Marget Pedisich DATE СНК ВУ **DESCRIPTION OF CHANGE** REV REF REV A M. Jaffe 12-13-78 As Per ECN 2301 Original Initial Documentation (30 Pages) originator 155-0206-00 I<u>herley</u> Writer D. Miller 5-29-79 (3 Pages) As Per ECN 3049 А Change the schematic (Section 3.0) and the Outline Drawing (Section 6.2) to read 51 Ω on R4, R17, R18, and R3 (Was 50 Ω) NUMBE PART Miley Spence Dal THE DRAWING TYPE DESIGNATION AND APPROVED SOURCES OF SUPPLY FOR THIS ITEM ARE LISTED ON THE PURCHASED ITEM SOURCE THIS DRAWING WHEN DISTRIBUTED OUTSIDE TEK-LIST (PISL) FOR THIS PART NUMBER. TRONIX, INC. IS SUPPLIED FOR IDENTIFICATION: EN-GINEERING EVALUATION AND/OR INSPECTION PUR-POSES ONLY AND MAY NOT BE USED AS A BASIS FOR MANUFACTURE OR SALES OF PRODUCTS WITH-E CONTRACTOR P. O. BOX 500 TEKTRONIX, INC. OUT WRITTEN PERMISSION FROM TEKTRONIX, INC. BEAVERTON, OREGON U.S.A. 97077 IF THIS DRAWING IS FURNISHED UNDER ANT U.S. GOVERNMENT CONTRACT, IT IS FURNISHED AS LIMITED RIGHTS DATA AND SHALL NOT, WITHOUT THE WRITTEN PERMISSION OF TEKTRONIX, INC., BE IF THIS DRAWING IS FURNISHED UNDER ANY U.S. DWN/ **DIMENSIONS ARE IN INCHES / MM** WR TOLERANCES: UNLESS OTHERWISE SPECIFIED EITHER (A) USED. RELEASED OR DISCLOSED IN-WHOLE OR IN PART OUTSIDE THE GOVERNMENT. (B) USED IN WHOLE OR IN PART BY THE GOVERN-COMP ANLR ENGR DEC (B) OSED IN WHOLE OR WANDER THE OR MAIN BAT BAT WORK OF MANUFACTURE OR (C) USED BY A PARTY OTHER THAN THE GOVERNMENT, EXCEPT FOR: (I) EMERGENCY REPAIR OR OVERHAUL WORK ONLY. BY OR FOR THE GOVERNMENT, WHERE THE ITEM OR PROCESS CONCERNED IS NOT OTHERWISE REASONABLY AVAILABLE TO ENABLE TIMELY PER-FORMANCE OF THE WORK, PROVIDED THAT THE RELEASE OR DISCLOSURE HEREOF OUTSIDE THE GOVERNMENT SMALL BE MADE SUBJECT TO A PRO-HIBITION AGAINST FURTHER USE, RELEASE. OR DISCLOSURE: OR (II) RELEASE TO A FOREIGN GOV-ERNMENT, AS THE INTEREST OF THE UNITED STATES MAY REOUIRE. ONLY FOR INFORMATION OR EVAL-UATION WITHIN SUCH GOVERHAUL WORK BY OR FOR SUCH GOVERNMENT UNDER THE CONDITIONS OF (I) ABOVE. THIS LEGEND SHALL BE INCLUDED ON ANY REPRODUCTION HEREOF. MENT FOR MANUFACTURE OR (C) USED BY A PARTY CHKR/ COORD FIRST USED ON SCALE INSTR DSGN MATERIAL FINISH TITLE CHANNEL SWITCH: H752 REV CODE IDENT NO PART NUMBER SIZE 155-0206-00 А 80009 А 1 of 30 SH DO NOT SCALE DRAWING 000.7242.00 D

1.0 DESCRIPTION

Hybrid Integrated Circuit, Channel Switch. Initially Designated as H752. The component consists of two M178 SHF III chips mounted on a 1.75 x 1.75 x .0635 cm Al_2O_3 thin film substrate.

2.0 ABSOLUTE MAXIMUM RATINGS

2.1	Storage Temperature Range (T _{stg})	•	•	•	•	•	-55°C to +125°C
2.2	Operating Ambient Temperature (T_A)	•	•	•	•	•	0 to +70°C
2.3	Total Device Power Dissipation $(P_{D_{MAY}})$	•	•	•	•	•	2,8 Watts
2.3	Maximum Voltage (Pins 2, 3, 12, and 13) (Referred to Substrate Backplane)	•	•	•	•	•	15 Volts
2.4	Maximum Current (Pins 2, 3, 12, and 13)	•	•	•	•	•	200 mA
2.5	Maximum Input Signal (Pins 7, 9, 17, and 19) (Referræd to Substrate Backplane)	•	•	•	•	•	± 1 Volt

2.6 <u>Electrical Specification</u>

Parameters measured at 25°C substrate backplane temperature.

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4.0 PARAMETRIC DEFINITIONS

Refer to Section 5.0 (Parametric Summary)

5.0 PARAMETRIC SUMMARY

Electrical characteristics (for an ambient temperature of $25^{\circ}C$ except where a different temperature may be shown).

