# Digital Non-Dispersive 360° Phase Shifter
# 18 - 26GHz


RoHS Compliant

## *Features*

- Wide Band Operation 18-26GHz
- 6-Bit Phase Shift
- Temperature Range -45°C~+85°C
- Customization available upon request
- Hermetically sealed package up to 60,000ft available upon request.

*Electrical Specifications, TA = +25°C, Vdd = +12V, VCTL = 0 / +5V*

| Description | PN:RFPSHT1826N6 | | | |
|---|---|---|---|---|
| | Digital Phase Shifter | | | |
| Parameter | Min | Typ | Max | Units |
| Frequency Range | 18 | | 26 | GHz |
| Phase Range | | 360 | | ° |
| Control Bits | | | 6 | Bit |
| Control Step Size | | 5.625 | | ° |
| Insertion Loss | | 14 | 16 | dB |
| Insertion Loss Temperature Coefficient | | 0.008 | | dB/°C |
| Phase Flatness | | ±5 | ±25 | ° |
| Input VSWR | | 2.5 | 3.5 | : 1 |
| Output VSWR | | 2.5 | 3.5 | : 1 |
| Input 1dB Compression Point (P1dB) | | | 23 | dBm |
| Weight | 1.76 | | | Ounces |
| Impedance | 50 | | | Ω |
| Bias Current (+12V) | 20 | | | mA |
| Input / Output Connectors | 2.92-Female | | | |
| Interface and Control Connector | MICRO-D15 (Female) | | | |
| Finish | Nickel plated | | | |
| Material | Aluminum | | | |
| Sealing | Hermetically Sealed (Optional) | | | |

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### *Absolute Maximum Ratings*

| | |
|---|---|
| Biasing | +5V±10%/-5V±10% |
| TTL Control Voltage | 0~0.8V/2.8~5V |

### *Ordering Information*

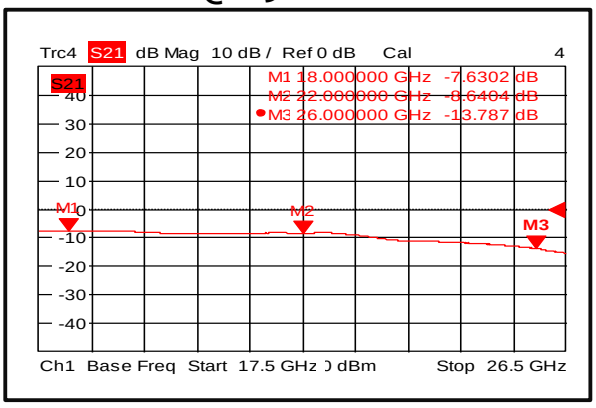
| Part No. | ECCN | Description |
|---|---|---|
| RFPSHT1826N6 | EAR99 | 18-26GHz Digital Phase Shifter |

### *Environmental Specifications and Test Standards*

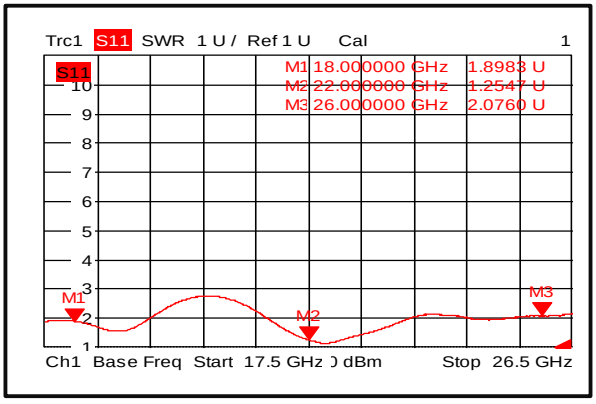
| Parameter | Standard | Description |
|---|---|---|
| Operational Temperature | MIL-STD-39016 | -45℃~+85℃ |
| Storage Temperature | | -55℃~+125℃ |
| Thermal Shock | | 1 Hour@ -45℃ → 1 Hour @ +85℃ (5 Cycles) |
| Random Vibration | | Acceleration Spectral Density 6 (m/s)<br>Total 92.6 RMS |
| Electrical & Temperature Burn In | | Temperature +85℃ for 72 Hours |
| Shock | | 1. Weight >20g, 50g half sine wave for 11ms, Speed variation 3.44m/s<br>2. Weight <=20g, 100g Half sine wave for 6ms, Speed variation 3.75m/s<br>3. Total 18 times (6 directions, 3 repetitions per direction). |
| Altitude | | Standard: 30,000 Ft (Epoxy Sealed Controlled Environment)<br>Optional: Hermetically Sealed (60,000 ft. 1.0 PSI min) |
| Hermetically Sealed (Optional) | MIL-STD-883 | MIL-STD-883 (For Hermetically Sealed Units) |

