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P-5512A-02 AUTOMATED INSERTION COMPONENTS 05-14-98

PART NAME: LEADED OR LEADLESS ELECTRICAL COMPONENTS

PART NUMBER: VARIOUS

NOTE: AUTOMATED INSERTION EQUIPMENT REQUIRES SPECIAL PACKAGING METHODS, BULK PACKAGING SHOULD NOT BE USED TO SUPPLY PARTS. ADHERE TO THE SPECIFIC SECTION OF THIS ATTACHMENT FOR THE COMPONENT TYPE SUPPLIED. QUESTIONS CONCERNING THE SPECIFIC PACKAGING FOR A COMPONENT SHOULD BE ADDRESSED TO PACKAGING ENGINEERING.

MARKING AND LABELING INSTRUCTIONS:

REELS SHALL BE MARKED WITH RAYTHEON PART NUMBER/NAME, QUANTITY, LOT NUMBER, DATE OF REELING (MONTH/YEAR). EACH SHIPPING CONTAINER SHALL BE MARKED WITH RAYTHEON PART NUMBER(S)/NAME(S), QUANTITY(S), PURCHASE ORDER NUMBER(S) AND VENDOR'S NAME/ADDRESS. PLACE A MOISTURE SENSITIVE LABEL ON THE CONTAINER AND SPECIFIC PACKAGING THAT PROTECTS THE COMPONENTS FROM MOISTURE AS NEEDED.

-----COMPONENT PACKAGING SECTIONS-----

AXIAL LEADED COMPONENTS  
RADIAL LEADED DEVICES  
LEADLESS CHIP COMPONENTS  
DIP'S IN STICK PACK COMPONENTS  
LEADLESS CHIPS IN SLIDE PACKS  
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AXIAL LEADED COMPONENT PACKAGING

PACKAGING, AXIAL LEADED TAPE AND REEL: AFTER REELING, A FLEXIBLE SINGLE-FACED CORRUGATED FIBERBOARD STRIP, SHALL BE WRAPPED AROUND THE COMPONENTS AND SECURED WITH MASKING TAPE OR EQUIVALENT. THE WIDTH OF THE STRIP SHALL BE 1/8-TO 1/2-INCH LESS THAN THE I.D. OF THE REEL. PLACE ANY NUMBER OF REELS INTO A SHIPPING CONTAINER WHICH SHALL BE A CORRUGATED FIBERBOARD BOX, DOMESTIC, RSC, OF SUFFICIENT QUALITY AND STRENGTH TO INSURE SAFE ARRIVAL OF PARTS. A MAXIMUM GROSS WEIGHT OF 40 POUNDS IS RECOMMENDED BUT DO NOT EXCEED WEIGHT LIMITATIONS OF CONTAINER. FILL VOIDS WITH CUSHIONING.

REFERENCE ANSI/EIA-296.

1. COMPONENT LEADS SHALL NOT BE BENT BEYOND .047" FROM THEIR NOMINAL POSITION.
2. THE OVERALL MAXIMUM COMPONENT LENGTH (TAPED) SHALL BE 3.10".
3. COMPONENT BODY DIAMETER SHALL BE NO LARGER

THAN .394". ORIENTATION.

4. ALL POLARIZED COMPONENTS MUST BE ORIENTED IN ONE DIRECTION. THE CATHODE LEAD TAPE SHALL BE A COLOR AND THE ANODE LEAD TAPE SHALL BE WHITE.

-----REELING-----

5. COMPONENT SPACING SHALL BE EITHER .200" PLUS/MINUS .015", OR .400" PLUS/MINUS .015".

6. COMPONENT LEADS SHALL BE POSITIONED BETWEEN PAIRS OF .25" TAPE.  
USE MINNESOTA MINING AND MANUFACTURING COMPANY #267 OR EQUIVALENT.

7. INSIDE EDGE OF TAPE TO INSIDE EDGE OF TAPE SHALL BE BETWEEN 2.00" AND 2.60".

8. THE INSIDE DIMENSION OF THE REEL SHALL BE GOVERNED BY THE OVERALL LENGTH OF THE REEL PACKAGED COMPONENT. THE DISTANCE BETWEEN FLANGES SHALL BE .059" TO .315" GREATER THAN THE OVERALL COMPONENT LENGTH.

9. REELS SHALL BE DISPOSABLE METAL, CHIPBOARD, PLASTIC OR EQUIVALENT.

10. A MINIMUM 12" LEADER OF TAPE SHALL BE PROVIDED AT EACH END OF THE REEL.

11. FLAT PAPER, 50 TO 60 POUND, MUST BE WOUND BETWEEN LAYERS OF COMPONENTS. WIDTH OF PAPER TO BE .062" TO .25" LESS THAN THE INSIDE DIMENSION OF THE REEL. THE PAPER MUST BE CHEMICALLY NEUTRAL NON-CORROSIVE WRAPPING PAPER.

