



TEST REPORT
ON
18 TO 20 GHz
SINGLE POLE THIRTY TWO THROW
ABSORPTIVE / NON-REFLECTIVE
PIN DIODE SWITCH MODULE
AMC MODEL No:
MSN-32DT-05-DEC-MP-TRWCC

Serial Number: MC81134

DESIGNED
BY
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TESTED
BY
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REPORTED
BY
E. Elder

September 8, 2004

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ISO9001 : 2000 CERTIFIED

DRH

Page 1 of 10

WMS
SK
JDT
MOB
ESC
PA

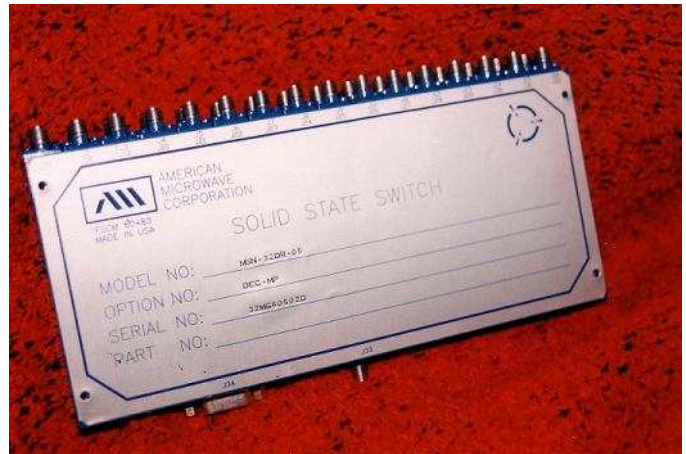
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SINGLE POLE THIRTY TWO THROW ABSORPTIVE / NON-REFLECTIVE PIN DIODE SWITCH MODULE AMC MODEL No: MSN-32DT-05-DEC-MP-TRWCC

FEATURES:

- **18 TO 20 GHz FREQUENCY RANGE**
- **HIGH INSERTION LOSS OF 8.5 dB**
- **HIGH ISOLATION OF 70 dB**



SPECIFICATIONS:

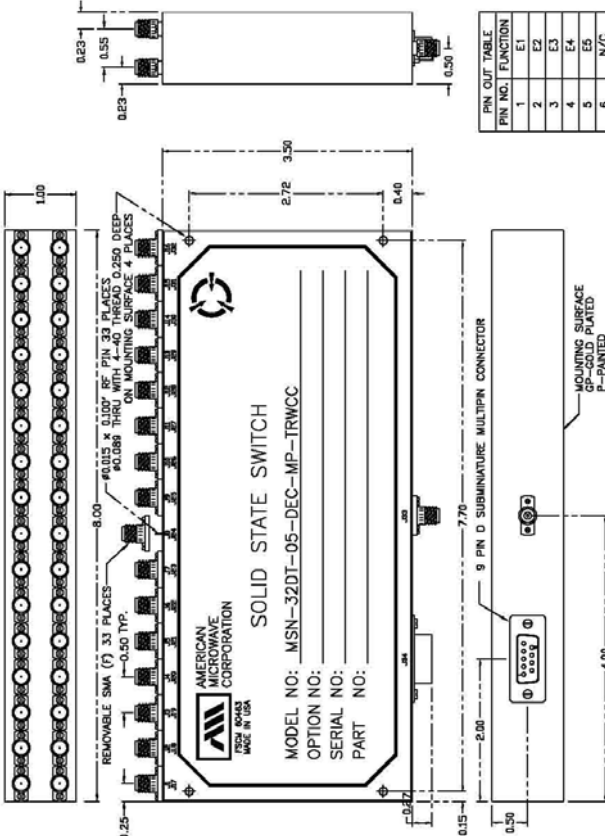
- | | |
|------------------|--|
| ● FREQUENCY | : 18 TO 20 GHz |
| ● INSERTION LOSS | : 8.5 dB MAXIMUM |
| ● ISOLATION | : 70 dB MINIMUM |
| ● VSWR | : 2.0:1 |
| ● SPEED | : DELAY ON: 100 μSEC MAXIMUM |
| | : DELAY OFF: 100 μSEC MAXIMUM |
| ● POWER INPUT | : (CW)+20dBm (STANDARD), +10dBm (HIGH SPEED) |
| ● SURVIVAL POWER | : 1 WATT CW, 10 WATTS PEAK 1 μSEC |
| ● CONTROL | : TTL LOGIC "0"=ON, "1"=OFF |
| ● POWER SUPPLY | : +5 VOLTS @ < 2.0 AMP MAXIMUM |
| | : -5 VOLTS @ < 2.0 AMP MAXIMUM |

