

# SEMICONDUCTOR IDENTIFICATION CHARTS

This section is divided into two parts: “Component Number Index” and “Part Number Index.” The Component Number Index provides a cross-reference between Circuit Component Numbers and their respective Heath Part Numbers. The component numbers

are listed in numerical order. The Part Number Index provides a lead configuration detail (basing diagram) for each semiconductor part number. The Heath Part Numbers in this section are also listed in numerical order.

## COMPONENT NUMBER INDEX

This index shows the Heath Part Number for each semiconductor in the IO-4205 Oscilloscope.

### DIODES

CIRCUIT COMPONENT NUMBER	HEATH PART NUMBER
D103A	
D101A, B-D106A,B	56-56
D107	56-67
D108A, B;D109A,B	56-56
D111A,B; D112A,B	56-56
D113-D116	56-89
D201	56-56
D204	56-56
D205	56-67
D206	56-59
D207-D210	56-56
D211	56-67

CIRCUIT COMPONENT NUMBER	HEATH PART NUMBER
D213,D214	56-56
D301, D302	57-52
D303, D310	57-27
D311	56-634
D312	56-56
D313	56-89
D314	56-26
D315, D316	56-56
D317	56-634
D318, D321	56-56

## TRANSISTORS

CIRCUIT COMPONENT NUMBER	HEATH PART NUMBER
D101A,B; D102A,B	417-854
Q101A,B; Q102A,B	471-902
Q103A,B	417-801
Q104A,B; Q105A,B	417-260
Q106A,B; Q109A,B	417-235
Q111A,B; Q112A,B	417-293
Q113, Q114	417-237
Q115, Q116	417-834
Q117, Q118	417-801
Q201	417-902
Q202	417-801
Q203, Q204	417-235
Q205, Q206	417-801
Q207, Q208	417-902
Q209, Q210	417-134
Q211	417-801
Q212, Q213	417-134
Q214, Q215	417-834
Q216	417-154
Q217	417-134
Q301, Q302	417-237
Q303, Q304	417-811
Q305	417-295
Q306, Q307	417-811

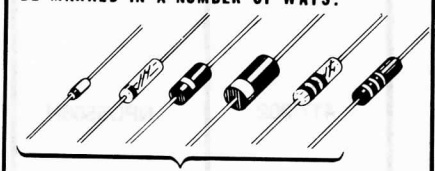
## INTEGRATED CIRCUITS

CIRCUIT COMPONENT NUMBER	HEATH PART NUMBER
U101	443-1
U102	443-4
U201	443-6
U202	443-625
U203	443-23
U204	443-44
U205	443-22
U301, U302	442-617
U303	442-618

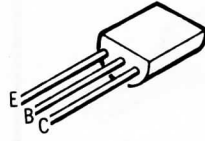
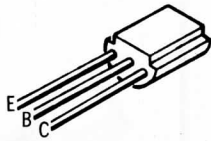
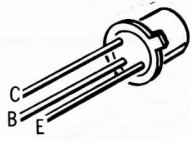
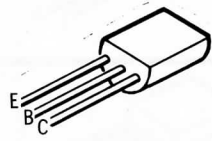
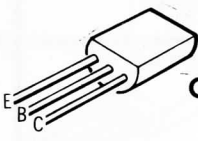
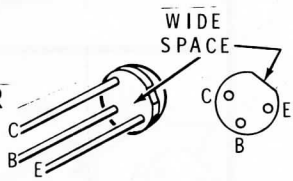
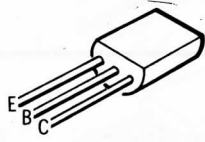
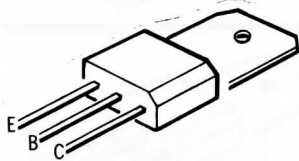
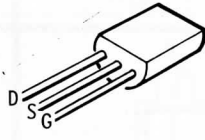
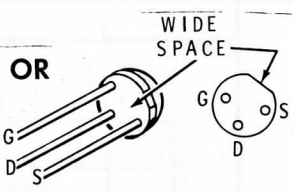
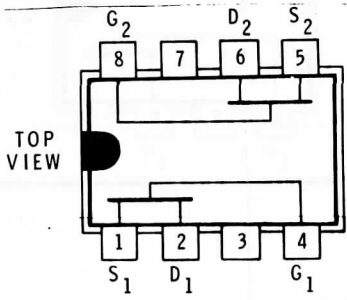
## PART NUMBER INDEX

This index shows a lead configuration detail (basing diagram) for each semiconductor part number.