	NO	SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
	1	I _{CB0} 1-4, 9-12	Collector-base leakage of Q1, Q2, Q3, Q4, Q9, Q10, Q11, and Q12 in	Pins 7, 8, 9, 17, 18, and 19, back of sub- strate grounded.		50	μA
		di o voits	parallel, emitters open	Pins 1, 2, 3, 10, 11, 12, 13, and 20 held at +8.8 volts.			
				All other pins open			
				Measure current from +8.8 volt source			
	2	^I CES ₁₋₄ ,	Collector-emitter leak- age of Q1, Q2, Q3, Q4,	Same as in #1 except Pins 4, 5, 6, 14, 15,		50	μA
		9-12 at 8 Volts	Q9, Q10, Q11, and Q12 in parallel, bases short- ed to emitters	and 16 grounded			
	3	I _{CB05-8} ,	Collector-base leakage of Q5, Q6, Q7, Q8, Q13,	Pins 1, 10, 11, and 20 grounded		50	μA
		13-16 at 12 Volts	Q14, Q15, and Q16 in parallel, emitters open	Pins 2, 3, 12, and 13 held at +12 volts			
				All other pins, sub- strate backplane open			
				Measure current from +12 volt source			
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5.0	PARAMETRIC	SUMMARY	(continued)	

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NO	SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
4	I _{CES} 5, 8, 13, 16	Collector-emitter leak- age of Q5, Q6, Q7, Q8, Q13, Q14, Q15, and Q16	Pins 1, 4, 5, 6, 10, 11, 14, 15, 16, and 20 grounded		50	μA
	at 12 voits	ed to emitters	Pins 2, 3, 12, and 13 held at +12 volts			
			Pins 7, 8, 9, 17, 18, and 19, back of sub- strate connected to positive current source of 500 μA			
			Measure current from +12 volt source			
5	I _{EB0} 6-7, of Q6, Q7, Q14, and 14-15 Q15 in parallel, with	Pins 1 and 11 grounded		10	μA	
	14-15	Q15 in parallel, with collectors open	Pins 10 and 20 held at 1.6 volts			
			All other pins, sub- strate backplane open			
			Measure current from 1.6 volt source			
6	I _{EB05.8}	Emitter-base leakage	Pins 10 and 20 grounded		10	μA
	13,16	Q16 in parallel, with	Pins 1 and 11 held at +1.6 volts			
			All other pins, sub- strate backplane open			
			Measure current from 1.6 volt source			
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5.0 PARAMETRIC SUMMARY (continued)

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NU	SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNI
7	I _{in7}	Pin 7 input bias cur- rent with total emitter current at 80 mA per channel	Pins 1 and 11 held at +2.0 volts Pins 10 and 20 held at +2.6 volts	80	4 50	μA
			Pins 12 and 13 through $50 \ \Omega$ resistors to +9.8V			
			Pins 2 and 3 through 50 Ω resistors to +5.8V			
			Pins 4, 6, 14, and 16 through 103 Ω resistors to -3.95 volts			
			Pins 5 and 15 to -3.95V			
			Pins 8 and 18 grounded			
			Pins 7, 9, 17, and 19, substrate backplane held at 0.0 volts			
			Measure current delivered by source connected to Pin 7			
8	I _{ing}	Pin 9 input bias cur- rent with total emit- ter current of 80 mA per channel	Same as #7 except measure current delivered by source connected to Pin 9	80	450	μA
9	I in _{Substrate}	Q2, Q3, Q10, and Q11 input bias current with total emitter current of 80 mA per channel	Same as in #7 except measure current delivered by source connected to substrate backplane	0.320	1.800	mA
10	^I in _{10(ON)}	Pin 10 input bias cur- rent with channel "on" and total emitter cur- rent of 80 mA per chan- nel	Same as #7 except measure current delivered by source connected to Pin 10	0.320	1.800	mA
1	I _{in11(ON)}	Pin 11 input bias cur- rent with channel "on" and total emitter cur- rent of 80 mA per chan- nel	Same as #7 except measure current delivered by source connected to Pin 11	-10	+10	μA
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5.0 <u>PARAMETRIC DEFINITIONS</u> (continued)