PRODUCT FEATURE

DESCRIPTION:
 AMC MODEL NUMBER MSN-32DT-05-DEC-MP-TRWCC IS A SINGLE POLE THIRTY TWO THROW PIN DIODE SWITCH MODULE WITH HIGH INSERTION LOSS, HIGH ISOLATION AND IS DESIGNED FOR THE 18 GHz TO 20 GHz FREQUENCY RANGE.

SPECIFICATIONS:

- FREQUENCY: 18 GHz TO 20 GHz
- INSERTION LOSS: 8.5 dB MAXIMUM
- ISOLATION: 70 dB MINIMUM
- VSWR: 2.0:1
- SPEED: DELAY ON: 100 nSEC MAXIMUM
 DELAY OFF: 100 nSEC MAXIMUM
- POWER INPUT: (CW)+20dBm (STANDARD), +10 dBm (HIGH SPEED)
- SURVIVAL POWER: 1 WATT CW, 10 WATTS PEAK 1 usec
- CONTROL: TTL LOGIC "0"=ON "1"=OFF
- POWER SUPPLY: +5V @ <2.0 AMP MAXIMUM
 -5V @ <2.0 AMP MAXIMUM



SOLID STATE SWITCH
 AMERICAN MICROWAVE CORPORATION
 FREDERICK, MARYLAND
 MADE IN USA

MODEL NO: MSN-32DT-05-DEC-MP-TRWCC
 OPTION NO:
 SERIAL NO:
 PART NO:

9 PIN D SUBMINIATURE MULTIPIN CONNECTOR

INSULATING SURFACE
 RS-SOLID PAINTED
 P-PAINTED

REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
—	—	ORIGINAL RELEASE, JOB# 807155	11/08/08	

ENVIRONMENTAL RATINGS:

- TEMPERATURE: -55°C TO +85°C (OPERATING)
 -65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 1038 COND. B
- SHOCK: MIL-STD-202F, METHOD 2138 COND. B
- VIBRATION: MIL-STD-202F, METHOD 2040 COND. B
 MIL-STD-202F, METHOD 105C COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 1070 COND. A

