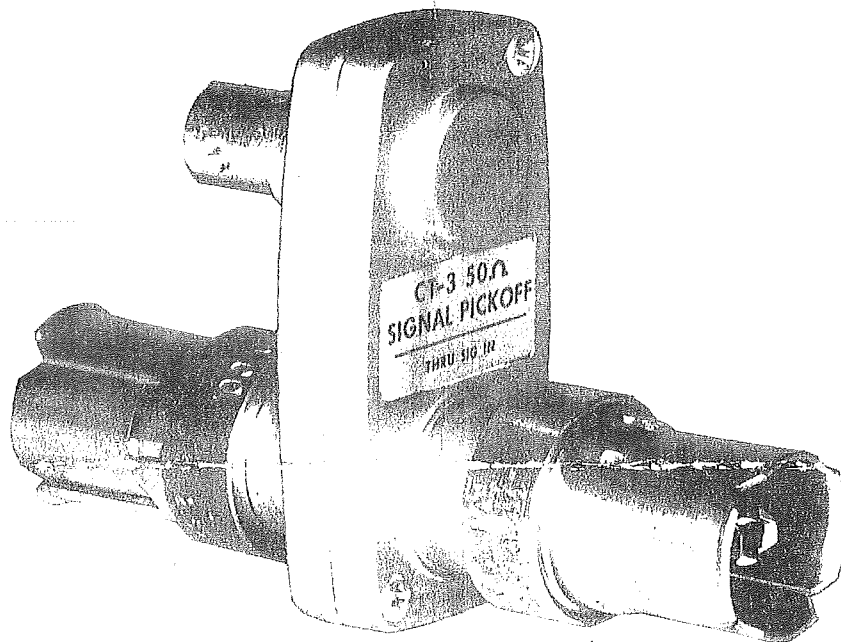


INSTRUCTION SHEET

CT-3 50 Ω SIGNAL PICKOFF



CT-3 50 Ω SIGNAL PICKOFF

Introduction

The CT-3 50 Ω Signal Pickoff is designed for use with high-frequency systems and is directly compatible with Tektronix 50-ohm sampling systems. It is a passive signal pickoff which can be used to obtain a trigger from a 50-ohm transmission system. It can also be used to monitor the voltage in a 50-ohm transmission system or for signal inspection.

The CT-3 inductively meters the current in the center conductor of the transmission line and develops an output voltage proportional to the current. In a 50-ohm system, the pickoff voltage is 10% of the voltage on the center conductor of the transmission line. An internal terminating resistor in the CT-3 minimizes reflections and allows the CT-3 to be left in the circuit without external connection with no effect on the transmission line signal.

The schematic of the CT-3 is shown in Fig. 1.

CHARACTERISTICS

Sensitivity

Output voltage into 50 Ω load is 10% of transmission-line voltage.

Pulse Response

Risetime—Less than 0.4 nanoseconds.

Falltime—Less than 0.4 nanoseconds.

Amplitude accuracy—Better than 4% during first 15 nanoseconds.

L/R Decay—Typically 4.5 microseconds at 0 dc current.

Frequency Response

0 dc current—50 kc to 875 Mc, within 3 db (30%). See Fig. 2.

Insertion Impedance

Terminated in 50 ohms—1 Ω paralleled by 4.5 μ h.

Unterminated—2 Ω paralleled by 4.5 μ h.

VSWR

Less than 1.2 at 1.5 Gc.

Transfer Loss

Signal at THRU SIG OUT connector is 99% of that at THRU SIG IN connector.

Signal Delay

THRU SIG IN connector to THRU SIG OUT connector—Typically 0.27 nanosecond.

THRU SIG IN connector to SIG OUT 10% INTO 50 Ω connector—Typically 0.68 nanosecond.

