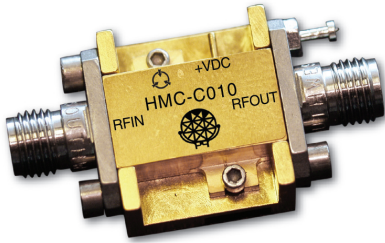


600° ANALOG PHASE SHIFTER MODULE, 6 - 15 GHz



Features

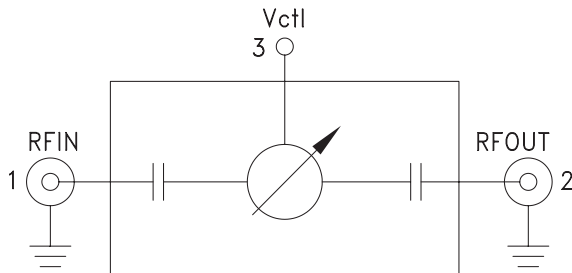
- Wide Bandwidth: 6 - 15 GHz
- >600° Phase Shift
- Single Positive Voltage Control
- Hermetically Sealed Module
- Field Replaceable SMA Connectors
- 55 to +85 °C Operating Temperature

Typical Applications

The HMC-C010 is ideal for:

- Fiber Optics
- Military
- Test Equipment

Functional Diagram



General Description

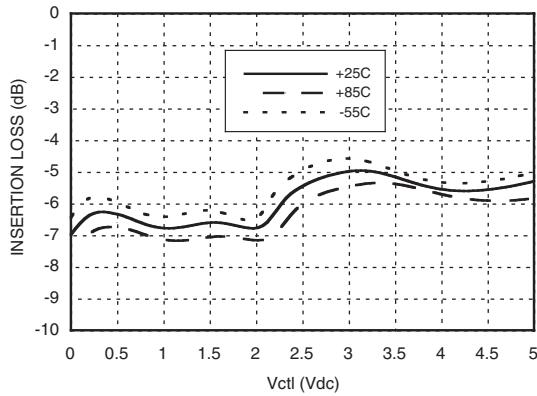
The HMC-C010 is an Analog Phase Shifter which is controlled via an analog control voltage from 0 to +5V. The HMC-C010 provides a continuously variable phase shift of 0 to 800 degrees at 6 GHz, and 0 to 450 degrees at 16 GHz, with consistent insertion loss versus phase shift. The phase shift is monotonic with respect to control voltage. The control port has a modulation bandwidth of 50 MHz. The low insertion loss and extremely robust packaging enable this part to be used in a wide range of applications including the phase adjustment of clocks in fiber optic systems and test equipment. The HMC-C010 is housed in a miniature hermetic module with replaceable SMA connectors.

Electrical Specifications, $T_A = +25^\circ\text{C}$, 50 Ohm System

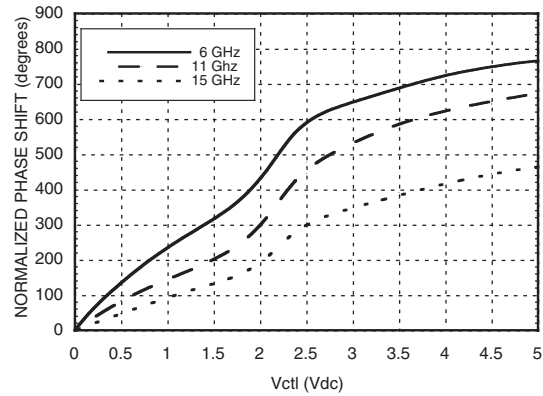
| Parameter | Frequency (GHz) | Min. | Typ. | Max. | Units |
|---|---------------------------|------------|------------|------|--------------------|
| Phase Shift Range: | 6 - 10 GHz 10 - 15 GHz | 600 360 | 800 600 | | degrees degrees |
| Insertion Loss | 6 - 15 GHz | | 7 | 10 | dB |
| Return Loss (Input and Output) | 6 - 15 GHz | | 7 | | dB |
| Control Voltage Range | 6 - 15 GHz | | 0 - 5 | | Volt |
| Modulation Bandwidth | 6 - 15 GHz | | 50 | | MHz |
| Phase Voltage Sensitivity | 6 - 15 GHz | | 120 | | deg /Volt |
| Insertion Phase Temperature Sensitivity | 6 - 15 GHz | | 0.5 | | deg /°C |

