CA3163

VHF/UHF Prescaler

Features:

- *Broadband operation - 90 to 1000 MHz*
- *High sensitivity*
- *Standard 5 V power supply*
- *Dual mode operation - VHF/UHF*
- *Complementary ECL outputs*
- *Independent VHF & UHF input terminals*

The RCA-CA3163E* is an integrated-circuit prescaler intended for use in TV frequency synthesis tuning systems over an input frequency range of 90 to 1000 MHz. It performs division by 256 in the uhf mode and division by 64 in the vhf mode.

The mode of operation can be selected by means of the bandswitch and the separate uhf and vhf input terminals provided. The output is a complementary emitter-coupled stage with controlled slew rate for harmonic suppression.

All input terminals should be ac coupled to the appropriate input signal source. Because of high sensitivity, unbuffered coupling from the local oscillator is possible in most cases. In the uhf mode, which is activated by applying a high level to the bandswitch input terminal, all eight divider stages are operative, resulting in division by 256. In the vhf mode, activated by a low level at the vhf input terminal, two divider stages are bypassed, resulting in division by 64. As a result, approximately the same range of output frequencies are generated for both the uhf and vhf TV bands. An internal amplifier/multiplexer provides this control while isolating both inputs and amplifying the vhf signal. In addition, harmonic output is reduced above 40 MHz by limiting output signal rise and fall times and maintaining a balanced load.

The CA3163E is supplied in the 14-lead Dual-in-Line Plastic Package.

*Formerly RCA Developmental No. TA10535.

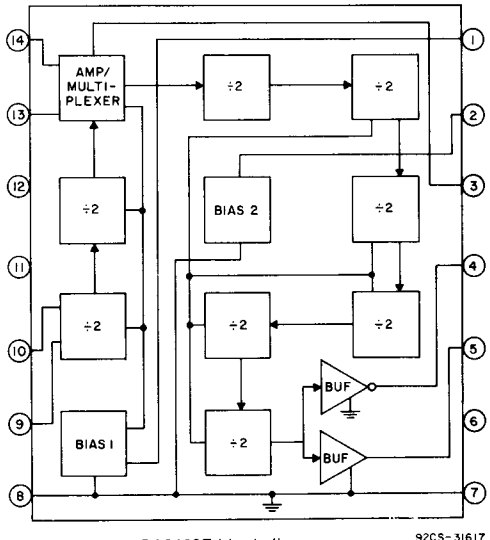

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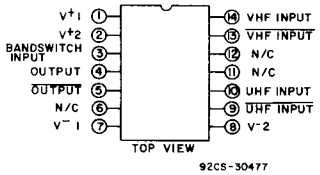
Fig. 1 - CA3163E block diagram.

TERMINAL DIAGRAM



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N/C = NO CONNECTION

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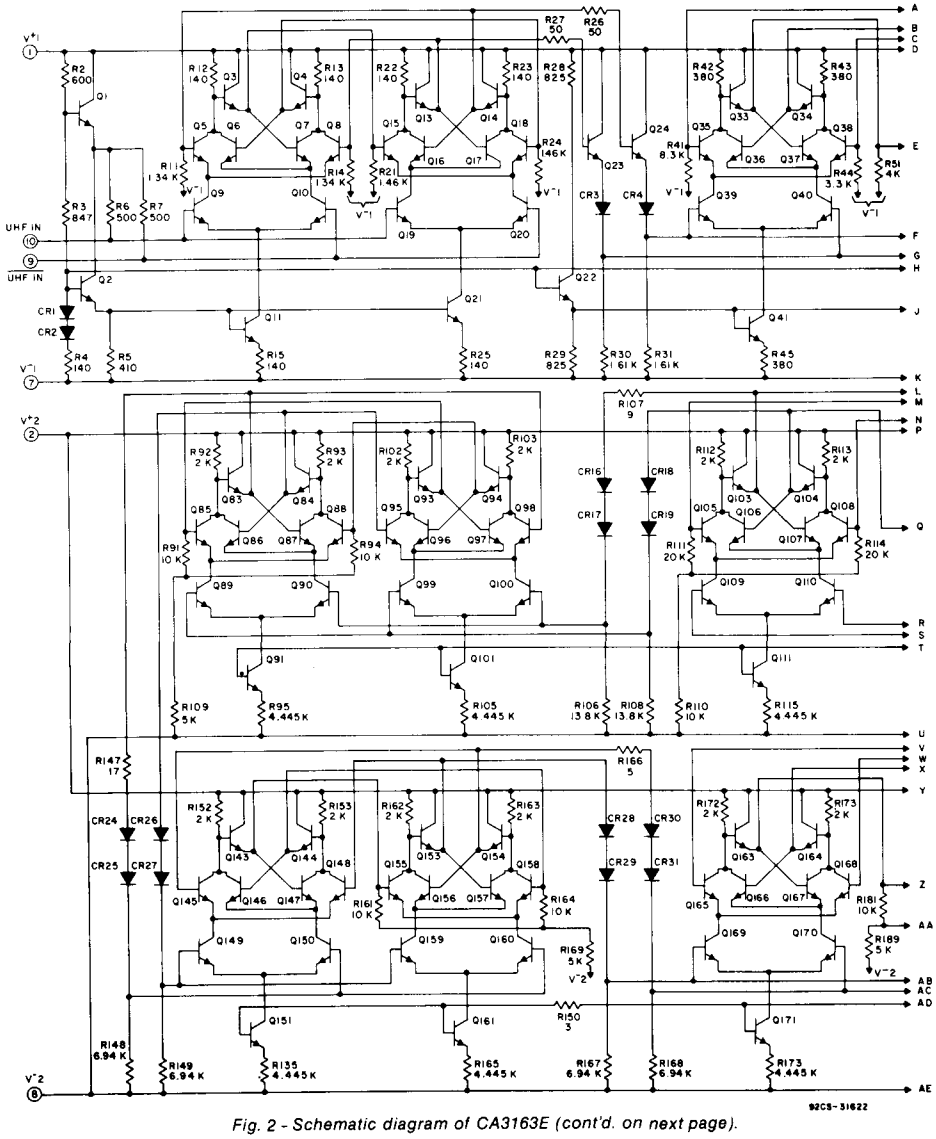

