when stations are too weak to be picked up by seek tuning.

* Each press of the (T-UP) side of button increases the frequency in 50kHz steps in the FM band, 9kHz in the MW band. Pressing the (T-DN) side of button decreases the frequency, Holding down either side of button changes the frequency at high speed.

8. PRESET STATION Swtiches (1-6)

A total of 6 MW and 12 FM stations can be preset into the six preset station switch. When any one of 1 to 6 switch is pressed for 2 seconds or longer, the frequency currently being received is written to the preset memory associated with the switch pressed. When any one of 1 to 6 switch is pressed for less than 2 seconds, the contents of the preset memory is called as soon as the switch is released.

9. TONE Control

Set the TONE response by rotating the TONE CONTROL. Tone control is used to adjust high-frequency quality of the sound.

Basic operation

1. Turn the unit on by means of the ON/OFF VOLUME control, and adjust it to obtain the desired volume.
 2. Press BAND selector to change the radio mode from FM, to MW.
 3. Press the TUNING button to tune in the desired station. When this is to the right, the reception frequency is increased, while pressing it to the left reduces the reception frequency.
 4. Use the volume, BALANCE, TONE controls to adjust the set to your liking.
- Your set is in the tape playmode if a cassette tape is loaded into the tape deck.

Memory back-up power supply

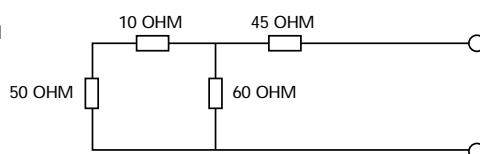
This unit is provided with a memory back-up power supply which functions retain the contents of both the preset station memory, which is used to store the preset stations, and the last station memory. Which is used to store the station which was tuned in before the Power was switched off.

6. PERFORMANCE SPECIFICATIONS

FM SECTION SPECIFICATION

NO	PERFORMANCE	POSITION	UNIT	NOMINAL	LIMIT	REMARK
1	TUNING RANGE	MIN	MHz	87.5	87.5	
		MIX	MHz	108.0	108.0	
2	CHANNEL SPACE	ALL	KHz	50	50	
3	INTERMEDIATE FREQUENCY	ALL	MHz	10.7	10.7±0.3	
4	USABLE SENSITIVITY (S/N=30dB)	90.1 MHz	dB μ	9	i ^ 12	
		98.1 MHz	dB μ	9	i ^ 12	
		106.1 MHz	dB μ	9	i ^ 12	
5	IMAGE REJECTION RATIO	106.1 MHz	dB	55	i ^ 45	
6	IF REJECTION RATIO	90.1 MHz	dB	70	i ^ 60	
7	LIMITING SENSITIVITY (-3dB)	98.1 MHz	dB	15	i ^ 20	
8	AM SUPPRESSION	MHz	dB	35	i ^ 30	
9	S/N RATIO (60) dB INPUT	MONO	98.1 MHz	dB	55	i ^ 50
		STEREO	MHz	dB		
10	T.H.D (60) dB INPUT	MONO	98.1 MHz	%	0.5	i ^ 1
		STEREO	MHz	%		
11	AUDIO FIDELITY Ref : 1KHz. 50 μs	LOW	100 Hz	dB	0	± 3
		HIGH	10 KHz	dB	0	± 3
12	STEREO ON SENSITIVITY	MHz	dB μ	10	i ^ 20	
13	STEREO SEPARATION 45 KHz DEV.	at 34dB μ	98.1 MHz	dB	4	i ^ 8
		at 40dB μ	98.1 MHz	dB	8	i ^ 1
		at 50dB μ	98.1 MHz	dB	20	i ^ 16
14	SEARCH STOP LEVEL	98.1 MHz	dB μ	20	20 ± 10	
15	LOCAL EFFECT	98.1 MHz	dB			
16	SK INDICATOR SENSITIVITY	MHz	dB μ			
17	DK OUTPUT LEVEL	MHz	mV			
18	PI SEEK LEVEL	MHz	dB μ			
19	AF SEARCH LEVEL	MHz	dB μ			
20	TA POWER (VR MIN)	MHz	mV			
21	TP INDICATOR ON LEVEL	MHz	dB μ			
22	EON SENSITIVITY	MHz	dB μ			
23	OVERLOAD CAPACITY (THD 10%)	MHz	dB			
24	ALTERNATE CH SENSITIVITY	MHz	dB			
25	NOISE OUPPUT (VR MIN)	MHz	mV			
26	ADACIENT CHANNEL REJECTION	98.1 MHz	dB			
27	HCC EFFECT (7 KHz)	98.1 MHz	dB			

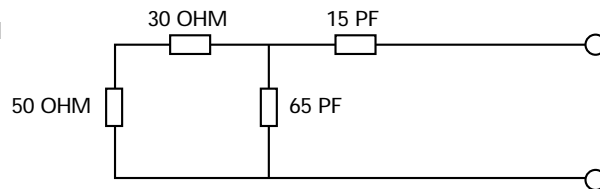
DUMMY CONDITION



§ MW SECTION SPECIFICATION

NO	PERFORMANCE	POSITION	UNIT	NOMINAL	LIMIT	REMARK
1	TUNING RANGE	MIN	KHz	522	522	
		MAX	KHz	1620	1620	
2	CHANNEL SPACE	KHz	KHz	9	9	
3	INTERMEDIATE FREQUENCY	KHz	KHz	450	450 ± 3	
4	USABLE SENSITIVITY (S/N = 20dB)	603 KHz	dB μ	25	i ^ 30	
		999 KHz	dB μ	25	i ^ 30	
		1404 KHz	dB μ	25	i ^ 30	
4	IMAGE REJECTION RATION	1404 KHz	dB	60	i ^ 50	
5	IF REJECTION RATIO	603 KHz	dB	65	i ^ 60	
6	AGC FIGURE OF MERTIT	KHz	dB	65	i ^ 45	
7	SELECTIVITY (± 10 KHz)	KHz	dB	95	i ^ 40	
8	BAND WIDTH (-6dB)	KHz	KHz	9.5	3~13	
9	S/N RATIO (74dBu INPUT)	KHz	dB	45	i ^ 40	
10	T.H.D (74dBu INPUT)	KHz	%	0.5	i ^ 2	
		KHz	%			
11	AUDIO FIDELITY (-6dB) 400Hz Ref.	999 KHz	Hz	50	i ^ 100	
			KHz	2.2	i ^ 1.8	
12	SEARCH STOP LEVEL	999 KHz	dB μ	30	30 ± 10	
13	LOCAL EFFECT	999 KHz	dB			
14	OVERLOAD CAPACITY(THD 10%)	KHz	dB			
15	TWEET MODULATION (2;IF)	900 KHz	%	1.0	i ^ 3	
16	MAX SENSITIVITY (S/N = 6dB)	KHz	dB μ			
		KHz	dB μ			
		KHz	dB μ			
17	NOISE OUPPUT (VR MIN)	KHz	mV			
18						
19						
20						

DUMMY CONDITION



§ AUDIO SECTION SPEC.

