

**GC4701-6LP Preliminary Datasheet**  
**DC-20GHz Surface Mount Limiter PIN Diode**

Preliminary



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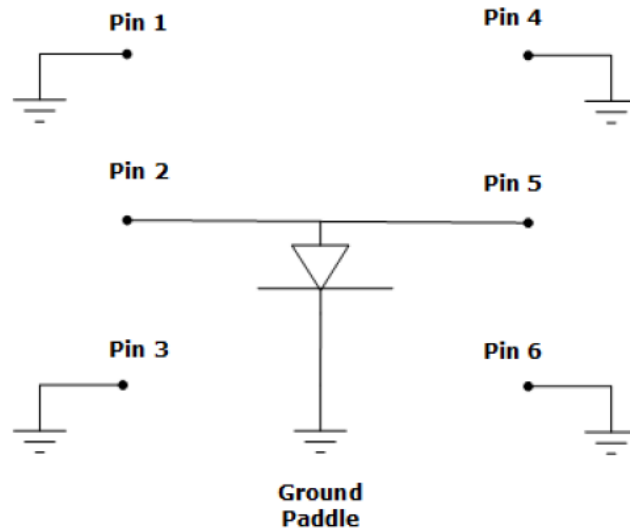
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## 1 Product Overview

Figure 1 Functional Block Diagram



### Key Features

- Small 1.6 mm × 1.6 mm QFN
- Low insertion loss: 0.1 dB at 5 GHz
- Multistage designs
  - GC4212-6LP: Input PIN diode
  - GC4701-6LP: Output PIN diode
  - GC9952-6LP: Schottky driver
- Suitable for applications to 20 GHz
- Excellent flat leakage performance
- Low-P1dB compression point: 10 dBm
- RoHS compliant

### Typical Electrical Performance

Table 1 Device Electrical Parameters

Parameter	Units	Condition	Min	Typ	Max
$V_B$	V	$I_R = 10 \mu\text{A}$		30	
$I_R$	nA	$V_R = 16 \text{ V}$			500
$C_T$	pF	$V_R = 0 \text{ V}, f = 1 \text{ MHz}$		0.45	
$C_T$	pF	$V_R = 10 \text{ V}, f = 1 \text{ MHz}$		0.35	0.4
$R_S$	$\Omega$	$I_F = 10 \text{ mA}, f = 1 \text{ GHz}$		1.5	2
$T_L$	ns	$I_F = 10 \text{ mA}, I_R = 6 \text{ mA}$		10	
Thermal Resistance	$^{\circ}\text{C}/\text{W}$	$I_{\text{heat}} = 0.5 \text{ A}$			50

**Table 2 Device RF Performance**

Parameter	Units	Condition	Min	Typ	Max
Peak Power ( $P_{IN}$ )	dBm	1 $\mu$ s, 0.001 duty cycle			50
Leakage power ( $P_{OUT}$ )	dBm	1 $\mu$ s, 0.001 duty cycle		22	
Threshold	dBm	P1dB		10	
CW power ( $P_{IN}$ )	dBm	Continuous			33
Insertion Loss ( $S_{21}$ )	dB	0 dBm $P_{IN}$ @12 GHz		-0.5	
Return Loss ( $S_{11}$ )	dB	0 dBm $P_{IN}$ @12 GHz		-20	
Frequency Range	GHz	0 dBm $P_{IN}$	0.01		20

## Typical Performance Curves of GC4701-6LP

The following graphs show the typical performance curves of the GC4701-6LP device at 25 °C

