

**CF** Chip Type, Standard series



- Low ESR, High ripple current.
- Load life of 2000 hours at 105°C.
- SMD type : Lead free reflow soldering condition at 260°C peak correspondence.
- Compliant to the RoHS directive (2002/95/EC).

■ Specifications

Item	Performance Characteristics		
Category Temperature Range	-55 to +105°C		
Rated Voltage Range	2.5 to 25V		
Rated Capacitance Range	3.3 to 1500µF		
Capacitance Tolerance	±20% at 120Hz, 20°C		
Tangent of loss angle (tan δ)	Less than or equal to the specified value at 120Hz, 20°C		
ESR (※ 1)	Less than or equal to the specified value at 100kHz, 20°C		
Leakage Current (※ 2)	Less than or equal to the specified value. After 2 minutes' application of rated voltage at 20°C		
Temperature Characteristics (Max.Impedance Ratio)	Z+105° C / Z+20° C ≤ 1.25 (100kHz) Z-55° C / Z+20° C ≤ 1.25		
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours at 105°C	Capacitance change	Within ± 20% of the initial capacitance value (※ 3)
		tan δ	150% or less than the initial specified value
		ESR (※ 1)	150% or less than the initial specified value
		Leakage current (※ 2)	Less than or equal to the initial specified value
Damp Heat (Steady State)	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 60° C, 90% RH.	Capacitance change	Within ± 20% of the initial capacitance value (※ 3)
		tan δ	150% or less than the initial specified value
		ESR (※ 1)	150% or less than the initial specified value
		Leakage current (※ 2)	Less than or equal to the initial specified value
Resistance to Soldering Heat	After soldering the capacitor under the soldering conditions prescribed here, the capacitor shall meet the specifications listed at right, provided that its temperature profile is measured at the capacitor top and the terminal. Pre-heating shall be done at 150 to 200°C and for 60 to 180 sec. The duration for over +230°C temperature at capacitor surface shall not exceed 60 seconds. In the case of peak temp, less than 250°C, reflow soldering shall be two times maximum. In the case of peak temp, less than 260°C, reflow soldering shall be once. Measurement for solder temperature profile shall be made at the capacitor top and the terminal.	Capacitance change	Within ± 10% of the initial capacitance value (※ 3)
		tan δ	130% or less than the initial specified value
		ESR (※ 1)	130% or less than the initial specified value
		Leakage current (※ 2)	Less than or equal to the initial specified value
Marking	Navy blue print on the case top		

※ 1 ESR should be measured at both of the terminal ends closest where the terminals protrude through the plastic platform.  
 ※ 2 Conditioning : If any doubt arises, measure the leakage current after the voltage treatment of applying DC rated voltage continuously to the capacitor for 120 minutes at 105°C.  
 ※ 3 Initial value : The value before test of examination of resistance to soldering.

φD
4 to 6.3