NO	PERFORMANCE	CONDITION	UNIT	NOMINAL	LIMIT	REMARK	
1	TAPE SPEED	MTT-111	%	+1	+3.-1		
2	WOW & FLUTTER	MTT-111	%	0.15	i ^ 0.35		
3	T.H.D	MTT-118	%	1.5	i ^ 3		
4	S/N RATIO	MTT-112	dB	50	i ^ 40		
5	SEPARATION	MTT-141	dB	40	i ^ 30		
6	CROSS TALK	MTT-121	dB	40	i ^ 30		
7	FREQUENCY RESPONSE Ref . 1 KHz	125 Hz	FORWARD	dB	0	± 3	
		8 KHz		dB	0	± 3	
		63 Hz	REVERSE	dB			
		10 KHz		dB			
8	LOUDNESS EFFECT	VR LEVEL	100Hz	dB			
		500mV	10 KHz	dB			
9	TONE CONTROL	BASS	100 Hz	dB			
		TREBLE	10 KHz	dB			
		HI-CUT	6.3 KHz	dB	7	7 ± 5	
10	OUTPUT (VR MAX)	FM.	1 KHz	W	10~5	i ^ 5	
11	OUTPUT (THD:10%)	45KHz Dev.		W	6~4	i ^ 4	
12	HUN & NOISE (MTT-501)	VR MIN		mV	1	i ^ 3	
		VR MAX		mV			
13	GAIN RATIO (1 KHz)	AM	30% MOD	dB	- 5	± 3	
		FM	45KHz DEV	dB	0	± 3	
		TAPE	MTT-112B	dB	0	0	
		CDC	TCD-782	dB			
14	LINE OUT LEVEL	VR MAX		mV			
15	AUX INPUT			dB			
16	CHANNEL BALANCE(L/R)	TUNER	FM 1KHz	dB	0	i ^ 3	
		TAPE	MTT-118	dB	0	i ^ 3	
		CDC	0dB 1KHz	dB	0	i ^ 3	
		LINE OUT	1 KHz	dB	0	i ^ 3	
17	METAL EFFECT			dB			
18	FADER CONTROL EFFECT			dB			
19	BALANCE CONTROL EFFECT			dB			
20	T.H.D	CDC	1 KHz	%			
21	S/N RATIO		1 KHz	dB			
22	CHANNEL SEP.		1 KHz	dB			
23	FREQUENCY		LOW	Hz			
24	RESPONSE (-3dB)		HIGH	KHz			

7. SCHEMATIC DIAGRAM

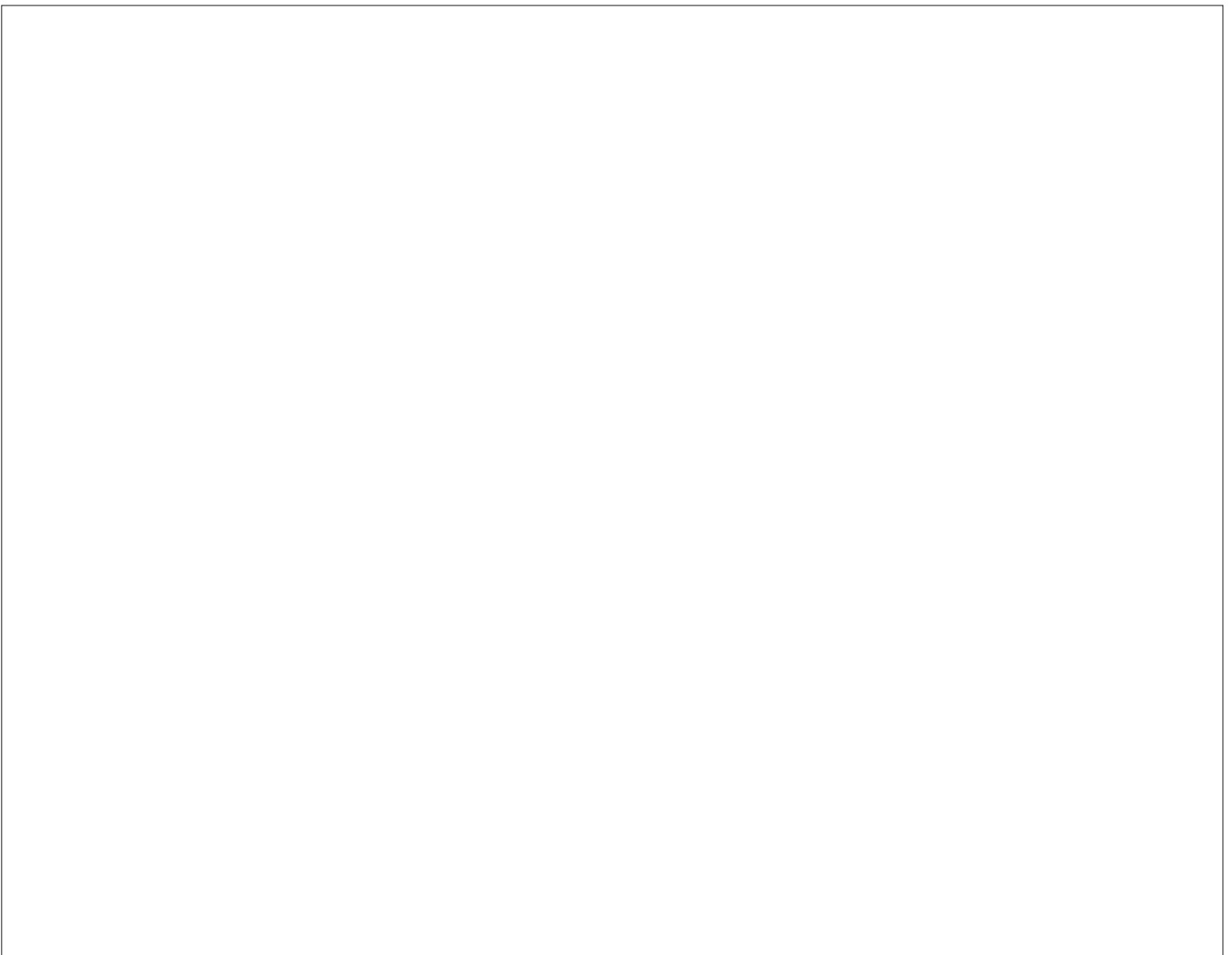


8. PCB PATTERN

∞ PCB FRONT (TOP SIDE)



∞ PCB MAIN (TOP SIDE)



§ PCB FRONT (BOTTOM SIDE)

