

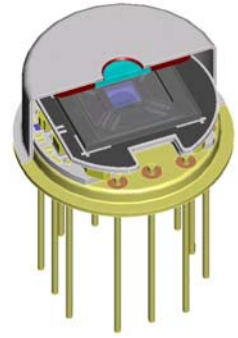
Datasheet - Variable Color Product

LFP-3041L-337

pyroelectric detector with tunable FPF

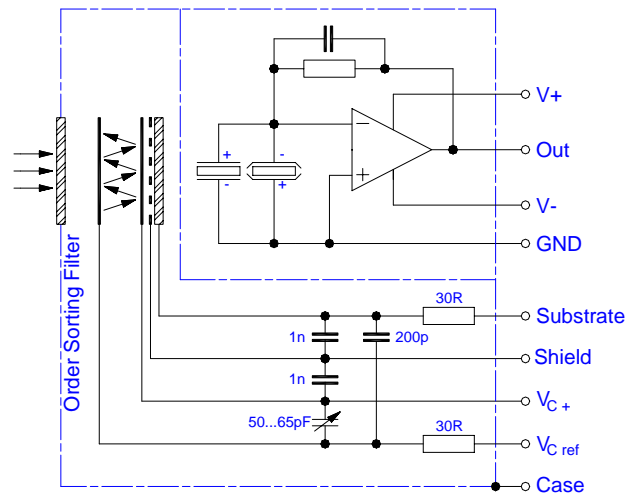
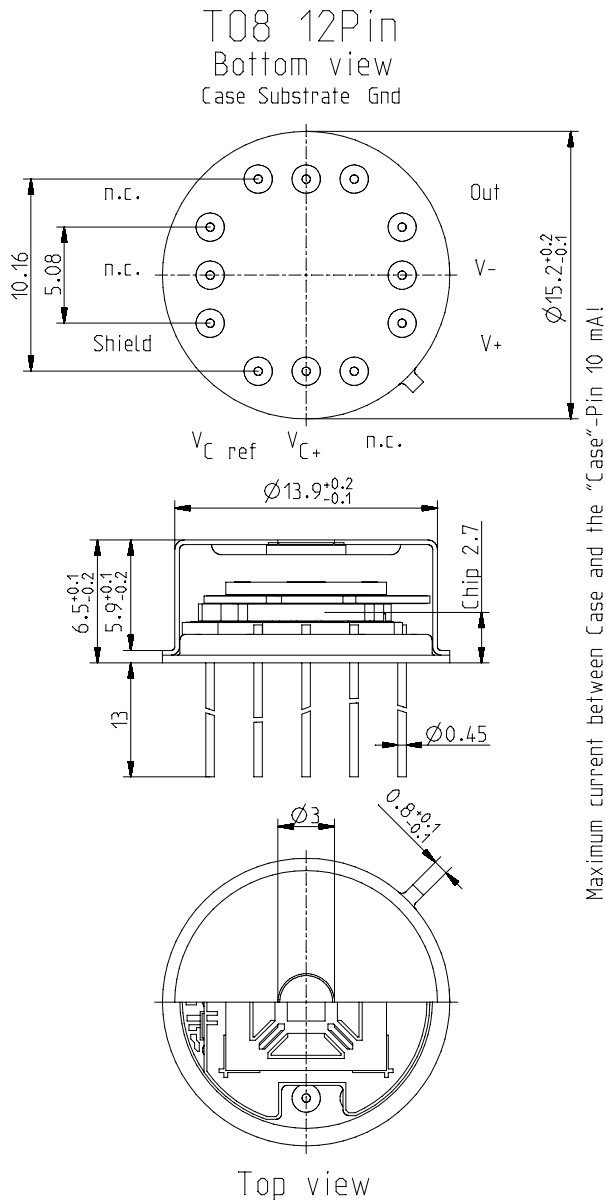
Description:

Pyroelectric IR detector with integrated $\varnothing 1.9\text{mm}$ micromachined tunable Fabry-Perot filter. Tuning range 3.0 ... 4.1 μm , spectral bandwidth 80nm, low spring stiffness, pyroelectric element area 2.0x2.0mm²
 thermal compensation, ultra low microphonic effect, current mode operation with advanced CMOS transimpedance amplifier (TIA) for 1Hz to 100Hz modulation frequency range
 feedback R 100GOhm $\pm 20\%$ // C 50 $\pm 10\text{fF}$ (very high gain)

