

Features

- Wide Band Operation 32-37GHz
- 360° Phase Shift
- Fast Switching Speed



Parameters	Min.	Typ.	Max.	Units
Frequency Range	32		37	GHz
Phase Range		360		deg
Control Bits		5		Bit
Control Step size		11.25		deg
Insertion Loss		9.8	11.0	dB
Insertion Loss Temperature Coefficient		0.008		dB/ °C
Phase Flatness		±5	±10	deg
Input VSWR		1.8		: 1
Output VSWR		2.0		: 1
Input 1dB Compression Point (P1dB)		20		dBm
Impedance		50		Ω
Bias Current		1.0Max.		mA
Input / Output Connectors	2.92mm-Female			
Interface and Control Connector	Micro-D9 (Female)			
Finish	Gold Plated			
Material	Aluminum			
Sealing	Hermetically Sealed (Optional)			

QOTANA TECHNOLOGIES

Digital 360° Phase Shifter 32 - 37GHz

Absolute Maximum Ratings

Biassing	+5V±10%
RF Input power	+20dBm

Environmental Specifications

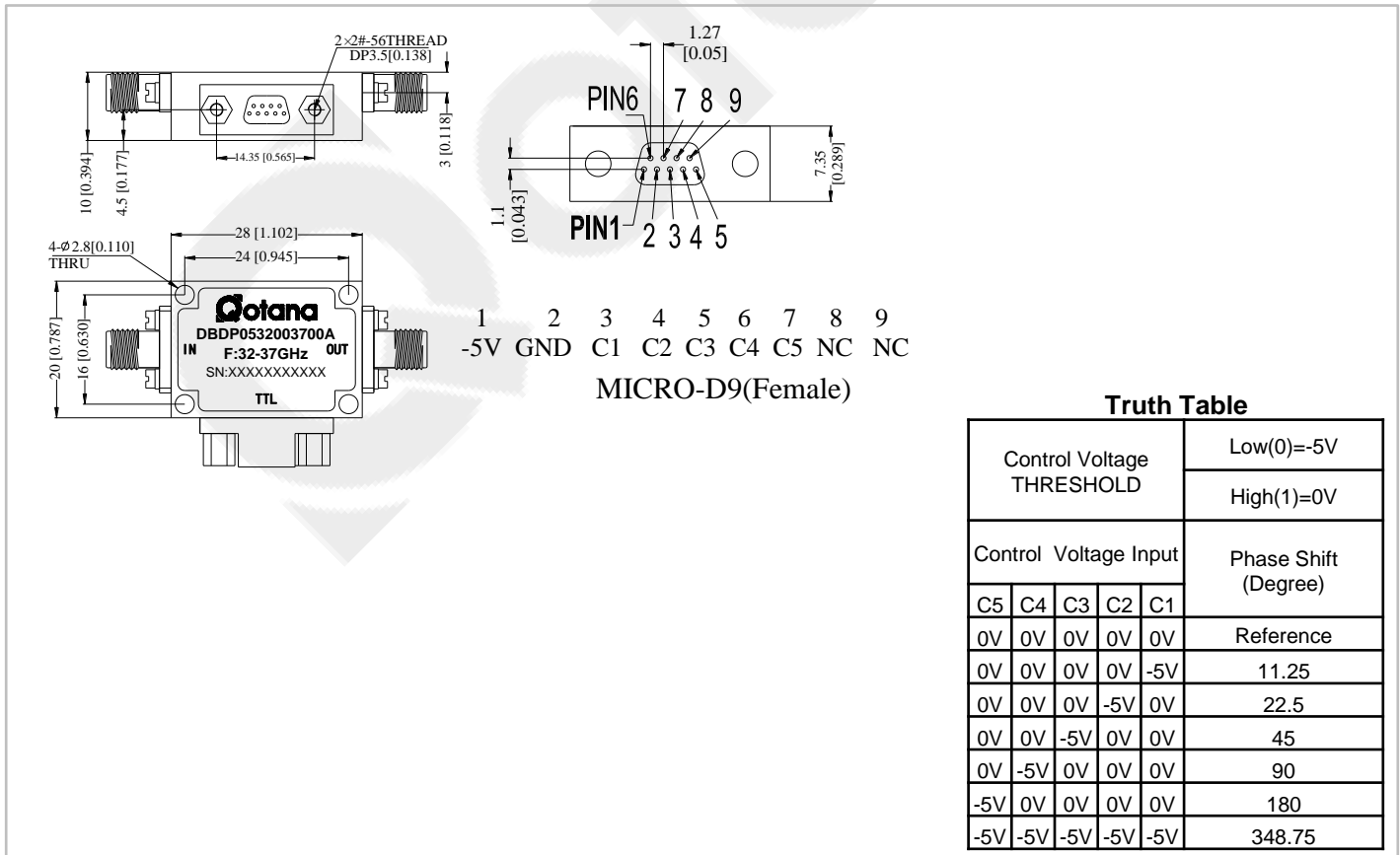
Operational Temperature	-40°C~+85°C
Storage Temperature	-50°C~+105°C
Altitude	30,000 ft. (Epoxy Sealed Controlled environment)
	60,000 ft. 1.0psi min (Hermetically Sealed Un-controlled environment) (Optional)
Vibration	25g RMS (15 degrees 2KHz) endurance, 1 hour per axis
Humidity	100% RH at 35°C, 95%RH at 40°C
Shock	20G for 11msec half sine wave, 3 axis both directions