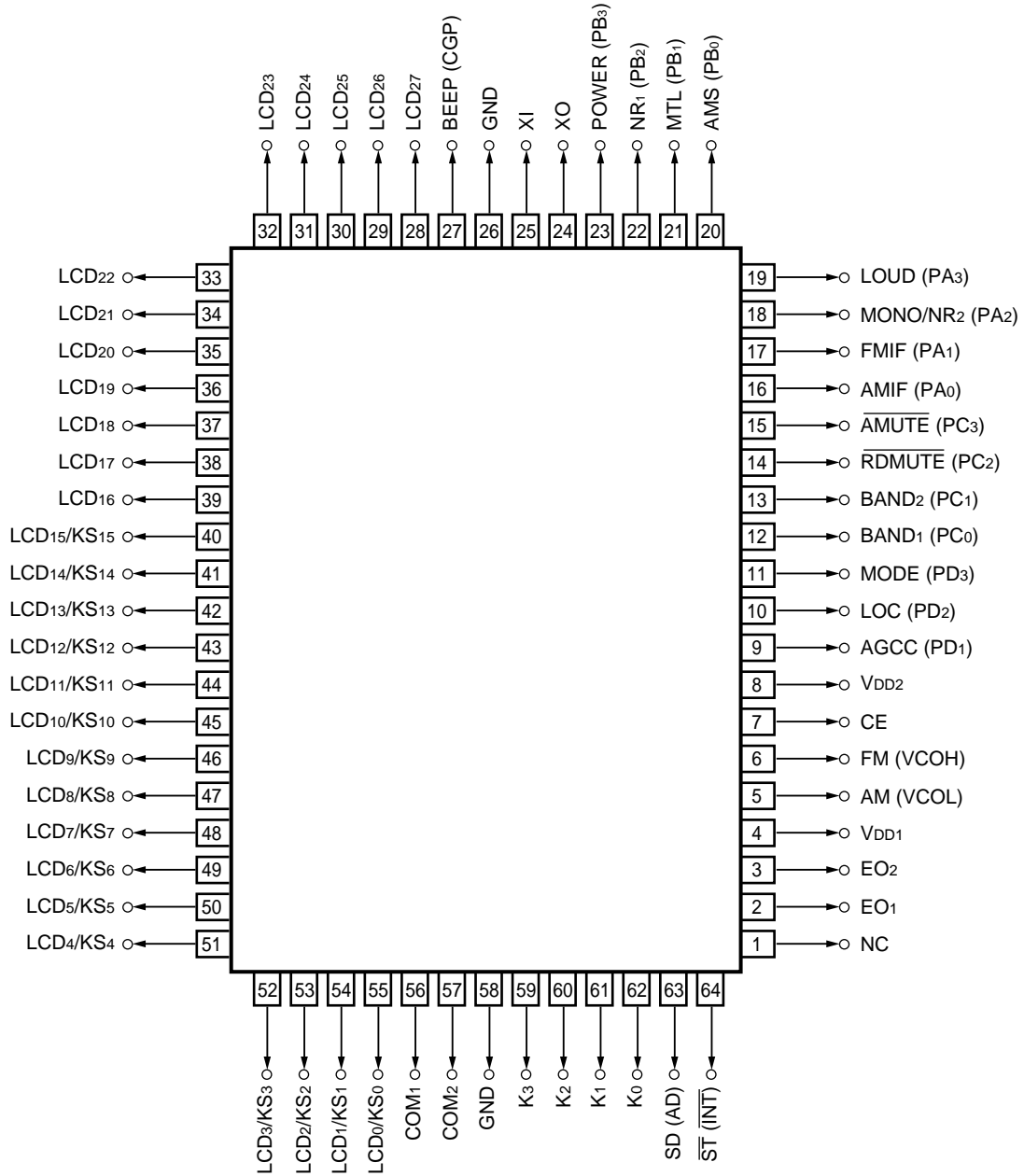


§ PCB MAIN (BOTTOM SIDE)



9. MICOM PIN CONFIGURATION AND DESCRIPTION

PIN CONFIGURATION (Top View)



§ PIN DESCRIPTIONS

PIN No.	SYMBOL	PIN NAME	DESCRIPTION	OUTPUT TYPE
1	NC	NO connection	This pin is not connected to the internal chip. Therefore, leave it open or connect it to GND, V _{DD} , etc.	–
2 3	EO ₁ EO ₂	Error out	PLL (Phase Locked Loop) error output pins. When the frequency obtained by dividing the local oscillation frequency (VOC output) is higher than the reference frequency, High level is output from these pins. When it is lower than the reference frequency, Low level is output from these pins. When the two frequencies are the same, these pins are floated. This output is input to an external LPF (Low Pass Filter) and is applied to a varactor diode through the LPF. EO ₁ and EO ₂ output the same waveform so that the pin to be used can be freely selected. When the radio is OFF, these pins are floated.	CMOS 3-state
4 8	V _{DD1} V _{DD2}	Power supply input	Device power supply input pin. This pin supplies 5V±10% power voltage during device operation (radio, tape, and CD modes). When the diode matrix NOCLK switch is 1 (shorted by diode), when the CE pin (pin 7) is made Low level, this pin drops to 2.5 V and data hold is enabled. When a voltage of 0 ~ 4.5 V is supplied to this pin, the data is initialized. Supply 0 ~ 4.5 V to this pin within 400 ms. Always connect pins 4 and 8 to the same potential. V _{DD1} (pin 4) is the analog system (PLL, A/D converter, INT, CE) power supply and V _{DD2} (pin 8) is the digital system (CPU, LCD driver, IF counter) power supply.	–
5	AM	AM local oscillation input	The AM (MW and LW band) local oscillation output (VCO output) is input to this pin. When the radio is turned on and the MW or LW band is received, this pin becomes active. Otherwise, it is pulled down internally. The input amplitude is 0.3 V _{P-P} MIN. Since there is an on-chip AC amplifier, block the DC component with a capacitor.	Input
6	FM	FM local oscillation input	The FM local oscillation output (VCO output) is input to this pin. When the radio is turned on and the FM band is received, this pin becomes active. Otherwise, it is pulled down internally. The input amplitude is 0.3 V _{P-P} MIN. Since there is an on-chip AC amplifier, block the DC component of the input signal with a capacitor.	Input
7	CE	Chip enable	Device select signal input pin. When the device is operated normally (radio, tape, CD, clock display, ect.), High level is input and when the device is not used, Low level is input. However, High and Low levels of 134 μs or less are not accepted. When this pin is Low level, the radio, tape, CD, and display are turned off and the device enters the data hold state. At this time, data hold at low consumption current (400 nA or less) is possible by setting the NOCLK switch of the diode matrix to be described later to 1 (shorted by diode, no-clock mode).	Input