Figure 2 S21

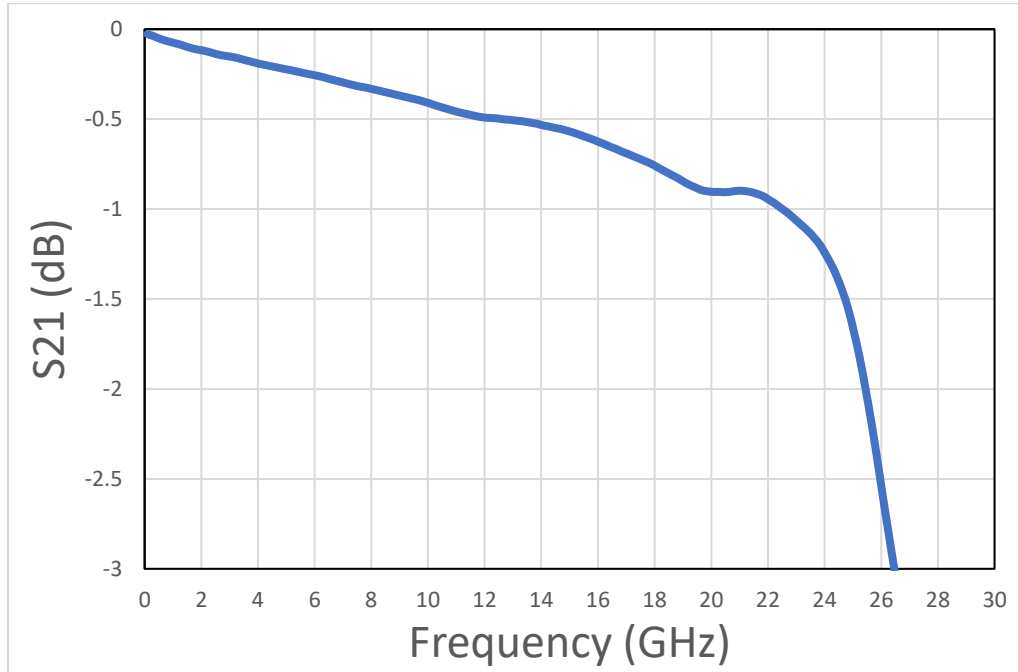


Figure 3 S11

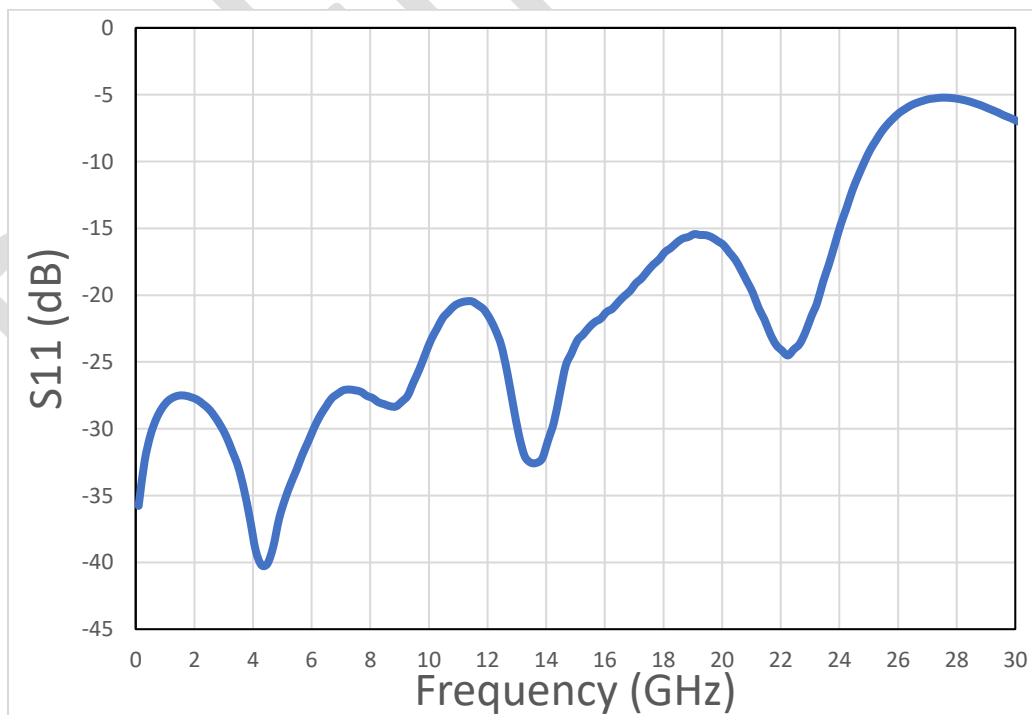