Ordering Information

Part No.	Description
DBDP0532003700A	32-37GHz Digital Phase Shifter

Outline Drawing:

All Dimensions in mm (inches) Tolerances ±0.1 (0.004)

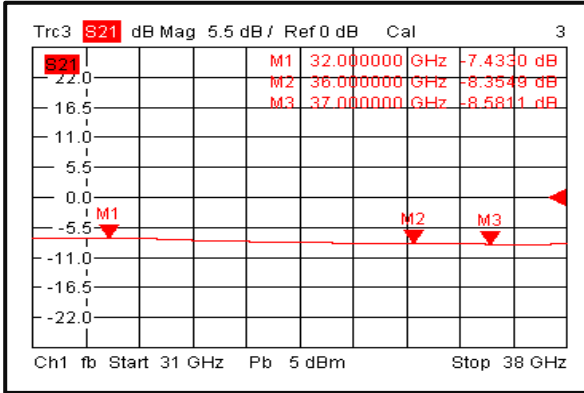


The drawing shows a top view and a side view of the phase shifter. Key dimensions include: 10 [0.394] mm for the top length, 4.5 [0.177] mm for the top offset, 14.35 [0.565] mm for the top width, 3 [0.118] mm for the top thickness, 28 [1.102] mm for the total width, 24 [0.945] mm for the internal width, 4-φ2.8 [0.110] THRU for the mounting holes, 20 [0.787] mm for the bottom length, and 1.6 [0.630] mm for the bottom offset. Pin 1 is 1.1 [0.043] mm from the left edge, and pins 7, 8, and 9 are 1.27 [0.05] mm apart. The pinout is: 1 (-5V), 2 (GND), 3 (C1), 4 (C2), 5 (C3), 6 (C4), 7 (C5), 8 (NC), 9 (NC). The device is labeled with 'Qotana DBDP0532003700A F:32-37GHz OUT SN:XXXXXXXXXX TTL'.

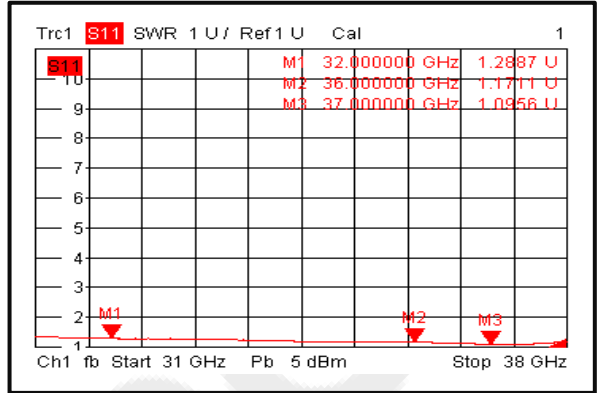
Truth Table

Control Voltage THRESHOLD						Low(0)=-5V
Control Voltage THRESHOLD						High(1)=0V
Control Voltage Input						Phase Shift (Degree)
C5	C4	C3	C2	C1		
0V	0V	0V	0V	0V	Reference	
0V	0V	0V	0V	-5V	11.25	
0V	0V	0V	-5V	0V	22.5	
0V	0V	-5V	0V	0V	45	
0V	-5V	0V	0V	0V	90	
-5V	0V	0V	0V	0V	180	
-5V	-5V	-5V	-5V	-5V	348.75	