## *Typical Performance Plots*

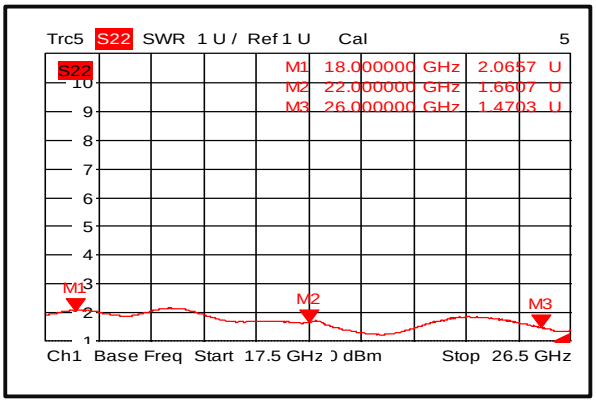
### Insertion Loss@+25℃



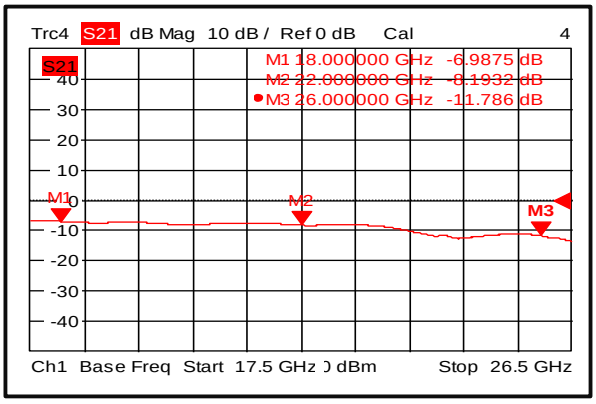

### Input VSWR @+25℃



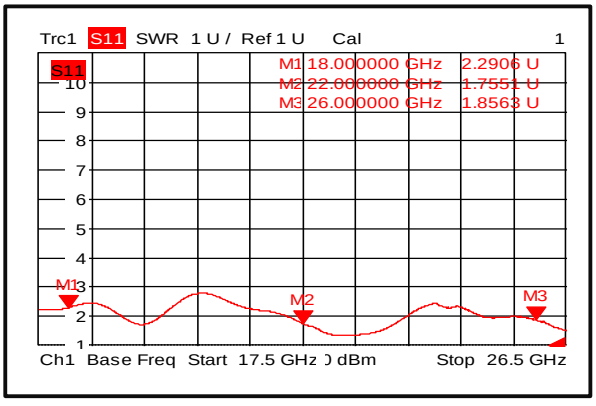

### Output VSWR @+25℃



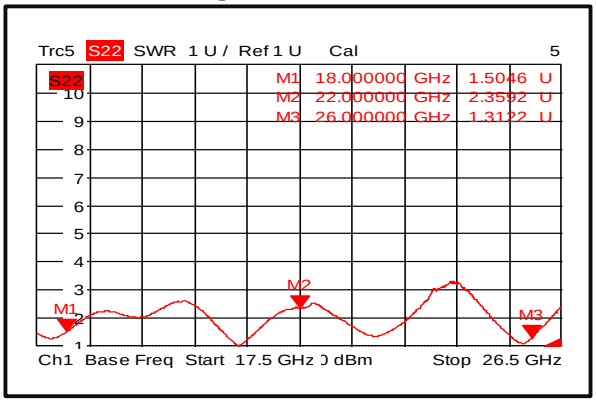