PIN No.	SYMBOL	PIN NAME	DESCRIPTION	OUTPUT TYPE																				
9	AGCC	AGC cut output	<p>Radio mode AGC (AUTOMATIC GAIN CONTROL) cut signal output pin. During autotuning, the High level shown below is output.</p> <p>① Key ON Chattering Watt ② Premuting ③ Postmuting</p>	CMOS push-pull																				
10	LOC	Local output	<p>Local output signal pin in radio mode. Output is inverted each time the <input type="checkbox"/> LOC key is pressed. When the LOCAL status is set by the <input type="checkbox"/> LOC key, the "LOC" indicator on the LCD panel lights and this pin outputs a high-level signal. The local status is common to FM, VF, MW and LW bands. Driven low when power is turned on.</p>	CMOS push-pull																				
11	MODE	Mode signal output	<p>Mode switching signal output pin. Its output in each mode is shown below.</p> <table border="1"> <thead> <tr> <th>Mode</th> <th>MODE</th> </tr> </thead> <tbody> <tr> <td>• CW = Low</td> <td>0</td> </tr> <tr> <td>• CE = High; radio, tape, and CD OFF</td> <td>0</td> </tr> <tr> <td>• Radio mode</td> <td>1</td> </tr> <tr> <td>• Tape mode</td> <td>0</td> </tr> <tr> <td>• CD mode</td> <td>0</td> </tr> <tr> <td>• Tape DK standby</td> <td></td> </tr> <tr> <td>• CD DK standby</td> <td>1</td> </tr> <tr> <td>• DK ON</td> <td></td> </tr> <tr> <td>• Radio monitor mode</td> <td>1</td> </tr> </tbody> </table> <p>0: Low level, 1: High level</p> <p>That is, when the PLL is operated, High level is output from this pin. Therefore, use it to turn the tuner power on and off, etc.</p>	Mode	MODE	• CW = Low	0	• CE = High; radio, tape, and CD OFF	0	• Radio mode	1	• Tape mode	0	• CD mode	0	• Tape DK standby		• CD DK standby	1	• DK ON		• Radio monitor mode	1	CMOS push-pull
Mode	MODE																							
• CW = Low	0																							
• CE = High; radio, tape, and CD OFF	0																							
• Radio mode	1																							
• Tape mode	0																							
• CD mode	0																							
• Tape DK standby																								
• CD DK standby	1																							
• DK ON																								
• Radio monitor mode	1																							

PIN No.	SYMBOL	PIN NAME	DESCRIPTION	OUTPUT TYPE																					
12 13	BAND ₁ , BAND ₂	Band switching signal output	<p>Radio mode band switching signal output pin. Its operation is described below.</p> <ul style="list-style-type: none"> Radio mode When the receiving band is switched by band switching key, the following is output on each band: <table border="1"> <thead> <tr> <th>Band \ Pin</th> <th>BAND₁</th> <th>BAND₂</th> </tr> </thead> <tbody> <tr> <td>MW</td> <td>0</td> <td>0</td> </tr> <tr> <td>LW</td> <td>0</td> <td>1</td> </tr> <tr> <td>FM</td> <td>1</td> <td>0</td> </tr> <tr> <td>VF</td> <td>1</td> <td>1</td> </tr> </tbody> </table> <p>(0: Low level, 1: High level)</p> <ul style="list-style-type: none"> DK standby mode DK ON mode <table border="1"> <thead> <tr> <th>Band \ Pin</th> <th>BAND₁</th> <th>BAND₂/OPT.</th> </tr> </thead> <tbody> <tr> <td>VF</td> <td>1</td> <td>1</td> </tr> </tbody> </table> <ul style="list-style-type: none"> Radio monitor mode Same as radio mode. Tape mode CD mode Low level output 	Band \ Pin	BAND ₁	BAND ₂	MW	0	0	LW	0	1	FM	1	0	VF	1	1	Band \ Pin	BAND ₁	BAND ₂ /OPT.	VF	1	1	CMOS push-pull
Band \ Pin	BAND ₁	BAND ₂																							
MW	0	0																							
LW	0	1																							
FM	1	0																							
VF	1	1																							
Band \ Pin	BAND ₁	BAND ₂ /OPT.																							
VF	1	1																							
14	$\overline{\text{RDMUTE}}$	Radio mute output	<p>Radio mute signal output pin. This pin operates as follows:</p> <ul style="list-style-type: none"> Radio mode Low level is output at radio ON/OFF, band switching, and receiving frequency switching. Tape and CD modes High level or Low level can be selected by MUTESEL switch of the diode matrix to be described later. However, when using the DK standby or radio monitor function, set the MUTESEL switch to 0 and select low level output. <p>For more information, see 4 "Mute Output Timing Chart".</p>	CMOS push-pull																					
15	$\overline{\text{AMUTE}}$	Audio mute output	<p>Tape and CD mute signal output pin at DK ON and radio monitor ON.</p> <p>In the radio mode, Low level is output and in the tape and CD modes, High level is output. When DK is turned on during DK standby and in the radio monitor mode, low level is output.</p> <p>For more information, see 4 "Mute Output Timing Chart".</p>	CMOS push-pull																					

