

RF Components

Faraday Rotator
For Optical Isolators

BFG Series

FARADAY ROTATORS

TDK Faraday rotators are based on Bi-substituted rare-earth iron garnet thick-film single crystal technology. The crystals are grown using the LPE(Liquid Phase Epitaxy)method. These devices exemplify TDK's extensive know-how in single crystal formation technologies. Using highly advanced ion substitution and additive control techniques, TDK has developed a basic composition that sets a new, exceedingly high standard for optical performance. In the thick-film formation process, TDK employs growth control techniques that minimize lattice constant disparity between the film and substrate across a wide temperature range. Moreover, TDK has developed advanced processes to eliminate lattice defects, oxygen bubbles, and contamination by impurities, resulting in a high

degree of crystal uniformity. And, finally, TDK Faraday rotators provide the benefits of extensive research into factors affecting performance, including the reduction of optical absorption loss, minimization of rotation angle temperature and wavelength dependencies, and improvement of rotatory power and extinction ratio.

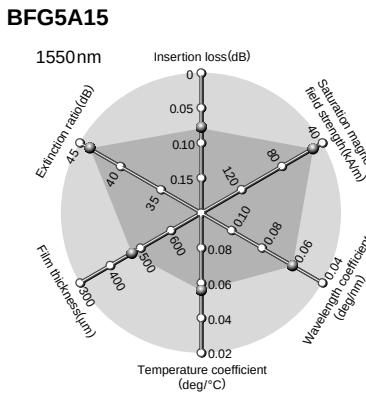
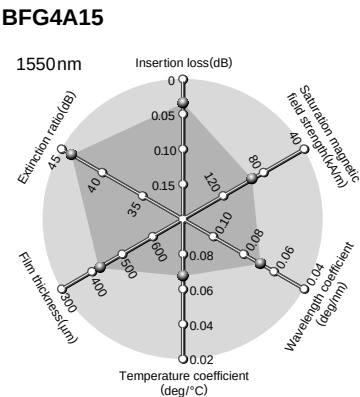
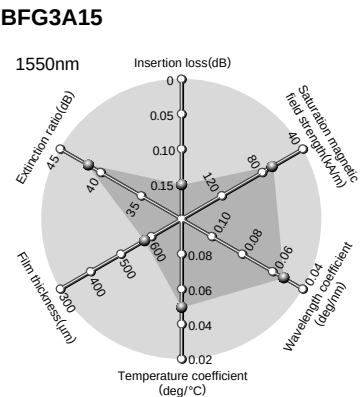
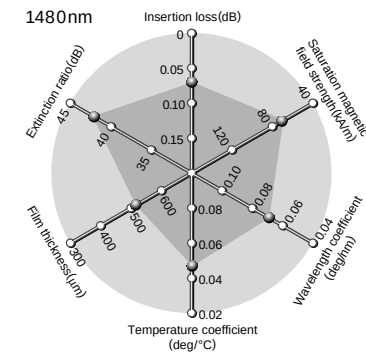
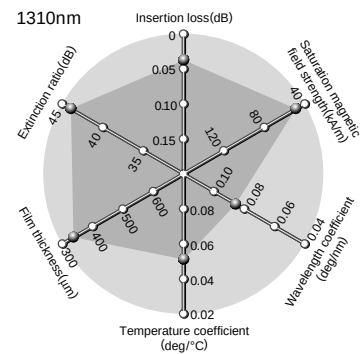
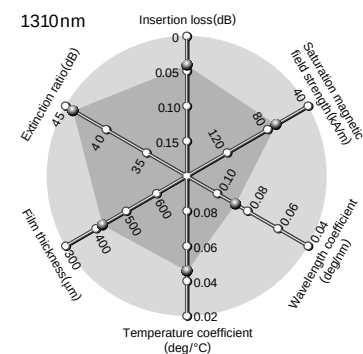


FARADAY ROTATORS FOR OPTICAL ISOLATOR
CHARACTERISTICS

Part No.	Center wavelength (nm)	Insertion loss (dB)		Element thickness (μm)max.	Faraday rotation angle(deg)	Faraday rotation temperature coefficient (deg/°C)	Faraday rotation angle wavelength coefficient (deg/nm)	Extinction ratio (dB)min	Saturation magnetic field strength (kA/m)*
		max.	typ.						
BFG3A13	1310	0.1	0.04	470	45±0.5	0.045	0.09	40	72
BFG5A13	1310	0.1	0.04	350	45±0.5	0.055	0.09	40	52
BFG3A14	1480	0.2	0.07	550	45±0.5	0.05	0.075	40	72
BFG3A15	1550	0.1	0.15	630	45±0.5	0.055	0.06	40	72
BFG4A15	1550	0.1	0.04	470	45±0.5	0.07	0.07	40	95
BFG5A15	1550	0.1	0.08	500	45±0.5	0.06	0.06	40	52

* Measurement sample size : 10x11mm Specifications in bold highlight dominant features with respect to other products of the same center wavelength.

