RF Capacitors - High Temperature Capacitors (HTC)

LASERtrim® Products (SMT RF Tuning)

LASERtrim® capacitors are laser adjustable monolithic ceramic surface mount devices for precise functional tuning of RF circuits. LASERtrims® have the high reliability expected of conventional multi-layer chip capacitors and do not experience capacitance drift, flux entrapment and other reliability concerns associated with mechanical trimmers. Excellent post-trim Q and ESR performance are exhibited at frequencies of 100 - 2000 MHz. Offered in chip sizes 0603 to 1210 with nickel barrier terminations and tape and reel packaging, LASERtrims® are compatible with high volume SMT auto-placement and reflow techniques. These high quality, drift-free devices are ideally suited for functional tuning applications in oscillator, filter, and antenna circuits in a variety of wireless RF products.

Features:

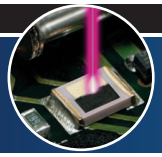
- RoHS Compliant Parts Available
- Automates Functional Tuning
- High Resolution, High Accuracy Tuning
- Highly Stable and Reliable After Adjustment
- Small, Standard SMD Chip Sizes
- Lower Placement Cost vs Mechanical

HOW TO ORDER

RoHS Part Number	EIACase Size	Initial	Tuning Range	200 MHz
LTCP500G100R1GG001T	0603	10.0 pF	10.0 - 2.00 pF	> 125
LTCP500G120R1GG001T	0603	12.0 pF	12.0 - 2.00 pF	> 125
LTCT500G100R1GG001T	0805	10.0 pF	10.0 - 1.20 pF	> 75
LTCT500G200R1GG001T	0805	20.0 pF	20.0 - 1.50 pF	> 50
LTDF500G210R1GG001T	1210	21.0 pF	21.0 - 3.00 pF	> 75

Applications

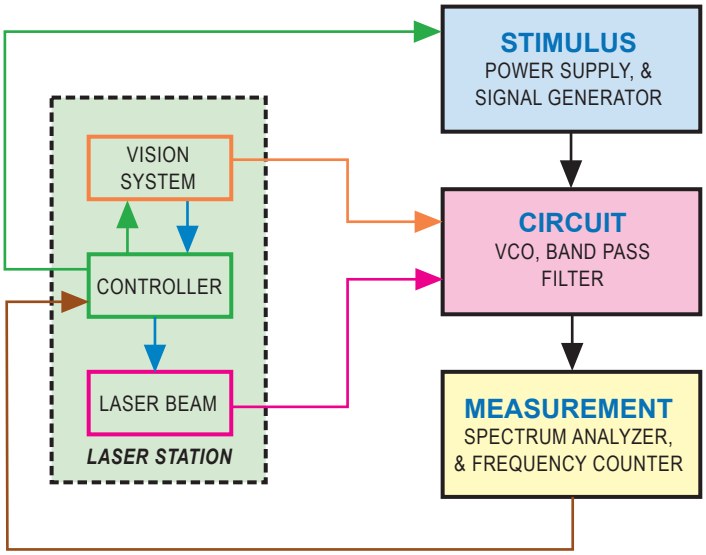
Impedance Matching	Precision Frequency Matching	Custom Applications	Power Amplifier Matching



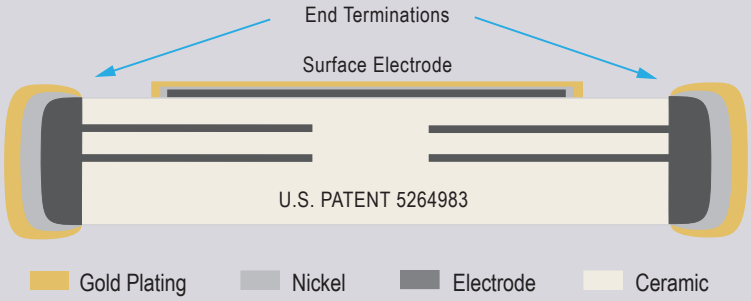
RF Capacitors

LASERtrim® Products (SMT RF Tuning)