NO	SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
12	I _{in₁₇}	Pin 17 input bias cur- rent with total emitter current of 80 mA per channel	Same as #7 except measure current delivered by source connected to Pin 17	80	4 50	μA
13	I _{in₁₉}	Pin 19 input bias cur- rent with total emitter current of 80 mA per channel	Same as #7 except measure current delivered to by source connected to Pin 19	80	450	μA
14	I _{in20()N)}	Pin 20 bias current with channel "on" and total emitter current of 80 mA per channel	Same as #7 except measure current delivered by source connected to Pin 20	0.320	1.800	mA
15	I _{in1(ON)}	Pin 1 bias current with channel "on" and total emitter current of 80 mA per channel	Same as #7 except measure cur r ent delivered by source connected to Pin 1	-10	+10	μA
16	^I in _{20(OFF)}	Pin 20 bias current with channel "off" and total emitter current of 80 mA per channel	Same as #7 except: Pin 1 held at +2.6V Pin 20 held at +2.0V Pin 11 held at +2.6V Pin 10 held at +2.0V Pin 10 held at +2.0V Pin 2 through 50 Ω to +9.8 volts Pin 3 through 50 Ω to +9.8 volts Pin 12 through 50 Ω to +5.8 volts Pin 13 through 50 Ω to 5.8 volts Measure current de- livered by source con- nected to Pin 20	-10	+10	μA
17	^I in _{10(OFF)}	Pin 10 bias current with channel "off" and total emitter current of 80 mA per channel	Same as #16 except measure current delivered by source connected to Pin 10	-10	+10	μA
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5.0	PARAMETRI	C SUMMARY (continued)				
NO	SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UN
18	I _{in} 11(OFF)	Pin 11 bias current with channel "off" and total emitter current of 80 mA per channel	Same as #16 except measure current delivered by source to Pin 11	0.320	1.800	m
19	I _{in} 1(OFF)	Pin 1 bias current with channel "off" and total emitter current of 80 mA per channel	Same as #16 except measure current delivered by source connected to Pin 1	0.320	1.800	m
20	V _{OUT 1(ADD)}	Common mode DC output voltage, ADD mode	Pins 7, 9, 17, and 19 open	5,6	5.8	۷
			Pins 10 and 20 to 2.6 volts			
			Pin 3 through 50 Ω to +5.8 volts			
			Pin 4 through 103 Ω to -3.95 volts			
			Pins 5 and 15 to -3.95 volts			
			Pin 6 through 103 Ω to -3.95 volts			
			Pins 8 and 18, sub- strate backplane grounded			
			Pins 1 and 11 to 2.0 volts			
			Pin 2 through 50 Ω to +5.8 volts			
			Pin 14 through 103 Ω to -3.95 volts			
			Pin 16 through 103 Ω to -3.95 volts			
			Pin 12 through 50 Ω to +9.8 volts			
			Pin 13 through 50 Ω to +9.8 volts			
			Measure average of voltages at Pins 12 and 13			
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5.0	PARAMETRIC	SUMMARY	(continued)
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NO	SYMBOL	PARAME	TER		CONDITIONS	MIN	MAX	UNI
21	V _{OUT 2(OFF)}	Common mode D	C outpu	t	Same as #20 except:	5.6	5.8	۷
		voitage, UFF	mode		Pins 10 and 20 to +2.0 volts			
					Pins 1 and 11 to +2.6 volts			
					Pin 12 through 50 Ω to +5.8 volts			
					Pin 13 through 50 Ω to +5.8 volts			
					Pin 3 through 50 Ω to +9.8 volts			
					Pin 2 through 50 Ω to +9.8 volts			
					Measure average of voltages at Pins 2 and 3			
22	V_{0S} 1(1)	Output #1 off	set		Same as #20 except:	-100	+100	mV
	00 1(L)	voltage, LEFI	mode		Pin 10 to +2.0 volts			
					Pin 11 to +2.6 volts			
					Pin 2 through 50 Ω to +7.8 volts			
					Pin 3 through 50 Ω to +7.8 volts			
					Pin 12 through 50 Ω to +7.8 volts			
					Pin 13 through 50 Ω to +7.8 volts			
					Measure voltage at Pin 12 with respect to Pin 13			
23	$V_{0S,1(R)}$	Output #1 off	set		Same as #22 except:	-100	+100	mV
	00 1(1)	voltage, RIGH	T mode		Pins 1 and 10 to +2.6 volts			
					Pins 11 and 20 to +2.0 volts			
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NO	SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	U
24	V _{OS 1(ADD)}	Output #1 offset voltage, ADD mode	Same as #20 except measure voltage at Pin 12 with respect to Pin 13	-100	+100	
25	V _{OS 1(L-ADD)}	Output #1 offset voltage between modes, LEFT-ADD	V _{OS 1(L-ADD)} = V _{OS 1(L)} -V _{OS 1(ADD)}	-50	+50	
26	V _{OS 1(R-L)}	Output #1 offset voltage between modes, RIGHT-LEFT	V _{OS 1(R-L)} = V _{OS 1 (R)} -V _{OS 1(L)}	-50	+50	
27	V _{OS 1} (R-ADD)	Output #1 offset voltage between modes, RIGHT-ADD	$V_{OS 1(R-ADD)} = V_{OS 1(R)} - V_{OS 1(R)} = V_{OS 1(ADD)}$	-50	+50	
28	V _{OS 2(L)}	Output #2 offset voltage, LEFT mode	Same as #22 except measure voltage at Pin 3 with respect to Pin 2	-100	+100	
29	V _{OS 2(R)}	Output #2 offset voltage, RIGHT mode	Same as #23 except measure voltage at Pin 3 with respect to Pin 2	-100	+100	
30	V _{OS 2(0FF)}	Output #2 offset voltage, OFF mode	Same as #21 except measure voltage at Pin 3 with respect to Pin 2	-100	+100	
31	V _{OS 2(L-OFF)}	Output #2 offset voltage between modes, LEFT-OFF	V _{OS 2(L-OFF)} = V _{OS 2(L)} -V _{OS 2(OFF)}	-50	+50	
32	V _{OS 2(R-L)}	Output #2 offset voltage between modes, RIGHT-LEFT	$V_{OS 2(R-L)} = V_{OS 2(R)} V_{OS 2(R)} V_{OS 2(L)}$	-50	+50	
33	V _{OS 2(R-OFF)}	Output #2 offset voltage between modes, RIGHT-OFF	V _{OS 2(R-OFF)} = V _{OS 2(R)} -V _{OS 2(OFF)}	-50	+50	
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NU	SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	1
34	R _{IN} 7(ADD)	Input resistance Pin 7 to ground, ADD mode	Pins 1 and 11 to +2.0 volts	49.70	50.50	
			Pin 10 and 20 to +2.6 volts			
			Pins 12 and 13 to +9.8 volts through 50 Ω resistors			
			Pins 2 and 3 to +5.8 volts through 50 Ω resistors			
			Pins 4, 6, 14, and 16 through separate 103 Ω resistors to -3.95 volts			
			Pins 5 and 15 to -3.95 volts			
			Pins 8 and 18, back- plane of substrate grounded			
			Pins 7 and 17 connect- ed to current sources of +1 mA then -1 mA			
			Pins 9 and 19 connect- ed to current sources of -1 mA then +1 mA			
			Measure voltage from Pin 7 to ground.			
			Voltage difference be- tween application of +1.0 mA and -1.0 mA divided by 2.0 mA is ^R IN			
35	R _{IN} 9(ADD)	Input resistance Pin 9 to ground, ADD mode	Same as #34 except measure voltage from Pin 9 to ground	49.70	50.50	
36	^R IN ₁₇ (ADD)	Input resistance Pin 17 to ground, ADD mode	Same as #34 except measure voltage from Pin 17 to ground	49.70	50.50	
37	R _{IN} 19(ADD)	Input resistance Pin 19 to ground, ADD mode	Same as #34 except measure voltage from Pin 19 to ground	49.70	50.50	

