Visible Zero-Order Quarter-wave Plates

QWP Series Datasheet

Waveplates (mounting optional)

Applications

- Projection Display
- Ellipsometry
- Widefield polarimetry
- Optical Isolators
- Remote Sensing
- Astronomical Instrumentation
- Laser/high heat light sources
- Microscopy/mineralogy
- Imaging

Standard Product Options

Product Name	Description
QC0450EC	450 nm QWP (High Transmission)
QC0550EC	550 nm QWP (High Transmission)
QC0650EC	650 nm QWP (High Transmission)

SAMPLES AVAILABLE

Moxtek® quarter-wave plates are manufactured using Moxtek Nanowire® technology, delivering exceptional phase-shift performance and uniformity. These inorganic quarter-wave plates are particularly well-suited for high-temperature applications, offering a broader angular range than organic waveplates. Moxtek manufactures high-volume optical products designed for a wide variety of demanding applications, including projection display, imaging, analytics, automotive, medical, research, laser systems, and telecommunications.

Features	Benefits
Nanowire® Technology	Brightness and contrast uniformity
	Broad angular field, ≤ 3.0˚ phase deviation over ±30˚ AOI Range
Inorganic	Very high heat resistance No damage noted whatsoever, with max laser damage threshold testing powers: 180 kW/cm² at 455 nm 4.5 MW/cm² at 532 nm

General Specifications

Wavelength Range:	450 ±7.0 nm or 550 ±7.0 nm or 650 ±7.0 nm (within ±3.0˚ phase shift) NOTE: Other wavelengths are available upon request
Substrate Type:	Display grade glass
Thickness:	0.7 ±0.07 mm
Index of Refraction:	1.5198 (435.8 nm) 1.5078 (643.8 nm)
Thermal Expansion:	31.7 x 10-7/˚C (0 - 300˚C)
AR Coating:	Standard on backside only
Maximum Temperature:	350˚C > 1,000 hours, no damage noted
Fast Axis Orientation:	Oriented at 45˚ or parallel to the part edge
Fast/Slow Axis Tolerance:	±1˚
Dimensional Tolerance:	±0.2 mm
Edge Exclusion:	2 mm
Transmitted Wavefront Distortion:	≤ λ/4
RoHS:	Compliant
Operating Temperature:	-40˚C to 350˚C
Total Reflectance:	≤ 3.0%
Retardance Change for	
450nm at 30° Tilt:	≤ 3.0˚
550nm at 30° Tilt:	≤ 3.0˚
650nm at 20° Tilt:	≤ 3.0˚

* Do not touch or clean the top surface otherwise the waveplate will be damaged.

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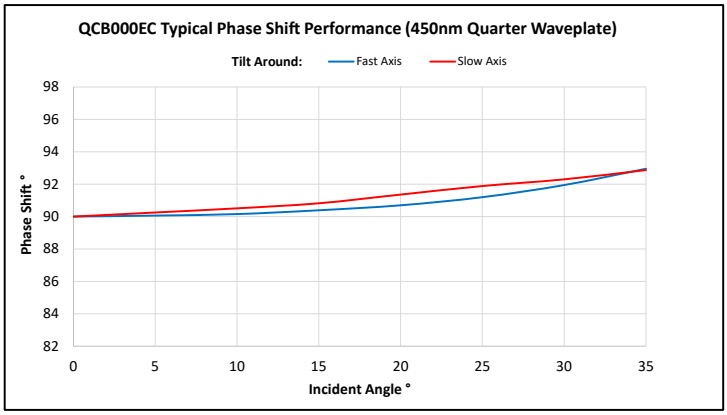
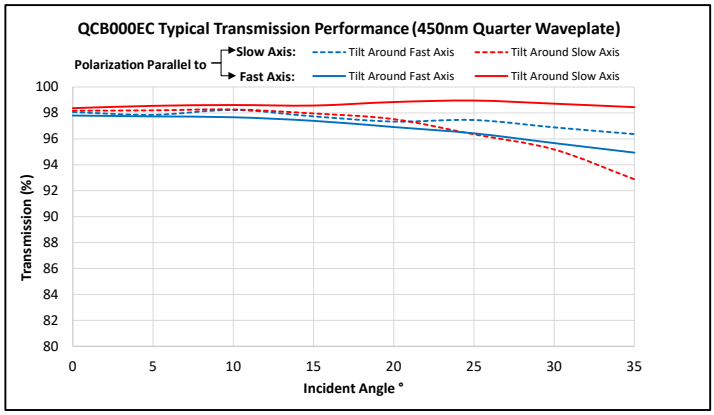
Performance Specifications

