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THE FOLLOWING SERVICING INSTRUCTIONS ARE FOR USE BY QUALIFIED PERSONNEL ONLY. TO AVOID PERSONAL INJURY, DO NOT PERFORM ANY SERVICING OTHER THAN THAT CONTAINED IN OPERATING INSTRUCTIONS UNLESS YOU ARE QUALIFIED TO DO SO. REFER TO OPERATORS SAFETY SUMMARY AND SERVICE SAFETY SUMMARY PRIOR TO PERFORMING ANY SERVICE.

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**PLEASE CHECK FOR CHANGE INFORMATION
AT THE REAR OF THIS MANUAL.**

2213A OSCILLOSCOPE SERVICE

INSTRUCTION MANUAL

Tektronix, Inc.
P.O. Box 500
Beaverton, Oregon 97077

070-4733-00
Product Group 46

Serial Number _____

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DIAGRAMS AND CIRCUIT BOARD ILLUSTRATIONS

Symbols

Graphic symbols and class designation letters are based on ANSI Standard Y32.2-1975.

Logic symbology is based on ANSI Y32.14-1973 in terms of positive logic. Logic symbols depict the logic function performed and may differ from the manufacturer's data.

The overline on a signal name indicates that the signal performs its intended function when it is in the low state.

Abbreviations are based on ANSI Y1.1-1972.

Other ANSI standards that are used in the preparation of diagrams by Tektronix, Inc. are:

- Y14.15, 1966 Drafting Practices.
- Y14.2, 1973 Line Conventions and Lettering.
- Y10.5, 1968 Letter Symbols for Quantities Used in Electrical Science and Electrical Engineering.

American National Standard Institute
1430 Broadway
New York, New York 10018

Component Values

Electrical components shown on the diagrams are in the following units unless noted otherwise:

- Capacitors = Values one or greater are in picofarads (pF). Values less than one are in microfarads (μ F).
- Resistors = Ohms (Ω).

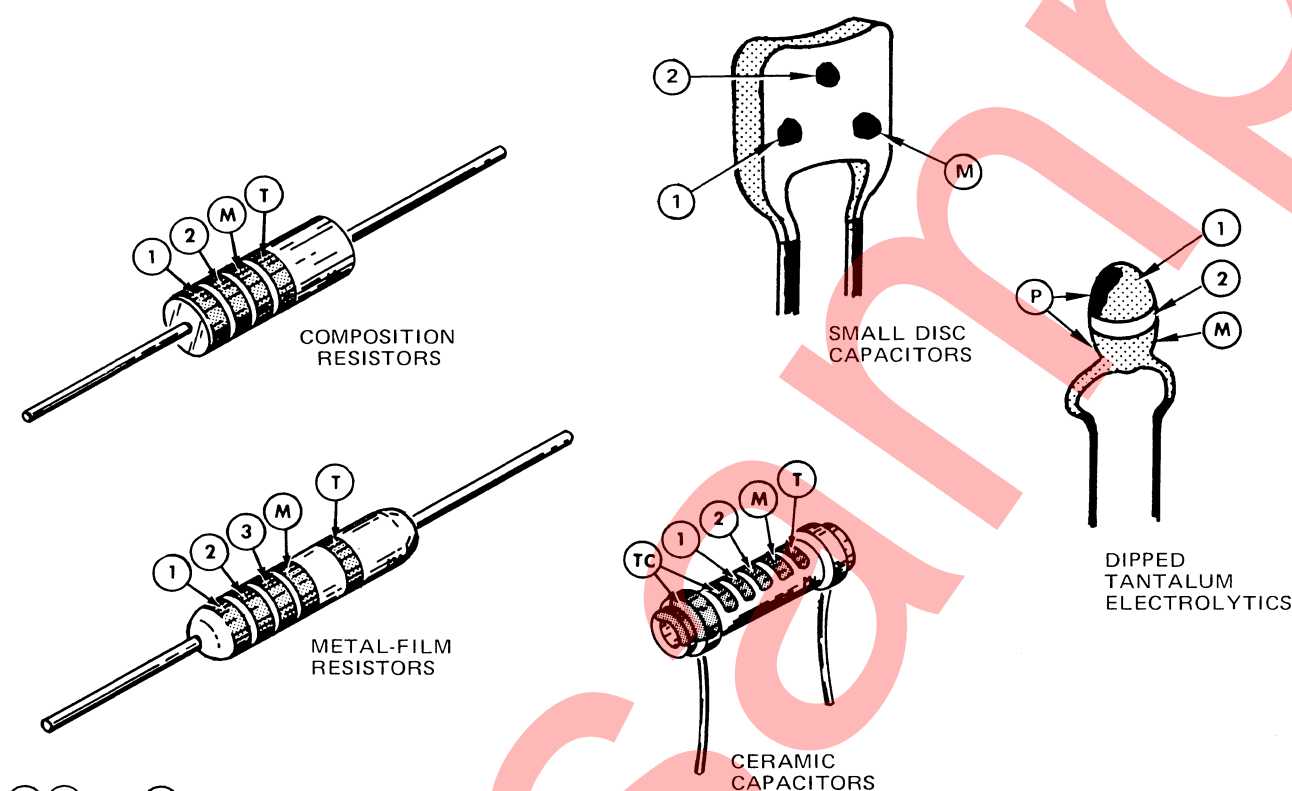
The information and special symbols below may appear in this manual.

