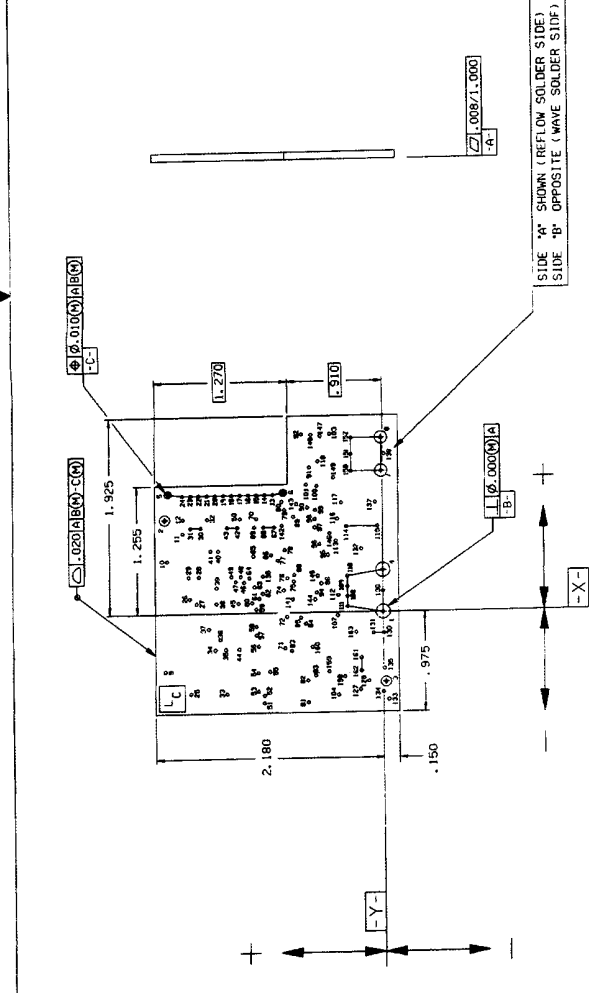


| | | | |
|----------|---------|-----|--------|
| DATE | REVISED | BY | REASON |
| 12/10/80 | 1 | ... | ... |
| 12/10/80 | 2 | ... | ... |
| 12/10/80 | 3 | ... | ... |
| 12/10/80 | 4 | ... | ... |
| 12/10/80 | 5 | ... | ... |
| 12/10/80 | 6 | ... | ... |
| 12/10/80 | 7 | ... | ... |
| 12/10/80 | 8 | ... | ... |
| 12/10/80 | 9 | ... | ... |
| 12/10/80 | 10 | ... | ... |
| 12/10/80 | 11 | ... | ... |
| 12/10/80 | 12 | ... | ... |
| 12/10/80 | 13 | ... | ... |
| 12/10/80 | 14 | ... | ... |
| 12/10/80 | 15 | ... | ... |
| 12/10/80 | 16 | ... | ... |
| 12/10/80 | 17 | ... | ... |
| 12/10/80 | 18 | ... | ... |

| FINISHED | UNLESS SPECIFIED |
|-------------------|------------------|
| 1. 0.005 ± 0.001 | 0.005 ± 0.001 |
| 2. 0.005 ± 0.001 | 0.005 ± 0.001 |
| 3. 0.005 ± 0.001 | 0.005 ± 0.001 |
| 4. 0.005 ± 0.001 | 0.005 ± 0.001 |
| 5. 0.005 ± 0.001 | 0.005 ± 0.001 |
| 6. 0.005 ± 0.001 | 0.005 ± 0.001 |
| 7. 0.005 ± 0.001 | 0.005 ± 0.001 |
| 8. 0.005 ± 0.001 | 0.005 ± 0.001 |
| 9. 0.005 ± 0.001 | 0.005 ± 0.001 |
| 10. 0.005 ± 0.001 | 0.005 ± 0.001 |
| 11. 0.005 ± 0.001 | 0.005 ± 0.001 |
| 12. 0.005 ± 0.001 | 0.005 ± 0.001 |
| 13. 0.005 ± 0.001 | 0.005 ± 0.001 |
| 14. 0.005 ± 0.001 | 0.005 ± 0.001 |
| 15. 0.005 ± 0.001 | 0.005 ± 0.001 |
| 16. 0.005 ± 0.001 | 0.005 ± 0.001 |
| 17. 0.005 ± 0.001 | 0.005 ± 0.001 |
| 18. 0.005 ± 0.001 | 0.005 ± 0.001 |

TO: FRANCE
 (UNLESS OTHERWISE SPECIFIED)
 1. ALL COORDINATE HOLE LOCATING
 DIMENSIONS IDENTIFIED IN THIS
 CHART ARE BASIC DIMENSIONS.



- NOTES:
1. REGISTRATION OF COPPER CONDUCTIVE PATTERNS WITH REGARD TO [X] AND [Y] TO BE WITHIN .008 RADIUS TRUE POSITION.
 2. CONDUCTOR FINISH: 5000/145L. ALL EXPOSED COPPER (NOT COVERED WITH SOLDER MASK) SHALL HAVE A COATING OF 58-60% TIN, WITH BALANCE LEAD. THE MINIMUM AVERAGE THICKNESS MEASURED AT THE GEOM (W/C CENTER OF THE PAD IS .0001 INCH, WITH AN ABSOLUTE MINIMUM OF .00005 INCH OVER THE ENTIRE METAL LAYER.
 3. FINISHED BOARD THICKNESS, WHEN MEASURED OVER CONDUCTIVE PATTERNS AT A MINIMUM THICKNESS SHALL BE .06557 ± .0715 INCH. THE MAXIMUM FINISHED BOARD THICKNESS SHALL BE .0715 INCH. THROUGH HOLES SHALL HAVE A MINIMUM THICKNESS OF .0014 INCH. THE MAXIMUM HEIGHT OF SURFACE MOUNT PADS SHALL BE .0014 INCH. THE COPPER CONDUCTIVE PATTERNS SHALL BE .0014 INCH THICK MINIMUM ON OUTER LAYERS.
 4. ON THE FINISHED WAVE SOLDER SIDE CONDUCTIVE RUNNERS IS .010 INCH.
 5. NOMINAL LINE WIDTH OF CONDUCTIVE RUNNERS IS .010 INCH.
 6. MINIMUM ANNUAL RING OF HOLE TO PAD IS .002 IN.
 7. SOLDER MASK TO MEET ALL REQUIREMENTS OF M-10057.1, M-11650-0 OR M-10733-0.
 8. SOLDER MASK TO BE WITHIN .010 INCH OF THE COPPER PATTERN.
 9. REGISTRATION TO BE WITHIN .010 INCH OF THE AREA DENOTED [X] ON THE TOOLING DRAWING (THE SUPPLIER IS NOT TO EXCEED THIS AREA) BY ADDING THE APPROPRIATE LOT CODE INFORMATION. THIS INFORMATION IS FOR TRACABILITY AND CAN APPEAR IN FORMATS SIMILAR TO THE OPTIONS BELOW.

| FORMAT | EXAMPLE |
|--------|-----------------------------|
| XXXXXX | 0511FEBRUARY 20 |
| YY | 411994 |
| ZZ | 26026TH LOT ON FEB 20, 1994 |
| XX | 05A WEEK OF JAN 31ST |
| YY | 95A WEEK IN YEAR |
| YY | 95A TWO DIGITS OF YEAR |

12. [X] NEEDS TO BE ADDED IN THIS AREA.
13. THE BOARD SHALL BE CONSTRUCTED OF .062 INCH THICK FR-4 PER M-10121-1 AND MEET ALL REQUIREMENTS OF C-7000.
14. X-Y COORDINATES ARE LOCATED IN THE ELECTRONIC DATA FILE (CIRCUIT BOARD - DK142570).
15. THE FOLLOWING HOLES ARE NOT PLATED-THRU: 1, 2, 3, 4, 5, 6, 7 AND 8.
16. THIS IS A 2-LAYER PTH CIRCUIT BOARD.
17. [X] POSITION CODE FOR LOCATION OF BOARD ON PANEL TO BE ADDED IN THIS AREA.
18. CIRCUIT BOARDS ARE TO BE MANUFACTURED IN A MULTI-PART-NUMBER, PER DRAWING 16236930. APPRYT INCLUDES CIRCUIT BOARD PARTS 16236928 & 16236935, OR DK142570 & DK154819.

BASIC TOOLING

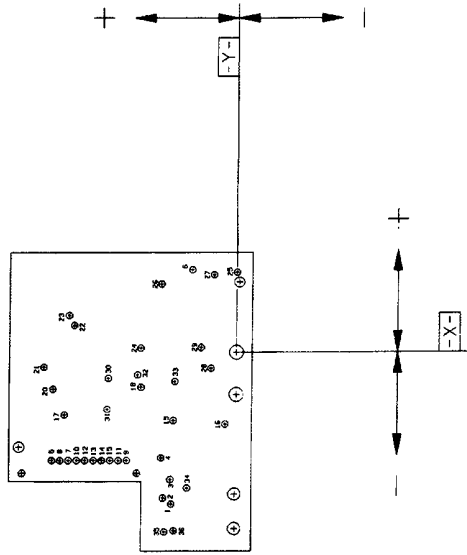
THIS TOOLING IS THE PROPERTY OF DELCO ELECTRONICS CORPORATION. IT IS TO BE USED ONLY FOR THE MANUFACTURE OF THE BOARD IDENTIFIED IN THIS DRAWING. IT IS TO BE KEPT IN A CLEAN AND MAINTAINED CONDITION. IT IS TO BE USED IN ACCORDANCE WITH THE INSTRUCTIONS PROVIDED WITH THE TOOLING. IT IS TO BE USED IN ACCORDANCE WITH THE INSTRUCTIONS PROVIDED WITH THE TOOLING.

GEOMETRIC DRAWING SYMBOLS
 C: CENTER
 R: RADIUS
 D: DIAMETER
 S: SQUARE
 L: LEADER
 P: POINT
 T: TOLERANCE
 F: FINISH
 M: MATERIAL
 N: NOTE
 O: OBJECT
 P: POINT
 R: RADIUS
 S: SQUARE
 T: TOLERANCE
 F: FINISH
 M: MATERIAL
 N: NOTE
 O: OBJECT

| REV. | NO. | DESCRIPTION |
|------|-----|----------------------------|
| 1 | A | WAVE SOLDER SIDE CIRCUIT |
| 2 | B | WAVE SOLDER SIDE RESIST |
| 3 | A | REFLOW SOLDER SIDE CIRCUIT |
| 4 | A | REFLOW SOLDER SIDE RESIST |
| 5 | A | REFLOW SIDE PASTE |
| 6 | A | REFLOW SIDE PASTE |

| | |
|--------------------|---|
| SAFETY COMPLIANCE | 0 |
| TOTAL FUNCTION F/F | 0 |
| LAST ON DRAWING | 0 |
| USE ONLY | 0 |

KEY PRODUCT CHARACTERISTICS
 SHEET 1 OF 2
 DK142570
 CIR BD-TRANSP, JBUS
 SH1 1
 OF 2
 T. SWANSON 104588-1



VIEWED FROM WAVE SOLDER SIDE

WAVE TEST POINTS

THE FOLLOWING SYMBOLS AND DIMENSIONS ARE SPECIFIED FOR THE WAVE TEST POINTS. THE DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.

GEOMETRIC DRAWING SYMBOLS

- 1. DIMENSION LINE
- 2. DIMENSION VALUE
- 3. DIMENSION UNIT
- 4. DIMENSION TOLERANCE
- 5. DIMENSION SURFACE
- 6. DIMENSION BREAK
- 7. DIMENSION CENTERLINE
- 8. DIMENSION EXTENSION LINE
- 9. DIMENSION TERMINATION
- 10. DIMENSION OFFSET
- 11. DIMENSION START
- 12. DIMENSION STOP
- 13. DIMENSION TRIM
- 14. DIMENSION TYPE
- 15. DIMENSION VALUE
- 16. DIMENSION UNIT
- 17. DIMENSION TOLERANCE
- 18. DIMENSION SURFACE
- 19. DIMENSION BREAK
- 20. DIMENSION CENTERLINE
- 21. DIMENSION EXTENSION LINE
- 22. DIMENSION TERMINATION
- 23. DIMENSION OFFSET
- 24. DIMENSION START
- 25. DIMENSION STOP
- 26. DIMENSION TRIM
- 27. DIMENSION TYPE

