



**MOTOROLA**

**NLN3545D - F**

**AALN4344A**

*Advisor*

**NYN5343A**

**DECODER SUPPLEMENT**



**MOTOROLA**  
Paging Products Group

## PUBLICATION REVISION

**PUBLICATION NUMBER: 6881104B15-B**

**PMR NUMBER: 604B15-B1**

**TITLE: Decoder Supplement, NLN3545F**

Information in the publication listed above has changed since the manual was printed. Use this document to update your manual.

Number of Instruction Pages: 1

Number of Replacement Pages: 0

### Revision Summary

Revision Level or PMR Number	Date	Description
6881104B15-B	April 1996	Current issue of Receiver Supplement
604B15-B1	September 18, 1996	Part Number Change

### PMR Number: 604B15-B1

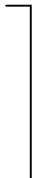
Location	Update Instructions	Purpose
Parts List	Change Part Number for BT2 as follows: From: 6062884A01 To: 6062884K01	Part number change




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# **COMPONENT OVERLAYS and ELECTRICAL PARTS LIST**





# DECODER ELECTRICAL PARTS LIST NLN3545F

REFERENCE DESIGNATOR	MOTOROLA PART NUMBER	DESCRIPTION
BT1 BT2	or 6062884G01 6062884A01	<b>BATTERIES:</b> Primary Backup Backup  <b>CAPACITORS:</b> Fixed: $\mu\text{F} \pm 0.25\%$ , 50V unless stated 15 $\pm 0.25\%$ 39 $\pm 5\%$ 0.1 $\mu\text{F} \pm 5\%$ 0.01 $\mu\text{F}$ 2.2 $\mu\text{F} \pm 5\%$ 220 $\pm 5\%$ 0.15 $\mu\text{F}$ 0.1 $\mu\text{F} +80-20\%$ 2000 $\pm 5\%$ 10 $\mu\text{F} \pm 10\%$ , 6v 10 $\mu\text{F} \pm 10\%$ , 10v 4.7 $\mu\text{F} \pm 10\%$ , 6v 10 $\mu\text{F} \pm 20\%$ , 6V 100 $\mu\text{F} \pm 10\%$ , 6V 220 $\pm 5\%$
C1 C2 C3 C4 C5, C6 C8 C9 C10 C12 C14, C15 C16 C17 C18 C19, C20 C21, C22	2113740F31 2113740F41 2113741B89 2113741F49 2311049A40 2113740F59 2113743B17 2113743K15 2113741F32 2311049J23 2311049A63 2311049A44 2311049A60 2311049A28 2113740F59	<b>DIODES:</b> (See Note 1) LED Silicon Schottkey Zener Hot Carrier Hot Carrier
CR2 CR3, CR4 CR6 CR8, CR9 CR10 CR11	4805729G47 4805129M04 4804129M83 4805129M35 4805129M83 4805129M72	<b>LAMPS:</b> Electroluminescent Panel Electroluminescent Panel
DS1	or 6562890A01 6562890A02	<b>CONTACT:</b> Programming
P1 - P3	3905012W04	<b>COIL:</b> RF unless stated 5 mH
L1	2562999J02	<b>TRANSDUCERS:</b> Audio Motor/Counterweight
LS1 M1	5062990V02 5962882B01	<b>CONNECTOR:</b> Connector, Decoder to Receiver
P5	3105023H02	<b>TRANSISTORS:</b> (See Note 1) (NPN) (PNP); SMT1368T1
Q3, Q4 Q5, Q6	4805128M61 4805218N33	<b>RESISTORS:</b> Fixed $\Omega \pm 5\%$ , 1/8W unless stated 100k 470 1.8k 56k 10M $\pm 10\%$ 330k 150 10k 56k 150 Jumper, 0 560 1.8k 6.8k 510 100k 1M $\pm 1\%$ 56k 1.8k 51 10
R1 R2 R3 R4 R5 R6 R9 R10 R11 R12 R13 R14 R15 R16 - R20 R30 - R37 R38, R39 R40 R41 R44 R45 R47, R48	0660076P01 0660076N41 0660076N55 0660076N91 0660076R49 0660076P13 0660076N29 0660076N73 0660076N91 0660076N29 0660076S01 0660076N43 0660076N55 0660076N69 0660076N42 0660076P01 0660076P25 0660076N91 0660076N55 0660076N18 0660076N01	<b>SWITCHES:</b> Pad Switch, Push Pad
S1-S3 S4 S5-S7	7505064V01 4005002N02 7505064V01	<b>TRANSFORMERS:</b> 1:1:50 1:1:50
T1	or 2562600A03 2562600A05	<b>CIRCUIT MODULES:</b> (See Note 1) Microcomputer CMOS, Support RAM, 8k x 8 Support, Linear Expander I/O Converter, dc/dc
U1 U2 U3 U4 U6 U7	5105079Z22 5105998X05 5105087X01 5105414S90 5105079Z21 5105596E98	

Y101	4813908D01	CRYSTAL: (See Note 2) 38.4 kHz
<b>NONREFERENCED ITEMS</b>		
	0180467M01	BRACKET, Backup Battery
	0705995T01	BRACKET, Motor
	1009798H01	PREFORM, Solder
	1505052V01	FRAME, Display
	1562440A07	ASSEMBLY, Battery Housing
	1562442A03	ASSEMBLY, Display
	6162885A01	LENS, Display
	7262922A01	LCD (With Heat Seal Connector)
	8405975E07	CIRCUIT BOARD, Decoder

## NOTES:

- For optimum performance, order replacement semiconductor devices by Motorola part number only.
- When ordering crystal units, specify carrier frequency, crystal frequency and Motorola part number.
- Gaps in numbering continuity of reference designators indicate that the missing numbers are not used.

