



## Voltage Control Phase Shifter 155 - 165MHz



### Features

- Wide Band Operation 155-165MHz
- 500° Phase Shift
- Low Insertion Loss and Low Phase Error
- Single Control Operation
- Customization available upon request

### Typical Applications

- Test and Measurement
- Military and Aerospace
- Research and Development

Voltage Control Phase Shifter 155 - 165MHz

Electrical Specifications, TA = +25 °C

Description	PN:RVPT0003M500S			
	Voltage Control Phase Shifter			
Parameters	Min.	Typ.	Max.	Units
Frequency Range	155-165			MHz
Phase Range	500			degrees
Phase Flatness			±10	degrees
Insertion Loss		5.5	6.5	dB
Insertion Loss Temperature Coefficient		0.01		dB/° C
Control Voltage	0	10		V
Input VSWR		1.3	1.6	:1
Output VSWR		1.3	1.6	:1
0.1dB Compression Point (Po.1dB)		23		dBm
Current	5 Max.			mA
Impedance	50			Ω
Weight	0.35 Max.			ounces
Finish	Nickel Plated			
Material	Aluminum			
Package	SMD			



**Absolute Maximum Ratings**

Control Voltage	0~13V @ 25°C
RF Input power	+23dBm @ 25°C

**Ordering Information**

Part No.	Description
RVPT0003M500S	155-165MHz Voltage Control Phase Shifter

**Environmental Specifications and Test Standards**

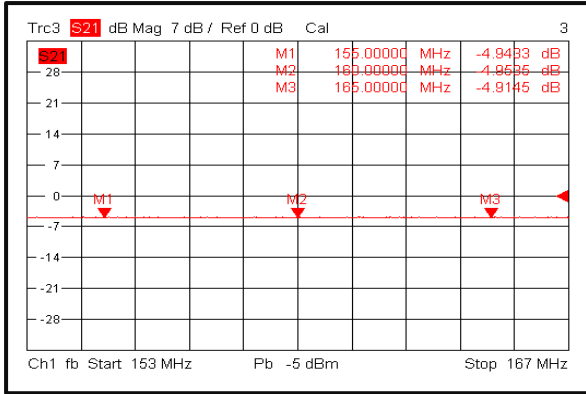
Parameter	Standard	Description
Operational Temperature	MIL-STD-39016	-40°C~+85°C
Storage Temperature		-50°C~+105°C
Thermal Shock		1 Hour@ -40°C → 1 Hour @ +85°C (5 Cycles)
Random Vibration		Acceleration Spectral Density 6 (m/s) Total 92.6 RMS
Electrical & Temperature Burn In		Temperature +85°C for 72 Hours
Shock		1. Weight >20g, 50g half sine wave for 11ms, Speed variation 3.44m/s 2. Weight <=20g, 100g Half sine wave for 6ms, Speed variation 3.75m/s 3. Total 18 times (6 directions, 3 repetitions per direction).
Altitude		Standard: 30,000 Ft (Epoxy Sealed Controlled Environment) Optional: Hermetically Sealed (60,000 ft. 1.0 PSI min)
Hermetically Sealed (Optional)	MIL-STD-883	MIL-STD-883 (For Hermetically Sealed Units)