UNLESS OTHERWISE SPECIFIED

UNIT: DIMENSIONS IN INCHES

TYPICAL DIMENSIONS: 2.01

TOLERANCE: 0.005

ANGLES: 90°

PRODUCTION

QUANTITY: 16230729A

DATE: 11-1-68

DESIGNER: T. STOUT

DRAWN: A. STUBER

CIR 80-TRANSP. JURIS

SHEET 2 OF 2

DK142570

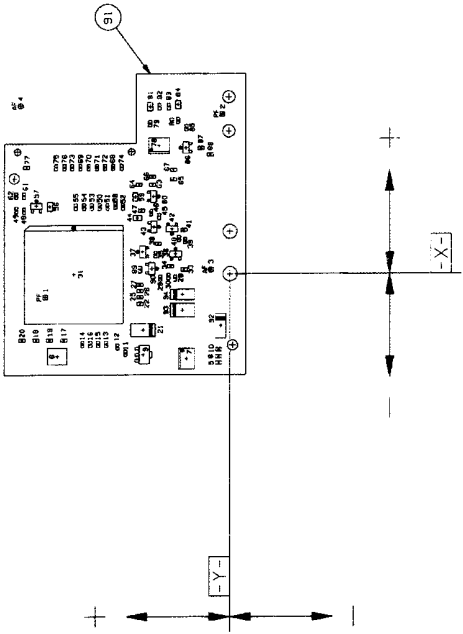
SHT 2

DF 2

T. STOUT (IMP) 1

| | | | |
|-----|---------|--|----------|
| REV | DATE | DESCRIPTION | BY |
| 1 | 11-1-68 | RELEASED - PROTO | T. STOUT |
| 2 | 11-1-68 | ADDED TP'S 24, 25, 26 | T. STOUT |
| 3 | 11-1-68 | ADDED TP'S 27, 28, 29, 30 | T. STOUT |
| 4 | 11-1-68 | ADDED TP'S 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100 | T. STOUT |

| | | | |
|-----|---------|--|----------|
| REV | DATE | DESCRIPTION | BY |
| 1 | 11-1-68 | RELEASED - PROTO | T. STOUT |
| 2 | 11-1-68 | ADDED TP'S 24, 25, 26 | T. STOUT |
| 3 | 11-1-68 | ADDED TP'S 27, 28, 29, 30 | T. STOUT |
| 4 | 11-1-68 | ADDED TP'S 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100 | T. STOUT |



NOTES:

1. SMC'S SHALL BE SECURED TO THE REFLOW SOLDER SIDE OF THE CIRCUIT BOARD USING SOLDER PASTE (1:3M 92 PER PROCESS SPECIFICATION.
2. D/C R01; 0, 90, 180 & 270 REFERS TO DEGREES ROTATION OF PIN #1, TRANSISTOR COLLECTOR, DIODE CATHODE, OR CAPACITOR (+) POSITIVE END. 0 EQUALS 3 O' CLOCK, 90 EQUALS 12 O' CLOCK, ETC. NON-POLARIZED COMPONENTS ARE SPECIFIED AS 0 OR 180 FOR HORIZONTAL AND 90 OR 270 FOR VERTICAL.
3. THIS ASSEMBLY IS ELECTROSTATIC DISCHARGE (ESD) SENSITIVE.

ETCL - JBUS

THE MAKING OF THIS DRAWING IS THE PROPERTY OF DELCO ELECTRONICS CORPORATION. IT IS LOANED TO YOU FOR YOUR INFORMATION ONLY. IT IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF DELCO ELECTRONICS CORPORATION.

GEOMETRIC DRAWING SYMBOLS
 1. HATCHING - POINTS OF VIEW
 2. DIMENSIONS - DIMENSIONS ARE IN MILLIMETERS
 3. DIMENSIONS - DECIMALS = 0.3
 4. DIMENSIONS - FRACTIONS = 1/16
 5. DIMENSIONS - ANGLES = 5'

METRIC DIMENSIONS ARE IN MILLIMETERS
 DECIMALS = 0.3
 FRACTIONS = 1/16
 ANGLES = 5'

DESIGNED BY: T. STOUT
 DRAWN BY: S. STRAKER 148595

16230729A

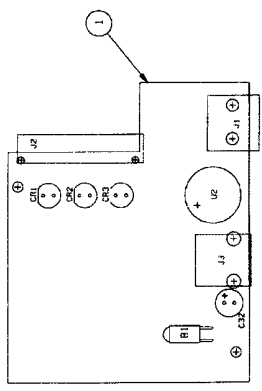
| KEY PRODUCT CHARACTERISTICS | | | |
|---|------------------|-------|-----------|
| SAFETY COMPLIANCE | TOTAL S/C | FTZ/F | TOTAL F/F |
| 0 | 0 | 0 | 0 |
| TOTAL ON DRAWING | LAST NUMBER USED | | |
| 0 | 0 | | |
| SHEET 1 OF 2 | | | |
| DRAWING NUMBER: DK142571 | | | |
| DRAWING REVISIONS NOT PERMITTED ON THIS DRAWING | | | |
| SHT 1 OF 2 | | | |
| DK142571 | | | |
| OF 2 | | | |

| CHIP NO. | REF | DES | Y | X | DIM | PART NUMBER | DESCRIPTION |
|----------|-----|-----|--------|-------|----------|------------------------|------------------------|
| 1 | 0 | WF1 | 45.34 | -5.71 | 1.97 | FIDUCIAL | VISION FIDUCIAL REF |
| 2 | 0 | WF2 | 39.13 | 1.02 | 4.70 | FIDUCIAL | VISION FIDUCIAL REF |
| 3 | 0 | WF3 | 41.15 | -3.21 | 4.44 | FIDUCIAL | VISION FIDUCIAL REF |
| 4 | 0 | WF4 | 41.15 | -3.21 | 4.44 | FIDUCIAL | VISION FIDUCIAL REF |
| 5 | 90 | U1 | 20.19 | 42.42 | 16519859 | BES-SM 4.7K, 0.63MS | BES-SM 4.7K, 0.63MS |
| 6 | 90 | U4 | -20.19 | 42.42 | 16519859 | BES-SM 4.7K, 0.63MS | BES-SM 4.7K, 0.63MS |
| 7 | 90 | U4 | -20.19 | 42.42 | 16519859 | BES-SM 4.7K, 0.63MS | BES-SM 4.7K, 0.63MS |
| 8 | 90 | U6 | -20.19 | 42.42 | 16519859 | BES-SM 4.7K, 0.63MS | BES-SM 4.7K, 0.63MS |
| 9 | 90 | U5 | -19.83 | 21.29 | 16167407 | RES-SM 100K, 0.63MS | RES-SM 100K, 0.63MS |
| 10 | 90 | U5 | -19.83 | 21.29 | 16167407 | RES-SM 100K, 0.63MS | RES-SM 100K, 0.63MS |
| 11 | 0 | R17 | -19.43 | 25.66 | 16167371 | RES-SM 3.3K, 0.63MS | RES-SM 3.3K, 0.63MS |
| 12 | 90 | R18 | -17.91 | 27.09 | 16167359 | RES-SM 100K, 0.63MS | RES-SM 100K, 0.63MS |
| 13 | 90 | R19 | -17.91 | 27.09 | 16167359 | RES-SM 100K, 0.63MS | RES-SM 100K, 0.63MS |
| 14 | 90 | C31 | -17.27 | 36.19 | 16167464 | CAP-SM 0.003, 1000PF | CAP-SM 0.003, 1000PF |
| 15 | 90 | L4 | -17.27 | 34.29 | 16167359 | FERRITE-SM RF, 0603 | FERRITE-SM RF, 0603 |
| 16 | 90 | L5 | -17.27 | 34.29 | 16167359 | FERRITE-SM RF, 0603 | FERRITE-SM RF, 0603 |
| 17 | 270 | C26 | -16.26 | 40.77 | 16167490 | CAP-SM 0.003, 5.8PF | CAP-SM 0.003, 5.8PF |
| 18 | 90 | C24 | -16.26 | 47.63 | 16167464 | CAP-SM 0.003, 1000PF | CAP-SM 0.003, 1000PF |
| 19 | 90 | C28 | -16.26 | 47.63 | 16167464 | CAP-SM 0.003, 1000PF | CAP-SM 0.003, 1000PF |
| 20 | 90 | C29 | -16.26 | 47.63 | 16167464 | CAP-SM 0.003, 1000PF | CAP-SM 0.003, 1000PF |
| 21 | 270 | C32 | -16.26 | 47.63 | 16167464 | CAP-SM 0.003, 1000PF | CAP-SM 0.003, 1000PF |
| 22 | 90 | L9 | -7.37 | 22.10 | 16167359 | FERRITE-SM RF, 0603 | FERRITE-SM RF, 0603 |
| 23 | 90 | L9 | -7.37 | 22.10 | 16167359 | FERRITE-SM RF, 0603 | FERRITE-SM RF, 0603 |
| 24 | 90 | L6 | -4.23 | 22.10 | 16167359 | FERRITE-SM RF, 0603 | FERRITE-SM RF, 0603 |
| 25 | 90 | L6 | -4.23 | 22.10 | 16167359 | FERRITE-SM RF, 0603 | FERRITE-SM RF, 0603 |
| 26 | 90 | L6 | -4.23 | 22.10 | 16167359 | FERRITE-SM RF, 0603 | FERRITE-SM RF, 0603 |
| 27 | 90 | L10 | -2.67 | 13.46 | 16167464 | CAP-SM 0.003, 1000PF | CAP-SM 0.003, 1000PF |
| 28 | 90 | L10 | -2.67 | 13.46 | 16167464 | CAP-SM 0.003, 1000PF | CAP-SM 0.003, 1000PF |
| 29 | 90 | L10 | -2.67 | 13.46 | 16167464 | CAP-SM 0.003, 1000PF | CAP-SM 0.003, 1000PF |
| 30 | 90 | L10 | -2.67 | 13.46 | 16167464 | CAP-SM 0.003, 1000PF | CAP-SM 0.003, 1000PF |
| 31 | 90 | L10 | -2.67 | 13.46 | 16167464 | CAP-SM 0.003, 1000PF | CAP-SM 0.003, 1000PF |
| 32 | 90 | L10 | -2.67 | 13.46 | 16167464 | CAP-SM 0.003, 1000PF | CAP-SM 0.003, 1000PF |
| 33 | 90 | R23 | 1.02 | 13.46 | 16167359 | FERRITE-SM RF, 0603 | FERRITE-SM RF, 0603 |
| 34 | 90 | R24 | 1.78 | 14.60 | 16167359 | FERRITE-SM RF, 0603 | FERRITE-SM RF, 0603 |
| 35 | 0 | R24 | 4.70 | 18.29 | 16167370 | RES-SM 3.3K, 0.63MS | RES-SM 3.3K, 0.63MS |
| 36 | 0 | U6 | 4.63 | 11.33 | 16226838 | XSTR-NPN, SOT23 | XSTR-NPN, SOT23 |
| 37 | 90 | U7 | 5.23 | 21.46 | 16226838 | XSTR-NPN, SOT23 | XSTR-NPN, SOT23 |
| 38 | 90 | U8 | 2.37 | 17.05 | 16167359 | RES-SM 100K, 0.63MS | RES-SM 100K, 0.63MS |
| 39 | 90 | U8 | 2.37 | 17.05 | 16167359 | RES-SM 100K, 0.63MS | RES-SM 100K, 0.63MS |
| 40 | 0 | R18 | 6.64 | 12.97 | 16167363 | RES-SM 10K, 0.63MS | RES-SM 10K, 0.63MS |
| 41 | 270 | R19 | 10.00 | 11.30 | 16167359 | RES-SM 10K, 0.63MS | RES-SM 10K, 0.63MS |
| 42 | 180 | R4 | 11.00 | 14.22 | 16220139 | XSTR-NPN, SOT23 | XSTR-NPN, SOT23 |
| 43 | 270 | U2 | 11.56 | 18.67 | 16226838 | XSTR-NPN, SOT23 | XSTR-NPN, SOT23 |
| 44 | 90 | R12 | 13.77 | 22.73 | 16226838 | RES-SM 0.005, 91, 5Z | RES-SM 0.005, 91, 5Z |
| 45 | 0 | R11 | 14.10 | 17.40 | 16167370 | RES-SM 3.3K, 0.63MS | RES-SM 3.3K, 0.63MS |
| 46 | 0 | R11 | 14.10 | 17.40 | 16167370 | RES-SM 3.3K, 0.63MS | RES-SM 3.3K, 0.63MS |
| 47 | 270 | R10 | 15.24 | 31.32 | 16167363 | RES-SM 100K, 0.63MS | RES-SM 100K, 0.63MS |
| 48 | 0 | R7 | 15.48 | 50.56 | 16167363 | RES-SM 1K, 0.63MS | RES-SM 1K, 0.63MS |
| 49 | 0 | R21 | 15.75 | 52.45 | 16167375 | RES-SM 4.7K, 0.63MS | RES-SM 4.7K, 0.63MS |
| 50 | 180 | L2 | 16.38 | 32.00 | 16167464 | CAP-SM 0.003, 1000PF | CAP-SM 0.003, 1000PF |
| 51 | 0 | C10 | 16.38 | 30.10 | 16167464 | CAP-SM 0.003, 1000PF | CAP-SM 0.003, 1000PF |
| 52 | 0 | C10 | 16.38 | 30.10 | 16167464 | CAP-SM 0.003, 1000PF | CAP-SM 0.003, 1000PF |
| 53 | 0 | R2 | 16.38 | 26.29 | 16167464 | CAP-SM 0.003, 1000PF | CAP-SM 0.003, 1000PF |
| 54 | 0 | R3 | 16.38 | 37.86 | 16167464 | CAP-SM 0.003, 1000PF | CAP-SM 0.003, 1000PF |
| 55 | 0 | R3 | 16.38 | 37.86 | 16167464 | CAP-SM 0.003, 1000PF | CAP-SM 0.003, 1000PF |
| 56 | 0 | R15 | 16.51 | 44.20 | 16226838 | RES-SM 0.005, 180K, 5Z | RES-SM 0.005, 180K, 5Z |
| 57 | 0 | U1 | 16.64 | 47.30 | 16226838 | XSTR-NPN, SOT23 | XSTR-NPN, SOT23 |
| 58 | 180 | L1 | 16.64 | 28.19 | 16167359 | FERRITE-SM RF, 0603 | FERRITE-SM RF, 0603 |
| 59 | 0 | R9 | 18.00 | 23.24 | 16226838 | RES-SM 0.005, 330K, 5Z | RES-SM 0.005, 330K, 5Z |
| 60 | 0 | R9 | 18.00 | 23.24 | 16226838 | RES-SM 0.005, 330K, 5Z | RES-SM 0.005, 330K, 5Z |
| 61 | 0 | R8 | 18.18 | 50.25 | 16167373 | RES-SM 3.3K, 0.63MS | RES-SM 3.3K, 0.63MS |
| 62 | 0 | R8 | 18.18 | 50.25 | 16167373 | RES-SM 3.3K, 0.63MS | RES-SM 3.3K, 0.63MS |
| 63 | 90 | C27 | 21.84 | 19.05 | 16167464 | CAP-SM 0.003, 220PF | CAP-SM 0.003, 220PF |
| 64 | 270 | R13 | 21.84 | 22.35 | 16167363 | RES-SM 10K, 0.63MS | RES-SM 10K, 0.63MS |
| 65 | 90 | R8 | 23.11 | 33.84 | 16167464 | CAP-SM 0.003, 1000PF | CAP-SM 0.003, 1000PF |
| 66 | 270 | R14 | 23.75 | 35.00 | 16167372 | RES-SM 3.3K, 0.63MS | RES-SM 3.3K, 0.63MS |
| 67 | 270 | L11 | 25.40 | 13.84 | 16167359 | FERRITE-SM RF, 0603 | FERRITE-SM RF, 0603 |
| 68 | 0 | C20 | 26.03 | 28.70 | 16167502 | CAP-SM 0.003, 50PF | CAP-SM 0.003, 50PF |
| 69 | 0 | C19 | 26.03 | 36.70 | 16167502 | CAP-SM 0.003, 50PF | CAP-SM 0.003, 50PF |
| 70 | 0 | C19 | 26.03 | 36.70 | 16167502 | CAP-SM 0.003, 50PF | CAP-SM 0.003, 50PF |
| 71 | 0 | C19 | 26.03 | 36.70 | 16167502 | CAP-SM 0.003, 50PF | CAP-SM 0.003, 50PF |
| 72 | 0 | C18 | 26.03 | 30.73 | 16167493 | CAP-SM 0.003, 220PF | CAP-SM 0.003, 220PF |
| 73 | 0 | C15 | 26.03 | 38.74 | 16167462 | CAP-SM 0.003, 800PF | CAP-SM 0.003, 800PF |
| 74 | 0 | C14 | 26.03 | 26.67 | 16167462 | CAP-SM 0.003, 800PF | CAP-SM 0.003, 800PF |
| 75 | 0 | C19 | 26.03 | 42.67 | 16167462 | CAP-SM 0.003, 800PF | CAP-SM 0.003, 800PF |
| 76 | 0 | C12 | 26.03 | 40.64 | 16167462 | CAP-SM 0.003, 800PF | CAP-SM 0.003, 800PF |

