

**TITLE: SPECIFICATION CONTROL DRAWING**

**PART IDENTIFIER:** HR03XXXW1S

(X)=TEST CODE: A=GROUP A; B=GROUP B; C=GROUP C  
 (XX)=DB VALUE (01-20DB)

**DESCRIPTION:** 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 FREQUENCY RANGE: DC-8 GHZ.
  - 1.1.3 ATTENUATION VALUES AVAILABLE: 1-20 DB IN 1 DB INCREMENTS.
  - 1.1.4 ATTENUATION ACCURACY: SEE TABLE.

ATTENUATION ACCURACY		
DB	DC - 4 GHZ	4 - 8 GHZ
1 -3	±0.3	±0.5
4 - 6	±0.4	±0.5
7 - 10	±0.5	±0.5
11 - 15	±0.75	+0.5,-3.0
16 - 20	±1.0	+0.5,-4.0

- 1.1.5 VSWR: DC - 4 GHZ - 1.25.  
4 - 8 GHZ - 1.35.
- 1.1.6 INPUT POWER: 2 WATTS CW.
  - 1.1.6.1 FULL RATED POWER TO 125°C, DERATED LINEARLY TO 0 WATTS AT 150°C.
  - 1.1.6.2 PEAK POWER, 50 WATTS FOR 10US PULSE WIDTH @ 1% DUTY CYCLE.
- 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 ALTITUDE:
    - 1.3.1.1 NON-OPERATING: SEA LEVEL TO 50,000 FEET.
    - 1.3.1.2 OPERATING: SEA LEVEL TO 50,000 FEET.
  - 1.3.2 TEMPERATURE RANGE:
    - 1.3.2.1 NON-OPERATING: -55°C TO +150°C.
    - 1.3.2.2 OPERATING: -55°C TO +150°C.
  - 1.3.3 VIBRATION: PER MIL-STD-202, METHOD 204, COND. D.
  - 1.3.4 SHOCK: PER MIL-STD-202, METHOD 213, COND. I.
  - 1.3.5 MOISTURE RESISTANCE: PER MIL-STD-202, METHOD 106 EXCEPT SUBCYCLE STEPS 7A AND 7B AND POLARIZATION AND LOAD ARE NOT APPLICABLE.
- 1.4 ELECTROSTATIC DISCHARGE CONTROL: PER MIL-STD-1686.

**2.0 UNIT MARKING:** "DB VALUE". 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 PERFORM 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 MECHANICAL 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 PER 1.1.6.

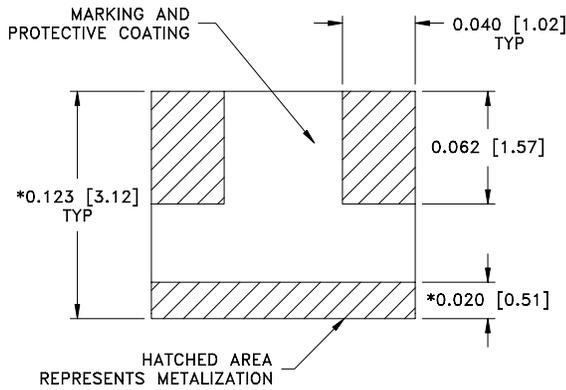
ENG		PUR		MFG		PLAN		SM	
CC				QA					
EMC TECHNOLOGY		CAGE CODE # 24602				DWG #	1009925000		
8851 SW OLD KANSAS AVE.		CHANGE NOTICE	EN 03-287			REV LVL	-		
STUART, FL 34997						SHEET	1 OF 3		

- 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 MECHANICAL 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 PER 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)

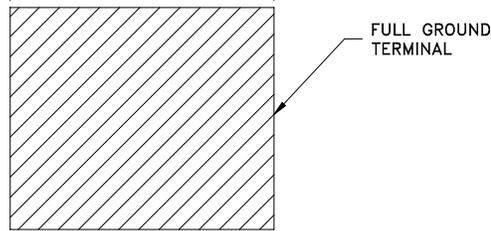
EMC TECHNOLOGY 8851 SW OLD KANSAS AVE. STUART, FL 34997	<b>CAGE CODE # 24602</b>		<b>DWG #</b>	1009925000
	<b>CHANGE NOTICE</b>	EN 03-287	<b>REV LVL</b>	-
			<b>SHEET</b>	2 OF 3

PART ID REF
HR03XXXW1S



\*0.021±0.003 [0.53]

0.145 [3.68]



**MECHANICAL SPECIFICATIONS:**

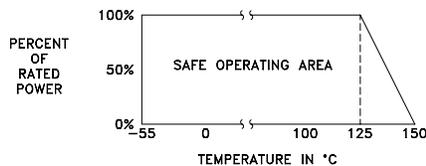
SUBSTRATE:  
 MATERIAL - ALUMINA 96%, MIL-I-10.  
 TERMINAL & GROUND PLANE:  
 MATERIAL - THICK FILM, NICKEL BARRIER,  
 SOLDER COATED.  
 RESISTIVE ELEMENT:  
 MATERIAL - THIN FILM, TANTALUM NITRIDE.

METRIC EQUIVALENTS GIVEN IN [mm]  
 FOR REFERENCE INFORMATION ONLY

\* DIMENSIONS APPLY BEFORE SOLDER. ALLOW  
 0.015 MAX FOR ALL PRETINNED SURFACES.



**POWER RATING AND DERATING**



**EMC Technology**  
 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
<b>TOLERANCES</b>
FRACT ---
ANG ---
XX ---
XXX ±0.005
XXXX ---

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CAGE CODE 24602	SCALE 16:1	DRAWN BY JG 12/5/03	CHECKED BY	APPROVED BY
REV -	CHANGE NOTICE EN 03-287	DRAWING NO 1009925000	SHEET 3 OF 3	