Handling Instructions

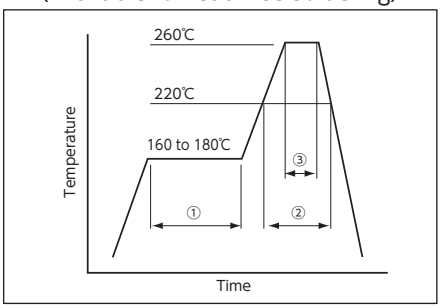
■ Soldering

Our products are designed so they may withstand the same standard reflow soldering temperatures as most other electronics components. However, if the reflow temperature is higher than our specification allows, the performance may be affected. Avoid soldering the product at temperatures higher than specified.
For the reflow temperature profile of SMD products, refer to the figure below.

①	Preheat	160 to 180℃	120sec.
②	Primary heat	220℃	60sec
③	Peak	260℃	10sec. max.

※ The reflow temperature profile may vary depending on the product model, specifications and frequency range. Refer to the individual product specifications for details.

Reflow Temperature Profile
(Available for lead free soldering)



■ Cleaning

◎General cleaning solutions or ultrasonic cleaning may be used to clean our crystal products, but verification tests are recommended prior to use.
◎Tuning fork crystals resonate at frequency bands that are close to the washing frequency of ultrasonic cleaning machines and this may cause resonance deterioration in the crystal. Therefore the use of ultrasonic cleaning machines to clean tuning fork crystals should be avoi-ded. After applying ultrasonic cleaning, the functionality of crystals should be verified by testing the performance of the end product.

■ Shock

Crystal products are designed to resist shock, but if the products receive excessive shocks or are dropped on the ground, be sure to check for any damages before using.

■ Mounting

〈SMD crystal products〉

Surface mount crystals are designed to be compatible with most automatic mounting processes, but some processes may exert excessive shock which may damage the crystal. Therefore test mounting of the crystal prior to mass production is necessary.
If there is a possibility that PCB may be warped, make sure the warping is not to such a degree that the crystal products' operating characteristics or soldering conditions will be negatively affected.
Avoid mounting and processing by Ultrasonic welding because this method has a possibility of an excessive vibration spreading inside the crystal products and becoming the cause of characteristic deterioration and not oscillating.

〈Lead type〉

When bending, forming, or mounting leaded crystal products be careful not to put too much pressure on the glassed part of the base, as it may crack and negatively affect the crystals' performance.

■ Storage

Storing crystal products at high temperatures or high humidity may deteriorate the soldering condition of pins. Do not store in direct sunlight or damp environments.

■ Others

〈Crystal Resonators〉

◎When excessive voltage is applied to crystal resonators, their performance may be affected or the crystal blank may be damaged. When handling the product, use the product within the specifications provided.
◎Negative resistance determines the tolerance margin of a circuit that oscillates the resonator. We recommend that the negative resistance be at least five times the standard series resistance for standard applications, and at least ten times the standard series resistance for automotive and safety applications.

〈Crystal Oscillators〉

◎C-MOS is used for internal circuit of crystal oscillators. To prevent latch-up phenomena or static electricity, take careful note.
◎Some crystal oscillators do not have internally connected bypass capacitors. When using the product, use a capacitor with a good high frequency characteristic of 0.01μ F between Vcc and GND (e.g. Ceramic chip capacitor) and connect it at the shortest possible distance. For details, refer to the specifications of each individual product.

〈Monolithic Crystal Filters〉

◎Take care so that the input pin and the output pin do not close on the PCB.
◎If the floating capacity of a PCB (on which a crystal filter is to be mounted) is too large, circuit tuning may be required to cancel out the excess floating capacity.
◎When excessive voltage is applied to crystal filters, their performance may be affected or the crystal blank may be damaged. When handling the product, use at its input level equal to or less than -10dBm.

〈Optical Products〉

◎Our products are manufactured in a dust-free environment. To keep them clean and dust free, keep them in a clean environment after they are unpacked.

RoHS/ELV Compliant Lead-free and Halogen-free products from KDS.