**600° ANALOG PHASE SHIFTER
MODULE, 6 - 15 GHz**

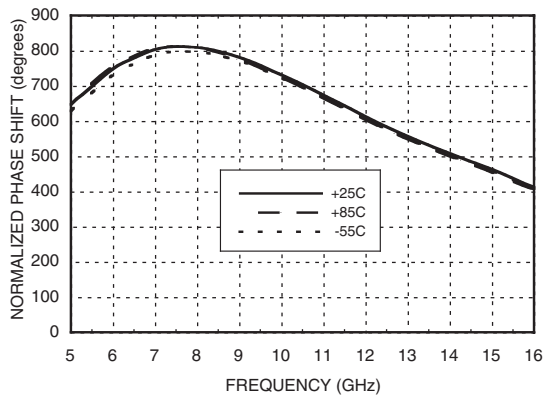
Insertion Loss vs. Control Voltage



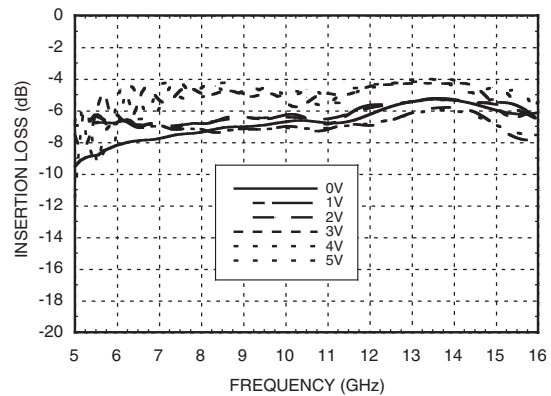
Phase Shift vs. Control Voltage



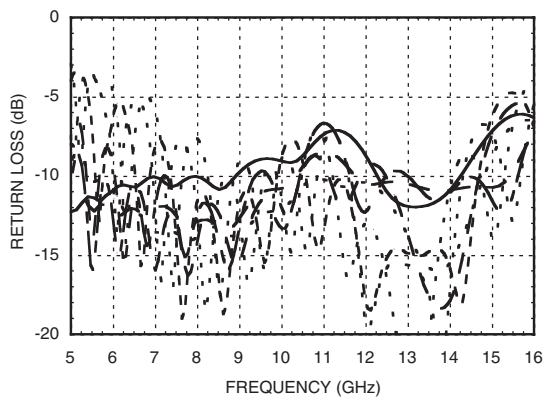
**Phase Shift vs. Frequency @ V_{ctl} = 5V
(Relative to V_{ctl} = 0V)**



