

/// Datasheet

# SpeedWave™ 300P Prepreg

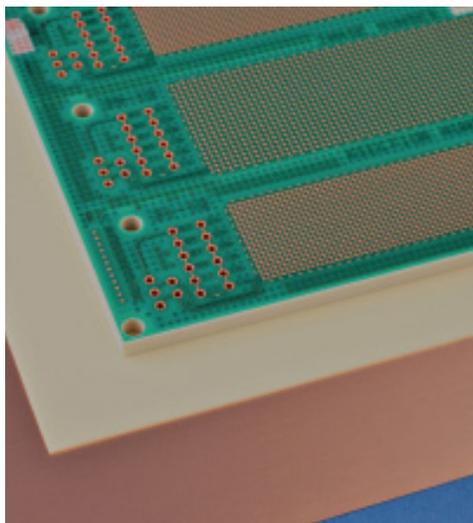
SpeedWave™ 300P low-Dk glass reinforced ultra-low loss resin system prepreg can be used to bond a variety of Rogers laminates including XtremeSpeed™ RO1200™, CLTE-MW™, and RO4000® series. SpeedWave prepreg is offered in multiple spread and open weave glass style and resin content combinations to allow for a wide range of options for the circuit designer.

SpeedWave 300P prepreps exhibit excellent fill and flow capability around heavy copper features, a low z-axis expansion for plated through hole reliability, and are CAF resistant. SpeedWave is also compatible with FR-4 fabrication processes.

The SpeedWave prepreg system offers a low dielectric constant of 3.0 – 3.3 and a low dissipation factor of 0.0019 – 0.0022 at 10GHz

with stable performance over a broad frequency range. These materials also offer excellent thermal reliability for demanding high layer count designs requiring multiple sequential laminations.

SpeedWave 300P prepreg is UL-94 V-0 rated and compatible with lead-free processing.



## /// Features and Benefits:

High performance ultra-low loss prepreg system compatible with a variety of Rogers' High Frequency and High Speed Laminates

- Excellent fill and flow
- Low Dk glass with spread and open weave offerings
- CAF resistant
- Compatible with FR-4 processes

Ideal for high layer count designs

Capable of multiple sequential laminations

Lead-free process compatible

## /// Typical Applications:

- 5G mmWave
- High resolution 77 GHz automotive radar
- Aerospace & Defense
- IP infrastructure (Backplane, Line card)
- Optical transceiver
- High performance computing
- Automated test equipment (ATE)

Standard Thicknesses	Standard Panel Sizes
0.0020" (0.051 mm) +/- 0.0005" 1035 RC 67% 0.0025" (0.064 mm) +/- 0.0005" 1035 RC 72%, 106 RC 76% 0.0030" (0.076 mm) +/- 0.0005" 1078 RC 64%, 1035 RC 76% 0.0035" (0.089 mm) +/- 0.0005" 1078 RC 69%, 1080 RC 69% 0.0040" (0.102 mm) +/- 0.0005" 2113 RC 57%, 1080 RC 72% 0.0050" (0.127 mm) +/- 0.0005" 2116 RC 56% 0.0055" (0.140 mm) +/- 0.0005" 2116 RC 59% *Contact Customer Service or Sales Engineering to inquire about additional available product configurations	24" X 18" (610 X 457 mm)  *Additional panel sizes available

