

STANDARD ATTENUATORS CATALOG

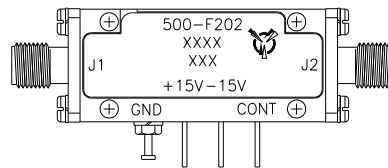
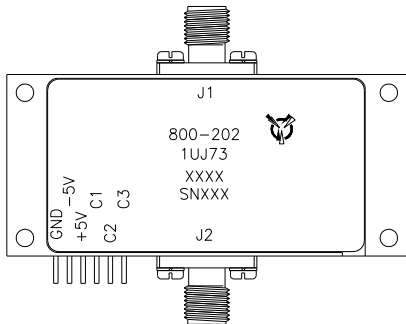
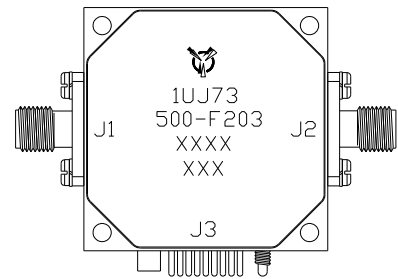
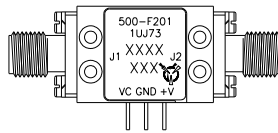
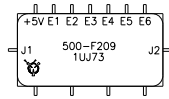
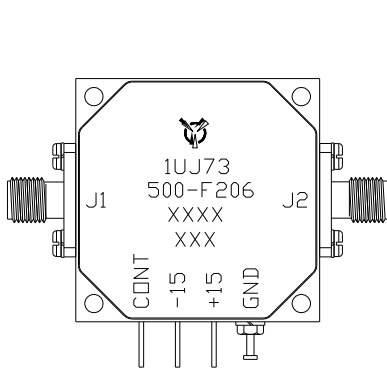
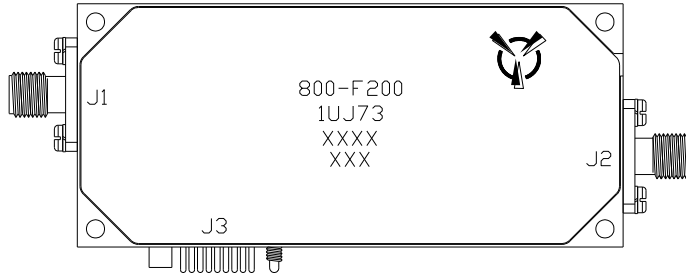
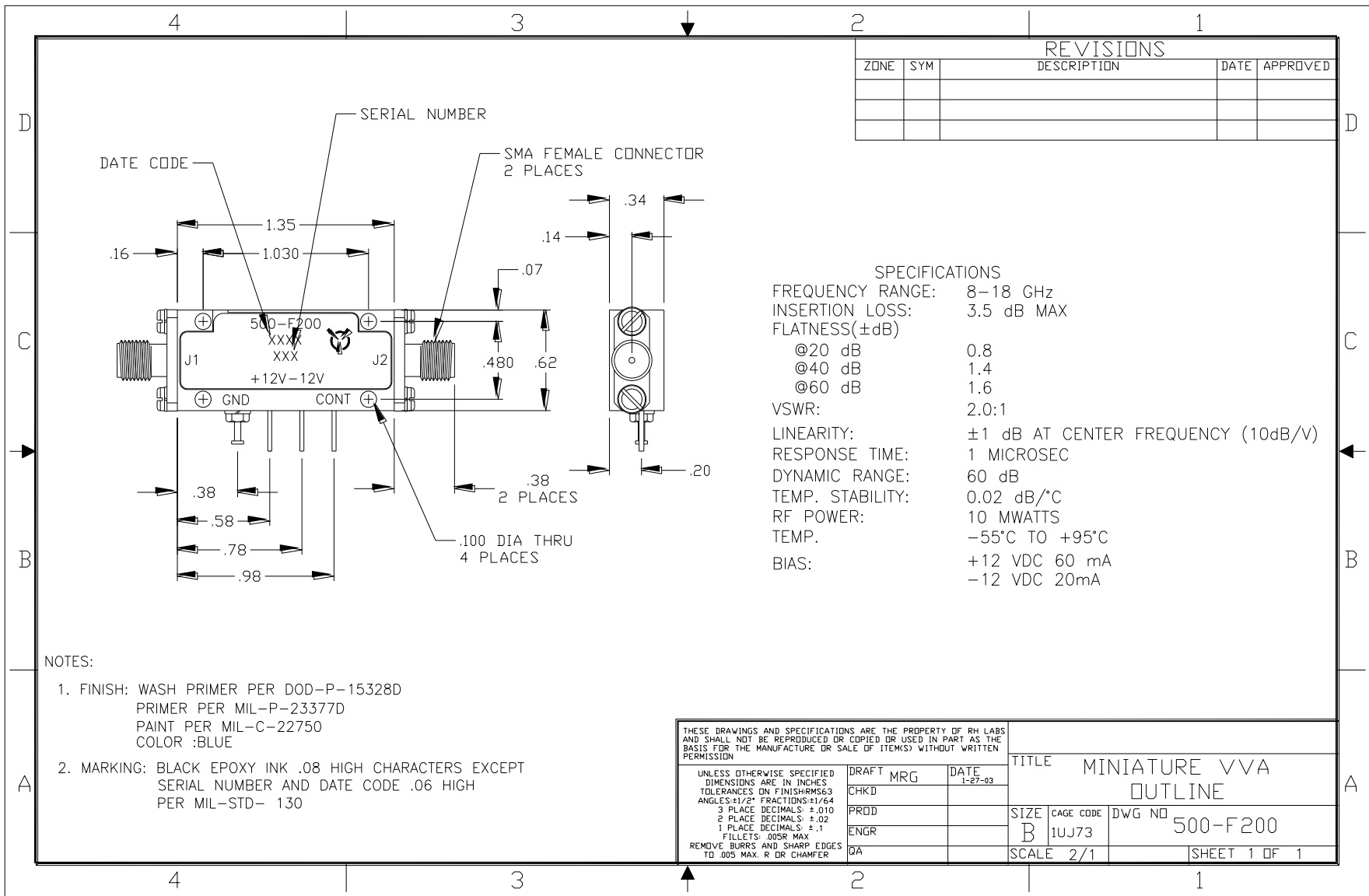


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500-F201	Ultra miniature VVA	12-18 GHz	50 dB	4
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REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVED

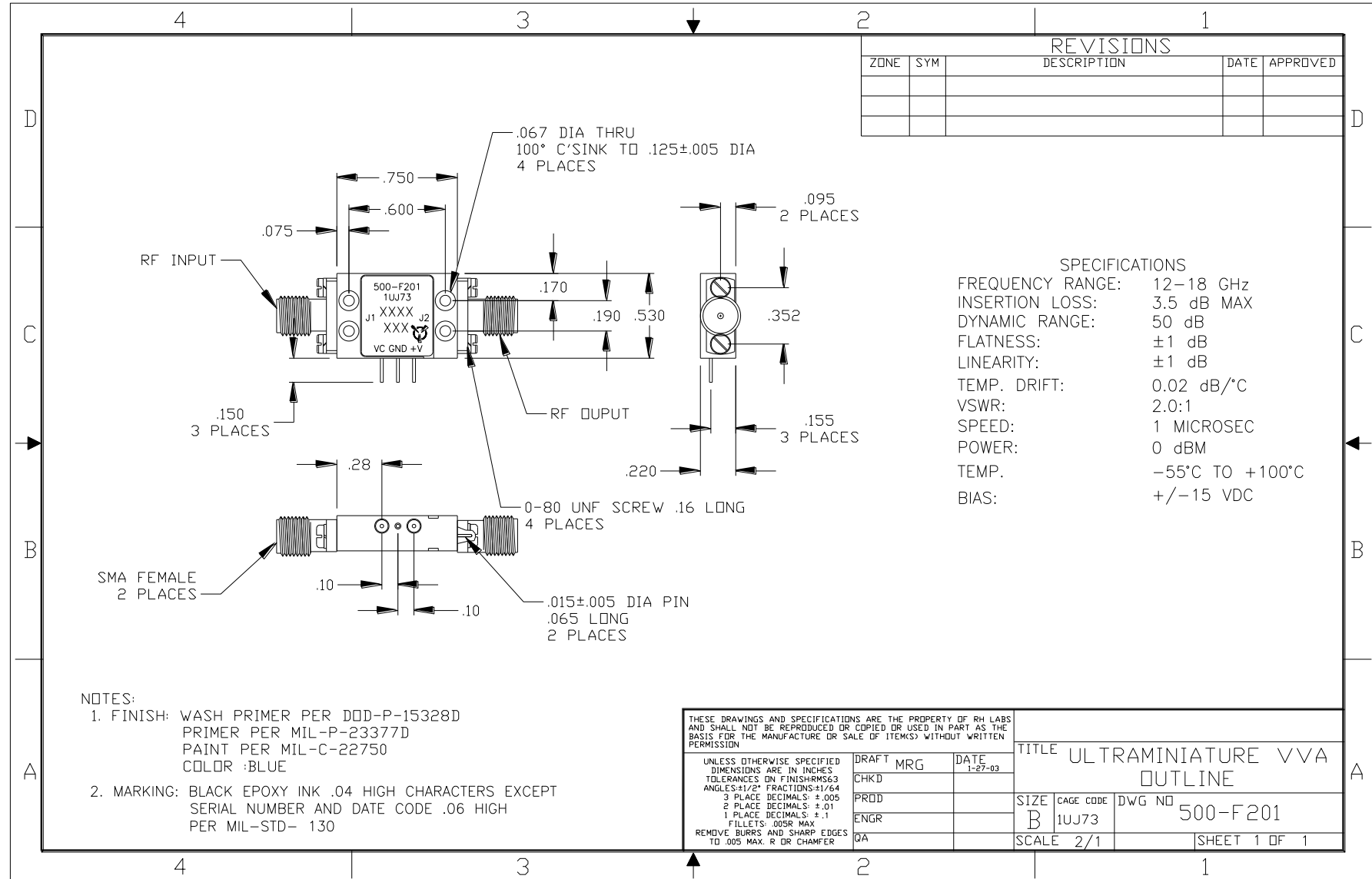
- NOTES:
1. FINISH: WASH PRIMER PER DOD-P-15328D
PRIMER PER MIL-P-23377D
PAINT PER MIL-C-22750
COLOR :BLUE