### Insertion Loss @-45℃




### Input VSWR @-45℃




### Output VSWR @-45℃

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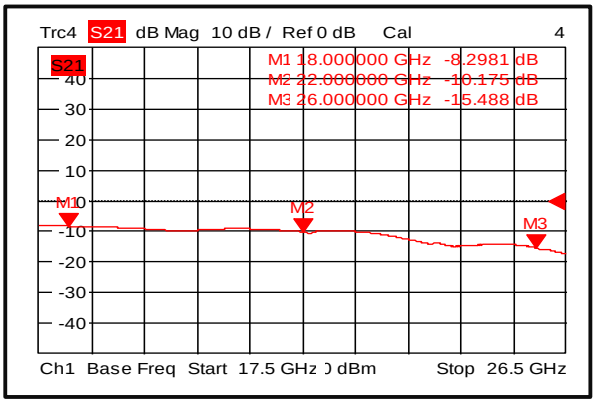
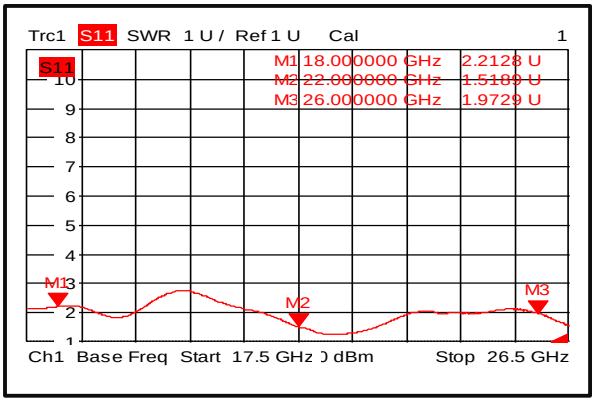
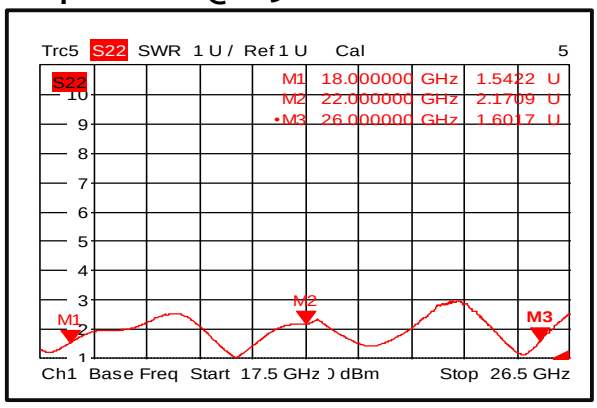
## Insertion Loss @+85℃