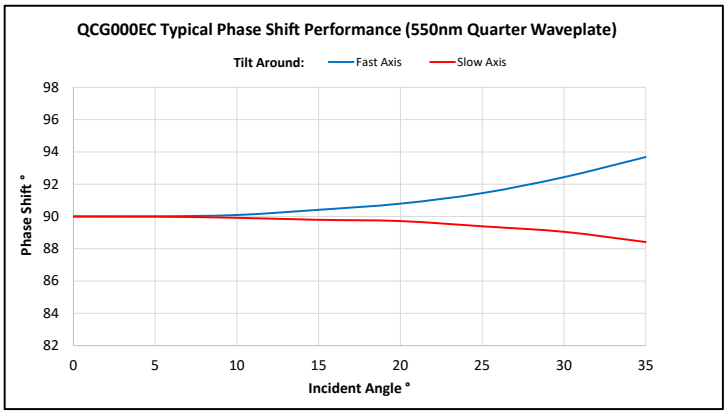
PRODUCT	At Target Wavelength and Normal Incidence		
	T% (min)	R% (max)	PS Tolerance at Normal Incidence (deg)
QC0450EC (450 nm Quarter-wave Plate)	97.0	3.0	90 ± 3.0˚
QC0550EC (550 nm Quarter-wave Plate)	97.0	3.0	90 ± 3.0˚
QC0650EC (650 nm Quarter-wave Plate)	97.0	3.0	90 ± 3.0˚

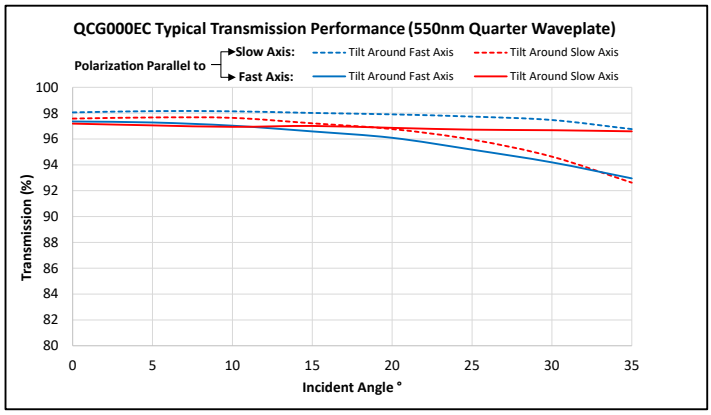
T –Transmission through the waveplate at any given incident polarization.
R – Value of total maximum reflection.
PS - Phase Shift difference between the fast and slow axis of transmission. 90 deg = ¼ wave of retardation.

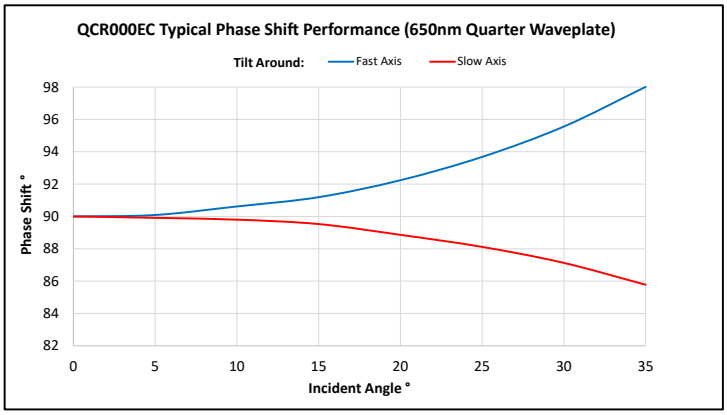
Example Optical Performance (0-35°)

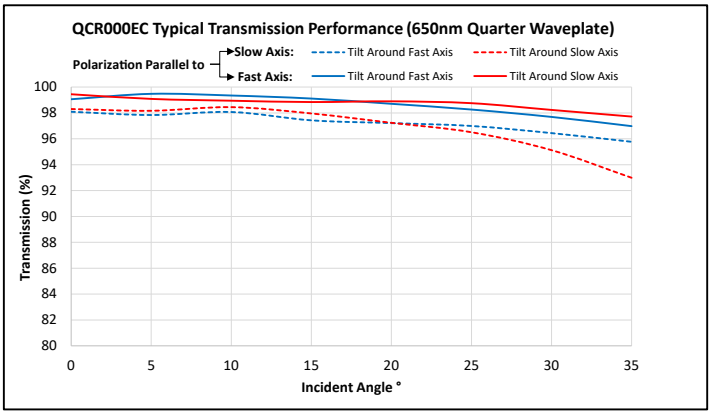












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Performance data was taken from sample evaluations. Some part-to-part variation is expected.
For warranty and ordering information, please visit moxtek.com.