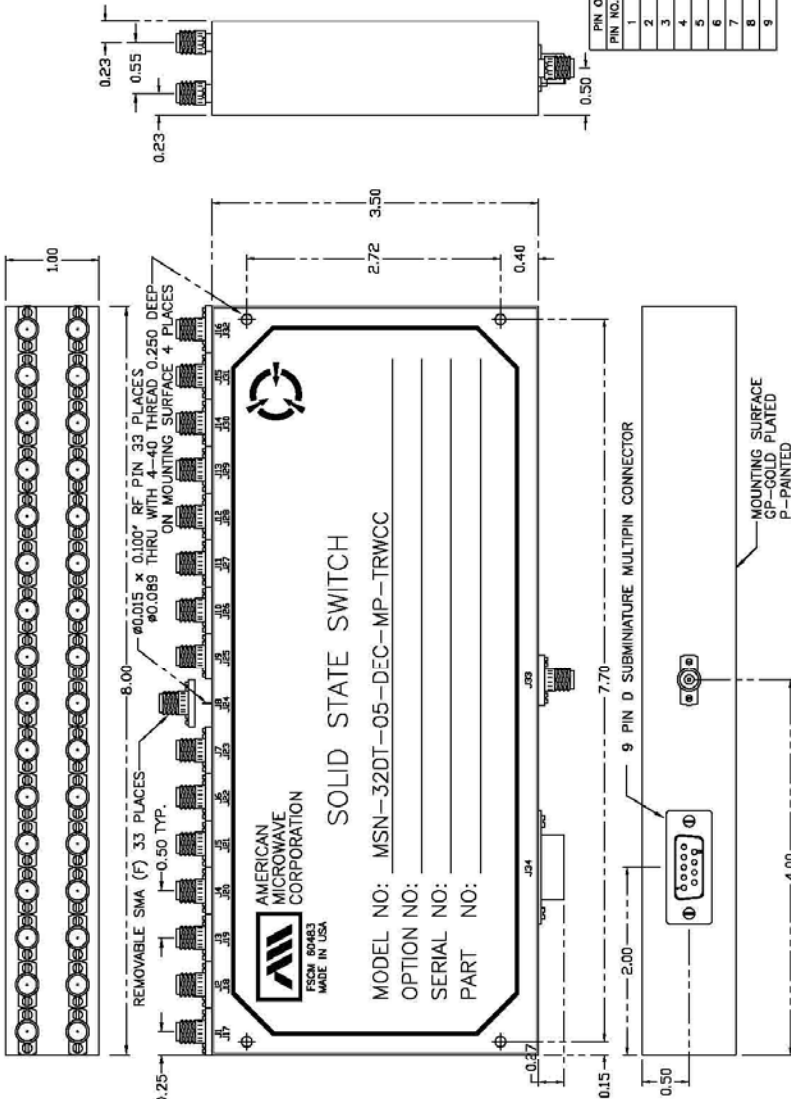
NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

CONFIDENTIAL AND PROPRIETARY

PART NO.		AMERICAN MICROWAVE CORPORATION FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DESIGN	11/08/08	PRODUCT FEATURE	
CHECKED		MSN-32DT-05-DEC-MP-TRWCC	
ESD/CAD		SOLID STATE SWITCH	
SIZE	FORM NO.	DRWG NO.	REV.
A	60483	100-6822	—
SCALE N/S		SHEET 1 of 3	

OUTLINE DRAWING

DESCRIPTION:
 AMC MODEL NUMBER MSN-32DT-05-DEC-MP-TRWCC IS A SINGLE POLE THIRTY TWO THROW PIN DIODE SWITCH MODULE WITH HIGH INSERTION LOSS, HIGH ISOLATION AND IS DESIGNED FOR THE 18 GHz TO 20 GHz FREQUENCY RANGE.



MECHANICAL OUTLINE

REMOVABLE SMA (F) 33 PLACES
 #0.015 x 0.100" RF PIN 33 PLACES
 #0.089 THRU WITH 4-40 THREAD 0.250 DEEP
 ON MOUNTING SURFACE 4 PLACES

AMERICAN MICROWAVE CORPORATION
 FSCM 60483
 MADE IN USA

SOLID STATE SWITCH

MODEL NO: MSN-32DT-05-DEC-MP-TRWCC
 OPTION NO:
 SERIAL NO:
 PART NO:

9 PIN D SUBMINIATURE MULTIPIN CONNECTOR

MOUNTING SURFACE
 S⁺-GOLD PLATED
 P-PAINTED

REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	1	ORIGINAL RELEASE, JOB# 807155	11/09/03	

