

LT 11/21 Series

- LiTaO_3
- Single element
- Current mode
- Integrated OpAmp (or JFET)
- TFC optional
- Trend towards low power OpAmp

Lithium Tantalate ($\text{LiTaO}_3/\text{LTO}$) is the most widely used pyroelectric material in many non-dispersive applications, and as power monitors for pulsed laser systems due to its relatively high performance and low cost compared to other thermal detectors.

Traditionally voltage mode devices have always been used for pyro-electrics; not because of performance, but because of the availability of small and reliable transimpedance amplifiers available on the market. Semiconductor manufacturing processes now allows for this with current mode devices providing some distinct advantages over voltage mode, especially for new users.

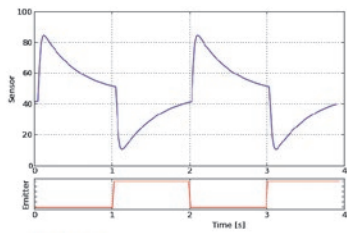
Basic Characteristics, Specifications

Part Number	Element Size [mm]	Aperture Size [mm]	Features	TFC	Low Micro	OpAmp			FOV [°]	Package
						Split Supply	Single Supply	Low Power	Min.	
LT1100X2020	2.0 x 2.0	5.0 x 5.0	Fast Single	-	-	■	-		75	4 Pin TO-39
LT1170X2020	2.0 x 2.0	5.0 x 5.0 ^c Dia. 3.5 ^d	Single versatile	-	■	-	-	■	90	4 Pin TO-39
LT1120M2020	2.0 x 2.0	5.0 x 5.0	JFET 24GOhm	-	■	n.a.	n.a.	■	90	4 Pin TO-39
LT1140X1410	1.4 x 1.0	Dia. 2.3	JFET 1GOhm	-	-	n.a.	n.a.	■	45	4 Pin TO-18
LT1150M3030	3.0 x 3.0	5.0 x 5.0 ^c Dia. 3.5 ^d	Single versatile +3V	-	■	-	■	■	75	3 Pin TO-39
LT2100M2020	2.0 x 2.0	5.0 x 5.0 ^c Dia. 3.5 ^d	Standard	■	■	■	-	-	90	4 Pin TO-39
LT2150M2020	2.0 x 2.0	5.0 x 5.0 ^c Dia. 3.5 ^d	High End standard	■	■	-	■	■	90	4 Pin TO-39

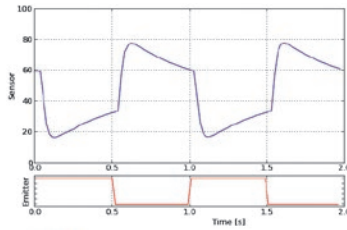
Polarity: A negative signal is created by positive IR flux change.

FOV is calculated for 0.5mm silicon substrate.

^c Aperture for Broadband windows. ^d Aperture for NBP filters.



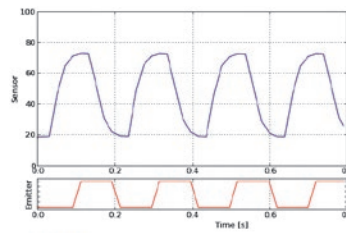
0.5 Hz



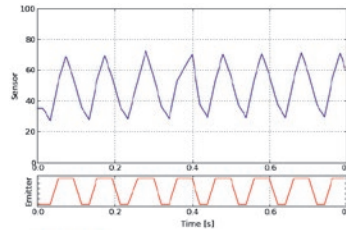
1 Hz

Detector Signal at Different Frequencies

The signal form depends on the frequency of the IR radiation source. Real-time data from our IR applications kit with a single mode CM detector (results vary from model to model).



5 Hz



10 Hz

- Easy system integration
- Short development times
- Increased performance at higher frequencies
- High signal with low offset
- Low temperature dependence
- Low output impedance reduces EMI effects

Electromechanical Characteristics

Part Number	Element Size [mm]	Responsivity ^a [V/W]	D* ^a [cm Hz ^{1/2} /W]	Supply Voltage ^b [V+, V-]	Similar Model
		@ 10 Hz	@ 10 Hz		
		Min.	Min.		
LT1100X2020	2.0 x 2.0	20	9.0 E+06	V+ = +6 V, V- = -6 V	LIE-382
LT1170X2020	2.0 x 2.0	28000	2.4 E+08	V+ = +3 V	
LT1120M2020	2.0 x 2.0	28000	2.8 E+08		LME-300
LT1140X1410	1.4 x 1.0	1300	Typ. 5.5 E+07		LIE-200
LT1150M3030	3.0 x 3.0	7000	1.0 E+08	V+ = +3V	
LT2100M2020	2.0 x 2.0	32000	2.4 E+08	V+ = +5V, V- = -5V	LME-345
LT2150M2020	2.0 x 2.0	85000	Typ. 4.0 E+08	V+ = +3V	LME-336

^a Measured with 500K blackbody, 1 Hz bandwidth, without filter / window. ^b Recommended