2. MARKING: BLACK EPOXY INK .08 HIGH CHARACTERS EXCEPT
SERIAL NUMBER AND DATE CODE .06 HIGH
PER MIL-STD- 130

THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF RH LABS AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION				TITLE MINIATURE VVA OUTLINE	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FINISHES: ANGLES: ±1/2° FRACTIONS: ±1/64 3 PLACE DECIMALS: ±.010 2 PLACE DECIMALS: ±.02 1 PLACE DECIMALS: ±.1 FILLETS: .005R MAX REMOVE BURRS AND SHARP EDGES TO .005 MAX. R DR CHAMFER		DRAFT	MGR	DATE	1-27-03
PRDD	ENGR	QA	SIZE	CAGE CODE	DWG NO
			B	1UJ73	500-F200
			SCALE	2/1	SHEET 1 OF 1



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REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVED

SPECIFICATIONS

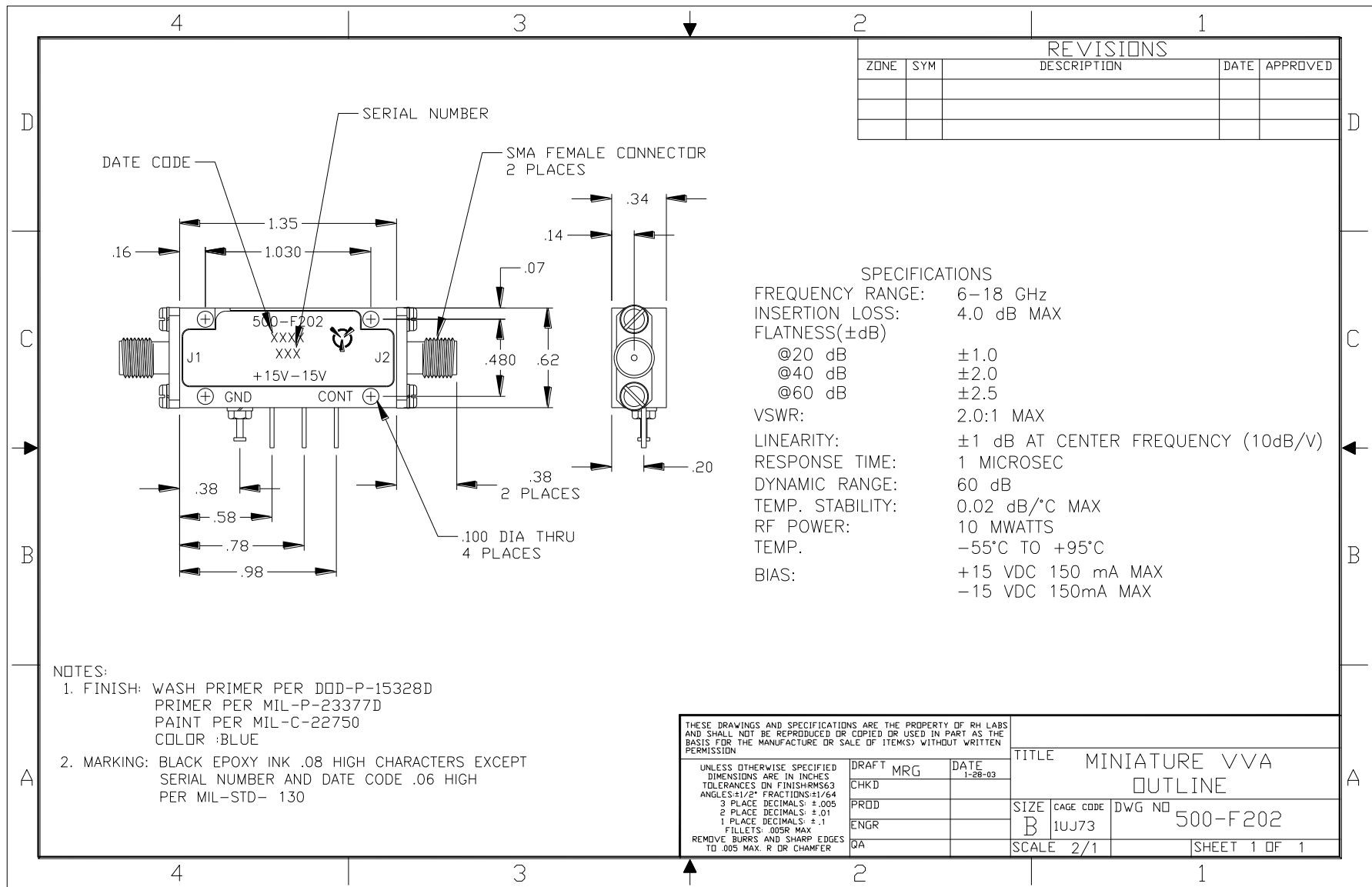
FREQUENCY RANGE:	12-18 GHz
INSERTION LOSS:	3.5 dB MAX
DYNAMIC RANGE:	50 dB
FLATNESS:	±1 dB
LINEARITY:	±1 dB
TEMP. DRIFT:	0.02 dB/°C
VSWR:	2.0:1
SPEED:	1 MICROSEC
POWER:	0 dBM
TEMP.	-55°C TO +100°C
BIAS:	+/-15 VDC

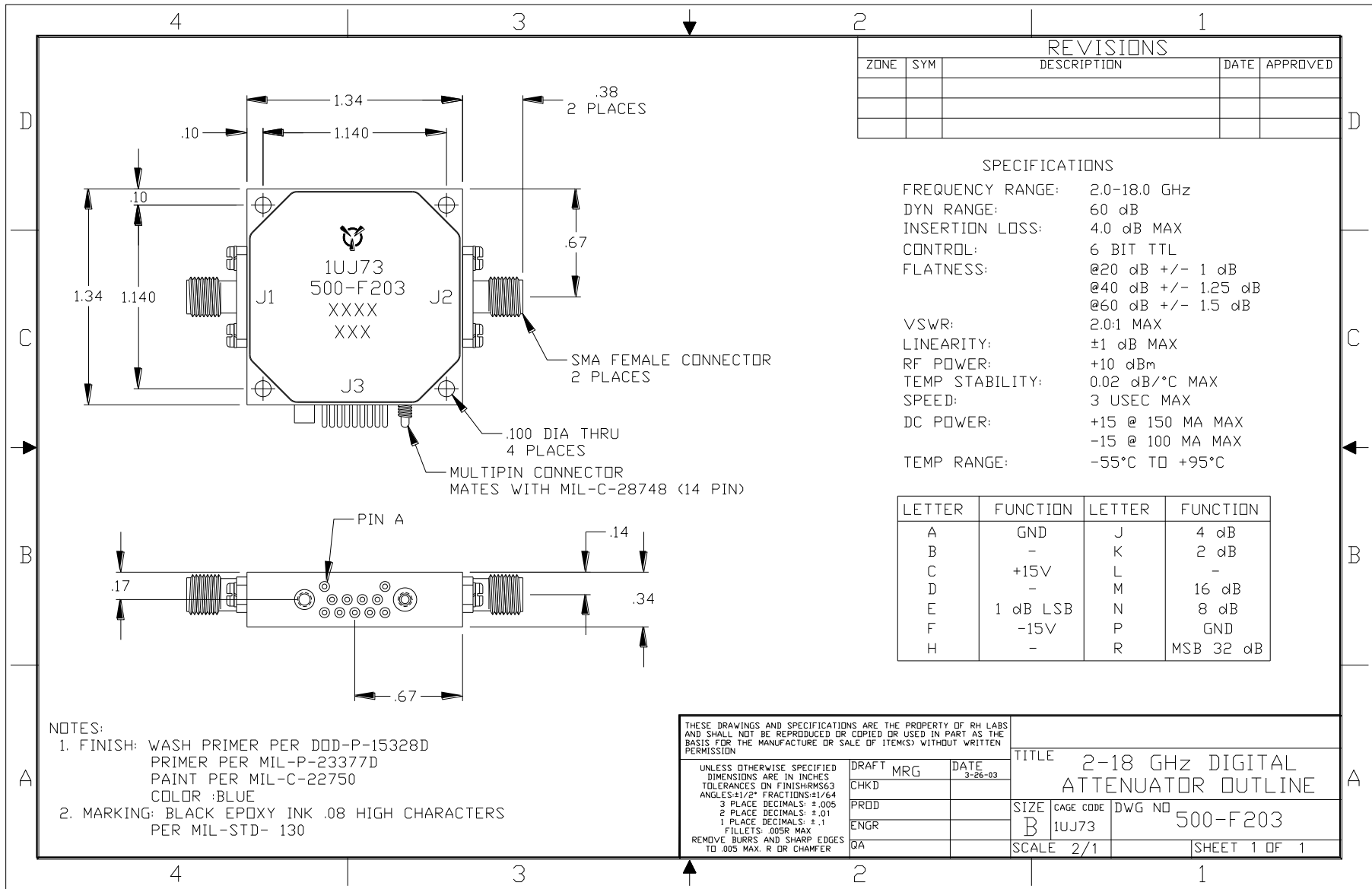
- NOTES:**
1. FINISH: WASH PRIMER PER DDD-P-15328D
PRIMER PER MIL-P-23377D
PAINT PER MIL-C-22750
COLOR :BLUE
 2. MARKING: BLACK EPOXY INK .04 HIGH CHARACTERS EXCEPT
SERIAL NUMBER AND DATE CODE .06 HIGH
PER MIL-STD- 130

