

# XtremeSpeed™ RO1200™ Bondply

XtremeSpeed™ RO1200™ extremely low loss, ceramic filled, non-glass reinforced PTFE bondply is designed for use in high speed digital applications. By combining the lowest loss resin system and the highest performance rolled copper foil, the XtremeSpeed RO1200 material system is well suited to address the performance needs of 56Gbps and 112Gbps system architecture. The all-RO1200 system is industry leading and unrivaled in the market place.

The RO1200 bondply complements the XtremeSpeed RO1200 laminate products by offering a matched dielectric constant solution at all necessary digital design thicknesses. The RO1200 bondply material has a dielectric constant of 2.99 with a dissipation factor of 0.0012 at 10 GHz. Thickness options are 2.5,

3.0, 4.0, and 5.0mils. Plies can also be stacked in any combination to achieve the desired homogeneous outcome ensuring that proper impedance matching is obtained while maintaining the extremely low loss and high reliability characteristics of the all-RO1200 system. Applications with up to 42 metal layers have been successfully demonstrated using the RO1200 laminate and bondply system.



## /// Features and Benefits:

Low dielectric constant of 2.99 @ 10 GHZ

- Excellent electrical match to the XtremeSpeed RO1200 laminate materials

Industry leading lowest loss of 0.0012 @ 10 GHz

- Ensures very best in class insertion loss of -0.74 dB/in at 28 GHz (stripline, 5mil signal to ground spacing, all-RO1200 system)

Low X/Y/Z axis CTE of 29 ppm/°C throughout the temperature range of -55 °C to 288 °C

- Contributes to outstanding thermal and mechanical performance in the most demanding applications

## /// Typical Applications:

- Core/edge IP routers and switches
- High performance computing (HPC) servers, switching and storage
- Backplanes
- Automated test equipment (ATE)

Standard Thicknesses	Standard Panel Sizes
0.0025" (0.064 mm) 0.0030" (0.076 mm) 0.0040" (0.102 mm) 0.0050" (0.127 mm)  *Contact Customer Service or Sales Engineering to inquire about additional available product configurations	12" X 18" (305 X 457 mm) 24" X 18" (610 X 457 mm) 24" X 36" (610 X 914 mm)  *Additional panel sizes available

### Standard Properties Table

Properties	Typical Values <sup>(1)</sup>	Direction	Units	Test Conditions		Test Method
<b>Electrical Properties</b>						
Dielectric Constant	2.97	Z	-	23°C @ 50% RH	10 GHz	IPC TM-650 2.5.5.5
Dielectric Constant (design)	2.99	-	-	C-24/23/50	10 GHz	Differential Phase Length Method
Dissipation Factor	0.0012	Z	-	23°C @ 50% RH	10 GHz	IPC TM-650 2.5.5.5
Volume Resistivity	8.9X10 <sup>7</sup>	-	Mohm-cm	C-96/35/90	-	IPC TM-650 2.5.17.1
Surface Resistivity	8.5 X10 <sup>5</sup>	X,Y	Mohm	C-96/35/90	-	IPC TM-650 2.5.17.1
Electrical Strength (dielectric strength)	880	Z	V/mil	-	-	IPC TM-650 2.5.6.2
<b>Thermal Properties</b>						
Decomposition Temperature (Td)	530	-	°C	2hrs @ 105°C	5% Weight Loss	IPC TM-650 2.4.24.6
Glass Transition (Tg)	N/A	-	-	-	-	-
Coefficient of Thermal Expansion	29	X	ppm/°C	-	-55°C to 288°C	IPC TM-650 2.4.41
Coefficient of Thermal Expansion	29	Y	ppm/°C	-	-55°C to 288°C	IPC TM-650 2.4.41
Coefficient of Thermal Expansion	29	Z	ppm/°C	-	-55°C to 288°C	IPC TM-650 2.4.41
Thermal Conductivity	0.5	Z	W/(m.K)	50°C	z direction	ASTM D5470
<b>Mechanical Properties</b>						
Copper Peel Strength after Thermal Stress	1.75 (10)	Z	N/mm (lbs/in)	10s @288°C	35 µm foil	IPC TM-650 2.4.8
<b>Physical Properties</b>						
Glass	N/A	-	-	-	-	-
Resin-Content	N/A	-	-	-	-	-
Color	N/A	-	-	-	-	-
Flammability	V-0	-	-	-	-	UL 94
Moisture Absorption	0.13	-	%	E-1/105 +D24/23	-	IPC TM-650 2.6.2.1
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.

### Design Dielectric Constant and Loss Table

Frequency (GHz)											
XtremeSpeed RO1200 Laminate Dk	1	5	10	15	20	25	30	35	40	45	50
0.003"	3.14	3.11	3.10	3.09	3.08	3.08	3.07	3.07	3.07	3.06	3.06
0.004"	3.08	3.06	3.05	3.04	3.04	3.03	3.03	3.03	3.03	3.03	3.02
0.005"	3.09	3.07	3.07	3.06	3.06	3.06	3.06	3.05	3.05	3.05	3.05
0.006"	3.09	3.07	3.07	3.06	3.06	3.06	3.06	3.05	3.05	3.05	3.05
0.007"	3.09	3.07	3.07	3.06	3.06	3.06	3.06	3.06	3.06	3.06	3.06
0.008"	3.02	3.01	3.00	3.00	3.00	2.99	2.99	2.99	2.99	2.99	2.99
0.010"	3.05	3.04	3.03	3.03	3.03	3.03	3.03	3.03	3.02	3.02	3.02
XtremeSpeed RO1200 Laminate Df											
Dissipation Factor	0.0010	0.0011	0.0012	0.0013	0.0014	0.0015	0.0016	0.0017	0.0018	0.0019	0.0020
XtremeSpeed RO1200 Bondply Dk											
0.0025" - 0.005"	3.04	3.00	2.99	2.98	2.98	2.98	2.98	2.97	2.97	2.97	2.97
XtremeSpeed RO1200 Bondply Df											
Dissipation Factor	0.0008	0.0008	0.0009	0.0010	0.0010	0.0011	0.0011	0.0012	0.0013	0.0013	0.0014

The information in this data sheet is intended to assist you in designing with Rogers' circuit materials. It is not intended to and does not create any warranties express or implied, including any warranty of merchantability or fitness for a particular purpose or that the results shown on this data sheet will be achieved by a user for a particular purpose. The user should determine the suitability of Rogers' circuit materials for each application. These commodities, technology and software are exported from the United States in accordance with the Export Administration regulations. Diversion contrary to U.S. law prohibited.

The Rogers' logo, Helping power, protect, connect our world, XtremeSpeed, RO1000 and RO1200 are trademarks of Rogers Corporation or one of its subsidiaries.  
©2022 Rogers Corporation, Printed in U.S.A., All rights reserved.  
Issued 1587 072822 Publication #92-199