Assembly Numbers and Grid Coordinates

Each assembly in the instrument is assigned an assembly number (e.g., A20). The assembly number appears on the circuit board outline on the diagram, in the title for the circuit board component location illustration, and in the lookup table for the schematic diagram and corresponding component locator illustration. The Replaceable Electrical Parts list is arranged by assemblies in numerical sequence; the components are listed by component number *(see following illustration for constructing a component number).

The schematic diagram and circuit board component location illustration have grids. A lookup table with the grid coordinates is provided for ease of locating the component. Only the components illustrated on the facing diagram are listed in the lookup table. When more than one schematic diagram is used to illustrate the circuitry on a circuit board, the circuit board illustration may only appear opposite the first diagram on which it was illustrated; the lookup table will list the diagram number of other diagrams that the circuitry of the circuit board appears on.

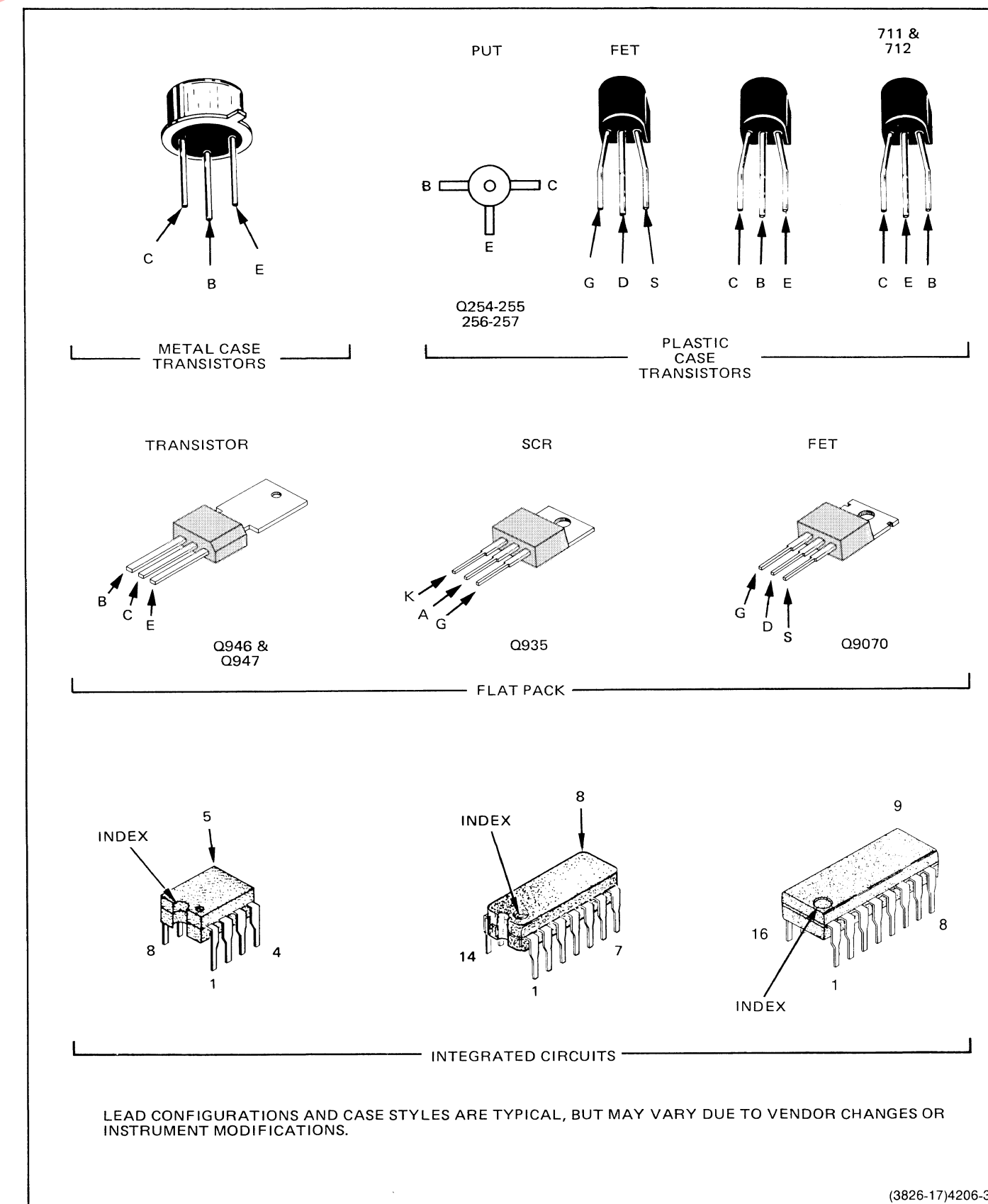