PIN No.	SYMBOL	PIN NAME	DESCRIPTION	OUTPUT TYPE																												
16	AMIF	AM intermediate frequency input	<p>AM (MW and LW bands) intermediate frequency (IF) input pin. The input amplitude is 0.1 V_{P-P}. Since there is an onchip AC amplifier, block the DC component of the input signal with a capacitor. This pin is valid when the initialize diode matrix DISAMIF switch is 0. This pin is used for detecting the presence of a broadcast station during MW and LW band autotuning. The input frequency ranges and input conditions for determining the presence of a broadcast station are shown below.</p> <table border="1" data-bbox="603 533 1246 875"> <thead> <tr> <th colspan="2" data-bbox="603 533 759 685">Area \ Item</th> <th data-bbox="759 533 871 685">Band</th> <th data-bbox="871 533 1062 685">Input Frequency Range ① (kHz)</th> <th data-bbox="1062 533 1246 685">Input Frequency Range ② (kHz)</th> </tr> </thead> <tbody> <tr> <td data-bbox="603 685 759 757" rowspan="2">Europe 1</td> <td data-bbox="759 685 871 719">MW</td> <td data-bbox="871 685 1062 719"></td> <td data-bbox="871 685 1062 719">450 ± 5</td> <td data-bbox="1062 685 1246 719">450 ± 2</td> </tr> <tr> <td data-bbox="759 719 871 757">LW</td> <td data-bbox="871 719 1062 757"></td> <td data-bbox="871 719 1062 757">450 ± 5</td> <td data-bbox="1062 719 1246 757">450 ± 0.5</td> </tr> <tr> <td data-bbox="603 757 759 831" rowspan="2">Europe 2</td> <td data-bbox="759 757 871 790">MW</td> <td data-bbox="871 757 1062 790"></td> <td data-bbox="871 757 1062 790">459 ± 5</td> <td data-bbox="1062 757 1246 790">459 ± 2</td> </tr> <tr> <td data-bbox="759 790 871 831">LW</td> <td data-bbox="871 790 1062 831"></td> <td data-bbox="871 790 1062 831">459 ± 5</td> <td data-bbox="1062 790 1246 831">459 ± 0.5</td> </tr> <tr> <td data-bbox="603 831 759 875">Others</td> <td data-bbox="759 831 871 875"></td> <td data-bbox="871 831 1062 875">MW</td> <td data-bbox="871 831 1062 875">450 ± 5</td> <td data-bbox="1062 831 1246 875">450 ± 0.5</td> </tr> </tbody> </table> <p>Input frequency range ① is the frequency that must be input within 20 ms after the PLL is lockde. Input frequency range ② is the frequency that must be input within 40 ms after ① was input. When both input frequency ranges ① and ② are satisfied, a broadcast station is judged to be present and autotuning stops.</p>	Area \ Item		Band	Input Frequency Range ① (kHz)	Input Frequency Range ② (kHz)	Europe 1	MW		450 ± 5	450 ± 2	LW		450 ± 5	450 ± 0.5	Europe 2	MW		459 ± 5	459 ± 2	LW		459 ± 5	459 ± 0.5	Others		MW	450 ± 5	450 ± 0.5	Input
Area \ Item		Band	Input Frequency Range ① (kHz)	Input Frequency Range ② (kHz)																												
Europe 1	MW		450 ± 5	450 ± 2																												
	LW		450 ± 5	450 ± 0.5																												
Europe 2	MW		459 ± 5	459 ± 2																												
	LW		459 ± 5	459 ± 0.5																												
Others		MW	450 ± 5	450 ± 0.5																												
17	FMIF	FM intermediate frequency input	<p>FM band intermediate frequency (IF) input. The input amplitude is 0.1 V_{P-P}. Since there is an AC amplifier on the chip, block the DC component of the input signal with a capacitor. This pin is valid when the initialize diode matrix switch ENFMIF is 1. This pin is used for detecting the presence of a broadcast station during FM band autotuning. The input frequency ranges and input conditions for determining the presence of a broadcast station are shown below.</p> <table border="1" data-bbox="603 1424 1246 1574"> <thead> <tr> <th data-bbox="603 1424 751 1541">Area \ Item</th> <th data-bbox="751 1424 1007 1541">Input Frequency Range ①</th> <th data-bbox="1007 1424 1246 1541">Input Frequency Range ②</th> </tr> </thead> <tbody> <tr> <td data-bbox="603 1541 751 1574">All areas</td> <td data-bbox="751 1541 1007 1574">10.7 MHz±50 kHz</td> <td data-bbox="1007 1541 1246 1574">10.7 MHz±12.5 kHz</td> </tr> </tbody> </table> <p>Input frequency range ① is the frequency that must be input within 20 ms after the PLL is locked. Input frequency range ② is the frequency that must be input within 20 ms after ① was input. When both input frequency ranges ① and ② are satisfied, a broadcast station is judged to be present and autotuning stops.</p>	Area \ Item	Input Frequency Range ①	Input Frequency Range ②	All areas	10.7 MHz±50 kHz	10.7 MHz±12.5 kHz	Input																						
Area \ Item	Input Frequency Range ①	Input Frequency Range ②																														
All areas	10.7 MHz±50 kHz	10.7 MHz±12.5 kHz																														

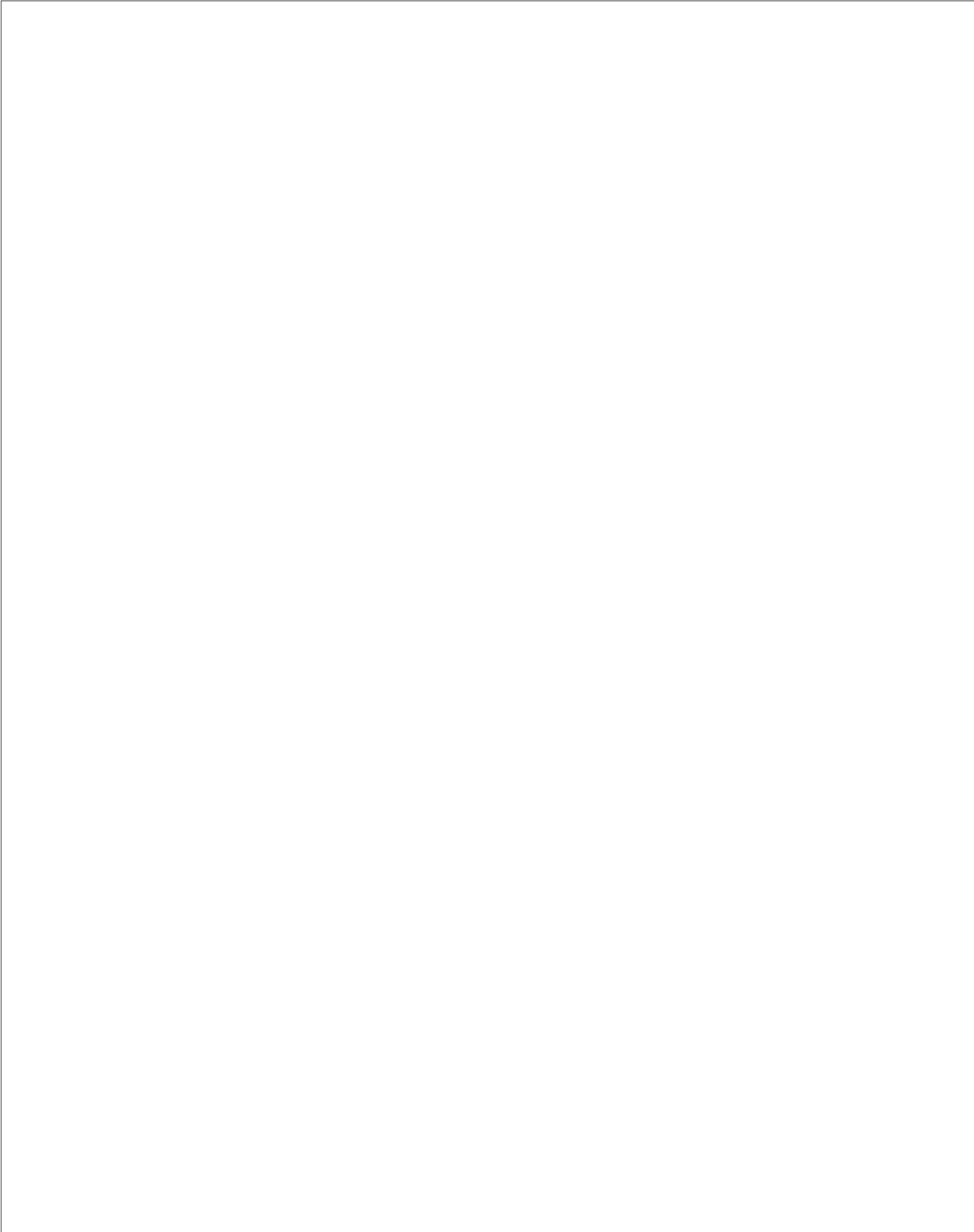
PIN No.	SYMBOL	PIN NAME	DESCRIPTION	OUTPUT TYPE
18	MONO/NR ₂	Monaural and noise reduction output	<p>In the radio mode, this pin operates as the MONORAL signal output pin and in the tape mode, this pin operates as the NOISE REDUCTION signal output pin.</p> <ul style="list-style-type: none"> • Radio mode Each time the [MONO] key is pressed on the FM and VF bands, the output is inverted. When the device is set to the MONORAL state by [MONO] key, the LCD panel "MONO" display lights and high level is output from this pin. On the MW and LW bands, this pin becomes low. When the power is turned on, this pin becomes low. • Tape mode This pin is valid when the diode matrix ENNR2 switch to be described later is 1 (shorted by diode.) When NOISE REDUCTION NR₂ is selected by pressing the [NR] key or NOISE REDUCTION function key (selected by diode matrix), high level is output. At this time, the LCD panel "NR₂" display lights. In the TAPE VF mode the "MONO" display is reversed each time the [MONO] key is pressed, but the MONO/NR₂ pin continues to a low-level signal. 	CMOS push-pull
19	LOUD	LOUD output	<p>LOUDNESS signal output pin. In the radio, tape, and CD modes, the output is inverted each time the [LOUD] key is pressed. When the LOUDNESS state is selected by [LOUD] key, the LCD panel "LOUD" display lights and high level is output from this pin. When the power is turned on, this pin becomes low.</p>	CMOS push-pull
20	AMS	AMS signal output	<p>Tape mode AMS (AUTO MUSIC SEARCH) control signal output pin. Its output is inverted each time the [AMS] key is pressed. High level is output while the LCD panel "AMS" display is lit.</p>	CMOS push-pull
21	MTL	Metal output	<p>Tape mode metal signal output pin. Its output is inverted each time the [MTL] key and METAL function key (selected by diode matrix) is pressed. When the METAL state is selected with these keys, the LCD panel "MTL" display lights and high level is output from this pin. When the power is turned on, this pin becomes low.</p>	CMOS push-pull
22	NR ₁	Noise reduction output	<p>Tape mode noise reduction (NR) signal output pin. When NR₁ is selected by the [NR] key or NOISE REDUCTION function key (selected by diode matrix), the LCD panel "NR₁" display lights and high level is output from this pin.</p>	CMOS push-pull
23	POWER	Power output	<p>When the CE pin is high level, the output of this pin is inverted each time the [POWER] key is pressed. When the power is turned on, low level is output. This pin can be used to turn the set power ON and OFF, ect. See 6 "Application Circuits".</p>	CMOS push-pull
24 25	XO XI	Crystal oscillator	<p>Crystal oscillator connection pin. It connects to a 4.5 MHz crystal oscillator. When the clock function is used, the accuracy of the clock is effected by the oscillation frequency accuracy only. Adjust the oscillation frequency while observing the LCD oscillation waveform and PLL local oscillation frequency.</p>	CMOS (XO) Input (XI)