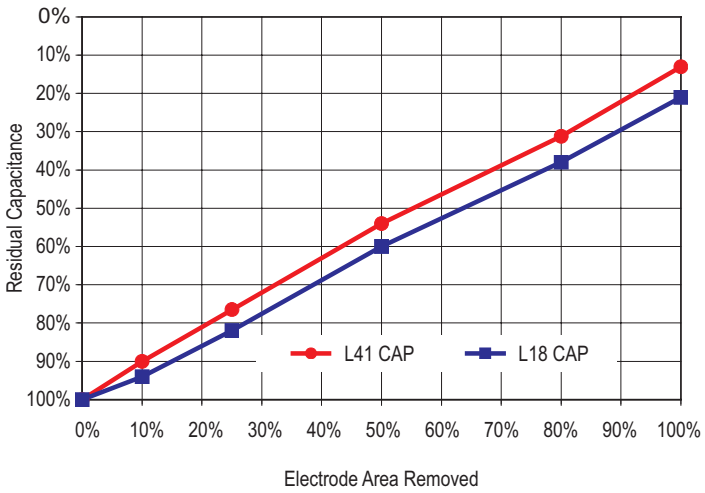
LASERtrim® tuning capacitors are used to provide functional RF circuitry tuning. The tuning is normally performed at a laser station integrated into the automated assembly line at a point beyond any operations that may significantly alter the circuit's RF characteristics. Tuning is performed by a computer controlled YAG laser beam which removes or "trims" the top electrode material of the LASERtrim® thereby decreasing it's capacitance. Circuit parameters such as frequency or voltage are monitored during tuning and fed back to the laser controller achieving extremely precise results. Typical capacitance change in relation to the amount of electrode removal is shown in the graphs below.



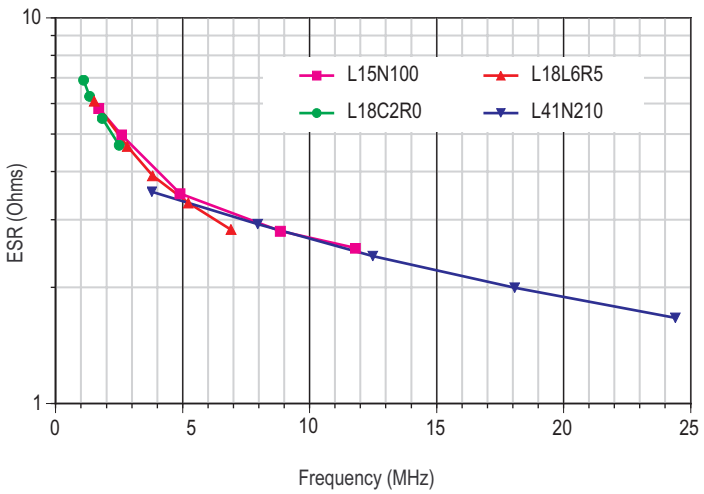
Sectional Diagram: Sizes L18 & L41



Trimming Effect on Capacitance



Typical Series Resonant Frequency



RESOURCE ▶ https://www.johansontechnology.com/products/rf-capacitors/lasertrim-rf-tuning/

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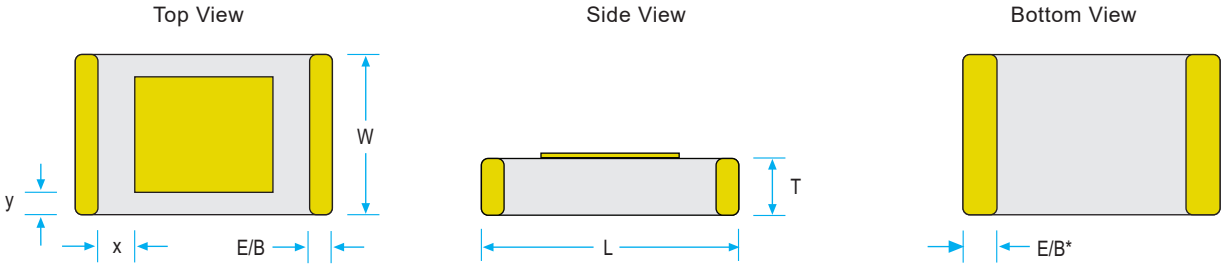
LASERtrim® Products (SMT RF Tuning)

