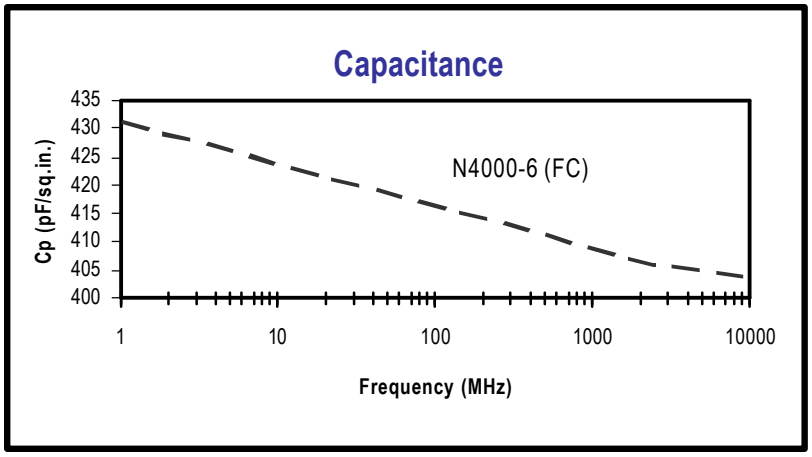
N4000-6 (FC) BC®

Buried Capacitance, High-T_g Multifunctional Epoxy Laminate & Buried Capacitance, Fast Cure, High-T_g Multifunctional Epoxy Laminate

N4000-6 (FC) is a high-T_g FR-4 epoxy that provides a wide range of performance versatility and ease of processing. Offering a greater degree of freedom of design for smaller, more reliable assemblies, N4000-6 (FC) BC® is offered as a buried capacitance solution. N4000-6 (FC) BC® is engineered for use as a BC-2000™ substrate and utilizes the same proven high-T_g multifunctional resin system as N4000-6 (FC), which is ideal for a number of demanding applications including high-layer count backplanes and high-density interconnects.



The N4000-6 (FC) series has robust thermal properties to withstand extreme operating temperatures and multiple thermal excursions or PCB rework operations. This product's performance through hot-air solder leveling, IR solder fusion, wave soldering, vapor phase soldering, and thermal shock testing is outstanding.

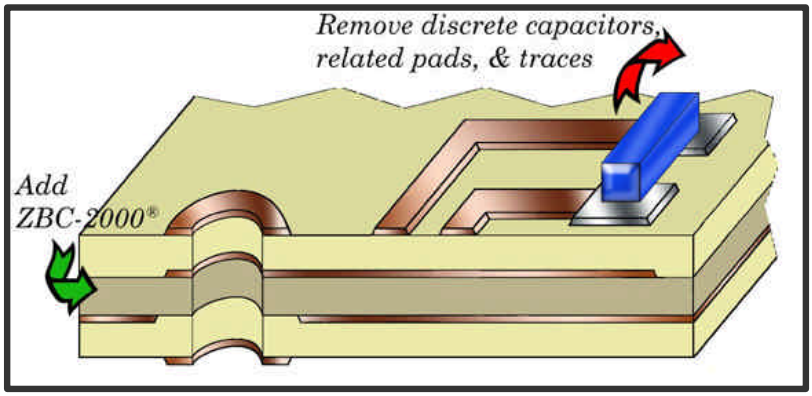
N4000-6 BC® and N4000-6 FC BC® are 2mil (50?m) dielectric BC-2000™ buried capacitance substrates. As you would expect from a high-Tg material, N4000-6 (FC) BC® is targeted for use in fine-line multilayers, surface-mount multilayers, and large-format backplanes. These materials are effective for BGA, MCM-L, and CSP component attachment. N4000-6 (FC) BC® is an ideal solution for distributed capacitance functions for telecommunications, wireless handsets, and other high frequency applications. N4000-6 (FC) BC® is provided with either Flip Double-Treat or RTFoil® to provide the most consistent electrostatic capacitance.

As with all Nelco materials, the N4000-6 (FC) and N4000-6 (FC) BC® are vacuum laminated. N4000-6 (FC) is available in a wide variety of constructions, copper weights and glass styles, and is ideally suited for constructions featuring N4000-6 (FC) BC® buried capacitance layers. It is also available in standard copper, double-treat copper and our RTFoil® Laminate.