**Voltage Control Phase Shifter 155 - 165MHz**

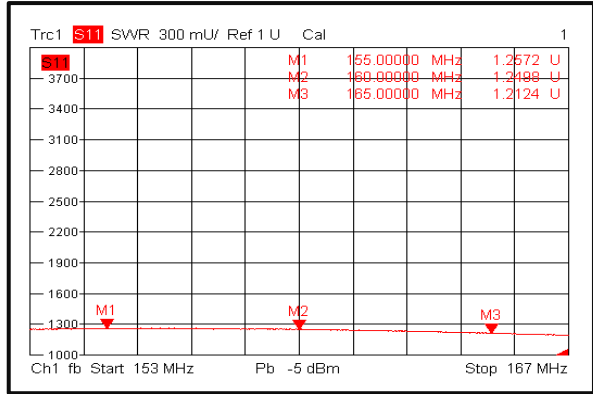


**Typical Performance Plots**

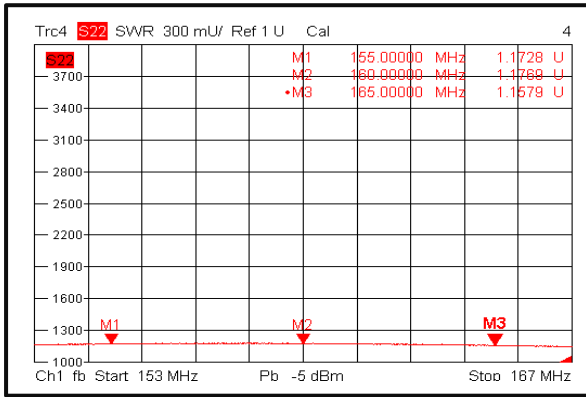
**Insertion Loss @ +25°C**



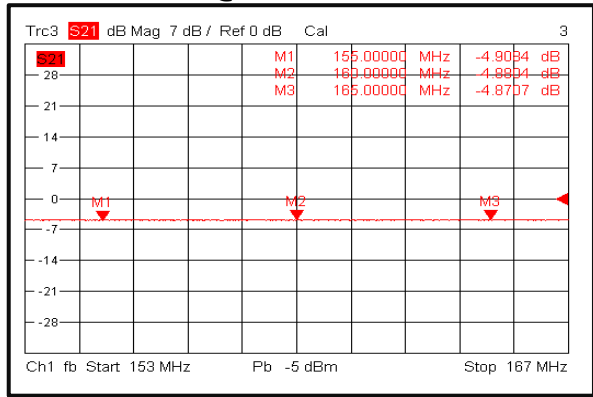
**Input VSWR @ +25°C**



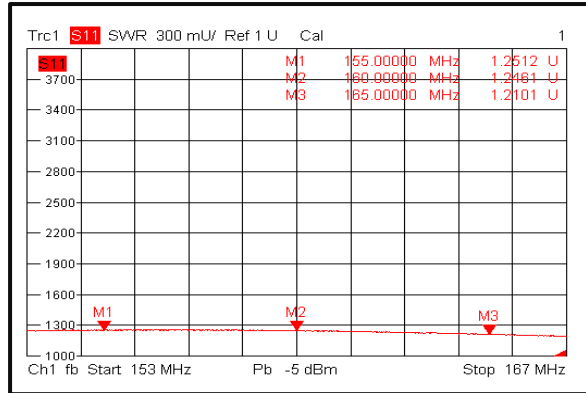
**Output VSWR @ +25°C**



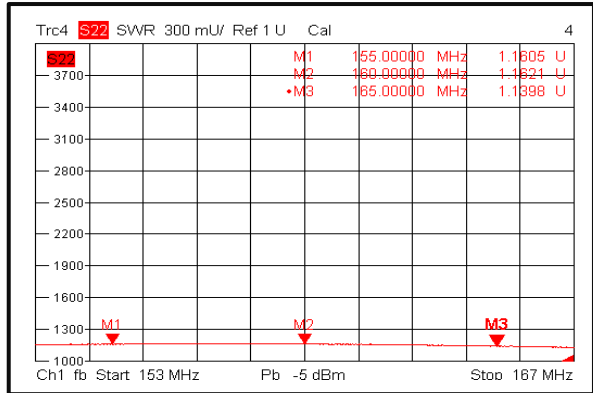
**Insertion Loss @ -40°C**



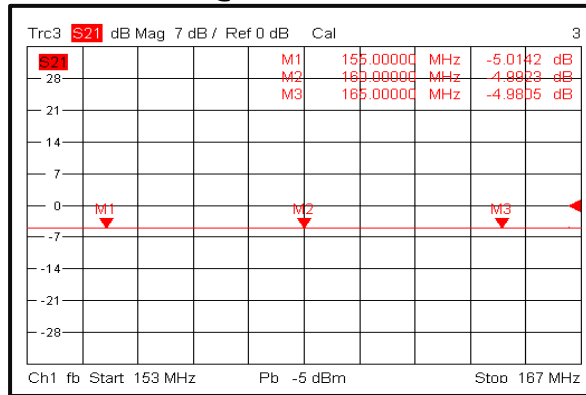