Figure 4 CW Transfer Characteristics

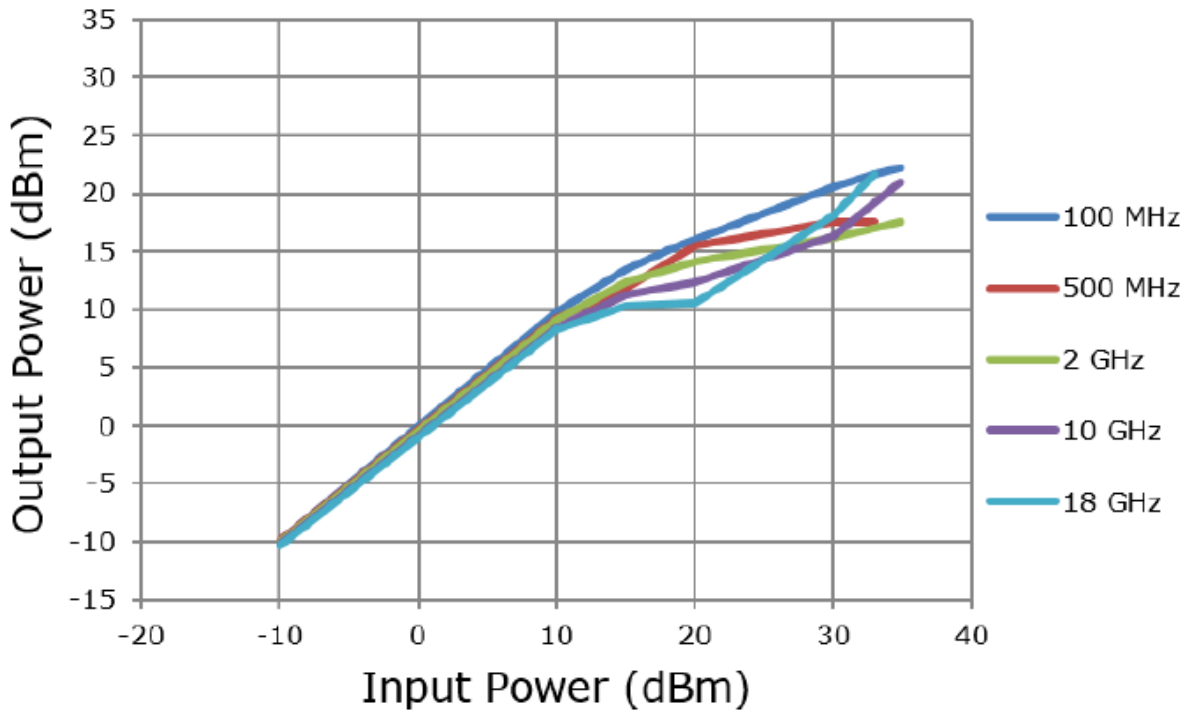
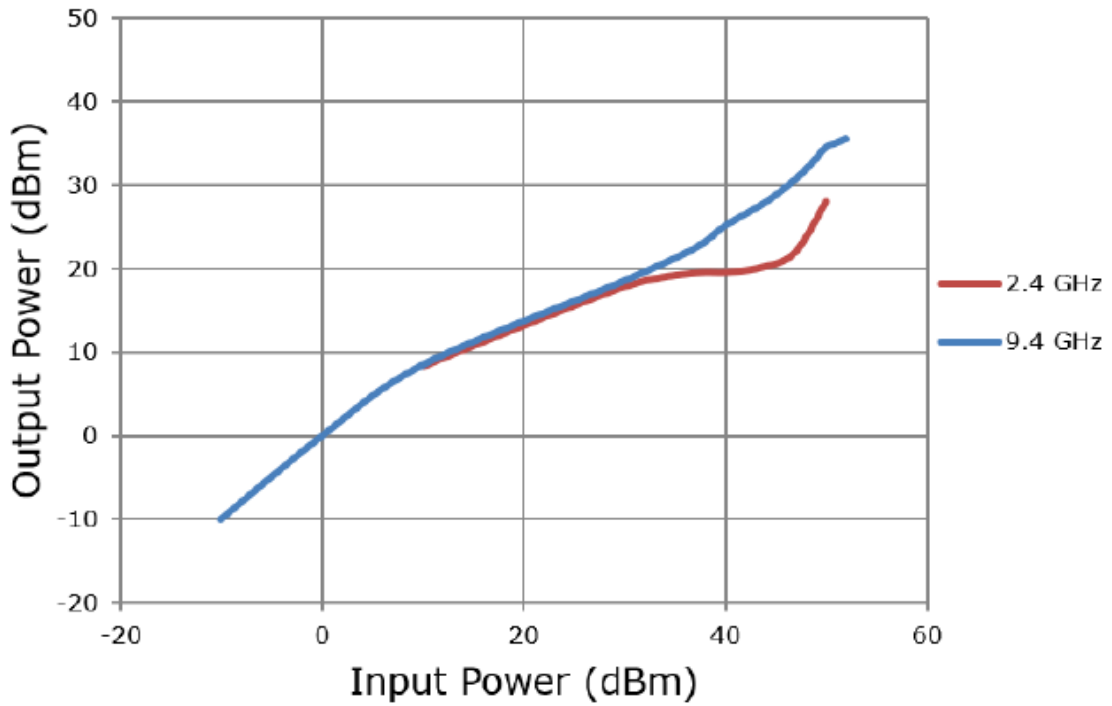