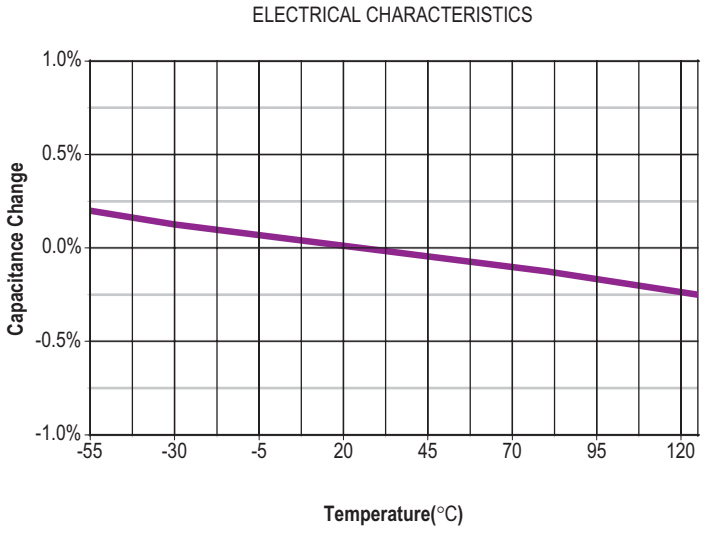
Mechanical Characteristics

Size	EIA 0603		EIA 0805		EIA 1210	
	inches	(mm)	inches	(mm)	inches	(mm)
L	.058 ± .008	(1.47 ± .20)	.080 ± .008	(2.00 ± .20)	.130 ± .008	(3.30 ± .20)
W	.032 ± .008	(0.81 ± .20)	.050 ± .008	(1.27 ± .20)	.100 ± .008	(2.54 ± .20)
T	.025 MAX	(0.64 MAX)	.025 ± .005	(0.64 ± .13)	.025 ± .005	(0.64 ± .13)
x & y	.004 MIN	(0.10 MIN)	.004 MIN	(0.10 MIN)	.004 MIN	(0.10 MIN)
E/B	.005 MAX	(0.13 MAX)	.005 MIN	(0.13 MIN)	.005 MIN	(0.13 MIN)
E/B*	.012 MAX	(0.30 MAX)	N/A (0603 Only)		N/A (0603 Only)	



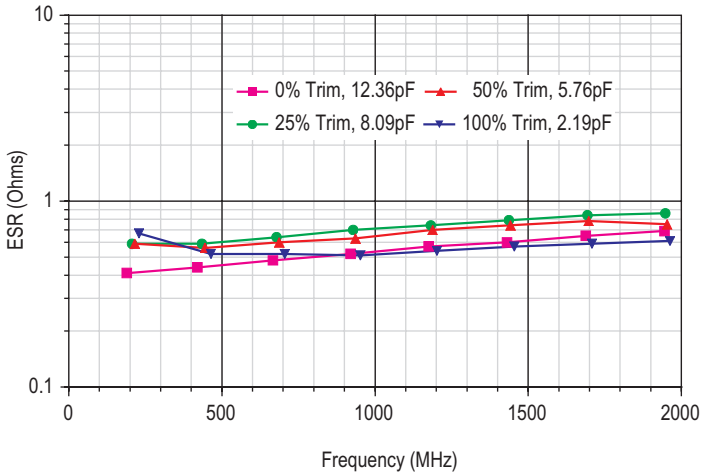
Electrical Characteristics

Working Voltage	50 Volts DC
Temperature Coefficient	0 ± 30ppm /°C, -55 to 125°C
Dissipation Factor	.001 (0.1%) max, 25°C
Insulation Resistance	> 10 GΩ @ 25°C, WVDC; 125°C IR is 10% of 25°C rating.
Dielectric Strength	2.5 X WVDC, 25°C, 50mA max
Test Parameters	1 MHz ± 50kHz, 1.0 ± 0.2 VRMS, 25°C
Environmental	Meets the mechanical & environmental characteristics as given for the Johanson S-Series capacitors (see second page of the S-Series specification sheet), except terminal adhesion for all sizes is > 2.0 lbs.



RF Characteristics - Model Selection

TYPICAL ESR: **0805, NP0, 10pF**



TYPICAL QUALITY FACTOR: **0805, NP0, 10pF**