**Input VSWR @ -40°C**



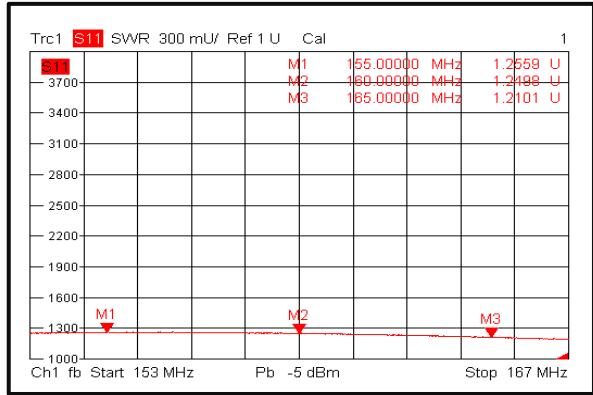
**Output VSWR @ -40°C**



**Insertion Loss @ +85°C**



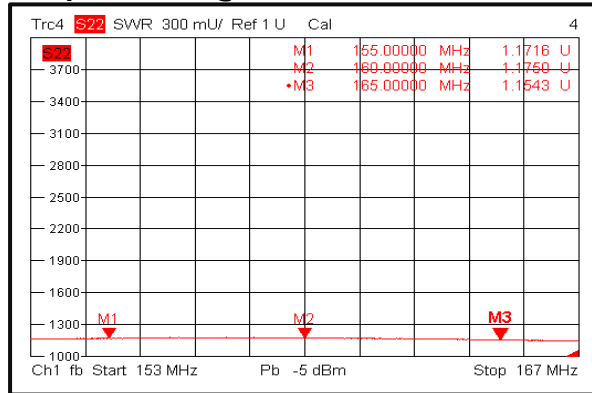
**Input VSWR @ +85°C**



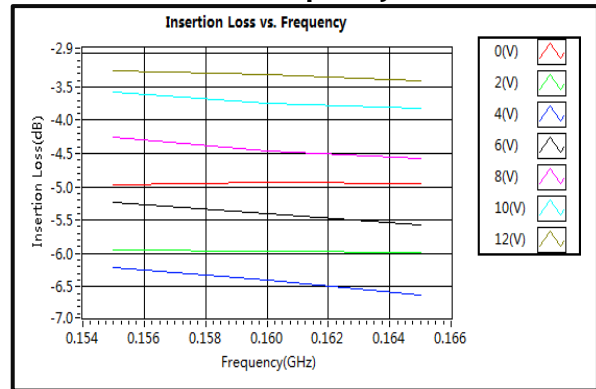
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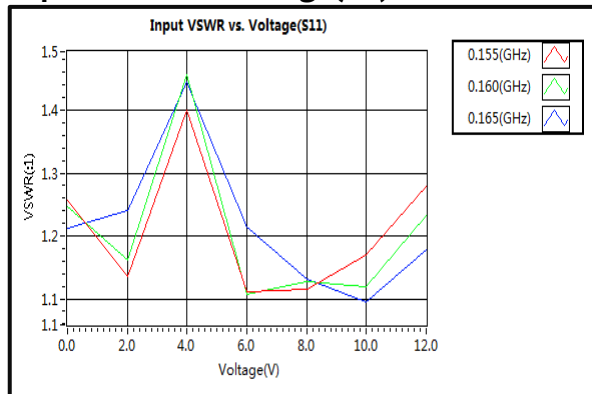
### Output VSWR @ +85°C



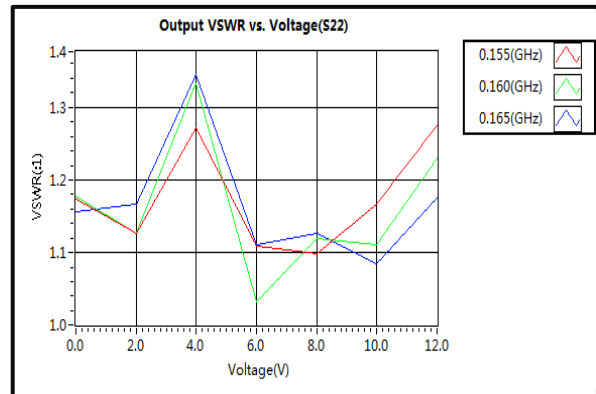
### Insertion Loss vs. Frequency



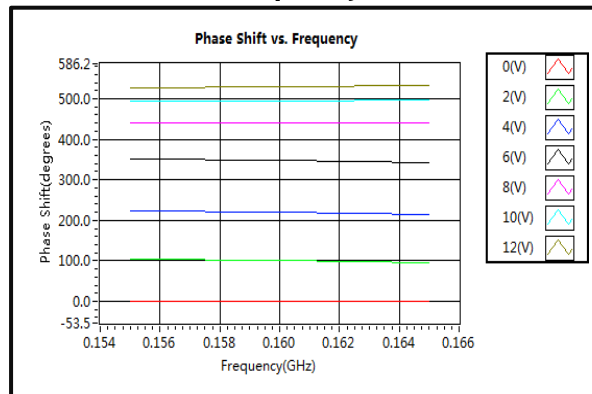
### Input VSWR vs. Voltage(s11)