COLOR CODE



- ① ② and ③ — 1st, 2nd, and 3rd significant figures
- M — multiplier T — tolerance
- TC — temperature coefficient
- P — polarity and voltage rating
- T and/or TC color code may not be present on some capacitors

COLOR	SIGNIFICANT FIGURES	RESISTORS		CAPACITORS		DIPPED TANTALUM VOLTAGE RATING	
		MULTIPLIER	TOLERANCE	MULTIPLIER	TOLERANCE		
BLACK	0	1	---	1	$\pm 20\%$	± 2 pF	4 VDC
BROWN	1	10	$\pm 1\%$	10	$\pm 1\%$	± 0.1 pF	6 VDC
RED	2	10^2 or 100	$\pm 2\%$	10^2 or 100	$\pm 2\%$	---	10 VDC
ORANGE	3	10^3 or 1 K	$\pm 3\%$	10^3 or 1000	$\pm 3\%$	---	15 VDC
YELLOW	4	10^4 or 10 K	$\pm 4\%$	10^4 or 10,000	$+100\% - 9\%$	---	20 VDC
GREEN	5	10^5 or 100 K	$\pm 5\%$	10^5 or 100,000	$\pm 5\%$	± 0.5 pF	25 VDC
BLUE	6	10^6 or 1 M	$\pm 4\%$	10^6 or 1,000,000	---	---	35 VDC
VIOLET	7	---	$\pm 1/10\%$	---	---	---	50 VDC
GRAY	8	---	---	10^{-2} or 0.01	$+80\% - 20\%$	± 0.25 pF	---
WHITE	9	---	---	10^{-1} or 0.1	$\pm 10\%$	± 1 pF	---
GOLD	---	10^{-1} or 0.1	$\pm 5\%$	---	---	---	---
SILVER	---	10^{-2} or 0.01	$\pm 10\%$	---	---	---	---
NONE	---	---	$\pm 20\%$	---	$\pm 10\%$	± 1 pF	---

Figure 9-1. Color codes for resistors and capacitors.