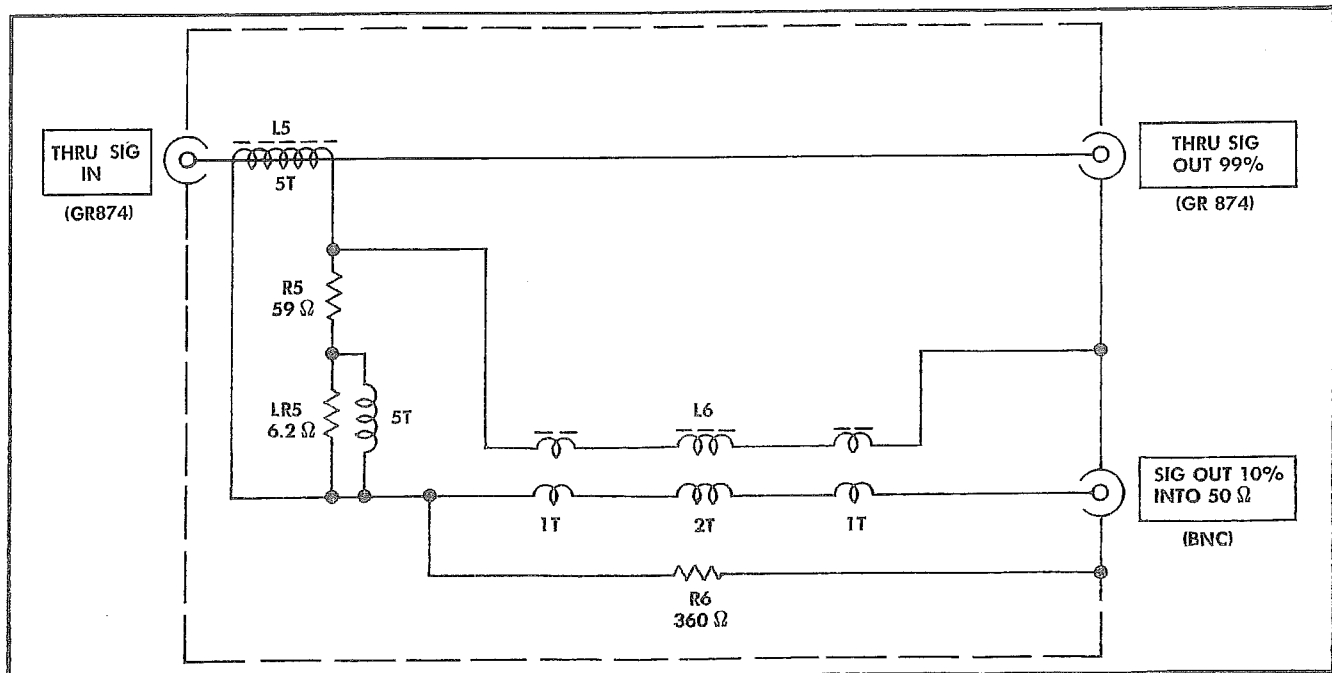


Fig. 1. Schematic of CT-3 50 Ω Signal Pickoff.

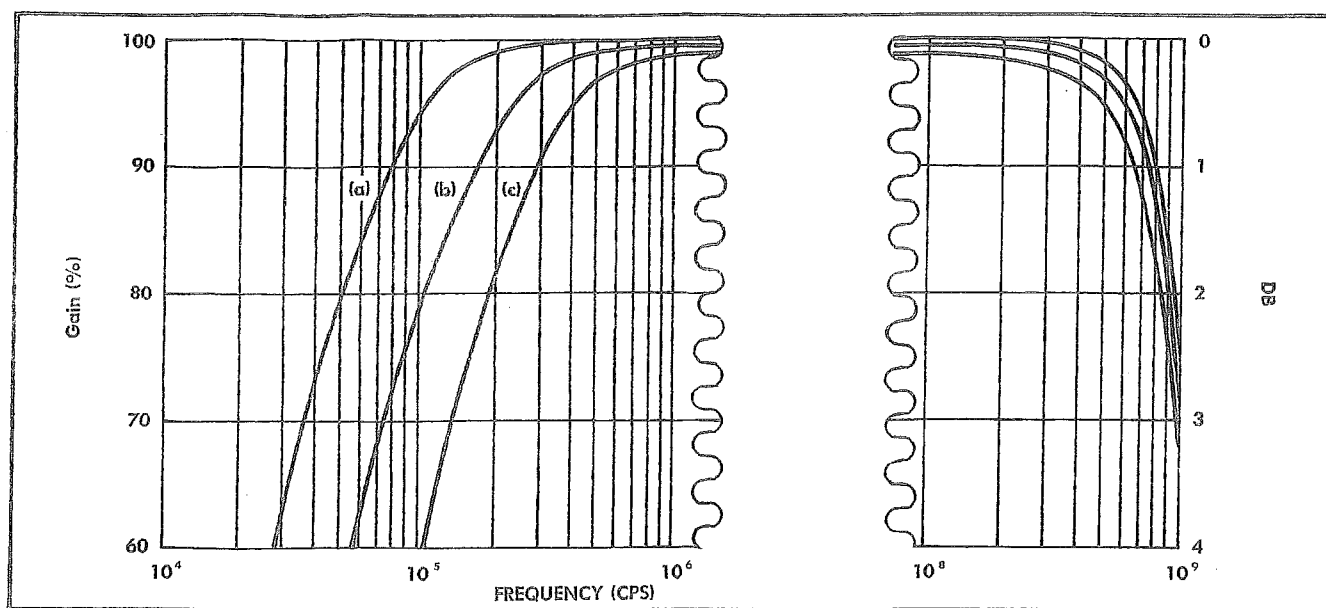


Fig. 2. Typical frequency response characteristics of CT-3. (a) 0 amp dc, (b) 0.5 amp dc, (c) 1 amp dc.