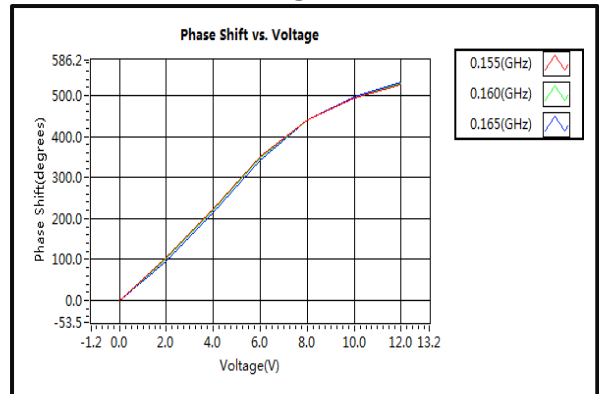
### Output VSWR vs. Voltage(s22)



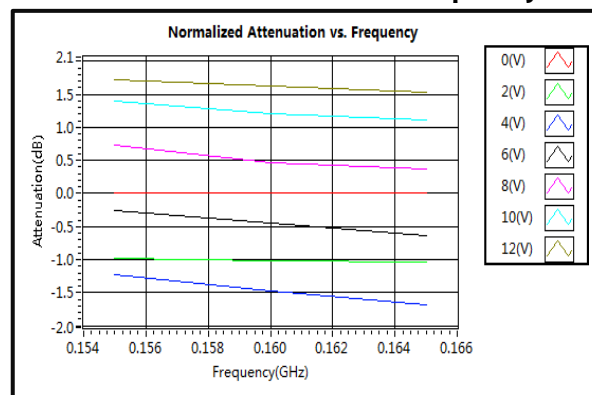
### Phase Shift vs. Frequency



### Phase Shift vs. Voltage



### Normalized Attenuation vs. Frequency



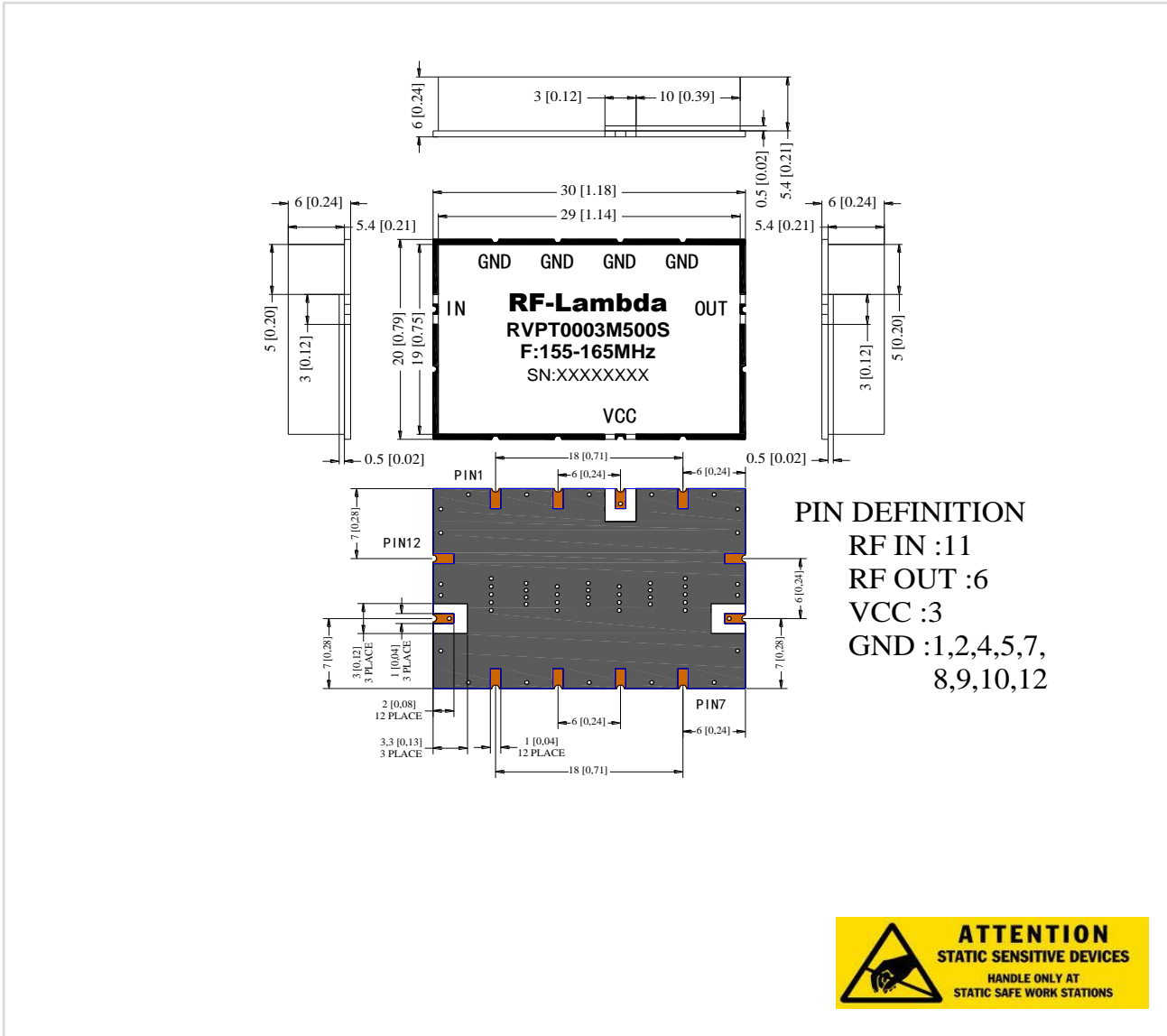
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**Outline Drawing:**