| CHIP NO. | REF | DES | Y | X | DIM | PART NUMBER | DESCRIPTION |
|----------|-----|-----|-------|-------|----------|------------------------|------------------------|
| 77 | 270 | R22 | 26.03 | 31.37 | 28.03 | RES-SM 10K, 0.63MS | RES-SM 10K, 0.63MS |
| 78 | 180 | U1 | 31.37 | 17.40 | DK142570 | IC-AJ MICRO REG -5V | IC-AJ MICRO REG -5V |
| 79 | 0 | R20 | 36.70 | 19.69 | DK142567 | RES-SM 4.7K, 0.63MS | RES-SM 4.7K, 0.63MS |
| 80 | 0 | R28 | 37.47 | 12.03 | 16167375 | RES-SM 4.7K, 0.63MS | RES-SM 4.7K, 0.63MS |
| 81 | 0 | R27 | 40.89 | 13.88 | 16167375 | RES-SM 4.7K, 0.63MS | RES-SM 4.7K, 0.63MS |
| 82 | 0 | R27 | 40.89 | 13.88 | 16167375 | RES-SM 4.7K, 0.63MS | RES-SM 4.7K, 0.63MS |
| 83 | 180 | R27 | 40.89 | 13.88 | 16167375 | RES-SM 4.7K, 0.63MS | RES-SM 4.7K, 0.63MS |
| 84 | 180 | R27 | 40.89 | 13.88 | 16167375 | RES-SM 4.7K, 0.63MS | RES-SM 4.7K, 0.63MS |
| 85 | 180 | R27 | 40.89 | 13.88 | 16167375 | RES-SM 4.7K, 0.63MS | RES-SM 4.7K, 0.63MS |
| 86 | 180 | R27 | 40.89 | 13.88 | 16167375 | RES-SM 4.7K, 0.63MS | RES-SM 4.7K, 0.63MS |
| 87 | 90 | U3 | 36.69 | 10.73 | 16167383 | RES-SM 10K, 0.63MS | RES-SM 10K, 0.63MS |
| 88 | 90 | U3 | 36.69 | 10.73 | 16167383 | RES-SM 10K, 0.63MS | RES-SM 10K, 0.63MS |
| 89 | 90 | U3 | 36.69 | 10.73 | 16167383 | RES-SM 10K, 0.63MS | RES-SM 10K, 0.63MS |
| 90 | 90 | U3 | 36.69 | 10.73 | 16167383 | RES-SM 10K, 0.63MS | RES-SM 10K, 0.63MS |
| 91 | 90 | U3 | 36.69 | 10.73 | 16167383 | RES-SM 10K, 0.63MS | RES-SM 10K, 0.63MS |
| 92 | 90 | U3 | 36.69 | 10.73 | 16167383 | RES-SM 10K, 0.63MS | RES-SM 10K, 0.63MS |
| 93 | 0 | C25 | 42.70 | 3.23 | 16226838 | RES-SM 0.005, 220K, 5Z | RES-SM 0.005, 220K, 5Z |
| 94 | 90 | C24 | 42.70 | 11.68 | 16226838 | RES-SM 0.005, 220K, 5Z | RES-SM 0.005, 220K, 5Z |

THIS ASSEMBLY SHALL CONSIST OF THE FOLLOWING:

| ITEM | PART NO | DESCRIPTION |
|------|-----------|-------------------|
| 1 | DK142571 | CIR BO S/A SM, DS |
| 2 | M-5940-4 | SOLDER |
| 3 | M-3940-19 | SOLDER TOUCH-UP |
| 4 | M-5958-38 | SOLDER FLUX |
| 5 | M-5958-38 | FLUX |
| 1 | DK144199 | CONN-3 COND |
| 1 | J2 | CONN-12 COND |
| 1 | J3 | CONN-4 COND, MALE |
| 1 | UP | BUZZER |
| 1 | CR3 | LED-RED, T1-75 |
| 1 | CR1 | LED-GREEN, T1-75 |
| 1 | CR2 | LED-YELLOW, T1-75 |
| 1 | CR4 | LED-RED, T1-75 |
| 1 | CR5 | LED-YELLOW, T1-75 |
| 1 | B | BULB-BALLAST |



- NOTES:
1. THERE SHALL BE NO DELAMINATION, CRACKS OR BREAKS IN THE CIRCUIT BOARD AND NO BLISTERING OR SEPARATION OF THE COPPER CIRCUIT FROM THE BOARD.
 2. MASSIVE STANDUP COMPONENTS MAY REQUIRE A SEATED HEIGHT DIMENSION. SEE COMPONENT DRAWING FOR DETAILS.
 3. ALL IC'S, CONNECTORS ARE MOUNTED WITH PIN 1 OR POLARITY AS SHOWN.
 4. SOLDER COMPONENT LEADS SECURELY TO CIRCUIT BOARD WITH ITEM 2 TOUCH-UP AS REQUIRED WITH ITEM 3.
 5. THIS ASSEMBLY IS ELECTROSTATIC DISCHARGE (ESD) SENSITIVE.
 6. THE CIRCUIT BOARD ASSEMBLY SHALL BE SUCH THAT THE RESISTIVITY IS GREATER THAN 1.0 MEGOHMS-CM WHEN TESTED PER P-2037.

ETOL-JBUS

REVISIONS:
 1. ORIGINAL DESIGN
 2. REVISED FOR USE IN THE
 CIRCUIT BOARD ASSEMBLY
 3. REVISED FOR USE IN THE
 CIRCUIT BOARD ASSEMBLY
 4. REVISED FOR USE IN THE
 CIRCUIT BOARD ASSEMBLY
 5. REVISED FOR USE IN THE
 CIRCUIT BOARD ASSEMBLY
 6. REVISED FOR USE IN THE
 CIRCUIT BOARD ASSEMBLY
 7. REVISED FOR USE IN THE
 CIRCUIT BOARD ASSEMBLY
 8. REVISED FOR USE IN THE
 CIRCUIT BOARD ASSEMBLY

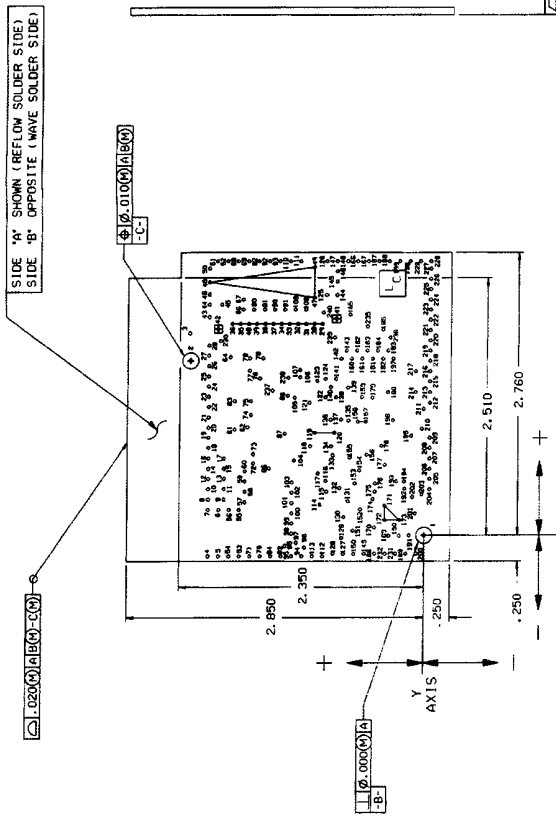
GEOMETRIC DRAWING SYMBOLS
 C CHAMFER
 R RADIUS
 S SQUARE
 T TOLERANCE
 UN UNLESS OTHERWISE SPECIFIED
 DIMENSIONS ARE IN MILLIMETERS
 DIMENSIONS IN PARENTHESIS ARE
 TOLERANCES ON THE PLACE DECIMALS
 DIMENSIONS IN PARENTHESIS ARE
 TOLERANCES ON THE PLACE DECIMALS
 DIMENSIONS IN PARENTHESIS ARE
 TOLERANCES ON THE PLACE DECIMALS

METRIC UNLESS OTHERWISE SPECIFIED
 DIMENSIONS ARE IN MILLIMETERS
 DIMENSIONS IN PARENTHESIS ARE
 TOLERANCES ON THE PLACE DECIMALS
 DIMENSIONS IN PARENTHESIS ARE
 TOLERANCES ON THE PLACE DECIMALS
 DIMENSIONS IN PARENTHESIS ARE
 TOLERANCES ON THE PLACE DECIMALS

PROJECTION
 FIRST ANGLE
 UNLESS OTHERWISE SPECIFIED

| KEY PRODUCT CHARACTERISTICS | SAFETY COMPLIANCE | TOTAL FLY BY | FUNCTION F/F | TOTAL F/F |
|-----------------------------|-------------------|--------------|--------------|-----------|
| 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 |

16230729A
 T. STOUT
 A. STODER
 CIR BO ASM-JBUS
 SHEET 1 OF 1
 DK142572
 T. SHANKS 16230729A



NOTES:

- REGISTRATION OF COPPER CONDUCTIVE PATTERNS WITH REGARD TO [B] AND [C] TO BE WITHIN .008 RADIUS TIME POSITION.
- CONDUCTOR FINISH 5083C/HASK. ALL EXPOSED COPPER (NOT COVERED WITH SOLDER MASK) SHALL HAVE A COATING OF 99-68Z TIN, WITH BALANCE LEAD. THE MINIMUM AVERAGE THICKNESS MEASURED AT THE GEOMETRIC CENTER OF THE PAD IS .0001 INCH, WITH AN ABSOLUTE MINIMUM OF .00005 INCH OVER INTERMETALLIC LAYER.
- FINISHED BOARD THICKNESS: WHEN MEASURED OVER CONDUCTIVE PATTERNS AT ANY POINT, OVERALL THICKNESS SHALL BE .0655-.0715 INCH. THE MAXIMUM FINISHED BOARD THICKNESS WHEN MEASURED OVER SOLDER MASK SHALL BE .075 INCH.
- FINISHED CONDUCTIVE PATTERN THICKNESS: THE COPPER CONDUCTIVE PATTERNS SHALL BE .0014 INCH THICK MINIMUM ON OUTER LAYERS. THRU HOLES SHALL HAVE A MINIMUM THICKNESS OF .001 INCH. THE ABSOLUTE MAXIMUM HEIGHT OF SURFACE MOUNT PADS SHALL NOT EXCEED .010 INCH.
- SMALLEST NOMINAL SPACING BETWEEN CONDUCTIVE PATTERNS IS .010 INCH.
- COPPER PATTERN PROCESS ALLOWANCE TO BE WITHIN .002-.004 INCH FROM THE MASTER DATA BASE OR MASTER PATTERN SUPPLIED BY DELCO ELECTRONICS.
- BOARDS ARE TO BE 100% TESTED FOR SHORTS AND OPENS.
- SOLDER MASK TO MEET ALL REQUIREMENTS OF M-11050-D, M-10057-1 OR M-10783-G. REGISTRATION TO BE WITHIN .010 INCH OF THE COPPER PATTERN.
- LOT CODE - CIRCUIT BOARD MANUFACTURER IS TO MODIFY AREA DENOTED [C] ON THE TOOLING DRAWING. THE INFORMATION IS FOR TRACEABILITY AND CAN APPEAR IN FORMATS SIMILAR TO THE OPTIONS BELOW:

| FORMAT | EXAMPLE |
|--------|-------------------------------|
| VZ | XX-VULCAN DATE |
| Y2 | XX-VLAST DIGIT OF YEAR |
| Y3 | XX-VLAST TWO DIGITS OF YEAR |
| Y4 | XX-VLAST FOUR DIGITS OF YEAR |
| Y5 | XX-VLAST FIVE DIGITS OF YEAR |
| Y6 | XX-VLAST SIX DIGITS OF YEAR |
| Y7 | XX-VLAST SEVEN DIGITS OF YEAR |
| Y8 | XX-VLAST EIGHT DIGITS OF YEAR |
| Y9 | XX-VLAST NINE DIGITS OF YEAR |
| Y0 | XX-VLAST TEN DIGITS OF YEAR |