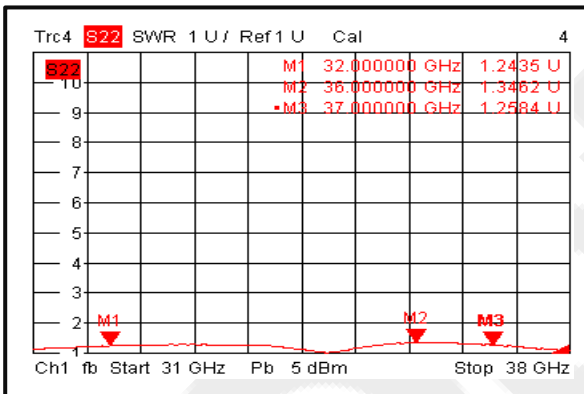
Insertion Loss @+25°C



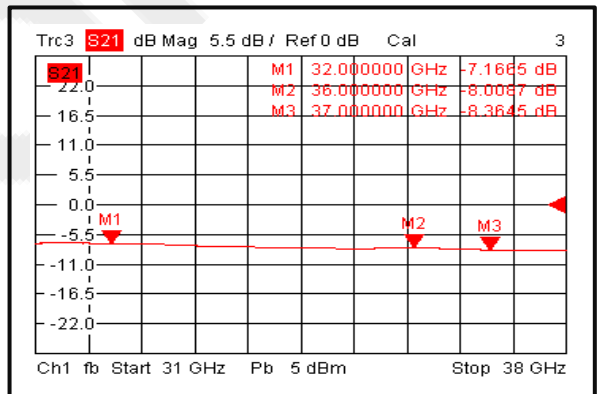
Input VSWR @+25°C



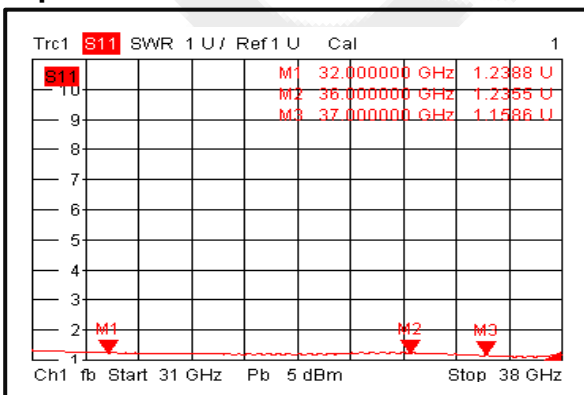
Output VSWR @+25°C



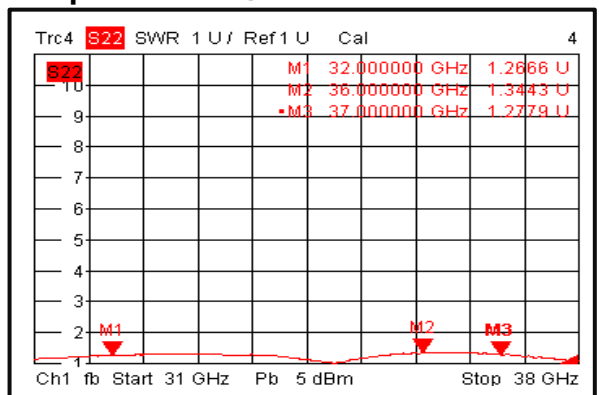
Insertion Loss @-40°C



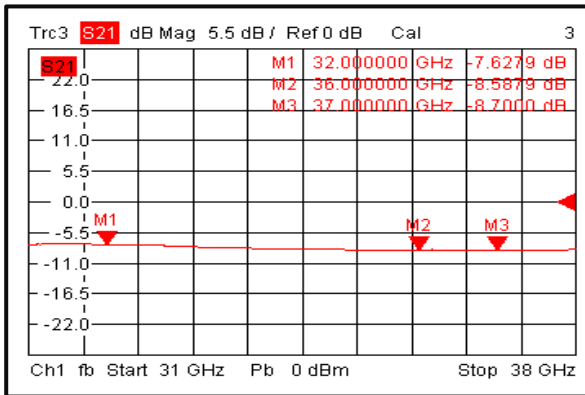
Input VSWR @-40°C



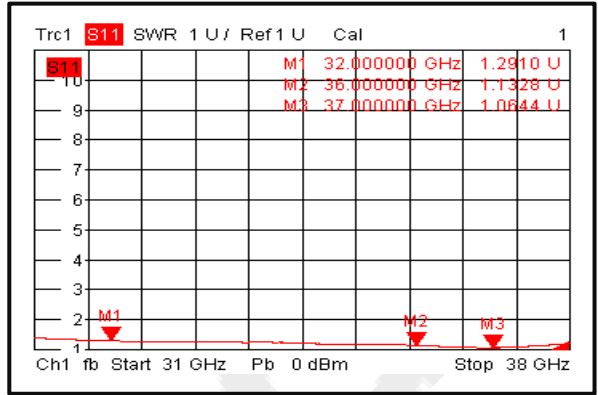