PIN OUT TABLE

PIN NO.	FUNCTION
1	E1
2	E2
3	E3
4	E4
5	E5
6	N/C
7	H-V
8	-V
9	GND

CONFIDENTIAL AND PROPRIETARY

ALL DIMENSIONS ARE IN INCHES
 TOLERANCES:
 X.XX ±0.020
 X.XXX ±0.010

AMERICAN MICROWAVE CORPORATION
 FREDERICK, MARYLAND

AMERICAN MICROWAVE CORPORATION
 FREDERICK, MARYLAND

OUTLINE DRAWING
 MSN-32DT-05-DEC-MP-TRWCC
 SOLID STATE SWITCH

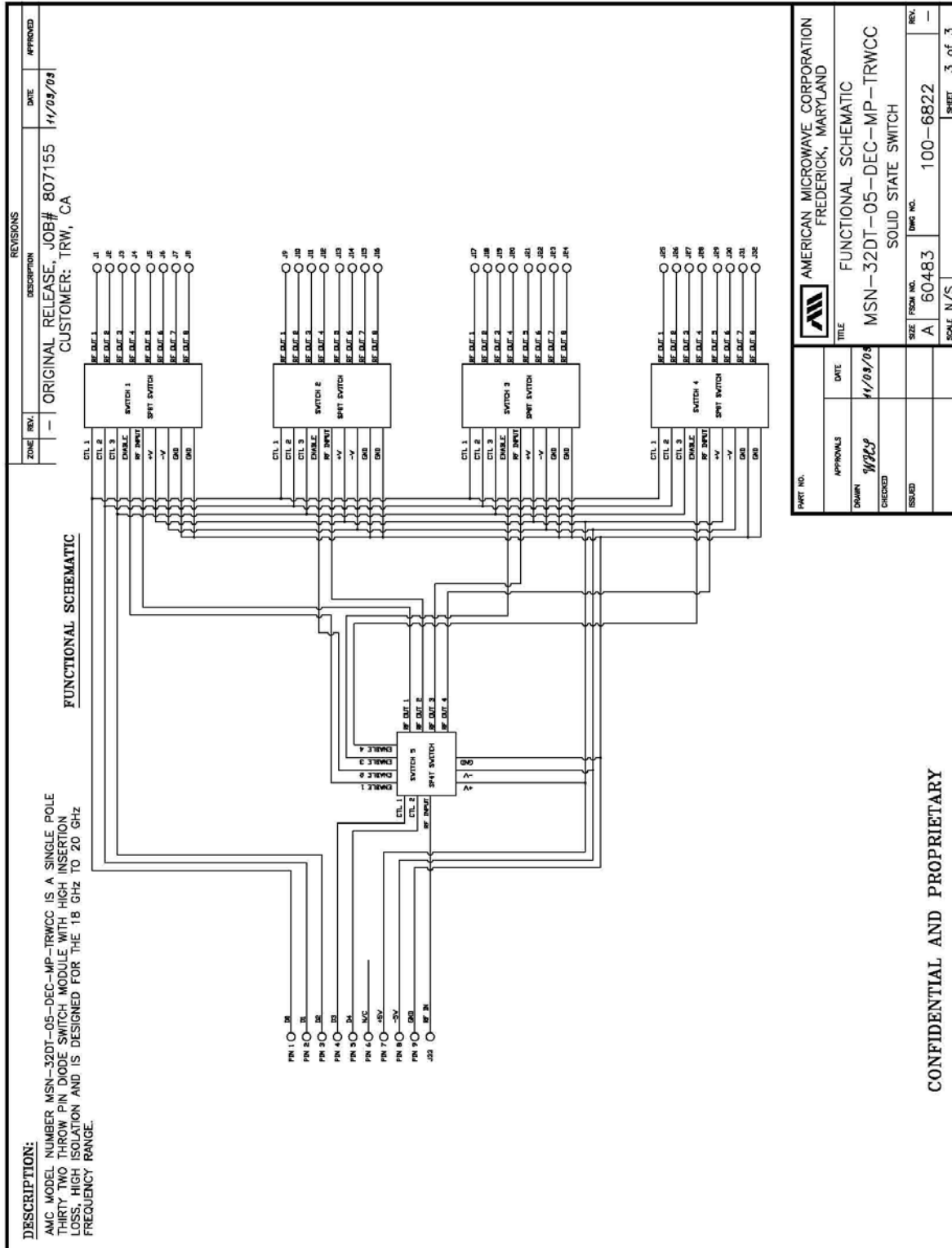
DATE: 11/09/03
 DRAWN: WPC
 CHECKED:
 ISSUED:

SIZE FROM NO. A 60483
 DWG NO. 100-6822
 REV. -

SCALE N/S
 SHEET 2 of 3



FUNCTIONAL SCHEMATIC





FINAL TEST DATA

AMC MODEL NO: MSN-32DT-05-DEC-MP-TRWCC, SERIAL NUMBER: MC81134 (pg1)

FORM: SW-01/0698



DATE: 11/30/98

MICROWAVE SWITCH FINAL TEST DATA

JOB NO: 807155 MODEL NO: MSN-32DT-05-DEC SERIAL NO: MC81134
 CUSTOMER: TRW TECHNICIAN: PA
 SPECIFICATION: _____ FREQUENCY RANGE: 18-20 GHz

$\pm 5V$ $I+1.6A$
 $I-90mA$

RETURN LOSS						
INSERTION LOSS	INPUT dB	INPUT VSWR	OUTPUT ON dB	OUTPUT ON VSWR	OUTPUT OFF dB	OUTPUT OFF VSWR
J33-J1 8.16 dB	11.33 dB	1.74 :1	16.63 dB	1.35 :1	10.09 dB	1.91 :1
J33-J2 7.15 dB	9.40 dB	2.03 :1	8.73 dB	2.15 :1	10.38 dB	1.87 :1
J33-J3 6.87 dB	12.05 dB	1.67 :1	12.48 dB	1.62 :1	10.92 dB	1.80 :1
J33-J4 7.14 dB	11.62 dB	1.71 :1	9.90 dB	1.94 :1	10.74 dB	1.82 :1
J33-J5 7.29 dB	10.92 dB	1.80 :1	9.77 dB	1.96 :1	11.56 dB	1.72 :1
J33-J6 7.39 dB	10.84 dB	1.81 :1	10.51 dB	1.85 :1	10.23 dB	1.89 :1
J33-J7 7.43 dB	10.38 dB	1.87 :1	8.81 dB	2.14 :1	10.42 dB	1.86 :1
J33-J8 7.73 dB	11.74 dB	1.70 :1	12.21 dB	1.65 :1	11.90 dB	1.68 :1
J33-J9 7.76 dB	13.17 dB	1.56 :1	13.68 dB	1.52 :1	12.62 dB	1.61 :1
J33-J10 6.69 dB	12.68 dB	1.61 :1	12.21 dB	1.65 :1	9.82 dB	1.95 :1

SWITCHING SPEED				
ISOLATION	DELAY ON	RISE TIME	DELAY OFF	FALL TIME
J33-J1 70 dB	< 150 ns	< 150 ns	< 150 ns	< 150 ns
J33-J2 70 dB	ns	ns	ns	ns
J33-J3 70 dB	ns	ns	ns	ns
J33-J4 70 dB	ns	ns	ns	ns
J33-J5 70 dB	ns	ns	ns	ns
J33-J6 70 dB	ns	ns	ns	ns
J33-J7 70 dB	ns	ns	ns	ns
J33-J8 70 dB	ns	ns	ns	ns
J33-J9 70 dB	ns	ns	ns	ns
J33-J10 70 dB	ns	ns	ns	ns

NOTE: Any additional Test Data on Back

TESTED ON: Wiltron 37347A

TEST: PA
 QA/QC: Q2 R.M.C.
 DATE: 11-30-98

FINAL TEST DATA

AMC MODEL NO: MSN-32DT-05-DEC-MP-TRWCC, SERIAL NUMBER: MC81134 (pg2)