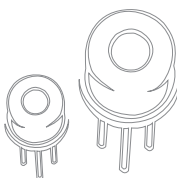
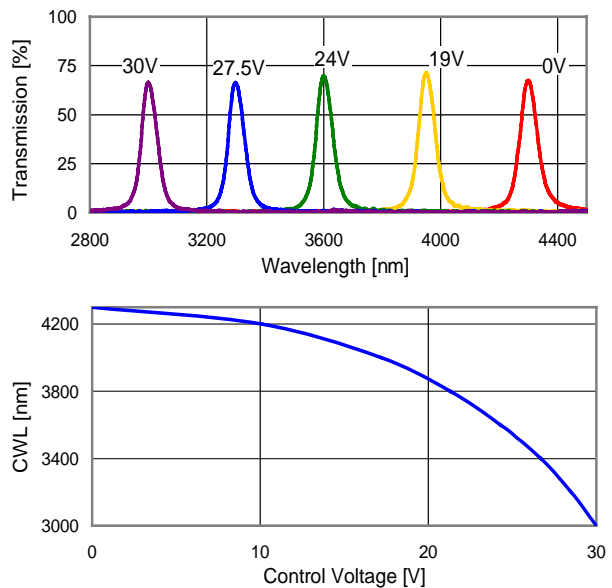


HOUSING:

PIN ASSIGNMENT:



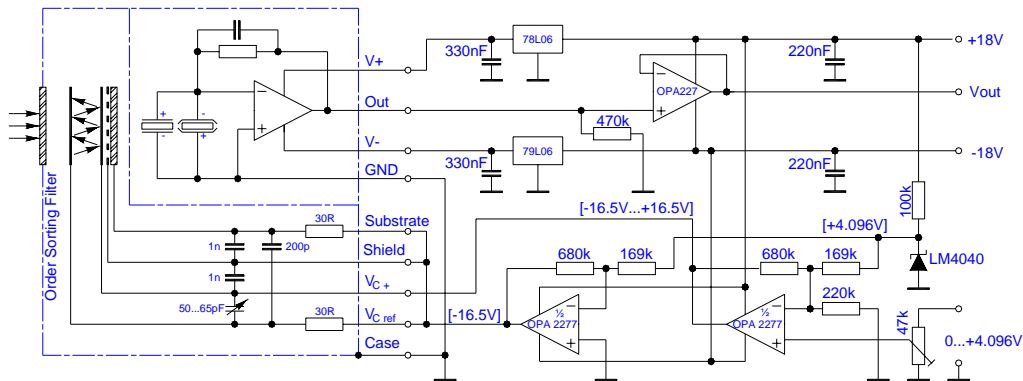
FPI WAVELENGTH RESPONSE:



LFP-3041L-337

pyroelectric detector with tunable FPF

TEST CIRCUIT:



PARAMETERS:

Fabry-Perot filter	nom	FPF 3.0 ... 4.1 μ m low spring stiffness design
Filter aperture size		\varnothing 1.9 mm
Mirror drive mechanism	nom	electrostatic, 1 nF load, <0.05 μ A leakage current
Center wavelength CWL @ Vc=0V	nom	4.3 \pm 0.2 μ m
Guaranteed tuning range	nom	3.0 ... 4.1 μ m
Spectral bandwidth @ 50% of transmission peak	nom	80 \pm 20 nm
Spectral bandwidth @ 10% of transmission peak	typ	180 nm
Control voltage Vc+ - Vc ref @ 3.0 μ m	typ	+30 V (max +33 V)
Allowable control voltage (limited by pull-in effect)	max	(control voltage @ 3.0 μ m) + 0.5 V
Settling time (from 4.3 μ m to 3.0 μ m by control voltage step; \pm 1nm)	max	500 ms
CWL shift by gravity when turning upside down 4.3 μ m / 3.0 μ m	typ	\pm 20 nm / \pm 35 nm
Order sorting filter	nom	WBP
Out of band blocking UV to	min	25 μ m
Pyroelectric detector	nom	LME-337 based type
Element size / type	nom	2.0x2.0 mm ² lithium-tantalate with black layer
Thermal time constant	typ	150 ms
Feedback resistor	nom	100 GOhm \pm 20%
Feedback capacitor	nom	50 \pm 10 fF
Polarity	nom	negative signal by positive IR flux change
Voltage responsivity (rms) {400 $^{\circ}$ C, 10 Hz, 25 $^{\circ}$ C} @ 0V, MgF2 long wavelength blocking	typ	2200 V/W
Noise density (rms) {10 Hz, BW 1 Hz, 25 $^{\circ}$ C}	max	65 μ V/(sqrt[Hz])
Detectivity {400 $^{\circ}$ C, 10 Hz, 1 Hz, 25 $^{\circ}$ C} @ 0V, MgF2 long wavelength blocking	typ	8.0E+06 cm(sqrt[Hz])/W
CMOS operational amplifier	nom	OpAmp2 (for characteristics see application note)
Supply voltage V+ - V-	max	16 V
Operating supply voltage V+ / V-		+2.2 ... 8.0 V / -2.2 ... -8.0 V
Recommended supply voltage V+ / V-	nom	V+ = +5 V; V- = -5 V
Supply current {output load 1MOhm}	max	150 μ A
Offset voltage {25 $^{\circ}$ C; output load 1MOhm}		-5 mV ... +5 mV
Optimal output load	nom	330 kOhm
Absolute output current	max	\pm 0.4 mA
Operating / Storage temperature	nom	-25 ... +85 $^{\circ}$ C
* Spectral measurement conditions		FTIR (resolution 8/cm; divergence angle \pm 4 $^{\circ}$; AOI 0 $^{\circ}$)