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5.0	PARAMETRIC	SUMMARY	(continued)
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<u>NO S</u>	YMBOL	PARAMETER		CONDITIONS	MIN	MAX	UNIT
38 R _{OUT}	1 (ADD)	Output resistance, P 12 to Pin 13, ADD mo	'in ode	Pins 1 and 11 to +2.0 volts	99.50	101.5	Ω
				Pin 13 held at +5.55 volts (case 1), then +6.05 volts (case 2) by current through 50 Ω resistor			
				Pin 4 through 103 Ω to -3.95 volts			
				Pins 5 and 15 to -3.95 volts			
				Pin 6 through 103 Ω to -3.95 volts			
				Pin 7 through 50 Ω to ground			
				Pins 8 and 18 back- plane of substrate ground			
				Pin 9 through 50 Ω to ground			
				Pins 10 and 20 to +2.6 volts			
		· · · · · · · · · · · · · · · · · · ·		Pin 12 held at +6.05 volts (case 1) then +5.55 volts (case 2) by current through 50 Ω resistor			
				Pin 14 through 103 Ω to -3.95 volts			
				Pin 16 through 103 Ω to -3.95 volts			
н. 				Pin 17 through 50 Ω to ground			
				Pin 19 through 50 Ω to ground			
- -				Pin 3 through 50 Ω to +5.8 volts			
				Pin 2 through 50 Ω to +5.8 volts			
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38 C	Continued	<u>1</u> R _{OUT} Output resistance, Pin 3 to Pin 2, OFF mode	Measure the currents in the 50 Ω resistors connected to Pins 12 and 13 for case 1 and case 2 Compute R _{OUT} as follows; $= \left[\frac{I_{12}^1 - I_{13}^1}{2} - \frac{I_{12}^2 - I_{13}^2}{2} \right]$ Same as #38 except; Pins 10 and 20 to	/1V 99.50	101.5	
39 R ₀	DUT 2(OFF)	<u>1</u> R _{OUT} Output resistance, Pin 3 to Pin 2, OFF mode	Compute R _{OUT} as follows; = $\left[\frac{I_{12}^1 - I_{13}^1}{2} - \frac{I_{12}^2 - I_{13}^2}{2}\right]$ Same as #38 except; Pins 10 and 20 to	/1V 99.50	101.5	
39 R ₀	DUT 2(OFF)	<u>1</u> R _{OUT} Output resistance, Pin 3 to Pin 2, OFF mode	$= \left[\frac{I_{12}^{1} - I_{13}^{1}}{2} - \frac{I_{12}^{2} - I_{13}^{2}}{2} \right]$ Same as #38 except; Pins 10 and 20 to	/1V 99.50	101 5	
39 R ₀	OUT 2(OFF)	Output resistance, Pin 3 to Pin 2, OFF mode	Same as #38 except; Pins 10 and 20 to	99.50	101 5	
U		Pin 3 to Pin 2, OFF mode	Pins 10 and 20 to		101.5	Ω
	. •		+2.0 volts			
		•	Pins 1 and 11 held at 2.6 volts			
			Pin 2 held at +5.55 volts (case 1) then +6.05 volts (case 2) by current through 50 Ω resistor			
			Pin 3 held at +6.05 volts (case 1) then +5.55 volts (case 2) by current through 50 Ω resistor.		· ·	
			Pin 12 through 50 Ω to +5.8 volts			
			Pin 13 through 50 Ω to +5.8 volts			
.'			Measure the currents in the 50 Ω resistors connected to Pins 2 and 3 for case 1 and case 2			
			Compute Rours as follows;			
				٦		
	•	1 R _{OUT}	$= \left[\frac{I_2^1 - I_2^1}{2} - \frac{I_3^2 - I_2^2}{2} \right]$	/1V		
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5.0	PARAME	IRIC SUMMARY (continued)				
NO .	SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
40	A _{il 1(L)}	Current gain from LEF input, LEFT mode, measured at Output #1	T Pins 4, 6, 14, and 16 through separate 103 Ω resistors to -3.95 volts	2.33	2.38	
			Pins 5 and 15 to -3.95 volts			
		· ·	Pins 8 and 18, back- plane of substrate grounded	·		
			Pins 1 and 10 to +2.0 volts			
			Pins 11 and 20 to 2.6 volts			
			Pins 2, 3, 12, and 13 through separate 50 Ω resistors to +7.8 volts			
			Connect Pins 7 and 17 to current sources of +1.0 mA and Pins 9 and 19 to current sources of -1.0 mA (Condition #1)			
