

**SCHEMATIC OF THE  
HEATHKIT®  
AM/FM STEREO DIGITAL TUNER  
MODEL AJ-1600**

**NOTES:**

1. ALL RESISTORS ARE 1/4 WATT, 5% TOLERANCE UNLESS OTHERWISE NOTED. 1K=1,000, M=1,000,000.
2. CAPACITORS LESS THAN 1 ARE IN pF (MICROFARADS). ALL OTHER CAPACITORS ARE IN µF (PICOFARADS) UNLESS OTHERWISE NOTED.
3. COMPONENT NUMBERS ARE IN THE FOLLOWING GROUPS:  
1-99 PARTS IN THE TUNER ASSEMBLY OR MOUNTED ON THE CHASSIS.

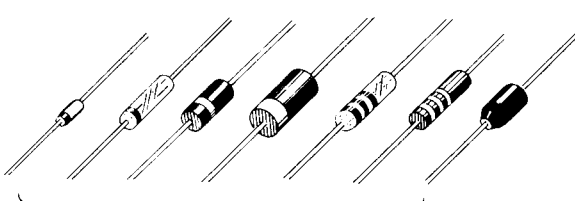
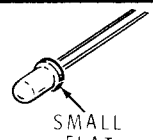
- 101-150 PARTS MOUNTED ON THE AM CIRCUIT BOARD.
  - 175-190 PARTS MOUNTED ON THE FM DIVIDER CIRCUIT BOARD.
  - 201-340 PARTS MOUNTED ON THE FM IF CIRCUIT BOARD.
  - 350-350 PARTS MOUNTED ON THE OUTPUT CIRCUIT BOARD.
  - 401-490 PARTS MOUNTED ON THE DISPLAY CIRCUIT BOARD.
  - 500-590 PARTS MOUNTED ON THE SWITCH CIRCUIT BOARD.
  - 601-690 PARTS MOUNTED ON THE POWER SUPPLY CIRCUIT BOARD.
- \*\* PARTS MOUNTED ON LED CIRCUIT BOARD. NOTE: PL1 AND PL2 ARE MOUNTED ON THE LAMP CIRCUIT BOARD.  
 4. THE FOLLOWING SYMBOLS ARE USED ON THE SCHEMATIC.  
 ≡ THIS SYMBOL INDICATES A CHASSIS GROUND.  
 ▽ THIS SYMBOL INDICATES A CIRCUIT BOARD GROUND.

- ⊕ THIS SYMBOL INDICATES A CIRCUIT BOARD PLUG CONNECTION (PIN NUMBER INDICATED).  
 ▽ THIS SYMBOL INDICATES A CONNECTION TO A CIRCUIT VOLTAGE SUPPLY.  
 ⏏ THIS SYMBOL INDICATES A POWER SUPPLY VOLTAGE SOURCE.  
 ⊖ THIS SYMBOL INDICATES A DC VOLTAGE TAKEN FROM THE POINT INDICATED WITH A HIGH IMPEDANCE VOLTMETER TO CHASSIS GROUND. ALSO INDICATES DC VOLTAGES AT MUTE CIRCUITS IN MUTED CONDITION.  
 □ THIS SYMBOL INDICATES DC VOLTAGES AROUND MUTE CIRCUITRY IN UNMUTED CONDITION.  
 ⊕ THIS SYMBOL INDICATES AN OPERATING DC VOLTAGE IN AM MODE ONLY.  
 \*\* ORDER ONLY DIRECT-REPLACEMENTS, BY HEATHKIT PART NUMBER.

5. FOR THE PHYSICAL LOCATION TO COMPONENTS, REFER TO THE "CIRCUIT BOARD X-RAY VIEWS," STARTING ON PAGE 116.

# SEMICONDUCTOR IDENTIFICATION CHARTS

## DIODES

COMPONENT	HEATH PART NUMBER	MAY BE REPLACED WITH	IDENTIFICATION
D202, D203	56-26	1N191	 <p style="text-align: center;">BANDED END</p>
D204, D205	56-27	S160	
D201, D206, D401, D402, D403	56-56	1N4149	
D608	56-64	MZ1000-24 (30-volt)	
D607	56-620	1N4744A, 17 mA zener (15-volt)	
D207, D601 through D606	57-65	1N4002	
D1, D2, D3	412-632	LED	 <p style="text-align: center;">SMALL FLAT</p>



**TRANSISTORS**

COMPONENTS	HEATH PART NUMBER	MAY BE REPLACED WITH	IDENTIFICATION
Q204, Q215, Q216, Q219, Q351, Q353	417-283	SM07275	
Q202, Q203, Q206, Q217, Q218, Q221, Q222, Q352, Q354	417-284	SM62186	
Q175, Q176	417-293	2N5770	
Q101, Q201, Q211, Q213, Q214	417-801	MPSA20	
Q102, Q205, Q207, Q208, Q209, Q401, Q402	417-875	2N3904	
Q103, Q104, Q177, Q212	417-881	MPSA13	
Q175	417-869	DS8629	
Q601	417-918	2N6387	

**INTEGRATED CIRCUITS (TOP VIEWS)**

COMPONENTS	HEATH PART NUMBER	MAY BE REPLACED WITH	IDENTIFICATION
U201 through U205	442-20	UA703	

Integrated Circuits (cont'd.)

