



Product Family: [Bessel Absorptive Filter–9th Order](#)

Part Number Series: [FL9 Series](#)

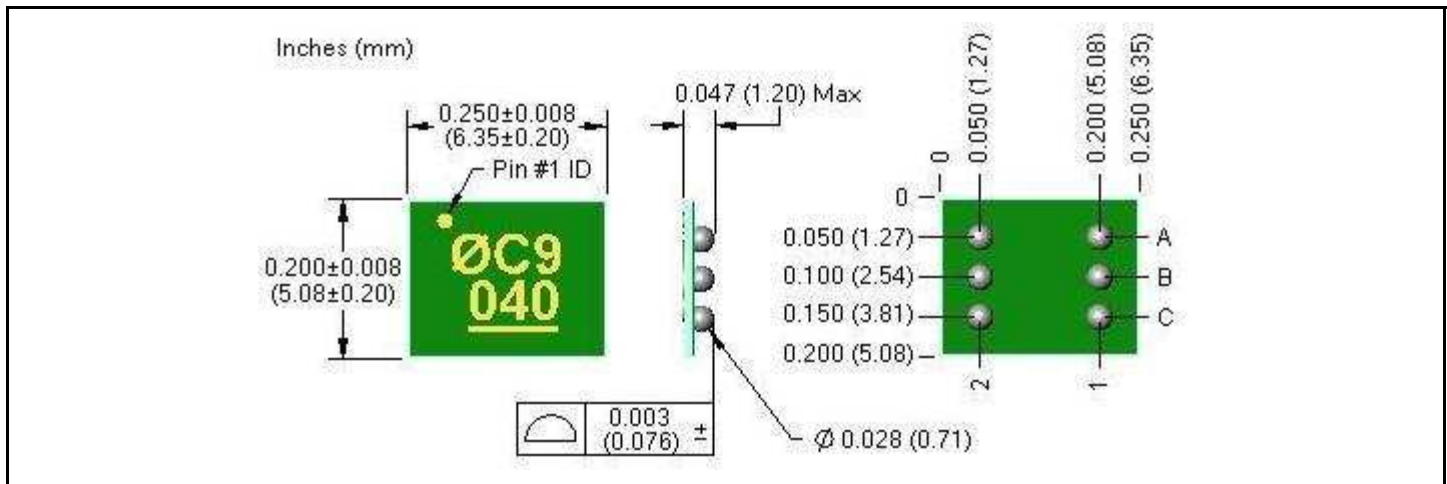
	<p>Construction:</p> <ul style="list-style-type: none"> • High Purity Alumina Substrate • Nickel alloy thin-film resistive element • Epoxy-resin overcoat • Available in RoHS (Sn95.5/Ag3.8/Cu0.7) or Non-RoHS (Sn63/Pb37) 	<p>Features:</p> <ul style="list-style-type: none"> • Cutoff frequencies between 2.5GHz and 4.0 GHz • Low pass • Absorptive • Ball Grid Array (BGA) for high bandwidth • Competitive pricing
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Description:

Thin Film Technology's FL9 series of surface mount low pass filters are designed for use in Duo-Binary modulation schemes where flat group delay and return loss beyond the cutoff frequency are important characteristics. The discrete (0.25GHz) cutoff series of 1/4 bitrates are intended for use in varying bitrates and application requirements including OC-192(10Gb/s) and forward error correction beyond 12Gb/s.

This product is currently available with solder finishes of Sn63/Pb37, as well as a RoHS compliant / Lead Free solder finish of Sn95.5/Ag3.8/Cu0.7. For the RoHS compliant / Lead Free part, the customer must specify this upon ordering by following the instructions in the part numbering section of this specification.

Product Dimensions:



Part Numbering: Ex. FL9B5BH033-T*-C

Product Designator	Orders	Type	Impedance	Function	Footprint	Cutoff Freq.	Custom Code	T&R Qty *	RoHS
FL	9 (9th Order)	B (Absorptive)	5 (50 ohm)	B (Bessel)	H (6 ball BGA)	025 = 2.5 GHz 028 = 2.75 GHz 030 = 3.0 GHz 033 = 3.25 GHz 035 = 3.5 GHz 038 = 3.75 GHz 040 = 4.0 GHz	S (Standard) TBD (Custom)	-T1 = 100 -T5 = 500	-C (RoHS) Leave blank for non-RoHS

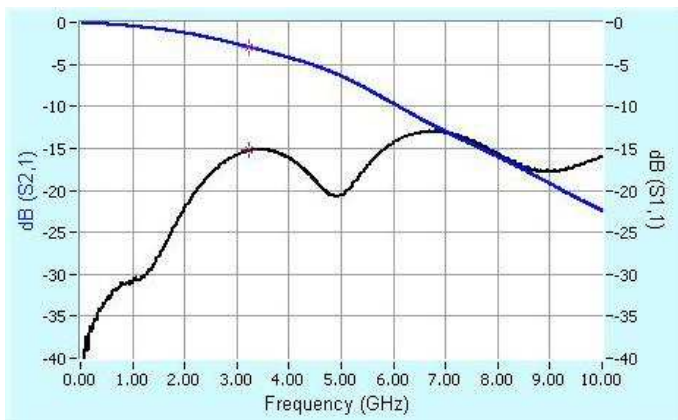
*Note: T&R package quantity (-T#) will be added to the part number by us depending on the quantity ordered.