## DIODES

HEATH PART NUMBER	MAY BE REPLACED WITH	IDENTIFICATION
56-26	1N191	<p>IMPORTANT: THE BANDED END OF DIODES CAN BE MARKED IN A NUMBER OF WAYS.</p>  <p>BANDED END</p>
56-56	1N4149	
56-59	1N750A	
56-67	VR10A	
56-89	GD510	
56-634	2EZ82D5	
57-27	1N2071	
57-52	DO-7	

# TRANSISTORS

HEATH PART NUMBER	MAY BE REPLACED WITH	IDENTIFICATION
417-134	MPS6520	 OR 
417-154	2N2369	
417-235 417-237	2N4121 SE6020	
417-260	2N4258A	 OR 
417-293 417-295 417-801 417-811	2N5770 MPSL51 MPSA20 MPSL01	
417-834	MPSU10	
417-854	SELECTED	 OR 
417-902	NPD5566N	



# INTEGRATED CIRCUITS

HEATH PART NUMBER	MAY BE REPLACED WITH	BASING DIAGRAM (TOP VIEW)
442-617	$\mu$ A78MGT2	<p>Diagram showing a rectangular chip with pins 1 through 4. Pin 1 is labeled INPUT, Pin 2 is OUTPUT, Pin 3 is CONTROL, and Pin 4 is COMMON. There are also two unlabeled pins between 1 and 2, and between 3 and 4, both labeled COMMON.</p>
442-618	$\mu$ A79MGT2	<p>Diagram showing a rectangular chip with pins 1 through 4. Pin 1 is COMMON, Pin 2 is CONTROL, Pin 3 is OUTPUT, and Pin 4 is INPUT. There are also two unlabeled pins between 1 and 2, and between 3 and 4, both labeled INPUT.</p>
443-1	SN7400N	<p>Diagram showing a rectangular chip with pins 1 through 14. Pins 1A, 1B, 1Y, 2A, 2B, 2Y, 3A, 3B, 3Y, 4A, 4B, 4Y are labeled. Pins 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 are labeled. The diagram shows two NAND gates (A and B) and two inverters (C and D).</p>
443-4	SN7472N	<p>Diagram showing a rectangular chip with pins 1 through 14. Pins 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 are labeled. The diagram shows a J-K Master-Slave Flip-flop with inputs J, K, and PRESET, and outputs Q and Q-bar.</p>

TTL  
J-K Master Slave  
Flip-flop

Integrated Circuits (Cont'd).