### Standard Properties Table

Properties	Typical Values <sup>(1)</sup>	Direction	Units	Test Conditions	
<b>Electrical Properties</b>					
Dielectric Constant	3.16	Z	-	23°C @ 50% RH	10 GHz (1078 64%)
Dielectric Constant (design)	See Table	-	-	-	-
Dissipation Factor	0.0021	Z	-	23°C @ 50% RH	10 GHz (1078 64%)
Volume Resistivity	1.0 X 10 <sup>9</sup>	-	Mohm-cm	C-96/35/90	-
Surface Resistivity	1.0 X 10 <sup>8</sup>	X,Y	Mohm	C-96/35/90	-
Electrical Strength (dielectric strength)	1016	Z	V/mil	-	-
<b>Thermal Properties</b>					
Decomposition Temperature (Td)	390	-	°C	2hrs @ 105°C	TGA
Glass Transition (Tg)	220 170	- -	°C	2hrs @ 105°C	DMA TMA
Coefficient of Thermal Expansion <sup>2</sup>	35	Z	ppm/°C	α1	< Tg
Coefficient of Thermal Expansion <sup>2</sup>	240	Z	ppm/°C	α2	> Tg
Coefficient of Thermal Expansion <sup>2</sup>	2.5%	Z	-	50°C to 260°C	-
Coefficient of Thermal Expansion <sup>2</sup>	15	X,Y	ppm/°C	α1	< Tg
Thermal Conductivity	0.48	Z	W/(m·K)	50°C	-
<b>Mechanical Properties</b>					
Copper Peel Strength after Thermal Stress	0.70 (4.0)	Z	N/mm (lbs/in)	10s @288°C	35 μm foil
<b>Physical Properties</b>					
Glass	See Table	-	-	-	-
Resin Content	See Table	-	-	-	-
Color	Cream	-	-	-	-
Flammability	V-0	-	-	UL94	-
Moisture Absorption	0.12	-	%	D24/23	-
Lead Free Process Compatible	Yes	-	-	-	-

<sup>1</sup> Typical values are a representation of an average value for the population of the property. For specification values contact Rogers Corporation.

<sup>2</sup> Configuration 2116 RC 56% Used for thermal property testing

### Available Constructions

Thickness		Glass Style	Resin Content Wt (%)	Typical Dk						Typical Df					
(mils)	(mm)			1GHz	3GHz	5GHz	10GHz	15GHz	20GHz	1GHz	3GHz	5GHz	10GHz	15GHz	20GHz
2.0	0.051	1035	67	3.14	3.14	3.13	3.12	3.11	3.10	0.0013	0.0016	0.0019	0.0020	0.0022	0.0023
2.5	0.064	1035	72	3.07	3.07	3.06	3.05	3.04	3.03	0.0012	0.0015	0.0018	0.0020	0.0022	0.0023
2.5	0.064	106	76	3.02	3.01	3.01	3.00	2.99	2.98	0.0011	0.0014	0.0017	0.0019	0.0021	0.0022
3.0	0.076	1078	64	3.18	3.18	3.17	3.16	3.15	3.14	0.0014	0.0016	0.0019	0.0021	0.0023	0.0024
3.0	0.076	1035	76	3.02	3.01	3.01	3.00	2.99	2.99	0.0011	0.0014	0.0017	0.0019	0.0021	0.0022
3.5	0.089	1078	69	3.11	3.11	3.10	3.09	3.08	3.07	0.0013	0.0015	0.0018	0.0020	0.0022	0.0023
3.5	0.089	1080	69	3.11	3.11	3.10	3.09	3.08	3.07	0.0013	0.0015	0.0018	0.0020	0.0022	0.0023
4.0	0.102	2113	57	3.28	3.27	3.27	3.26	3.25	3.24	0.0015	0.0017	0.0020	0.0022	0.0024	0.0025
4.0	0.102	1080	72	3.07	3.07	3.06	3.05	3.04	3.03	0.0012	0.0015	0.0018	0.0020	0.0022	0.0023
5.0	0.127	2116	56	3.29	3.29	3.28	3.27	3.26	3.25	0.0015	0.0018	0.0020	0.0022	0.0024	0.0025
5.5	0.140	2116	59	3.25	3.25	3.24	3.23	3.22	3.21	0.0015	0.0017	0.0020	0.0021	0.0023	0.0024

\\\ 100 S. Roosevelt Avenue \\\ Chandler, AZ 85226 \\\ Tel: 480-961-1382 \\\ Fax: 480-961-4533 \\\ www.rogerscorp.com  
\\\ IPC Slash Sheet # 4101E/102 \\\ UL File # E102763

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Revised 1585 072822 Publication #92-200