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**TEK**

**Self-Study Series**

070-7500-00  
Product Group 47

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# **QuickStart Board Reference**

*Please check for CHANGE INFORMATION  
at the rear of this manual.*

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**Tektronix®**  
COMMITTED TO EXCELLENCE

## Instrument Serial Numbers

Each instrument manufactured by Tektronix has a serial number on a panel insert or tag, or stamped on the chassis. The first letter in the serial number designates the country of manufacture. The last five digits of the serial number are assigned sequentially and are unique to each instrument. Those manufactured in the United States have six unique digits. The country of manufacture is identified as follows:

B010000	Tektronix, Inc., Beaverton, Oregon, USA
G100000	Tektronix Guernsey, Ltd., Channel Islands
E200000	Tektronix United Kingdom, Ltd., London
J300000	Sony/Tektronix, Japan
H700000	Tektronix Holland, NV, Heerenveen, The Netherlands

Instruments manufactured for Tektronix by external vendors outside the United States are assigned a two digit alpha code to identify the country of manufacture (e.g., JP for Japan, HK for Hong Kong, etc.).

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# Table of Contents



<b>General Information</b> .....	<b>1-1</b>
Board Removal and Replacement .....	1-1
Warranty .....	1-1
Safety Summary .....	1-2
Terms in Manuals .....	1-2
Terms on Equipment .....	1-2
Symbols in Manuals .....	1-2
Symbols on Equipment .....	1-2
Power Source .....	1-3
Do Not Operate in Explosive Atmospheres ..	1-3
Shipping the QuickStart Board .....	1-4
Non-Warranty Repairs .....	1-5
<b>Using the QuickStart Board</b> .....	<b>2-1</b>
User Controls .....	2-1
Configuring the Board .....	2-1
Jumpers .....	2-1
Test Pins .....	2-3
QuickStart Board Performance .....	2-4
Adjustment and Verification Procedure .....	2-4
Output Signal Descriptions .....	2-7
ECL Pulses .....	2-7
Triggers .....	2-11
Sine Wave .....	2-19
Ringing Square Wave .....	2-20
TTL Square Waves .....	2-22
Eye Diagrams .....	2-24
Transient Pulse .....	2-27
<b>Board Diagram</b> .....	<b>3-1</b>
<b>Replaceable Parts</b> .....	<b>4-1</b>
<b>Index</b> .....	<b>I-1</b>



**Figures**

QuickStart Board Component Locator Diagram . . . 2-6  
 ECL Pulses TP1-TP6 . . . . . 2-8  
 Triggers TP7 and TP8 . . . . . 2-11  
 Trigger TP7 at Various Jumper Configurations . . . 2-13  
 Triggers TP11 and TP12 . . . . . 2-14  
 TP11 and TP12 at Various Jumper  
 Configurations . . . . . 2-17  
 TP1 Shown as a Changing ECL Waveform  
 Triggered by TP11 . . . . . 2-18  
 Sine Wave TP10 . . . . . 2-19  
 Ringing Square Wave TP15 . . . . . 2-21  
 TTL Square Waves Q1, Q2, and Q3 . . . . . 2-23  
 Eye Diagram TP13 . . . . . 2-25  
 Eye Diagram TP14 . . . . . 2-26  
 Transient Pulse TP9 . . . . . 2-27  
 QuickStart Board Schematic Diagram . . . . . 3-1

**Tables**

Jumper Functions and Modes . . . . . 2-1  
 Test Pins and their Related Jumpers . . . . . 2-3  
 Jumper Functions and Modes . . . . . 2-3  
 ECL Pulses Jumper Configurations and  
 Applications . . . . . 2-9  
 TP7 and TP8 Jumper Configurations and  
 Applications . . . . . 2-12  
 TP11 and TP12 Jumper Configurations and  
 Applications . . . . . 2-15  
 TP10 Jumper Configurations and Applications . . 2-20  
 TP15 Jumper Configurations and Applications . . 2-21  
 TP9 Jumper Configurations and Applications . . . 2-28

# General Information



The QuickStart board produces signals specifically designed to demonstrate the timing- and voltage-measurement capabilities of modern instruments. The board is especially useful for demonstration and training purposes because some of its output signals incorporate imperfections found in the “real world”.

This manual documents the QuickStart board. This manual includes safety and warranty information, instructions for configuring the board, an adjustment procedure, descriptions of the output signals, circuit diagrams, and a replaceable parts list.

## Board Removal and Replacement

The board has rubber feet on its underside. Therefore, when you want to use the board, you may remove it from the carrying case and place it on any flat surface.

To remove the QuickStart board from the carrying case, pull up on any of the three mounting tabs located at the corners of the board. Then lift the board out of the carrying case.

To replace the board, perform the reverse procedure.

## Warranty

Tektronix, Inc. warrants the QuickStart board and the step-down transformer to be free from defects in materials and workmanship for a period of 90 days from the shipment date. If the board or transformer fails during the warranty period, return it to your local Tektronix service center.



## Safety Summary

The general safety information in this part of the summary is for both operators and service personnel. Specific warnings and cautions will be found throughout the manual where they apply, but may not appear in this summary.

### Terms in Manuals

*CAUTION* statements in manuals identify conditions or practices that could result in damage to the equipment or other property.

*WARNING* statements in manuals identify conditions or practices that could result in personal injury or loss of life.

### Terms on Equipment

*CAUTION* on equipment means a personal injury hazard not immediately accessible as one reads the marking, or a hazard to property including the equipment itself.

*DANGER* on equipment means a personal injury hazard immediately accessible as one reads the marking.

### Symbols in Manuals



*Static Sensitive Devices*

### Symbols on Equipment



*DANGER*  
*High Voltage*



*Protective*  
*ground (earth)*  
*terminal*



*ATTENTION*  
*Refer to*  
*manual*



## Power Source

The QuickStart board operates from a 9 V DC power supply. You can power the board from your main AC power source using the step-down transformer included in this *QuickStart Package*.

**List of Options**—the QuickStart board has the following options:

- Option 2F—A transformer for use with a 110 V to 120 V, 60 Hz AC power source.
- Option 3F—A transformer for use with a 220 V to 250 V, 50 Hz AC power source.

To power the board:

- Connect the power cord to power connector J10 on the board.
- Plug the transformer into a wall socket.

or

You can also power the QuickStart board from the CRS 10 Power Unit board. To power the board from the CRS 10 Power Unit board:

- Connect the ribbon cable from the CRS 10 Power Unit board to connector J9 on the QuickStart board.

## Do Not Operate in Explosive Atmospheres

To avoid explosion, do not operate this product in an explosive atmosphere unless it has been specifically certified for such operation.

*The LED DS109 (in the upper-right corner of the board) will light when the board is properly powered.*



## Shipping the QuickStart Board

To commercially transport the QuickStart board or transformer, package the board or transformer as follows:

- Step 1: Obtain a corrugated cardboard shipping carton with inside dimensions at least six inches greater than the board's or transformer's dimensions and with a carton test strength of at least 200 pounds.
- Step 2: If you are shipping the package to a Tektronix service center for Warranty service, attach a tag to the board or transformer showing the following:
  - Owner (with address)
  - Name of a person who can be contacted
  - Board or transformer type and serial number
  - Description of the problem
- Step 3: Place the board in an anti-static bag to protect static-sensitive components.
- Step 4: Tightly pack dunnage or urethane foam between the carton and the board or transformer (allowing three inches on each side) to cushion the board or transformer on all sides.
- Step 5: Seal the carton with shipping tape or with an industrial stapler.
- Step 6: Mark the address of the Tektronix service center and your return address on the carton in one or more prominent places.





## **Non-Warranty Repairs**

Tektronix service centers are not authorized to repair QuickStart boards that fail after the 90-day warranty period has expired. In the event of such a failure, you can order Tektronix part number 671-0799-00 from your local Tektronix representative to purchase a replacement board.

Alternatively, you can repair the board. All electrical components on the board are parts that are available at any local commercial source.



# Using the QuickStart Board



**User Controls** The QuickStart board has three user controls:

- SW1 A momentary switch
- C4 A variable capacitor to adjust the frequency of the TTL reference clock
- R31 A variable resistor to adjust the frequency of the 1 kHz sine wave

## Configuring the Board

You can configure the board using the board's eight jumpers. The jumper configuration you choose will determine the output signals appearing at the test pins TP1 through TP15.

### Jumpers

The eight jumpers, J1 through J8, are located along one edge of the board.

Each jumper consists of a socket and a jumper cap (shorting block). The socket contains either two, three, or four pairs of square pins labeled A through D. The jumper cap selects the mode for the function of its jumper.

The table that follows lists the function for each jumper, and the mode selected for each configuration of its jumper cap.

### *Jumper Functions and Modes*

---

Jumper	Function	Jumper Cap Configuration	Mode
J1	TTL Clock on TP7	A	70 MHz Clock
		B	40 MHz Clock
		C	20 MHz Clock

---



*Jumper Functions and Modes (Cont.)*

<b>Jumper</b>	<b>Function</b>	<b>Jumper Cap Configuration</b>	<b>Mode</b>
J2	Power <sup>1</sup>	A	ECL circuits enabled
		B	Eye Diagram circuits enabled
J3	Spikes on Sine Wave TP10	A	Pressing SW1 fires a single-shot spike.
		B	Depressing SW1 causes continuous spikes
		C	Continuous spikes
		D	No spikes
J4	40 MHz Noise on the TP10 Sine Wave	A	40 MHz noise
		B	No 40 MHz noise
J5	Transient Pulse on TP8	A	Transient pulse frequency = 15.5 Hz
		B	Transient pulse frequency = 1 kHz
		C	Single-shot transient pulse
J6	Metastability on ECL Pulses TP1-TP6	A	Metastability (requires J7-A or C)
		B	No metastability
J7	ECL Pulses on TP1-TP6	A	Continuous train of ECL pulses
		B	Single-shot burst of ECL pulses
		C	Repetitive burst of ECL pulses
J8	Noise on the Ringing Square Wave TP15	A	Square wave noise
		B	No square wave noise

<sup>1</sup>Press SW1 to reset power after changing J2 from A to B or from B to A.



## Test Pins

Fifteen test pins are arranged along two edges of the board. Each test pin has from one to four related jumpers, as shown in the following table. The jumper-cap settings on unrelated jumpers have no effect on the output signal of a test pin. An \* denotes that the jumper has an effect on the output signal for every jumper cap configuration.

*Test Pins and their Related Jumpers*

Test Pin	Related Jumpers							
	J1	J2	J3	J4	J5	J6	J7	J8
TP1 ECL Pulses	*	A				*	*	
TP2 ECL Pulses	*	A				*	*	
TP3 ECL Pulses	*	A				*	*	
TP4 ECL Pulses	*	A				*	*	
TP5 ECL Pulses	*	A				*	*	
TP6 ECL Pulses	*	A				*	*	
TP7 TTL Clock	*							
TP8 Transient Trigger	*				*			
TP9 Transient Pulse	*				*			
TP10 1 kHz Sine Wave	*		*	*				
TP11 TTL Framing Pulse	*	A					*	
TP12 TTL Framing Pulse	*	A					*	
TP13 Eye Diagram	*	B						
TP14 Eye Diagram	*	B						
TP15 Ringing Square Wave								*



## QuickStart Board Performance

The following procedure requires an instrument with a vertical bandwidth of 100 MHz or greater and a 10X probe (for example, an oscilloscope or digitizing signal analyzer (DSA)) to adjust and verify the performance of the QuickStart board.