- [C] VENDOR ID TO BE ADDED IN THIS AREA.
- THE BOARD SHALL BE CONSTRUCTED OF .062 INCH THICK FR-4 PER M-10121-1 AND MEET ALL REQUIREMENTS OF C-7000.
- X-Y COORDINATES ARE LOCATED IN THE ELECTRONIC DATA FILE (CIRCUIT BOARD DK154819).
- THE FOLLOWING HOLES ARE NOT PLATED-THRU: 1, 2, 41, 42, 171, 172.
- CIRCUIT BOARDS ARE TO BE MANUFACTURED IN A MULTI-PART-NUMBER ARRAY, PER DRAWING 16236930. ARRAY INCLUDES BOARD PATNS 16236929 & 16236935, OR DK142570 & DK154819.
- THIS IS A 2-LAYER PTH CIRCUIT BOARD.

FINISHED HOLE SIZES (UNLESS OTHERWISE SPECIFIED)

| HOLE SIZE | UNLESS OTHERWISE SPECIFIED |
|-----------|----------------------------|
| Ø.005 | Ø.005 |
| Ø.007 | Ø.007 |
| Ø.008 | Ø.008 |
| Ø.009 | Ø.009 |
| Ø.010 | Ø.010 |
| Ø.012 | Ø.012 |
| Ø.015 | Ø.015 |
| Ø.020 | Ø.020 |
| Ø.025 | Ø.025 |
| Ø.030 | Ø.030 |
| Ø.035 | Ø.035 |
| Ø.040 | Ø.040 |
| Ø.045 | Ø.045 |
| Ø.050 | Ø.050 |
| Ø.055 | Ø.055 |
| Ø.060 | Ø.060 |
| Ø.065 | Ø.065 |
| Ø.070 | Ø.070 |
| Ø.075 | Ø.075 |
| Ø.080 | Ø.080 |
| Ø.085 | Ø.085 |
| Ø.090 | Ø.090 |
| Ø.095 | Ø.095 |
| Ø.100 | Ø.100 |
| Ø.110 | Ø.110 |
| Ø.120 | Ø.120 |
| Ø.130 | Ø.130 |
| Ø.140 | Ø.140 |
| Ø.150 | Ø.150 |
| Ø.160 | Ø.160 |
| Ø.170 | Ø.170 |
| Ø.180 | Ø.180 |
| Ø.190 | Ø.190 |
| Ø.200 | Ø.200 |

ALL HOLES TO BE DRILLED UNLESS OTHERWISE SPECIFIED IN NOTE 14.

TOLERANCE:
 (UNLESS OTHERWISE SPECIFIED)
 1. ALL COORDINATE HOLE LOCATING DIMENSIONS IDENTIFIED IN THIS CHART ARE BASIC DIMENSIONS.

DETAIL D/JR

BASIC TOOLING

THE FOLLOWING ARE THE SPECIFICATIONS FOR THE TOOLING REQUIRED FOR THE PRODUCTION OF THIS BOARD:

1. PHOTO MASKING - 1/2" DIA. HOLES
2. PHOTO MASKING - 1/4" DIA. HOLES
3. PHOTO MASKING - 1/8" DIA. HOLES
4. PHOTO MASKING - 3/16" DIA. HOLES
5. PHOTO MASKING - 1/4" DIA. HOLES
6. PHOTO MASKING - 3/8" DIA. HOLES
7. PHOTO MASKING - 1/2" DIA. HOLES
8. PHOTO MASKING - 3/4" DIA. HOLES
9. PHOTO MASKING - 1" DIA. HOLES
10. PHOTO MASKING - 1 1/4" DIA. HOLES
11. PHOTO MASKING - 1 1/2" DIA. HOLES
12. PHOTO MASKING - 1 3/4" DIA. HOLES
13. PHOTO MASKING - 2" DIA. HOLES
14. PHOTO MASKING - 2 1/4" DIA. HOLES
15. PHOTO MASKING - 2 1/2" DIA. HOLES
16. PHOTO MASKING - 2 3/4" DIA. HOLES
17. PHOTO MASKING - 3" DIA. HOLES
18. PHOTO MASKING - 3 1/4" DIA. HOLES
19. PHOTO MASKING - 3 1/2" DIA. HOLES
20. PHOTO MASKING - 3 3/4" DIA. HOLES
21. PHOTO MASKING - 4" DIA. HOLES
22. PHOTO MASKING - 4 1/4" DIA. HOLES
23. PHOTO MASKING - 4 1/2" DIA. HOLES
24. PHOTO MASKING - 4 3/4" DIA. HOLES
25. PHOTO MASKING - 5" DIA. HOLES
26. PHOTO MASKING - 5 1/4" DIA. HOLES
27. PHOTO MASKING - 5 1/2" DIA. HOLES
28. PHOTO MASKING - 5 3/4" DIA. HOLES
29. PHOTO MASKING - 6" DIA. HOLES
30. PHOTO MASKING - 6 1/4" DIA. HOLES
31. PHOTO MASKING - 6 1/2" DIA. HOLES
32. PHOTO MASKING - 6 3/4" DIA. HOLES
33. PHOTO MASKING - 7" DIA. HOLES
34. PHOTO MASKING - 7 1/4" DIA. HOLES
35. PHOTO MASKING - 7 1/2" DIA. HOLES
36. PHOTO MASKING - 7 3/4" DIA. HOLES
37. PHOTO MASKING - 8" DIA. HOLES
38. PHOTO MASKING - 8 1/4" DIA. HOLES
39. PHOTO MASKING - 8 1/2" DIA. HOLES
40. PHOTO MASKING - 8 3/4" DIA. HOLES
41. PHOTO MASKING - 9" DIA. HOLES
42. PHOTO MASKING - 9 1/4" DIA. HOLES
43. PHOTO MASKING - 9 1/2" DIA. HOLES
44. PHOTO MASKING - 9 3/4" DIA. HOLES
45. PHOTO MASKING - 10" DIA. HOLES

UNLESS OTHERWISE SPECIFIED, TOLERANCE ONE INCHES

KEY PRODUCT CHARACTERISTICS:

| SAFETY COMPLIANCE | S/C | FUNCTION | F/F | TOTAL |
|-------------------|-----|----------|-----|-------|
| 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 |

REVISIONS:
 REV. NO. DESCRIPTION
 1. 16230729C

DATE: 10/14/81 BY: R. BANKS

| | | |
|----------------|------------------------|--------------------|
| DATE: 10/14/81 | BY: R. BANKS | PROJECT: 16230729C |
| REV. NO. 1 | DESCRIPTION: 16230729C | DATE: 10/14/81 |
| REV. NO. 2 | DESCRIPTION: 16230729C | DATE: 10/14/81 |
| REV. NO. 3 | DESCRIPTION: 16230729C | DATE: 10/14/81 |
| REV. NO. 4 | DESCRIPTION: 16230729C | DATE: 10/14/81 |
| REV. NO. 5 | DESCRIPTION: 16230729C | DATE: 10/14/81 |
| REV. NO. 6 | DESCRIPTION: 16230729C | DATE: 10/14/81 |
| REV. NO. 7 | DESCRIPTION: 16230729C | DATE: 10/14/81 |
| REV. NO. 8 | DESCRIPTION: 16230729C | DATE: 10/14/81 |
| REV. NO. 9 | DESCRIPTION: 16230729C | DATE: 10/14/81 |
| REV. NO. 10 | DESCRIPTION: 16230729C | DATE: 10/14/81 |

NO. OF PLACES REQUIRING WORK ON THIS DRAWING: 2

DATE: 10/14/81 BY: R. BANKS

PROJECT: 16230729C

REV. NO. 1

DESCRIPTION: 16230729C

DATE: 10/14/81

DATE: 1/14/97
DRAWN BY: R. BARBER
CHECKED BY: J. CHAPMAN
CIRCUIT NAME: 16230729C

REV: 0
REV: 1
REV: 2

DESCRIPTION: 16230729C (SEE SHEET FOR DETAILS)
SHEET 2 OF 2

F

E

D

C

B

A

F

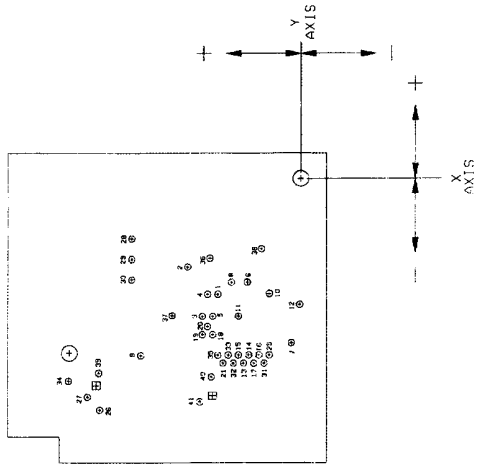
E

D

C

B

A



VIEWED FROM WAVE SOLDER SIDE

MS TEST POINTS

THE TEST POINTS SHOWN ON THIS DRAWING ARE INTENDED FOR USE IN THE TESTING OF THE BOARD IN THE ASSEMBLED STATE AT THE BOARD LEVEL. THIS DRAWING IS NOT INTENDED TO BE USED AS A REFERENCE FOR THE DESIGN OF TEST EQUIPMENT. THE LOCATION OF TEST POINTS IS SUBJECT TO CHANGE WITHOUT NOTICE. CONTACT THE DESIGN ENGINEER FOR DETAILS.

TEST POINT SYMBOLS

- OPEN
- FILL
- UNPAVED
- ◇ PAVED
- ◇ PAVED WITH FINISH
- ◇ PAVED WITH FINISH AND TYPICAL DIMENSIONS
- ◇ PAVED WITH FINISH AND TYPICAL DIMENSIONS AND BOARD ORIENTATION

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS
DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED
TOLERANCE ON DIMENSIONS IS ±0.10
DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED

DATE: 1/14/97
DRAWN BY: R. BARBER
CHECKED BY: J. CHAPMAN

16230729C

CIR BOB RF

SHEET 2 OF 2
DK154819

REV: 0
REV: 1
REV: 2

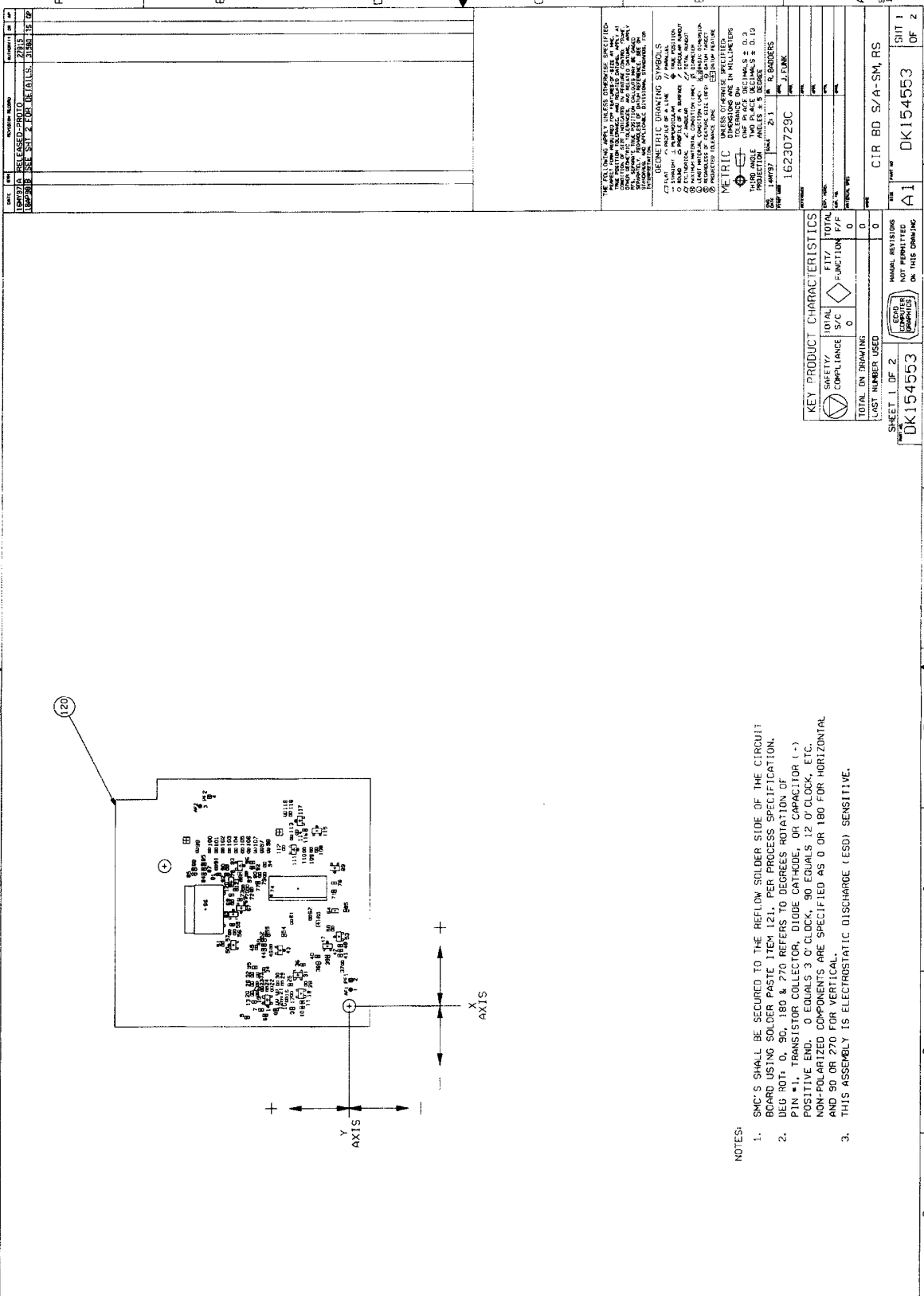
DESCRIPTION: 16230729C (SEE SHEET FOR DETAILS)
SHEET 2 OF 2