HEATH PART NUMBER	MAY BE REPLACED WITH	BASING DIAGRAM (TOB VIEW)
443-6	SN7474N	<p>The diagram shows a 14-pin DIP package with pins 14, 13, 12, 11, 10, 9, 8 on the top and 1, 2, 3, 4, 5, 6, 7 on the bottom. Pin 14 is V<sub>CC</sub> and pin 7 is GND. The internal circuit consists of two D-type flip-flops. The left flip-flop has inputs CLEAR (pin 1), D (pin 2), TOG (pin 3), and PRESET (pin 4). Its outputs are Q (pin 5) and Q-bar (pin 6). The right flip-flop has inputs PRESET (pin 10), TOG (pin 11), D (pin 12), and CLEAR (pin 13). Its outputs are Q (pin 9) and Q-bar (pin 8).</p>
443-22	SN74121N	<p>The diagram shows a 14-pin DIP package with pins 14, 13, 12, 11, 10, 9, 8 on the top and 1, 2, 3, 4, 5, 6, 7 on the bottom. Pin 14 is V<sub>CC</sub> and pin 7 is GND. The internal circuit includes an SR flip-flop and an AND gate. Inputs include V<sub>CC</sub> (pin 14), NC (pins 13, 12), R<sub>ext</sub>/C<sub>ext</sub> (pin 11), C<sub>ext</sub> (pin 10), R<sub>int</sub> (pin 9), and NC (pin 8). The flip-flop has inputs A1 (pin 2), A2 (pin 3), and B (pin 5). Its outputs are Q (pin 1) and Q-bar (pin 6).</p>
443-23	SN74122N	<p>The diagram shows a 14-pin DIP package with pins 14, 13, 12, 11, 10, 9, 8 on the top and 1, 2, 3, 4, 5, 6, 7 on the bottom. Pin 14 is V<sub>CC</sub> and pin 7 is GND. The internal circuit includes an SR flip-flop and an AND gate. Inputs include V<sub>CC</sub> (pin 14), R<sub>ext</sub>/C<sub>ext</sub> (pin 13), NC (pin 12), C<sub>ext</sub> (pin 11), NC (pin 10), R<sub>int</sub> (pin 9), and Q (pin 8). The flip-flop has inputs A1 (pin 2), A2 (pin 3), B1 (pin 4), B2 (pin 5), and CLR (pin 6). Its outputs are Q (pin 1) and Q-bar (pin 7).</p>
443-44	SN7413N	<p>The diagram shows a 14-pin DIP package with pins 14, 13, 12, 11, 10, 9, 8 on the top and 1, 2, 3, 4, 5, 6, 7 on the bottom. Pin 14 is V<sub>CC</sub> and pin 7 is GND. The internal circuit consists of two inverters, labeled A and B. Inverter A has inputs 1A (pin 1), 1B (pin 2), NC (pin 3), 1C (pin 4), 1D (pin 5), 1Y (pin 6), and GND (pin 7). Inverter B has inputs 2D (pin 13), 2C (pin 12), NC (pin 11), 2B (pin 10), 2A (pin 9), 2Y (pin 8), and GND (pin 7).</p>



## Integrated Circuits (Cont'd.)

HEATH PART NUMBER	MAY BE REPLACED WITH	BASING DIAGRAM (TOP VIEW)
443-625	SN74132N	<p>The diagram shows the pin configuration for the SN74132N integrated circuit. The pins are numbered 1 through 14. Pin 14 is labeled <math>V_{CC}</math> and pin 7 is labeled GND. The circuit includes four inverters labeled A, B, C, and D. Inverter A has inputs at pins 1 and 2, and its output is at pin 3. Inverter B has inputs at pins 4 and 5, and its output is at pin 6. Inverter C has inputs at pins 9 and 10, and its output is at pin 8. Inverter D has inputs at pins 11 and 12, and its output is at pin 13. A thick black semi-circular symbol is located on the left side of the diagram, between pins 14 and 1.</p>

**FOR PARTS REQUESTS ONLY**

- Be sure to follow instructions carefully.
- Use a separate letter for all correspondence.
- Please allow 10 - 14 days for mail delivery time.

**DO NOT WRITE IN THIS SPACE****INSTRUCTIONS**

- Please print all information requested.
- Be sure you list the correct **HEATH** part number exactly as it appears in the parts list.
- If you wish to prepay your order, mail this card and your payment in an envelope. Be sure to include 10% (25¢ minimum, \$3.50 maximum) for insurance, shipping and handling. Michigan residents add 4% tax.

Total enclosed \$ \_\_\_\_\_

- If you prefer COD shipment, check the COD box and mail this form. COD ☐

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_

STATE \_\_\_\_\_ ZIP \_\_\_\_\_

The information requested in the next two lines is not required when purchasing nonwarranty replacement parts, but it can help us provide you with better products in the future.

Model # \_\_\_\_\_ Invoice # \_\_\_\_\_

Date \_\_\_\_\_ Location \_\_\_\_\_

Purchased \_\_\_\_\_ Purchased \_\_\_\_\_

LIST **HEATH**  
PART NUMBER

QTY.

