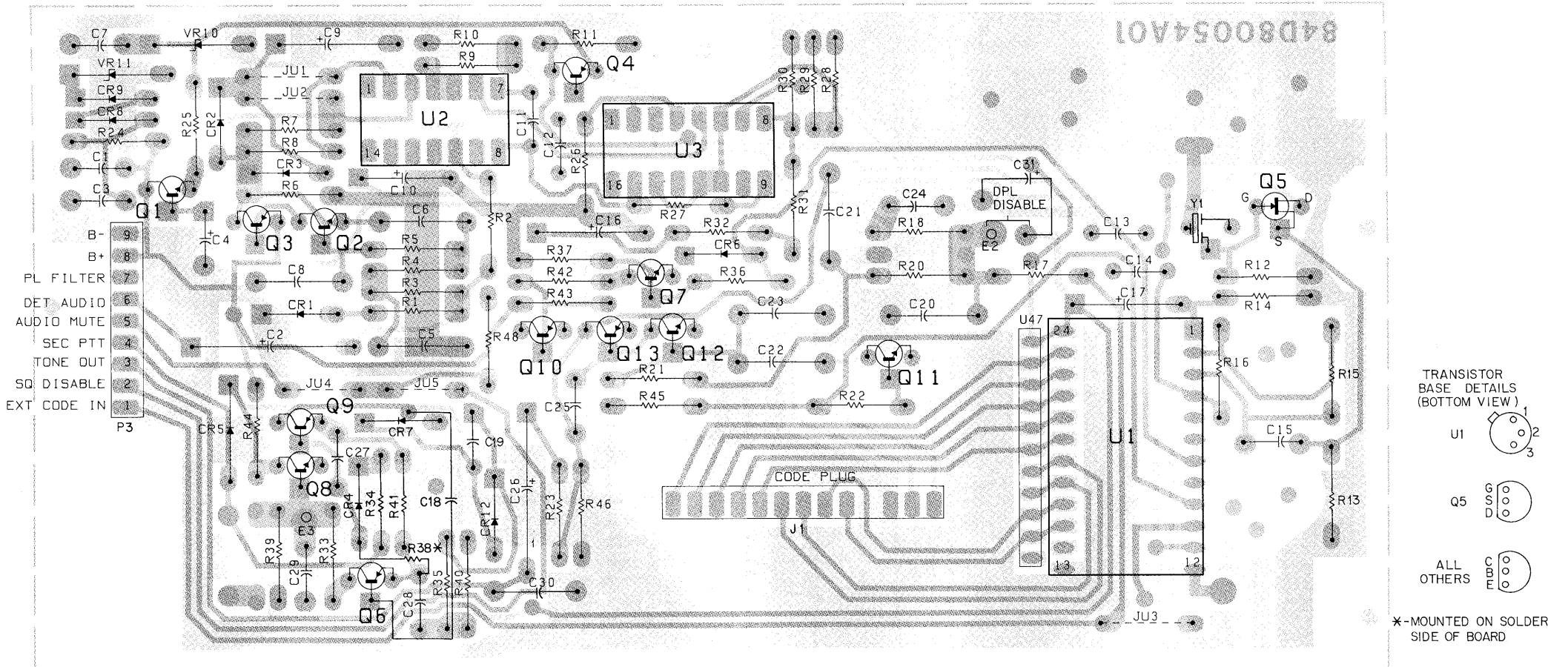