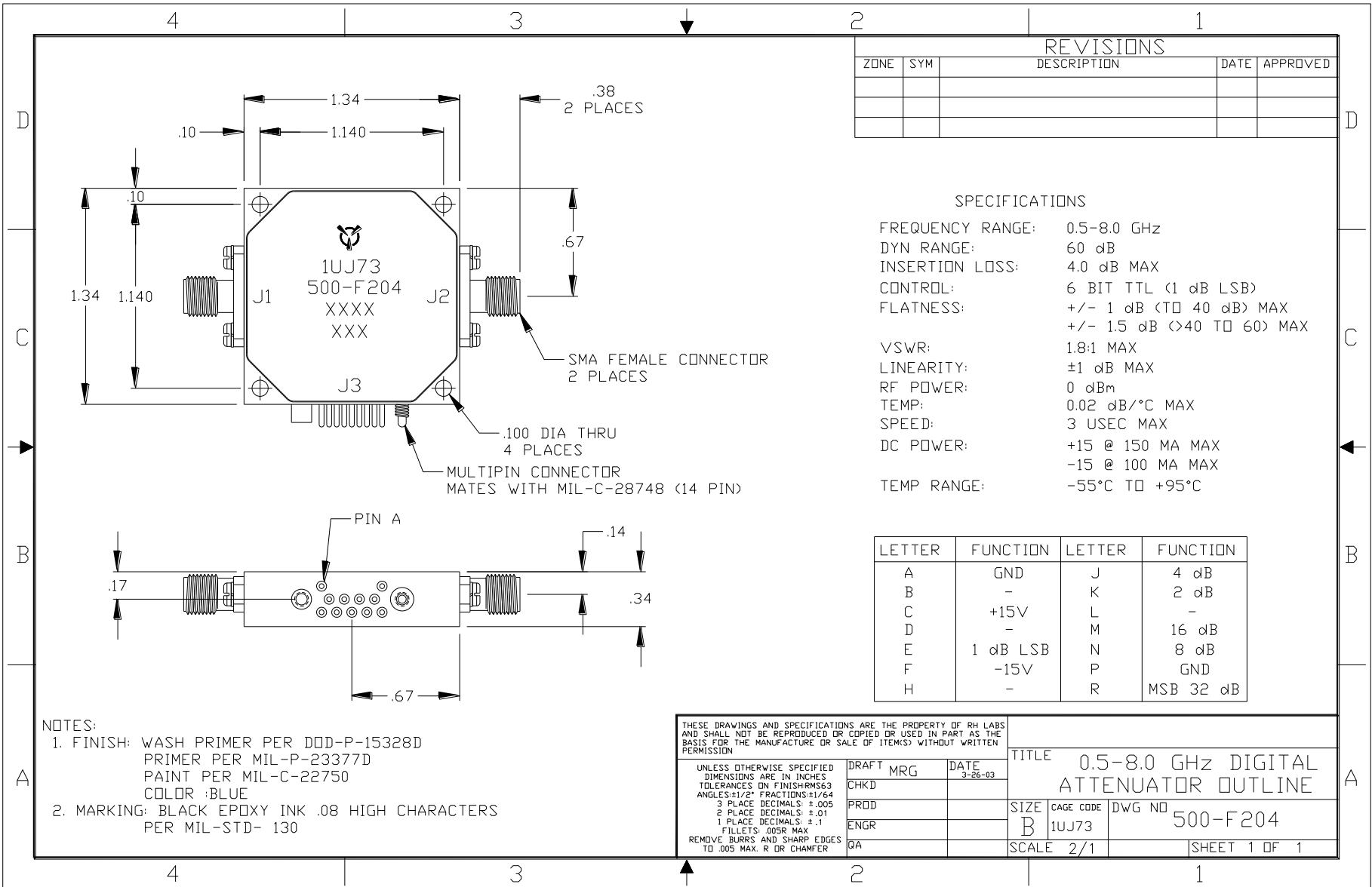
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<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FINISHES: ANGLES: 1/2° FRACTIONS: 1/64 3 PLACE DECIMALS: ±.005 2 PLACE DECIMALS: ±.01 1 PLACE DECIMALS: ±.1 FILLETS: .005R MAX REMOVE BURRS AND SHARP EDGES TD .005 MAX. R OR CHAMFER</small>	DRAFT MRG CHKD PROD ENGR QA	DATE 1-27-03	SIZE B	CAGE CODE 1UJ73	DWG NO 500-F201
SCALE 2/1			SHEET 1 OF 1		