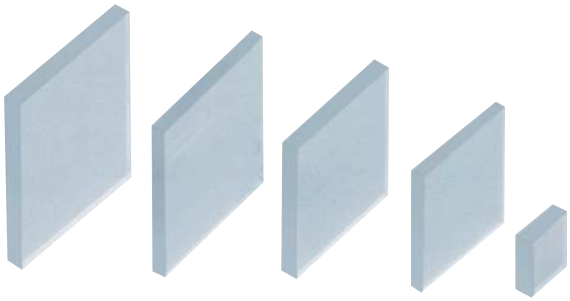
KDS is fully committed to environmental protection and has been proactively working to comply with the major environmental regulations such as RoHS Directive (Directive of the Restriction of the use of certain Hazardous Substances : 2011/65/EU and (EU) 2015/863), ELV Directive (End-of-Life Vehicles Directive : 2000/53/EC) and Halogen-free activities etc. The below spreadsheet provide the current status of the product compliance in each environmental regulations. Please visit our website for the latest information.(http://www.kds.info)

As of sept.30.2020

	Type	RoHS/ELV Compliant	Halogen-free	Pb-free	Materials of pin	Note
Crystal Resonators/ MHz Band Crystal Resonators	DX1008JS	○	○	○	Ni/Au	
	DSX1008A	○	○	○	Ni/Au	
	DSX1210A	○	○	○	Ni/Au	
	DSX1612S	○	○	○	Ni/Au	
	DSX211S, DSX211SH	○	○	○	Ni/Au	
	DSX221SH	○	○	○	Ni/Au	
	DSX321SH	○	○	○	Ni/Au	
	DSX210GE	○	○	Pb in sealing-glass	Ni/Au	Pb in sealing-glass is exempted from RoHS/ELV Directive.(*)
	DSX320G, DSX320GE	○	○	Pb in sealing-glass	Ni/Au	Pb in sealing-glass is exempted from RoHS/ELV Directive.(*)
	DSX211G	○	○	Pb in sealing-glass	Ni/Au	Pb in sealing-glass is exempted from RoHS/ELV Directive.(*)
	DSX321G, DSX321GK	○	○	Pb in sealing-glass	Ni/Au	Pb in sealing-glass is exempted from RoHS/ELV Directive.(*)
	DSX530GA, DSX530GK	○	○	Pb in sealing-glass	Ni/Au	Pb in sealing-glass is exempted from RoHS/ELV Directive.(*)
	SMD-49	○	○	○	Sn-Cu	
Tuning Fork Crystal Resonators/ kHz Band Crystal Resonators	DT-26, DT-261	○	○	○	Sn	
	DT-38, DT-381	○	○	○	Sn	
	DMX-26S	○	○	High temperature solder	Sn	High temperature solder used inside the product is exempted from RoHS/ELV Directive.(*)
	DST1210A	○	○	○	Ni/Au	
	DST1610A, DST1610AL	○	○	○	Ni/Au	
	DST210AC	○	○	○	Ni/Au	
	DST311S, DST310S	○	○	○	Ni/Au	
Crystal Resonators with dedicated temperature sensor/MHz Band Crystal Resonators	DSR1210ATH	○	○	○	Ni/Au	
	DSR1612ATH, DSR1612STH	○	○	○	Ni/Au	
	DSR211ATH, DSR211STH	○	○	○	Ni/Au	
	DSR221STH	○	○	○	Ni/Au	
Temperature Compensated Crystal Oscillators (TCXO)	DSA/DSB1612 SERIES	○	○	○	Ni/Au	
	DSA/DSB211 SERIES	○	○	○	Ni/Au	
	DSA/DSB221 SERIES	○	○	○	Ni/Au	
	DSA/DSB321 SERIES	○	○	○	Ni/Au	
	DSA/DSB535 SERIES	○	○	○	Ni/Au	
	DSK321STD	○	○	○	Ni/Au	
Real Time Clock Module (RTC)	DSK324SR	○	○	○	Ni/Au	
Simple Packaged Crystal Oscillators (SPXO)	DS1008J SERIES	○	○	○	Ni/Au	
	DSO1612AR	○	○	○	Ni/Au	
	DSO211A SERIES	○	○	○	Ni/Au	
	DSO221S SERIES	○	○	○	Ni/Au	
	DSO223S SERIES	○	○	○	Ni/Au	
	DSO321S SERIES	○	○	○	Ni/Au	
	DSO323S SERIES	○	○	○	Ni/Au	
	DSO531S SERIES	○	○	○	Ni/Au	
	DSO533 SERIES	○	○	○	Ni/Au	
	DLO555MBA	○	○	○	Sn	
	DSO751S SERIES	○	○	○	Ni/Au	
	DSO753S SERIES	○	○	○	Ni/Au	
Voltage Controlled Crystal Oscillators (VCXO)	DSV321S SERIES	○	○	○	Ni/Au	
	DSV323S SERIES	○	○	○	Ni/Au	
	DSV531SV	○	○	○	Ni/Au	
	DSV753S SERIES	○	○	○	Ni/Au	
Monolithic Crystal Filters	DSF334 SERIES	○	○	○	Ni/Au	
	DSF444 SERIES	○	○	○	Ni/Au	
	DSF633 SERIES	○	○	○	Ni/Au	
	DSF753 SERIES	○	○	○	Ni/Au	

