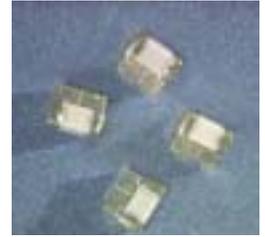




# OPTI-CAP<sup>®</sup>

Ultra Broadband DC Blocking  
Improved X7R Performance



## Features

Ultra Broadband, Low Loss  
0602 Mounting Footprint  
Very Low Series Inductance  
X7R Temperature and Voltage Stability

## Benefits

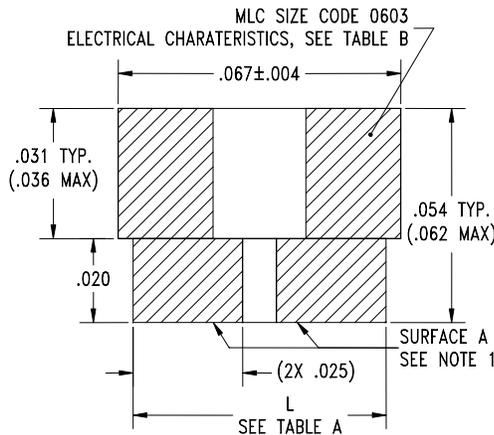
Resonance Free DC Blocking to >40GHz  
Surface Mountable by Solder or Epoxy Bonding  
Available in Tape & Reel or Waffle Pack Format  
Improved Low Frequency Stability over Temperature

### OPTI-CAP<sup>®</sup> ELECTRICAL CHARACTERISTICS

PART NUMBER (Includes T&R)	Capacitance / MLC Case Size	Voltage Rating	Temperature Coefficient	IR (@+20°C, Rated Voltage)	Max DF 1kHz	Aging Rate (% per Decade Hour Max.)	Term	Frequency Range 3dB pts. Typical	Uses	Fp (GHz)	Maximum Process Temperature / Recommended Attachment method
P02BN820MA2636	100 nF ± 20% / 0603	16 Vdc	X7R ΔC max: ±15% (-55°C to 125°C)	10 <sup>2</sup> MΩ	3.0%	1.0%	Au (Flash)	16 KHz. – >>40 GHz	SONET OC-768 OC-192	1.3	250°C/ Conductive Epoxy or Solder

Replaces P02BJ300KB1954T / 2337T, P02BJ820MB1954T / 2337T, P02BJ820MB1891T / 2338T & P02BJ820MC1954T

## Physical Characteristics



### NOTES:

1. TERMINATION METALIZATION:  
7.5 ± 4.5 MICROINCHES Au OVER 50 MICROINCHES Ni MIN.
2. MAXIMUM ASSEMBLY PROCESS TEMPERATURE: 250°C
3. FOR BEST HIGH FREQUENCY PERFORMANCE, ATTACH SURFACE A TO TRANSMISSION LINE. FOR 50 OHM SYSTEM, TRANSMISSION LINE SHOULD BE NEAR OR SLIGHTLY GREATER THAN 20 MILS. RECOMMENDED MICROSTRIP GAP LENGTH IS 0.015 INCH.
4. RATED WORKING VOLTAGE (WVDC) IS THE LESSER OF 25 VOLTS (Milli-Cap<sup>®</sup>) OR MULTILAYER WVDC FROM TABLE B.
5. RECOMMENDED ATTACHMENT IS SOLDER OR CONDUCTIVE EPOXY.

TABLE A:

ASSEMBLY PART NO						ADDITIONAL CHARACTERISTICS	
MILLI-CAP			MULTILAYER CAPACITOR			DIMENSION L LENGTH	PARALLEL RESONANT FREQUENCY (GHZ), TYPICAL
PRODUCT	MATERIAL CODE	CAPACITANCE CODE	TOLERANCE CODE	PART TYPE	ASSEMBLY OUTLINE DWG		
P02	BN	820	M	SEE TABLE B	2636	0.058	1.3

TABLE B:

MULTILAYER CAPACITOR ELECTRICAL CHARACTERISTICS								
MLC CODE	CAPACITANCE VALUE 1 KHZ @20°C	CAPACITANCE TOLERANCE	TEMPERATURE CHARACTERISTIC	WVDC	IR AT 20°C AT WVDC	DWV	DF MAX 1 KHZ	CAPACITANCE AGING RATE % ΔC/DECADE HOUR
A	100nF	±20%	X7R*	16V	>100 MEGOHMS	40V	3%	-1%