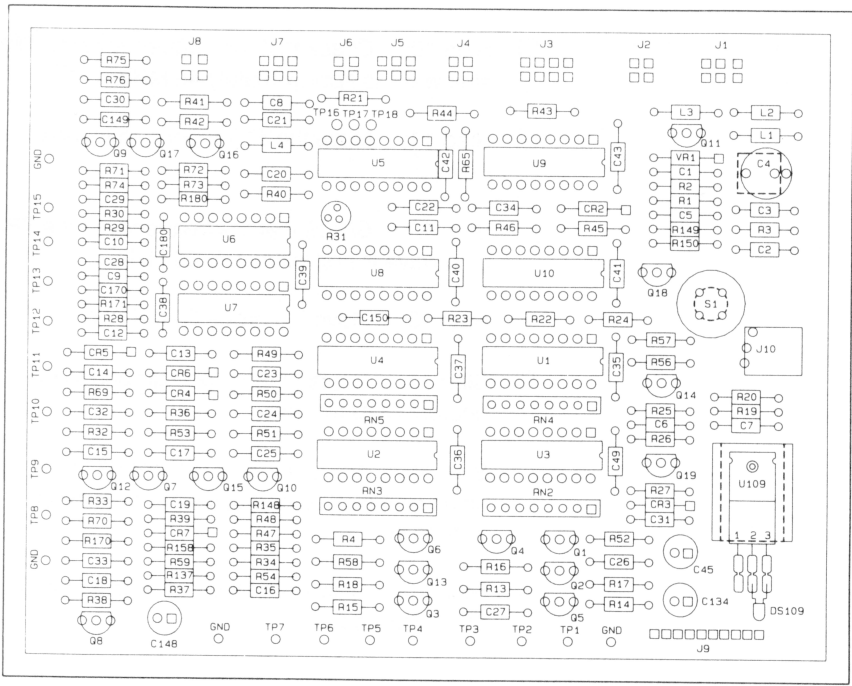
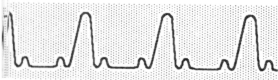
See the figure on page 2-6 for the connector and adjustment locations.

### Adjustment and Verification Procedure

- Step 1: Connect the jack on the power cord to J10 on the board.
- Step 2: Plug the transformer into an AC power-source outlet. (Observe that the LED DS109 is lit.)
- Step 3: Connect the 10X probe to the vertical input of the instrument.
- Step 4: Select DC input coupling.
- Step 5: Set the instruments **Vert Size** to 1 V/div and the **Main Size** to 1 ms/div.
- Step 6: Connect the probe tip to TP7. Ensure that the J1 jumper cap is set in the A position.
- Step 7: Change the **Vert Size** to 500 mV/div and the **Main Size** to 10 ns/div.
- Step 8: *Adjust* variable capacitor C4 for a 70 MHz sine wave (that is, exactly seven cycles in the 10 divisions of the screen).
- Step 9: Move the J1 jumper cap to the B position.



- Step 10: *Check* that the frequency of the TP7 sine wave is approximately 40 MHz.
- Step 11: Move the J1 jumper cap to the C position.
- Step 12: *Check* that the frequency of the TP7 sine wave is approximately 20 MHz.
- Step 13: Move the probe tip to TP10.
- Step 14: Connect the probe ground to the nearest GND test pin.
- Step 15: *Adjust* variable resistor R31 for a 1 kHz sine wave (that is, one cycle per division at 1 ms/div).
- Step 16: Disconnect the instrument from the QuickStart board.



QuickStart Board Component Locator Diagram





## Output Signal Descriptions

The output signals are categorized as follows:

- ECL pulses (TP1-TP6)
- Triggers (TP7, TP8, TP11, TP12)
- Sine wave (TP10)
- Ringing square wave (TP15)
- TTL square waves (Q1, Q2, Q3)
- Eye diagram (TP13, TP14)
- Transient pulse (TP9)

### ECL Pulses

The output signals on TP1-TP5 are groups of level-shifted, fast-rise ECL pulses. The signal on TP6 is a single ECL pulse. The TP6 pulse is the index for the TP1-TP5 groups of pulses.

**TP1 Description**—The output signal on TP1 consists of five negative-going, level-shifted ECL pulses.

**TP2 Description**—The output signal on TP2 consists of six positive-going, level-shifted ECL pulses.

**TP3 Description**—The output signal on TP3 consists of four equally spaced, negative-going, level-shifted ECL pulses.

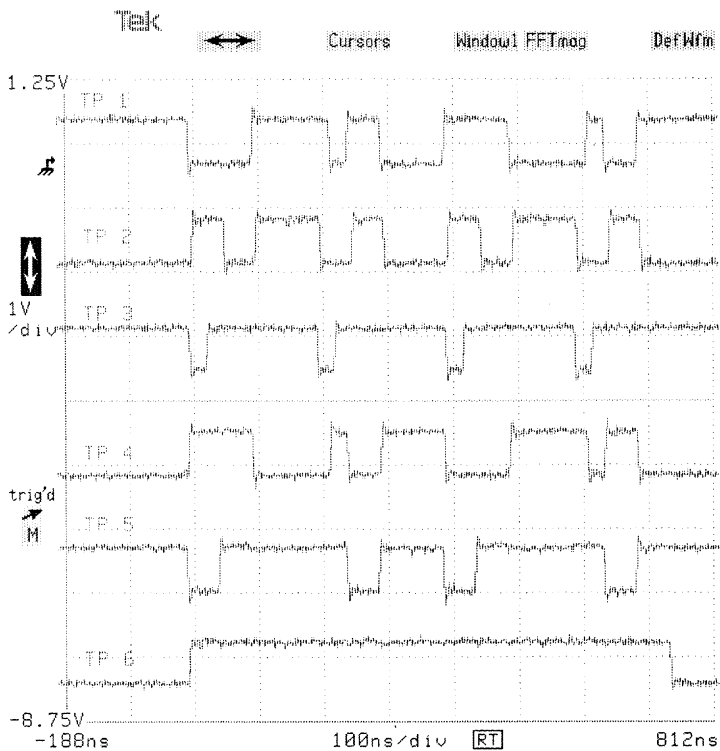
**TP4 Description**—The output signal on TP4 is the inverse of the signal on TP1.

**TP5 Description**—The output signal on TP5 consists of four unequally spaced, negative-going, level-shifted ECL pulses.

**TP6 Description**—The output signal on TP6 consists of a single positive-going, level-shifted ECL pulse.



The figure below is a display of ECL pulses, TP1-TP6 where the clock is set to 20 MHz (J1-C).



*ECL Pulses TP1-TP6*



### *ECL Pulses Jumper Configurations and Applications*

<b>Test Point</b>	<b>Jumper Configurations</b>	<b>Applications</b>
TP1	J7-A – Continuous train of pulses	■ Measuring ECL rise and fall times
	J7-B – Single-shot burst of pulses	■ Delay by Events (use the recurring bursts in conjunction with one of the framing pulses on TP11 and TP12)
	J7-C – Equally-spaced bursts of pulses	■ Word Recognizer Probe (use the recurring bursts in conjunction with Q1, Q2, and Q3) ■ Single-shot applications ■ Glitch triggering
TP2	J7-A – Continuous train of pulses	■ Measuring ECL rise and fall times
	J7-B – Single-shot burst of pulses	■ Single-shot applications
	J7-C – Equally spaced bursts of pulses	■ Viewing metastability
TP3	J7-A – Continuous train of pulses	■ Measuring ECL rise and fall times
	J7-B – Single shot burst of pulses	■ Single-shot applications
	J7-C – Equally spaced bursts of pulses	■ Viewing metastability



### *ECL Pulses Jumper Configurations and Applications (Cont.)*

Test Point	Jumper Configurations	Applications
TP4	J7-A — Continuous train of pulses	■ Measuring ECL rise and fall times
	J7-B — Single-shot burst of pulses	■ Delay by Events (use the recurring bursts in conjunction with one of the framing pulses on TP11 and TP12)
	J7-C — Equally-spaced bursts of pulses	■ Word Recognizer Probe (use the recurring bursts in conjunction with Q1, Q2, and Q3) ■ Single-shot applications ■ Glitch triggering
TP5	J7-A — Continuous train of pulses	■ Measuring ECL rise and fall times
	J7-B — Single-shot burst of pulses	■ Single-shot applications
	J7-C — Equally spaced bursts of pulses	■ Viewing metastability
TP6	J7-A — Continuous train of pulses	■ Measuring ECL rise and fall times
	J7-B — Single-shot burst of pulses	■ Single-shot applications
	J7-C — Equally spaced bursts of pulses	■ Viewing metastability

The interval between the recurring bursts is a function of a variable resistor R31. When R31 is adjusted for a 1 kHz sine wave on TP10, the bursts occur at intervals of approximately 15.5  $\mu$ s. The clock frequency, that J1 selects, affects the pulse widths but does not affect the interval between bursts.

When J6 is set to select metastability (J6-A), J7 must be set for continuous pulses (J7-A) or repetitive bursts (J7-C). The resulting display jitters occasionally, even when triggered.

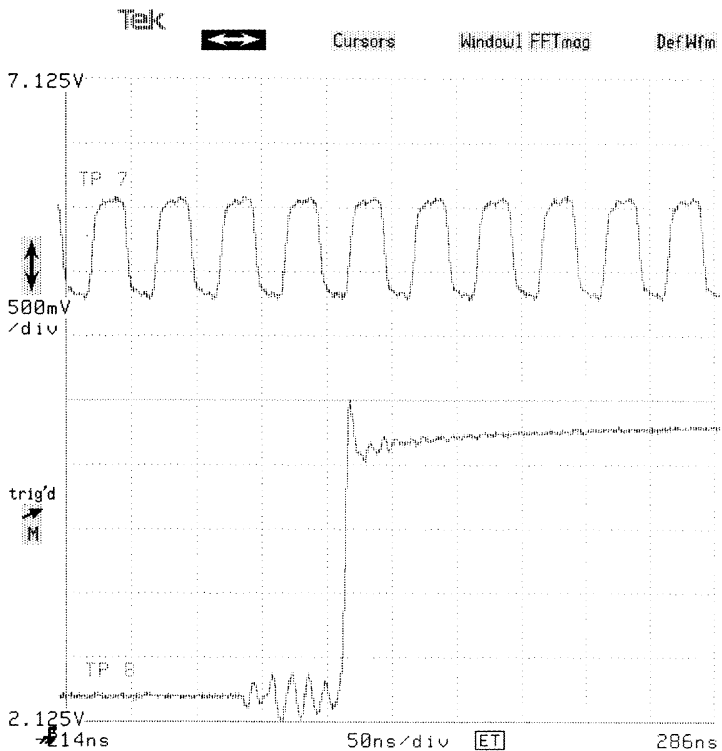


## Triggers

The output signals on TP7, TP8, TP11, and TP12 are primarily used for triggering.

**TP7 and TP8 Description**—The signal on TP7 is the TTL Reference Clock, and the signal on TP8 is a TTL square wave.

See the figure below for a display of triggers TP7 and TP8.



