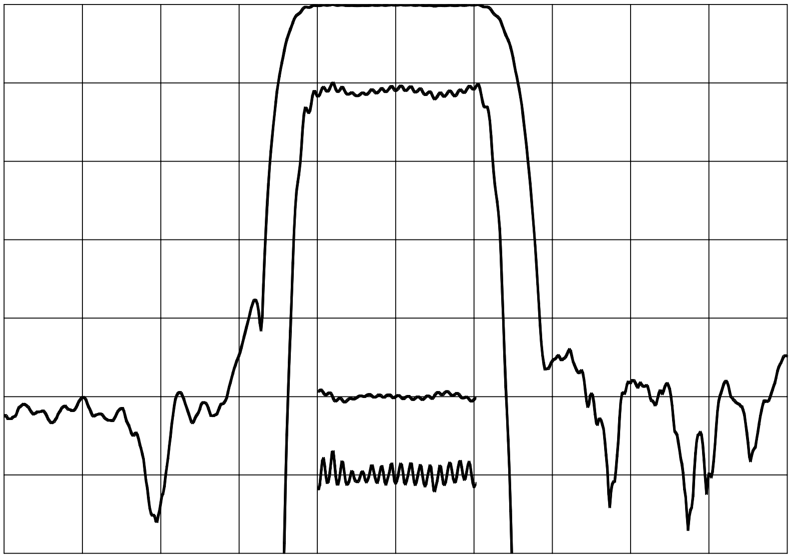
Integrated
Circuit
Systems, Inc.

140 MHz Filter
10 MHz Bandwidth
Part Number SF0140BA03107S

TYPICAL PERFORMANCE



Horizontal: 4 MHz/div

Vertical (from top):		
Magnitude	10,1	dB/div
Phase Deviation	10	deg/div
Group Delay Variation	50	ns/div

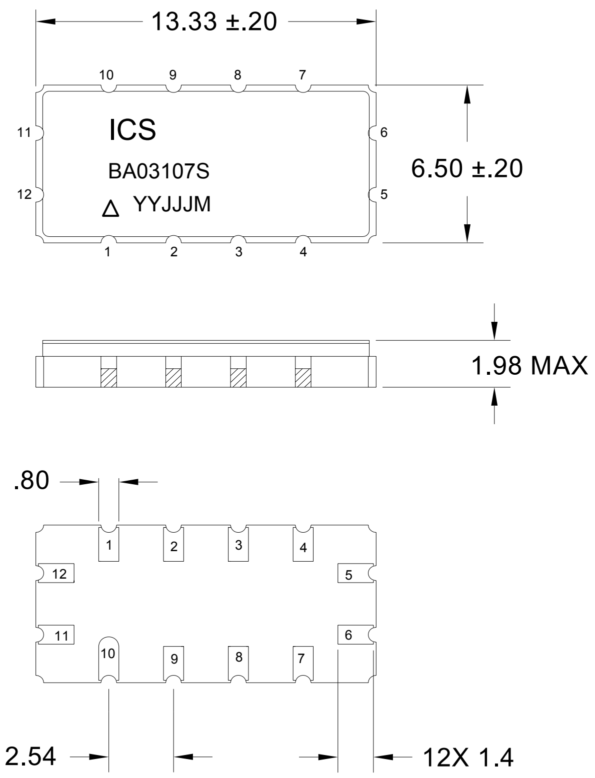
SPECIFICATION

Parameter	Min	Typ	Max	Units
Center Frequency [1]	139.8	140	140.2	MHz
Insertion Loss		8.3	9.5	dB
1 dB Bandwidth	9.6	9.92		MHz
3 dB Bandwidth	10.5	10.9		MHz
35 dB Bandwidth		14.0	15	MHz
Passband Ripple [2]		0.25	1	dB
Phase Deviation from Linear [2]		3	6	deg
Group Delay Variation [2]		30	100	ns
Absolute Delay		1.0		us
Ultimate Rejection (30-350 MHz)	40			dB
Substrate Material	YZ Lithium Niobate			
Temperature Coefficient of Frequency (Tc) [3]		-94		ppm/°C
Ambient Temperature		25		°C
Source and Load Impedance		50		Ω

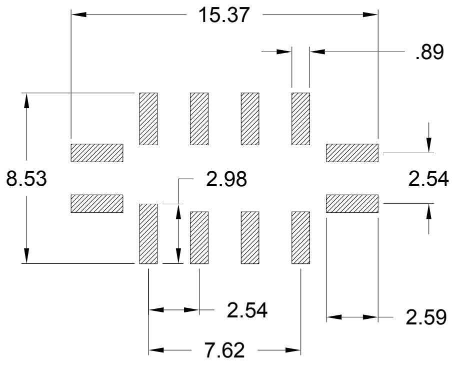
Notes:
1. Average of lower & upper 3 dB frequencies.
2. Evaluated over 80% of the 3 dB bandwidth.
3. Typical change of filter frequency response with temperature is $\Delta f/f_{ref} = (T-T_{ref})*Tc$ ppm.