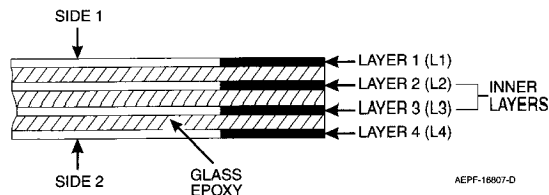
## WARNING

Substitution of components may impair intrinsic safety.



This product contains static-sensitive devices. Use anti-static handling procedures to prevent electrostatic discharge.

FOUR-LAYER CIRCUIT BOARD DETAIL VIEWING  
COPPER AT EDGE OF BOARD IN PROPER LAYER SEQUENCE



Four-Layer Circuit Board Construction

## REPLACEMENT PARTS

When ordering replacement parts or equipment, include the Motorola part number and description used in the service manual or supplement.

When ordering crystals or channel elements, specify the Motorola part number, description, crystal frequency, and operating frequency desired.

When the Motorola part number of a component is not known, use the product model number or other related major assembly along with the description of the related major assembly and of the component in question.

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#### North and South America (Test Equipment)

Telex: 403305  
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#### International

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Fax: 65-354-2232 (Asia Pacific/India/Australia)  
Fax: 441-256-81-9338 (Europe/Africa/Middle East)  
Fax: 86-10461-0272 (China)

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## U.S.A. PAGER CARE CENTERS

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Midwest Pager Care Center  
1335 Basswood Road  
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Phone: 847-576-5763  
Fax: 847-538-2763

Motorola Inc.  
Southeast Pager Care Center  
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Boynton Beach, FL 33426  
Phone: 407-533-0037  
Fax: 407-533-9711

Motorola Inc.  
South Central Pager Care Center  
1701 Valley View Lane, Suite A  
Farmers Branch, TX 75234  
Phone: 214-241-1891  
Fax: 214-243-6781

Motorola Inc.  
Mid Atlantic Pager Care Center  
5370 Truman Drive, Suite C  
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Fax: 441-256-81-9338

Motorola Electronics Pte. Ltd.  
Asia Pacific Pager Care Center  
49 Jalan Pemimpin #02-10  
Republic of Singapore 577203  
Phone: 65-354-2268  
Fax: 65-354-2232

Motorola (China) Electronics Ltd.  
Beijing Pager Service Centre  
29, Don Zhi Men Wai Avenue  
Beijing, Peoples Republic of China 100027  
Phone: 86-10461-1155  
Fax: 86-10461-0272

Motorola (China) Electronics Ltd.  
Shanghai Pager Service Centre  
5th Floor, Central Place  
16 Henan Road South  
Shanghai 200002, P.R.C.  
Phone: 8621-6374-7668 ext. 5888  
Fax: 8621-6374-2714

Motorola (China) Electronics Ltd.  
Guangzhou Pager Service Centre  
271 Huang Pu Da Dao West  
Tian-He District  
Guangzhou 510620, P.R.C.  
Phone: 8620-753-7888 ext. 3602  
Fax: 8620-754-2591

Motorola India LTD.  
Paging Service Centre  
No. 33, The Senate Bldg.  
Ulsoor Road  
Bangalore, India 560 042  
Phone: 91-80-559-9904/8983  
Fax: 91-80-559-8984

Motorola de Venezuela Y de los Andes  
Edificio Forum  
Entre Calle Guayaipuro y  
Carabobo con avenida principal  
Las Mercedes, El Rosal  
Caracas, Venezuela  
Phone: 582-952-8355

Motorola  
Iberia Pager Care Center  
San Severo S/N, Barajas Park  
28042 Madrid, Spain  
Phone: 34-1-329-0461  
Fax: 34-1-329-1933

Motorola Do Brazil  
São Paulo Pager Care Center  
Rua Bandeira Paulista, 580  
Itaim Bibi, CEP 04532-001  
São Paulo, SP, Brasil  
Phone: 55-11-821-9991

Motorola  
Taiwan Pager Care Center  
2F-1, 35 Section 1, Cheng-Teh Road  
Taipei, Taiwan, China  
Phone: 886-2-555-0589  
Fax: 886-2-555-1039

Motorola de Mexico  
Pager Care Center  
Avenida Paseo de la Reforma  
No. 164 Colonia Juarez  
No Postal CP06600  
Mexico, D.F. de Mexico  
Phone: 011-525-747-8200

Motorola Korea Ltd  
Korea Pager Care Center  
Samtan Bldg, 2nd Floor 947-7 Daechi-Dong  
Kangnan-Ku, Seoul, South Korea, 135-280  
Phone: 82-2-565-5316  
Fax: 82-2-561-1633