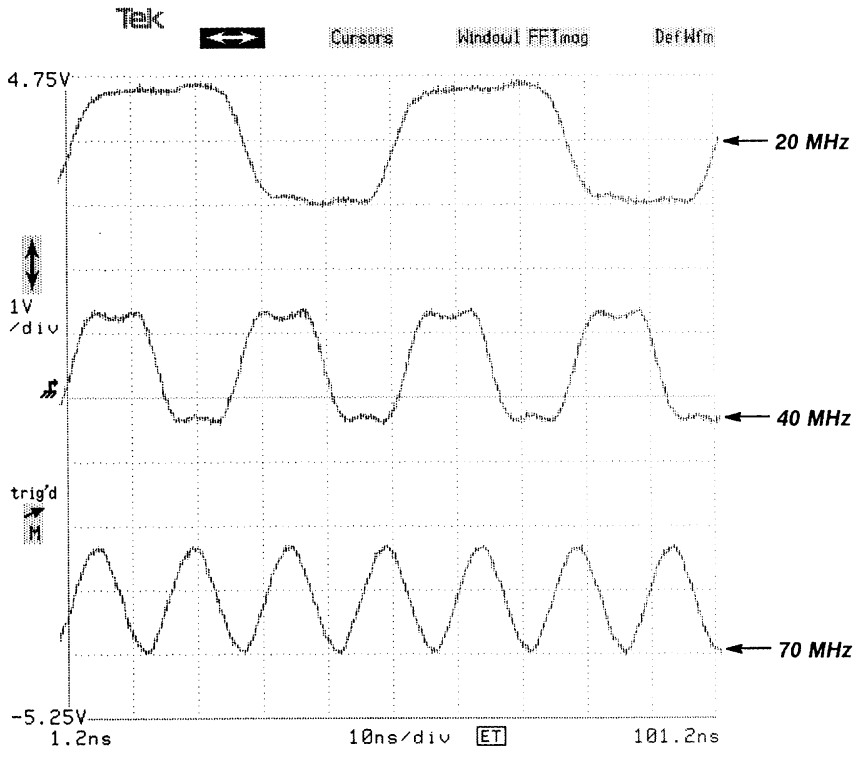
*Triggers TP7 and TP8*



### *TP7 and TP8 Jumper Configurations and Applications*

<b>Test Point</b>	<b>Jumper Configurations</b>	<b>Applications</b>
TP7	J1-A – 70 MHz Clock	■ Adjusting the clock frequency ■ Triggering the eye diagrams on TP13 and TP14
	J1-B – 40 MHz Clock	
	J1-C – 20 MHz Clock	
TP8	J5-A – Transient pulse frequency of 15.5 Hz	■ Triggering the fast transient on TP9
	J5-B – Transient pulse frequency of 1 kHz	
	J5-C – Single-shot transient pulse when SW1 is pressed	

The following figure shows trigger TP7 at the various jumper configurations listed in the preceding table.



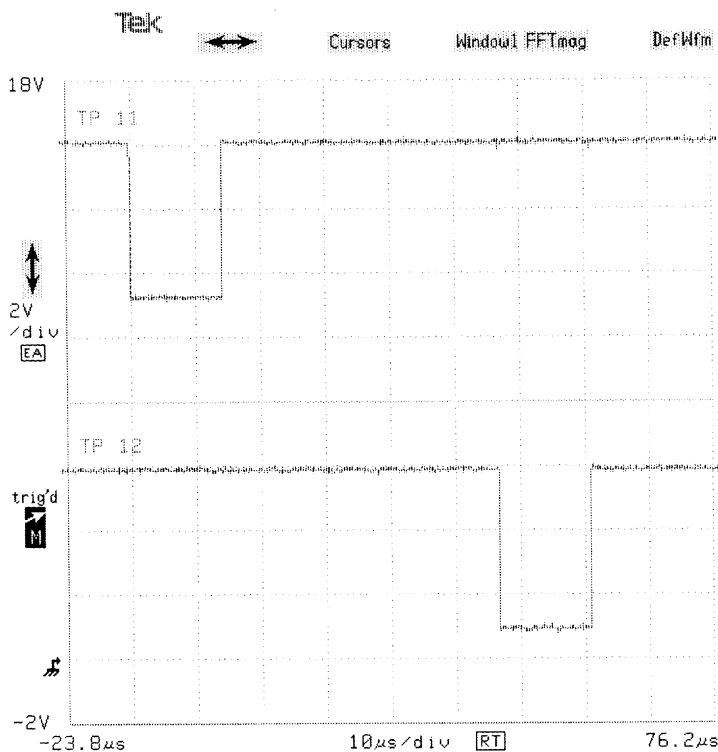
*Trigger TP7 at Various Jumper Configurations*



**TP11 and TP12 Description**—The signals on TP11 and TP12 are normally high TTL framing pulses for the ECL bursts on TP1-TP5. The framing- pulse frequency depends on the adjustment of variable resistor R1. When R1 is adjusted for a 1 kHz sine wave on TP10, the framing-pulse frequency is approximately 8 kHz.

When the TP11 signal is low, the pulses on TP1 and TP4 are degraded. When the TP12 signal is low, the pulses on TP1 and TP4 are normal.

See the figure below for a display of triggers TP11 and TP12.



*Triggers TP11 and TP12*





*TP11 and TP12 Jumper Configurations and Applications*

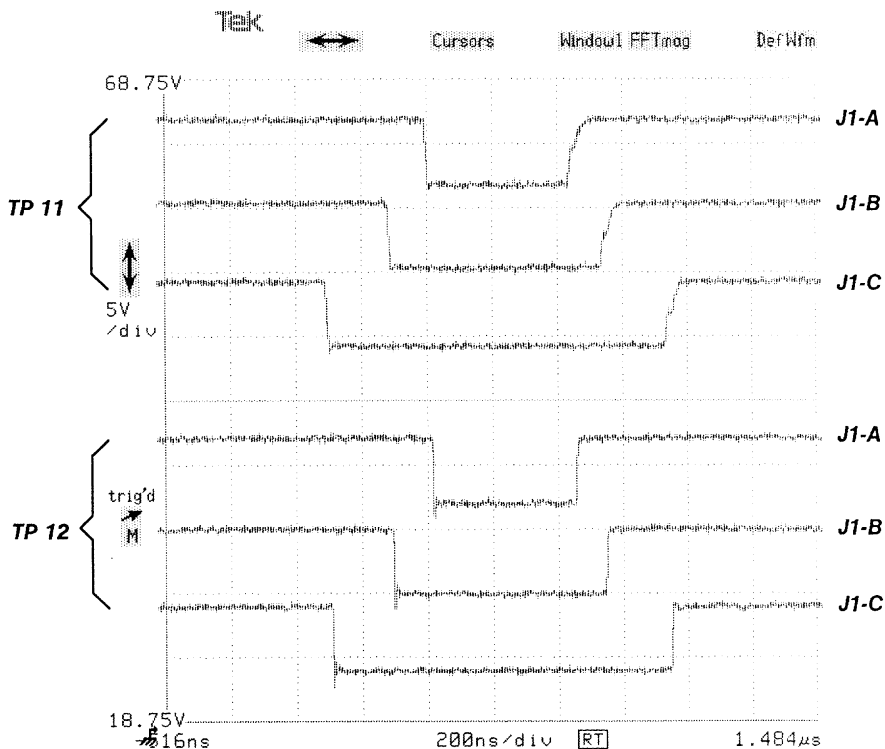
<b>Test Point</b>	<b>Jumper Configurations</b>	<b>Applications</b>
TP11	<p>J7-A – The framing pulse width is <math>\approx 15.5 \mu\text{s}</math> (if R31 is adjusted for a 1 kHz sine wave on TP10)</p> <p>J7-B – The signal remains high</p> <p>J7-C, J1-A – The framing pulse width is <math>\approx 410 \text{ ns}</math> (if the TTL Reference Clock is calibrated)</p> <p>J7-C, J1-B – The framing pulse width is <math>\approx 610 \text{ ns}</math> (if the TTL Reference Clock is calibrated)</p> <p>J7-C, J1-C – The framing pulse width is <math>\approx 970 \text{ ns}</math> (if the TTL Reference Clock is calibrated)</p>	<ul style="list-style-type: none"> <li>■ Delay by Events in conjunction with TP1 or TP4 as a changing ECL waveform (see the figure on page 2-18)</li> <li>■ Timing Measurements that measure the delay between TP11 and TP12</li> </ul>



*TP11 and TP12 Jumper Configurations and Applications (Cont.)*

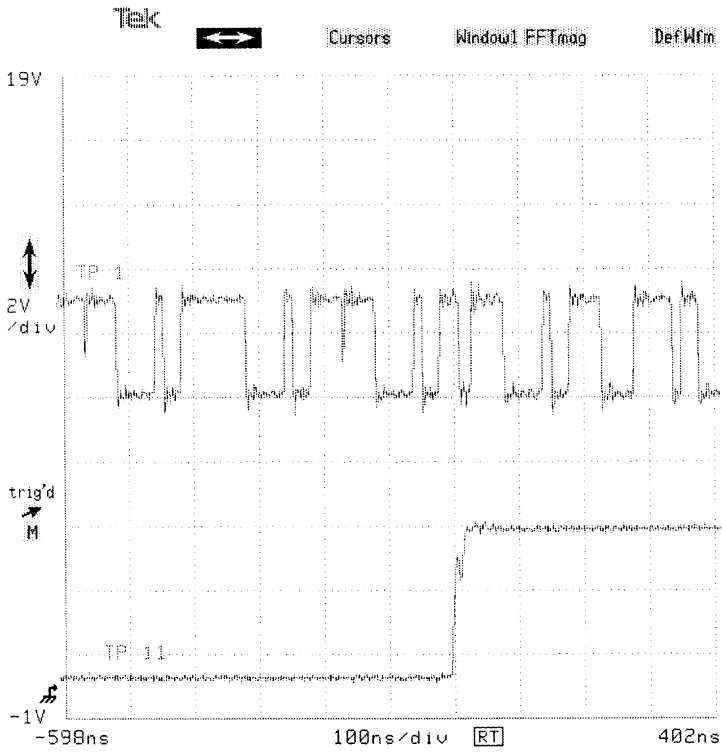
<b>Test Point</b>	<b>Jumper Configurations</b>	<b>Applications</b>
TP12	<p>J7-A – The framing pulse width is <math>\approx 15.5 \mu\text{s}</math> (if R31 is adjusted for a 1 kHz sine wave on TP10)</p> <p>J7-B – The signal remains high</p> <p>J7-C, J1-A – the framing pulse width is <math>\approx 410 \text{ ns}</math> (if the TTL Reference Clock is calibrated)</p> <p>J7-C, J1-B – The framing pulse width is <math>\approx 610 \text{ ns}</math> (if the TTL Reference Clock is calibrated)</p> <p>J7-C, J1-C – The framing pulse width is <math>\approx 970 \text{ ns}</math> (if the TTL Reference Clock is calibrated)</p>	<ul style="list-style-type: none"> <li>■ Delay by Events in conjunction with TP1 or TP4 as a changing ECL waveform on page 2-18</li> <li>■ Timing Measurements that measure the delay between TP11 and TP12</li> </ul>

The following figure shows triggers TP11 and TP12 at the various jumper configurations listed in the preceding table.



*TP11 and TP12 at Various Jumper Configurations*

The following figure shows the ECL pulse TP1 changing when triggered by TP11.



*TP1 Shown as a Changing ECL Waveform Triggered by TP11*

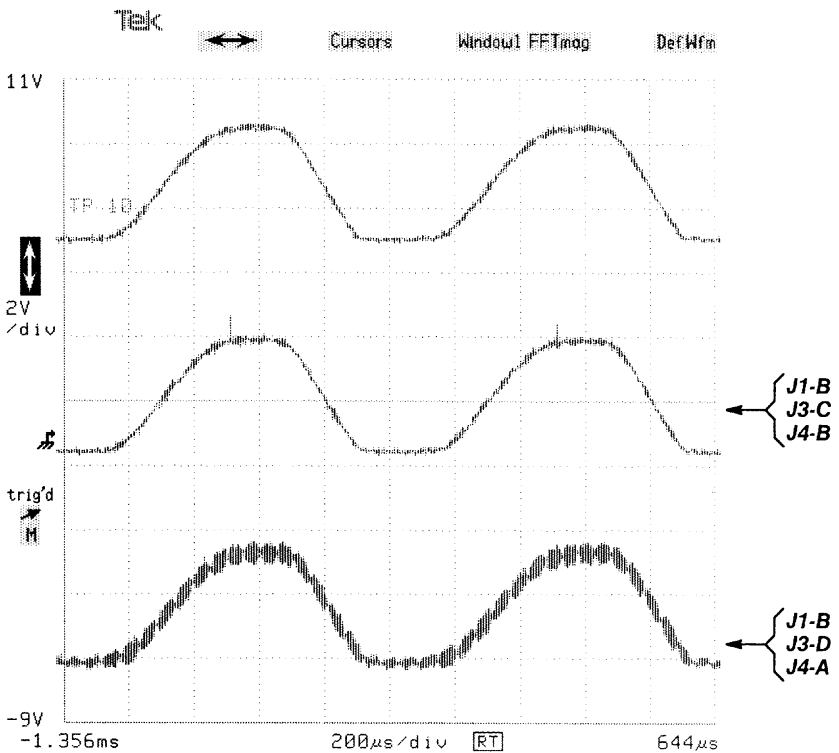


## Sine Wave

The output signal on TP10 is a sine wave.