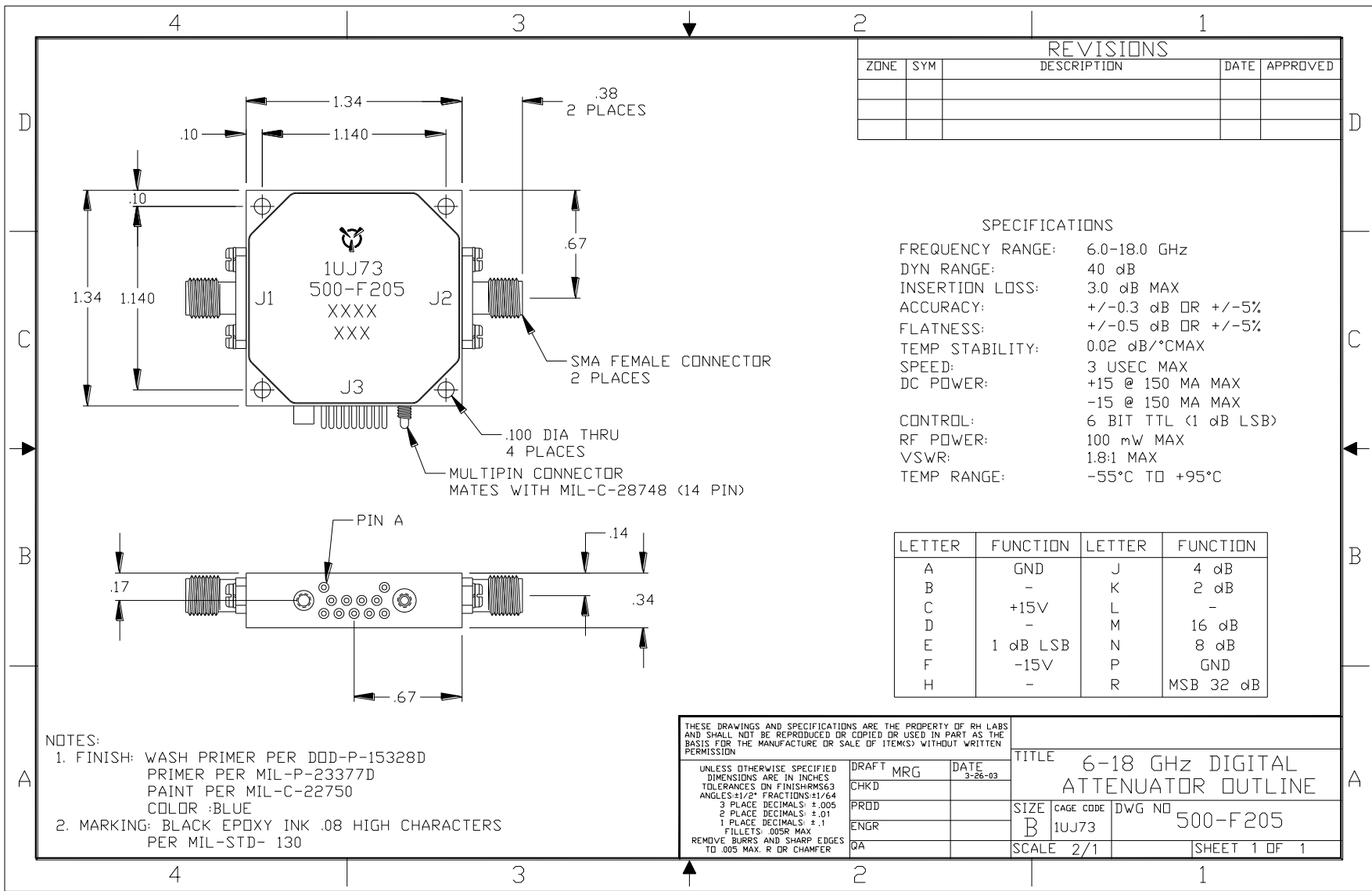


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REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVED

SPECIFICATIONS

FREQUENCY RANGE: 6.0-18.0 GHz
 DYN RANGE: 40 dB
 INSERTION LOSS: 3.0 dB MAX
 ACCURACY: +/-0.3 dB OR +/-5%
 FLATNESS: +/-0.5 dB OR +/-5%
 TEMP STABILITY: 0.02 dB/°C MAX
 SPEED: 3 USEC MAX
 DC POWER: +15 @ 150 MA MAX
 -15 @ 150 MA MAX
 CONTROL: 6 BIT TTL (1 dB LSB)
 RF POWER: 100 mW MAX
 VSWR: 1.8:1 MAX
 TEMP RANGE: -55°C TO +95°C

LETTER	FUNCTION	LETTER	FUNCTION
A	GND	J	4 dB
B	-	K	2 dB
C	+15V	L	-
D	-	M	16 dB
E	1 dB LSB	N	8 dB
F	-15V	P	GND
H	-	R	MSB 32 dB

- NOTES:**
- FINISH: WASH PRIMER PER DOD-P-15328D
 PRIMER PER MIL-P-23377D
 PAINT PER MIL-C-22750
 COLOR :BLUE
 - MARKING: BLACK EPOXY INK .08 HIGH CHARACTERS
 PER MIL-STD- 130

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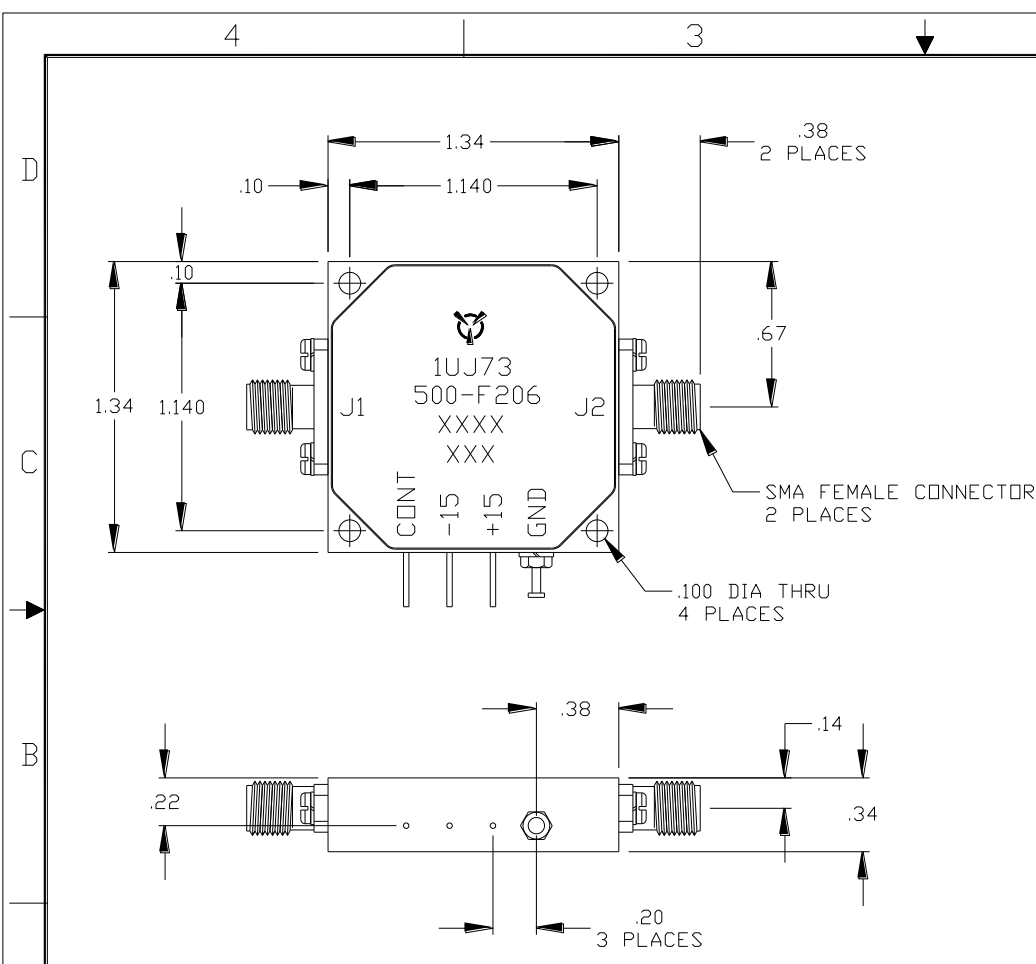
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
 TOLERANCES ON FINISHES: M3
 ANGLES: 1/2° FRACTIONS: 1/64
 3 PLACE DECIMALS: ±.005
 2 PLACE DECIMALS: ±.01
 1 PLACE DECIMALS: ±.1
 FILLETS: .005R MAX
 REMOVE BURRS AND SHARP EDGES TO .005 MAX. R OR CHAMFER

DRAFT	MRG	DATE	3-26-03
CHKD			
PROD			
ENGR			
QA			
TITLE		6-18 GHz DIGITAL ATTENUATOR OUTLINE	
SIZE	B	CAGE CODE	1UJ73
DWG NO	500-F205		
SCALE	2/1	SHEET 1 OF 1	



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REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVED



SPECIFICATIONS

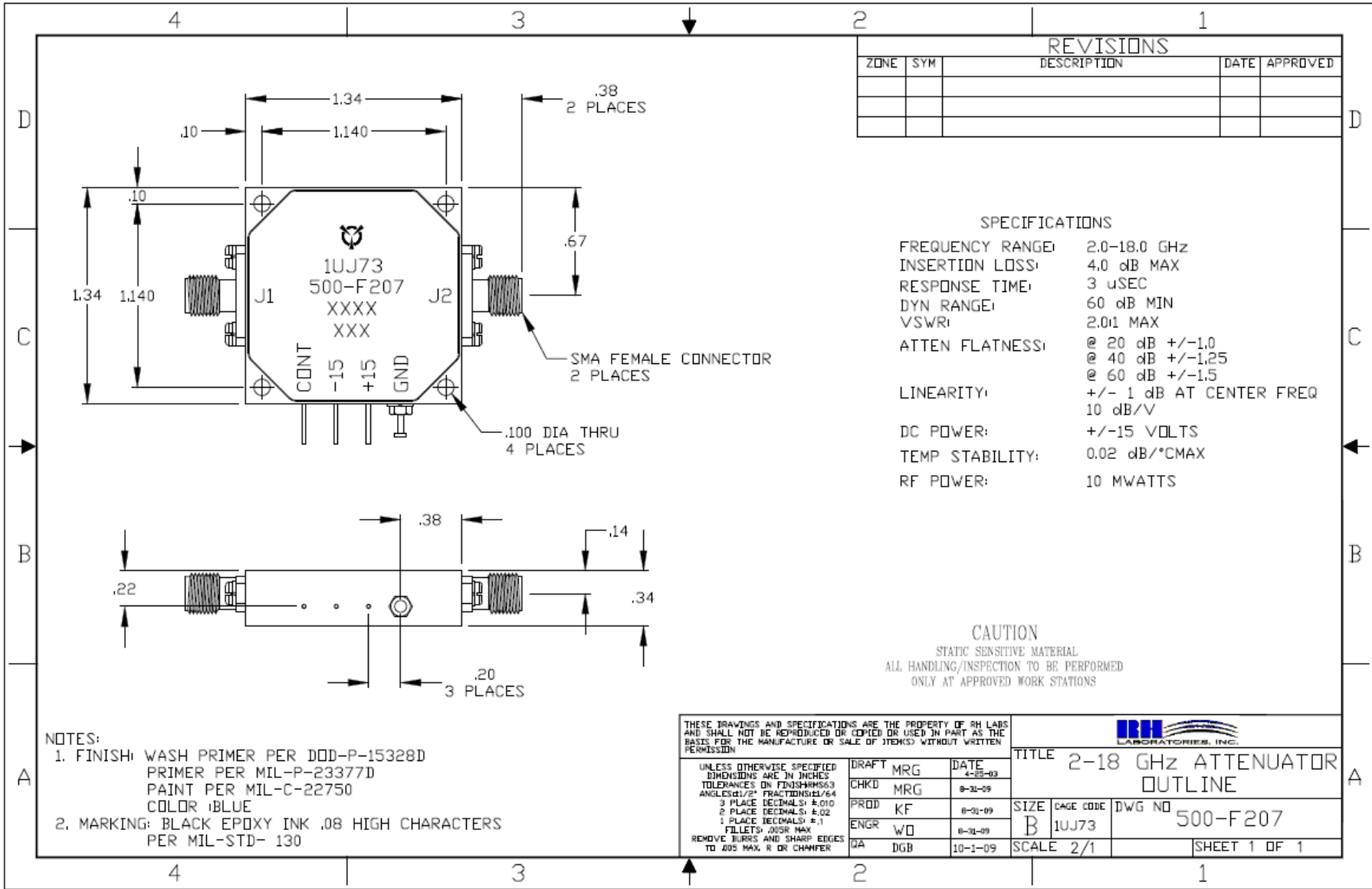
FREQUENCY RANGE: 2.0-6.0 GHz
 DYN RANGE: 60 dB
 INSERTION LOSS: 2.5 dB MAX
 FLATNESS: +/-0.5 dB OR +/-4%
 VSWR: 2.0:1 MAX
 CONTROL VOLTAGE: 0 TO 10 VOLTS
 INPUT IMPEDANCE: 10 K OHMS
 LINEARITY: +/- 1 dB MAX
 SWITCHING TIME: 1.25 uSEC MAX
 TEMP STABILITY: 0.02 dB/°C MAX
 RF POWER: 0 dBM
 DC POWER: +15 @ 130 MA MAX
 -15 @ 50 MA MAX

- NOTES:
- FINISH: WASH PRIMER PER DOD-P-15328D
 PRIMER PER MIL-P-23377D
 PAINT PER MIL-C-22750
 COLOR :BLUE
 - MARKING: BLACK EPOXY INK .08 HIGH CHARACTERS
 PER MIL-STD- 130

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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FINISHES ANGLES: ±1/2° FRACTIONS: ±1/64 3 PLACE DECIMALS: ±.005 2 PLACE DECIMALS: ±.01 1 PLACE DECIMALS: ±.1 FILLETS: .005R MAX REMOVE BURRS AND SHARP EDGES TD .005 MAX. R OR CHAMFER	DRAFT	MRG	DATE	SIZE	CAGE CODE
	CHKD		4-25-03	B	1UJ73
	PRD			SCALE	DWG NO
	ENGR			2/1	500-F206
	QA				SHEET 1 OF 1



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REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVED

SPECIFICATIONS

FREQUENCY RANGE:	2.0-18.0 GHz
INSERTION LOSS:	4.0 dB MAX
RESPONSE TIME:	3 μSEC
DYN RANGE:	60 dB MIN
VSWR:	2.0:1 MAX
ATTEN FLATNESS:	@ 20 dB +/-1.0 @ 40 dB +/-1.25 @ 60 dB +/-1.5
LINEARITY:	+/- 1 dB AT CENTER FREQ 10 dB/V
DC POWER:	+/-15 VOLTS
TEMP STABILITY:	0.02 dB/°C MAX
RF POWER:	10 MWATTS

CAUTION
 STATIC SENSITIVE MATERIAL
 ALL HANDLING/INSPECTION TO BE PERFORMED
 ONLY AT APPROVED WORK STATIONS

- NOTES:**
- FINISH: WASH PRIMER PER DOD-P-15328D
 PRIMER PER MIL-P-23377D
 PAINT PER MIL-C-22750
 COLOR BLUE
 - MARKING: BLACK EPOXY INK .08 HIGH CHARACTERS
 PER MIL-STD- 130

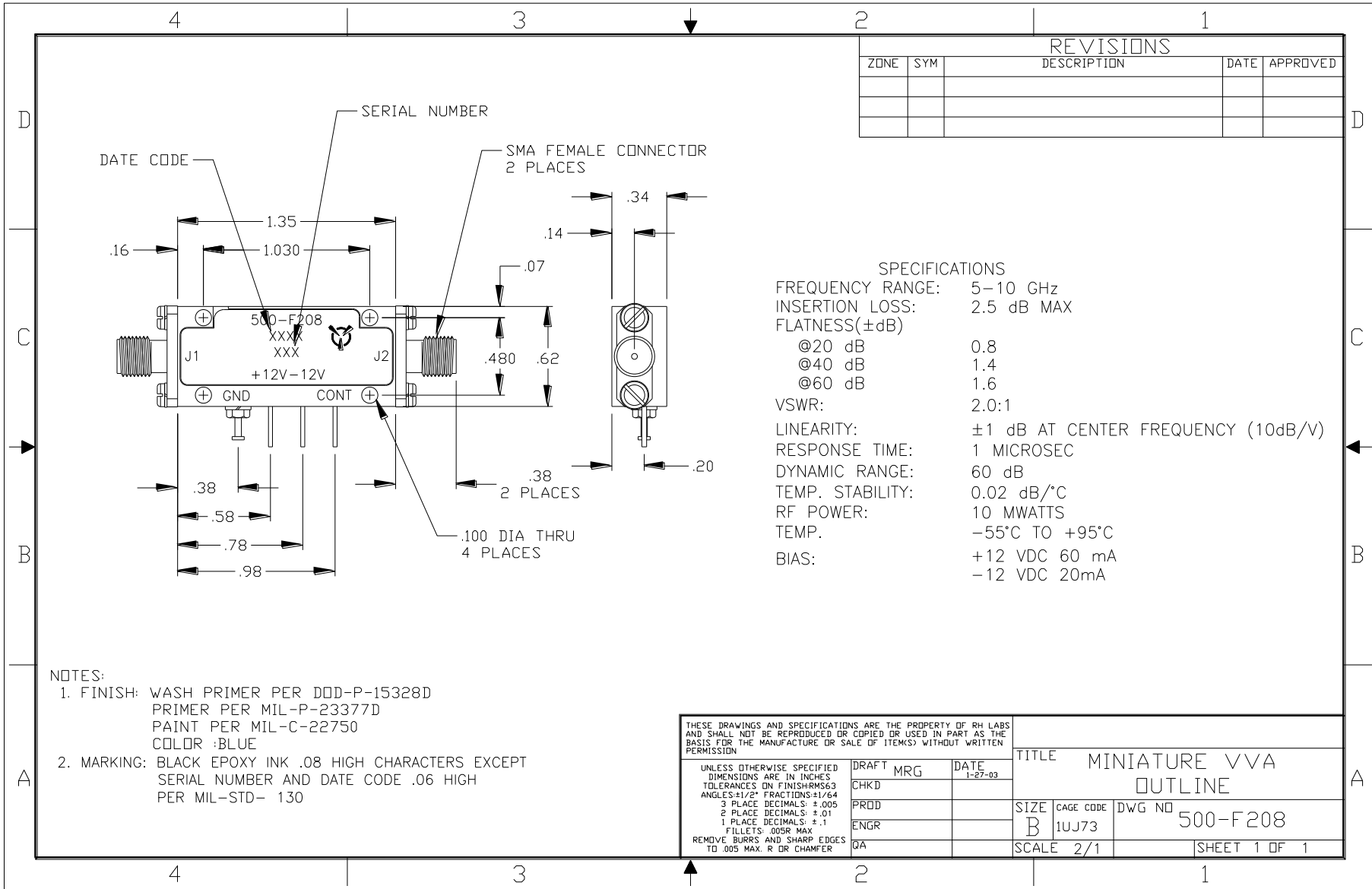
THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF IRH LABS AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION

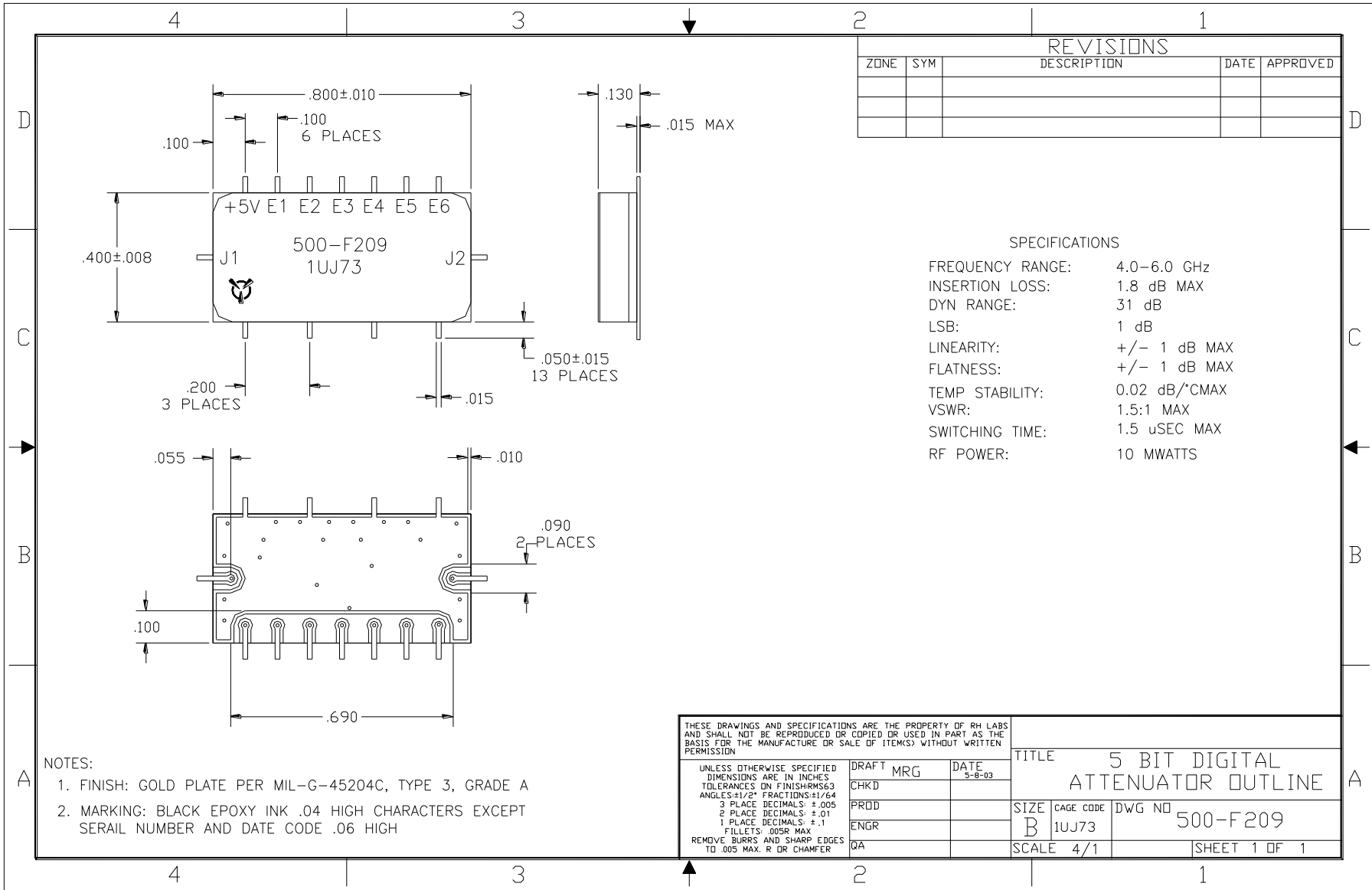
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FINISHES: ANGLES: 1/2" FRACTIONS: 1/64 3 PLACE DECIMALS: ±.010 2 PLACE DECIMALS: ±.02 1 PLACE DECIMALS: ±.1 FILETS: .05R MAX REMOVE BURRS AND SHARP EDGES TO .05 MAX R OR CHAMFER	DRAFT	MRG	DATE
	CHKD	MRG	8-31-09
	PRD	KF	8-30-09
	ENGR	WD	8-30-09
	QA	DGB	10-1-09

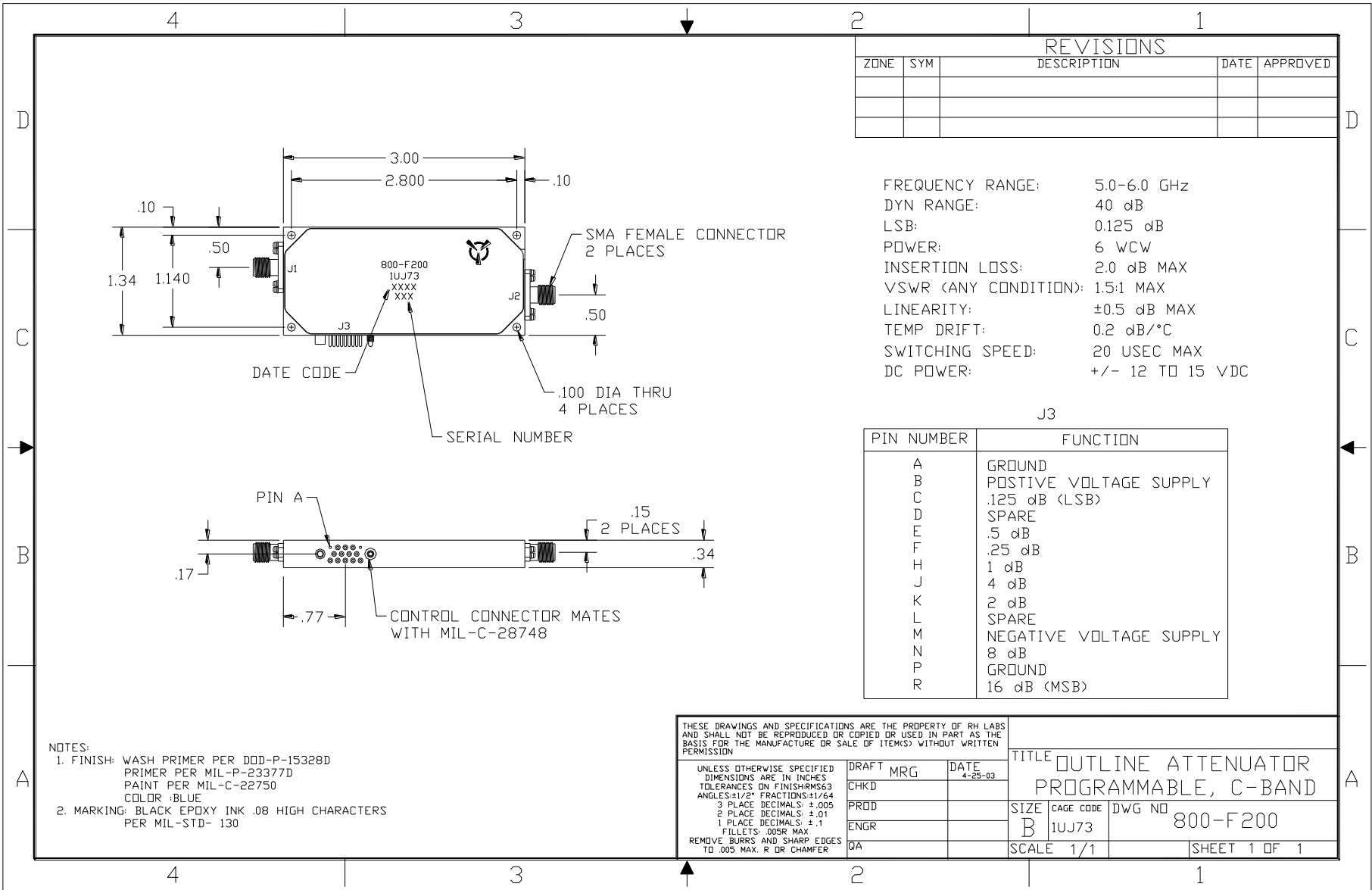
IRH LABORATORIES, INC.			
TITLE 2-18 GHz ATTENUATOR OUTLINE			
SIZE	CAGE CODE	DWG NO	
B	1UJ73	500-F207	
SCALE	2/1		SHEET 1 OF 1



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REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVED

FREQUENCY RANGE: 5.0-6.0 GHz
 DYN RANGE: 40 dB
 LSB: 0.125 dB
 POWER: 6 WCW
 INSERTION LOSS: 2.0 dB MAX
 VSWR (ANY CONDITION): 1.5:1 MAX
 LINEARITY: ±0.5 dB MAX
 TEMP DRIFT: 0.2 dB/°C
 SWITCHING SPEED: 20 USEC MAX
 DC POWER: +/- 12 TO 15 VDC

J3

PIN NUMBER	FUNCTION
A	GROUND
B	POSTIVE VOLTAGE SUPPLY
C	.125 dB (LSB)
D	SPARE
E	.5 dB
F	.25 dB
H	1 dB
J	4 dB
K	2 dB
L	SPARE
M	NEGATIVE VOLTAGE SUPPLY
N	8 dB
P	GROUND
R	16 dB (MSB)

NOTES:
 1. FINISH: WASH PRIMER PER DDD-P-15328D
 PRIMER PER MIL-P-23377D
 PAINT PER MIL-C-22750
 COLOR :BLUE
 2. MARKING: BLACK EPOXY INK .08 HIGH CHARACTERS
 PER MIL-STD- 130