PACKAGE AND SUGGESTED PCB FOOTPRINT

PACKAGE INFORMATION



SUGGESTED PCB FOOTPRINT

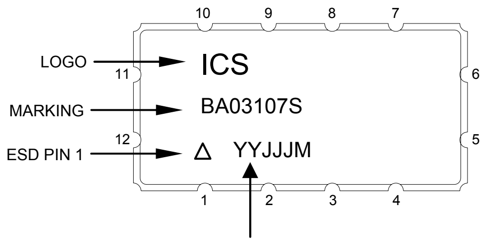


PIN CONFIGURATION	
11	INPUT
12	INPUT RETURN
5	OUTPUT
6	OUTPUT RETURN
ALL OTHERS	GROUND

NOTES:
DIMENSIONS SHOWN ARE NOMINAL IN MILLIMETERS. ALL TOLERANCES ARE ±0.15MM EXCEPT OVERALL LENGTH AND WIDTH

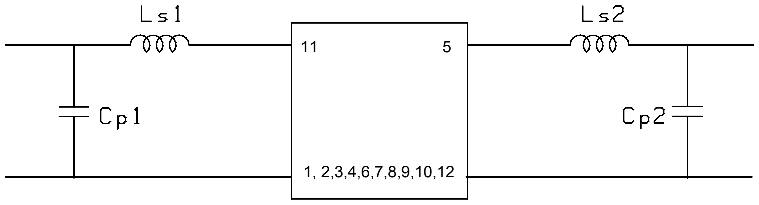
Package Material:
Body: Al_2O_3 ceramic
Lid: *Kovar, Ni* plated
Terminations: *Au* plating 1 μm min, over a 1.3-8.9 μm *Ni* plating

MARKING



The date code consists of:
YY = last two digits of year; JJJ = Julian day;
M = manufacturing site code

MATCHING CIRCUIT



Component values in 50 Ω: Ls1 = 68 nH Ls2 = 100 nH
(Minimum Q = 40) Cp1 = 15 pF Cp2 = 10 pF

Notes:

1. Optimum values may differ from these when using a different fixture or board layout. The values shown here are intended as a guide only.

MAXIMUM RATINGS

Parameter	Min	Max	Units
Storage Temperature Range	-45	+85	ºC
Maximum Input Power Level		15	dBm
D. C. Voltage between Each Terminal		15	V

PHYSICAL AND ENVIRONMENTAL CHARACTERISTICS

Parameter	Qualification Conditions
Life Testing	High temperature bake at +85 ºC for 168 hours.
Temperature Cycling	MIL-STD 883, Method 1010: -40 ºC to +85 ºC, 10 cycles, 10 minutes dwell at temperature extremes
Vibration	MIL-STD-202, Method 201A: 10 to 55 Hz, double amplitude of 0.06” for 2 hours in each axis.
Mechanical Shock	MIL-STD-883, Method 2002, Test Condition B: 1500 g, 3 impacts each axis
Solder Heat Resistance and Reflow Condition	Peak temperature 240+/-5 ºC for 10 seconds. Pre-heat: 150-170 ºC for 60 to 90 seconds. Peak dwell: over 200 ºC for 23 to 26 seconds. Handling: Class 1 per MIL-STD-1686 Reflow Profile is shown at the bottom of this table.
Lead Integrity	MIL-STD 883 Method 2004, Condition D 8 oz for 30 seconds.
Solderability	MIL-STD-883 Method 2003: 245 ºC +/-5 ºC; 95% coverage; no steam aging
Hermeticity	MIL-STD 883 Method 1014: Condition A2 and Condition C (no bomb)
ESD Classification	Class I per MIL-STD-883 Method 3015
Precautions	Do not subject devices to ultrasonic cleaning, which may cause deterioration and destruction of the device.