**TP10 Description**—The sine wave on TP10 is approximately 3.7 V peak-to-peak. The sinewave frequency is 1 kHz  $\pm$  ~30%, which you can adjust using variable resistor R31.

See the figure below for a display of sine wave TP10.



*Sine Wave TP10*



### TP10 Jumper Configurations and Applications

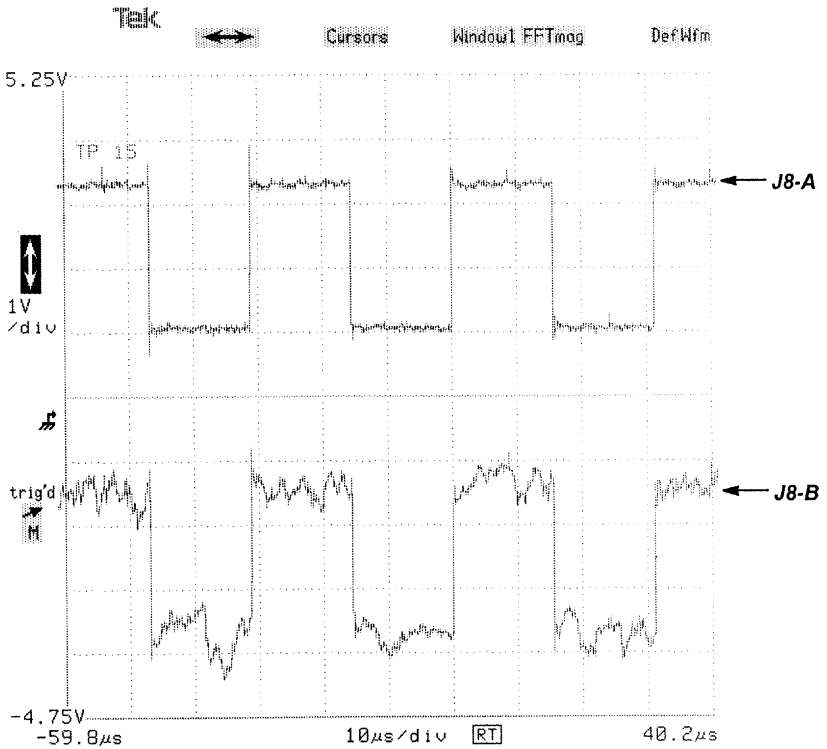
Test Point	Jumper Configurations	Applications
TP10	J3-A – A single-shot spike when SW1 is pressed	<ul style="list-style-type: none"> <li>■ Act-on-Delta Glitch capture</li> <li>■ Envelope Glitch capture</li> </ul>
	J3-B – Continuous spikes while SW1 is pressed	<ul style="list-style-type: none"> <li>■ Averaging (with 40 MHz noise)</li> <li>■ Measuring bandwidth limit (with 40 MHz noise)</li> </ul>
	J3-C – Continuous spikes	<ul style="list-style-type: none"> <li>■ Noise Reject Trigger Coupling (with 40 MHz noise)</li> </ul>
	J3-D – No spikes	
	J1B, J4A – 40 MHz noise	
	J1B, J4B – No 40 MHz noise	

### Ringling Square Wave

The output signal on TP15 is a ringing square wave.

**TP15 Description** – The signal on TP15 is a square wave of approximately 3 V peak-to-peak with ringing of approximately 1 V peak-to-peak. The square-wave frequency depends on the adjustment of variable resistor R1. When you adjust R1 for a 1 kHz sine wave on TP10, the square wave frequency on TP15 is 32 kHz.

See the figure on page 2-21 for a display of ringing square wave TP15 with and without noise.



*Ringng Square Wave TP15*

*TP15 Jumper Configurations and Applications*

Test Point	Jumper Configurations	Applications
TP15	J8-A — Square wave with noise	<ul style="list-style-type: none"> <li>■ Averaging</li> <li>■ Envelope Glitch capture</li> </ul>
	J8-B — Square wave without noise	



### **TTL Square Waves**

The output signals on Q1, Q2, and Q3 are TTL square waves.

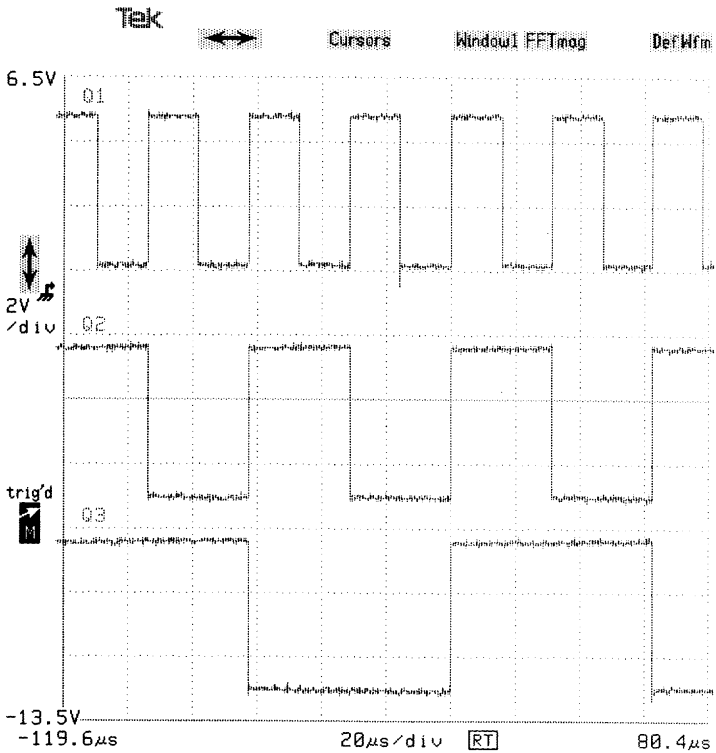
**Q1 Description**— The output signal on Q1 is approximately a 32 kHz TTL square wave.

**Q2 Description**— The output signal on Q2 is approximately a 16 kHz TTL square wave.

**Q3 Description**— The output signal on Q3 is approximately a 8 kHz TTL square wave.

See the following figure for a display of TTL square waves Q1, Q2, and Q3.





### TTL Square Waves Q1, Q2, and Q3

**Q1, Q2, Q3 Application** – Use the signals on Q1, Q2, and Q3 to demonstrate digital-word triggering with the Word Recognizer Probe.

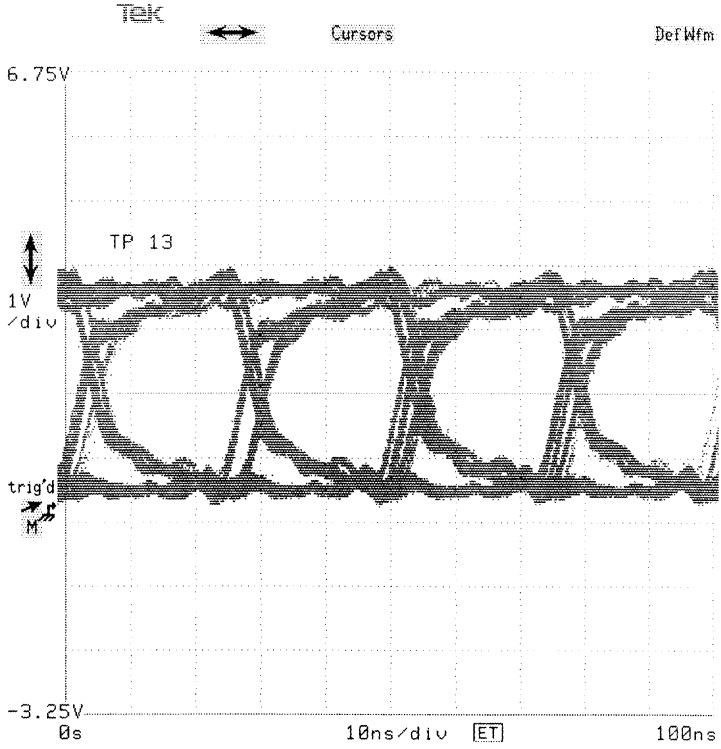


## Eye Diagrams

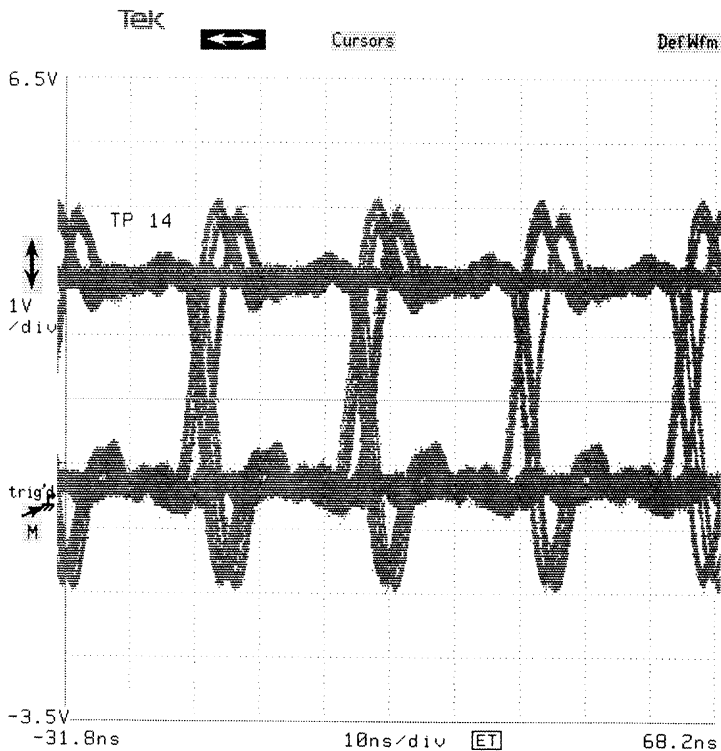
The signals on TP13 and TP14 are eye diagrams.

**TP13 and TP14 Description**— The output signals on TP13 and TP14 are one-bit, two-level eye diagrams. These output signals are representative of computer-bus eye patterns. You must trigger the TP13 and TP14 signals with the TTL clock on TP7. Also, you must set the oscillator frequency of the QuickStart board to 40 MHz (J1-B) or 20 MHz (J1-C). At 40 MHz, set the instruments **Main Size** to 5 ns/div; at 20 MHz, set the instruments **Main Size** to 10 ns/div.

See the following two figures for displays of eye diagrams TP13 and TP14 respectively.



*Eye Diagram TP13*



*Eye Diagram TP14*

**TP13 and TP14 Application** – Use the output signals on TP13 and TP14 to demonstrate the triggering on and displaying of an eye pattern.

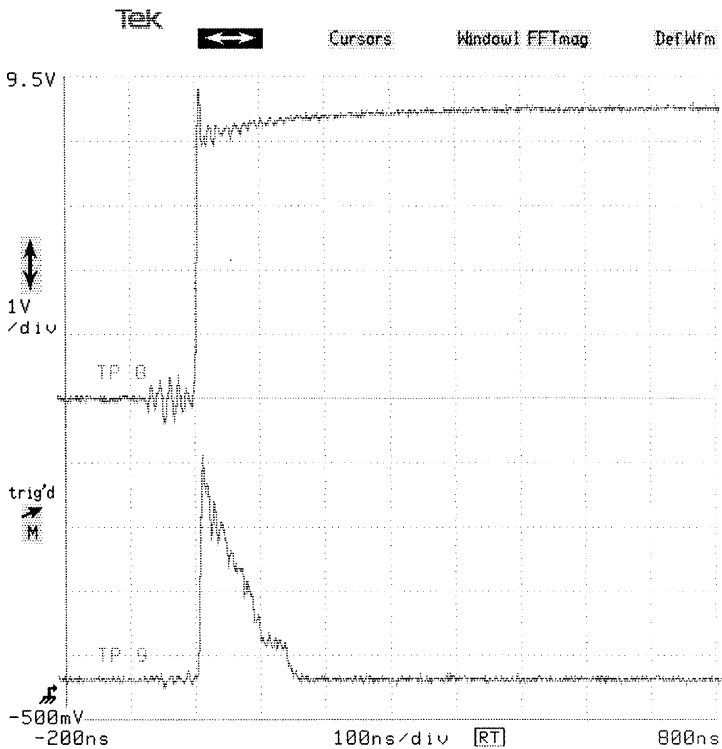


## Transient Pulse

The output signal on TP9 is a random fast transient.