Motorola South Asia Pte. Ltd.  
Malaysia Pager Care Center  
2nd Floor, Wisma Damansara  
Jalan Semantan 50490  
Kuala Lumpur, Malaysia  
Phone: 603-253-9372  
Fax: 603-253-8892

Motorola Canada Limited  
Canada Pager Care Center  
2 East Beaver Creek Road, Unit 4  
Richmond Hills, Ontario, Canada LB42N3  
Phone: 905-709-2337  
Fax: 905-709-7240

Motorola de Colombia, PCC  
Diagonal 127A, No. 1764  
Santa Fe de Bogota, Colombia  
Phone: 571-615-5769  
Phone: 571-615-6941

Motorola Electronica de Puerto Rico, Inc.  
Paging 2  
Pager Care Center  
Road 686, Km 17.0  
Cabo Caribe Industrial Park  
Vega Baja, Puerto Rico 00695  
Phone: 787-858-8903

For other international locations, please inquire at the most convenient phone number, or contact your local Motorola sales representative.

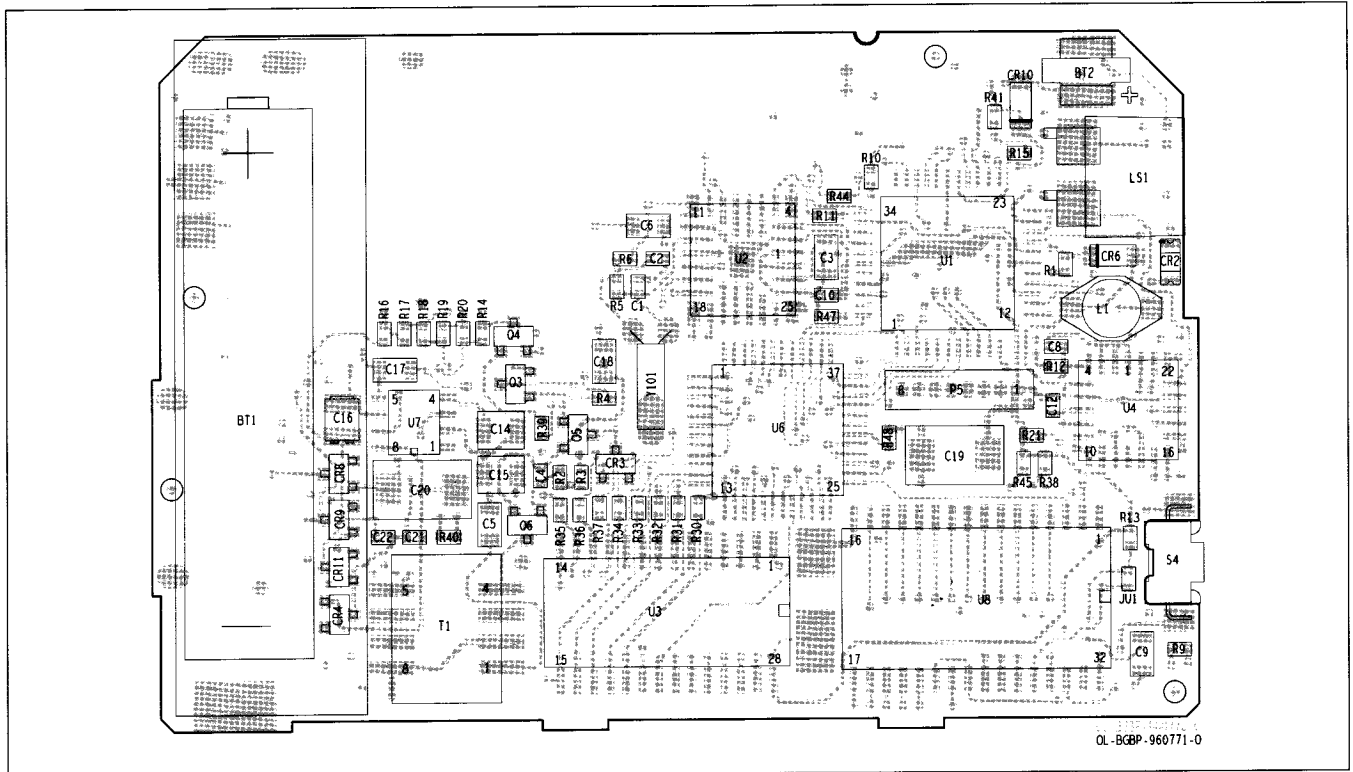
## PRODUCT SERVICES BULLETIN BOARD SERVICE (BBS)