Figure 5 Pulsed Transfer Characteristics



### Typical Performance Curves of the GC4212-6LP and GC4701-6LP

The following graphs show the typical performance curves of the GC4212-6LP input PIN and GC4701-6LP output PIN devices in series at 25 °C

Figure 6 Application Schematic

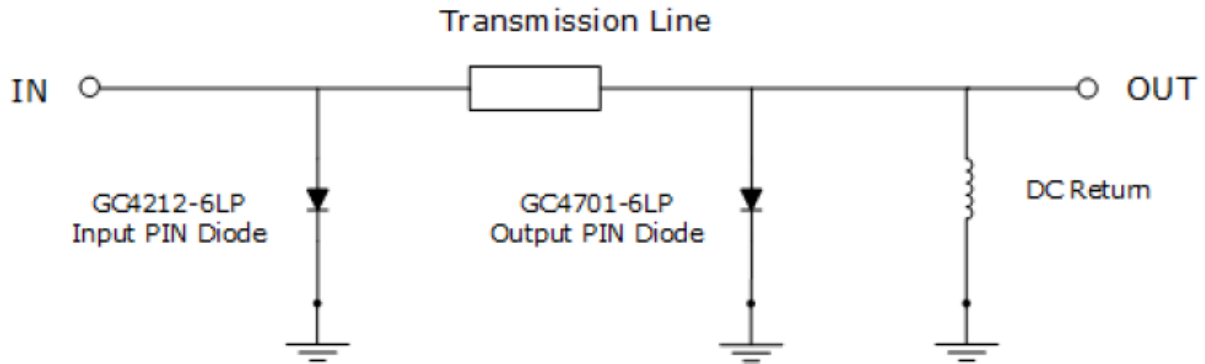


Figure 7 GC4212-6LP and GC4701-6LP CW Multi-Stage Transfer Characteristics

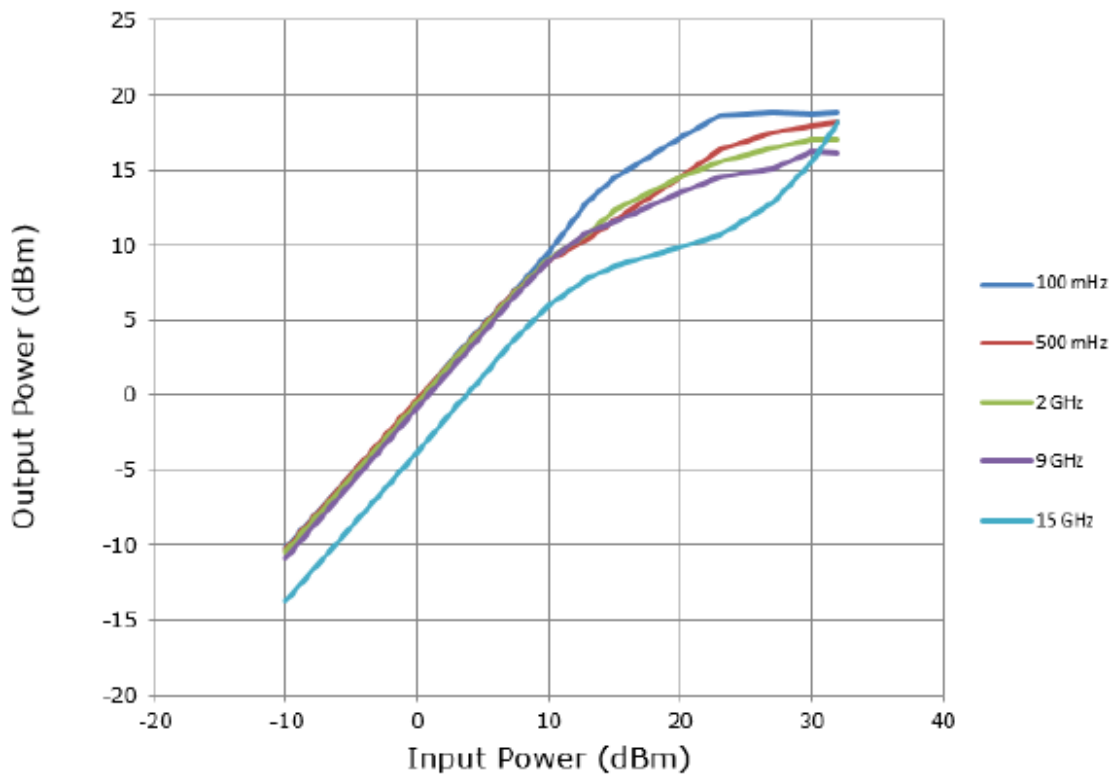
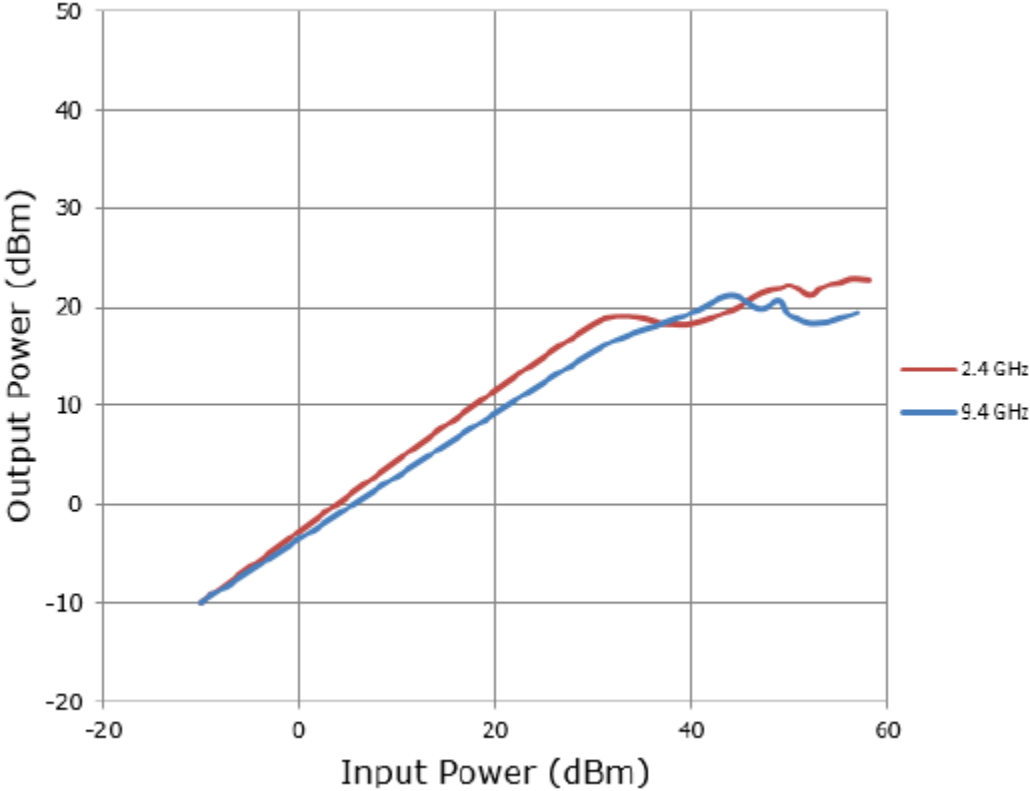