Fig. 2 - Schematic diagram of CA3163E (cont'd. on next page).

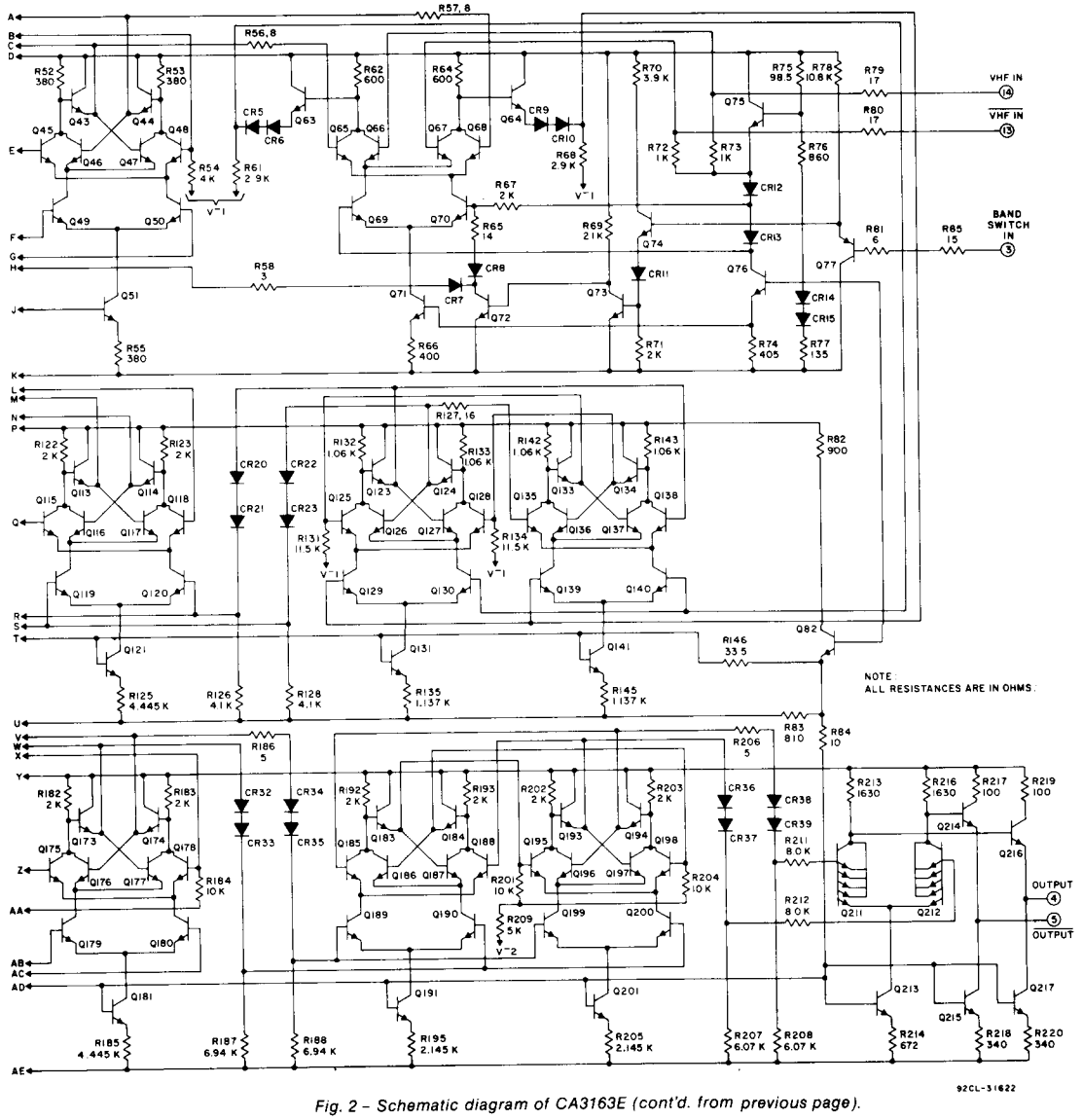

Fig. 2 - Schematic diagram of CA3163E (cont'd. from previous page).

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ELECTRICAL CHARACTERISTICS At T_A = 25°C, V^+ = 5VDC, V^- = 0 VDC; see Figs. 1 & 3

CHARACTERISTIC	TEST CONDITIONS	LIMITS			UNITS
		Min.	Typ.	Max.	
Supply Current, I^+	Terms. (1+2), Fig. 1	30	60	90	mA
UHF Bandswitch Input Voltage, V_{BH}	High Level	2.4	—	—	V
VHF Bandswitch Input Voltage, V_{BL}	Low Level	—	—	0.8	V
UHF Bandswitch Input Current, I_{BH}	V_{BH} = 20 VDC, Fig. 1	—	—	0.5	mA
VHF Bandswitch Input Current, I_{BL}	V_{BL} = 0 VDC, Fig. 1	—	—	-1	mA
UHF Sensitivity Level Input Voltage, V_{IN}(U)	f_{IN} = 450 to 950 MHz, $f_{OUT} = f_{IN}/256$, Fig. 3	—	—	80	mVRMS
