

TV Chroma Demodulator

Features:

- *Balanced chroma demodulators*
- *Color difference matrix (6500° K)*
- *DC tint control*
- *Three low-output-impedance drivers for direct coupling*
- *Reference subcarrier limiter*
- *Internal RF filtering*
- *DC chroma gain control*
- *Dynamic "flesh correction" – corrects purple and green flesh colors without affecting primary red, green, and blue colors*

The RCA-CA3137E is a monolithic silicon integrated circuit that performs the demodulation, dynamic "flesh correction", tint control, and chroma gain-control functions. It is designed to function compatibly with the CA3126Q Chroma Processor, and is supplied in the 16-lead dual-in-line plastic package.

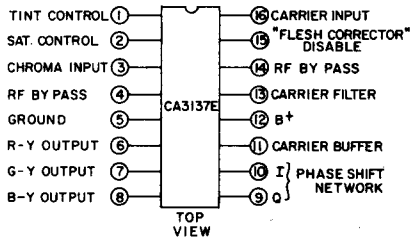
- *Requires few external components*
- *No tuning adjustments are necessary*

MAXIMUM RATINGS, Absolute-Maximum Values at $T_A = 25^\circ\text{C}$:

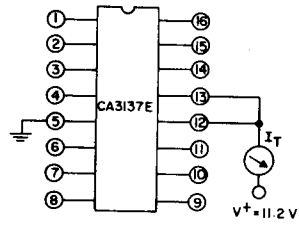
DC SUPPLY VOLTAGE (Between Terms. 5 and 12)	13.2 V
DEVICE DISSIPATION:	
Up to $T_A = 55^\circ\text{C}$	750 mW
Above $T_A = 55^\circ\text{C}$	derate linearly 7.9 mW/ $^\circ\text{C}$
AMBIENT-TEMPERATURE RANGE:	
Operating	-40 to +85 $^\circ\text{C}$
Storage	-65 to +150 $^\circ\text{C}$
LEAD TEMPERATURE (During soldering):	
At distance $1/16 \pm 1/32$ inch (1.59 ± 0.79 mm) from case for 10s max.	+265 $^\circ\text{C}$

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CA3137E



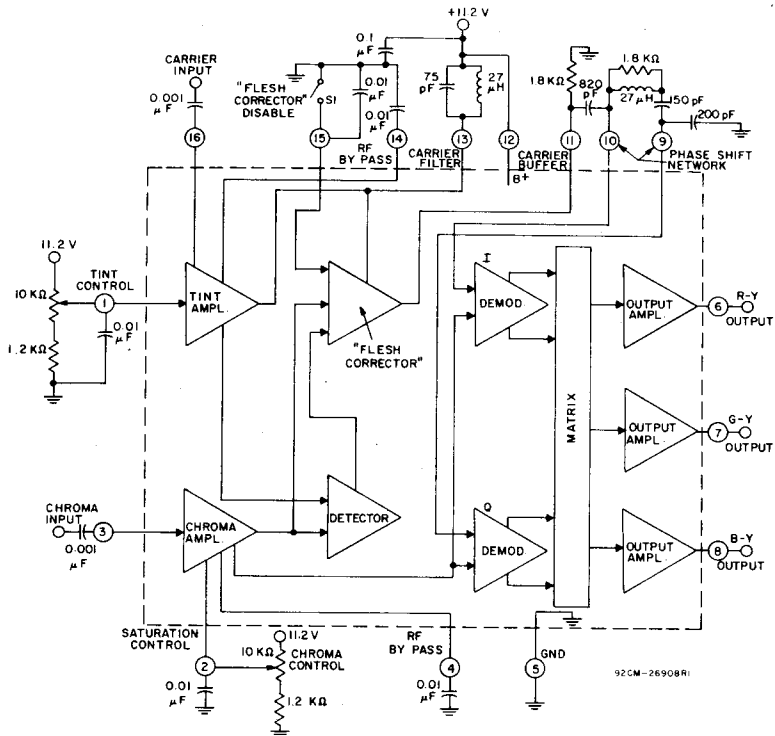
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Fig.1 - CA3137E terminal assignment.

Fig.2 - DC test circuit.



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Fig.3 - Functional diagram and typical dynamic test circuit.