FORM: SW-01/0698



DATE: 11/30/98

MICROWAVE SWITCH FINAL TEST DATA

JOB NO: 807155 MODEL NO: MSN-32DT-05-DEC SERIAL NO: MC81134
 CUSTOMER: TRW TECHNICIAN: PA
 SPECIFICATION: _____ FREQUENCY RANGE: 18-20 GHz

RETURN LOSS						
INSERTION LOSS	INPUT dB	INPUT VSWR	OUTPUT ON dB	OUTPUT ON VSWR	OUTPUT OFF dB	OUTPUT OFF VSWR
J33-J11 7.00 dB	12.95 dB	1.58 :1	10.96 dB	1.79 :1	10.75 dB	1.82 :1
J33-J12 7.02 dB	13.77 dB	1.52 :1	13.76 dB	1.52 :1	19.28 dB	1.24 :1
J33-J13 6.27 dB	12.15 dB	1.66 :1	13.10 dB	1.57 :1	14.54 dB	1.46 :1
J33-J14 6.82 dB	13.81 dB	1.51 :1	11.07 dB	1.78 :1	10.65 dB	1.83 :1
J33-J15 7.19 dB	14.08 dB	1.49 :1	9.46 dB	2.01 :1	12.19 dB	1.65 :1
J33-J16 7.81 dB	12.61 dB	1.61 :1	12.50 dB	1.62 :1	10.28 dB	1.88 :1
J33-J17 7.44 dB	14.15 dB	1.49 :1	15.68 dB	1.39 :1	14.79 dB	1.45 :1
J33-J18 7.47 dB	12.38 dB	1.63 :1	11.47 dB	1.73 :1	12.67 dB	1.61 :1
J33-J19 6.76 dB	12.93 dB	1.58 :1	16.28 dB	1.36 :1	13.62 dB	1.53 :1
J33-J20 7.13 dB	12.09 dB	1.66 :1	11.21 dB	1.76 :1	13.79 dB	1.51 :1

SWITCHING SPEED				
ISOLATION	DELAY ON	RISE TIME	DELAY OFF	FALL TIME
J33-J11 70 dB	<150 ns	<15 ns	<150 ns	<15 ns
J33-J12 70 dB	ns	ns	ns	ns
J33-J13 70 dB	ns	ns	ns	ns
J33-J14 70 dB	ns	ns	ns	ns
J33-J15 70 dB	ns	ns	ns	ns
J33-J16 70 dB	ns	ns	ns	ns
J33-J17 70 dB	ns	ns	ns	ns
J33-J18 70 dB	ns	ns	ns	ns
J33-J19 70 dB	ns	ns	ns	ns
J33-J20 70 dB	ns	ns	ns	ns

NOTE: Any additional Test Data on Back

TESTED ON: Wiltron 37347A

TEST: PA
 QA/QC: Q2 RMC
 DATE: 11-30-98



FINAL TEST DATA

AMC MODEL NO: MSN-32DT-05-DEC-MP-TRWCC, SERIAL NUMBER: MC81134 (pg3)