FARADAY ROTATORS FOR OPTICAL ISOLATOR COMPARISON OF PRIMARY CHARACTERISTICS (Typical values)
BFG3A13 BFG5A13 BFG3A14

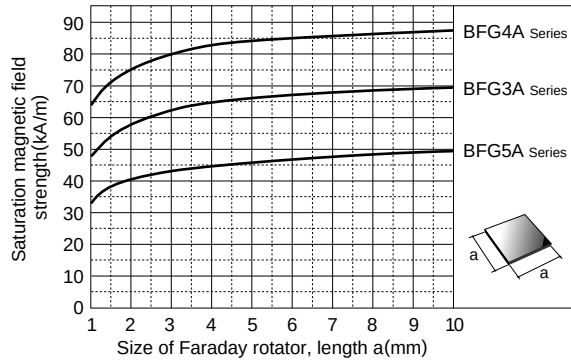


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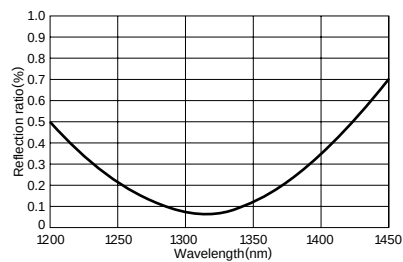
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FARADAY ROTATORS FOR OPTICAL ISOLATORS SATURATION MAGNETIC FIELD vs. SIZE CHARACTERISTICS

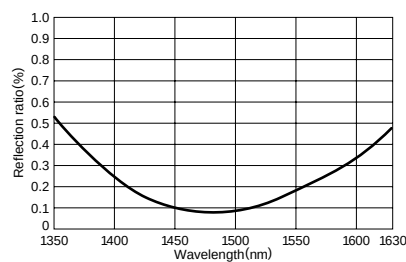


DISTRIBUTION CHARACTERISTICS OF ANTI-REFLECTION COATING

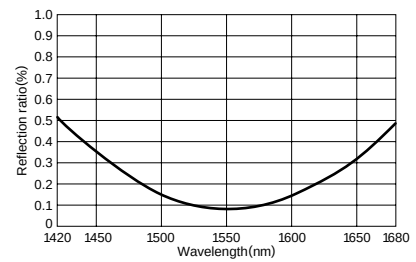
CENTER WAVELENGTH : 1310nm
BFG3A13/BFG5A13



CENTER WAVELENGTH : 1480nm
BFG3A14



CENTER WAVELENGTH : 1550nm
BFG3A15/BFG4A15/BFG5A15



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Faraday Rotator For Optical Isolators

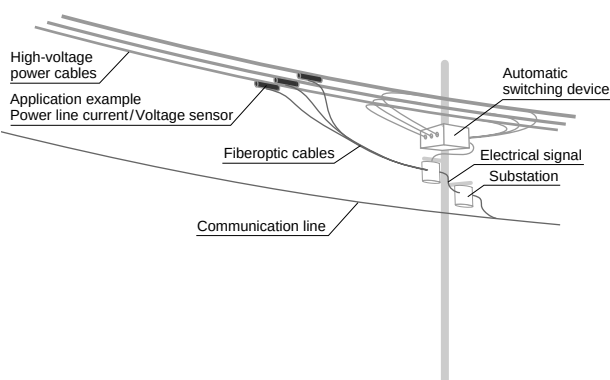
FARADAY ROTATORS FOR OPTICAL MAGNETIC FIELD SENSOR

TDK produces Bi-substituted rare-earth iron garnet thick-film single crystal Faraday rotators exhibiting highly stable temperature characteristics and magnetic response performance optimal for optical magnetic field sensor applications.

FEATURES

- Because these devices provide Faraday rotation angle response that is highly linear with respect to the applied magnetic field, they simplify the design of precision detection and sensing systems.
- Faraday rotation angle remains exceptionally constant over a wide range of operating temperature, making these devices an excellent choice for sensor systems that must provide a high degree of reliability in harsh environments. An example of such an application is an optical sensing system designed to monitor the amount of transmitted electrical power and detect breaks in high-voltage distribution lines.
- TDK Faraday rotators can be custom-manufactured to meet special application requirements not covered by standard-specification parts. Support is available for numerous applicable wavelengths, magnetic field strength detection ranges, and specific size and shape requirements.