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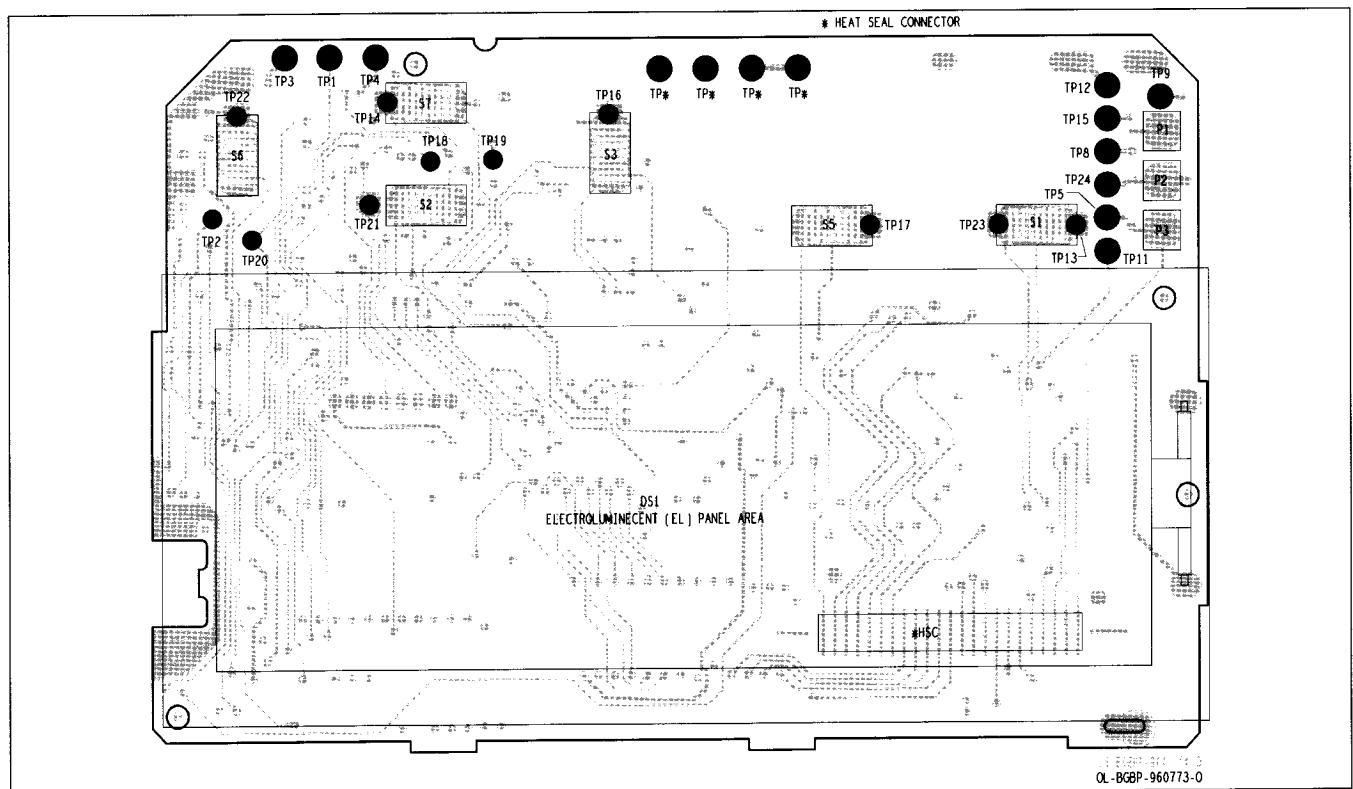
For access to the BBS, use any PC or Macintosh computer that is connected to a modem. Set the modem to 8 data bits, no parity, and 1 stop bit, then dial (407) 739-3069. For further information about the Product Services BBS call (407) 739-3255.

In the Peoples Republic of China, dial 8610-462-4643 or 8610-463-4645 for access to the Chinese BBS.