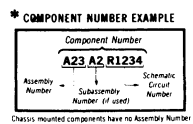
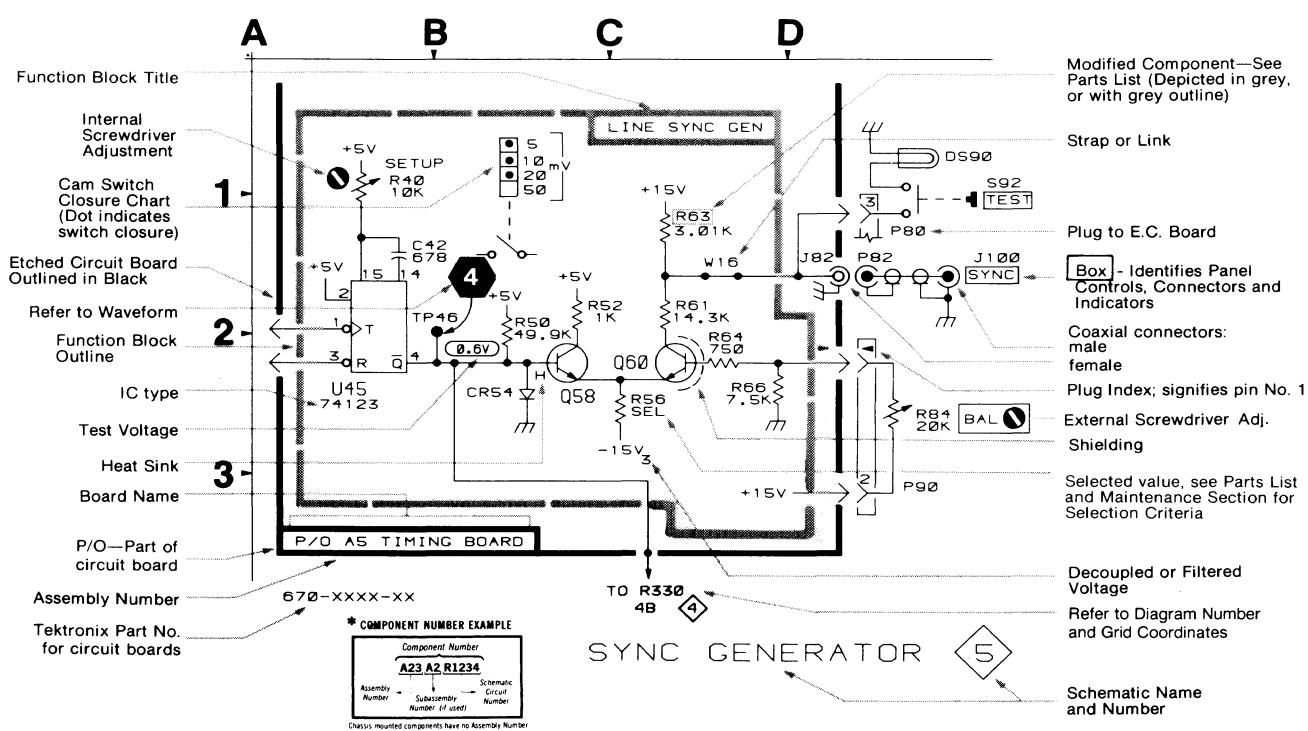