12. ROW OF COMPONENTS MUST BE CENTERED BETWEEN TAPES WITHIN .055". IN ADDITION, INDIVIDUAL COMPONENTS MAY DEVIATE FROM CENTER OF COMPONENT ROW PLUS/MINUS .031".

13. STAPLES SHALL NOT BE USED FOR SPLICING. NO MORE THAN 4 LAYERS OF TAPE SHALL BE USED IN ANY SPLICE AREA AND NO TAPE SHALL BE OFFSET FROM ANOTHER BY MORE THAN .031" NONCUMULATIVE. TAPE SPLICES SHALL OVERLAP AT LEAST 6-INCHES FOR BUTT JOINTS AND AT LEAST 3-INCHES FOR LAP JOINTS, AND SHALL NOT BE WEAKER THAN UNSPLICED TAPE. UNIVERSAL SPLICING CLIPS MAY ALSO BE USED.

14. QUANTITY PER REEL SHALL BE CONTROLLED SO THAT TAPED COMPONENTS AND COVER SHALL NOT EXTEND BEYOND THE SMALLEST DIMENSION OF THE FLANGE (EITHER ACROSS FLATS OR DIAMETER). ONCE THE QUANTITY PER REEL FOR EACH PART NUMBER HAS BEEN ESTABLISHED, FUTURE ORDERS FOR THAT PART SHALL BE PACKAGED IN THAT QUANTITY.

15. THERE SHALL BE NO MISSING COMPONENTS.

16. IF THE ORDER QUANTITY CONSISTS OF 200 TO 500 PARTS, COMPLIANCE TO THE TAPING, SHIPPING CONTAINERIZATION, AND MARKING REQUIREMENTS ARE NEEDED. ORDER QUANTITIES OF LESS THAN 200 PARTS DO NOT REQUIRE REELING. VENDOR'S COMMERCIAL PACK WILL SUFFICE, BUT LEADS ARE TO BE PROTECTED AND MAINTAINED IN A STRAIGHT CONDITION.

17. STATIC SENSITIVE COMPONENTS REELS SHALL BE LABELED ACCORDINGLY.

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RADIAL LEADED DEVICES

PACKAGING, RADIAL LEADED DEVICES REEL PACK:  
REFERENCE EIA-468 FOR REEL AND TAPE REQUIREMENTS.

THE HEIGHT TO THE SEATING PLANE, DIMENSION "H" AS DESCRIBED IN SECTION 3.17 OF EIA-468 AND REFERENCED AS THE ABSCISSA IN SECTION 5.1 OF EIA-468 SHALL BE .065 INCHES MINIMUM TO .885 INCHES MAXIMUM.

IF THE ORDER QUANTITY CONSISTS OF 200 OR LESS PARTS, THE PARTS SHALL BE TAPED OR AMMO PACKS MAY BE USED.

AFTER COMPONENTS ARE REELED PLACE EACH REEL IN A STATIC SHIELDING OR CONDUCTIVE BAG. DO NOT HEAT SEAL. PLACE A SENSITIVE ELECTRONIC DEVICE CAUTION LABEL OR EQUIVALENT ON THE BAG AND SHIPPING CONTAINER. ANY NUMBER OF REELS CAN BE PLACED INTO A SHIPPING CONTAINER WHICH SHALL BE A CORRUGATED FIBERBOARD BOX, DOMESTIC, RSC, OF SUFFICIENT QUALITY AND STRENGTH TO INSURE SAFE ARRIVAL OF PARTS. A MAXIMUM GROSS WEIGHT OF 40 POUNDS IS RECOMMENDED BUT DO NOT EXCEED WEIGHT LIMITATIONS OF CONTAINER. FILL VOIDS WITH CUSHIONING.

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LEADLESS CHIP COMPONENT PACKAGING

PACKAGING, LEADLESS CHIP COMPONENTS REEL PACK:  
(REFERENCE EIA-481, REV A (ELECTRONICS INDUSTRY ASSOCIATION) FOR REEL AND TAPE REQUIREMENTS. AFTER COMPONENTS ARE REELED PLACE EACH REEL IN A STATIC SHIELDING OR CONDUCTIVE BAG. DO NOT HEAT SEAL. PLACE A SENSITIVE ELECTRONIC DEVICE CAUTION LABEL OR EQUIVALENT ON THE BAG AND SHIPPING CONTAINER. ANY NUMBER OF REELS CAN BE PLACED INTO A SHIPPING CONTAINER WHICH SHALL BE A CORRUGATED FIBERBOARD BOX, DOMESTIC, RSC, OF SUFFICIENT QUALITY AND STRENGTH TO INSURE SAFE ARRIVAL OF PARTS.