Subsidiary of Hughes Electronics Korea, Ltd.
DELCO ELECTRONICS CORPORATION

| | | | |
|--------------------------|--|--------------------------|---|
| ELECTRICAL COMPARISON | MAIN REVISIONS NOT PERMITTED ON THIS DRAWING | SHEET 2 OF 2 DK154819 | 1 |
| | | | 2 |

* TP22, 23, AND 24 ARE NOT USED.

1 2 3 4 5 6 7 8



- NOTES:
1. SMC'S SHALL BE SECURED TO THE REFLOW SOLDER SIDE OF THE CIRCUIT BOARD USING SOLDER PASTE, ITEM 121, PER PROCESS SPECIFICATION.
 2. D50 90° TRANSISTOR COLLECTOR DIODE ANTHODE OR CAPACITOR (-) POSITIVE END COMPONENTS, AS CLOCK, 90° EQUALS 12° CLOCK, ETC. NON-POLARIZED COMPONENTS ARE SPECIFIED AS 0 OR 180 FOR HORIZONTAL AND 90 OR 270 FOR VERTICAL.
 3. THIS ASSEMBLY IS ELECTROSTATIC DISCHARGE (ESD) SENSITIVE.

ALL DIMENSIONS UNLESS OTHERWISE SPECIFIED SHALL BE IN MILLIMETERS (CONVERTED TO INCHES BY DIVIDING BY 25.4). DIMENSIONS ARE TO BE TAKEN FROM THE CENTER OF THE PART UNLESS OTHERWISE SPECIFIED. DIMENSIONS TO BE TAKEN FROM THE CENTER OF THE PART UNLESS OTHERWISE SPECIFIED. DIMENSIONS TO BE TAKEN FROM THE CENTER OF THE PART UNLESS OTHERWISE SPECIFIED.

GEOMETRIC DRIVING SYMBOLS

□ DIMENSIONAL TOLERANCE
○ SURFACE FINISH
◇ POSITION
△ COORDINATE
∠ ANGLE
∅ DIA.
R RADIUS
RHO RHO
SLOT
T TOLERANCE
TOL TOLERANCE
TYP TYPICAL
X X COORDINATE
Y Y COORDINATE
Z Z COORDINATE
Z Z COORDINATE
Z Z COORDINATE
Z Z COORDINATE

METRIC

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS SHALL BE IN MILLIMETERS.

TOLERANCE ON DIMENSIONS SHALL BE ± 0.10 UNLESS OTHERWISE SPECIFIED.

TOLERANCE ON ANGLES SHALL BE ± 0.10 UNLESS OTHERWISE SPECIFIED.

TOLERANCE ON SURFACE FINISH SHALL BE 2.1 UNLESS OTHERWISE SPECIFIED.

DESIGNED BY: J. DUNK

16230729C

| KEY PRODUCT CHARACTERISTICS | | |
|-----------------------------|---|---|
| SAFETY | 0 | 0 |
| COMPLIANCE | 0 | 0 |
| TOTAL DIM. DRAWING | 0 | 0 |
| LAST NUMBER USED | 0 | 0 |
| SAFETY | 0 | 0 |
| COMPLIANCE | 0 | 0 |
| TOTAL DIM. DRAWING | 0 | 0 |
| LAST NUMBER USED | 0 | 0 |

SHEET 1 OF 2
DK154553
MANUAL REVISIONS NOT PERMITTED ON THIS DRAWING
A1
DK154553
CTR BD S/A-SM, RS

T. SHANKS (APPR) BRU DK154553

DELCO ELECTRONICS CORPORATION
 Subsidiary of General Motors Corporation

DELCO ELECTRONICS CORPORATION
 1612177, R3B W/S
 1612178, R3B W/S
 1612179, R3B W/S
 1612180, R3B W/S
 1612181, R3B W/S
 1612182, R3B W/S

| QTY | REQ. NO. | REF. DES. | Y. DIM. | X. DIM. | Y. DIM. | X. DIM. | DESCRIPTION |
|-----|----------|-----------|---------|---------|------------------------|---------|---------------------|
| 1 | 1 | 0 VFR1 | 4.95 | -0.38 | FIDUCIAL | 0.38 | VISION FIDUCIAL REF |
| 1 | 2 | 0 VFR2 | 6.00 | -0.38 | FIDUCIAL | 0.38 | VISION FIDUCIAL REF |
| 1 | 3 | 0 VFR3 | 6.19 | 46.35 | FIDUCIAL | 0.38 | VISION FIDUCIAL REF |
| 1 | 4 | 0 VFR4 | 64.52 | 43.43 | FIDUCIAL | 0.38 | VISION FIDUCIAL REF |
| 1 | 5 | 0 VFR5 | 3.43 | 31.62 | NOT USED | 0.38 | |
| 1 | 6 | 0 VFR6 | 1.02 | 27.31 | INDUCTOR 12-11 SM | 0.38 | |
| 1 | 7 | 0 VFR7 | 1.02 | 27.31 | INDUCTOR 12-11 SM | 0.38 | |
| 1 | 8 | 0 VFR8 | -1.02 | 22.73 | RES-SM 20K, 0.5W | 0.38 | |
| 1 | 9 | 0 VFR9 | -0.63 | 17.65 | RES-SM 20K, 0.5W | 0.38 | |
| 1 | 10 | 0 VFR10 | 0.38 | 14.60 | INDUCTOR-R, 2NH, SM | 0.38 | |
| 1 | 11 | 0 VFR11 | 1.14 | 14.60 | INDUCTOR-R, 2NH, SM | 0.38 | |
| 1 | 12 | 0 VFR12 | 1.27 | 22.46 | INDUCTOR 12-11 SM | 0.38 | |
| 1 | 13 | 0 VFR13 | 1.27 | 22.46 | INDUCTOR 12-11 SM | 0.38 | |
| 1 | 14 | 0 VFR14 | 2.03 | 20.95 | RES-SM 30K, 0.5W | 0.38 | |
| 1 | 15 | 0 VFR15 | 2.03 | 20.95 | RES-SM 30K, 0.5W | 0.38 | |
| 1 | 16 | 0 VFR16 | 2.03 | 19.43 | CAP-SM 0.003, 100PF | 0.38 | |
| 1 | 17 | 0 VFR17 | 3.68 | 17.91 | CAP-SM 0.003, 100PF | 0.38 | |
| 1 | 18 | 0 VFR18 | 3.81 | 14.99 | TRANSISTOR-SOT143 | 0.38 | |
| 1 | 19 | 0 VFR19 | 3.81 | 16.99 | CAP-SM 0.003, 1.0PF | 0.38 | |
| 1 | 20 | 0 VFR20 | 3.81 | 30.10 | CAP-SM 0.003, 100PF | 0.38 | |
| 1 | 21 | 0 VFR21 | 4.71 | 27.48 | RES-SM 1.0K, 0.5W | 0.38 | |
| 1 | 22 | 0 VFR22 | 4.71 | 27.48 | RES-SM 1.0K, 0.5W | 0.38 | |
| 1 | 23 | 0 VFR23 | 5.21 | 27.00 | RES-SM 1.0K, 0.5W | 0.38 | |
| 1 | 24 | 0 VFR24 | 5.21 | 25.93 | RES-SM 0.63M210 | 0.38 | |
| 1 | 25 | 0 VFR25 | 6.60 | 18.29 | RES-SM 33K, 0.5W | 0.38 | |
| 1 | 26 | 0 VFR26 | 6.60 | 30.10 | CAP-SM 0.003, 2.7PF | 0.38 | |
| 1 | 27 | 0 VFR27 | 6.86 | 25.99 | NOT USED | 0.38 | |
| 1 | 28 | 0 VFR28 | 6.86 | 13.99 | CAP-SM 0.003, 100PF | 0.38 | |
| 1 | 29 | 0 VFR29 | 7.11 | 22.23 | RES-SM 1.0K, 0.5W | 0.38 | |
| 1 | 30 | 0 VFR30 | 7.11 | 22.23 | RES-SM 1.0K, 0.5W | 0.38 | |
| 1 | 31 | 0 VFR31 | 8.65 | 16.00 | TRANSISTOR-SOT143 | 0.38 | |
| 1 | 32 | 0 VFR32 | 9.78 | 30.10 | INDUCTOR 12-11 SM | 0.38 | |
| 1 | 33 | 0 VFR33 | 9.78 | 28.45 | NOT USED | 0.38 | |
| 1 | 34 | 0 VFR34 | 11.30 | 26.54 | CAP-SM 0.003, 100PF | 0.38 | |
| 1 | 35 | 0 VFR35 | 12.06 | 29.34 | RES-SM 22K, 0.5W | 0.38 | |
| 1 | 36 | 0 VFR36 | 12.06 | 14.60 | CAP-SM 0.003, 100PF | 0.38 | |
| 1 | 37 | 0 VFR37 | 13.33 | 5.03 | RES-SM 100, 0.5W | 0.38 | |
| 1 | 38 | 0 VFR38 | 13.33 | 9.09 | RES-SM 100, 0.5W | 0.38 | |
| 1 | 39 | 0 VFR39 | 15.37 | 8.91 | RES-SM 2.0K, 0.5W | 0.38 | |
| 1 | 40 | 0 VFR40 | 15.37 | 8.91 | RES-SM 3.0K, 0.5W | 0.38 | |
| 1 | 41 | 0 VFR41 | 15.62 | 2.92 | CAP-SM 0.003, 100PF | 0.38 | |
| 1 | 42 | 0 VFR42 | 17.15 | 2.92 | RES-SM 2.0K, 0.5W | 0.38 | |
| 1 | 43 | 0 VFR43 | 17.27 | 21.46 | XSTR-NP, 50723 | 0.38 | |
| 1 | 44 | 0 VFR44 | 17.27 | 21.46 | CAP-SM 0.003, 100PF | 0.38 | |
| 1 | 45 | 0 VFR45 | 18.45 | 18.45 | RES-SM 0.003, 100PF | 0.38 | |
| 1 | 46 | 0 VFR46 | 18.45 | 24.38 | RES-SM 10K, 0.5W | 0.38 | |
| 1 | 47 | 0 VFR47 | 18.54 | 6.96 | RES-SM 200, 50723 | 0.38 | |
| 1 | 48 | 0 VFR48 | 18.67 | 2.32 | RES-SM 1.0K, 0.5W | 0.38 | |
| 1 | 49 | 0 VFR49 | 18.92 | 26.54 | RES-SM 6.2K, 0.5W | 0.38 | |
| 1 | 50 | 0 VFR50 | 18.92 | 35.94 | RES-SM 6.2K, 0.5W | 0.38 | |
| 1 | 51 | 0 VFR51 | 19.30 | 33.12 | INDUCTOR-PIN | 0.38 | |
| 1 | 52 | 0 VFR52 | 21.46 | 3.91 | RES-SM 200, 50723 | 0.38 | |
| 1 | 53 | 0 VFR53 | 21.46 | 3.91 | RES-SM 200, 50723 | 0.38 | |
| 1 | 54 | 0 VFR54 | 21.97 | 20.32 | CAP-SM 0.003, 6.BPF | 0.38 | |
| 1 | 55 | 0 VFR55 | 21.97 | 25.40 | CAP-SM 0.003, 6.BPF | 0.38 | |
| 1 | 56 | 0 VFR56 | 22.86 | 35.96 | CAP-SM 0.003, 2.7PF | 0.38 | |
| 1 | 57 | 0 VFR57 | 22.86 | 37.08 | INDUCTOR-R, 2NH, SM | 0.38 | |
| 1 | 58 | 0 VFR58 | 22.86 | 5.21 | CAP-SM 0.003, 100PF | 0.38 | |
| 1 | 59 | 0 VFR59 | 22.86 | 5.21 | CAP-SM 0.003, 100PF | 0.38 | |
| 1 | 60 | 0 VFR60 | 25.99 | 35.96 | RES-SM 1.0K, 0.5W | 0.38 | |
| 1 | 61 | 0 VFR61 | 25.99 | 35.96 | RES-SM 1.0K, 0.5W | 0.38 | |
| 1 | 62 | 0 VFR62 | 27.20 | 12.20 | CAP-SM 0.003, 2.2PF | 0.38 | |
| 1 | 63 | 0 VFR63 | 28.32 | 35.96 | INDUCTOR-PIN | 0.38 | |
| 1 | 64 | 0 VFR64 | 28.34 | 4.44 | RES-SM 0.003, 464K, 1Z | 0.38 | |
| 1 | 65 | 0 VFR65 | 29.34 | 1.02 | RES-SM 270K, 0.5W | 0.38 | |
| 1 | 66 | 0 VFR66 | 29.34 | 4.44 | RES-SM 270K, 0.5W | 0.38 | |
| 1 | 67 | 0 VFR67 | 30.23 | 31.93 | TRANSISTOR-SOT143 | 0.38 | |
| 1 | 68 | 0 VFR68 | 30.23 | 33.12 | RES-SM 1.0K, 0.5W | 0.38 | |
| 1 | 69 | 0 VFR69 | 31.06 | 34.06 | RES-SM 7.5K, 0.5W | 0.38 | |
| 1 | 70 | 0 VFR70 | 34.54 | 38.07 | CAP-SM 0.003, 100PF | 0.38 | |
| 1 | 71 | 0 VFR71 | 35.43 | 4.83 | CAP-SM 0.003, 0.1UF | 0.38 | |
| 1 | 72 | 0 VFR72 | 35.99 | 30.95 | RES-SM 3.3K, 0.5W | 0.38 | |
| 1 | 73 | 0 VFR73 | 36.07 | 35.94 | CAP-SM 0.003, 100PF | 0.38 | |