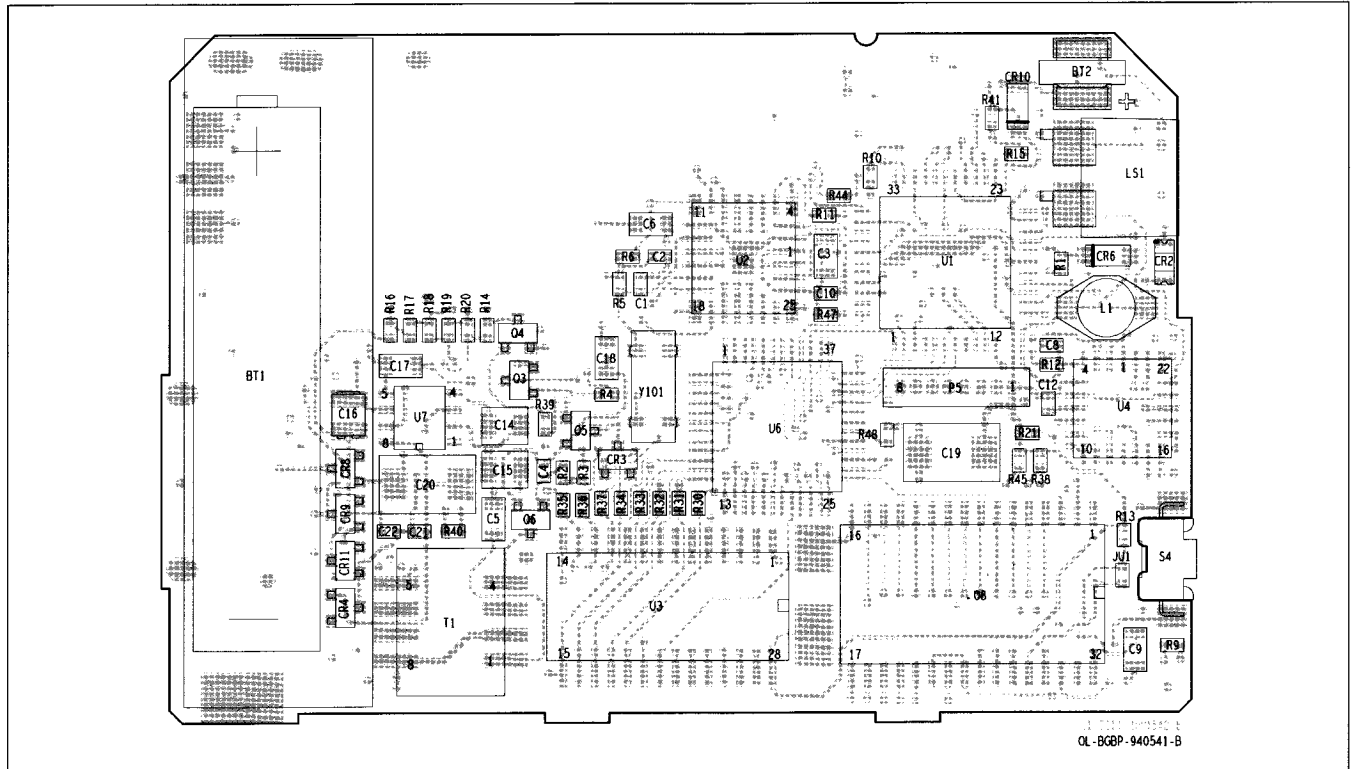
# **NLN3545E LAYER 1 AND SIDE 1 COMPONENTS (VIEWED FROM SIDE 1)**



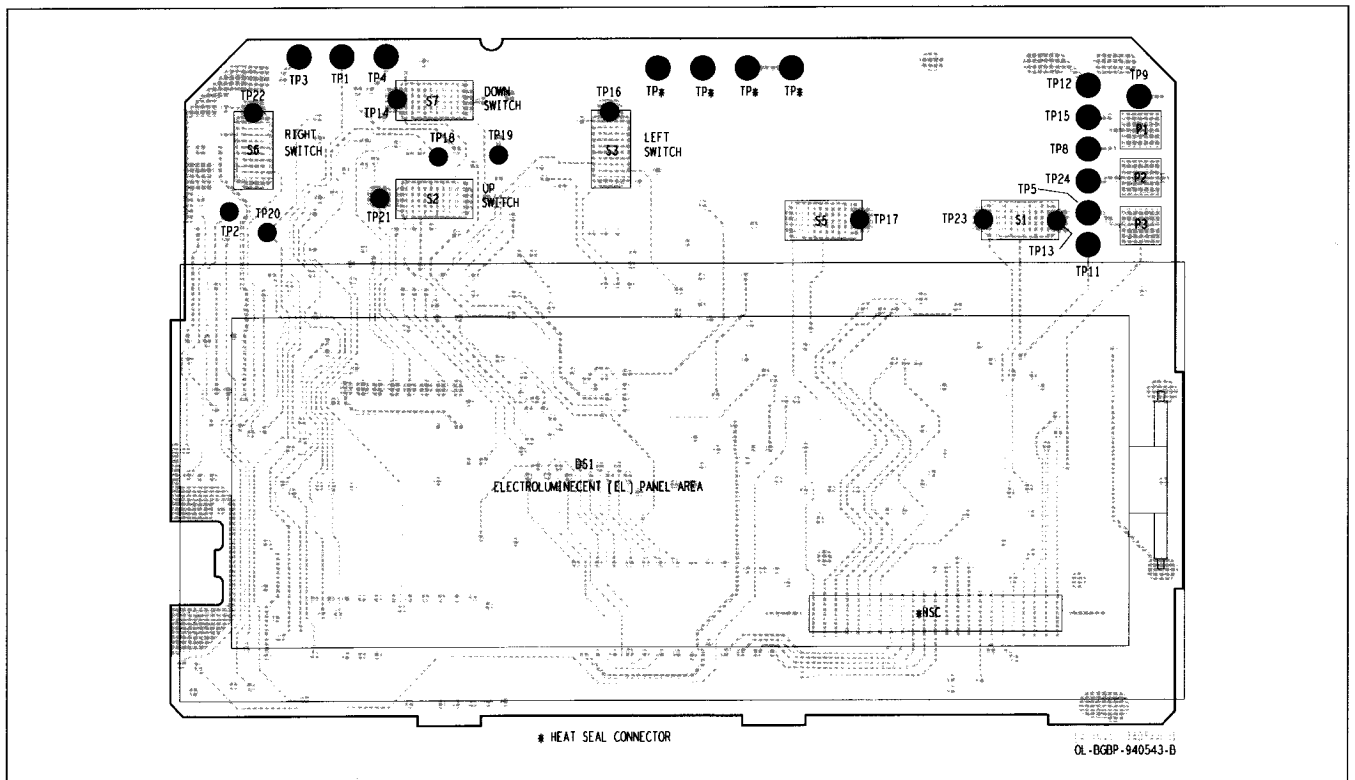
# **NLN3545E LAYER 4 AND SIDE 2 WITH TEST POINT LOCATIONS (VIEWED FROM SIDE 2)**