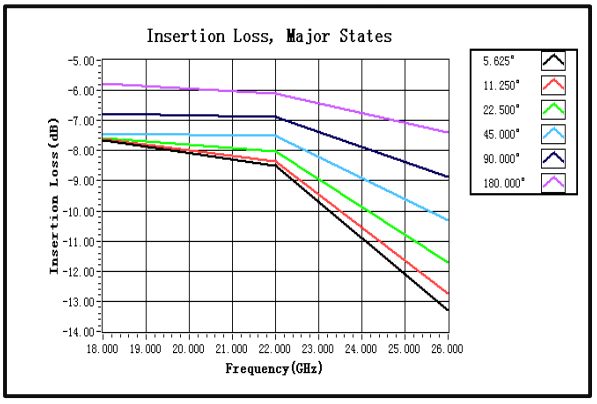

## Input VSWR @+85℃



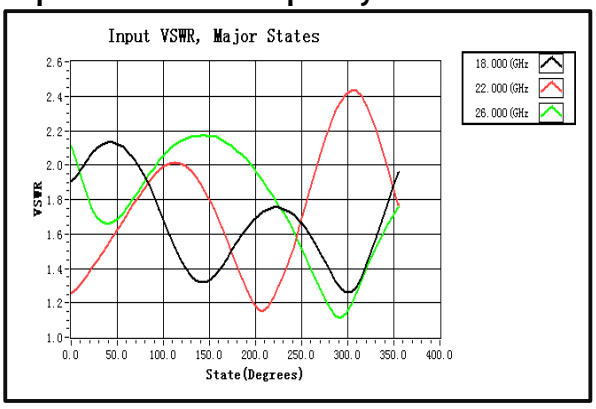

## Output VSWR @+85℃



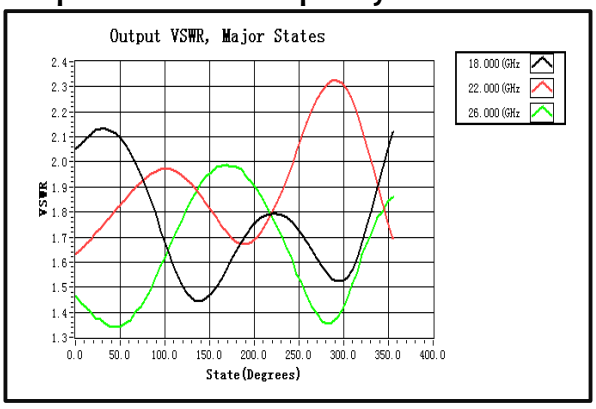

## Insertion Loss vs. Frequency




## Input VSWR vs. Frequency




## Output VSWR vs. Frequency

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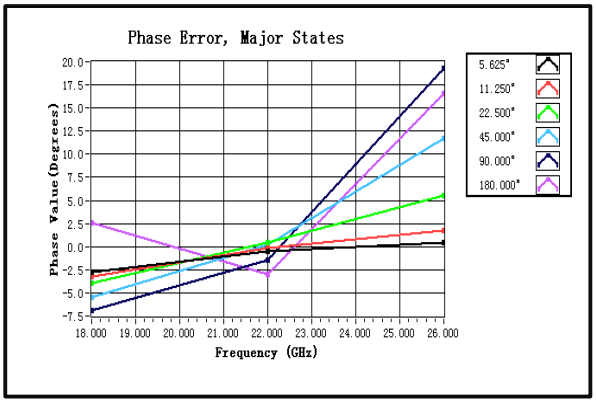
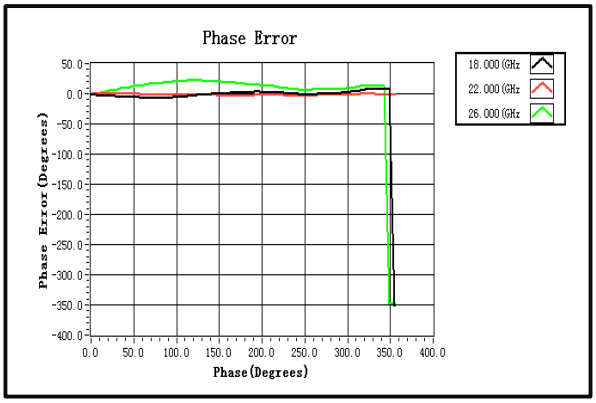
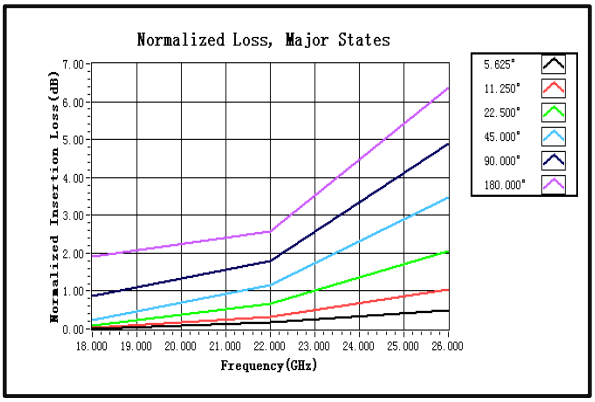
## Phase Error vs. Frequency