NO. OF THIS DRAWING SHALL BE KEPT IN THE DRAWING OFFICE UNTIL THE PRODUCT IS DISCONTINUED. THEREAFTER, THE DRAWING SHALL BE KEPT IN THE DRAWING OFFICE UNTIL THE PRODUCT IS DISCONTINUED. THEREAFTER, THE DRAWING SHALL BE KEPT IN THE DRAWING OFFICE UNTIL THE PRODUCT IS DISCONTINUED. THEREAFTER, THE DRAWING SHALL BE KEPT IN THE DRAWING OFFICE UNTIL THE PRODUCT IS DISCONTINUED.

GEOMETRIC DRAWING SYMBOLS
 1. DIMENSIONS ARE IN MILLIMETERS
 2. DIMENSIONS ARE IN MILLIMETERS
 3. DIMENSIONS ARE IN MILLIMETERS
 4. DIMENSIONS ARE IN MILLIMETERS

METRIC DIMENSIONS ARE IN MILLIMETERS
 ONE PLACE DECIMALS & .10
 TWO PLACE DECIMALS & .05
 THREE PLACE DECIMALS & .025

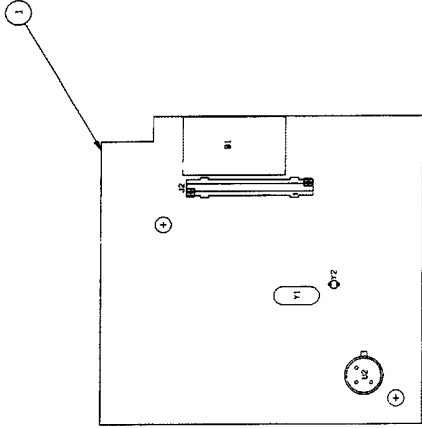
CIR 80 SVA-SM, RS
 DK154553

REVISIONS NOT PERMITTED ON THIS DRAWING

SHEET 2 OF 2
 DK154553
 1. SHAWES 10/29/81

THIS ASSEMBLY SHALL CONSIST OF THE FOLLOWING:

| ITEM | PART NO. | DESCRIPTION |
|------|-----------|----------------------|
| 1 | DK154552 | CIR. BD. 5/2A-SM-RS |
| 2 | M-3340-4 | SOLDER |
| 3 | M-3344-13 | SOLDER-TOUCH UP |
| J2 | 16211972 | CONN-12 COND |
| U2 | 16200768 | RESONATOR-SAW 315MHZ |
| Y1 | 16200769 | CRYSTAL-4.00MHZ MINI |
| Y2 | 16221018 | CRYSTAL-32.768KHZ |
| B1 | 16219869 | BATTERY W/TERM. 3V |



NOTES:

- ALL IC'S & CONNECTORS ARE MOUNTED WITH PIN 1 OR POLARITY AS SHOWN.
- SOLDER COMPONENT LEADS SECURELY TO CIRCUIT BOARD WITH SOLDER ITEM 2. TOUCH UP AS REQUIRED WITH SOLDER ITEM 3. SOLDERING TO BE PERFORMED PER PROCESS SPECIFICATION.
- THIS ASSEMBLY IS ELECTROSTATIC DISCHARGE (ESD) SENSITIVE.

KEY PRODUCT CHARACTERISTICS

| SAFETY COMPLIANCE | TOTAL S/C | ENVIRONMENTAL | FUNCTION F/F |
|-------------------|-----------|---------------|--------------|
| 0 | 0 | 0 | 0 |
| TOTAL ON DRAWING | | | |
| LAST NUMBER USED | | | |

SHEET 1 OF 1
 DK154552

MANUAL REVISIONS
 NOT PERMITTED
 ON THIS DRAWING

REV. DATE
 A1 2

16230729C
 2.1
 R. BARKERS

CIR. BD. ASM-RF

SHIT 1 OF 1
 DK154552

R. BARKERS 1/19/77 BRD DK154819

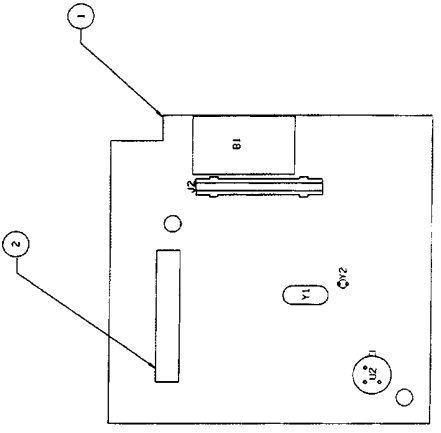
THE FOLLOWING SYMBOLS, UNLESS OTHERWISE SPECIFIED, ARE TO BE USED IN THE DRAWING TO INDICATE THE FOLLOWING: UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE TO BE HOLD TO THE CLOSEST TOLERANCE PERMITTED BY THE MANUFACTURING PROCESS. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE TO BE HOLD TO THE CLOSEST TOLERANCE PERMITTED BY THE MANUFACTURING PROCESS. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE TO BE HOLD TO THE CLOSEST TOLERANCE PERMITTED BY THE MANUFACTURING PROCESS.

GEOMETRIC DRIVING SYMBOLS
 □ TOLERANCE ZONE
 ○ PROFILE OF A SURFACE
 ⊕ CENTER POINT OF A HOLE
 ⊖ CENTER POINT OF A HOLE
 ⊕ CENTER POINT OF A HOLE
 ⊖ CENTER POINT OF A HOLE
 ⊕ CENTER POINT OF A HOLE
 ⊖ CENTER POINT OF A HOLE
 ⊕ CENTER POINT OF A HOLE
 ⊖ CENTER POINT OF A HOLE
 ⊕ CENTER POINT OF A HOLE
 ⊖ CENTER POINT OF A HOLE

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES.
 THIRD ANGLE PROJECTION
 UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES.
 UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES.

| QTY | ITEM | PART NO. | DESCRIPTION |
|-----|------|----------|---------------|
| 1 | 1 | DK154852 | CIR BD ASM-RF |
| 1 | 2 | DK150118 | LABEL-ID, MFG |

| | |
|----------|---------------|
| DATE | REVISED |
| 3/27/87 | RELEASED-PROG |
| DRAWN | BY |
| | |
| APPROVED | BY |
| | |



- NOTES:
1. SECURELY ATTACH LABEL, ITEM 2, TO BOARD, ITEM 1.
 2. THIS ASSEMBLY IS ELECTROSTATIC DISCHARGE (ESD) SENSITIVE.
 3. THERE IS A SECRET CUSTOMER PIN NUMBER THAT IS REQUIRED TO PROGRAM THE PRIVATE ID. FOR INFORMATION ON THIS PIN NUMBER, SEE THE PDD DEFINED ON THE OUTLINE DRAWING.

TYPE III

THE FOLLOWING APPLY UNLESS OTHERWISE SPECIFIED
 THIS DRAWING IS UNLESS OTHERWISE SPECIFIED
 THIS DRAWING IS UNLESS OTHERWISE SPECIFIED
 THIS DRAWING IS UNLESS OTHERWISE SPECIFIED

- GEOMETRIC DRAWING SYMBOLS
 C/P () PROFILE OF A LINE // MANIFOLD
 R () RADIUS OF A SURFACE / END VIEW ONLY
 S () SURFACE FINISH SYMBOL
 S () SURFACE FINISH SYMBOL
 S () SURFACE FINISH SYMBOL
 S () SURFACE FINISH SYMBOL

THIRD ANGLE PROJECTION
 DIMENSIONS ARE IN INCHES
 DIMENSIONS ARE IN INCHES
 DIMENSIONS ARE IN INCHES

16230729C

| | | | |
|---------------------|---|------------|-----------|
| SAFETY COMPLIANCE | TOTAL FUNCTION | PI17 | TOTAL P/F |
| 0 | 0 | 0 | 0 |
| TOTAL ON DRAWING | | 0 | |
| LAST NUMBER USED | | 0 | |
| SHEET 1 OF 1 | TOTAL REVISIONS NOT PERMITTED ON THIS DRAWING | | |
| DK154551 | 2 P. BUCKER 2/1/87 | | |
| CIR BD ASM-RF, PROG | | SHT 1 OF 1 | |
| A1 | | DK154551 | |

2 P. BUCKER 2/1/87

| REV | DATE | DESCRIPTION | BY | CHK |
|-----|----------|-------------------|-----|-----|
| 1 | 10/23/70 | REVISED FOR LISTS | ... | ... |
| 2 | 11/10/70 | REVISED FOR LISTS | ... | ... |
| 3 | 11/10/70 | REVISED FOR LISTS | ... | ... |
| 4 | 11/10/70 | REVISED FOR LISTS | ... | ... |
| 5 | 11/10/70 | REVISED FOR LISTS | ... | ... |
| 6 | 11/10/70 | REVISED FOR LISTS | ... | ... |
| 7 | 11/10/70 | REVISED FOR LISTS | ... | ... |
| 8 | 11/10/70 | REVISED FOR LISTS | ... | ... |
| 9 | 11/10/70 | REVISED FOR LISTS | ... | ... |
| 10 | 11/10/70 | REVISED FOR LISTS | ... | ... |

UNLESS OTHERWISE SPECIFIED,
RESISTOR VALUES ARE IN OHMS,
CAPACITOR VALUES ARE IN
MICROFARADS, μ F/80C.
INDUCTANCE VALUES ARE IN HENRIES.