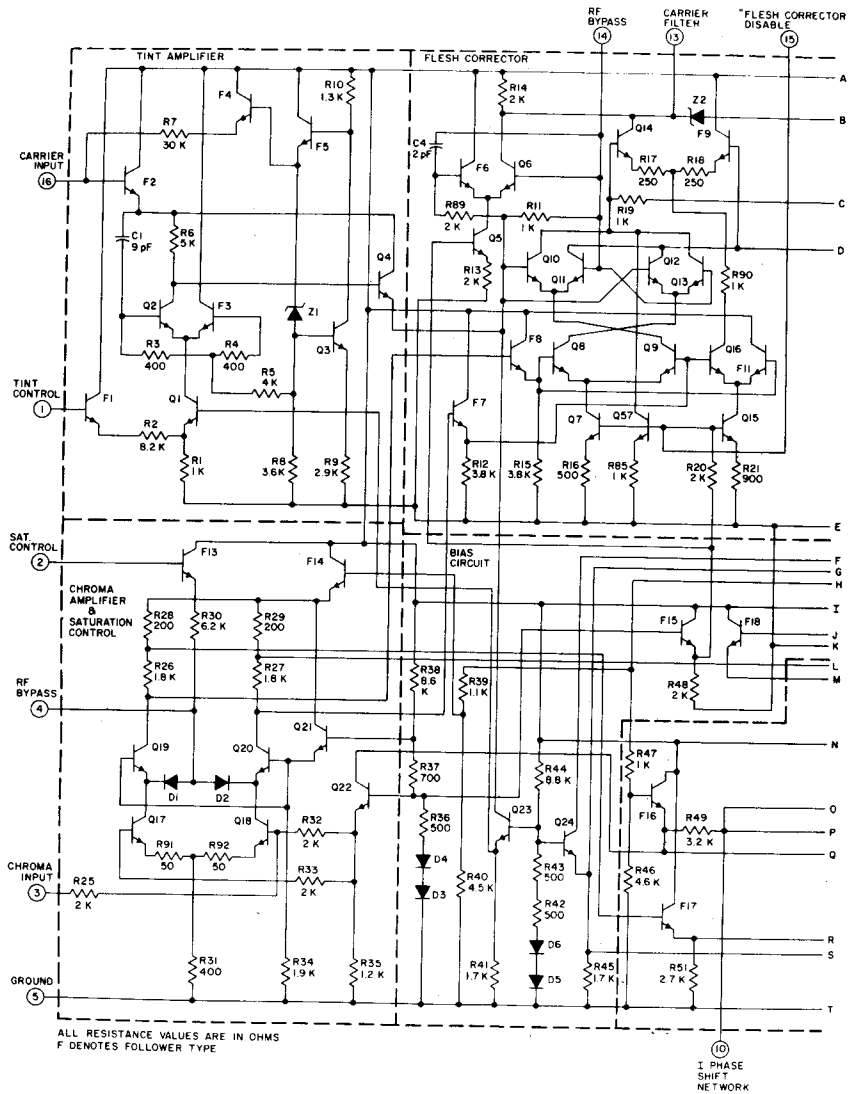
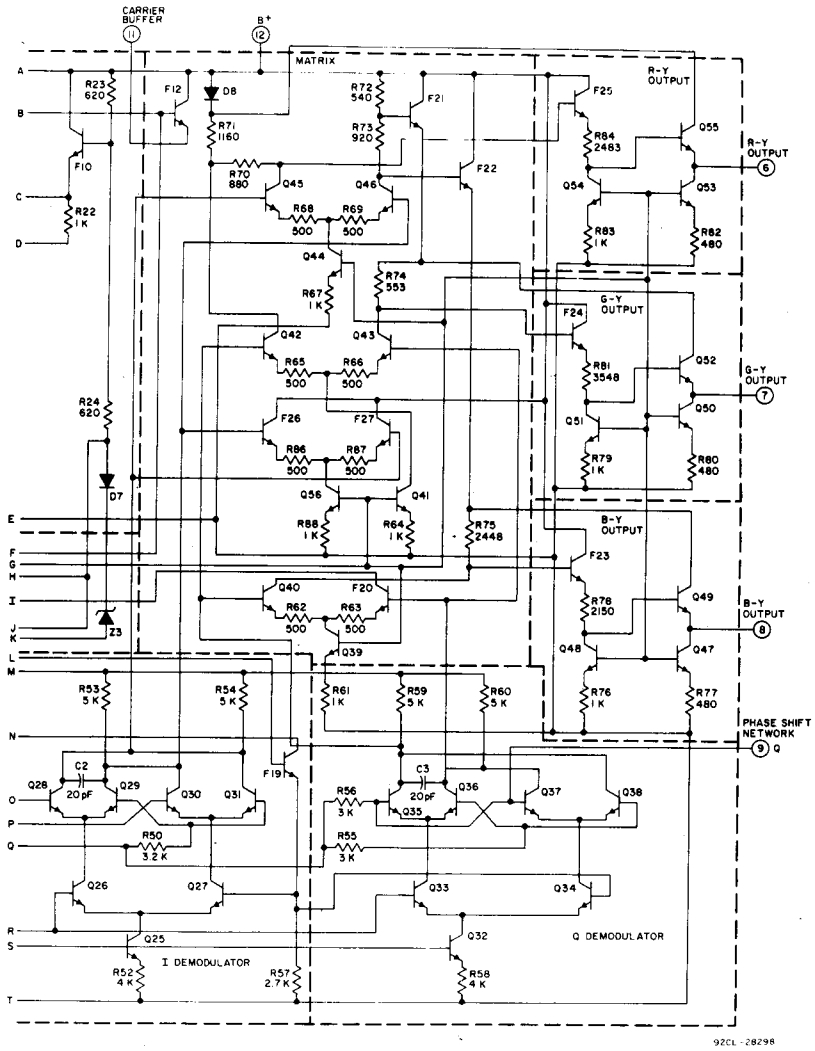


