SECTION 34

FIELD TRIGGER DELAY GENERATOR GE2/534

Introduction

The GE2/534 accepts 405/625-line field trigger pulses, regenerates them and delays them for a preset time between 75 and 200μs. The generator also produces a feed of pulses, known as inhibit pulses, the leading edges of which coincide with those of the input field-trigger pulses and the trailing edges of which coincide with the leading edges of the delayed field-trigger pulses.

The generator, which is mounted on a chassis type CH1/12A, forms part of the Vidicon Telecine equipment EP6/501.

General Specification

Input (negative-going field trigger pulses)	2$\pm$0·25V p-p
Input Impedance	greater than 2·5 kilohms
Outputs (across 75 ohms)	
Delayed negative-going field trigger pulses	2$\pm$0·25V p-p
Negative-going inhibit pulses	3$\pm$0·5V p-p
Output Impedance (both outputs)	75 ohms approx.
Output Pulse Duration (field trigger)	0·4$\pm$0·1ms
Operating Temperature Range	20°C-45°C
Index Pegs	14 and 26
Power Requirement	$-$18$\pm$1V, 180ma

General Description

A circuit diagram is given in Fig. 34.1. TRI to TR10 form the field-trigger delay circuit. RV1 is the preset delay control and operates by varying the time constant C3 (R8+RV1). The monostable multivibrator, TR5 and TR6, regenerates the field trigger pulses; the controlling time constant is C5, R17.

The inhibit pulses are produced by the bistable multivibrator TR12 and TR13, which is driven by the input and output field trigger pulses.

Circuit Description

The incoming field trigger pulses are clipped by the emitter-coupled pair TR1/TR2 (see Television Engineering, Volume 3). The negative-going leading edge of the pulse at the collector of TR2 cuts off TR3 which is normally held on by the base current via R8 and RV1. TR3 reverts to the conducting state again after a time determined by C3, R8 and RV1. The positive pulse which appears at the collector of TR3 has a duration of between 75 and 200μs, depending on the setting of RV1. This pulse is differentiated by C4, R11 and R12 and the resulting negative edge, via TR4, triggers the monostable multivibrator TR5/TR6, of which TR5 is normally cut-off. TR5 now conducts for a time fixed by C5 and R17, after which the multivibrator reverts to normal. The negative-going pulse at the collector of TR6 has a duration of about 0·4ms and is passed to TR7. TR7 and TR8 form a double-limiter or slicer circuit. The signal from TR8 is negative-going with an amplitude of 2 volts and is fed to the output via the emitter followers TR9 and TR10. Thus the output waveform has an amplitude of 2 volts, a pulse duration determined by C5 and R17 and the delay of its leading edge relative to the leading edge of the input field trigger pulses is determined by C3, R8, RV1.

The inhibit pulses are produced by TR11 to TR15. The input field trigger pulses and the delayed field trigger pulses are differentiated and fed via emitter followers to the bistable multivibrator TR12, TR13. The output waveform at the collector of TR13 is thus a set of pulses which go negative when TR12 is switched off by the leading edge of field trigger and go positive when TR13 is switched off by the leading edge of delayed field trigger. The output from the emitter follower TR15 is thus a negative-going pulse waveform the duration of which is defined by the leading edges of field-trigger and delayed field-trigger. The duration is normally set to 150μs by adjustment of RV1.

Maintenance

Routine maintenance is not required other than to ensure that the correct output waveforms are