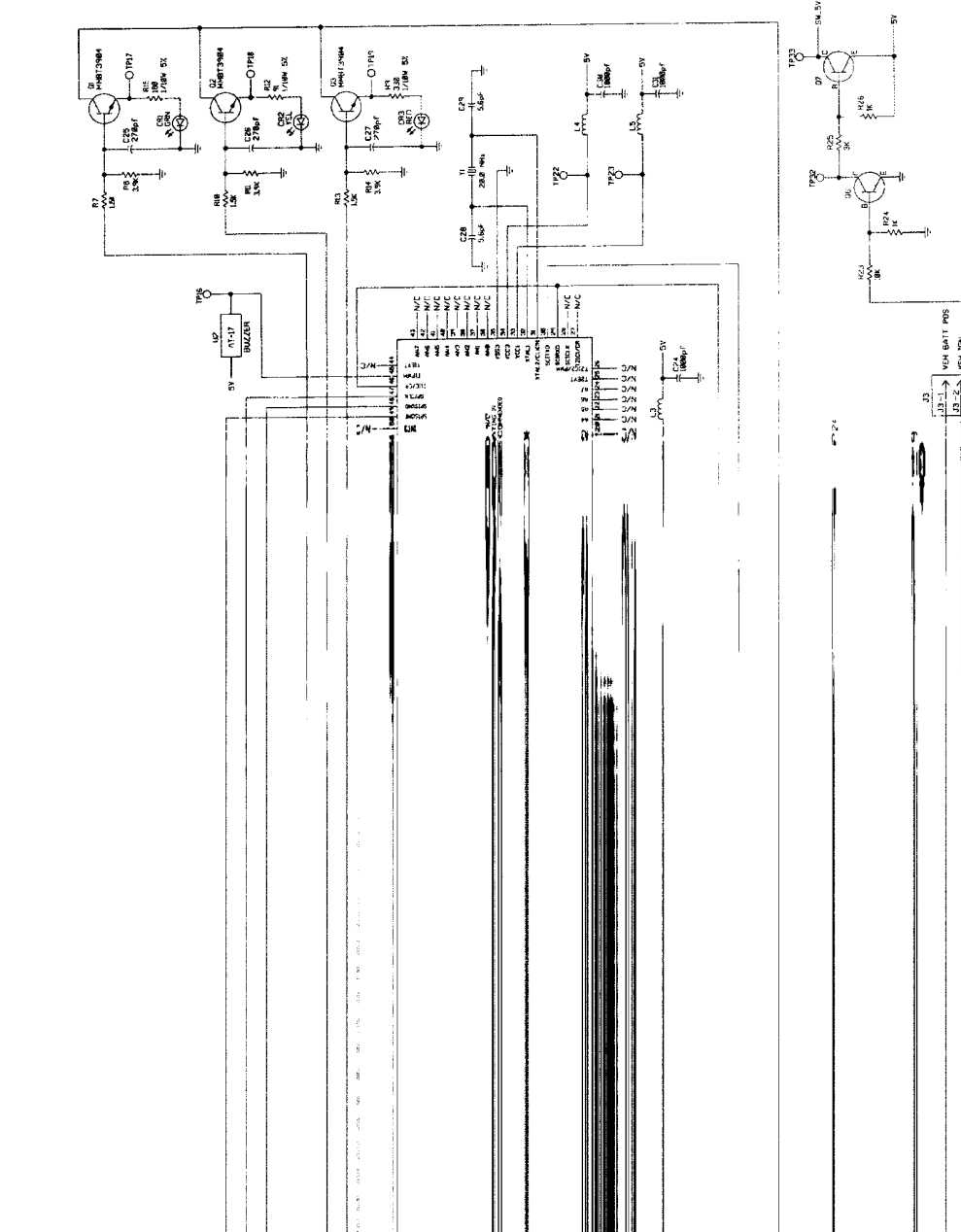
ETOL-JBUS

16230729A

SCH DIAC-DIG

DK140181

PCB DK14278



| KEY PRODUCT CHARACTERISTICS | SAFETY/ COMPLIANCE | ENVIRONMENTAL | FUNCTION | TOTAL F/F |
|-----------------------------|--------------------|---------------|----------|-----------|
| 0 | 0 | 0 | 0 | 0 |
| TOTAL ON DRAWING | | | | |
| LAST NUMBER USED | | | | |
| SHEET 1 OF 1 | | | | |

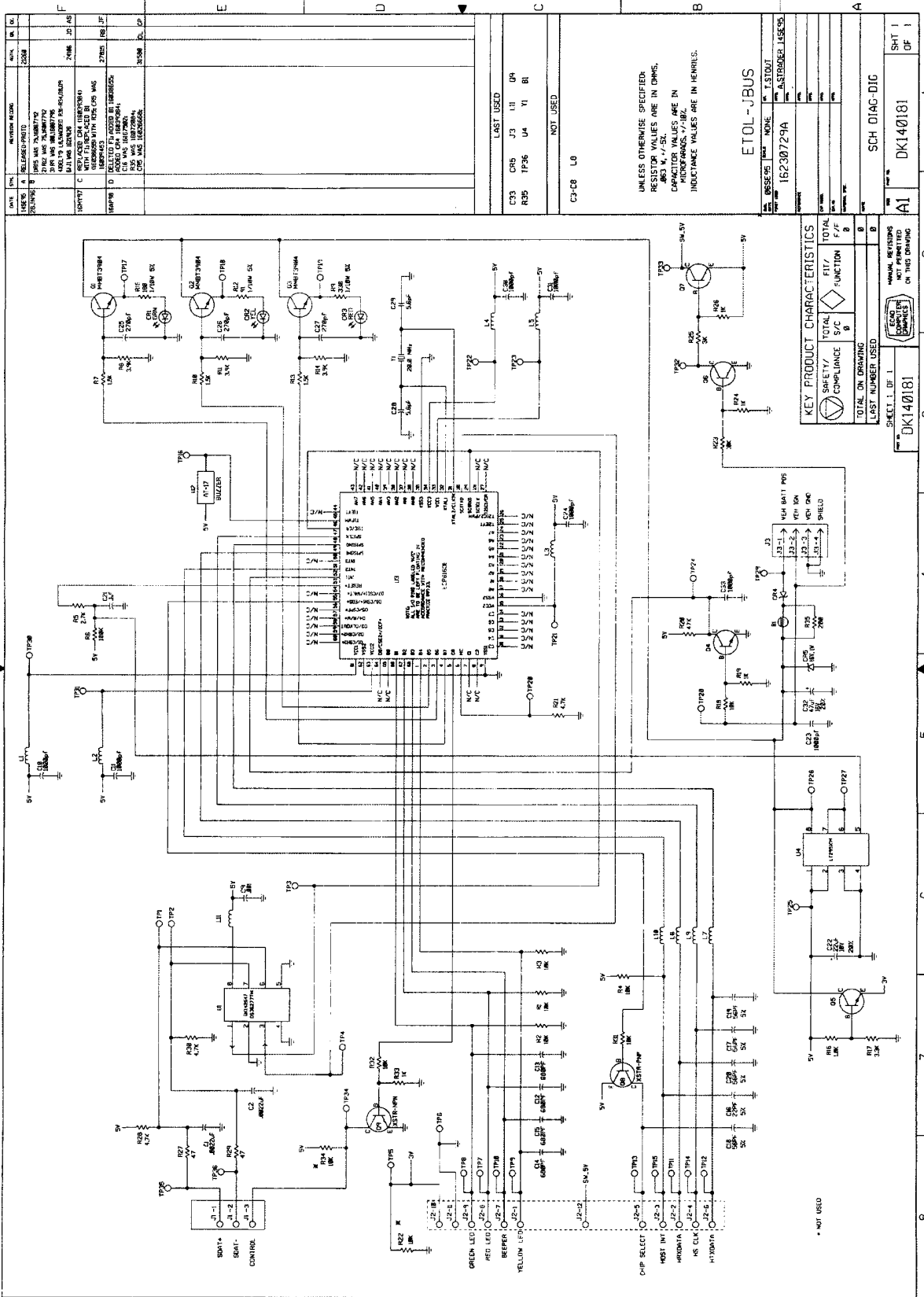
| |
|--|
| MANUAL REVISIONS NOT PERMITTED ON THIS DRAWING |
| DK140181 |
| 3 |

| |
|--|
| UNLESS OTHERWISE SPECIFIED, RESISTOR VALUES ARE IN OHMS, CAPACITOR VALUES ARE IN MICROFARADS, μ F/80C. INDUCTANCE VALUES ARE IN HENRIES. |
| ETOL-JBUS |
| 16230729A |
| SCH DIAC-DIG |
| DK140181 |
| PCB DK14278 |

| |
|-------------------|
| LAST USED |
| C33 CR5 J3 I11 O4 |
| R35 IP36 U4 Y1 B1 |
| NOT USED |
| C3-E0 L0 |

| |
|--|
| UNLESS OTHERWISE SPECIFIED, RESISTOR VALUES ARE IN OHMS, CAPACITOR VALUES ARE IN MICROFARADS, μ F/80C. INDUCTANCE VALUES ARE IN HENRIES. |
| ETOL-JBUS |
| 16230729A |
| SCH DIAC-DIG |
| DK140181 |
| PCB DK14278 |

| |
|--|
| UNLESS OTHERWISE SPECIFIED, RESISTOR VALUES ARE IN OHMS, CAPACITOR VALUES ARE IN MICROFARADS, μ F/80C. INDUCTANCE VALUES ARE IN HENRIES. |
| ETOL-JBUS |
| 16230729A |
| SCH DIAC-DIG |
| DK140181 |
| PCB DK14278 |



DELCO ELECTRONICS CORPORATION
 Division of General Motors Corporation

| DATE | BY | REVISION | REV. | OK. |
|----------|----|--|------|------|
| 10/25/75 | AS | RELEASED FOR PRODUCTION | 1 | 2350 |
| 10/25/75 | AS | DESIGN WAS EXAMINED FOR PRODUCTION AND FOUND TO BE CORRECT | 2 | 2350 |
| 10/25/75 | AS | DESIGN WAS EXAMINED FOR PRODUCTION AND FOUND TO BE CORRECT | 3 | 2350 |
| 10/25/75 | AS | DESIGN WAS EXAMINED FOR PRODUCTION AND FOUND TO BE CORRECT | 4 | 2350 |

| | | | |
|-----------------------------|------------------|-----------|----------------|
| KEY PRODUCT CHARACTERISTICS | TOTAL COMPLIANCE | TOTAL FIT | TOTAL FUNCTION |
| | | | |
| | | | |
| | | | |
| | | | |
| ETOL-IBUS | | | |
| 16230729A | | | |
| 12/18/75 | | | |
| 12/18/75 | | | |
| 12/18/75 | | | |
| 12/18/75 | | | |
| 12/18/75 | | | |
| 12/18/75 | | | |
| 12/18/75 | | | |
| 12/18/75 | | | |
| 12/18/75 | | | |
| 12/18/75 | | | |

| |
|---|
| UNLESS OTHERWISE SPECIFIED: RESISTOR VALUES ARE IN OHMS. CAPACITOR VALUES ARE IN MICROFARADS. INDUCTANCE VALUES ARE IN HENRYS. |
| ETOL-IBUS |
| 16230729A |
| 12/18/75 |
| 12/18/75 |
| 12/18/75 |
| 12/18/75 |
| 12/18/75 |
| 12/18/75 |
| 12/18/75 |
| 12/18/75 |

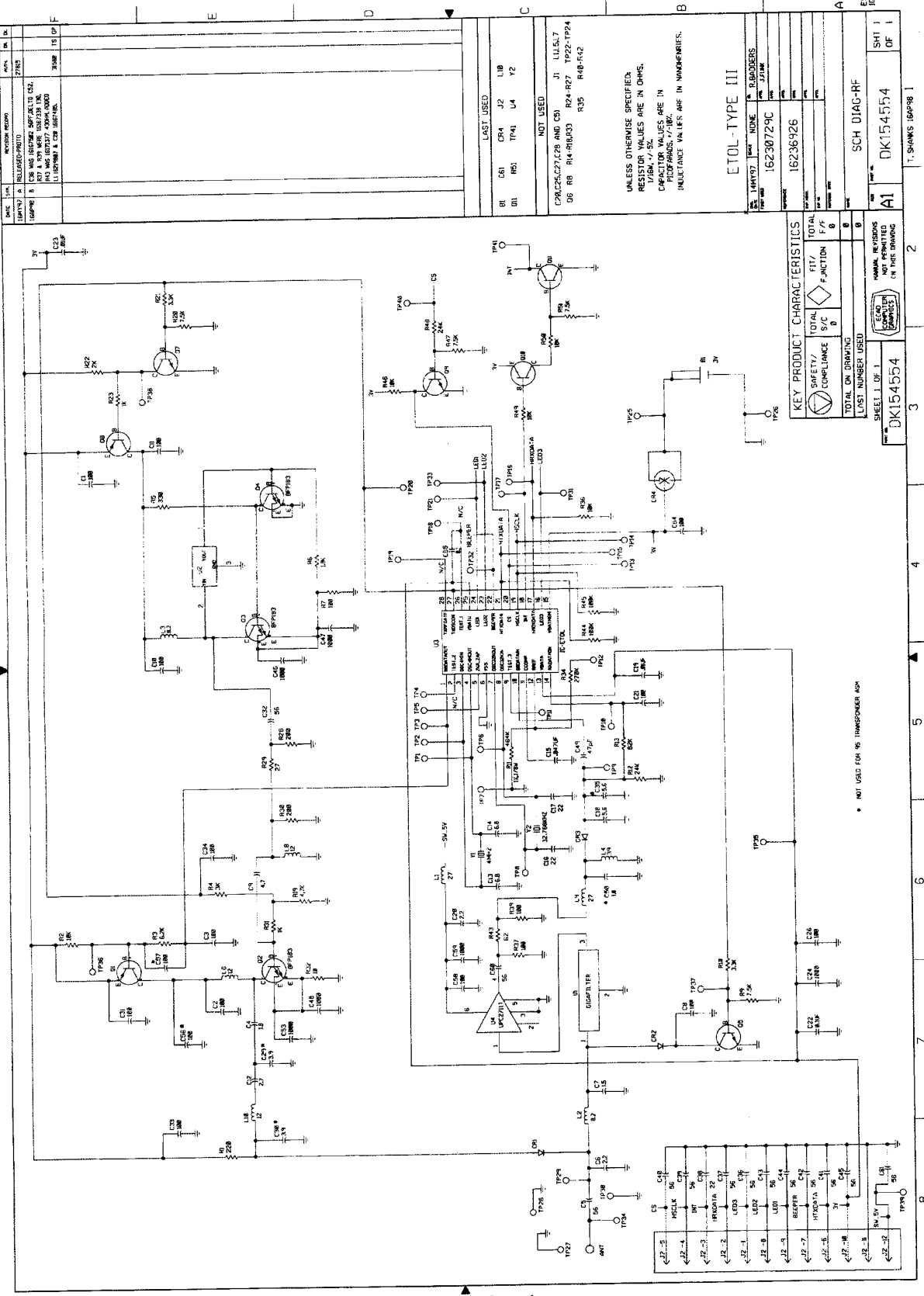
| | | | | |
|----------|------|----|----|----|
| C33 | C45 | J3 | L1 | U4 |
| R25 | TP36 | U4 | U1 | BI |
| NOT USED | | | | |
| C1-08 | L0 | | | |

| | | | | | | | |
|-----------------------------|--|------------------|--|-----------|--|----------------|--|
| KEY PRODUCT CHARACTERISTICS | | TOTAL COMPLIANCE | | TOTAL FIT | | TOTAL FUNCTION | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| ETOL-IBUS | | | | 16230729A | | | |
| 12/18/75 | | | | 12/18/75 | | | |
| 12/18/75 | | | | 12/18/75 | | | |
| 12/18/75 | | | | 12/18/75 | | | |
| 12/18/75 | | | | 12/18/75 | | | |
| 12/18/75 | | | | 12/18/75 | | | |
| 12/18/75 | | | | 12/18/75 | | | |
| 12/18/75 | | | | 12/18/75 | | | |

| |
|---|
| UNLESS OTHERWISE SPECIFIED: RESISTOR VALUES ARE IN OHMS. CAPACITOR VALUES ARE IN MICROFARADS. INDUCTANCE VALUES ARE IN HENRYS. |
| ETOL-IBUS |
| 16230729A |
| 12/18/75 |
| 12/18/75 |
| 12/18/75 |
| 12/18/75 |
| 12/18/75 |
| 12/18/75 |
| 12/18/75 |

| | | | | |
|----------|------|----|----|----|
| C33 | C45 | J3 | L1 | U4 |
| R25 | TP36 | U4 | U1 | BI |
| NOT USED | | | | |
| C1-08 | L0 | | | |

| | | | | |
|----------|----|--|------|------|
| DATE | BY | REVISION | REV. | OK. |
| 10/25/75 | AS | RELEASED FOR PRODUCTION | 1 | 2350 |
| 10/25/75 | AS | DESIGN WAS EXAMINED FOR PRODUCTION AND FOUND TO BE CORRECT | 2 | 2350 |
| 10/25/75 | AS | DESIGN WAS EXAMINED FOR PRODUCTION AND FOUND TO BE CORRECT | 3 | 2350 |
| 10/25/75 | AS | DESIGN WAS EXAMINED FOR PRODUCTION AND FOUND TO BE CORRECT | 4 | 2350 |