Electrical Specifications:

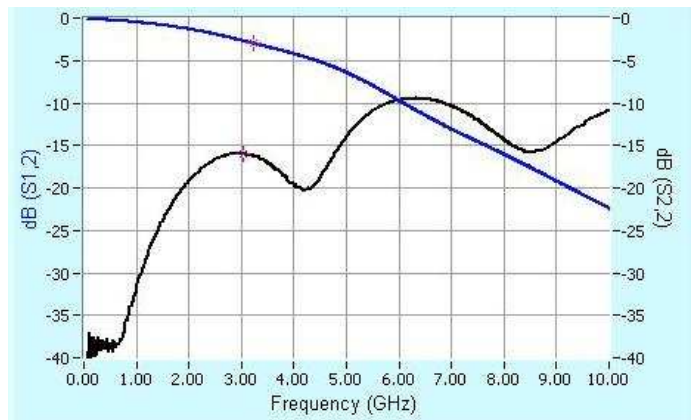
Parameter	Specification
English Size	2520
Metric Size	6450
Type	Absorptive Low Pass
Function	Bessel
Order	9th
Reference Impedance	50 ohms
Fo Cutoff Freq (-3dB)	2.5 to 4.0GHz in 0.25 GHz steps
Fo Cutoff Tolerance	Fo \pm 0.25 GHz
Return Loss (S11) (S22)	<15dB Loss through Fo <10dB Loss through two times Fo <13dB Loss through Fo
Rejection	-10dB through three times Fo
Group Delay Ripple (max)	20ps Max through 1.6x Fo
Rated Current	100mA
Isolation Resistance	>100Mohm @ 50Vdc
Operating Temperature	-40°C ~ +85°C
Packaging	100 or 500 pcs/reel

Please consult the factory for any desired variations to the above specifications

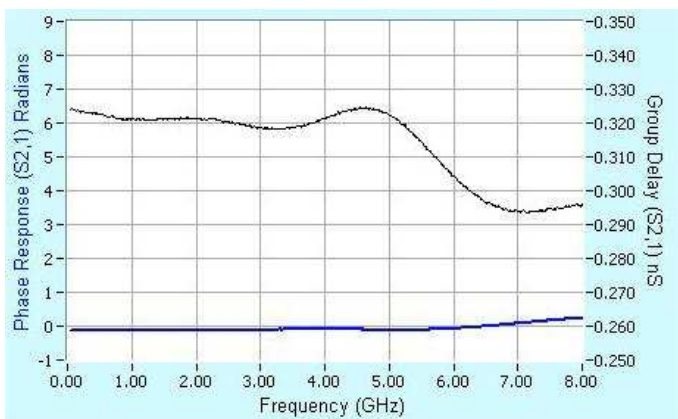
Frequency Performance Plots -3.25 GHz typical:



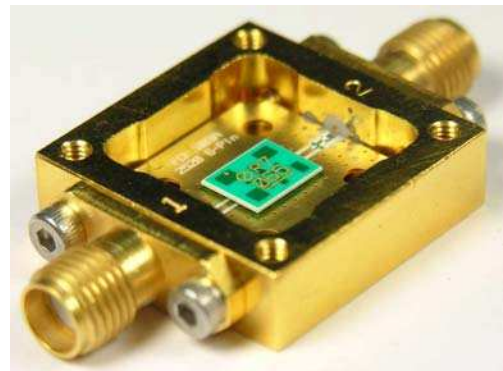
S2,1 (Blue) / S1,1 (Black)



S1,2 (Blue) / S2,2 (Black)



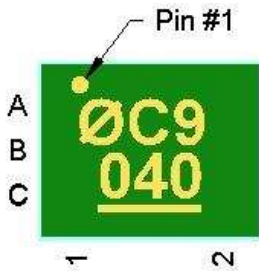
Phase Response (Blue) / Group Delay (Black)



These products are available mounted into a Coaxial Measurement Module (CMM) for bench evaluation purposes. Please call the factory.

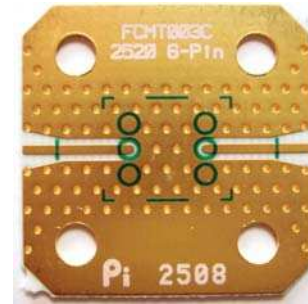
Marking and Recommended Land Pattern:

Marking:



Pin 1	Corner of pin A1
Row 1	TFT "don't stop" logo
	C = Monthly date code
	9 = Filter orders (9th)
Row 2	Fo Freq (040=4.0 GHz) (roundup as necessary so 033=3.25 GHz, etc.)
Row 3	Underline indicates absorptive type filter

Recommended Land Pattern:



Please call the factory for DXF output of Land Pattern

Tape and Reel Packaging:

Packaging Specifications	General Guidelines & Recommendations
Packaging Requirements	<ul style="list-style-type: none"> All taping done in accordance with EIA 481 standards. Pieces taped with the marking up and showing through the cover tape (as shown in the drawing below). All orders under 100 pcs will be put on cut tape only with no leader or trailer.
Labeling Requirements	Labels will contain the TFT part number and quantity of pieces taped.

