

RF-35TC-A Thermally Conductive Low Loss Laminate

RF-35TC-A laminates are constructed with a woven matrix of fiberglass fabric coated with ceramic filled PTFE. RF-35TC-A's special ceramic filler technique makes a low dissipation factor with high thermal conductivity possible. It will not oxidize, yellow or show upward drift in dielectric constant and dissipation factor like its synthetic rubber (hydrocarbon) competitors.

RF-35TC-A is suited for high power applications. Its low DF can deliver signals with lower heat generation at high power and high frequency applications and its high thermal conductivity can diffuse heat away from both transmission lines and chip components such as transistors or capacitors. RF-35TC-A's excellent thermal management and power handling capability can provide improved reliability, power and warranty cost or life time of active components such as power amplifiers.

RF-35TC-A bonds very well to low profile copper foils. This results in even lower insertion and conductor loss at high frequencies where skin effect losses can be affected.

The low Z-axis CTE values of RF-35TC-A provide plated through hole reliability in multilayer applications.

This product family was designed to provide excellent electrical, thermal and mechanical stability at cost effective prices.

Benefits & Applications:

- Exceptional Thermal Management
 - Enhanced RF Performance
 - Excellent Loss Tangent
 - High Thermal Conductivity
 - Enhanced Mechanical Stability
 - Excellent Adhesion to Very Low Profile copper
 - Stable Multilayer Performance
 - Excellent Price/Performance Ratio
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- High-end Power Amplifiers
 - High Power Broadcast Systems
 - Power Dividers, Filters and Couplers
 - Antennas
 - Aerospace Components

An example of a 20 mil material with 1 oz. RTF copper on both sides is part #: RF-35TC-0200-A-CL1/CL1 - 18" x 24" (RF-35TC-0200-A-CL1/CL1 - 457 mm x 610 mm)

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Commercial and Government Entity (CAGE) Code: 1C6Q9

RF-35TC-A Typical Values

Property	Test Method	Unit	Value	Unit	Value
Dielectric Constant @ 10 GHz	IPC-650 2.5.5.5.1 (Modified)		3.50 +/- 0.05		3.50 +/- 0.05
Dissipation Factor @ 10 GHz	IPC-650 2.5.5.5.1 (Modified)		0.0017		0.0017
T _c (D)K (-55 to 150 °C)	IPC-650 2.5.5.6 (Modified)	ppm/°C	-10	ppm/°C	-10
Water Absorption	IPC-650 2.6.2.1	%	0.05	%	0.05
Peel Strength (1 oz RT copper)	IPC-650 2.4.8 (Solder)	lbs./inch	9	N/mm	1.6
Volume Resistivity	IPC-650 2.5.17.1	Mohm/cm	5.0 x 10 ⁸	Mohm/cm	5.0 x 10 ⁸
Surface Resistivity	IPC-650 2.5.17.1	Mohm	5.0 x 10 ⁸	Mohm	5.0 x 10 ⁸
Flexural Strength (MD)	IPC-650 2.4.4	psi	17,000	N/mm ²	117.21
Flexural Strength (CD)	IPC-650 2.4.4	psi	12,000	N/mm ²	82.74
Dimensional Stability (MD)	IPC-650-2.4.39 (Bake)	% (20 mil)	0.004	% (60 mil)	0.018
Dimensional Stability (TD)	IPC-650-2.4.39 (Bake)	% (20 mil)	0.071	% (60 mil)	0.078
Dimensional Stability (MD)	IPC-650-2.4.39 (Stress)	% (20 mil)	-0.003	% (60 mil)	0.012
Dimensional Stability (TD)	IPC-650-2.4.39 (Stress)	% (20 mil)	0.068	% (60 mil)	0.076
Density	IPC-650 2,3,5	g/cm ³	2.35	g/cm ³	2.35
Specific Heat	IPC-650 2.4.50	j/(g °C)	1.02	j/(g °C)	1.02
Thermal Conductivity (Unclad)	IPC-650 2.4.50	W/(mK)	0.83	W/(mK)	0.83
CTE (X axis) (50 to 150 °C)	IPC-650 2.4.41	ppm/°C	9	ppm/°C	9
CTE (Y axis) (50 to 150 °C)	IPC-650 2.4.41	ppm/°C	13	ppm/°C	13
CTE (Z axis) (50 to 150 °C)	IPC-650 2.4.41	ppm/°C	20	ppm/°C	20
T _d (2% Wt. Loss)	IPC-650 2.4.24.6/TGA	°F	968	°C	520
T _d (5% Wt. Loss)	IPC-650 2.4.24.6/TGA	°F	1004	°C	540
Flammability	UL-94	-	V-0	-	V-0

All reported values are typical and should not be used for specification purposes. In all instances, the user shall determine suitability in any given application.

Designation	Dielectric Constant	Typical Thicknesses ¹		Typical Panel Sizes ²	
		Inches	mm	Inches	mm
RF-35TC-A	3.50 +/- 0.05	0.010	0.25	12 x 18	304 x 457
		0.020	0.51	16 x 18	406 x 457
		0.030	0.76	18 x 24	457 x 610
		0.060	1.52	36 x 48	914 x 1220

¹Standard RF-35TC-A Series can be manufactured in increments of 0.010". Please call for availability of additional thicknesses.

²Standard sheet size is 36" x 48" (914 mm x 1220 mm). Please contact our customer service department for availability of other sizes.

Available Copper Cladding			
Designation	Weight	R _{ms} Treated	Description
CVH (CH)	½ oz./sq. ft.	1.68 µm	Very Low Profile
CV1 (C1)	1 oz./sq. ft.	1.52 µm	Very Low Profile
C2	2 oz./sq. ft.	1.78 µm	Electrodeposited
CLH	½ oz./sq. ft.	0.99 µm	Reverse Treated
CL1	1 oz./sq. ft.	0.99 µm	Reverse Treated
ULPH	½ oz./sq. ft.	0.28 µm	Ultra Low Profile
ULP1	1 oz./sq. ft.	0.28 µm	Ultra Low Profile

OhmegaPly®, Ticer® and other resistive foils available upon the request. Please contact Taconic for availability.

