TITLE: SPECIFICATION CONTROL DRAWING

PART IDENTIFIER: HRT**XXXXXXXW3**

- XX-TEMPERATURE COEFFICIENT OF ATTENUATION 1X10³ DB/DB/°C
- X-ATTENUATION SHIFT NEGATIVE OR POSITIVE.
- XX-TEST CODE: 0A=GROUP A; 0B=GROUP B; 0C=GROUP C
- XX DB VALUE SEE TABLE BELOW.

SHIFT (NEG)	DB VALUE	SHIFT (POS)	DB VALUE
-.003	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	.003	1, 3, 4, 6
-.004	1, 2, 3, 4, 5, 6, 7, 8	.005	1, 3, 6
-.005	1, 2, 3, 4, 5, 6, 7,10	.006	1
-.006	1, 2, 3, 4, 5, 6, 7, 8	.007	1, 2, 3, 6
-.007	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	.008	6
-.009	1, 2, 3, 4, 5, 6	.009	6

DESCRIPTION: TEMPERATURE VARIABLE CHIP ATTENUATOR WITH HIGH RELIABILITY TESTING.

NOTE: SINGLE LOT AND DATE CODE AVAILABLE UPON REQUEST.

ASSEMBLY DWG: N/A

1.0 SPECIFICATIONS:

1.1 ELECTRICAL:
- 1.1.1 IMPEDANCE: 50 OHMS NOMINAL.
- 1.1.2 OPERATING FREQUENCY RANGE: DC - 6 GHZ.
- 1.1.3 ATTENUATION VALUES AVAILABLE: SEE TABLE ABOVE.
- 1.1.4 ATTENUATION ACCURACY AT 25°C: ±0.5DB @ 1 GHZ.
- 1.1.5 VSWR: 1.30:1 MAX. @ 1GHZ.
- 1.1.6 INPUT POWER: NEGATIVE SHIFTING: 2 WATTS CW.
  POSITIVE SHIFTING: 0.25 WATTS CW.
  - 1.1.6.1 FULL RATED POWER TO 125°C, DERATED LINEARLY TO 0 WATTS AT 150°C.
- 1.1.7 TEMPERATURE COEFFICIENT OVER OPERATING TEMPERATURE RANGE:
  SEE TABLE ABOVE, TEMPERATURE COEFFICIENT TOLERANCE: ±0.001 DB/DB/°C.

1.2 MECHANICAL:
- 1.2.1 OUTLINE DWG: SEE SHEET 3.
- 1.2.2 WORKMANSHIP: PER MIL-PRF-55342.

1.3 ENVIRONMENTAL:
- 1.3.1 OPERATING TEMPERATURE RANGE: -55°C TO +150°C.

1.4 ELECTROSTATIC DISCHARGE CONTROL: PER MIL-STD-1686.

2.0 UNIT MARKING: DB VALUE (X), DIRECTION OF SHIFT (N OR P) AND TCA SHIFT (X).
LEGIBILITY AND PERMANENCY PER MIL-STD-130.

3.0 QUALITY ASSURANCE:

3.1 VERIFY 100% VISUAL PRE-CAP INSPECTION PERFORMED PER TP-8965.

3.2 PERFOM GROUP A, B AND/OR C TESTING AS INDICATED BY THE PART NUMBER PER TP-8965.
- 3.2.1 GROUP A TESTING
  - 3.2.1.1 VISUAL AND MECHNICAL INSPECTION PER SHEET 3.
  - 3.2.1.2 INITIAL RF MEASUREMENTS – MEASURE AND RECORD VSWR @ 1 GHZ AND ATTENUATION AT DC (0 GHZ) AND 1.0 GHZ.
  - 3.2.1.3 THERMAL SHOCK – 10 CYCLES FROM -55°C TO +125°C.
  - 3.2.1.4 AFTER THERMAL SHOCK RF MEASUREMENTS - MEASURE AND RECORD VSWR @ 1 GHZ AND ATTENUATION AT DC (0 GHZ) AND 1.0 GHZ.
  - 3.2.1.5 BURN-IN – DURATION OF 168 HRS AT INPUT POWER SEE 1.1.6.
  - 3.2.1.6 SUB-GROUP 1 (3 SAMPLES)
    - 3.2.1.6.1 TCA MEASUREMENT - MEASURE AND RECORD ATTENUATION AT DC EVERY 20°C FROM -55°C TO +125°C PER 2.5.1 OF TP-8965.
    - 3.2.1.7.2 CALCULATE, USING LINEAR REGRESSION, THE SLOPE OF THE CURVE.