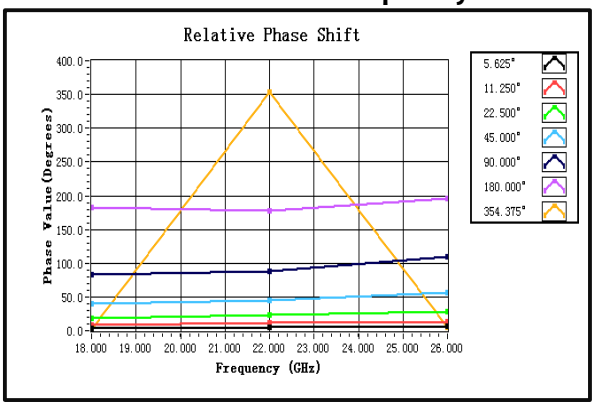

## Phase Error vs. State



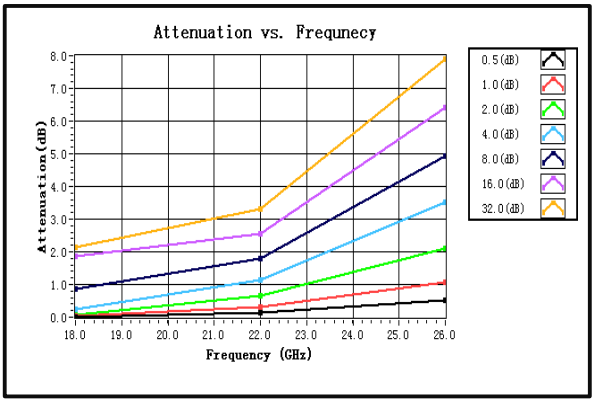

## Normalized Loss. All States



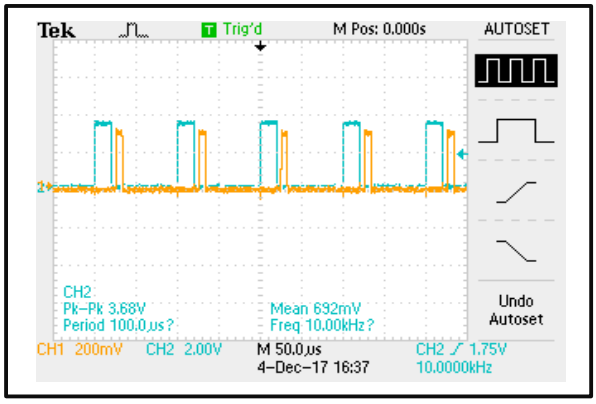

## Relative Phase Shift vs. Frequency




## Attenuation vs. Frequency




## Speed

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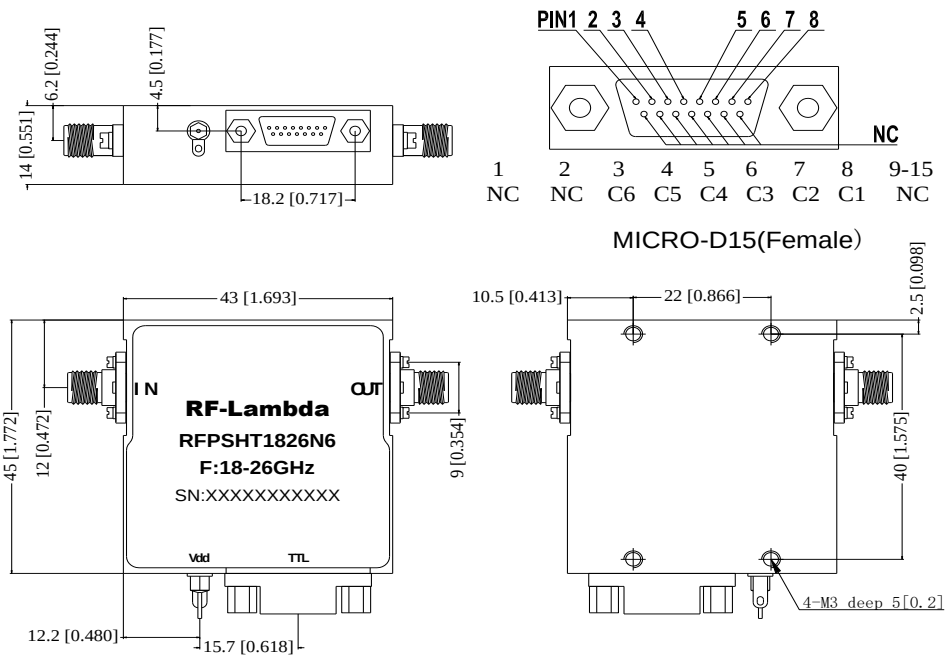
## Outline Drawing:

All Dimensions in mm [inches]




### Truth Table

| Control Voltage Input | | | | | | Phase Shift (Degrees) |
|---|---|---|---|---|---|---|
| C6 | C5 | C4 | C3 | C2 | C1 | |
| 1 | 1 | 1 | 1 | 1 | 1 | Reference |
| 1 | 1 | 1 | 1 | 1 | 0 | 5.625 |
| 1 | 1 | 1 | 1 | 0 | 1 | 11.25 |
| 1 | 1 | 1 | 0 | 1 | 1 | 22.5 |
| 1 | 1 | 0 | 1 | 1 | 1 | 45 |
| 1 | 0 | 1 | 1 | 1 | 1 | 90 |
| 0 | 1 | 1 | 1 | 1 | 1 | 180 |
| 0 | 0 | 0 | 0 | 0 | 0 | 354.375 |


## Important Notice