* RoHS Directive and ELV Directive exemptions are granted for high temperature solder and lead content in low-melting glass of DSX-G Series.

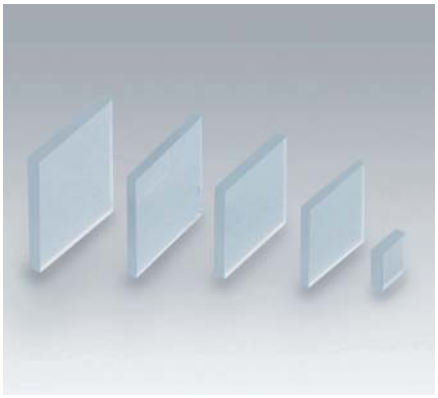
Quartz Devices
Optical products



KDS DAISHINKU CORP.

Optical Products

Description



Crystal has wider transmission wavelength range of the light compared to common glass, and is physically stable material. In addition, it has depolarization properties, optical rotation property and double refraction properties that separates the ordinary and extraordinary light. It is used for wave plate, heat dissipation plate, OLPF (Optical Low Pass Filters).
The dielectric multilayer film can control the transmission of the light and is used in various electronic and optical devices. It can be formed on the various kinds of substrates, such as crystal, glass, etc.

■ Applications

- Surveillance camera, FA cameras, cameras for automotive electronics, action camera, digital still camera, video camera.

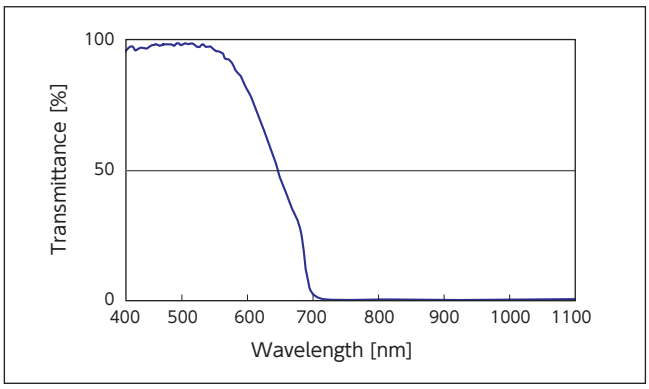
IR Double Cut Filter (IR Cut Filter)

"IR Double Cut Filter" is designed with the absorptive material and coating which blocks the transmission of the infrared. It comes with improved transmittance rate at visible light range, blocks near infrared light range and reduces the flares.

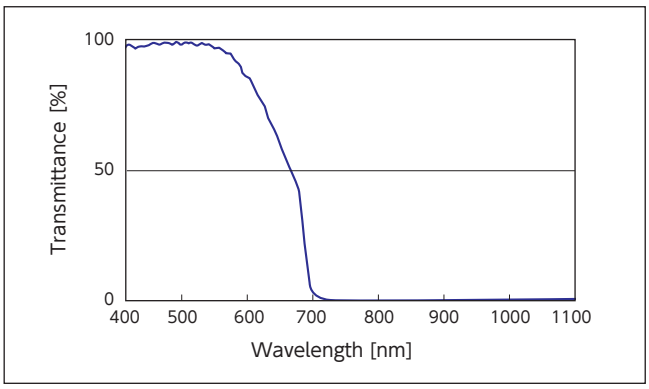
■ Example of Spectrum Characteristics

Infrared Absorbing Glass + Infrared Cut Coating Type

(High sensitivity type)



(Super high sensitivity type)