Fig.4 - CA3137E Schematic diagram.

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Fig.4 - CA3137E Schematic diagram.

ELECTRICAL CHARACTERISTICS AT $T_A = 25^\circ\text{C}$, $V^+ = 11.2\text{ V}$

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	LIMITS			UNITS
			Min.	Typ.	Max.	
STATIC (See Fig.2)						
Supply Current	I_T		—	35	47	mA
Reference Subcarrier Input	V_{16}		—	6.7	—	VDC
Oscillator Reference Inputs	V_9, V_{10}		—	3.8	—	VDC
R-Y, G-Y, B-Y Outputs	V_6, V_7, V_8		—	5	—	VDC
Chroma Input	V_3		—	1.2	—	VDC
DYNAMIC (See Fig.3)						
Tint and Sensitivity Limiting	V_{11}	$V_{16} = 200\text{ mV p-p @ } 3.58\text{ MHz}$	200	300	—	mVp-p
Tint Limiting	V_{11}	$V_{16} = 800\text{ mV p-p @ } 3.58\text{ MHz}$	—	425	600	mVp-p
Tint Amplifier* Phase Reference	ϕV_{11}	$V_{16} = 400\text{ mV p-p}$, Term.1 = 11.2 VDC	-35	-25	-15	Degrees
Tint Control▲ Range	$\Delta\phi_{11}$	$V_{16} = 800\text{ mV p-p}$, Term.1 = 1.2 VDC	-130	-110	-80	Degrees
Ratio G-Y to R-Y	V_7/V_6	$V_{16} = 400\text{ mV p-p}$,	28	33	38	%
Ratio B-Y to R-Y	V_8/V_6	$V_3 = 40\text{ mV p-p}$	108	120	132	%
Demodulated Chroma Output R-Y	V_6	$V_{16} = 400\text{ mV p-p}$, $V_3 = 40\text{ mV p-p}$	350	550	—	mV p-p
Color Difference Output (Bandwidth at 3 dB)		$V_3 = 40\text{ mV p-p}$	—	900	—	kHz
Maximum Color Difference Outputs:						V_{p-p}
R-Y	V_6	$V_{16} = 400\text{ mV p-p}$, $V_3 = 300\text{ mV p-p}$	1.5	2.2	—	
G-Y	V_7		0.42	0.7	—	
B-Y	V_8		1.6	2.65	—	
"Flesh Detector" Reference:		Set-Up: Term.2 = 1.6 V Term.1 = 11.2 V Term.16 = 400 mV p-p @ 0° Reference Angle Term.3 = 40 mV p-p @ 10° Reference Angle S ₁ Closed (Term.15 at GND)	Reference Set-Up			
"Flesh Detector": Phase	ϕ_{11}	Same Set-up except S ₁ open	—	0	—	Degrees
Amplitude	V_{11}		—	275	—	%
"Flesh Detector": Phase	ϕ_{11}	Same Set-up except Term.3 at 190° angle	—	0	—	Degrees
Amplitude	V_{11}		—	100	—	%
Small-Signal Output Resistance (Terms.6,7,8)	r_o		—	50	—	Ω
Small-Signal Input Resistance:						
Term.3	r_i		—	3	—	k Ω
Terms.9&10			—	2.5	—	

* Phase angle of term. 11 referenced to term. 16 phase angle.

▲ Phase angle of term. 11 with term. 1 = 1.2 V minus phase angle of term. 11 with term. 1 = 11.2 V.