			Then connect Pins 7 and 17 to current sources of -1.0 mA and Pins 9 and 19 to current sources of +1.0 mA (Condition #2)	•		
•			Current gain is deter- mined by measuring the voltage difference of Pin 12 with respect to Pin 13 for Conditions #1 and #2 and performin the following calcula- tion:	ıg		
• •			Current gain =			
			V(Condition #1) ^{-V} (Condition	#2)		
	· ·		200 mV		•	•
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5.0		PARAMETRI	<u>C SUMMARY</u>	(continue	d)			•	
NO	<u> </u>	YMBOL	PAR	AMETER		CONDITIONS	MIN	MAX	UNIT
41	A _{iR}	2(L)	Current input, L measured	gain from R EFT mode 1 at Output :	IGHT #2	Same as #40 except measure voltage difference of Pin 2 with respect to Pin 3	2.33	2.38	
42	A _{iR}	1(R)	Current	gain from R	IGHT	Same as #40 except:	2.33	2.38	<u></u>
		- ()	measured	l at Output	#1	Pins 1 and 10 to +2.6 v olts			
				• •		Pins 11 and 20 to +2.0 volts			
						Measure voltage diff- erence of Pin 13 with respect to Pin 12			
43	A _{iL}	2(R)	Current input, R measured	gain from Li IGHT mode at OUtput	EFT #2	Same as #42 except measure voltage difference of Pin 3 with respect to Pin 2	2.33	2.38	
44	A _{iL}	1(ADD)	Current	gain from L	EFT	Same as #40 except:	2.33	2.38	
			measured	l at Output	#1	Pin 10 to +2.6 volts			
				•		Pin 11 to +2.0 volts			
						Pins 7 and 9 open			
						Pins 12 and 13 through 50 Ω resistors to +9.8 volts			
						Pins 2 and 3 through 50 Ω resistors to +5.8 volts			
45	AiR	1(ADD)	Current	gain from R	IGHT	Same as #42 except:	2.33	2.38	
		1(100)	measured	DD mode	#1	Pin 1 to +2.0 volts			
						Pin 20 to +2.6 volts			
						Pins 17 and 19 open			
				•		Pins 12 and 13 through 50 Ω resistors to +9.8 volts		•	
•		• •				Pins 2 and 3 through 50 Ω resistor to +5.8 volts			
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5.0	PARAMETRIC SUMMARY	(continued)
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NO	SYMB	0L	F	ARAMETER		CONDITIONS	MIN	MAX	UNIT
46	ADD Acc	uracy	Reject	ion of equal b	out	Same as #42 except:	-0.5	0.5	%
		. ·	oppost put st	te polarity ir)- 	Pin 1 to +2.0 volts			
			at Out	put #1, ADD mo	de	Pin 20 to +2.6 volts			
						Pins 12 and 13 through 50 Ω resistors to +9.8 volts			
						Pins 2 and 3 through 50 Ω resistors to +5.8 volts			
						Add Accuracy is cur- rent gain measured then divided by 2.355 with the result ex- pressed as a percent- age	·		
47	A., 2(0		Currei	nt gain from Li	EFT	Same as #42 except:	2.33	2.38	
	1L 2(U	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	input	, OFF mode,	#9	Pin 10 to +2.0 volts			
			illeasu		72	Pin 11 to +2.6 volts			
						Pins 12 and 13 through 50 Ω resistors to +5.8 volts			
					÷	Pins 2 and 3 through 50 Ω resistors to +9.8 volts			
•						Pins 7 and 9 open			
				• •		Measure voltage diff- erence of Pin 3 with respect to Pin 2			
48	A:D 2/0		Curre	nt gain from R	IGHT	Same as #42 except:	2.33	2.38	
		JEFJ -	input	, OFF mode,	#2	Pin 10 to +2.0 volts			
			measu	ieu at output	π 6	Pin 11 to +2.6 volts			
•	· · · · · · · · · · · · · · · · · · ·					Pins 12 and 13 through 50 Ω resistors to +5.8 volts			
• .						Pins 2 and 3 through 50 Ω resistors to +5.8 volts		•	
						Pins 17 and 19 open			
						Measure voltage diff- erence of Pin 2 with respect to Pin 3			
	CINC.	SHT 17 C	DF 30	CODE IDENT NO	SIZE	PART NUMBER 155-0206-0	0		REV
242 000		<u> </u>	50			DO NOT SCALE DRAWING	-	L	