**TP9 Description**—The output signal TP9 is a transient pulse, varying randomly from 0 to 5 V in amplitude and from 20 to 150 ns in duration.

See the figure below for a display of transient pulse TP9.



*Transient Pulse TP9*



The previous figure shows the TP8 signal and the TP9 transient. The transient occurs on the rising edge of the TP8 square wave.

### *TP9 Jumper Configurations and Applications*

<b>Test Point</b>	<b>Jumper Configurations</b>	<b>Applications</b>
TP9	J5-A – The pulse frequency is $\approx 15.5$ Hz J5-B – The pulse frequency is $\approx 1$ kHz J5-C – Single shot transient pulse when SW1 is pressed	■ Demonstrating fast transients in either single-shot or repetitive applications

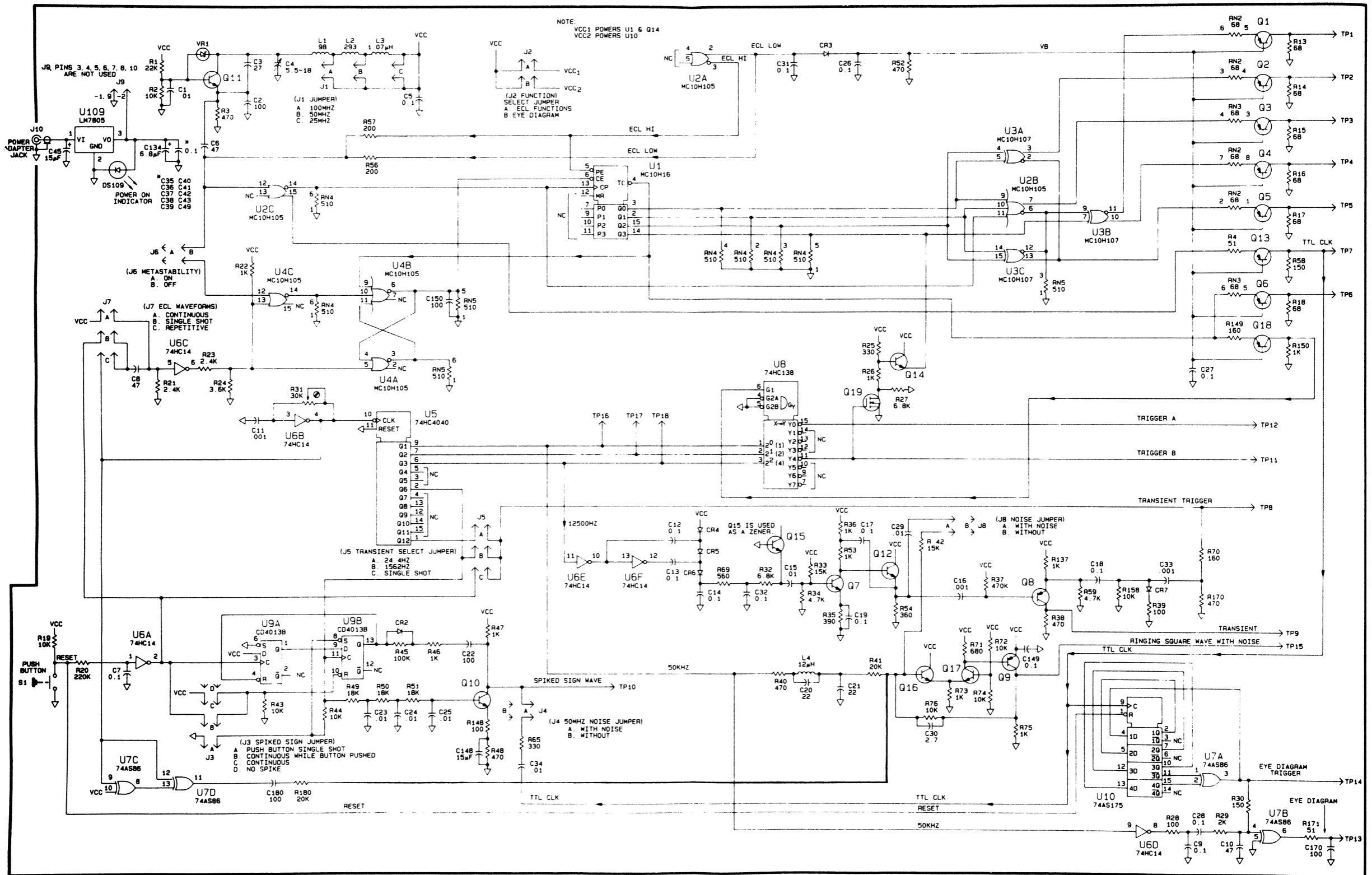
# Board Diagram



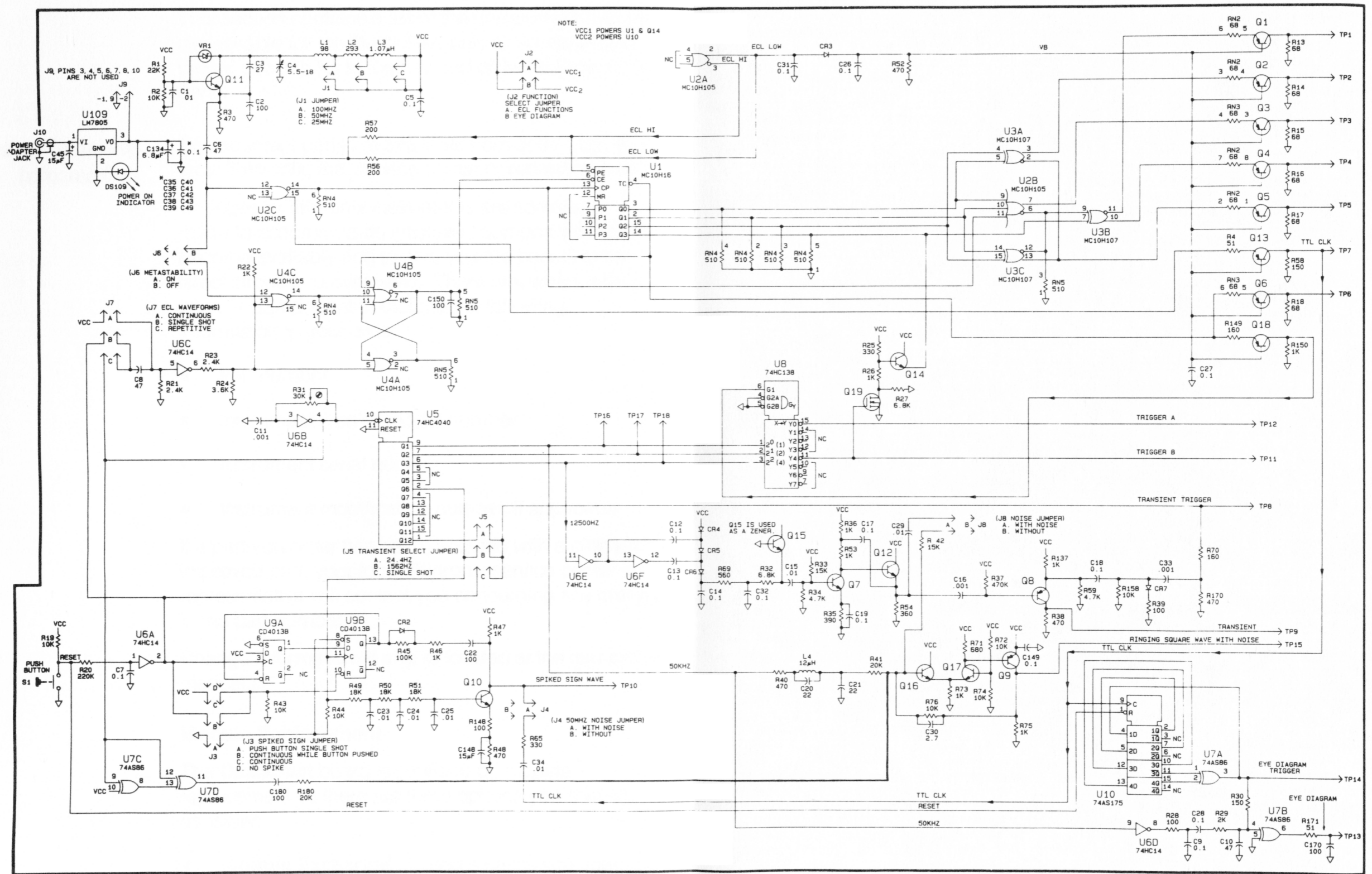
The following figure illustrates the operation of the QuickStart board. Use this figure to troubleshoot the QuickStart board, and for reference information.







QuickStart Board Schematic Diagram



QuickStart Board Schematic Diagram

# Replaceable Parts



This section contains a list of the components that are replaceable for the QuickStart board. As described below, use this list to identify and order replacement parts.

## Parts Ordering Information

Replacement parts are available from or through your local Tektronix, Inc. service center or representative.

Changes to Tektronix instruments are sometimes made to accommodate improved components as they become available and to give you the benefit of the latest circuit improvements. Therefore, when ordering parts, it is important to include the following information in your order:

- Part number
- Instrument type or model number
- Instrument serial number
- Instrument modification number, if applicable

If a part you order has been replaced with a different or improved part, your local Tektronix service center or representative will contact you concerning any change in the part number.

Change information, if any, is located at the rear of this manual.

## Module Replacement

The QuickStart board is serviced by module replacement so there are three options you should consider:

- **Module Exchange.** In some cases you may exchange your module for a remanufactured module. These modules cost significantly less than new modules and meet the same factory specifications. For more information about the



module exchange program, call 1-800-TEKWIDE, ext. BVJ5799.

- **Module Repair.** You may ship your module to us for repair, after which we will return it to you.
- **New Modules.** You may purchase new replacement modules in the same way as other replacement parts.

## Using the Replaceable Parts List

The tabular information in the Replaceable Parts List is arranged for quick retrieval. Understanding the structure and features of the list will help you find the all the information you need for ordering replacement parts.

### Item Names

In the Replaceable Parts List, an Item Name is separated from the description by a colon (:). Because of space limitations, an Item Name may sometimes appear as incomplete. For further Item Name identification, U.S. Federal Cataloging Handbook H6-1 can be used where possible.

### Indentation System

This parts list is indented to show the relationship between items. The following example is of the indentation system used in the Description column:

1	2	3	4	5	Name & Description
					<i>Assembly and/or Component</i>
					<i>Attaching parts for Assembly and/or Component</i> <i>(END ATTACHING PARTS)</i>
					<i>Detail Part of Assembly and/or Component</i>
					<i>Attaching parts for Detail Part</i> <i>(END ATTACHING PARTS)</i>
					<i>Parts of Detail Part</i>
					<i>Attaching parts for Parts of Detail Part</i> <i>(END ATTACHING PARTS)</i>



Attaching parts always appear at the same indentation as the item it mounts, while the detail parts are indented to the right. Indented items are part of, and included with, the next higher indentation. Attaching parts must be purchased separately, unless otherwise specified.