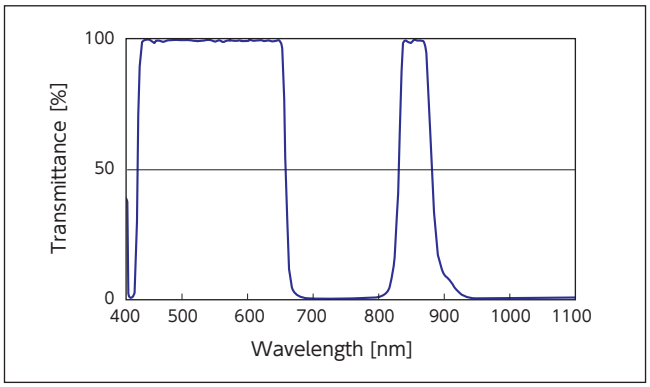
Optical Products

Dual Pass Filters (Dual Band Pass Filters)

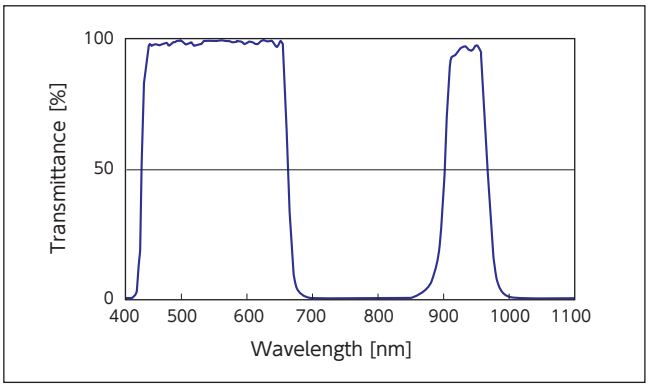
"Dual Pass filter" is a filter that has a transmission range of the near-infrared region and the visible light region.This filter is suitable to the surveillance cameras for shooting day and night continuously.

■ Example of Spectrum Characteristics

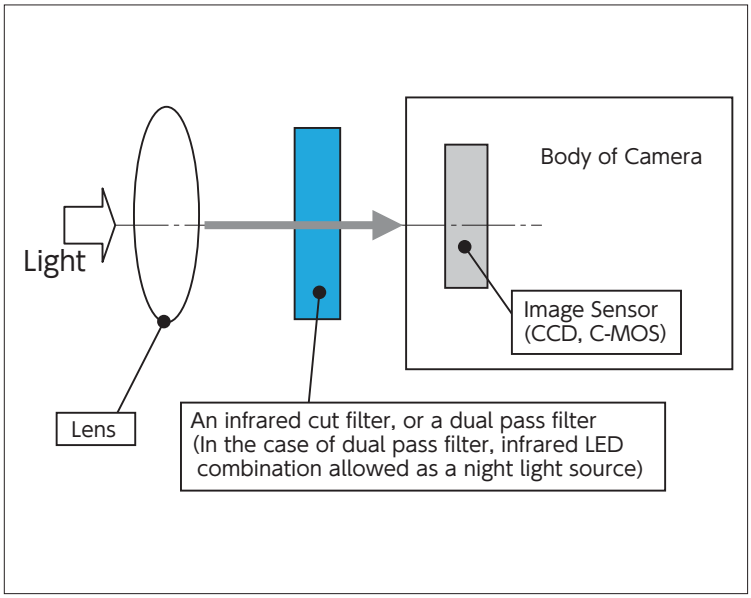
Type Ⅰ



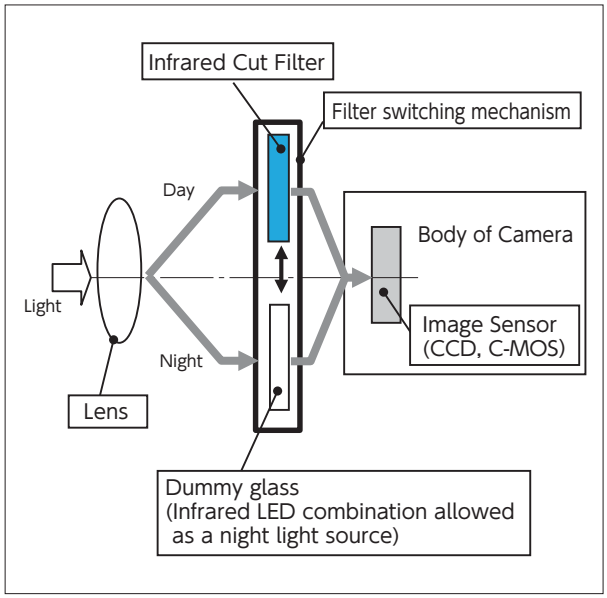
Type Ⅱ



■ Usage Examples



General camera



Day&Night mechanism with a camera