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 BASIS FOR THE MANUFACTURE OR SALE OF ITEMS) WITHOUT WRITTEN
 PERMISSION

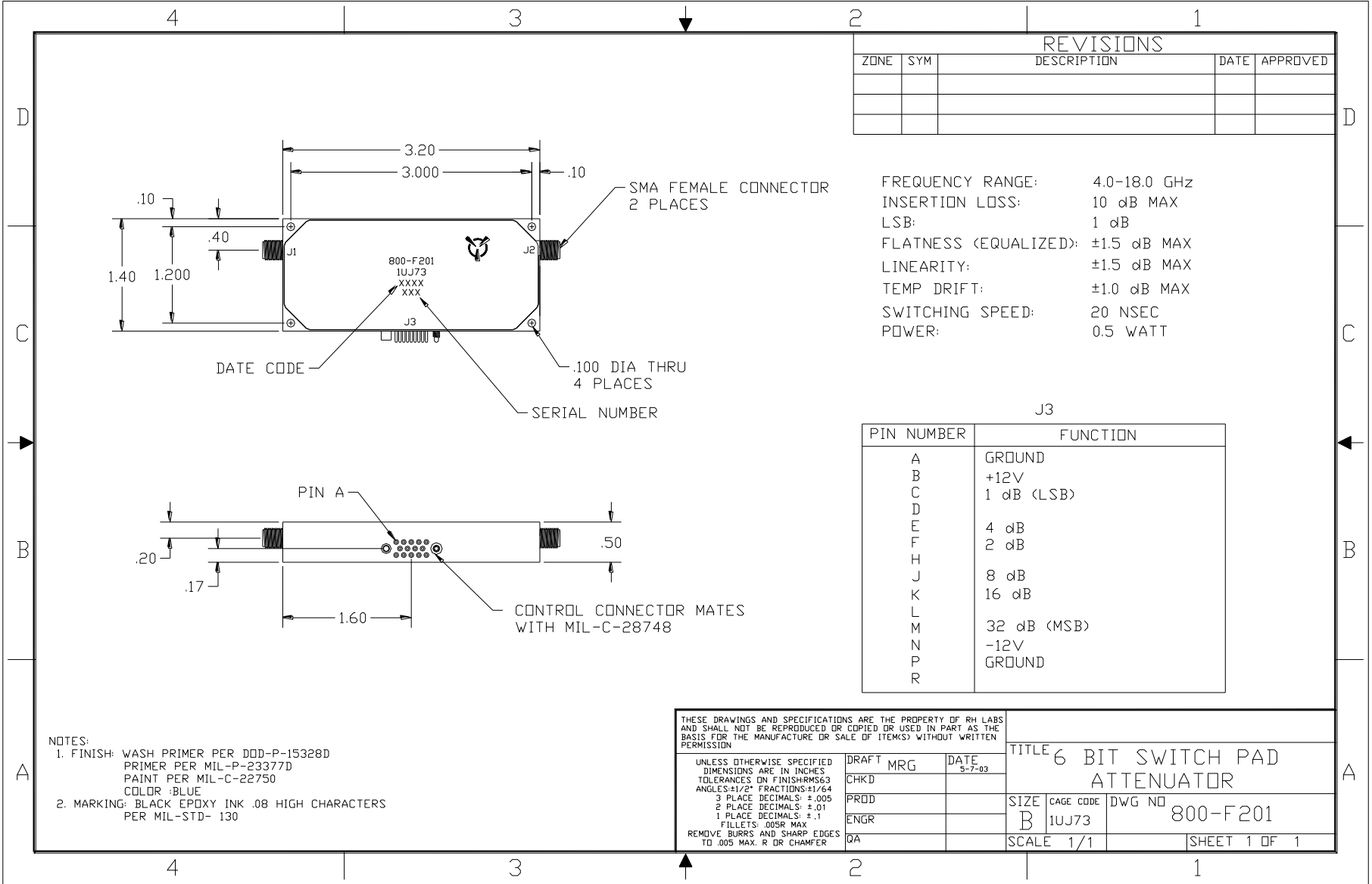
UNLESS OTHERWISE SPECIFIED
 DIMENSIONS ARE IN INCHES
 TOLERANCES ON FINISH: RMS ±.003
 ANGLES: 41/2° FRACTIONS: 1/64
 3 PLACE DECIMALS: ±.005
 2 PLACE DECIMALS: ±.01
 1 PLACE DECIMALS: ±.1
 FILLETS: .005R MAX
 REMOVE BURRS AND SHARP EDGES
 TO .005 MAX. R OR CHAMFER

DRAFT	MRG	DATE	4-25-03
CHKD			
PRDD			
ENGR			
QA			

TITLE			OUTLINE ATTENUATOR		
PROGRAMMABLE, C-BAND					
SIZE	CAGE CODE	DWG NO			
B	1UJ73	800-F200			
SCALE	1/1	SHEET 1 OF 1			



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REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVED

FREQUENCY RANGE: 4.0-18.0 GHz
 INSERTION LOSS: 10 dB MAX
 LSB: 1 dB
 FLATNESS (EQUALIZED): ±1.5 dB MAX
 LINEARITY: ±1.5 dB MAX
 TEMP DRIFT: ±1.0 dB MAX
 SWITCHING SPEED: 20 NSEC
 POWER: 0.5 WATT

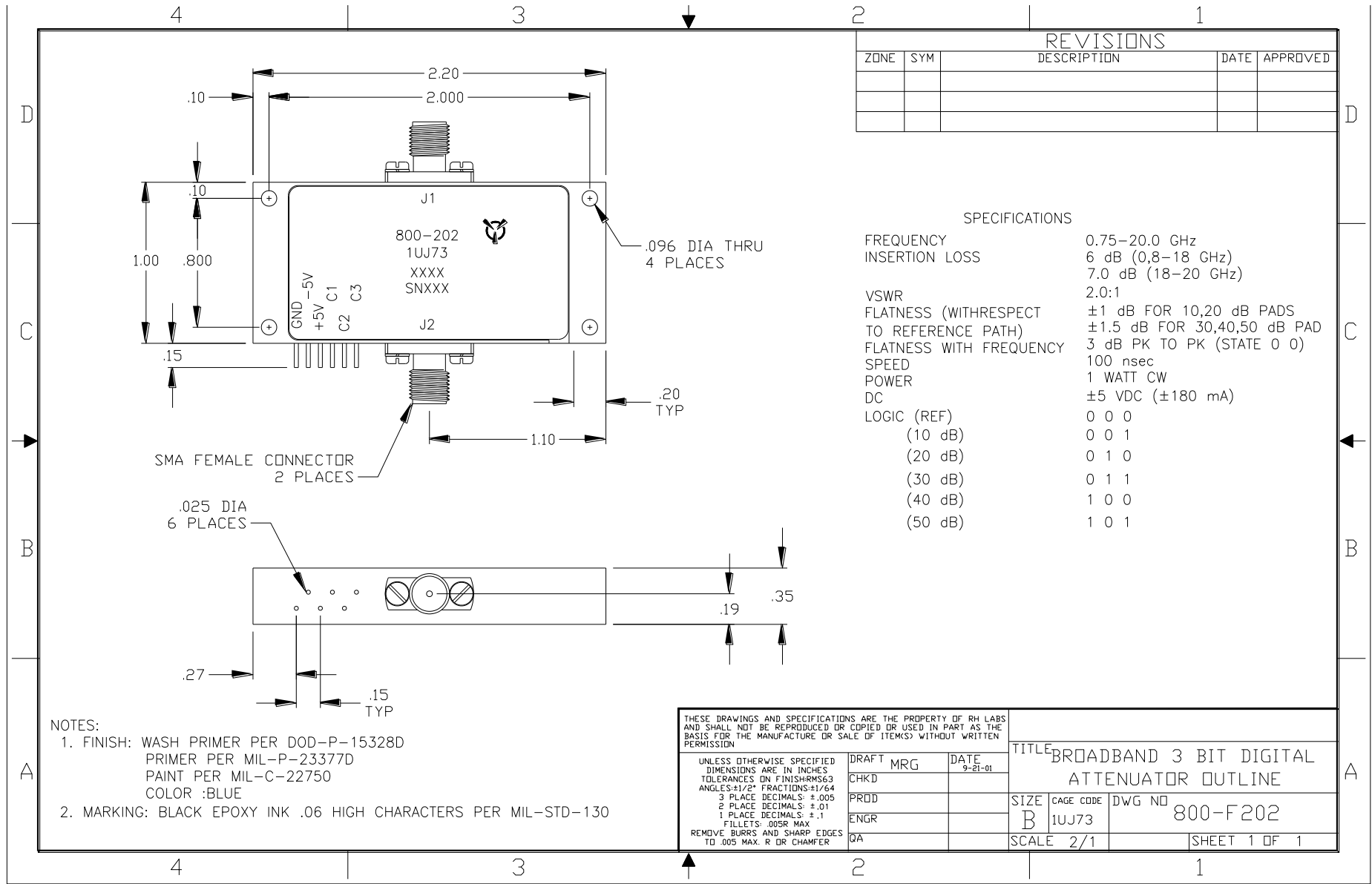
J3	
PIN NUMBER	FUNCTION
A	GROUND
B	+12V
C	1 dB (LSB)
D	
E	4 dB
F	2 dB
H	
J	8 dB
K	16 dB
L	
M	32 dB (MSB)
N	-12V
P	GROUND
R	