CALCULATE TCA USING THE FOLLOWING FORMULA:
TCA = SLOPE .
ATTENUATION @ 25°C

3.3.1.7.3 ACCEPTANCE LIMITS: NOMINAL TCA +/-0.001 dB/dB/°C.

3.2.2 GROUP B TESTING (7 SAMPLES APPROVED FROM GROUP A).
- 3.2.2.1 SUB-GROUP 1 (3 SAMPLES)
  - 3.2.2.1.1 LOW TEMPERATURE OPERATION
    - 3.2.2.1.1.1 USE FINAL ELECTRICAL MEASUREMENTS FROM GROUP A.
    - 3.2.2.1.1.2 DISSIPATE LOW POWER FOR A DURATION OF 45 +5/-0 MINUTES. ALLOW TO STABILIZE AT 25°C FOR 24 HOURS.
  - 3.2.2.1.2 AFTER LOW TEMPERATURE ELECTRICAL MEASUREMENTS - MEASURE AND RECORD VSWR @ 1 GHZ AND ATTENUATION AT DC (0 GHZ) AND 1.0 GHZ.
  - 3.2.2.1.3 HIGH TEMPERATURE BAKE – +125°C +/- 5°C FOR 100 HRS THEN STABILIZE AT 25°C FOR 4 HRS.
    - 3.2.2.1.3.1 VISUAL EXAMINATION - INSPECT FOR EVIDENCE OF MECHANCIAL DAMAGE.
  - 3.2.2.1.4 AFTER HIGH TEMPERATURE BAKE ELECTRICAL TEST - MEASURE AND RECORD VSWR @ 1 GHZ AND ATTENUATION AT DC (0 GHZ) AND 1.0 GHZ.
  - 3.2.2.1.5 TERMINATION ADHESION - SOLDER A WIRE AND PULL WITH 15 GRAMS PERPENDICULAR TO AND AWAY FROM THE SURFACE AREA.
    - 3.2.2.1.5.1 VISUAL INSPECTION – THERE SHALL BE NO SEPARATION OF MATERIAL.
  - 3.2.2.1.6 TERMINATION SOLDERABILITY IMMERSE EACH SAMPLE 5 SECONDS IN A SOLDER POT HELD AT 220°C +/- 5°C USING 60/40 OR 63/37 TIN-LEAD COMPOSITION.
- 3.2.2.2 SUB-GROUP 2 (4 SAMPLES)
  - 3.2.2.2.1 INITIAL RF MEASUREMENTS - USE FINAL ELECTRICAL MEASUREMENTS FROM GROUP A.
  - 3.2.2.2.2 LIFE TEST – OPERATE SAMPLES UNITS FOR 1000 HRS AT 70°C AT INPUT POWER PER 1.1.6. ELECTRICAL MEASUREMENTS SHALL BE MADE AT 250 +48/-0 HRS, 500 +48/-0 HRS, AND 1000 +48/-0 HRS.
  - 3.2.2.2.3 FINAL RF MEASUREMENTS - MEASURE AND RECORD VSWR @ 1 GHZ AND ATTENUATION AT DC (0 GHZ) AND 1.0 GHZ.