### **Abbreviations**

Abbreviations conform to American National Standards Institute (ANSI) standard Y1.1

CROSS INDEX - MFR. CODE NUMBER TO MANUFACTURER

Mfr. Code	Manufacturer	Address	City, State, Zip Code
01121	ALLEN-BRADLEY CO	1201 S 2ND ST	MILWAUKEE WI 53204-2410
01295	TEXAS INSTRUMENTS INC	13500 N CENTRAL EXPY	DALLAS TX 75265
	SEMICONDUCTOR GROUP	PO BOX 655012	
02735	RCA CORP	ROUTE 202	SOMERVILLE NJ 08876
	SOLID STATE DIVISION		
03508	GENERAL ELECTRIC CO	W GENESEE ST	AUBURN NY 13021
	SEMI-CONDUCTOR PRODUCTS DEPT		
04222	AVX CERAMICS	19TH AVE SOUTH	MYRTLE BEACH SC 29577
	DIV OF AVX CORP	P O BOX 867	
04713	MOTOROLA INC	5005 E MCDOWELL RD	PHOENIX AZ 85008-4229
	SEMICONDUCTOR PRODUCTS SECTOR		
05397	UNION CARBIDE CORP	11901 MADISON AVE	CLEVELAND OH 44101
	MATERIALS SYSTEMS DIV		
05820	EG AND G WAKEFIELD ENGINEERING	60 AUDUBON RD	WAKEFIELD MA 01880-1203
07263	FAIRCHILD SEMICONDUCTOR CORP	10400 RIDGEVIEW CT	CUPERTINO CA 95014
	NORTH AMERICAN SALES		
	SUB OF SCHLUMBERGER LTD MS 118		
11236	CTS CORP	406 PARR ROAD	BERNE IN 46711-9506
	BERNE DIV		
	THICK FILM PRODUCTS GROUP		
17856	SILICONIX INC	2201 LAURELWOOD RD	SANTA CLARA CA 95054-1516
18324	SIGNETICS CORP	4130 S MARKET COURT	SACRAMENTO CA 95834-1222
	MILITARY PRODUCTS DIV		

## CROSS INDEX - MFR. CODE NUMBER TO MANUFACTURER

Mfr. Code	Manufacturer	Address	City, State, Zip Code
19701	MEPCO/CENTRALAB A NORTH AMERICAN PHILLIPS CO MINERAL WELLS AIRPORT	PO BOX 760	MINERAL WELLS TX 76067-0760
22526	DU PONT E. I. DE NEMOURS AND CO INC DU PONT CONNECTOR SYSTEMS DIV MILITARY PRODUCTS GROUP	515 FISHING CREEK RD	NEW CUMBERLAND PA 17070-3007
31918	ITT SCHADOW INC	8081 WALLACE RD	EDEN PRAIRIE MN 55344-2224
32997	BOURNS INC	1200 COLUMBIA AVE	RIVERSIDE CA 92507-2114
50434	TRIMPOT DIV HEWLETT-PACKARD CO	370 W TRIMBLE RD	SAN JOSE CA 95131
52763	OPTOELECTRONICS DIV STETCO INC	3344 SCHIERHORN 92 HAYDEN AVE	FRANKLIN PARK IL 60131 LEXINGTON MA 02173-7929
56289	SPRAGUE ELECTRIC CO WORLD HEADQUARTERS	8 WHATNEY PO BOX 19515	IRVINE CA 92713
57668	ROHM CORP	1327 6TH AVE	
60705	CERA-MITE CORPORATION	ST CHARLES ROAD	
74932	INDUSTRIAL SPECIALTIES, INC	14150 SW KARL BRAUN DR	GRAFTON WI 53024-1831
78189	ILLINOIS TOOL WORKS INC SHAKEPROOF DIV	PO BOX 500	WARREN, MI 48091 ELGIN IL 60120
80009	TEKTRONIX INC	950 S RICHFIELD RD	BEAVERTON OR 97077-0001 PLACENTIA CA 92670-6732
83014	HARTWELL CORP LOCKWELL DIVISION		

CROSS INDEX - MFR. CODE NUMBER TO MANUFACTURER

Mfr. Code	Manufacturer	Address	City, State, Zip Code
93907	TEXTRON INC CAMCAR DIV	600 18TH AVE	ROCKFORD IL 61108-5181
TK1345	ZMAN AND ASSOCIATES	7633 S 180TH	KENT WA 98032
TK1727	PHILLIPS NEDERLAND BV AFD ELONCO	POSTBUS 90050	5600 PB EINDHOVEN THE NETHERLANDS
TK2042	ZMAN & ASSOCIATES	7633 S 180TH	KENT WA 98032



Replaceable Parts

Component No.	Tektronix Part No.	Serial/Assembly No. Effective	Discont	Name & Description	Mfr. Code	Mfr. Part No.
A	671-0799-00			CIRCUIT BD ASSY: SIGNAL GENERATOR	80009	671-0799-00
C1	281-0773-00			CAP, FXD, CER DI: 0.01UF, 10%, 100V	04222	MA201C103KAA
C2	281-0765-00			CAP, FXD, CER DI: 100PF, 5%, 100V	04222	MA101A101JAA
C3	281-0762-00			CAP, FXD, CER DI: 27PF, 20%, 100V	04222	MA101A270MAA
C4	281-0093-00			CAP, VAR, CER DI: 5.5-18PF, 350V	52763	302322237
C4	281-0184-00			CAP, VAR, PLASTIC: 2-18PF, 500VDC (ALTERNATE)	TK1727	2222-809-05003
C5	281-0775-01			CAP, FXD, CER DI: 0.1UF, 20%, 50V	04222	SA105E104MAA
C6	281-0763-00			CAP, FXD, CER DI: 47PF, 10%, 100V	04222	MA101A470KAA
C7	281-0775-01			CAP, FXD, CER DI: 0.1UF, 20%, 50V	04222	SA105E104MAA
C8	281-0763-00			CAP, FXD, CER DI: 47PF, 10%, 100V	04222	MA101A470KAA
C9	281-0775-01			CAP, FXD, CER DI: 0.1UF, 20%, 50V	04222	SA105E104MAA
C10	281-0763-00			CAP, FXD, CER DI: 47PF, 10%, 100V	04222	MA101A470KAA
C11	281-0865-00			CAP, FXD, CER DI: 1000PF, 5%, 100V	04222	MA101A102JAA
C12	281-0775-01			CAP, FXD, CER DI: 0.1UF, 20%, 50V	04222	SA105E104MAA
C13	281-0775-01			CAP, FXD, CER DI: 0.1UF, 20%, 50V	04222	SA105E104MAA
C14	281-0775-01			CAP, FXD, CER DI: 0.1UF, 20%, 50V	04222	SA105E104MAA
C15	281-0773-00			CAP, FXD, CER DI: 0.01UF, 10%, 100V	04222	MA201C103KAA
C16	281-0865-00			CAP, FXD, CER DI: 1000PF, 5%, 100V	04222	MA101A102JAA
C17	281-0775-01			CAP, FXD, CER DI: 0.1UF, 20%, 50V	04222	SA105E104MAA

Replaceable Parts

Component No.	Tektronix Part No.	Serial/Assembly No. Effective	Discount	Name & Description	Mfr. Code	Mfr. Part No.
C18	281-0775-01			CAP, FXD, CER DI:0.1UF, 20%, 50V	04222	SA105E104MAA
C19	281-0775-01			CAP, FXD, CER DI:0.1UF, 20%, 50V	04222	SA105E104MAA
C20	281-0759-00			CAP, FXD, CER DI:22PF, 10%, 100V	04222	MA101A220KAA
C21	281-0759-00			CAP, FXD, CER DI:22PF, 10%, 100V	04222	MA101A220KAA
C22	281-0765-00			CAP, FXD, CER DI:100PF, 5%, 100V	04222	MA101A101JAA
C23	281-0773-00			CAP, FXD, CER DI:0.01UF, 10%, 100V	04222	MA201C103KAA
C24	281-0773-00			CAP, FXD, CER DI:0.01UF, 10%, 100V	04222	MA201C103KAA
C25	281-0773-00			CAP, FXD, CER DI:0.01UF, 10%, 100V	04222	MA201C103KAA
C26	281-0775-01			CAP, FXD, CER DI:0.1UF, 20%, 50V	04222	SA105E104MAA
C27	281-0775-01			CAP, FXD, CER DI:0.1UF, 20%, 50V	04222	SA105E104MAA
C28	281-0775-01			CAP, FXD, CER DI:0.1UF, 20%, 50V	04222	SA105E104MAA
C29	281-0773-00			CAP, FXD, CER DI:0.01UF, 10%, 100V	04222	MA201C103KAA
C30	283-0912-00			CAP, FXD, CER DI:2.7PF, 1000V	60705	561CRE501EE2R7CA
C31	281-0775-01			CAP, FXD, CER DI:0.1UF, 20%, 50V	04222	SA105E104MAA
C32	281-0775-01			CAP, FXD, CER DI:0.1UF, 20%, 50V	04222	SA105E104MAA
C33	281-0865-00			CAP, FXD, CER DI:1000PF, 5%, 100V	04222	MA101A102JAA
C34	281-0773-00			CAP, FXD, CER DI:0.01UF, 10%, 100V	04222	MA201C103KAA
C35	281-0775-01			CAP, FXD, CER DI:0.1UF, 20%, 50V	04222	SA105E104MAA
C36	281-0775-01			CAP, FXD, CER DI:0.1UF, 20%, 50V	04222	SA105E104MAA
C37	281-0775-01			CAP, FXD, CER DI:0.1UF, 20%, 50V	04222	SA105E104MAA
C38	281-0775-01			CAP, FXD, CER DI:0.1UF, 20%, 50V	04222	SA105E104MAA
C39	281-0775-01			CAP, FXD, CER DI:0.1UF, 20%, 50V	04222	SA105E104MAA

Replaceable Parts

Component No.	Tektronix Part No.	Serial/Assembly No. Effective	Discount	Name & Description	Mfr. Code	Mfr. Part No.
C40	281-0775-01			CAP, FXD, CER DI: 0.1UF, 20%, 50V	04222	SA105E104MAA
C41	281-0775-01			CAP, FXD, CER DI: 0.1UF, 20%, 50V	04222	SA105E104MAA
C42	281-0775-01			CAP, FXD, CER DI: 0.1UF, 20%, 50V	04222	SA105E104MAA
C43	281-0775-01			CAP, FXD, CER DI: 0.1UF, 20%, 50V	04222	SA105E104MAA
C45	290-0327-00			CAP, FXD, ELCTLT: 15UF, 20%, 20V	05397	T368B156M020AS
C49	281-0775-01			CAP, FXD, CER DI: 0.1UF, 20%, 50V	04222	SA105E104MAA
C134	290-0530-00			CAP, FXD, ELCTLT: 68UF, 20%, 6V	56289	196D686X0006KAI
C148	290-0527-00			CAP, FXD, ELCTLT: 15UF, 20%, 20V	05397	T368B156M020AS
C149	281-0775-01			CAP, FXD, CER DI: 0.1UF, 20%, 50V	04222	SA105E104MAA
C150	281-0765-00			CAP, FXD, CER DI: 100PF, 5%, 100V	04222	MA101A101JAA
C170	281-0765-00			CAP, FXD, CER DI: 100PF, 5%, 100V	04222	MA101A101JAA
C180	281-0765-00			CAP, FXD, CER DI: 100PF, 5%, 100V	04222	MA101A101JAA
CR2	152-0141-02			SEMICOND DVC, DI: SW, SI, 30V, 150MA, 30V, DO-35	03508	DA2527 (1N4152)
CR3	152-0141-02			SEMICOND DVC, DI: SW, SI, 30V, 150MA, 30V, DO-35	03508	DA2527 (1N4152)
CR4	152-0141-02			SEMICOND DVC, DI: SW, SI, 30V, 150MA, 30V, DO-35	03508	DA2527 (1N4152)
CR5	152-0141-02			SEMICOND DVC, DI: SW, SI, 30V, 150MA, 30V, DO-35	03508	DA2527 (1N4152)
CR6	152-0141-02			SEMICOND DVC, DI: SW, SI, 30V, 150MA, 30V, DO-35	03508	DA2527 (1N4152)
CR7	152-0141-02			SEMICOND DVC, DI: SW, SI, 30V, 150MA, 30V, DO-35	03508	DA2527 (1N4152)
DS109	150-1152-00			LT EMITTING DIO: RED 5V, T-1 PACKAGE	50434	HIMP-1600-002
J1	131-0608-00			TERMINAL, PIN: 0.365 L X 0.025 BRZ GLD PL (QUANTITY OF 3)	22526	48283-036
J2	131-0608-00			TERMINAL, PIN: 0.365 L X 0.025 BRZ GLD PL	22526	48283-036