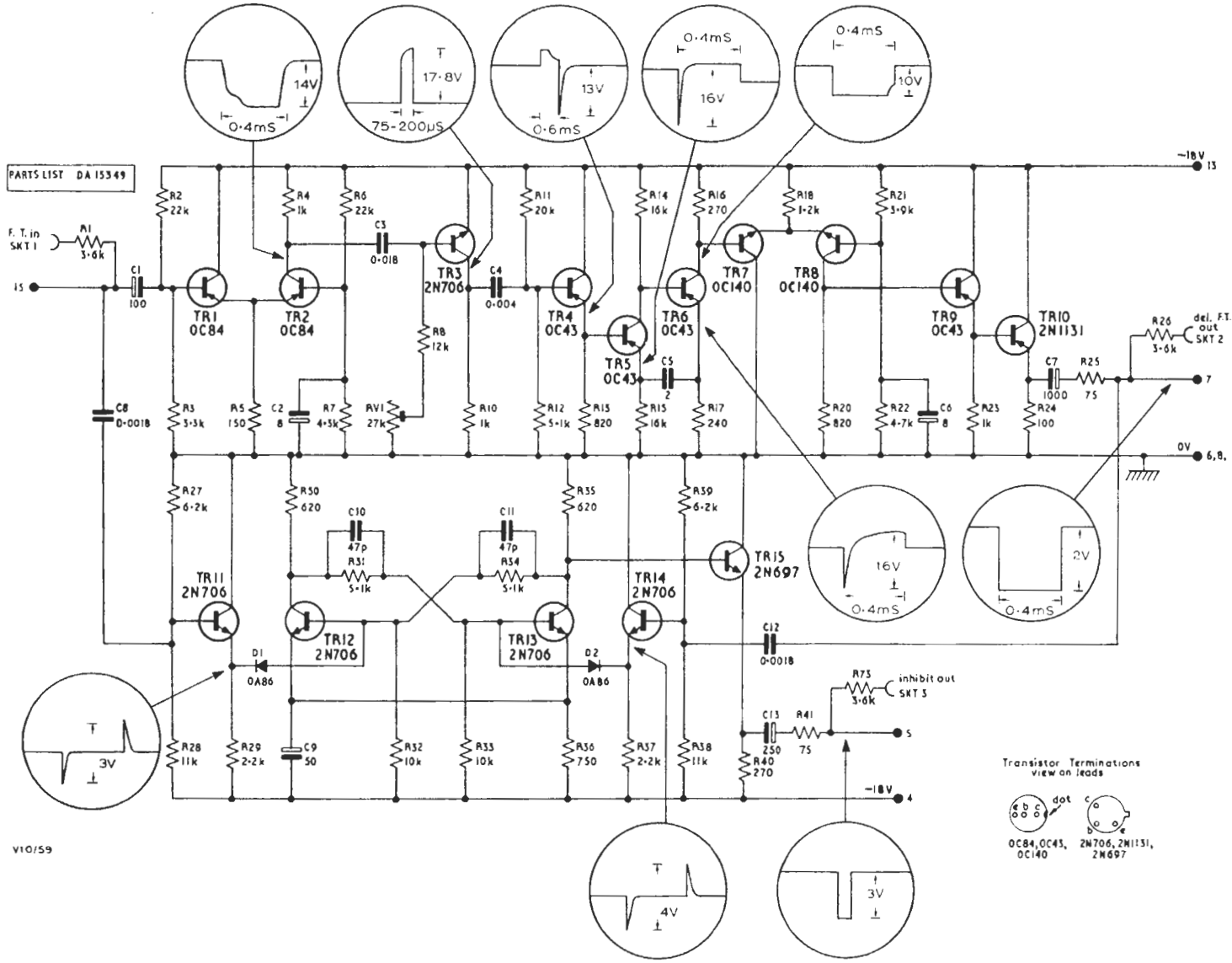

Fig. 34.1 Circuit of the GE2/534

produced. If the performance does become suspect, the typical voltages given in Table 1 and the waveforms on Fig. 34.1 should enable the trouble to be located.

Apparatus Required

Avometer Model 8

Oscilloscope such as Tektronix Type 533A with Type CA plug-in unit

Procedure

1. With the pulse output removed, check voltages against typical values give in Table 1
2. Check waveforms
3. Check the delay of the output pulses. This should be between 75 and 200μs depending on the setting of RV1. Normal delay setting is 150μs.

TABLE 1

Circuit Point	*Volts with respect to chassis*
TR1 base	2·2
TR2 base	2·3
TR2 collector	4·5
TR3 base	17·3
TR3 collector	17·8
TR4 emitter	3·5
TR7 base	8·8
TR8 base	9·8
TR10 emitter	0
TR11 emitter	7·5
TR13 emitter	8·4
TR14 emitter	7·7

Reference

Designs Department Technical Memorandum No. 7. 101 (65).

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