THRU SIG OUT connector to SIG OUT 10% INTO 50 Ω connector—typically 0.4 nanosecond.

Maximum Input Voltage at 0 dc Current

Rms—25 volts.

Pulse—1 kilovolt.

Effect of Direct Current

100 volts/microsecond. If exceeded, L/R decay will not follow standard decay curve but will decay rapidly toward zero.

OPERATION

Termination

When observing the output of the CT-3, the SIG OUT 10% INTO 50 Ω connector should always be terminated in 50 ohms. If the load connected to the output is not 50 ohms, use suitable matching adapters.

Phasing

If the input signal is connected to the CT-3 THRU SIG IN connector, the input and output voltages will be in phase.

Output Waveforms

Fig. 3 illustrates the output of the CT-3 with an input pulse from a Tektronix Type 109 Pulse Generator. Fig. 4 shows the CT-3 L/R decay characteristics.

Parts Replacement

Replacement parts for the CT-3 are shown on the back of this sheet. Take care when replacing parts to maintain the original pulse characteristics of this unit.

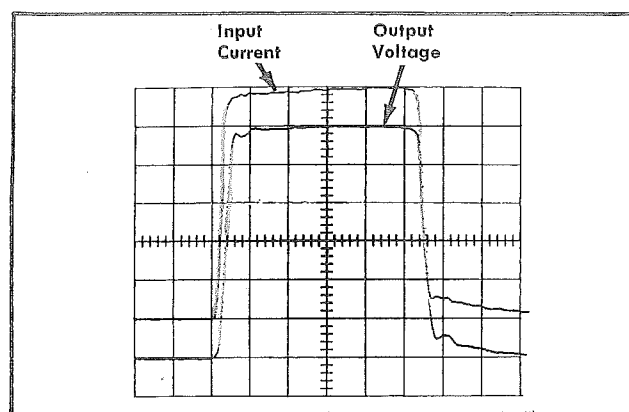


Fig. 3. Typical output voltage with 10-nsec, 120-ma input pulse. 100 mv/cm vertical and 2 nsec/cm horizontal.