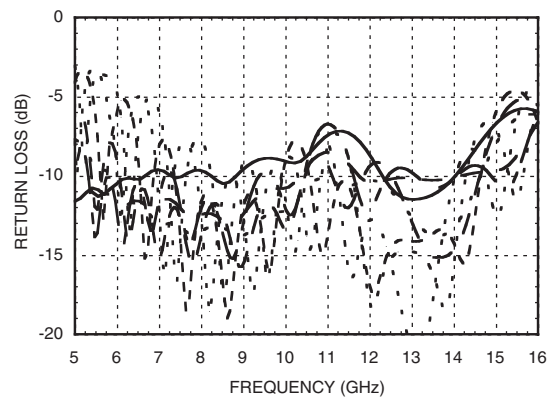
Insertion Loss vs. Frequency



**Input Return Loss vs. Frequency,
V_{ctl} = 0 to +5V**

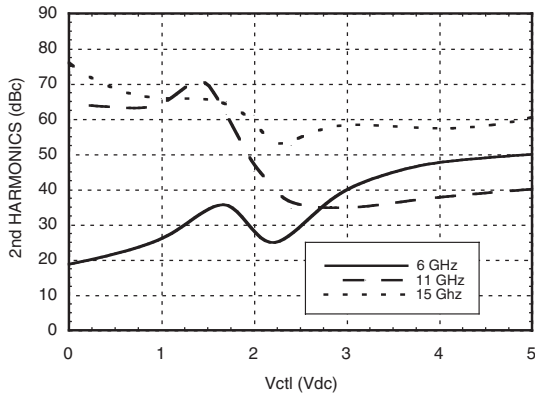


**Output Return Loss vs. Frequency,
V_{ctl} = 0 to +5V**

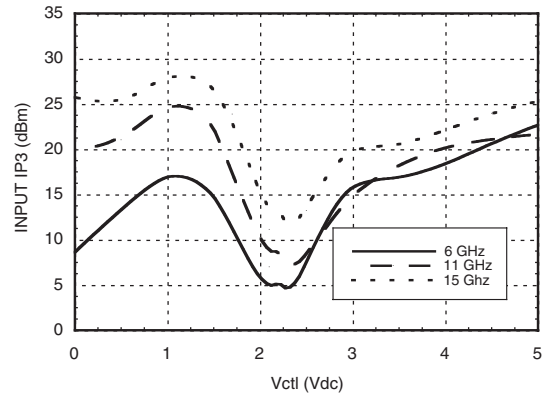


**600° ANALOG PHASE SHIFTER
MODULE, 6 - 15 GHz**

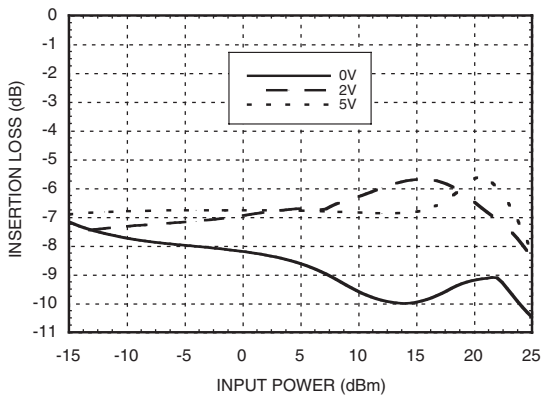
**Second Harmonics vs. Control Voltage,
Pin = -10 dBm**