# NLN3545D, AALN4344A, NYN5343A LAYER 1 AND SIDE 1 COMPONENTS (VIEWED FROM SIDE 1)



# NLN3545D, AALN4344A, NYN5343A LAYER 4 AND SIDE 2 WITH TEST POINT LOCATIONS (VIEWED FROM SIDE 2)





# **DECODER ELECTRICAL PARTS LIST** NLN3545E

REFERENCE DESIGNATOR	MOTOROLA PART NUMBER	DESCRIPTION
BT1		<b>BATTERIES:</b>
BT2	6062884G01	Primary
	or 6062884A01	Backup
		Backup
		<b>CAPACITORS: Fixed: pF ±0.25%, 50V</b> unless stated
C1	2113740F31	15 ±0.25%
C2	2113740F41	39 ±5%
C3	2113741B69	0.1 µF±5%
C4	2113741F49	0.01 µF
C5, C6	2311049A40	2.2 µF±5%
C8	2113740F59	220 ±5%
C9	2113743B17	0.15 µF
C10	2113743K15	0.1 µF +80-20%
C12	2113741F32	2000 ±5%
C14, C15	2311049J23	10 µF ±10%, 6v
C16	2311049A63	10 µF ±10%, 10v
C17	2311049A44	4.7µF±10%, 6v
C18	2311049A60	10 µF±20%, 6V
C19, C20	2311049A28	100 µF±10%, 6V
C21, C22	2113740F59	220 ±5%
		<b>DIODES: (See Note 1)</b>
CR2	4805729G47	LED
CR3, CR4	4805129M04	Silicon
CR6	4804129M83	Schottkey
CR8, CR9	4805129M35	Zener
CR10	4805129M83	Hot Carrier
CR11	4805129M72	Hot Carrier
		<b>LAMPS:</b>
DS1	6562890A01	Electroluminescent Panel
	or 6562890A02	Electroluminescent Panel
		<b>CONTACT:</b>
P1 - P3	3905012W04	Programming
		<b>COIL: RF unless stated</b>
L1	2562600A04	5 mH
		<b>TRANSDUCERS:</b>
LS1	5062990V02	Audio
M1	5902165J03	Motor/Counterweight
		<b>CONNECTORS:</b>
P5	3105023H02	Connector, Decoder to Receiver
		<b>TRANSISTORS: (See Note 1)</b>
Q3, Q4	4805128M61	NPN
Q5, Q6	4805218N33	PNP; SMBT1368T1
		<b>RESISTORS: Fixed Ω ±5%, 1/8W</b> unless stated
R1	0660076P01	100k
R2	0660076N41	470
R3	0660076N55	1.8k
R4	0660076N91	56k
R5	0660076R49	10M ±10%
R6	0660076P13	330k
R9	0660076N29	150
R10	0660076N73	10k
R11	0660076N91	56k
R12	0660076N29	150
R13	0660076S01	Jumper, 0
R14	0660076N43	560
R15	0660076N55	1.8k
R16 - R20	0660076N69	6.8k
R21	0660076P01	100k
R30 - R37	0660076N42	510
R38, R39	0660076P01	100k
R40	0660076P25	1M ±1%
R41	0660076N91	56k
R44	0660076N55	1.8k
R45	0660076N18	51
R47, R48	0660076N01	10
		<b>SWITCHES:</b>
S1-S3	7505064V01	Pad
S4	4005002N02	Switch, Push
S5-S7	7505064V01	Pad
		<b>TRANSFORMERS:</b>
T1	2562600A03	1:1:50
	or 2562600A05	1:1:50
		<b>CIRCUIT MODULES: (See Note 1)</b>
U1	5105079Z22	Microcomputer
U2	5105998X05	CMOS, Support
U3	5105087X01	RAM, 8k x 8
U4	5105414S90	Support, Linear
U6	5105079Z21	Expander I/O
U7	5105596E98	Converter, dc/dc

Y101	4813908D01	CRYSTAL: (See Note 2) 38.4 kHz
<b>NONREFERENCED ITEMS</b>		
	0180467M01	BRACKET, Backup Battery
	1009798H01	PREFORM, Solder
	1505052V01	FRAME, Display
	1562440A07	ASSEMBLY, Battery Housing
	1562442A03	ASSEMBLY, Display
	6162885A01	LENS, Display
	7262922A01	LCD (With Heat Seal Connector)
	7505031M01	PAD, Microprocessor
	7505038W04	BOOT, Motor
	8405975E05	CIRCUIT BOARD, Decoder

## **NOTES:**

- For optimum performance, order replacement semiconductor devices by Motorola part number only.
- When ordering crystal units, specify carrier frequency, crystal frequency and Motorola part number.
- Gaps in numbering continuity of reference designators indicate that the missing numbers are not used.

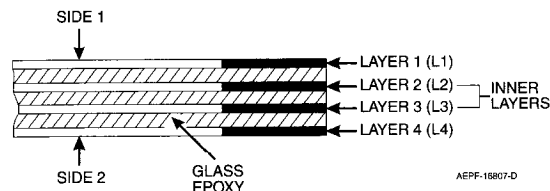
## **WARNING**

Substitution of components may impair intrinsic safety.



This product contains static-sensitive devices. Use anti-static handling procedures to prevent electrostatic discharge.