COMPONENTS	HEATH PART NUMBER	MAY BE REPLACED WITH	IDENTIFICATION
IC601	442-617	UA78MGT2C	<p>HEAT SINK TABS ARE CONNECTED TO GND</p>
U206	442-637	HA1137	
U207, U208	442-657	MC1355	



## Integrated Circuits (cont'd.)

COMPONENTS	HEATH PART NUMBER	MAY BE REPLACED WITH	IDENTIFICATION
U101	442-658	HA1197	
U403, U404	442-659	UDN6128A	
U209	442-673	HA11223	

Integrated Circuits (cont'd.)

COMPONENTS	HEATH PART NUMBER	MAY BE REPLACED WITH	IDENTIFICATION																																																								
U402	443-701	MC14049	<p>Pinout diagram for MC14049. Pins 1 and 8 are Vcc and Vss respectively. Pins 16 and 13 are NC. Internal blocks A-F are shown.</p>																																																								
U401	443-870	A438112	<p>Pinout diagram for A438112. Pins 1-14 are on the left, 15-28 on the right.</p> <table border="1"> <tr><td>AM FREQ</td><td>1</td><td>28</td><td>Vcc</td></tr> <tr><td>FM FREQ</td><td>2</td><td>27</td><td>SET TIME</td></tr> <tr><td>AM/FM</td><td>3</td><td>26</td><td>SET FREQ</td></tr> <tr><td>INHIBIT TIME SET</td><td>4</td><td>25</td><td>INTENSITY</td></tr> <tr><td>TEST</td><td>5</td><td>24</td><td>SEGMENT E</td></tr> <tr><td>PRESET</td><td>6</td><td>23</td><td>SEGMENT A</td></tr> <tr><td>OSCILLATOR 1</td><td>7</td><td>22</td><td>SEGMENT B</td></tr> <tr><td>OSCILLATOR 2</td><td>8</td><td>21</td><td>SEGMENT F</td></tr> <tr><td>FM/IF ADJUST</td><td>9</td><td>20</td><td>SEGMENT DP</td></tr> <tr><td>DIGIT 2</td><td>10</td><td>19</td><td>SEGMENT C</td></tr> <tr><td>DIGIT 3</td><td>11</td><td>18</td><td>SEGMENT G</td></tr> <tr><td>DIGIT 4</td><td>12</td><td>17</td><td>SEGMENT D</td></tr> <tr><td>DIGIT 1</td><td>13</td><td>16</td><td>SET MINUTES</td></tr> <tr><td>GND</td><td>14</td><td>15</td><td>SET HOURS</td></tr> </table>	AM FREQ	1	28	Vcc	FM FREQ	2	27	SET TIME	AM/FM	3	26	SET FREQ	INHIBIT TIME SET	4	25	INTENSITY	TEST	5	24	SEGMENT E	PRESET	6	23	SEGMENT A	OSCILLATOR 1	7	22	SEGMENT B	OSCILLATOR 2	8	21	SEGMENT F	FM/IF ADJUST	9	20	SEGMENT DP	DIGIT 2	10	19	SEGMENT C	DIGIT 3	11	18	SEGMENT G	DIGIT 4	12	17	SEGMENT D	DIGIT 1	13	16	SET MINUTES	GND	14	15	SET HOURS
AM FREQ	1	28	Vcc																																																								
FM FREQ	2	27	SET TIME																																																								
AM/FM	3	26	SET FREQ																																																								
INHIBIT TIME SET	4	25	INTENSITY																																																								
TEST	5	24	SEGMENT E																																																								
PRESET	6	23	SEGMENT A																																																								
OSCILLATOR 1	7	22	SEGMENT B																																																								
OSCILLATOR 2	8	21	SEGMENT F																																																								
FM/IF ADJUST	9	20	SEGMENT DP																																																								
DIGIT 2	10	19	SEGMENT C																																																								
DIGIT 3	11	18	SEGMENT G																																																								
DIGIT 4	12	17	SEGMENT D																																																								
DIGIT 1	13	16	SET MINUTES																																																								
GND	14	15	SET HOURS																																																								
U175	443-869	DS8629	<p>Pinout diagram for DS8629. Pins 1-4 on left, 5-8 on right.</p> <table border="1"> <tr><td>(TTL) Vcc<sub>2</sub></td><td>1</td><td>8</td><td>Vcc<sub>1</sub> (ECL/BUFFER)</td></tr> <tr><td>OUTPUT</td><td>2</td><td>7</td><td>INPUT (POSITIVE-EDGE TRIGGERED)</td></tr> <tr><td>(TTL) GND<sub>2</sub></td><td>3</td><td>6</td><td>INPUT (NEGATIVE-EDGE TRIGGERED)</td></tr> <tr><td>(ECL BUFFER)</td><td>4</td><td>5</td><td>BIAS</td></tr> </table>	(TTL) Vcc <sub>2</sub>	1	8	Vcc <sub>1</sub> (ECL/BUFFER)	OUTPUT	2	7	INPUT (POSITIVE-EDGE TRIGGERED)	(TTL) GND <sub>2</sub>	3	6	INPUT (NEGATIVE-EDGE TRIGGERED)	(ECL BUFFER)	4	5	BIAS																																								
(TTL) Vcc <sub>2</sub>	1	8	Vcc <sub>1</sub> (ECL/BUFFER)																																																								
OUTPUT	2	7	INPUT (POSITIVE-EDGE TRIGGERED)																																																								
(TTL) GND <sub>2</sub>	3	6	INPUT (NEGATIVE-EDGE TRIGGERED)																																																								
(ECL BUFFER)	4	5	BIAS																																																								