PIN No.	SYMBOL	PIN NAME	DESCRIPTION	OUTPUT TYPE
26 58	GND	Ground	Device ground pins. Remarks: Pins 26 and 58 are connected inside the chips, and therefore it is not necessary to use both pins for GND: One of them is used for GND.	-
27	BEEP	Beep output	Beep output pin when momentary key pressed. A 2.25 kHz and 50% duty square wave is output for approx. 40 ms. This time is equal to the premuting time. When a momentary key is pressed and the state of the LCD panel display or output port is changed (valid key) and at the end of 5 seconds hold during preset memory scan and scan operations, a beep is output. To disable the beep, float (leave open) this pin. The beep output is also used at SK alarm at DK standby.	CMOS push-pull
28 to 39 40 to 55	LCD ₂₇ to LCD ₁₆ LCD ₁₅ /KS ₁₅ to LCD ₀ /KS ₀	LCD segment and key source output	LCD panel segment signal output (pins 28 to 55) and key matrix key source signal output (pins 40 to 55) pins. 56-dot display is performed at the LCD panel by matrix with the COM ₁ pin (pin 56) and COM ₂ pin (pin 57). Since LCD ₁₅ /KS ₁₅ (pin 40) to LCD ₀ /KS ₀ (pin 55) share the key source signal and LCD segment signal, to use them as key source signals, a reverse current prevention diode is necessary. For the connection method, see 1.3 "Key Matrix Connection" and 6 "Application Circuits".	CMOS push-pull
56 57	COM ₁ COM ₂	LCD common signal output	Common signal output to LCD panel. 56-dot display is performed at the LCD panel by matrix with LCD ₂₇ (pin 18) to LCD ₀ /KS ₀ (pin 55).	CMOS push-pull
59 to 62	K ₃ to K ₀	Key return signal input	Key matrix key return signal input pin. Since the key source signal output is shared with the LCD segment signal, do not connect a pull-down resistor to this pin.	Input

PIN No.	SYMBOL	PIN NAME	DESCRIPTION	OUTPUT TYPE																																											
63	SD	SD input	<p>Autotuning SD (Station Detector) signal input pin. When the voltage shown below is applied to this pin during the seek operation, a broadcast station is judged to be present.</p> <table border="1"> <thead> <tr> <th>BAND</th> <th>LOCAL Mode</th> <th>SD Voltage</th> <th>V_{DD} = 5V</th> </tr> </thead> <tbody> <tr> <td rowspan="2">FM</td> <td>LOCAL</td> <td>28.5/64 x V_{DD} min.</td> <td>2.227</td> </tr> <tr> <td>DX</td> <td>12.5/64 x V_{DD} min.</td> <td>0.977</td> </tr> <tr> <td>MW</td> <td>LOCAL</td> <td>15.5/64 x V_{DD} min.</td> <td>1.211</td> </tr> <tr> <td>LW</td> <td>DX</td> <td>12.5/64 x V_{DD} min.</td> <td>0.977</td> </tr> </tbody> </table> <p>In the auto preset memory mode, search is performed twice in the LOCAL mode and once in the DX mode. The voltage to determine the presence of a broadcast station at this time is shown below.</p> <table border="1"> <thead> <tr> <th>BAND</th> <th>LOCAL Mode</th> <th>SD Voltage</th> <th>V_{DD} = 5V</th> </tr> </thead> <tbody> <tr> <td rowspan="3">FM</td> <td>LOCAL (1st time)</td> <td>44.5/64 x V_{DD} min.</td> <td>3.477</td> </tr> <tr> <td>LOCAL (2nd time)</td> <td>28.5/64 x V_{DD} min.</td> <td>2.227</td> </tr> <tr> <td>DX (3rd time)</td> <td>12.5/64 x V_{DD} min.</td> <td>0.977</td> </tr> <tr> <td rowspan="3">MW LW</td> <td>LOCAL (1st time)</td> <td>18.5/64 x V_{DD} min.</td> <td>1.445</td> </tr> <tr> <td>LOCAL (2nd time)</td> <td>15.5/64 x V_{DD} min.</td> <td>1.211</td> </tr> <tr> <td>DX (3rd time)</td> <td>12.5/64 x V_{DD} min.</td> <td>0.977</td> </tr> </tbody> </table> <p>When using the IF count, a broadcast station is detected when a broadcast station is judged to be present by both IF and SD pins.</p>	BAND	LOCAL Mode	SD Voltage	V _{DD} = 5V	FM	LOCAL	28.5/64 x V _{DD} min.	2.227	DX	12.5/64 x V _{DD} min.	0.977	MW	LOCAL	15.5/64 x V _{DD} min.	1.211	LW	DX	12.5/64 x V _{DD} min.	0.977	BAND	LOCAL Mode	SD Voltage	V _{DD} = 5V	FM	LOCAL (1st time)	44.5/64 x V _{DD} min.	3.477	LOCAL (2nd time)	28.5/64 x V _{DD} min.	2.227	DX (3rd time)	12.5/64 x V _{DD} min.	0.977	MW LW	LOCAL (1st time)	18.5/64 x V _{DD} min.	1.445	LOCAL (2nd time)	15.5/64 x V _{DD} min.	1.211	DX (3rd time)	12.5/64 x V _{DD} min.	0.977	Input
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64	$\overline{\text{ST}}$	Stereo signal input	<p>Radio mode "ST" (STEREO) display input pin. When low level is input to this pin, the LCD panel "ST" display lights. This pin is valid only on the FM and VF bands.</p>	Input																																											

