S-Band Fast Tuned Notch Filter

ES005

TELEDYNE DEFENCE & SPACE
Everywhereyoulook™

S-Band Fast Tuned Notch Filter

The ES005 fast tuned notch filter (FTNF) has been specifically designed to protect ESM receivers from high duty cycle frequency agile interference from on board or cohort combat radar systems. Each FTNF provides two independently controlled notches to suppress multiple interference sources with the added ability to also combine to a single, greater depth notch.

The ES005 incorporates temperature correction and integrated auto-calibration circuits. The temperature correction circuit corrects notch centre frequency drift due to operating temperature variations and maintains the notch characteristics within the specified limits across the operating temperature range. The ES005 carries out this function automatically during its normal operation independent of customer intervention.

The integrated auto-calibration circuit provides the option to re-calibrate the ES005 for any long-term drift of the notch centre frequency. This self-calibration routine is carried out under external command, a single active low input provided by the operator through the MDM connector.

FEATURES

- S-Band coverage
- Ultrafast tuning speed <250nS
- Digital Tuning Control
- Can be cascaded
- Low Loss In All Pass State
- Dual Independently Controlled Notches
- Very Small Form Factor

APPLICATIONS

- ESM Receiver Protection
- Direction Finding (DF) System Protection

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SPECIFICATIONS

All-Pass State	
Passband	2.0 to 4.8 GHz
Insertion Loss	2.5 dB max
Insertion Loss Ripple	1.5 dB max
Return Loss	10 dB min
Harmonics (0 dBm input)	-60 dBc max
Input 3rd Order Intercept Point	+25 dBm min
Notch Operation	
Number of IndependentlyTuned Notches	2
Tuning Range	2.8 to 3.7 GHz
Tuning Resolution	4 MHz
Tuning Accuracy	± 2.0 MHz
–3dBc bandwidth	200 MHz max
–25dBc bandwidth	30 MHz min
Full range switching speed	250 ns max
Common	
Operating power range	+10 dBm max
Survival power range	+25 dBm max
Power Supplies	+5V @ 210mA max (normal operation) @600mA max (auto-calibration) +15V @ 225mA max -12V @ 200mA max
RF Connectors	Hermetic, SMA Female
Digital Control and Power Supplies Connector	Hermetic, 37-way MDM (Micro-D) with receptacle pins
Weight	950 grams max
Dimensions	258.5 x 76 x 30 mm

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ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-28 to +65ºC
Storage Temperature	-40 to +85ºC
Environmental Seal	All covers and MDM connector laser welded Typical leak rate = 1x10-8 atm cc/s Tested in accordance to MIL-STD-883 Method 1014.10, test condition A1 & A4
Mechanical Shock	30g, 18ms pulse width Tested in accordance to NES 104 data sheet 27
Vibration Operation (each 3 orthogonal axes)	Vibration sweep levels 1.0Hz to 13.5Hz @ +/- 1mm maximum 13.2Hz – 33.0Hz @ +/- 0.7g Tested in accordance to IEC-68-2-6 test Fc
Endurance Vibration Level (each 3 orthogonal axes)	90 minutes in accordance to operational vibration levels Tested in accordance to IEC-68-2-6 test Fc
Salt Atmosphere	Meets the requirements of MIL-STD-810E Method 509.3
Mould Growth	Meets the requirements of MIL-STD-810E Method 508.4

TUNING CONTROL INPUT REQUIREMENTS

Single 8-bit binary Frequency Control Word - common for Notch A and B
Independent Notch A Frequency Data Strobe Bit
Independent Notch B Frequency Data Strobe Bit
1-bit Active-Low Auto-Correction Bit
3-bit LED (red, yellow) drive output lines for auto- calibration status indication

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