



## Pulse Embedded (SMT) Antennas for GPS/ Glonass/Beidou/ Iridium Applications

Rev H.02 (JAN 2018)

App.	Type	Pulse Part number	RF Performance								ME requirement			Note	
			Operating Frequency (MHz)	RL Min. (dB)	RHCP Gain (dBic)		Linear Gain (dBi)		Efficiency (%) / (dB)		Antenna DIM. (LxWxH,mm)	GC-area (L x W,mm)	Evaluation Board Size (L x W,mm)		
					Peak	Band edges	Peak	Band edges	Peak	Band edges					
GPS Only	Ceramic chip	<a href="#">W3000</a>	1575.42 ± 1.023	-15	-3.9	-4.1	0.3	0	50/-3	45/-3.5	7 x 1.6 x 1.6	6 x 20	30 x 20	3 Matching components	
		<a href="#">W3009</a>		-12	-3.5	-3.9	0.1	-0.2	50/-3	45/-3.5		6 x 11	40 x 11		
		<a href="#">W3011</a>		-11	0.2	-0.6	3	2.3	83/-0.8	70/-1.5	10 x 3.2 x 4.0	10.80 x 6.25	80 x 37	On Ground shunt 3.3pF	
	Patch	<a href="#">W3212</a>		-12	0.85	0.5	3.4	3	85/-0.7	80/-1	3.2 x 1.6 x 1.1	4.00 x 4.25	80 x 37	w/o matching	
		<a href="#">W3213</a>		-13	-7	-	-	-	-	-	10 x 10 x 4	-	30 x 30		
		<a href="#">W3099</a>		-13	-1.5	-	-	-	-	-	13 x 13 x 4	-	30 x 30		
	Helical	<a href="#">W3110</a>		-14	3.5	-	-	-	-	-	-	25 x 25 x 4	-	70 x 70	
		<a href="#">W3110</a>		-16	-2.1	-2.4	1.3	0.7	47/-3.3	43/-3.7	5.0 x 2.5 x 5.5	7.50 x 5.50	100 x 40	Vertical SMD, @ Corner	
GPS, Glonass, and/ or Beidou	Ceramic chip	<a href="#">W3000</a>	1561 ± 2/ 1575.42 ± 1.023/ 1602.56 ± 4	-18	-0.2	-1	2.4	1.5	70/-1.55	65/-1.9	7 x 1.6 x 1.6	6 x 10	80 x 37	3 Matching components, Horiz. Mount + @Corner	
		<a href="#">W3010</a>		-12	1	0	3	2.2	75/-1.25	70/-1.5	10 x 3.2 x 2	10.80 x 6.25	80 x 37	@ Position1 shunt 3.3pF	
		<a href="#">W3011A</a>		-12	1.5	0.4	3	1.8	70/-1.55	50/-3.0				@ Position2 shunt 2.2pF	
		<a href="#">W3062A</a>		-16	1	-0.4	3.7	2.5	88/-0.6	70/-1.5	3.2 x 1.6 x 1.1	4.00 x 6.25	80 x 37	Shunt 1.8pF	
		<a href="#">W3062A</a>		-10	0	-0.5	2.5	2.0	80/-1	60/-2.1	7 x 1.6 x 1.6	7.80 x 5.25	80 x 37	Shunt 2.2pF	
	Patch (Pin)	<a href="#">W3207</a>	-4	2.1	0.9	-	-	-	-	-	25 x 25 x 4	-	70 x 70		
		<a href="#">W3216</a>	-7	-2	-	-	-	60	50	13 x 13 x 5	-	50 x 50			
		<a href="#">W3223</a>	-10	4	3.5	-	-	97/-0.2	93/-0.6	25 x 25 x 4	-	70 x 70	TS 16949		
	Patch (SMD)	<a href="#">W3224</a>	-10	2.5	2.0	-	-	95/-0.5	79/-2	18 x 18 x 4	-	70 x 70	SMD		
		<a href="#">W3225</a>	-10	3	-	-	-	96/-0.3	92/-0.7	25 x 25 x 4	-	70 x 70	SMD		
Iridium	Patch (Pin)	<a href="#">W3228</a>	1621 ± 4	-15	4.8	4.3	-	-	84	80	25 x 25 x 4	-	60 x 60	Iridium certified, AR < 2	
Iridium/ GNSS		<a href="#">W3227</a>	1559-1660	-10	4.2	0.0	-	-	91	70	40 x 40 x 6.6	-	63 x 63	Iridium certified, VSWR < 3.5 @ 1532-1709MHz	
WiFi and GPS Combo	Ceramic chip	<a href="#">W3056</a>	2400-2483.5	-8	-	-	3.2	2.5	80	70	10 x 3.2 x 1.5	10.80 x 6.25 (Notch)	100 x 40	Single feed and 2.4GHz+GPS	
			1575.42 ± 1.023	-10	-	-	2.5	1.5	75	65					
		<a href="#">W3064C</a>	2400-2483.5	-11	-	-	-0.7	-1.7	80	70	10 x 3.2 x 1.5	10.80 x 6.40 (Divided)	96 x 45	Dual feed and 2.4GHz+GPS	
			1575.42 ± 1.023	-15	-	-	-1	-2.0	70	60					
		<a href="#">W3095</a>	2400-2483.5	-10	-	-	2.7	1.5	85	80	10 x 3.2 x 1.5	17.80 x 6.45	80 x 50	Dual feed and Dual WiFi+GPS/Glonass	
			4950-5850	-6	-	-	3.7	1.0	73	53					
			1575-1610	-8	-	-	1.7	0.7	75	62					

**NOTE:** 1. Recommended minimum GND dimensions of PIFA type and Monopole are roughly 40x20mm and 30x20mm (or 40x11mm), respectively. Need to construct matching values to optimize antenna performance on surrounding mechanics and materials. 2. Pulse offers very unique GPS+WiFi combo antennas on single ceramic chip (10x3.2x1.5mm). There are three different types of combo antennas. W3056 (2.4G Wifi +GPS, single feed), W3064C (2.4G WiFi+GPS, dual feed), and W3095 (2.4G and 5G Wifi +GPS/Glonass/Beidou, dual feed). 3. "Stock" Stocked parts are typically available from Pulse distribution partners immediately.