# Replaceable Parts

Component No.	Tektronix Part No.	Serial/Assembly No. Effective	Discount	Name & Description	Mfr. Code	Mfr. Part No.
J3	131-0608-00			(QUANTITY OF 2) TERMINAL, PIN: 0.365 L X 0.025 BRZ GLD PL	22526	48283-036
J4	131-0608-00			(QUANTITY OF 4) TERMINAL, PIN: 0.365 L X 0.025 BRZ GLD PL	22526	48283-036
J5	131-0608-00			(QUANTITY OF 2) TERMINAL, PIN: 0.365 L X 0.025 BRZ GLD PL	22526	48283-036
J6	131-0608-00			(QUANTITY OF 3) TERMINAL, PIN: 0.365 L X 0.025 BRZ GLD PL	22526	48283-036
J7	131-0608-00			(QUANTITY OF 2) TERMINAL, PIN: 0.365 L X 0.025 BRZ GLD PL	22526	48283-036
J8	131-0608-00			(QUANTITY OF 3) TERMINAL, PIN: 0.365 L X 0.025 BRZ GLD PL	22526	48283-036
J9	131-0608-00			TERMINAL, PIN: 0.365 L X 0.025 BRZ GLD PL	22526	48283-036
J10	131-4368-00			JACK, POWER: CKT BD MOUNT, RT ANG	80009	131-4368-00
L1	108-0260-00			COIL, RF: FIXED, 98NH	TK2042	ORDER BY DESCR
L2	108-0182-00			COIL, RF: FIXED, 293NH	80009	108-0182-00
L3	108-0723-00			COIL, RF: FIXED, 1.07UH	TK1345	108-0723-00
L4	108-0249-00			CHOKE, RF: FIXED, 12MF	80009	108-0249-00
P1	131-0993-00			BUS, CONDUCTOR: SHUNT ASSEMBLY, BLACK	22526	65474-005
P2	131-0993-00			BUS, CONDUCTOR: SHUNT ASSEMBLY, BLACK	22526	65474-005
P3	131-0993-00			BUS, CONDUCTOR: SHUNT ASSEMBLY, BLACK	22526	65474-005
P4	131-0993-00			BUS, CONDUCTOR: SHUNT ASSEMBLY, BLACK	22526	65474-005

Replaceable Parts

Component No.	Tektronix Part No.	Serial/Assembly No. Effective	Discount	Name & Description	Mfr. Code	Mfr. Part No.
P5	131-0993-00			BUS, CONDUCTOR: SHUNT ASSEMBLY, BLACK	22526	65474-005
P6	131-0993-00			BUS, CONDUCTOR: SHUNT ASSEMBLY, BLACK	22526	65474-005
P7	131-0993-00			BUS, CONDUCTOR: SHUNT ASSEMBLY, BLACK	22526	65474-005
P8	131-0993-00			BUS, CONDUCTOR: SHUNT ASSEMBLY, BLACK	22526	65474-005
Q1	151-0712-00			TRANSISTOR: PNP, SI, TO-92	04713	SPS8223
Q2	151-0712-00			TRANSISTOR: PNP, SI, TO-92	04713	SPS8223
Q3	151-0712-00			TRANSISTOR: PNP, SI, TO-92	04713	SPS8223
Q4	151-0712-00			TRANSISTOR: PNP, SI, TO-92	04713	SPS8223
Q5	151-0712-00			TRANSISTOR: PNP, SI, TO-92	04713	SPS8223
Q6	151-0712-00			TRANSISTOR: PNP, SI, TO-92	04713	SPS8223
Q7	151-0190-00			TRANSISTOR: NPN, SI, TO-92	80009	151-0190-00
Q8	151-0712-00			TRANSISTOR: PNP, SI, TO-92	04713	SPS8223
Q9	151-0220-00			TRANSISTOR: PNP, SI, TO-92	80009	151-0220-00
Q10	151-0190-00			TRANSISTOR: NPN, SI, TO-92	80009	151-0190-00
Q11	151-0190-00			TRANSISTOR: NPN, SI, TO-92	80009	151-0190-00
Q12	151-0190-00			TRANSISTOR: NPN, SI, TO-92	80009	151-0190-00
Q13	151-0712-00			TRANSISTOR: PNP, SI, TO-92	04713	SPS8223
Q14	151-0190-00			TRANSISTOR: NPN, SI, TO-92	80009	151-0190-00
Q15	151-0190-00			TRANSISTOR: NPN, SI, TO-92	80009	151-0190-00
Q16	151-0190-00			TRANSISTOR: NPN, SI, TO-92	80009	151-0190-00
Q17	151-0190-00			TRANSISTOR: NPN, SI, TO-92	80009	151-0190-00
Q18	151-0712-00			TRANSISTOR: PNP, SI, TO-92	04713	SPS8223

# Replaceable Parts

Component No.	Tektronix Part No.	Serial/Assembly No. Effective	Discont	Name & Description	Mfr. Code	Mfr. Part No.
Q19	151-1121-00			TRANSISTOR:FE,N CHANNEL,SI,10-92	17856	V10206
R1	315-0223-00			RES,FXD,FILM:22K OHM,5%,0.25W	19701	5043CX22K00J92U
R2	315-0103-00			RES,FXD,FILM:10K OHM,5%,0.25W	19701	5043CX10K00J
R3	315-0471-00			RES,FXD,FILM:470 OHM,5%,0.25W	57668	NTR25J-E470E
R4	315-0510-00			RES,FXD,FILM:51 OHM,5%,0.25W	19701	5043CX51R00J
R13	315-0680-00			RES,FXD,FILM:68 OHM,5%,0.25W	57668	NTR25J-E68E0
R14	315-0680-00			RES,FXD,FILM:68 OHM,5%,0.25W	57668	NTR25J-E68E0
R15	315-0680-00			RES,FXD,FILM:68 OHM,5%,0.25W	57668	NTR25J-E68E0
R16	315-0680-00			RES,FXD,FILM:68 OHM,5%,0.25W	57668	NTR25J-E68E0
R17	315-0680-00			RES,FXD,FILM:68 OHM,5%,0.25W	57668	NTR25J-E68E0
R18	315-0680-00			RES,FXD,FILM:68 OHM,5%,0.25W	57668	NTR25J-E68E0
R19	315-0103-00			RES,FXD,FILM:10K OHM,5%,0.25W	19701	5043CX10K00J
R20	315-0224-00			RES,FXD,FILM:220K OHM,5%,0.25W	57668	NTR25J-E220K
R21	315-0242-00			RES,FXD,FILM:2.4K OHM,5%,0.25W	57668	NTR25J-E02K4
R22	315-0102-00			RES,FXD,FILM:1K OHM,5%,0.25W	57668	NTR25JE01K0
R23	315-0242-00			RES,FXD,FILM:2.4K OHM,5%,0.25W	57668	NTR25J-E02K4
R24	315-0362-00			RES,FXD,FILM:3.6K OHM,5%,0.25W	19701	5043CX3K600J
R25	315-0331-00			RES,FXD,FILM:330 OHM,5%,0.25W	57668	NTR25J-E330E
R26	315-0102-00			RES,FXD,FILM:1K OHM,5%,0.25W	57668	NTR25JE01K0
R27	315-0682-00			RES,FXD,FILM:6.8K OHM,5%,0.25W	57668	NTR25J-E06K8
R28	315-0101-00			RES,FXD,FILM:100 OHM,5%,0.25W	57668	NTR25J-E 100E
R29	315-0202-00			RES,FXD,FILM:2K OHM,5%,0.25W	57668	NTR25J-E 2K

Replaceable Parts

Component No.	Tektronix Part No.	Serial/Assembly No. Effective	Discount	Name & Description	Mfr. Code	Mfr. Part No.
R30	315-0151-00			RES, FXD, FILM: 150 OHM, 5%, 0.25W	57668	NTR25J-E150E
R31	311-0614-00			RES, VAR, NONMW: TRMR, 30K OHM, 0.5W	32997	3329H-L58-303
R32	315-0682-00			RES, FXD, FILM: 6.8K OHM, 5%, 0.25W	57668	NTR25J-E06K8
R33	315-0153-00			RES, FXD, FILM: 15K OHM, 5%, 0.25W	19701	5043CX15K00J
R34	315-0472-00			RES, FXD, FILM: 4.7K OHM, 5%, 0.25W	57668	NTR25J-E04K7
R35	315-0391-00			RES, FXD, FILM: 390 OHM, 5%, 0.25W	57668	NTR25J-E390E
R36	315-0102-00			RES, FXD, FILM: 1K OHM, 5%, 0.25W	57668	NTR25JE01K0
R37	315-0474-00			RES, FXD, FILM: 470K OHM, 5%, 0.25W	19701	5043CX470K0J92U
R38	315-0471-00			RES, FXD, FILM: 470 OHM, 5%, 0.25W	57668	NTR25J-E470E
R39	315-0101-00			RES, FXD, FILM: 100 OHM, 5%, 0.25W	57668	NTR25J-E 100E
R40	315-0471-00			RES, FXD, FILM: 470 OHM, 5%, 0.25W	57668	NTR25J-E470E
R41	315-0203-00			RES, FXD, FILM: 20K OHM, 5%, 0.25W	57668	NTR25J-E 20K
R42	315-0153-00			RES, FXD, FILM: 15K OHM, 5%, 0.25W	19701	5043CX15K00J
R43	315-0103-00			RES, FXD, FILM: 10K OHM, 5%, 0.25W	19701	5043CX10K00J
R44	315-0103-00			RES, FXD, FILM: 10K OHM, 5%, 0.25W	19701	5043CX10K00J
R45	315-0104-00			RES, FXD, FILM: 100K OHM, 5%, 0.25W	57668	NTR25J-E100K
R46	315-0102-00			RES, FXD, FILM: 1K OHM, 5%, 0.25W	57668	NTR25JE01K0
R47	315-0102-00			RES, FXD, FILM: 1K OHM, 5%, 0.25W	57668	NTR25JE01K0
R48	315-0471-00			RES, FXD, FILM: 470 OHM, 5%, 0.25W	57668	NTR25J-E470E
R49	315-0183-00			RES, FXD, FILM: 18K OHM, 5%, 0.25W	19701	5043CX18K00J
R50	315-0183-00			RES, FXD, FILM: 18K OHM, 5%, 0.25W	19701	5043CX18K00J
R51	315-0183-00			RES, FXD, FILM: 18K OHM, 5%, 0.25W	19701	5043CX18K00J