NOTES:
 1. FINISH: WASH PRIMER PER DDD-P-15328D
 PRIMER PER MIL-P-23377D
 PAINT PER MIL-C-22750
 COLOR: BLUE
 2. MARKING: BLACK EPOXY INK .08 HIGH CHARACTERS
 PER MIL-STD-130

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<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FINISH: R/MS/63 ANGLES: 1/2° FRACTIONS: 1/64 3 PLACE DECIMALS: ±.005 2 PLACE DECIMALS: ±.01 1 PLACE DECIMALS: ±.1 FILLETS: .005R MAX REMOVE BURRS AND SHARP EDGES TO .005 MAX. R DR CHAMFER</small>		DRAFT MRG CHKD PRDD ENGR QA	DATE 3-7-03	SIZE B	CAGE CODE 1UJ73
SCALE 1/1				DWG NO 800-F201	SHEET 1 OF 1



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REVISIONS				
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SPECIFICATIONS

FREQUENCY	0.75-20.0 GHz
INSERTION LOSS	6 dB (0.8-18 GHz) 7.0 dB (18-20 GHz)
VSWR	2.0:1
FLATNESS (WITH RESPECT TO REFERENCE PATH)	±1 dB FOR 10,20 dB PADS ±1.5 dB FOR 30,40,50 dB PAD
FLATNESS WITH FREQUENCY	3 dB PK TO PK (STATE 0 0)
SPEED	100 nsec
POWER	1 WATT CW
DC	±5 VDC (±180 mA)
LOGIC (REF)	0 0 0
(10 dB)	0 0 1
(20 dB)	0 1 0
(30 dB)	0 1 1
(40 dB)	1 0 0
(50 dB)	1 0 1

- NOTES:
- FINISH: WASH PRIMER PER DOD-P-15328D
PRIMER PER MIL-P-23377D
PAINT PER MIL-C-22750
COLOR :BLUE
 - MARKING: BLACK EPOXY INK .06 HIGH CHARACTERS PER MIL-STD-130

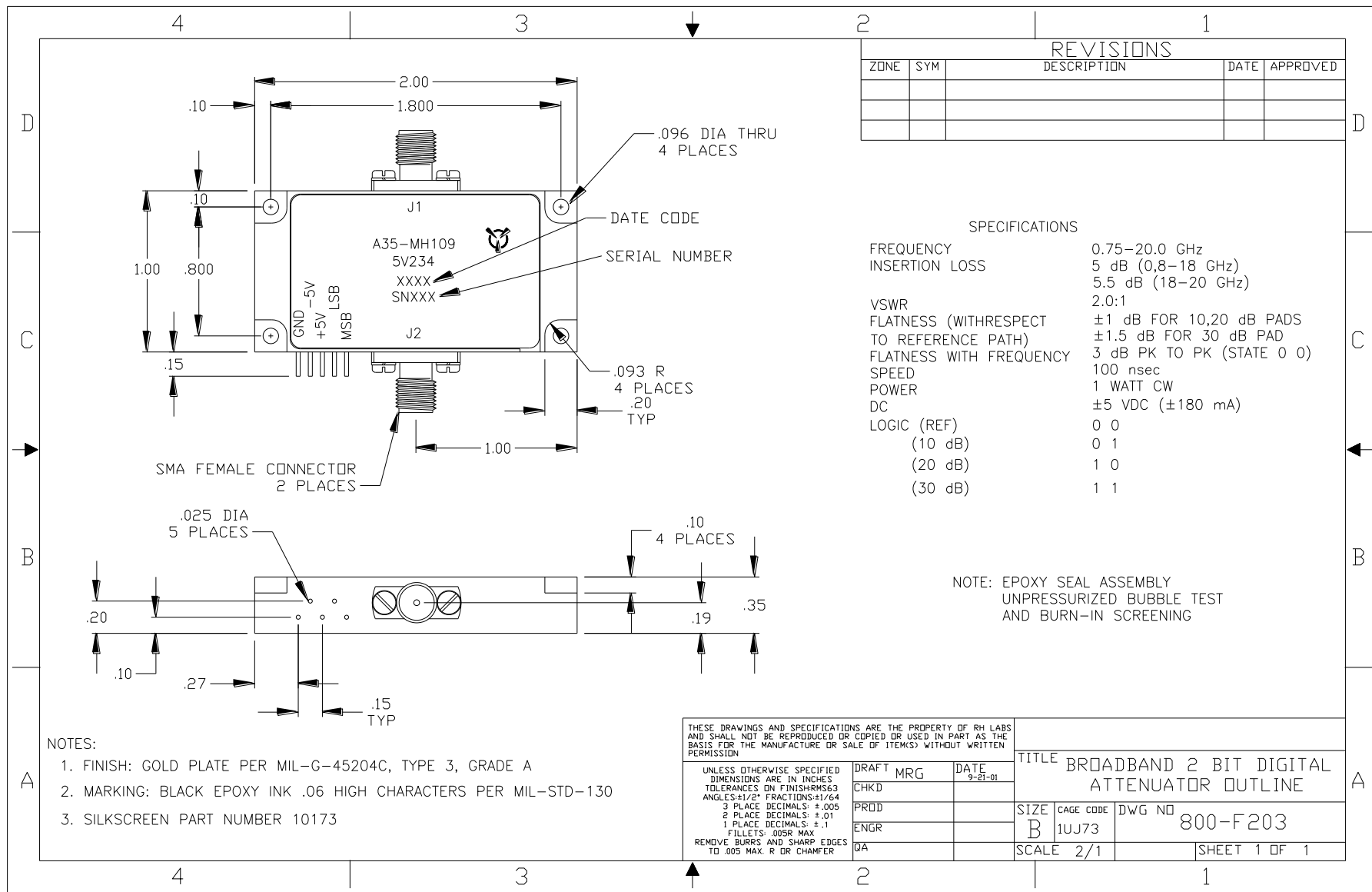
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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON FINISH: RMS63
ANGLES: 1/2° FRACTIONS: 1/64
3 PLACE DECIMALS: ±.005
2 PLACE DECIMALS: ±.01
1 PLACE DECIMALS: ±.1
FILLET: .005R MAX
REMOVE BURRS AND SHARP EDGES TO .005 MAX. R DR CHAMFER

DRAFT	MRG	DATE	TITLE	
		9-21-01	BROADBAND 3 BIT DIGITAL ATTENUATOR OUTLINE	
CHKD			SIZE	CAGE CODE
PRD			B	1UJ73
ENGR			DWG NO	800-F202
QA			SCALE	2/1
				SHEET 1 OF 1



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REVISIONS				
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SPECIFICATIONS

FREQUENCY	0.75-20.0 GHz
INSERTION LOSS	5 dB (0.8-18 GHz)
	5.5 dB (18-20 GHz)
VSWR	2.0:1
FLATNESS (WITH RESPECT TO REFERENCE PATH)	±1 dB FOR 10,20 dB PADS
FLATNESS WITH FREQUENCY	±1.5 dB FOR 30 dB PAD
SPEED	3 dB PK TO PK (STATE 0 0)
POWER	100 nsec
DC	1 WATT CW
LOGIC (REF)	±5 VDC (±180 mA)
(10 dB)	0 0
(20 dB)	0 1
(30 dB)	1 0
	1 1

NOTE: EPOXY SEAL ASSEMBLY
UNPRESSURIZED BUBBLE TEST
AND BURN-IN SCREENING

- NOTES:
1. FINISH: GOLD PLATE PER MIL-G-45204C, TYPE 3, GRADE A
 2. MARKING: BLACK EPOXY INK .06 HIGH CHARACTERS PER MIL-STD-130
 3. SILKSCREEN PART NUMBER 10173

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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	DRAFT	MRG	DATE
TOLERANCES ON FINISHES: M63	CHKD		9-21-01
ANGLES: 1/2° FRACTIONS: ±1/64	PROD		
3 PLACE DECIMALS: ±.005	ENGR		
2 PLACE DECIMALS: ±.01	QA		
1 PLACE DECIMALS: ±.1			
FILLET: .005R MAX			
REMOVE BURRS AND SHARP EDGES TO .005 MAX. R OR CHAMFER			

TITLE BROADBAND 2 BIT DIGITAL ATTENUATOR OUTLINE			
SIZE B	CAGE CODE 1UJ73	DWG NO 800-F203	
SCALE 2/1		SHEET 1 OF 1	



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