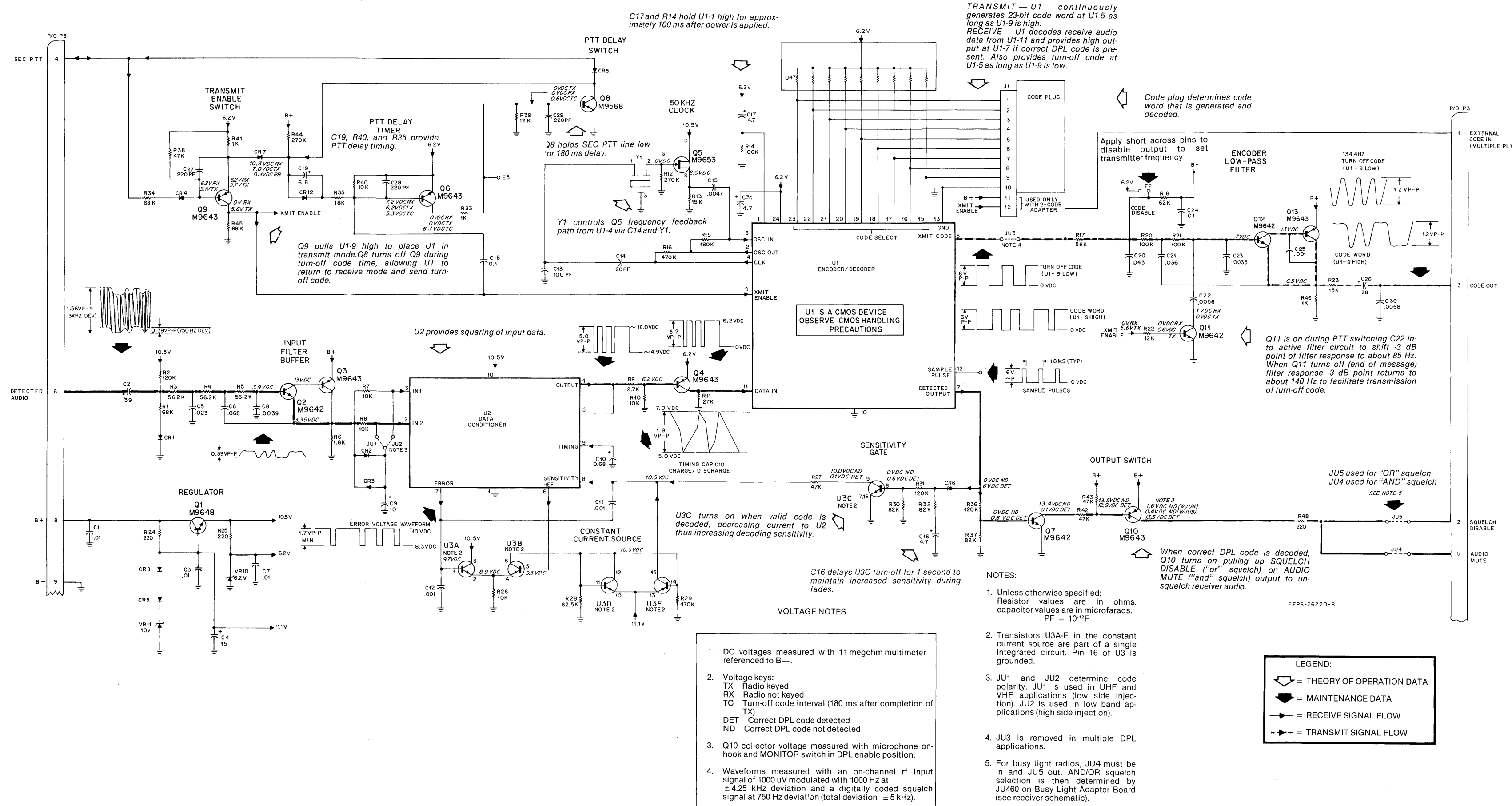