* NOT USED FOR 96 TRANSFORMER A04

| | | | | |
|----------|-----|-----------------------|----|-----|
| DATE | REV | DESCRIPTION | BY | CHK |
| 10/15/73 | 1 | REVISED FROM 10/15/73 | JL | JK |
| 10/15/73 | 2 | REVISED FROM 10/15/73 | JL | JK |
| 10/15/73 | 3 | REVISED FROM 10/15/73 | JL | JK |
| 10/15/73 | 4 | REVISED FROM 10/15/73 | JL | JK |
| 10/15/73 | 5 | REVISED FROM 10/15/73 | JL | JK |
| 10/15/73 | 6 | REVISED FROM 10/15/73 | JL | JK |
| 10/15/73 | 7 | REVISED FROM 10/15/73 | JL | JK |
| 10/15/73 | 8 | REVISED FROM 10/15/73 | JL | JK |

LAST USED
 U1 541 U4 J2 U8
 U2 151 U5 TPA U4 U2
 NOT USED
 C2A C25 C27 C28 AND C31 J1 L1 U5 L7
 D5 R8 R4 R6 R33 R35 R48 R52

UNLESS OTHERWISE SPECIFIED:
 RESISTOR VALUES ARE IN OHMS.
 CAPACITOR VALUES ARE IN MICROFARADS (1/1000)
 INDUCTANCE VALUES ARE IN MILLIHENRIES.

ETOL-TYPE III

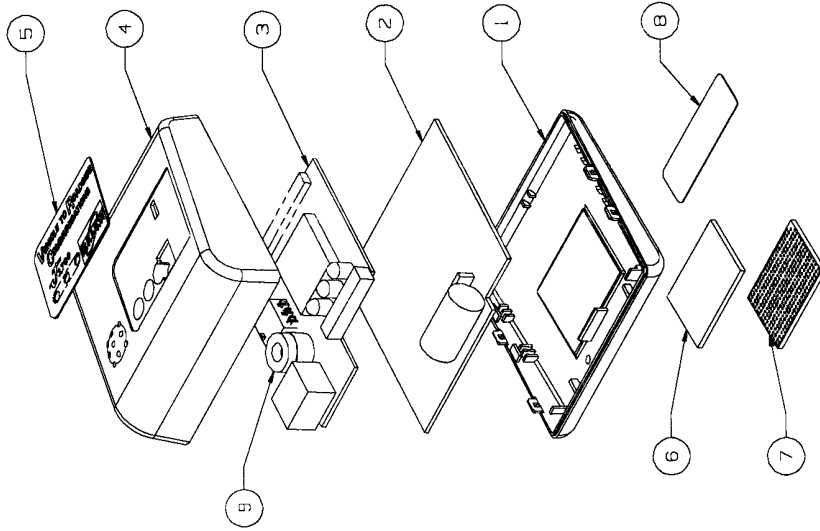
| | | | | |
|-----|----------|-----------------------|----|-----|
| REV | DATE | DESCRIPTION | BY | CHK |
| 1 | 10/15/73 | REVISED FROM 10/15/73 | JL | JK |
| 2 | 10/15/73 | REVISED FROM 10/15/73 | JL | JK |
| 3 | 10/15/73 | REVISED FROM 10/15/73 | JL | JK |
| 4 | 10/15/73 | REVISED FROM 10/15/73 | JL | JK |
| 5 | 10/15/73 | REVISED FROM 10/15/73 | JL | JK |
| 6 | 10/15/73 | REVISED FROM 10/15/73 | JL | JK |
| 7 | 10/15/73 | REVISED FROM 10/15/73 | JL | JK |
| 8 | 10/15/73 | REVISED FROM 10/15/73 | JL | JK |

| | | | | |
|-----------------------------|------------|------------------------------------|------|----------|
| KEY PRODUCT CHARACTERISTICS | | TOTAL | FIT/ | TOTAL |
| SAFETY/ | COMPLIANCE | S/C | F | FUNCTION |
| 0 | 0 | 0 | 0 | 0 |
| TOTAL ON DRAWING | | 0 | 0 | 0 |
| LIST NUMBER USED | | 0 | 0 | 0 |
| SHEET 1 OF 1 | | NAME, RELATIONS IN THIS DRAWING | | |
| DK154554 | | A1 | | |
| SCH DIAO-RF | | T. SHAWNS 10/15/73 | | |

| | | | |
|------|--------|---|---|
| U1 | 54LS16 | 1 | 1 |
| U2 | 54LS10 | 1 | 1 |
| U3 | 54LS00 | 1 | 1 |
| U4 | 54LS00 | 1 | 1 |
| U5 | 54LS00 | 1 | 1 |
| U6 | 54LS00 | 1 | 1 |
| U7 | 54LS00 | 1 | 1 |
| U8 | 54LS00 | 1 | 1 |
| U9 | 54LS00 | 1 | 1 |
| U10 | 54LS00 | 1 | 1 |
| U11 | 54LS00 | 1 | 1 |
| U12 | 54LS00 | 1 | 1 |
| U13 | 54LS00 | 1 | 1 |
| U14 | 54LS00 | 1 | 1 |
| U15 | 54LS00 | 1 | 1 |
| U16 | 54LS00 | 1 | 1 |
| U17 | 54LS00 | 1 | 1 |
| U18 | 54LS00 | 1 | 1 |
| U19 | 54LS00 | 1 | 1 |
| U20 | 54LS00 | 1 | 1 |
| U21 | 54LS00 | 1 | 1 |
| U22 | 54LS00 | 1 | 1 |
| U23 | 54LS00 | 1 | 1 |
| U24 | 54LS00 | 1 | 1 |
| U25 | 54LS00 | 1 | 1 |
| U26 | 54LS00 | 1 | 1 |
| U27 | 54LS00 | 1 | 1 |
| U28 | 54LS00 | 1 | 1 |
| U29 | 54LS00 | 1 | 1 |
| U30 | 54LS00 | 1 | 1 |
| U31 | 54LS00 | 1 | 1 |
| U32 | 54LS00 | 1 | 1 |
| U33 | 54LS00 | 1 | 1 |
| U34 | 54LS00 | 1 | 1 |
| U35 | 54LS00 | 1 | 1 |
| U36 | 54LS00 | 1 | 1 |
| U37 | 54LS00 | 1 | 1 |
| U38 | 54LS00 | 1 | 1 |
| U39 | 54LS00 | 1 | 1 |
| U40 | 54LS00 | 1 | 1 |
| U41 | 54LS00 | 1 | 1 |
| U42 | 54LS00 | 1 | 1 |
| U43 | 54LS00 | 1 | 1 |
| U44 | 54LS00 | 1 | 1 |
| U45 | 54LS00 | 1 | 1 |
| U46 | 54LS00 | 1 | 1 |
| U47 | 54LS00 | 1 | 1 |
| U48 | 54LS00 | 1 | 1 |
| U49 | 54LS00 | 1 | 1 |
| U50 | 54LS00 | 1 | 1 |
| U51 | 54LS00 | 1 | 1 |
| U52 | 54LS00 | 1 | 1 |
| U53 | 54LS00 | 1 | 1 |
| U54 | 54LS00 | 1 | 1 |
| U55 | 54LS00 | 1 | 1 |
| U56 | 54LS00 | 1 | 1 |
| U57 | 54LS00 | 1 | 1 |
| U58 | 54LS00 | 1 | 1 |
| U59 | 54LS00 | 1 | 1 |
| U60 | 54LS00 | 1 | 1 |
| U61 | 54LS00 | 1 | 1 |
| U62 | 54LS00 | 1 | 1 |
| U63 | 54LS00 | 1 | 1 |
| U64 | 54LS00 | 1 | 1 |
| U65 | 54LS00 | 1 | 1 |
| U66 | 54LS00 | 1 | 1 |
| U67 | 54LS00 | 1 | 1 |
| U68 | 54LS00 | 1 | 1 |
| U69 | 54LS00 | 1 | 1 |
| U70 | 54LS00 | 1 | 1 |
| U71 | 54LS00 | 1 | 1 |
| U72 | 54LS00 | 1 | 1 |
| U73 | 54LS00 | 1 | 1 |
| U74 | 54LS00 | 1 | 1 |
| U75 | 54LS00 | 1 | 1 |
| U76 | 54LS00 | 1 | 1 |
| U77 | 54LS00 | 1 | 1 |
| U78 | 54LS00 | 1 | 1 |
| U79 | 54LS00 | 1 | 1 |
| U80 | 54LS00 | 1 | 1 |
| U81 | 54LS00 | 1 | 1 |
| U82 | 54LS00 | 1 | 1 |
| U83 | 54LS00 | 1 | 1 |
| U84 | 54LS00 | 1 | 1 |
| U85 | 54LS00 | 1 | 1 |
| U86 | 54LS00 | 1 | 1 |
| U87 | 54LS00 | 1 | 1 |
| U88 | 54LS00 | 1 | 1 |
| U89 | 54LS00 | 1 | 1 |
| U90 | 54LS00 | 1 | 1 |
| U91 | 54LS00 | 1 | 1 |
| U92 | 54LS00 | 1 | 1 |
| U93 | 54LS00 | 1 | 1 |
| U94 | 54LS00 | 1 | 1 |
| U95 | 54LS00 | 1 | 1 |
| U96 | 54LS00 | 1 | 1 |
| U97 | 54LS00 | 1 | 1 |
| U98 | 54LS00 | 1 | 1 |
| U99 | 54LS00 | 1 | 1 |
| U100 | 54LS00 | 1 | 1 |

THIS ASSEMBLY SHALL CONSIST OF THE FOLLOWING

| ITEM | PART NO. | DESCRIPTION | QTY |
|------|----------|--------------------|-----|
| 1 | 16209033 | CASE | 1 |
| 2 | DK154551 | CIR BD ASM-RE-PROG | 1 |
| 3 | DK142572 | CIR BD ASM-BUS | 1 |
| 4 | 16205501 | COVER | 1 |
| 5 | DK144200 | APPLIQUE | 1 |
| 6 | 16220357 | FASTENER-W/S | 1 |
| 7 | 16220356 | FASTENER-TA | 1 |
| 8 | DK150055 | LABEL-ID.END | 1 |
| 9 | 16267522 | GASKET | 1 |



DATE 3/1988
 REVISION RECORD
 RELEASED PROTOTYPE
 AUTHORITY DR AP
 30852

SCALE 1/1

METRIC
 UNLESS OTHERWISE SPECIFIED: ALL DIMENSIONS ARE IN MILLIMETERS, AND THE TOLERANCES ARE:
 ONE PLACE DECIMALS ± 0.3
 TWO PLACE DECIMALS ± 0.25
 DRAFT ANGLES = 1° 30'
 SHARP CORNERS = R 0.25

SEE ASME Y14.5M-84
 FOR GD&T INTERPRETATION
 CHANGES ALLOWED ONLY BY
 PDM DOCUMENT PROCEDURES
 DO NOT THIRD ANGLE
 SCALE

DESIGN A, TIBBITTS 19115
 APP'RIC TIBBITTS 30498
 APR APR
 APR APR
 APR APR

FIRST USED 16230729D
 REFERENCE 16230729C
 EXP. DATE 16202749
 EXP. NUM

MATERIAL SPEC

RESTRICTED AND
 REPORTING CATEGORIES

KEY PRODUCT CHARACTERISTICS
 SAFETY/COMPLIANCE
 TOTAL ON DRAWING 0
 LAST NUMBER USED 0

DRAWING NAME TRANSponder ASM
 PART NUMBER 16230729D
 SHEET 1 OF 1
 SIZE A2