5.0 PARAMETRIC SUMMARY (continued)

NO	SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
49	OFF Accuracy	Rejection of equal but	Same as #42 except:	-0.5	0.5	%
	- *	opposite polarity in- put signals measured	Pin 10 to +2.0 volts			
		at Output #2, OFF mode	Pin 11 to +2.6 volts			
			Pins 12 and 13 through 50 Ω resistors to +5.8 volts			
			Pins 2 and 3 through 50 Ω resistors to +9.8 volts			
			Measure voltage diff- erence of Pin 2 with respect to Pin 3			
			Calculated current gain divided by 2.355 and expressed as a percentage is OFF Accuracy			-
50	Output-to-	Difference in gains of	$(A_{iL 1(L)}^{-A_{iL 2(R)}})/$	-0.5	0.5	%
	Output Accu- racy, LEFT Input	LEFT input to Output #1 or Output #2	2.355 = Output-to-Out- put Accuracy, LEFT Input			
			Express result as a per- centage	•		
51	Output-to-	Difference in gains of	$(A_{iR \ 1(R)}^{-A}_{iR \ 2(L)})/$	-0.5	0.5	%
	racy, RIGHT Input	#1 or Output #2	2.355 = Output-to-Out- put Accuracy, RIGHT Input			
			Express result as a per- centage	-		
52	Left to ADD	Change in gain of a	(A _{iL} 1(L) ^{-A} iL A(ADD))/	-0.5	0.5	%
	Accuracy, Output #1	input directed to Out-	2.355			
		put #1 when the mode i changed from LEFT to ADD	s Express in pe r cent			- , *
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RONI	X,INC. DREGON SHT 18	OF 30 80009	ZE PART NUMBER 155-0206-0	00		rev OR
243.00D			DO NOT SCALE DRAWING	· · · · · · · · · · · · · · · · · · ·		

5.0	PARAMETRIC	SUMMARY (continued)				
NO	SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
53	Right to ADD Accuracy, Output #1	Change in gain of a sig- nal from the RIGHT in- put directed to Output #1 when the mode is changed from RIGHT to ADD	(A _{iR 1(R)} -A _{iR 1(ADD)})/ 2.355 Express in precent	-0.5	0.5	%
54	Left to OFF Accuracy, Output #2	Change in gain of a sig- nal from the RIGHT in- put directed to Output #2 when the mode is changed from LEFT to OFF	(A _{iR 2(L)} -A _{iR 2(OFF)})/ 2.355 Express in precent	-0.5	0.5	%
55	Right to OFF Accuracy, Output #2	Change in gain of a sig- nal from the LEFT in- put directed to Output #2 when the mode is changed from RIGHT to OFF	(A _{iL 2(R)} -A _{iL 2(OFF)})/ 2.355 Express in precent	-0.5	0.5	%
56	A _{il 1(R)}	Current gain from LEFT input, RIGHT mode, measured at Output #1	Same as #42 except: Pins 7 and 9 open Pin 17 connected to a current source of -7.5 mA then +7.5 mA and Pin 19 connected to a current source of +7.5 mA then -7.5 mA		-66	dB
			Measure the voltage difference between Pins 12 and 13			
			The change in voltage difference between application of -7.5 mA and +7.5 mA divided by 1.5 volts then 2.355 and expressed in dB is the current gain			
					•	