# Replaceable Parts

Component No.	Tektronix Part No.	Serial/Assembly No. Effective	Discount	Name & Description	Mfr. Code	Mfr. Part No.
R52	315-0471-00			RES, FXD, FILM:470 OHM, 5%, 0.25W	57668	NTR25J-E470E
R53	315-0102-00			RES, FXD, FILM:1K OHM, 5%, 0.25W	57668	NTR25JE01K0
R54	315-0361-00			RES, FXD, FILM:360 OHM, 5%, 0.25W	19701	5043CX360R0J
R56	315-0201-00			RES, FXD, FILM:200 OHM, 5%, 0.25W	57668	NTR25J-E200E
R57	315-0201-00			RES, FXD, FILM:200 OHM, 5%, 0.25W	57668	NTR25J-E200E
R58	315-0151-00			RES, FXD, FILM:150 OHM, 5%, 0.25W	57668	NTR25J-E150E
R59	315-0472-00			RES, FXD, FILM:4.7K OHM, 5%, 0.25W	57668	NTR25J-E04K7
R65	315-0331-00			RES, FXD, FILM:330 OHM, 5%, 0.25W	57668	NTR25J-E330E
R69	315-0561-00			RES, FXD, FILM:560 OHM, 5%, 0.25W	19701	5043CX560R0J
R70	315-0161-00			RES, FXD, FILM:160 OHM, 5%, 0.25W	57668	NTR25J-E 160E
R71	315-0681-00			RES, FXD, FILM:680 OHM, 5%, 0.25W	57668	NTR25J-E680E
R72	315-0103-00			RES, FXD, FILM:10K OHM, 5%, 0.25W	19701	5043CX10K00J
R73	315-0102-00			RES, FXD, FILM:1K OHM, 5%, 0.25W	57668	NTR25JE01K0
R74	315-0103-00			RES, FXD, FILM:10K OHM, 5%, 0.25W	19701	5043CX10K00J
R75	315-0102-00			RES, FXD, FILM:1K OHM, 5%, 0.25W	57668	NTR25JE01K0
R76	315-0103-00			RES, FXD, FILM:10K OHM, 5%, 0.25W	19701	5043CX10K00J
R137	315-0102-00			RES, FXD, FILM:1K OHM, 5%, 0.25W	57668	NTR25JE01K0
R148	315-0101-00			RES, FXD, FILM:100 OHM, 5%, 0.25W	57668	NTR25J-E 100E
R149	315-0161-00			RES, FXD, FILM:160 OHM, 5%, 0.25W	57668	NTR25J-E 160E
R150	315-0102-00			RES, FXD, FILM:1K OHM, 5%, 0.25W	57668	NTR25JE01K0
R158	315-0103-00			RES, FXD, FILM:10K OHM, 5%, 0.25W	19701	5043CX10K00J
R170	315-0471-00			RES, FXD, FILM:470 OHM, 5%, 0.25W	57668	NTR25J-E470E



Replaceable Parts

Component No.	Tektronix Part No.	Serial/Assembly No. Effective	Discont.	Name & Description	Mfr. Code	Mfr. Part No.
R171	315-0510-00			RES, FXD, FILM: 51 OHM, 5%, 0.25W	19701	5043CX51R00J
R180	315-0203-00			RES, FXD, FILM: 20K OHM, 5%, 0.25W	57668	NR25J-E 20K
RN2	307-0711-00			RES NTWK, FXD, FI: 4, 68 OHM, 2%, 0.2W	01121	108B680
RN3	307-0711-00			RES NTWK, FXD, FI: 4, 68 OHM, 2%, 0.2W	01121	108B680
RN4	307-0539-00			RES NTWK, FXD, FI: (7)510 OHM, 10%, 1W	11236	750-81-R510 OHM
RN5	307-0539-00			RES NTWK, FXD, FI: (7)510 OHM, 10%, 1W	11236	750-81-R510 OHM
S1	260-2072-00			SWITCH, PUSH: SPST, 10MA, 35VDC, MOMENTARY	31918	532.000.001
TP1	131-0589-00			TERMINAL, PIN: 0.46 L X 0.025 SQ PH BRZ	22526	48283-029
TP2	131-0589-00			TERMINAL, PIN: 0.46 L X 0.025 SQ PH BRZ	22526	48283-029
TP3	131-0589-00			TERMINAL, PIN: 0.46 L X 0.025 SQ PH BRZ	22526	48283-029
TP4	131-0589-00			TERMINAL, PIN: 0.46 L X 0.025 SQ PH BRZ	22526	48283-029
TP5	131-0589-00			TERMINAL, PIN: 0.46 L X 0.025 SQ PH BRZ	22526	48283-029
TP6	131-0589-00			TERMINAL, PIN: 0.46 L X 0.025 SQ PH BRZ	22526	48283-029
TP7	131-0589-00			TERMINAL, PIN: 0.46 L X 0.025 SQ PH BRZ	22526	48283-029
TP8	131-0589-00			TERMINAL, PIN: 0.46 L X 0.025 SQ PH BRZ	22526	48283-029
TP9	131-0589-00			TERMINAL, PIN: 0.46 L X 0.025 SQ PH BRZ	22526	48283-029
TP10	131-0589-00			TERMINAL, PIN: 0.46 L X 0.025 SQ PH BRZ	22526	48283-029
TP11	131-0589-00			TERMINAL, PIN: 0.46 L X 0.025 SQ PH BRZ	22526	48283-029
TP12	131-0589-00			TERMINAL, PIN: 0.46 L X 0.025 SQ PH BRZ	22526	48283-029
TP13	131-0589-00			TERMINAL, PIN: 0.46 L X 0.025 SQ PH BRZ	22526	48283-029
TP14	131-0589-00			TERMINAL, PIN: 0.46 L X 0.025 SQ PH BRZ	22526	48283-029
TP15	131-0589-00			TERMINAL, PIN: 0.46 L X 0.025 SQ PH BRZ	22526	48283-029

# Replaceable Parts

Component No.	Tektronix Part No.	Serial/Assembly No. Effective	Discount	Name & Description	Mfr. Code	Mfr. Part No.
TP16	131-0589-00			TERMINAL,PIN:0.46 L X 0.025 SQ PH BRZ	22526	48283-029
TP17	131-0589-00			TERMINAL,PIN:0.46 L X 0.025 SQ PH BRZ	22526	48283-029
TP18	131-0589-00			TERMINAL,PIN:0.46 L X 0.025 SQ PH BRZ	22526	48283-029
U1	156-2142-00			MICROCKT,DGTL:ECL,4-BIT COUNTER	04713	MC10H016(P OR L)
U2	156-1642-00			MICROCKT,DGTL:ECL,TPL 2-3-2 INPUT	04713	MC10H105(L OR P)
U3	156-1676-00			MICROCKT,DGTL:ECL,TRIPLE 2 INP EX OR/NOR	04713	MC10H107LD
U4	156-1642-00			MICROCKT,DGTL:ECL,TPL 2-3-2 INPUT	04713	MC10H105(L OR P)
U5	156-2601-00			MICROCKT,DGTL:HOMOS,12 STAGE	04713	74HC4040CP/CL
U6	156-2392-00			MICROCKT,DGTL:CMOS,HEX SCHMITT TRIG INV	80009	156-2392-00
U7	156-1800-00			MICROCKT,DGTL:ASTTL,QUAD 2 INP EXCL OR GATE	18324	N74F86(NB OR JB)
U8	156-1956-00			MICROCKT,DGTL:HCTCMOS,OCTAL DECODER,SCRN	01295	SN74HC138N
U9	156-0366-00			MICROCKT,DGTL:DUAL D FLIP-FLOP	02735	CD4013BF
U10	156-1973-00			MICROCKT,DGTL:STTL,QUAD D FF	07263	74F175PCQR
U109	156-0277-00			MICROCKT,L,LINEAR,VOLTAGE REGULATOR	04713	LM340T-5.0
VR1	152-0322-00			SEMITCOND DVC,DI:SCHOTTKY,SI,15V,1.2PF,DO-35	50434	5082-2672

Replaceable Parts

Fig. &  
Index

Fig. & Index No.	Tektronix Part No.	Serial/Assembly No. Effective	Discont	Qty	12345	Name & Description	Mfr. Code	Mfr. Part No.
1-	119-3297-00			1		ADPTR, BTRY CHGR: 220V, 500MA	80009	119-3297-00
	119-3306-00			1		ADPTR, BTRY CHGR: 500MA POWER SUPPLY (PLUGS INTO JACK ADAPTER)	80009	119-3306-00
	210-0586-00			1		NUT, PL, ASSEM WA: 4-40 X 0.25, STL CD PL (HEAT SINK)	78189	211-041800-00
	211-0097-00			1		SCREW, MACHINE: 4-40 X 0.312, PNH, STL (HEAT SINK)	93907	ORDER BY DESCR
	214-1967-00			1		HEAT SINK, DIODE: (2) 0.15 DIA HOLES, AL	05820	289-AB
	348-0430-00			4		BUMPER, PLASTIC: BLACK POLYURETHANE (ON THE BACK OF THE BOARD)	74932	SJ5027
	214-3732-00			3		PLUNGER, FSTNR: 0.187 DIA, NYLON BLACK (TO HOLD BOARD IN TRAY)	83014	HN3P-34-4-1
	348-0430-00			4		BUMPER, PLASTIC: BLACK POLYURETHANE (TO HOLD BOARD IN TRAY)	74932	SJ5027
	348-0849-00			3		GROMMET, FSTNR: 0.187 ID, NYLON BLACK	83014	HN3G-34-1
						ACCESSORIES		
	020-1767-00			1		COMPONENT KIT: 11403 QUICKSTART, PKG, US	80009	020-1767-00
	020-1768-00			1		COMPONENT KIT: 11403 QUICKSTART, PKG, EURO	80009	020-1768-00
	020-1769-00			1		COMPONENT KIT: QUICKSTART, PKG, US, DSA600 SERIES	80009	020-1769-00
	020-1770-00			1		COMPONENT KIT: QUICKSTART, PKG, EUROPEAN	80009	020-1770-00
	070-7498-00			1		MANUAL, TECH: GUIDE, 11403	80009	070-7498-00
	070-7499-00			1		MANUAL, TECH: GUIDE, DSA600 SERIES	80009	070-7499-00
	070-7500-00			1		MANUAL, TECH: REF, QUICKSTART BOARD	80009	070-7500-00





## **B**

Board Removal and Replacement, 1-1

## **C**

Configuring the Board, 2-1

## **E**

ECL Pulses, 2-7–2-10

TP1, 2-7

TP2, 2-7

TP3, 2-7

TP4, 2-7

TP5, 2-7

TP6, 2-7

Eye Diagrams, 2-24–2-26

TP13, 2-24, 2-26

TP14, 2-24, 2-26

## **J**

Jumper Modes, 2-1

jumper socket, 2-1

Jumpers, 2-1–2-2

## **O**

Output Signals, 2-7

## **P**

Power Source, 1-3



## **Q**

Q1, 2-23

Q2, 2-23

Q3, 2-23

## **R**

Repackaging Information, 1-4

Repair Information, 1-5

Ringling Square Wave, 2-20—2-21

TP15, 2-20

## **S**

Shipping Information, 1-4

Sine Wave, 2-19—2-20

TP10, 2-19

Square Wave, Ringling, 2-20—2-21

Square Waves, TTL, 2-22—2-23

## **T**

Test Pins, 2-3—2-4

TP1, 2-7, 2-8, 2-9, 2-18

TP10, 2-19, 2-20

TP11, 2-14, 2-15, 2-17, 2-18

TP12, 2-14, 2-16, 2-17

TP13, 2-24, 2-25, 2-26

TP14, 2-24, 2-26

TP15, 2-20, 2-21

TP2, 2-7, 2-9

TP3, 2-7, 2-9

TP4, 2-7, 2-10

TP5, 2-7, 2-10



TP6, 2-7, 2-8, 2-10

TP7, 2-11, 2-13

TP8, 2-11, 2-12

TP9, 2-27, 2-28

Transient Pulse, 2-27

Transient Pulser, TP9, 2-27

Triggers, 2-11–2-18

TP11, 2-11, 2-14

TP12, 2-11, 2-14

TP7, 2-11, 2-14

TP8, 2-11, 2-14

TTL Square Waves, 2-22–2-23

Q1, 2-22, 2-23

Q2, 2-22, 2-23

Q3, 2-22, 2-23

## U

User Controls, 2-1

C4, 2-1

R31, 2-1

SW1, 2-1

## W

Warranty Information, 1-1

