

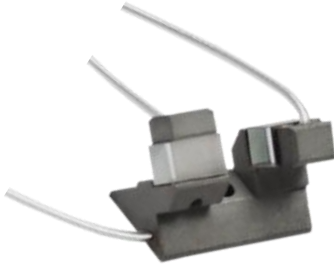
RTP Modulator/Switch

2, 4, 6, 8mm aperture, 350nm to 4500nm



DATASHEET

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Features

- Large Nonlinear Coef.
- High Repetition Rate
- Low Half-Wave Voltage
- No Piezoelectric Ringing
- High Damage Threshold
- High Extinction Ratio
- Non-Hygroscopic

Applications

- Q-Switch
- Laser Power Modulation
- Laser Phase Modulation
- Pulse Picker

RTP (Rubidium Titanyl Phosphate - RbTiOPO_4) is an electro-optical crystal with unique stable properties that are best suited for shortwave and high optical power applications in which other electro-optical crystals become unstable. Due to its small piezo effects, RTP is also well suited for high repetition rates and short pulse lengths. Our device contains a matching RTP pairs that advantageously compensates temperature induced birefringent drifts. We offer a wide range of aperture and driving voltage choice.

For amplitude modulation, polarized light is essential because the modulation process relies on controlling the intensity of light based on its polarization state. By incorporating input and output polarizers, the extinction ratio (ER) of the device is significantly improved.

Specifications

Parameter	Min	Typical	Max	Unit
Transparency Range	350		4500	nm
Dielectric Constant (ϵ_{eff})		13.0		
Thermo-Optical Coefficients ($d\lambda/dT$)		-0.029		nm/°C
Clear Aperture ^[2]		> 90		%
Coatings (AR@1064nm)		R < 0.2		%
Nonlinear Coefficients	d15/d31	2.0		pm/V
	d24/d32	3.6		
	d33	8.3		
Electro-Optic Constants	Y-cut: $r_{51}=38.5$ pm/V X-cut: $r_{33}=35$ pm/V, $r_{23}=12.5$ pm/V, $r_{13}=10.6$ pm/V			
Thermal Expansion Coefficients	$\alpha_x=1.01 \times 10^{-5}$, $\alpha_y=1.37 \times 10^{-5}$, $\alpha_z=-4.17 \times 10^{-6}$			
Static Half Wave Voltage (1064nm)	4x4x20 mm: 1,600 V 6x6x20 mm: 2,400 V			
Electrical Resistivity	1011		1012	ohm*cm
Extinction Ratio		> 20		dB
Optical Damage Threshold	> 600MW/ cm ² 10ns 10Hz at 1064nm			
Wave front distortion	$\lambda/6@633\text{nm}$			
Flatness	$\lambda/10@633\text{nm}$			
Angle Tolerance (perpendicularity)		± 0.15		°
Perpendicularity		≤ 10		'
Scratch/Dig		20/10		
Parallelism		≤ 5		"
Material Electrical Resistivity	$\leq 0.2\text{mm} \times 45^\circ$			

* Sellmeier equations of KD^*P : (λ in μm):
 $n_x^2=2.15559 + 0.93307[1-(0.20994/\lambda)^2] - 0.01452\lambda^2$
 $n_y^2=2.38494 + 0.73603[1-(0.23891/\lambda)^2] - 0.01583 \lambda^2$
 $n_z^2=2.27723 + 1.11030[1-(0.23454/\lambda)^2] - 0.01995\lambda^2$

Note: The specifications provided are for general applications with a cost-effective approach. If you need to narrow or expand the tolerance, coverage, limit, or qualifications, please [click this link](#):

Warning: Do not use it, if you are not well trained. Do not clean the optical surfaces. Do not solder on crystals causing cracks. High voltage on the electrodes is extremely dangerous.

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Ordering Information (Part Number)

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Prefix	Type	Wavelength		Aperture	Length	
RTPM-		350~430 nm = 0390 430~700 nm = 0550 700~1000 nm = 0850 1064 nm = 1064		2mm = 2 3mm = 3 4mm = 4 5mm = 5 6mm = 6 7mm = 7 8mm = 8	12mm = 1 14mm = 2 18mm = 3 20mm = 4 22mm = 5 25mm = 6	

The crystal length relates to driving voltage. An example for 1060nm operation is listed below.