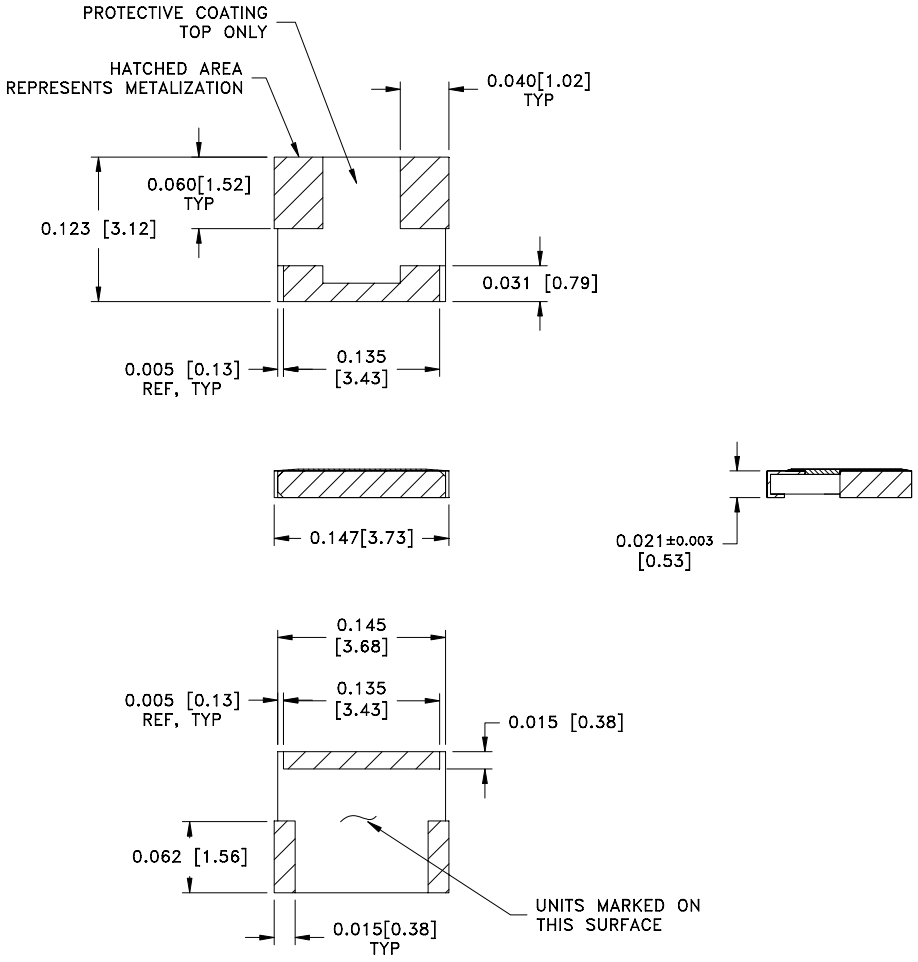
3.2.3 GROUP C (QCI TESTING 4 SAMPLES APPROVED FROM GROUP A).
- 3.2.3.1 LOAD LIFE TEST – BURN-IN UNITS AT 70°C WITH INPUT POWER (SEE 1.1.6) FOR A DURATION OF 1000 HOURS (1½ HOURS ON, ½ HOUR OFF). MEASURE AND RECORD ELECTRICALS AT 0, 250, 500, AND 1000 HOURS.
- 3.2.3.2 AFTER LOAD LIFE RF MEASUREMENTS – MEASURE AND RECORD VSWR AND ATTENUATION AT 1 GHZ AT 25°C. TEST ACCEPTABLE LIMITS PER 4.2.1 OF TP-8965.

3.4 TEST DATA REQUIREMENTS:
- 3.4.1 TEST DATA REQUIRED FOR CUSTOMER - SEE PARAGRAPH 5.0 OF TP-8965.
- 3.4.2 DATA RETENTION - 24 MONTHS.
- 3.4.3 TEST SAMPLES REQUIRED FOR CUSTOMER - SEE PARAGRAPH 5.0 OF TP-8965.

4.0 PACKAGING: STANDARD PACK PER MC0023. (SERIALIZED WAFFLE PACK)

PART ID REF
HRTXXXXXXXW3

U.S. PATENT NO. 5332981

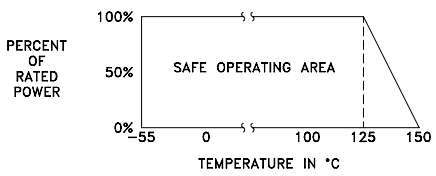


MECHANICAL SPECIFICATIONS:

SUBSTRATE:
MATERIAL – ALUMINA 96%, MIL–I–10.
TERMINAL:
MATERIAL – THICK FILM, NICKEL BARRIER, SOLDER PLATED.
RESISTIVE ELEMENT:
MATERIAL – THICK FILM.

METRIC EQUIVALENTS GIVEN IN [mm]
ARE FOR REFERENCE INFORMATION ONLY

POWER RATING AND DERATING



EMC Technology Inc
8851 SW OLD KANSAS AVE
STUART, FL 34997
PHONE NO. (772)286–9300
FAX NO. (772)283–5286

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES
FRACT -- --
ANG -- --
XX -- --
XXX ±0.005
XXXX -- --

CAGE CODE	SCALE	DRAWN BY	CHECKED BY	APPROVED BY
24602	10:1	JG		

REV	CHANGE NOTICE	DRAWING NO	SHEET
–	EN 03–266	1009755000	3 OF 3