PRICE  
EACHTOTAL  
PRICE

TOTAL FOR PARTS

HANDLING AND SHIPPING

MICHIGAN RESIDENTS ADD 4% TAX

TOTAL AMOUNT OF ORDER

SEND TO: **HEATH COMPANY**  
BENTON HARBOR  
MICHIGAN 49022  
**ATTN: PARTS REPLACEMENT**

Phone (Replacement parts only): 616 982-3571

THIS FORM IS FOR U.S. CUSTOMERS ONLY  
OVERSEAS CUSTOMERS SEE YOUR DISTRIBUTOR

**FOR PARTS REQUESTS ONLY**

- Be sure to follow instructions carefully.
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Purchased \_\_\_\_\_ Purchased \_\_\_\_\_

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QTY.

PRICE  
EACHTOTAL  
PRICE

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# CUSTOMER SERVICE

## REPLACEMENT PARTS

Please provide complete information when you request replacements from either the factory or Heath Electronic Centers. Be certain to include the **HEATH** part number exactly as it appears in the parts list.

## ORDERING FROM THE FACTORY

Print all of the information requested on the parts order form furnished with this product and mail it to Heath. For telephone orders (parts only) dial 616 982-3571. If you are unable to locate an order form, write us a letter or card including:

- Heath part number.
- Model number.
- Date of purchase.
- Location purchased or invoice number.
- Nature of the defect.
- Your payment or authorization for COD shipment of parts not covered by warranty.

Mail letters to: Heath Company  
Benton Harbor  
MI 49022  
Attn: Parts Replacement

**Retain original parts until you receive replacements. Parts that should be returned to the factory will be listed on your packing slip.**

## OBTAINING REPLACEMENTS FROM HEATH ELECTRONIC CENTERS

For your convenience, "over the counter" replacement parts are available from the Heath Electronic Centers listed in your catalog. Be sure to bring in the original part and purchase invoice when you request a warranty replacement from a Heath Electronic Center.

## TECHNICAL CONSULTATION

Need help with your kit? — Self-Service? — Construction? — Operation? — Call or write for assistance. you'll find our Technical Consultants eager to help with just about any technical problem except "customizing" for unique applications.

The effectiveness of our consultation service depends on the information you furnish. Be sure to tell us:

- The Model number and Series number from the blue and white label.
- The date of purchase.
- An exact description of the difficulty.
- Everything you have done in attempting to correct the problem.

Also include switch positions, connections to other units, operating procedures, voltage readings, and any other information you think might be helpful.

**Please do not send parts for testing**, unless this is specifically requested by our Consultants.

Hints: Telephone traffic is lightest at midweek — please be sure your Manual and notes are on hand when you call.

Heathkit Electronic Center facilities are also available for telephone or "walk-in" personal assistance.

## REPAIR SERVICE

Service facilities are available, if they are needed, to repair your completed kit. (Kits that have been modified, soldered with paste flux or acid core solder, cannot be accepted for repair.)

**If it is convenient, personally deliver your kit to a Heathkit Electronic Center. For warranty parts replacement, supply a copy of the invoice or sales slip.**

If you prefer to ship your kit to the factory, attach a letter containing the following information directly to the unit:

- Your name and address.
- Date of purchase and invoice number.
- Copies of all correspondence relevant to the service of the kit.
- A brief description of the difficulty.
- Authorization to return your kit COD for the service and shipping charges. (This will reduce the possibility of delay.)

Check the equipment to see that all screws and parts are secured. (Do not include any wooden cabinets or color television picture tubes, as these are easily damaged in shipment. Do not include the kit Manual.) Place the equipment in a strong carton with at least **THREE INCHES** of *resilient* packing material (shredded paper, excelsior, etc.) on all sides. Use additional packing material where there are protrusions (control sticks, large knobs, etc.). If the unit weighs over 15 lbs., place this carton in another one with 3/4" of packing material between the two.

Seal the carton with reinforced gummed tape, tie it with a strong cord, and mark it "Fragile" on at least two sides. Remember, the carrier will not accept liability for shipping damage if the unit is insufficiently packed. Ship by prepaid express, United Parcel Service, or insured Parcel Post to:

Heath Company  
Service Department  
Benton Harbor, Michigan 49022



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