A MAXIMUM GROSS WEIGHT OF 40 POUNDS IS RECOMMENDED BUT DO NOT EXCEED WEIGHT LIMITATIONS OF CONTAINER. FILL VOIDS WITH CUSHIONING.

-----ORIENTATION-----

1. ALL POLARIZED COMPONENTS MUST BE ORIENTED IN ONE DIRECTION. THE NEGATIVE TERMINATION IS TO BE NEXT TO THE SPROCKET INDEXING HOLES.
2. CHIP RESISTORS SHALL BE PACKAGED WITH THE RESIST MATERIAL FACING THE TOP COVER TAPE. COMPONENTS WITH BOTTOM-ONLY TERMINATIONS SHALL BE PACKAGED WITH THE TERMINATIONS FACING THE BOTTOM COVER TAPE OR EMBOSSED CARRIER.

-----REELING-----

3. UNLESS SPECIFIED, TAPE WIDTH SHALL BE 8MM, 12MM, OR 16MM PER EIA-481, REV A. THE DIMENSIONS OF THE REEL POCKETS SHALL BE DETERMINED BY COMPONENT SIZE. THE CLEARANCE BETWEEN THE COMPONENT AND THE CAVITY MUST BE WITHIN .002 MIN. TO .020 MAX., ALSO, THE COMPONENT CANNOT ROTATE MORE THAN 20 DEG. WITHIN THE DETERMINED CAVITY.
4. REELS SHALL BE DISPOSABLE METAL OR PLASTIC. STATIC SAFE MATERIALS ARE PREFERRED.
5. THE TOP COVER TAPE FOR EACH CARRIER TAPE SHALL HAVE A PEEL STRENGTH OF +40 OR -30 GRAMS, MEASURED AT 175 DEG TO 180 DEG WITH RESPECT TO THE COMPONENT CARRIER ALONG THE LONGITUDINAL AXIS OF THE CARRIER TAPE. THE PEEL-OFF SPEED SHALL BE 120 +5 OR -5 MM/MIN.
6. AFTER REELING, THE EMBOSSED TAPE SHALL BE SECURED SO THAT NO UNWINDING OCCURS. IF THE ENDS ARE TAPED THE TAPE STRIP SHALL BE LESS THAN THE INSIDE DIMENSION OF THE REEL. A MINIMUM 16" LEADER WITH SEALED COVER TAPE SHALL BE PROVIDED AT EACH END OF THE REEL.
7. QUANTITY PER REEL SHALL BE CONTROLLED SO THAT TAPED COMPONENTS AND COVER SHALL NOT EXTEND BEYOND THE SMALLEST DIMENSION OF THE FLANGE (EITHER ACROSS FLATS OR DIAMETER). ONCE THE QUANTITY PER REEL FOR EACH PART NUMBER HAS BEEN ESTABLISHED, FUTURE ORDERS FOR THAT PART SHALL BE PACKAGED IN THAT QUANTITY.
8. THERE SHALL BE NO MORE THAN 2 CONSECUTIVE MISSING COMPONENTS.
9. IF LESS THAN 100 PARTS ARE ORDERED, VENDOR'S COMMERCIAL PACK WILL SUFFICE IF PARTS CAN BE EASILY HANDLED. BULK PACKAGING, VIALS, BAGS, AND TUBES WILL NOT SUFFICE.
10. REGARDLESS OF TAPE SIZE, COMPONENT SIZE, OR

PITCH SIZE USED, THE CENTERLINE OF THE COMPONENT CAVITY, OR POSITION, IS TO BE LOCATED MIDWAY BETWEEN A PAIR OF SPROCKET HOLES IN THE LENGTHWISE DIRECTION OF THE TAPE.

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#### DIP'S IN STICK PACK COMPONENT PACKAGING

STATIC DISSIPATIVE, CONDUCTIVE OR STATIC SHIELDING STICK PACKS ARE TO BE USED.