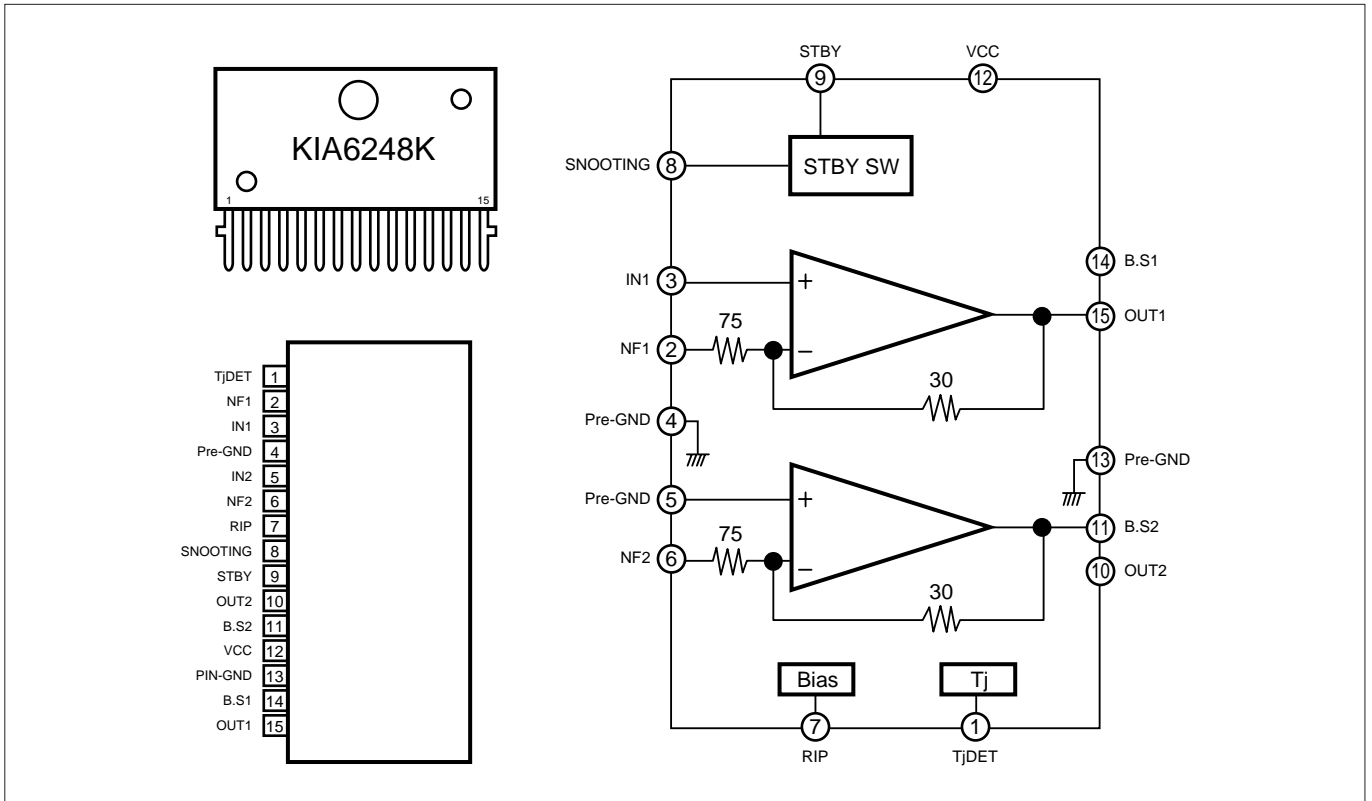
10. EXPLODED VIEW AND PARTS LIST

11. DECK MECHANISM EXPLODED VIEW AND PARTS

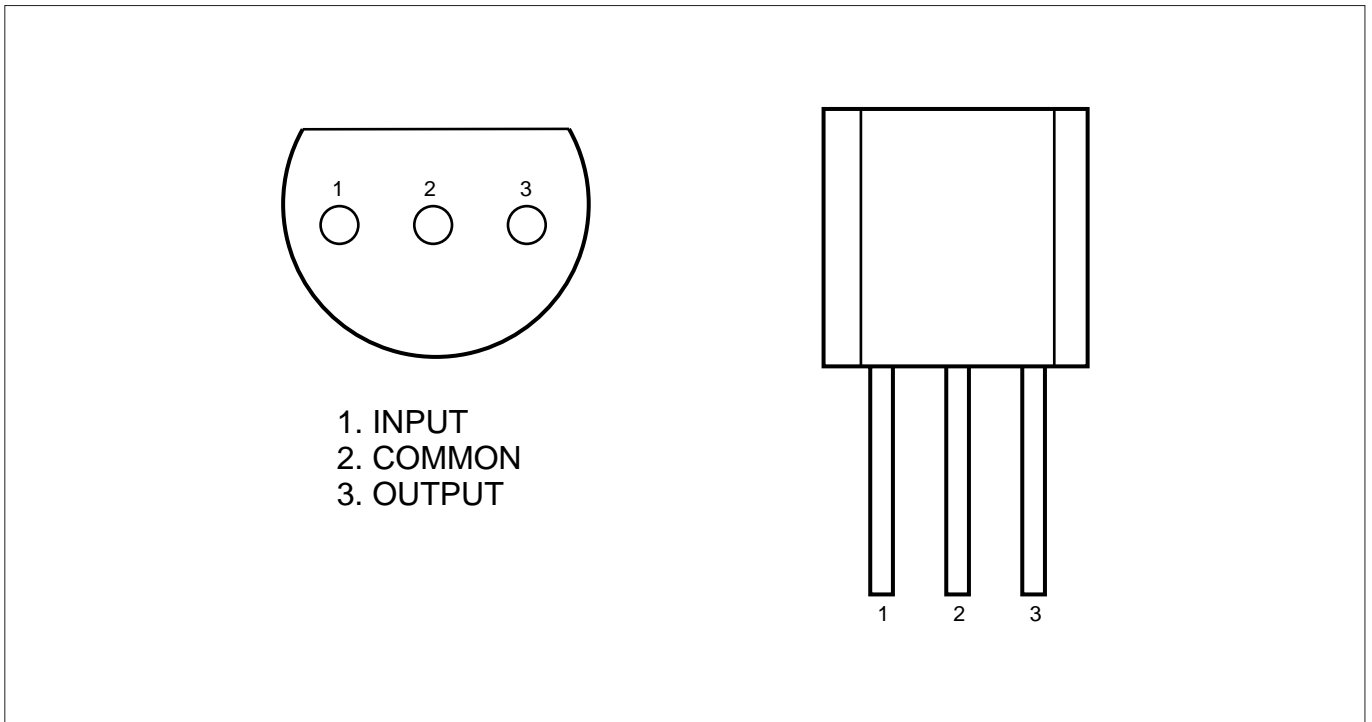


12. IC BLOCK AND DESCRIPTIONS

IC 301 (KIA 6248K) - POWER IC



IC 302 (KIA 7805S) - REGULATOR IC



13. PARTS LIST

A'SSY PCB MAIN AS			
LOC	PART CODE	PART NAME	DESCRIPTION
CH301	5LC102P226	COIL CHOKE	EI-24MM1MH
XT401	5XEZ4R500E	CRYSTAL QUARTZ	HC-49/U 4.500MHZ 12PF
D315, D405, D410, D104, D310, D304, D303, D306, D103, D604, D601, D602, D603, D313, D301, D106, D180, D401, D314, D107, D407, D409, D412, D305, D413	DKSS133---	DIODE	1SS133 AUTO 26MM
D420, D421, D422, D423, D302	DKN4148---	DIODE	KN4148 AUTO 26MM
D311, D309, D308, D312	DKN4004A--	DIODE	KN4004A AUTO 26MM
VR301	5V1503676B	VR ROTARY	V12L5N31H 50KB
VR302	5V1503A68A	VR ROTARY	V12L5(9X10)-120K
R315, R3314, R313, R312, R324	RD-AZ471JK	R CARBON	1/6 470 OHM J
R320, R611	RD-AZ331JK	R CARBON	1/6 330 OHM J
R319, R108, R109, R304, R620, R621, R310	RD-AZ102JK	R CARBON	1/6 1K OHM J
R316, R610, R609, R605, R602, R115,R321,R403	RD-AZ104JK	R CARBON	1/6 100K OHM J
R105, R606, R603, R326, R325, R309, R104	RD-AZ472JK	R CARBON	1/6 4.7K OHM J
R107	RD-AZ222JK	R CARBON	1/6 2.2K OHM J
R305	RD-AZ473JK	R CARBON	1/6 47K OHM J
R303	RD-AZ101JK	R CARBON	1/6 100 OHM J
R301	RD-4Z221JK	R CARBON	1/4 220 OHM J
R302	RD-4Z330JK	R CARBON	1/4 33 OHM J
R608	RD-4Z479JK	R CARBON	1/4 4.7 OHM J
R607, R106, R311	RD-AZ221JK	R CARBON	1/6 220 OHM J
R615, R614	RD-AZ271JK	R CARBON	1/6 2.7K OHM J
R604, R601	RD-AZ330JK	R CARBON	1/6 33 OHM J
R616, R617	RD-AZ332JK	R CARBON	1/6 3.3K OHM J
R406, R405, R401	RD-AZ105JK	R CARBON	1/6 1M OHM J
R113	RD-AZ224JK	R CARBON	1/6 220K OHM J
R322, R323	RD-AZ229JK	R CARBON	1/6 2.2K OHM J