FOUR-LAYER CIRCUIT BOARD DETAIL VIEWING  
COPPER AT EDGE OF BOARD IN PROPER LAYER SEQUENCE



Four-Layer Circuit Board Construction

# DECODER ELECTRICAL PARTS LIST

NLN3545D (English)

AALN4344A (Vietnamese)

NYN5343A (Polish/Arabic/Icelandic/Russian)

(A)

(B)

(C)

REFERENCE DESIGNATOR	MOTOROLA PART NUMBER	DESCRIPTION
<b>BATTERIES:</b>		
BT1	-----	Primary
BT2	6062884G01	Backup
or	6062884A01	Backup
<b>CAPACITORS: Fixed: pF ±0.25%, 50V unless stated</b>		
C1	2113740F24	7.5 ±0.25%
C2	2113740F35	22 ±5%
C3	2113741B69	0.1 µF ±5%
C4	2113741F49	0.01 µF
C5, C6	2311049A40	2.2 µF ±5%
C8	2113740F59	220 ±5%
C9	2113743B17	0.15 µF
C10	2113743K15	0.1 µF +80-20%
C12	2113741F32	2000 ±5%
C14, C15	2311049J23	10 µF ±10%, 6V
C16	2311049A63	10 µF ±10%, 10V
C17	2311049A44	4.7 µF ±10%, 6V
C18	2311049A60	10 µF ±20%, 6V
C19, C20	2311049A28	100 µF ±10%, 6V
C21, C22	2113740F59	220 ±5%
<b>DIODES: (See Note 1)</b>		
CR2	4805729G47	LED
CR3, CR4	4805129M04	Silicon
CR6	4804129M83	Schottkey
CR8, CR9	4805129M35	Zener
CR10	4805129M83	Hot Carrier
CR11	4805129M72	Hot Carrier
<b>LAMPS:</b>		
DS1	6562890A01	Electroluminescent Panel
or	6562890A02	Electroluminescent Panel
<b>CONTACT:</b>		
P1 - P3	3905012W04	Programming
<b>COIL: RF unless stated</b>		
L1	2562600A04	5 mH
<b>TRANSDUCERS:</b>		
LS1	5062990V02	Audio
M1	5902165J03	Motor/Counterweight
<b>CONNECTOR:</b>		
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<b>TRANSISTORS: (See Note 1)</b>		
Q3, Q4	4805128M61	NPN
Q5, Q6	4805218N33	PNP, SMT 1368T1
<b>RESISTORS: Fixed Ω ±5%, 1/8W unless stated</b>		
R1	0660076P01	100k
R2	0660076N41	470
R3	0660076N55	1.8k
R4	0660076N91	56k
R5	0660076R49	10M ±10%
R6	0660076P13	330k
R9	0660076N29	150
R10	0660076N73	10k
R11	0660076N91	56k
R12	0660076N29	150
R13	0660076S01	Jumper, 0
R14	0660076N43	560
R15	0660076N55	1.8k
R16 - R20	0660076N69	6.8k
R21	0660076P01	100k (B, C)
R30 - R37	0660076N42	510
R38, R39	0660076P01	100k
R40	0660076P25	1M ±1%
R41	0660076N91	56k
R44	0660076N55	1.8k
R45	0660076N18	51
R47, R48	0660076N01	10
<b>SWITCHES:</b>		
S1-S3	7505064V01	Pad
S4	4005002N02	Switch, Push
S5-S7	7505064V01	Pad
<b>CRYSTAL: (See Note 2)</b>		
T1	2562600A05	1:1.50

<b>CIRCUIT MODULES: (See Note 1)</b>		
U1	5105079Z22	Microcomputer (A)
or	5105079Z57	Microcomputer (B)
or	5105079Z33	Microcomputer (C)
U2	5102188J97	CMOS, Support
or	5105329V43	CMOS, Support
or	5105998X05	CMOS, Support
U3	5105087X01	RAM, 8k x 8
U4	5105414S90	Support, Linear
U6	5105079Z21	Expander I/O
U7	5105596E98	Converter, dc/dc
U8	-----	Not Used (A)
or	5105087X10	CG - ROM (B)
or	5105087X08	CG - ROM (C)
<b>CRYSTAL: (See Note 2)</b>		
Y101	4813908B01	38.4 kHz
<b>NONREFERENCED ITEMS</b>		
	1009798H01	PREFORM, Solder
	1505052V01	FRAME, Display
	1562440A07	ASSEMBLY, Battery Housing
	1562442A03	ASSEMBLY, Display
	6162885A01	LENS, Display
	7262922A01	LCD (With Heat Seal Connector)
	7505031M01	PAD, Microprocessor
	7505038W04	BOOT, Motor (A)
or	7505038W05	BOOT, Motor (B, C)
	8405975E03	CIRCUIT BOARD, Decoder

## NOTES:

- For optimum performance, order replacement semiconductor devices by Motorola part number only.
- When ordering crystal units, specify carrier frequency, crystal frequency and Motorola part number.
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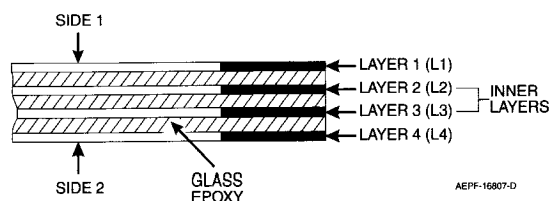
## WARNING

Substitution of components may impair intrinsic safety.