AMERICAN MICROWAVE CORPORATION
 7311 G GROVE ROAD, FREDERICK MD, 21701
 TEL: (301)662-4700 FAX: (301)662-4938

FORM: SW-01/0698

DATE: 11/30/98

MICROWAVE SWITCH FINAL TEST DATA

-MP-TRWCC

JOB NO: 807155 MODEL NO: MSN-32DT-05-DEC SERIAL NO: MC81134

CUSTOMER: TRW TECHNICIAN: PA

SPECIFICATION: _____ FREQUENCY RANGE: 18-20 GHz

RETURN LOSS						
INSERTION LOSS	INPUT dB	INPUT VSWR	OUTPUT ON dB	OUTPUT ON VSWR	OUTPUT OFF dB	OUTPUT OFF VSWR
J33-J21 7.00 dB	14.10 dB	1.49 :1	13.67 dB	1.52 :1	21.66 dB	1.18 :1
J33-J22 7.13 dB	13.39 dB	1.54 :1	14.60 dB	1.46 :1	10.10 dB	1.91 :1
J33-J23 7.01 dB	14.07 dB	1.49 :1	12.37 dB	1.63 :1	12.15 dB	1.68 :1
J33-J24 7.56 dB	15.58 dB	1.40 :1	18.08 dB	1.29 :1	17.58 dB	1.30 :1
J33-J25 7.66 dB	10.34 dB	1.87 :1	11.83 dB	1.69 :1	10.97 dB	1.79 :1
J33-J26 7.02 dB	11.75 dB	1.70 :1	12.09 dB	1.66 :1	11.27 dB	1.75 :1
J33-J27 6.63 dB	10.27 dB	1.88 :1	13.51 dB	1.54 :1	15.34 dB	1.41 :1
J33-J28 7.14 dB	10.11 dB	1.91 :1	12.51 dB	1.62 :1	12.22 dB	1.65 :1
J33-J29 6.86 dB	10.36 dB	1.87 :1	12.71 dB	1.60 :1	14.37 dB	1.47 :1
J33-J30 6.93 dB	10.97 dB	1.79 :1	13.95 dB	1.50 :1	15.12 dB	1.43 :1

SWITCHING SPEED				
ISOLATION	DELAY ON	RISE TIME	DELAY OFF	FALL TIME
J33-J21 70 dB	< 150 ns	< 15 ns	< 150 ns	< 15 ns
J33-J22 70 dB	ns	ns	ns	ns
J33-J23 70 dB	ns	ns	ns	ns
J33-J24 70 dB	ns	ns	ns	ns
J33-J25 70 dB	ns	ns	ns	ns
J33-J26 70 dB	ns	ns	ns	ns
J33-J27 70 dB	ns	ns	ns	ns
J33-J28 70 dB	ns	ns	ns	ns
J33-J29 70 dB	ns	ns	ns	ns
J33-J30 70 dB	ns	ns	ns	ns

NOTE: Any additional Test Data on Back

TEST: PA

TESTED ON: Wiltron 37347A

QA/QC: Q2 R.M.C.

DATE: 11-30-98

FINAL TEST DATA

AMC MODEL NO: MSN-32DT-05-DEC-MP-TRWCC, SERIAL NUMBER: MC81134 (pg4)

FORM: SW-01/0698



AMERICAN MICROWAVE CORPORATION
 7311 G GROVE ROAD, FREDERICK MD. 21701
 TEL: (301)662-4700 FAX: (301)662-4938

DATE: 11/30/98

MICROWAVE SWITCH FINAL TEST DATA

JOB NO: 807155 MODEL NO: MSN-32DT-05-DEC-MP-TRWCC SERIAL NO: MC81134
 CUSTOMER: TRW TECHNICIAN: PA
 SPECIFICATION: _____ FREQUENCY RANGE: 18-20 GHz.

RETURN LOSS						
INSERTION LOSS	INPUT dB	INPUT VSWR	OUTPUT ON dB	OUTPUT ON VSWR	OUTPUT OFF dB	OUTPUT OFF VSWR
J33-J31 6.82 dB	10.52 dB	1.85 : 1	12.43 dB	1.60 : 1	11.43 dB	1.73 : 1
J33-J32 7.46 dB	10.97 dB	1.79 : 1	12.94 dB	1.58 : 1	12.08 dB	1.66 : 1

SWITCHING SPEED				
ISOLATION	DELAY ON	RISE TIME	DELAY OFF	FALL TIME
J33-J31 70 dB	< 150 ns	< 15 ns	< 150 ns	< 15 ns
J33-J32 70 dB	< 150 ns	< 15 ns	< 150 ns	< 15 ns

NOTE: Any additional Test Data on Back

TESTED ON: Wiltron 37347A

TEST : PA
 QA/QC : Q2 Rme
 DATE : 11-30-98