Figure 8 GC4212-6LP and GC4701-6LP Pulsed Multi-Stage Transfer Characteristics



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### Typical Performance Curves of the GC4212-6LP, GC4701-6LP

The following graphs show the typical performance curves of the GC4212-6LP input PIN and GC4701-6LP output PIN and the GC9952-6LP Schottky driver devices in series at 25 °C

Figure 9 Application Schematic

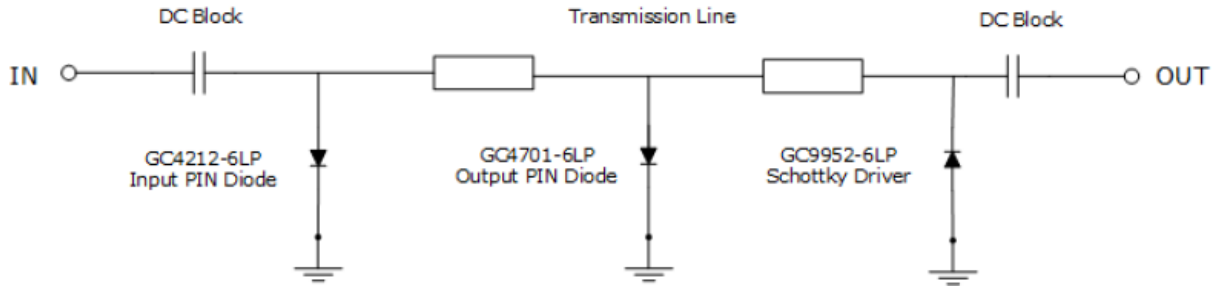


Figure 10 GC4212-6LP, GC4701-6LP, and GC9952-6LP CW Multi-Stage Transfer Characteristics