APPLICATION EXAMPLE



CHARACTERISTICS

Part No.	Center wavelength (nm)	Insertion loss(dB)		Verdet constant (deg/A)	Verdet constant temperature coefficient (%/°C)	Saturation magnetic field strength (kA/m)typ.
		max.	typ.*			
BFG2C	1300	0.2	0.15	2.8	0.02	64/3×3mm
BFG4C	850	2.5	2.2	14	0.02	44/4×4mm

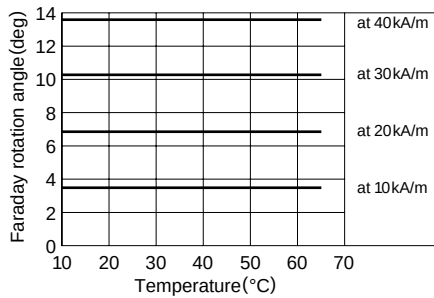
* Measurements were performed on films with a saturated Faraday rotation angle of 10 degrees in a non-magnetic environment.

RF Components

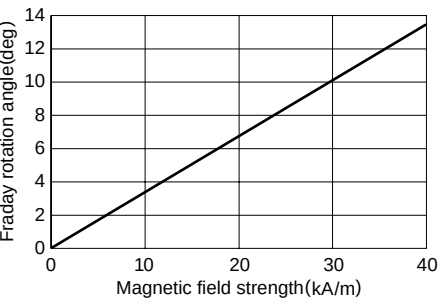
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FARADAY ROTATORS FOR OPTICAL MAGNETIC FIELD SENSOR
ROTATION ANGLE CHARACTERISTICS
FARADAY ROTATION ANGLE vs.
TEMPERATURE CHARACTERISTICS



FARADAY ROTATION ANGLE vs. MAGNETIC FIELD
STRENGTH



SUNSTAR 商斯达实业集团是集研发、生产、工程、销售、代理经销、技术咨询、信息服务等为一体的高科技企业，是专业高科技电子产品生产厂家，是具有 10 多年历史的专业电子元器件供应商，是中国最早和最大的仓储式连锁规模经营大型综合电子零部件代理分销商之一，是一家专业代理和分销世界各大品牌 IC 芯片和电子元器件的连锁经营综合性国际公司，专业经营进口、国产名厂名牌电子元件，型号、种类齐全。在香港、北京、深圳、上海、西安、成都等全国主要电子市场设有直属分公司和产品展示展销窗口门市部专卖店及代理分销商，已在全国范围内建成强大统一的供货和代理分销网络。我们专业代理经销、开发生产电子元器件、集成电路、传感器、微波光电元器件、工控机/DOC/DOM 电子盘、专用电路、单片机开发、MCU/DSP/ARM/FPGA 软件硬件、二极管、三极管、模块等，是您可靠的一站式现货配套供应商、方案提供商、部件功能模块开发配套商。商斯达实业公司拥有庞大的资料库，有数位毕业于著名高校——有中国电子工业摇篮之称的西安电子科技大学（西军电）并长期从事国防尖端科技研究的高级工程师为您精挑细选、量身订做各种高科技电子元器件，并解决各种技术问题。

微波光电部专业代理经销高频、微波、光纤、光电元器件、组件、部件、模块、整机；电磁兼容元器件、材料、设备；微波 CAD、EDA 软件、开发测试仿真工具；微波、光纤仪器仪表。欢迎国外高科技微波、光纤厂商将优秀产品介绍到中国、共同开拓市场。长期大量现货专业批发高频、微波、卫星、光纤、电视、CATV 器件：晶振、VCO、连接器、PIN 开关、变容二极管、开关二极管、低噪晶体管、功率电阻及电容、放大器、功率管、MMIC、混频器、耦合器、功分器、振荡器、合成器、衰减器、滤波器、隔离器、环行器、移相器、调制解调器；光电子元件和组件：红外发射管、红外接收管、光电开关、光敏管、发光二极管和发光二极管组件、半导体激光二极管和激光器组件、光电探测器和光接收组件、光发射接收模块、光纤激光器和光放大器、光调制器、光开关、DWDM 用光发射和接收器件、用户接入系统光收发器件与模块、光纤连接器、光纤跳线/尾纤、光衰减器、光纤适配器、光隔离器、光耦合器、光环行器、光复用器/转换器；无线收发芯片和模组、蓝牙芯片和模组。

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