All Dimensions in mm [inches]

Tolerance  $\pm 0.2$  [0.008]



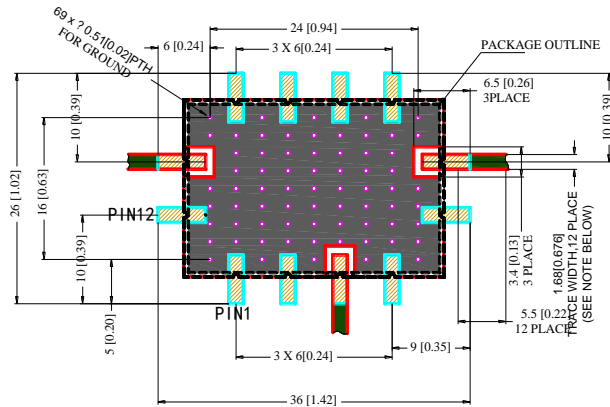
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Recommended PCB Footprint  
All Dimensions in mm [inches]  
Tolerance  $\pm 0.13$  [0.005]



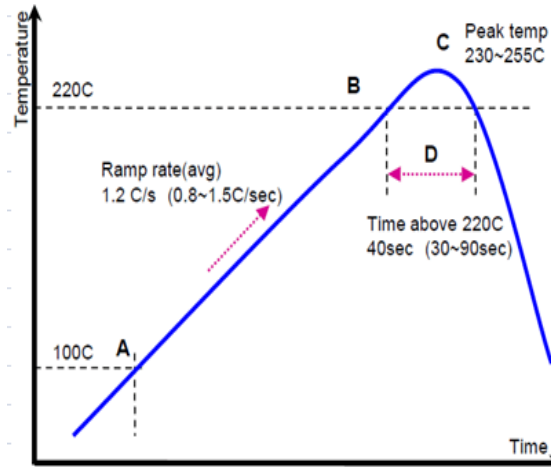
**NOTES:**

1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.030"±0.002"; COPPER : 0.5OZ. EACH SIDE.  
FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

**Recommended Reflow Temperature Profile**



Point		Standard	Upper	Lower
A	Pre-heat start point	100C	-	-
B	Pre-heat end point	220C	-	-
A-B	Pre-heat time	100sec	150sec	80sec
	Ramp up rate to Peak temp	1.2 C/sec	0.8C/sec	1.5C/sec
C	Peak temperature	240C	255C	230C
D	Time above 220C	40sec	90sec	30sec