MODEL HLN4011A

Encodes and decodes "Digital Private-Line" codes. Encoder modulates transmitter and delays transmitter turn-off 150 ms to allow transmission of turn-off code. Decoder detects received tone and unquelsches receiver when proper code is received.



SHOWN FROM SOLDER SIDE

HLN4011A "Digital Private-Line" Encoder/Decoder Board PL-6050-0

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION	REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION	REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION	
		capacitors, fixed: uF, ± 5%, 50 V; unless otherwise stated	Q1	48-869648	transistor: (see note) NPN; type M9648	R35	6-124A79	18k	
C1	21-83596E36	.01 + 60-40%; 250 V	Q2	48-869642	NPN; type M9642	R36	6-124C99	120k ± 10%	
C2	23-82783B36	39 ± 10%; 10 V	Q3, 4	48-869643	PNP; type M9643	R37	6-124C95	82k ± 10%	
C3	21-83596E36	.01 + 60-40%; 250 V	Q5	48-869653	FET; type M9653	R38	6-124A89	47k	
C4	23-84538G04	15 ± 20%; 20 V	Q6	48-869643	PNP; type M9643	R39	6-124C75	12k ± 10%	
C5	8-82905G39	.023	Q7	48-869643	PNP; type M9643	R40	6-124A73	10k	
C6	8-83813H23	.068	Q8	48-869642	NPN; type M9642	R41	6-124A49	1k	
C7	21-83596E36	.01 + 60-40%; 250 V	Q8	48-869508	NPN; type M9508	R42, 43	6-124C89	47k ± 10%	
C8	8-83813H19	.0039	Q9, 10	48-869643	PNP; type M9643	R44	6-124D08	270k ± 10%; 1/4 W	
C9	23-84782H03	10 ± 10%; 20 V	Q11, 12	48-869642	NPN; type M9642	R45	6-124A93	68k	
C10	23-82783B48	.68; 35 V	Q13	48-869643	PNP; type M9643	R46	6-124A49	1k	
C11, 12	21-82187B44	.001 ± 10%; 100 V			resistor, fixed: ± 5%; 1/4 W; unless otherwise stated	R48	6-124C33	220 ohms ± 10%	
C13	21-80067A65	100 pF; 200 V	R1	6-124A93	68k			integrated circuit: (see note)	
C14	21-80067A40	20 pF; 500 V	R2	6-124A99	120k	U1	51-84267A82	type M6782	
C15	21-83596E36	.0047 ± 10%; 100 V	R3, 4, 5	6-10621D64	56.2k ± 1%; 1/8 W	U2	51-84320A55	type LM565CN	
C16, 17	23-84762H07	4.7 ± 20%; 10 V	R6	6-124A55	1.8k	U3	51-84320A79	type CA3096AE	
C18	8-82096J18	.1 uF ± 10%; 250 V	R7, 8	6-124A73	10k	U47	51-82142K02	resistor network	
C19	23-84538G22	6.8 ± 10%; 20 V	R9	6-124C59	2.7k ± 10%			voltage regulator: (see note)	
C20	8-83813H14	.043	R10	6-124A73	10k	VR10	48-83696E07	Zener, 6.2 V	
C21	8-83813H24	.036	R11	6-124A83	27k	VR11	48-82256C11	Zener, 10 V	
C22	8-83813H26	.0056	R12	6-124B08	270k			crystal, resonator:	
C23	8-83813H27	.0033; 100 V	R13	6-124A77	15k	Y1	48-82003K01	50 kHz	
C24	21-83596E36	.01 + 60-40%; 250 V	R14	6-124A97	100k			mechanical parts	
C25	21-82187B44	.001 ± 10%; 25 V	R15	6-124B04	180k			14-861196	INSULATOR, transistor
C26	23-82783B36	39 ± 10%; 10 V	R16	6-124B14	470k			3-10904A02	SCREW, machine: M3.5 x 0.6 x 6
C27, 28, 29	21-83596E10	220 pF ± 20%; 500 V	R17	6-124A91	56k			3-10904A15	SCREW, machine: M3.5 x 0.6 x 13; 3 used
C30	8-84496D08	.0068 ± 10%; 400 V	R18	6-124A92	62k			4-80149A01	WASHER, captive; 4 used
C31	23-84538G02	4.7 uF ± 20%; 20 V	R20, 21	6-124A97	100k			29-10271A15	TERMINAL pin; 2 used
		diode: (see note)	R22	6-124C75	12k ± 10%				
CR1	48-83654H02	silicon	R23	6-124A77	15k				
CR2, 3	48-84616A01	silicon, hot-carrier	R24	6-124A33	220 ohms				
CR4	48-83654H01	silicon	R25	6-124A33	220 ohms				
CR5	48-82178A01	germanium	R26	6-124A73	10k				
CR6 thru 9, 12	48-83654H01	silicon	R27	6-124A89	47k				
		connector, receptacle:	R28	6-10621D80	82.5k ± 1%; 1/8 W				
J1	9-82071K01	female, 12-contact	R29	6-124B14	470k				
		connector, plug:	R30	6-124C95	82k ± 10%				
P3	28-80181B02	male, 9-contact	R31	6-124C99	120k ± 10%				
			R32	6-124C95	82k ± 10%				
			R33	6-124C49	1k ± 10%				
			R34	6-124A93	68k				

note: For optimum performance, diodes, transistors, and integrated circuits must be ordered by Motorola part numbers.

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