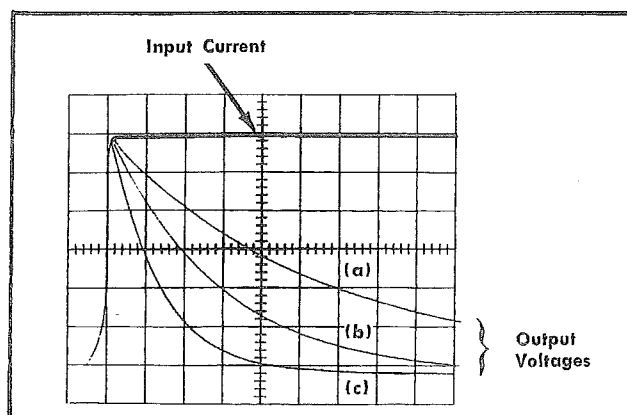
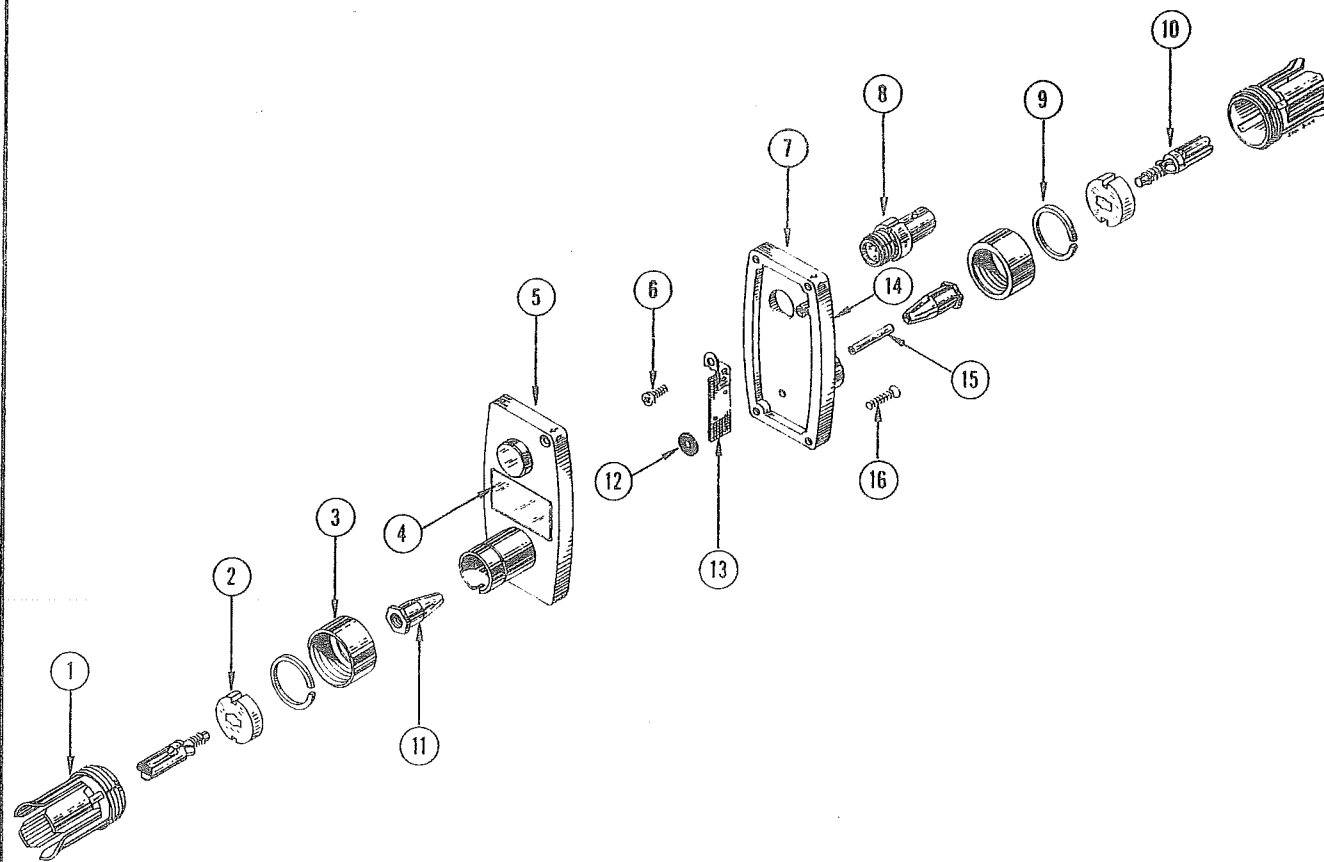


Fig. 4. Typical output voltages showing L/R decay with dc current. (a) 0 amp dc, (b) 0.5 amp dc, (c) 1 amp dc.

CT-3 50 OHM SIGNAL PICKOFF (Part No. 017-061)



REF. NO.	PART NO.	SERIAL/MODEL NO.		QTY.	DESCRIPTION
		EFF.	DISC.		
1	132-002			2	SLEEVE, conductor, outer
2	132-028			2	INSULATOR
3	132-001			2	NUT, coupling
4	334-890			1	TAG, input
5	204-228			1	BODY, input signal pickoff
6	213-055			1	SCREW, thread forming, 2-32 x 3/16 inch, PHS phillips
7	204-229			1	BODY, output signal pickoff
8	131-318			1	CONNECTOR, BNC
9	132-007			2	SNAP RING
10	132-029			2	INNER CONDUCTOR
11	132-122			2	INNER TRANSITION
12	210-960			2	WASHER, neoprene
13	392-155			1	BOARD and BRACKET ASSEMBLY
14	334-889			1	TAG, output (not shown)
15	361-049			1	SPACER, .420 inch long
16	211-070			4	SCREW, 2-56 x 1/4 inch, OHS phillips
ELECTRICAL PARTS					
	108-259			1	LR5, COIL, 0.075 μ h
	120-302			1	L5, TRANSFORMER, torroid, 5 turns, single
	120-303			1	L6, TRANSFORMER, torroid, 3 turns
	318-120			1	R5, RESISTOR, 59 Ω , 1/8 w, Prec., 1%
	315-361			1	R6, RESISTOR, 360 Ω , 1/4 w, 5%