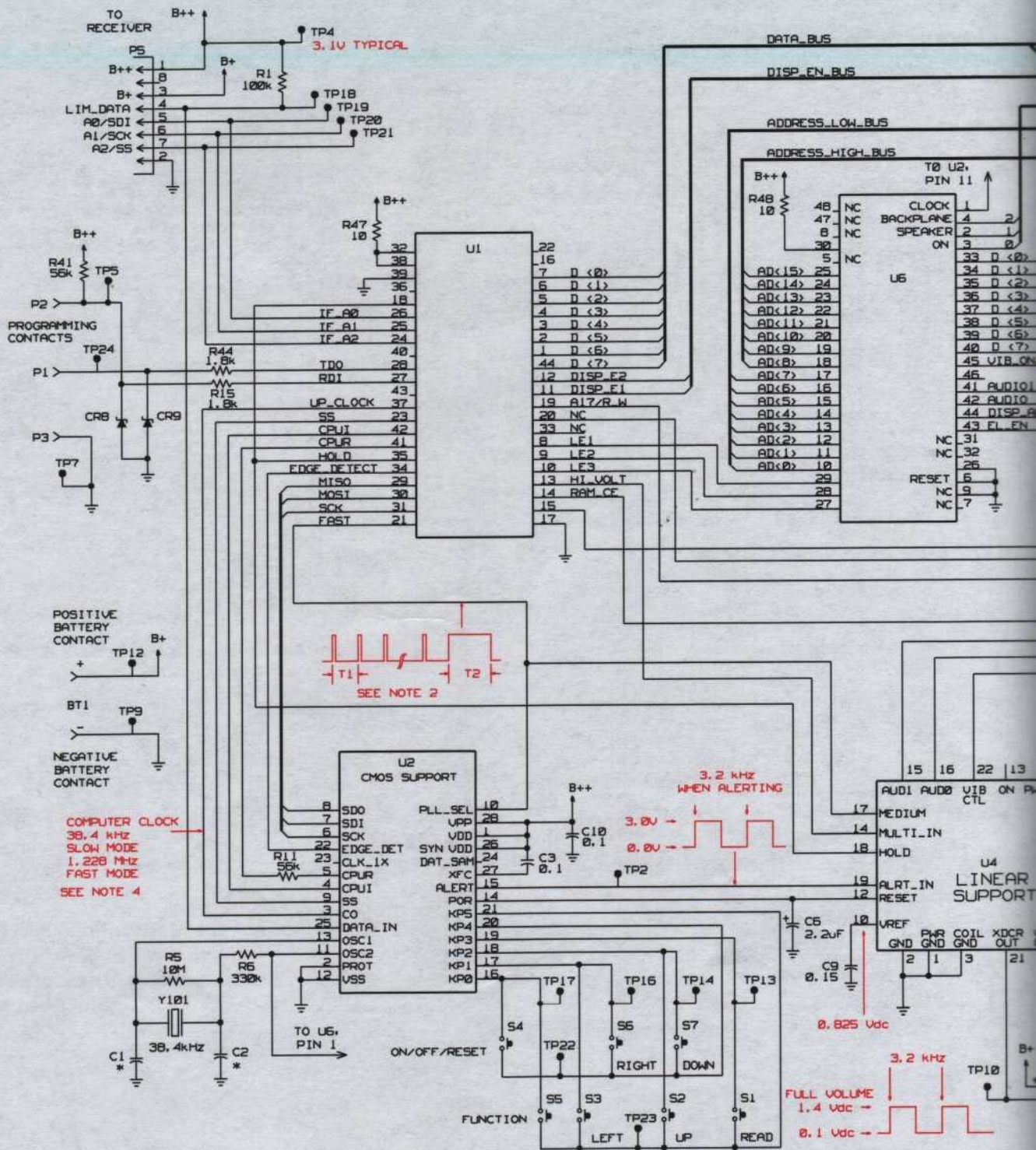


This product contains static-sensitive devices. Use anti-static handling procedures to prevent electrostatic discharge.

FOUR-LAYER CIRCUIT BOARD DETAIL VIEWING  
COPPER AT EDGE OF BOARD IN PROPER LAYER SEQUENCE



Four-Layer Circuit Board Construction



# NOTES:

\* REFER TO ELECTRICAL PARTS LIST FOR VALUE AND DESCRIPTION.

1. RESISTANCES ARE IN OHMS (K=1000, M=MEG OHM), CAPACITANCES LESS THAN 1 ARE IN MICROFARADS (uF); CAPACITANCES 1 OR GREATER ARE IN PICO FARADS (pF).

2. T1 = 6.7 ms 1200 BAUD POCSAG  
T1 = 15.6 ms 512 BAUD POCSAG  
T1 = 3.3 ms 2400 BAUD POCSAG  
T2 = 51 ms 1200 BAUD POCSAG (NO RECEIVER)  
T2 = 116 ms 512 BAUD POCSAG (NO RECEIVER)  
T2 = 25 ms 2400 BAUD POCSAG (NO RECEIVER)

3. ELECTROLUMINESCENT (EL) VOLTAGE MEASURED AT PANEL SOLDER CONTACT. VOLTAGE AND FREQUENCY VARIES WITH BATTERY.

4. DURING SHUT AT TO