CODE IDENT NO

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155-0206-00

PART NUMBER

5.0	PARAMETRIC	SUMMARY (continued)				
NO	SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNITS
57	$A_{iR 1(L)}$	Current gain from	Same as #56 except;		-66	dB
		RIGHT input, LEFT mode, measured at Output #1	Pins 1 and 10 to +2.0 volts			
			Pins 11 and 20 to +2.6 volts			
			Pins 17 and 19 open			
			Pin 7 connected to a current source of -7.5 mA then +7.5 mA and Pin 9 connected to a current source of +7.5 ma then -7.5 mA			
 58	A. 1(055)	Current gain from	Same as #57 except;		-66	dB
	1r 1(0FF)	RIGHT input, OFF	Pin 1 to +2.6 volts			
		Output #1	Pin 20 to +2.0 volts			
			Pin2 12 and 13 through 50 Ω resistors to +5.8 volts			
	·		Pins 2 and 3 through 50 Ω resistors to +9.8 volts			
59	A.,	Current gain from	Same as #56 except		-66	dB
00	"1L 1(0FF)	iL 1(OFF) LEFT input, OFF	Pin 10 to +2.0 volts			
		Output #1	Pin 11 to +2.6 volts			
			Pins 12 and 13 through 50 Ω resistor to +5.8 volts			
•			Pins 2 and 3 through 50 Ω resistor to +9.8 volts			
60	A.p. 0(p)	Current gain from	Same as #57 except;		-66	dB
	1R Z(R)	RIGHT input, RIGHT mode, measured at	Pins 11 and 20 to +2.0 volts			
	•		Pins 1 and 10 to +2.6 volts			
	• •		Measure voltage diff- erence between Pins 3 and 2			
RONIX	REGON SHT 20 0	# 30 80009	155-0206-00			rev OR

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	5.0	PARAMETRIC	SUMMARY (continued)				
	NO	SYMBOL	PARAMETER		CONDITIONS	MIN	MAX	UNITS
	61	A_{11}	Current gain from		Same as #56 except;		-66	dB
			mode, measured at Output #2		Pins 1 and 10 to +2.0 volts	·		
					Pins 11 and 20 to +2.6 volts			
•					Measure voltage diff- erence between Pins 3 and 2			
	62	A _{iR 2(ADD)}	Current gain from		Same as #57 except;		-66	dB
			mode, measured at		Pin 10 to +2.6 volts			
			Output #2		Pin 11 to +2.0 volts			
					Pins 2 and 13 through 50 Ω resistors to +5.8 volts			
					Pins 3 and 12 through 50 Ω resistors to +5.8 volts		•	
					Measure voltage diff- erence between Pins 3 and 2			
	63	A _{iL} 2(ADD)	Current gain from		Same as #56 except;		-66	dB
		•	mode, measured at		Pin 20 to +2.6 volts			
			Output #2		Pin 1 to +2.0 volts			
					Pins 12 and 13 through 50 Ω resistors to +9.8 volts			
	·				Pins 2 and 3 through 50 Ω resistors to +5.8 volts			
					Measure voltage diff- erence between Pins 3 and 2		•	
		5	*****					
				X - 2 				
TEKTR	ONIX	,INC. REGON SHT 210F	30 80009	SIZE A	PART NUMBER 155-0206-00			Ø ₽
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	NO	SYMBOL	PARAMETER		CONDITIONS	MIN	MAX	UNTT
	64 C	MRR ¹ (R)	Common-mode rejec- tion ratio, RIGHT mode, measured at Output #1		Pins 4, 6, 14, and 15 through separate 103 Ω resistors to -3.95 volts	100		0111
					Pins 5 and 15 to -3.95 volts			
					Pins 8 and 18 back- plane of substrate grounded			
					Pins 1 and 10 to +2.6 volts			
			· · · · · · · · · · · ·		Pins 11 and 20 to +2.0 volts			
				·	Pins 2, 3, 12, and 13 through separate 50 Ω resistors to +7.8 volts			
			• •		Pins 7 and 9 each connected through 50 Ω resistors to a common current source of +4.0 mA, then -4.0 mA			
					Pins 17 and 19 open			
	•				Measure the voltage diff- erence between Pins 12 and 13. The change in voltage difference be- tween application of +4.0 mA and -4.0 mA divided by 200 mV, the result being divided into 2.355 is CMRR			
	65 CM	$RR 1_{(1)}$	Common-mode rejec-		Same as #64 except;	100		
		(~/	tion ratio, LEFT mode, measured at Output #1	. •	Pins 1 and 10 to +2.0 volts			
	•				Pins 11 and 20 to +2.6 volts			
					Pins 7 and 9 open			
		•			Pins 17 and 19 each connected through 50 Ω resistors to a common source of +4.0 mA, then -4.0 mA			
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NO	SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
66	CMRR 2(R)	Common-mode rejec-	Same as #64 except;	100		
		tion ratio, RIGHT mode, measured at Output #1	Pins 1 and 10 to +2.0 volts			
			Pins 11 and 20 to +2.6 volts			
			Pins 7 and 9 open			
			Pins 17 and 19 each connected through 50 Ω resistors to a common current source of +4.0 mA, then -4.0 mA			
67	CMRR 2(1)	Common-mode rejec-	Same as #64 except;	100		
		tion ratio, LEFT mode, measured at Output #2	Pins 1 and 10 to +2.0 volts			
			Pins 11 and 20 to +2.6 volts			
			Measure the voltage difference between Pins 3 and 2			
68	^T r	Risetime of a pulse at either output which is	Use the test fixture as shown in Section 5.1		200	p٩
		the result of a pulse at either input	Measure the system risetime, T , using a feedthrough sub- strate			
			100% is defined as the amplitude 1 ms after the mid-point of rise of the pulse			
			T, is the displayed 10% to 90% risetime of the system and			
			$T_r = \int T_d^2 - T_s^2$			
			T must be less than 80 ps			
		· ·				
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		RIGHT. mode				
		put with channel switch in LEFT or				
		sent at one output into the other out-				
72	X-Talk (L-R)	Feedthrough of a pulse signal pre-	Same as #71		6.5	9
	•	·	output			
			#68) of the pulse present on the adjacent			
		OFF mode	as a percentage of the reference (100%) amp-			
		put with channel	Measure peak-to-peak amplitude and express			
	(Ααα-υττ)	pulse signal pre- sent at one output	as shown in Section 5.1			
71	X-Talk	Feedthrough of a	Use the test fixture		3	9
		pulse at either in- put				
		tions of a pulse at Output #2 which is the result of a				
70	Aberration	Peak-to-peak aberra-	Same as #69		30	%
		ρυτ	centage of the ref- erence (100%) ampli- tude defined in #68			
		the result of a pulse at either in-	Express the measured	•		
	• • • • •	<pre>tions of a pulse at Output #1 which is</pre>	as shown in Section 5.1		15	/
<u>69</u>	SYMBUL	PARAMETER Peak-to-peak aberra-	<u>CONDITIONS</u>	MIN	MAX	<u>UN</u>