R404	RD-AZ103JK	R CARBON	1/6 10K OHM J
R329	RD-4Z229JK	R CARBON	1/4 2.2 OHM J
R328, R327	RD-AZ560JK	R CARBON	1/6 56 OHM J
R110	RD-AZ183JK	R CARBON	1/6 18K OHM J
CM307, CM306	CMXV1H473J	C MYLAR	50V 0.047MF J
CM313, CM317	CMXV1H104J	C MYLAR	50V 0.1MF J

LOC	PART CODE	PART NAME	DESCRIPTION
CC326, CC328, CC324, CC323, CC312, CC311, CC108,CC105, CC403	CCKB1H102K	C CERA	HIKB50V 1000PF K AXL
CC321, CC319, CC301, CC112, CC110, CC107, CC302, CC109	CCKF1E223K	C CERA	HIKF 25V 0.022MF Z AXL
CC106	CCKF1E223Z	C CERA	HIKF 25V 0.022MF K AXL
CM602, CM609	CMXV1H333K	C MYLAR	50V 0.033MF K
CC605, CC604	CCKB1H222K	C CERA	HIKB50V 2200PF K AXL
CM110, CM109	CMXV1H222J	C MYLAR	50V 2200PF J
CC401, CC402	CKCH1H180J	C CERA	CH 50V 18PF J AXL
CC404	CCKB1H104K	C CERA	HIKB50V 0.1PF K AXL
CM103	CMXV1V223J	C MYLAR	50V 0.022PF J
DZ301, DZ605, DZ601, DZ602	DKTZ10B---	DIODE ZENER	MTZ-10V 26MM
DZ305	DKTZ6R2B--	DIODE ZENER	MTZ-6.2V 26MM
CE304, CE305, CE309, CE310, CE104, CE308,	CEXP1H229A	C ELECTRO	50V REM 2.2MF
CE326, CE327, CE102, CE614, CE613, CE612, CE332, CE331, CE329, CE303, CE307, CE312 CE311	CEXF1C470V	C ELECTRO	16V RSS 47MF
CE322, CE314, CE315	CEXP1C102E	C ELECTRO	RM 16V 1000MF
CS301	CDXF0H104M	C SUPPER	0.1F 12.5X11
Q304, Q106, Q107	TZRC111M--	KRC111M	
Q302	TZRC102M--	KRC102M	
Q301	TZ2SD1862R-	2SD1862R	
Q303	TZTA1267Y-	TR	KIA1267Y
Q306,Q307	TZDTC323TS	TR	DTC323SA
IC302	1Z1A78S05P	IC REGULATOR	KIA78S05
Q102, Q103, Q305	TZTC3199Y-	TR	KTC-3199Y
A'SSY: PCB FRONT AS			
LOC	PART CODE	PART NAME	DESCRIPTION
D501, D502, D503, D504	DKSS133---	DIODE	1SS133
PL501, PL502, PL503, PL504	97T85L0084	PILOT LAMP	14V 40MA D3.0
SW501, SW502, SW503, SW504, SW505, SW506, SW507, SW508, SW509	5S50101Z02	SW TACT	1C-1P SKQC10918B 2