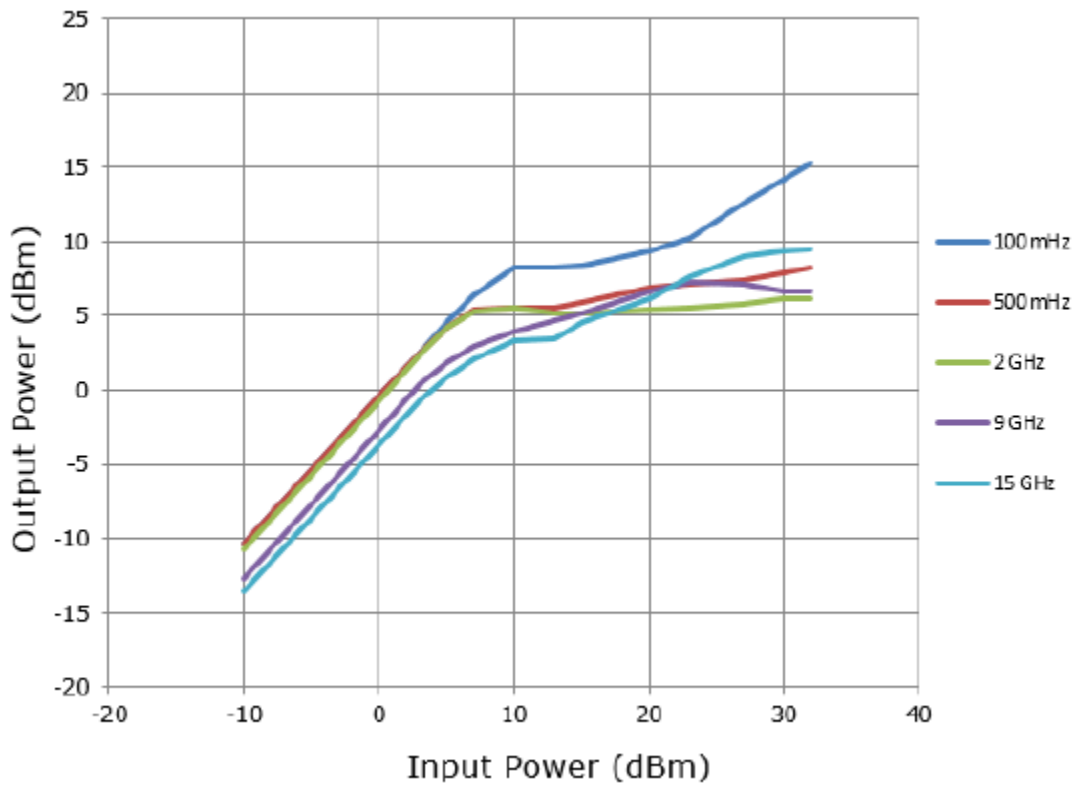
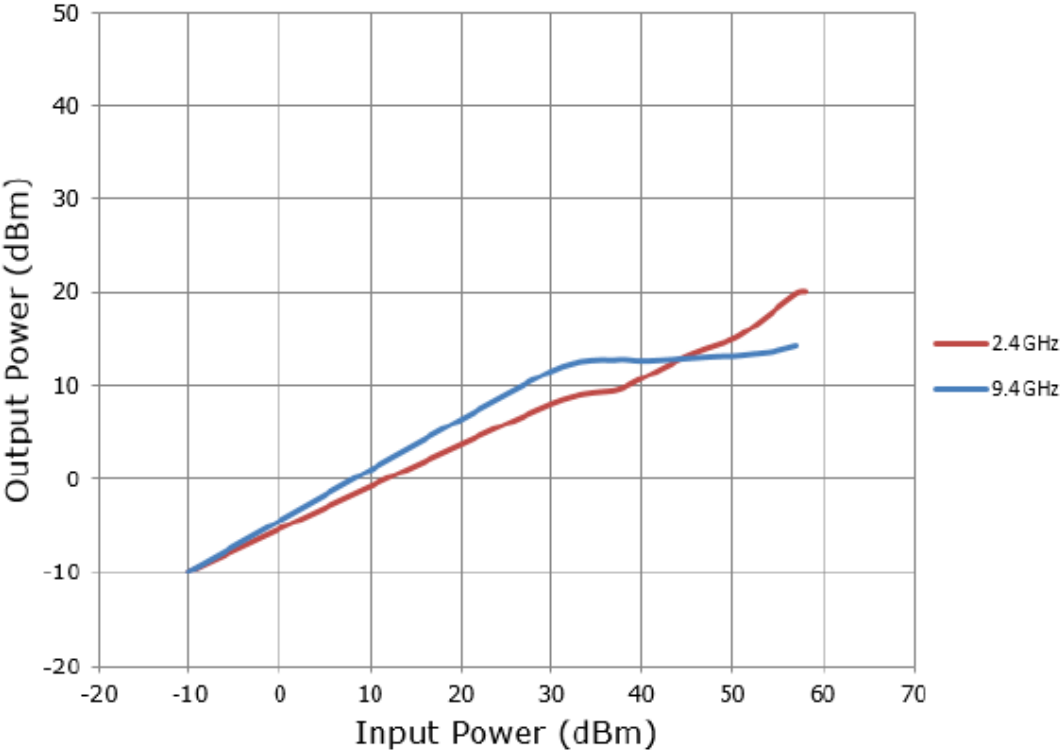


Figure 11 GC4212-6LP, GC4701-6LP, and GC9952-6LP Pulsed Multi-Stage Transfer Characteristics



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### Evaluation Board Assembly