Nelco, California	(714) 879-4293	Nelco, Asia Pacific	(65) 6861-7117
Nelco, New York	(845) 567-6200	Neltec Europe SAS	(33) 380-10-10-00
Neltec, Arizona	(480) 967-5600	Neltec, SA	(33) 562-98-52-90
www.parkelectro.com		info@parkelectro.com	

N4000-6 (FC) BC®

Property / Condition	Value (U.S. Units)			Value (Metric Units)			Test Method
Mechanical	**N4000-6**	**N4000-6 FC**		**N4000-6**	**N4000-6 FC**		
Peel Strength - 1 oz. (35µm) Cu							
After Solder Float	9.0	9.0	lb / inch	1.58	1.58	N / mm	IPC-TM-650.2.4
At Elevated Temperature	7.0	7.0	lb / inch	1.23	1.23	N / mm	IPC-TM-650.2.4.8.2a
After Exposure to Process Solutions	9.0	9.0	lb / inch	1.58	1.58	N / mm	IPC-TM-650.2.4.8
Poisson's Ratios (X / Y)	0.16 / 0.14	0.16 / 0.14		0.16 / 0.14	0.16 / 0.14		ASTM D3039
Thermal Conductivity	0.3 – 0.4	0.3 – 0.4	W / m-K	0.3 – 0.4	0.3 – 0.4	W / m-K	ASTM E1461-92
Specific Heat	1.2 – 1.4	1.2 – 1.4	J / g-K	1.2 – 1.4	1.2 – 1.4	J / g-K	ASTM E1461-92
Electrical							
Dielectric Constant (1 ply, 106)							
@ 1 MHz (TFC / LCR Meter)	3.8	4.3		4.3	4.3		IPC-TM-650.2.5.5.3
@ 1 GHz (RF Impedance)	3.6	4.1		4.1	4.1		IPC-TM-650.2.5.5.9
@ 2.5 GHz (Stripline)	3.6	4.0		4.0	4.0		IPC-TM-650.2.5.5.5
Dissipation Factor (50% resin content)							
@ 1 MHz (TFC / LCR Meter)	0.023	0.023		0.023	0.023		IPC-TM-650.2.5.5.3
@ 2.5 GHz (Stripline)	0.022	0.022		0.022	0.022		IPC-TM-650.2.5.5.5
Electric Strength	1300	1300	V / mil	$5.1x10^4$	$5.1x10^4$	V / mm	IPC-TM-650.2.5.6.2
Thermal							
Glass Transition Temperature (Tg)							
DSC (°C)	175 *	175 *	°C	175 *	175 *	°C	IPC-TM-650.2.4.25c
TMA (°C)	170 *	170 *	°C	170 *	170 *	°C	IPC-TM-650.2.4.24c
Degradation Temp (TGA) (5% wt. loss)	300	300	°C	300	300	°C	IPC-TM-650.2.3.40
T_{260}	4 - 8	4 – 8	minutes	4 – 8	4 - 8	minutes	IPC-TM-650.2.4.24.1
Chemical / Physical							
Moisture Absorption	0.10	0.10	wt. %	0.10	0.10	wt. %	IPC-TM-650.2.6.2.1
Methylene Chloride Resistance	0.70	0.70	% wt. chg	0.70	0.70	% wt. chg.	IPC-TM-650.2.3.4.3
Density [50% resin content]	1.92	1.92	g / cm^3	1.92	1.92	g / cm^3	Internal Method



* Tg nominal on laminates. Finished board value may be lower due to printed circuit processes
All test data provided are typical values and not intended to be specification values. For review of critical specification tolerances, please contact a Nelco representative directly. Nelco reserves the right to change these typical values as a natural process of refining our testing equipment and techniques.
*CAF resistance has been established to greater than 500 hours using a specific OEM coupon design and test procedure. For details visit www.parkelectro.com.
** Tg may exceed printed value and is dependent upon relamination cure time and temperature. Stated Tg is a nominal value and related product properties are determined at this Tg value.