VHF Sensitivity Level Input Voltage, V_{IN}(V)	f_{IN} = 90 to 275 MHz, $f_{OUT} = f_{IN}/64$, Fig. 3	—	—	40	mVRMS
Output Voltage, V_O	Terms, 4 or 5, Fig. 3	0.65	1	—	V_{p-p}
Output Voltage Rise of Fall Time, t_r, t_f		—	70	—	ns

MAXIMUM RATINGS, *Absolute-Maximum Values:*

DC SUPPLY VOLTAGE	5.5	V
DC BANDSWITCH VOLTAGE	20	V
RMS INPUT VOLTAGE	0.5V	
DEVICE DISSIPATION:		
UP TO T_A = 70°C	600	mW
ABOVE T_A = 70°C	derate linearly at 7.5	mW/°C
AMBIENT TEMPERATURE RANGE:		
OPERATING	0 to 70	°C
STORAGE	-55 to +150	°C
LEAD TEMPERATURE (DURING SOLDERING):		
AT DISTANCE 1/16 ± 1/32 INCH (1.59 ± 0.79 MM)		
FROM CASE FOR 10 SECONDS MAX.	+265	°C

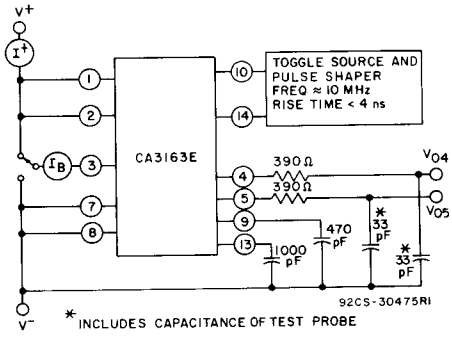

Fig. 3 - DC characteristics test circuit.

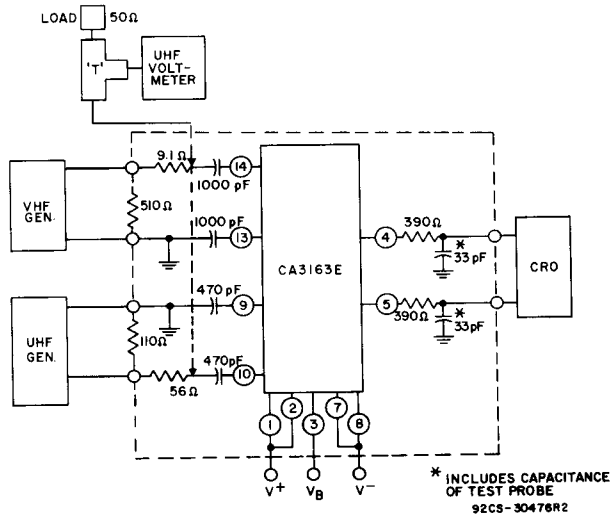

Fig. 4 - AC characteristics test circuit.