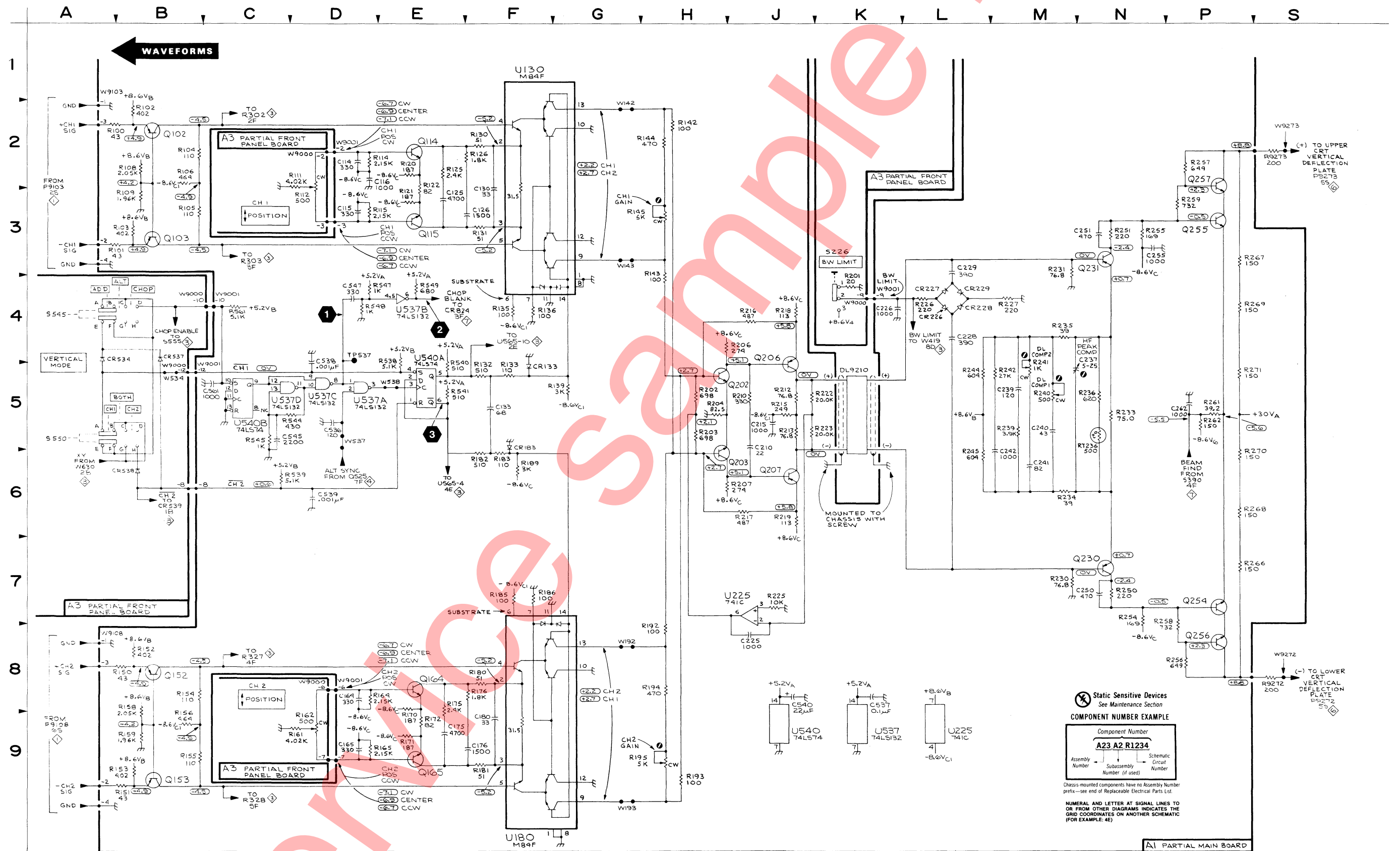
LEAD CONFIGURATIONS AND CASE STYLES ARE TYPICAL, BUT MAY VARY DUE TO VENDOR CHANGES OR INSTRUMENT MODIFICATIONS.

(3826-17)4206-32A

(1861-20A)4206-31

Figure 9-2. Semiconductor lead configurations.





Static Sensitive Devices
See Maintenance Section

COMPONENT NUMBER EXAMPLE

Component Number		
A23	A2	R1234
Assembly Number	Subassembly Number (if used)	Schematic Circuit Number

Chassis-mounted components have no Assembly Number prefix—see end of Replaceable Electrical Parts List.

NUMERAL AND LETTER AT SIGNAL LINES TO OR FROM OTHER DIAGRAMS INDICATES THE GRID COORDINATES ON ANOTHER SCHEMATIC (FOR EXAMPLE: 4E).