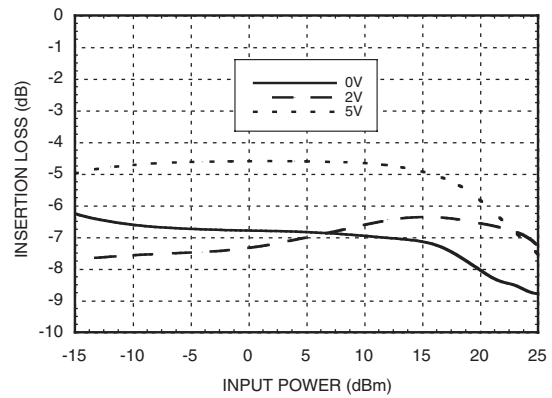
Input IP3 vs. Control Voltage



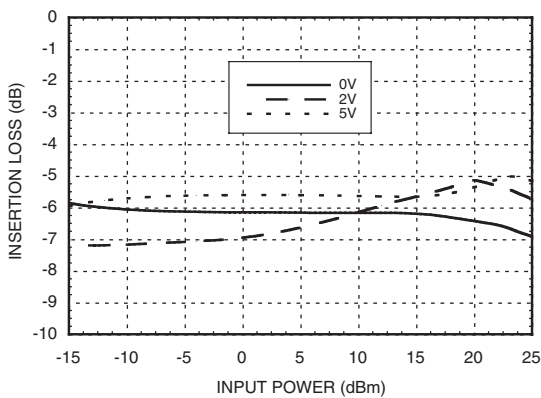
Insertion Loss vs. Pin @ 7 GHz



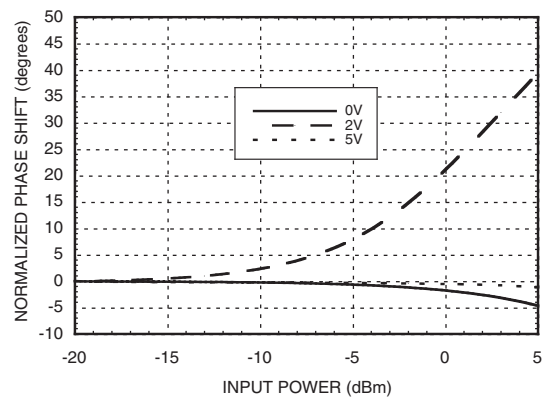
Insertion Loss vs. Pin @ 11 GHz



Insertion Loss vs. Pin @ 15 GHz

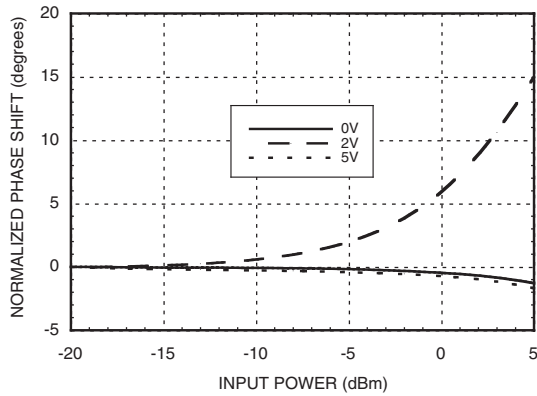


Phase Shift vs. Pin @ 7 GHz

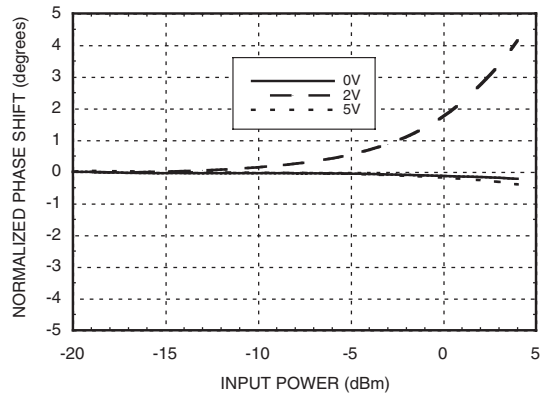


**600° ANALOG PHASE SHIFTER
MODULE, 6 - 15 GHz**

Phase Shift vs. Pin @ 11 GHz



Phase Shift vs. Pin @ 15 GHz

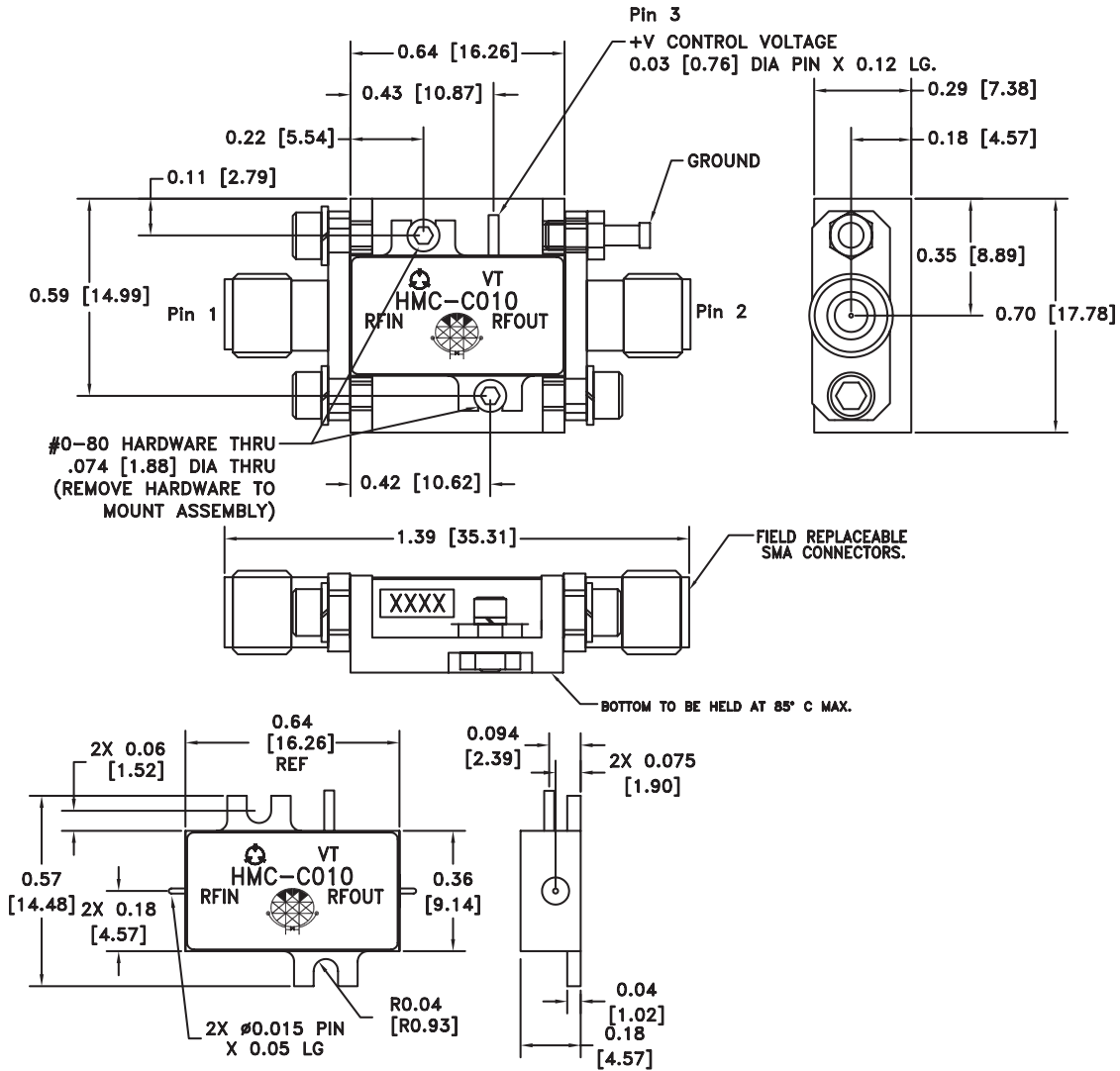


Absolute Maximum Ratings

| | |
|---|------------------|
| Control Voltage (Vctl) | -1 Vdc to +8 Vdc |
| Input Power (RFin) | +25 dBm |
| Channel Temperature (Tc) | 150 °C |
| Continuous Pdiss (T = 85 °C) (derate 21 mW/°C above 85 °C) | 1.36 W |
| Thermal Resistance (junction to ground paddle) | 48 °C/W |
| Storage Temperature | -65 to +150 °C |
| Operating Temperature | -55 to +85 °C |
| ESD Sensitivity (HBM) | Class 1B |

**600° ANALOG PHASE SHIFTER
MODULE, 6 - 15 GHz**

Outline Drawing

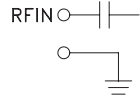
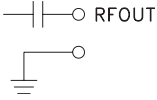
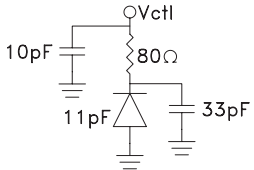



NOTES:

1. PACKAGE, LEADS, COVER MATERIAL: KOVART™
 2. BRACKET MATERIAL: ALUMINUM
 3. PLATING: ELECTROLYTIC GOLD 50 MICROINCHES MIN., OVER ELECTROLYTIC NICKEL 75 MICROINCHES MIN.
 4. ALL DIMENSIONS ARE IN INCHES [MILLIMETERS].
 5. TOLERANCES ±.005 [0.13] UNLESS OTHERWISE SPECIFIED.
 6. FIELD REPLACEABLE SMA CONNECTORS.
TENSOLITE 5602 - 5CCSF OR EQUIVALENT.
- ⚠ TO MOUNT MODULE TO SYSTEM PLATFORM REPLACE 0 - 80 HARDWARE WITH DESIRED MOUNTING SCREWS.

**600° ANALOG PHASE SHIFTER
MODULE, 6 - 15 GHz**

Pin Descriptions

| Pin Number | Function | Description | Interface Schematic |
|------------|-------------------|--|---|
| 1 | RFIN & RF Ground | RF input connector, SMA female, field replaceable. This pin is DC blocked and matched to 50 Ohms from 6 - 15 GHz. |  |
| 2 | RFOUT & RF Ground | RF output connector, SMA female, field replaceable. This pin is DC blocked and matched to 50 Ohms from 6 - 15 GHz. |  |
| 3 | Vctl | Phase shift control pin. Application of a voltage between 0 and 5 volts causes the transmission phase to change. The DC equivalent circuit is a series connected diode and resistor. |  |
| | GND | Power supply ground. |  |



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.