FILL STICK PACK WITH DIP'S TO CAPACITY. THE #1 PIN OF ALL THE DIP'S SHALL BE ORIENTED IN THE SAME DIRECTION. A PIN OR PLUG SHALL BE INSERTED IN EACH END OF THE STICK PACK. IF LESS THAN A FULL STICK PACK IS REQUIRED, A SUITABLE PIN, PLUG OR RESTRICTIVE DEVICE SHALL BE USED TO RESTRICT MOVEMENT. THE PINS, PLUGS OR RESTRICTIVE DEVICES SHALL BE MADE OF ANTI-STATIC OR CONDUCTIVE MATERIAL. WHEN THE PINS, PLUGS OR RESTRICTIVE DEVICES ARE REMOVED, THE DIP'S SHALL BE ABLE TO SLIDE SMOOTHLY OUT OF THE STICK PACK. STICK PACKS SHALL BE STRAIGHT, NOT CURVED. THE STICKS WILL NOT BE DEFORMED IN ANY MANNER WHICH RESTRICTS SMOOTH MOVEMENT AND EXIT OF COMPONENTS FROM THE TUBE. STICKS SHALL BE PLACED INTO A STATIC SHIELDING BARRIER BAG. HEATSEAL OR TAPE THE BAG CLOSED. UNLIKE PART NUMBERS SHALL NOT BE PACKAGED TOGETHER.

AFTER COMPONENTS HAVE BEEN PLACED INSIDE STATIC SHIELDING OR CONDUCTIVE BAG(S). PLACE A SENSITIVE ELECTRONIC DEVICE CAUTION LABEL OR EQUIVALENT ON THE BAG AND SHIPPING CONTAINER. ANY NUMBER OF STICK PACKS CAN BE PLACED INTO A SHIPPING CONTAINER WHICH SHALL BE A CORRUGATED FIBERBOARD BOX, DOMESTIC, RSC, OF SUFFICIENT QUALITY AND STRENGTH TO INSURE SAFE ARRIVAL OF PARTS. A MAXIMUM GROSS WEIGHT OF 40 POUNDS IS RECOMMENDED BUT DO NOT EXCEED WEIGHT LIMITATIONS OF CONTAINER. FILL VOIDS WITH CUSHIONING.

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#### LEADLESS CHIPS IN SLIDE PACK PACKAGING

STATIC DISSIPATIVE, CONDUCTIVE OR STATIC SHIELDING SLIDE PACK ARE TO BE USED

FILL SLIDE PACK WITH PARTS TO CAPACITY. A PIN OR PLUG SHALL BE INSERTED IN EACH END OF THE SLIDE PACK. THE NUMBER 1 PIN TO BE ORIENTED PARALLEL TO THE AXIS OF FEED (TRAVEL) AND IN ONE COMMON

DIRECTION INSIDE THE TUBE. IF LESS THAN A FULL SLIDE PACK IS REQUIRED, A SUITABLE PIN, PLUG OR RESTRICTIVE DEVICE SHALL BE USED TO RESTRICT MOVEMENT OF THE PARTS. THE PINS, PLUGS, OR RESTRICTIVE DEVICES SHALL BE FABRICATED FROM ANTI-STATIC OR CONDUCTIVE MATERIAL. UPON REMOVAL THE PARTS SHALL BE ABLE TO SLIDE SMOOTHLY OUT OF THE SLIDE PACK. SLIDE PACKS SHALL BE STRAIGHT, NOT CURVED. THE PACKS WILL NOT BE DEFORMED IN ANY MANNER WHICH RESTRICTS SMOOTH MOVEMENT AND EXIT OF COMPONENTS FROM THE TUBE. SLIDE PACKS SHALL BE PLACED INTO A STATIC SHIELDING BARRIER BAG. HEATSEAL OR TAPE THE BAG CLOSED. UNLIKE PART NUMBERS SHALL NOT BE PACKAGED TOGETHER.

AFTER COMPONENTS HAVE BEEN PLACED INSIDE STATIC SHIELDING OR CONDUCTIVE BAG(S). PLACE A SENSITIVE ELECTRONIC DEVICE CAUTION LABEL OR EQUIVALENT ON THE BAG AND SHIPPING CONTAINER. ANY NUMBER OF SLIDE PACKS CAN BE PLACED INTO A SHIPPING CONTAINER WHICH SHALL BE A CORRUGATED FIBERBOARD BOX, DOMESTIC, RSC, OF SUFFICIENT QUALITY AND STRENGTH TO INSURE SAFE ARRIVAL OF PARTS. A MAXIMUM GROSS WEIGHT OF 40 POUNDS IS RECOMMENDED BUT DO NOT EXCEED WEIGHT LIMITATIONS OF CONTAINER. FILL VOIDS WITH CUSHIONING.

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GENERAL REQUIREMENTS:  
THIS ATTACHMENT, WITH ITS TERMS AND CONDITIONS, IS AN INTEGRAL PART OF THIS PURCHASE ORDER.

NOTE: TO PRESERVE THE ENVIRONMENT, IT IS RECOMMENDED THAT PACKAGING MATERIALS WHICH ARE MANUFACTURED FROM, AND OR, WITH CFC'S (CHLOROFLOUROCARBONS) NOT BE USED.