\* X7R: -55°C TO +125°C ΔCMAX: ±15%

## Dielectric Laboratories Inc.

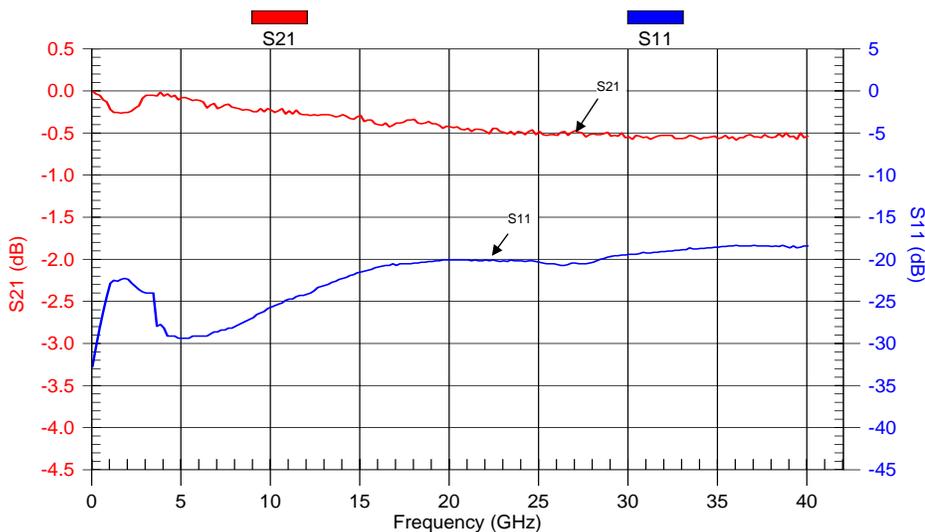
2777 Route 20 East, Cazenovia, NY 13035-9477  
Phone: 315-655-8710 Facsimile: 315-655-0445

e-mail: [sales@dilabs.com](mailto:sales@dilabs.com) web: <http://www.dilabs.com>

## Electrical Performance

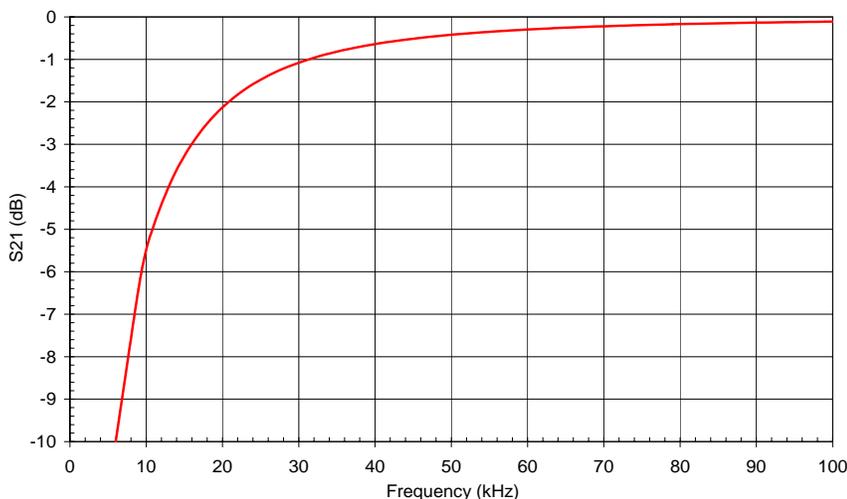
### Opti-Cap Insertion & Return Loss, (S21 & S11)

P02BN820MA2636



### Opti-Cap Low Frequency Insertion Loss, (S21)

P02BN820MA2636



#### Mounting Recommendations to achieve design performance:

- Surface A of the Milli-Cap® (see drawing on page 1) is to always be in direct contact with the circuit trace.
- Reflections will be minimized when a 50 Ohm microstrip line with a width of .020" to .025", (.508mm to .635mm) is used.
- A gap in the microstrip should be approximately .015" to .020", (.381mm to .508mm) when mounting with conductive epoxy.
- A gap in the microstrip should be approximately .010" to .015", (.254mm to .381mm) when mounting with solder.
- The maximum processing temperatures is +250°C. Solder dams are suggested for solder attach process.
- Objective is to maintain part symmetry in relationship to microstrip.

Consult Factory for additional information or special requirements.

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