Output VSWR @-40°C



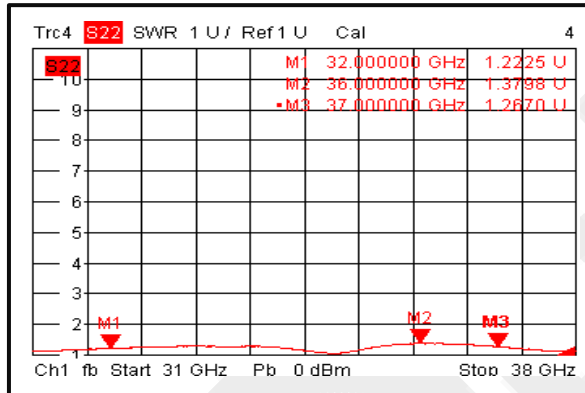
Insertion Loss @+85°C



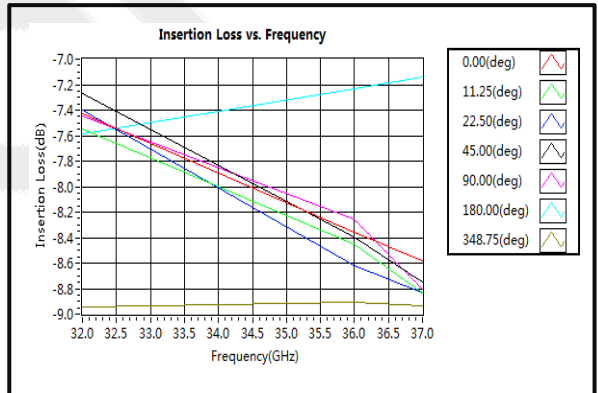
Input VSWR @+85°C



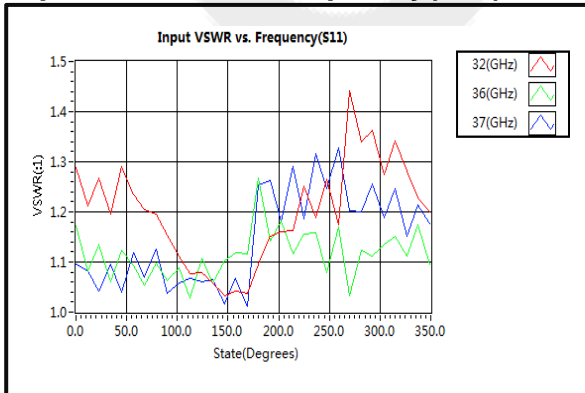
Output VSWR @+85°C



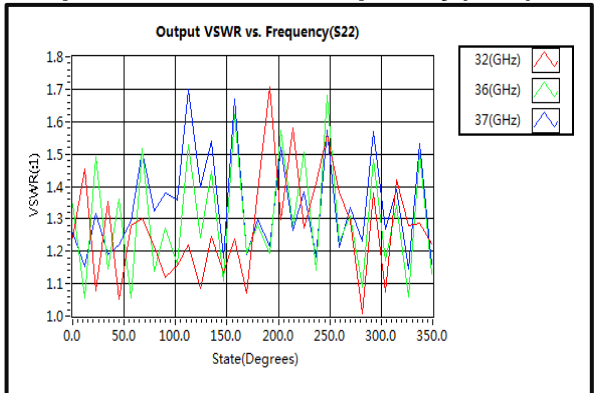
Insertion Loss vs. Frequency



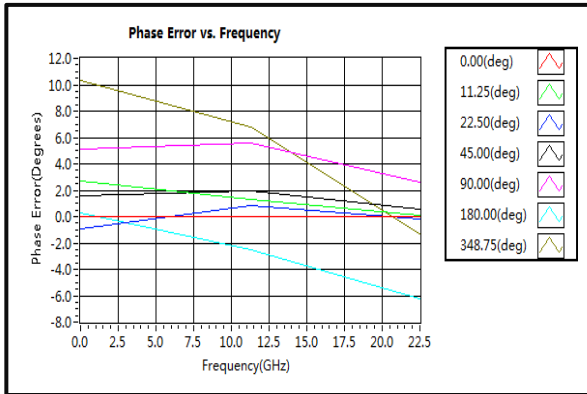
Input VSWR vs. Frequency (S11)