5.0 <u>PARAMETRIC SUMMARY</u> (continued)

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155-0206-00

5.1

TEKTRONIX, INC. BEAVERTON, OREGON

внт 25 ог 30

6.0 <u>PACKAGING</u>

1.75 cm x 1.75 cm $A1_20_3$ (805) substrate with 22 pin HYPCON connector.

6.1 <u>Terminal Identification</u>

PIN NUMBER	INPUT/OUTPUT
1	Left Channel OFF
2	-Output #2
3	+Output #2
3a	+V _{CC} ²
4	Right Channel Emitter Pick-Off
5	Right Channel Emitter Longtail
6	Right Channel Emitter Pick-Off
7	Right Channel -Input
8	Right Channel Bias
9	Right Channel +Input
10	Right Channel ON
11	Right Channel OFF
12	+Output #1
13	-Output #1
13a	+V _{CC} 1
14	Left Channel Emitter Pick-Off
15	Left Channel Emitter Longtail
16	Left Channel Emitter Pick-Off
17	Left Channel +Input
18	Left Channel Bias
19	Left Channel -Input
20	Left Channel ON

TEKTRONIX, INC. BEAVERTON, OREGON	внт 26 ог 30	CODE IDENT NO	SIZE A	PART NUMBER 155-0206-00	rev OR
000.7243.00D				DO NOT SCALE DRAWING	



TEKTRONIX, INC. BEAVERTON, OREGON SHT 27 OF 30 CODE IDENT NO SIZE PART NUMBER 155-0206-00 000 7243.00D DO NOT SCALE DRAWING

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6.3 Thermal Characteristics

For 1.64W total M178 power, $\Delta T_{J-Die Pad} = 18.7^{\circ}C$ For 2.01W total substrate power, $\Delta T_{Die Pad-Ambient} = 62.0^{\circ}C$ (EC Board Mounting)

 ΔT_1 M178 Ambient = 80.7°C (EC Board Mounting)

 T_{J} M178 (For $T_{Ambient} = 65^{\circ}C$) = 145.7°C

7.0 RELIABILITY STATEMENT Based on the H442 - No Test Done on the H752

7.1 Reliability Goal

λ, Failure Rate \le .7%/1K Hours at 145°C T_j λ, Failure Rate \le .0026%/1K Hours at 75°C T_j MTTF \ge 143K Hours at 145°C T_j

CODE IDENT NO

80009

Expected Instrument Life; 10K Hours

7.2 Life Test Results

90% Confidence Level

SHT 29 OF 30

 λ , .25%/1K Hours at 145°C T_i

 λ , .00093%/1K Hours at 75°C T_i

Life Test Report #RA-32

TEKTRONIX, INC. BEAVERTON, OREGON

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PART NUMBER

SIZE

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8.0 APPLICATIONS INFORMATION

> The circuit receives analog input data at differential input RIGHT and at differential input LEFT. The outputs select the inputs according to the following schedule:

MODE*	MODE**	PIN 1	PIN 20	PIN 11	PIN 10
LEFT	RIGHT	2.0 Volts	2.6 Volts	2.6 Volts	2.0 Volts
RIGHT	LEFT	2.6 Volts	2.0 Volts	2.0 Volts	2.6 Volts
ADD	OFF	2.0 Volts	2.6 Volts	2.0 Volts	2.6 Volts
OFF	ADD	2.6 Volts	2.0 Volts	2.6 Volts	2.0 Volts

*Referenced to Output #1: All of the preceeding mode designations are referenced to Output #1

******Referenced to Output #2

REFERENCE LIST 9.0

SPEC NO TITLE SOURCE	SPEC NO	TITLE `	SOURCE
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TEKTRONIX, INC. BEAVERTON, OREGON	внт 30 ог 30	CODE IDENT NO	size A	PART NUMBER 155-0206-00	Rev OR
000.7243.00D		4. ⁻		DO NOT SCALE DRAWING	