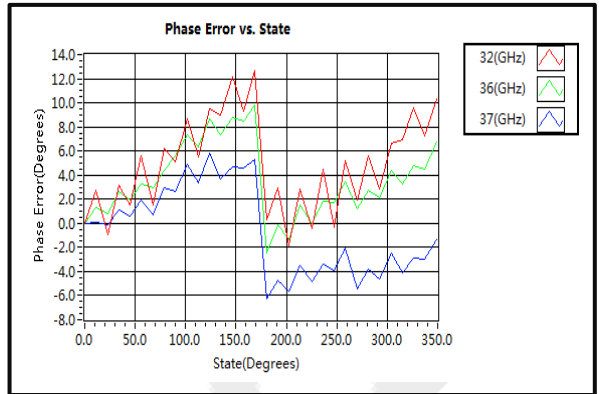
Output VSWR vs. Frequency (S22)



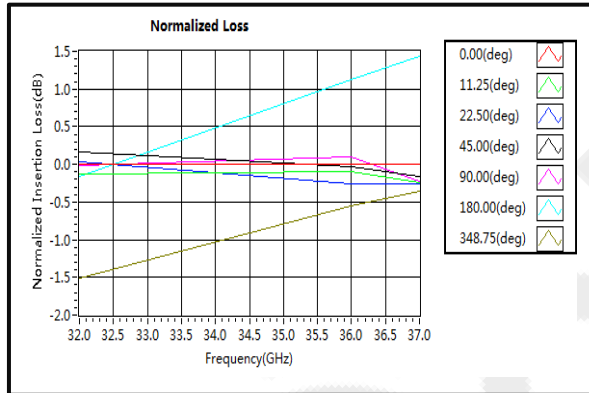
Phase Error vs. Frequency



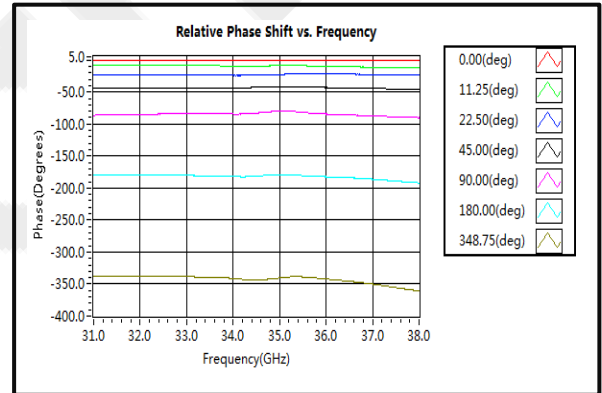
Phase Error vs. State



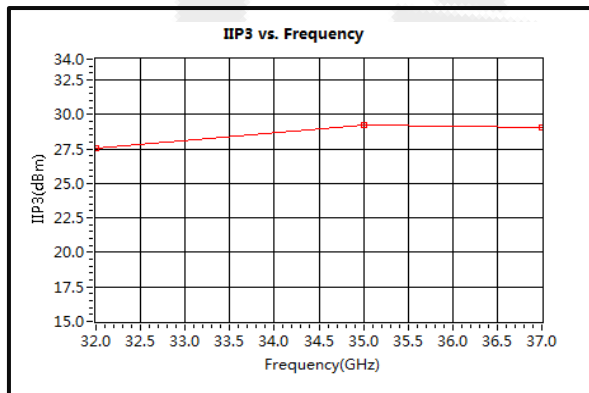
Normalized Loss. All States



Relative Phase Shift vs. Frequency



IIP3



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