# MACP-009945-CH0670

Broadband CATV 17.5 dB Directional Coupler
5 to 1200 MHz

Rev. V3

## Features

- Surface Mount
- Coupling 17.5dB Typical
- Excellent Temperature stability
- 260°C Reflow Compatible
- RoHS* Compliant, lead free
- Available on Tape and Reel.

## Description

M/A-COM Technology Solutions MACP-009945-CH0670 is a low cost 17.5dB directional coupler designed in a low cost, surface mount package. Ideally suited for high volume CATV/Broadband applications. Suitable for use in 50 Ohm and 75 Ohm systems.

## Note:

There is no orientation dot on the bottom of the PCB.

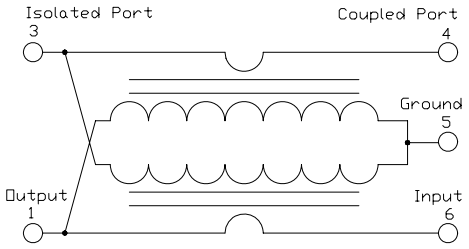


## Pin Configuration

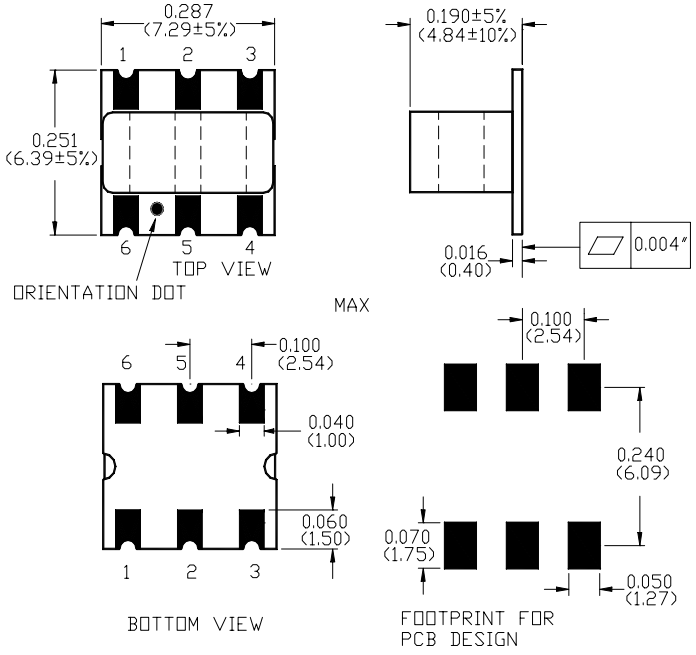
| Pin No. | Function |
|---|---|
| 1 | Output |
| 2 | Not Connected (ground) |
| 3 | Isolated (external 75 Ohm Load) |
| 4 | Coupling |
| 5 | Ground |
| 6 | Input |

Note: Reference Application Note **M513** for reel size information.

## Schematic




## Case Style: SM-103




Dimensions in inches [mm] Tolerance: .xx ± .02, .xxx ± .010, unless otherwise stated

## Ordering Information

| Part number | Description |
|---|---|
| MACP-009945-CH0670 | 900 piece reel |
| MACP-009945-CH06TB | Customer Test Board |

* Restrictions on Hazardous Substances, European Union Directive 2002/95/EC.



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## Electrical Specifications: $T_A$ = 25°C, 0dBm, $Z_0$ = 75Ω, $P_{in}$ = 0dBm

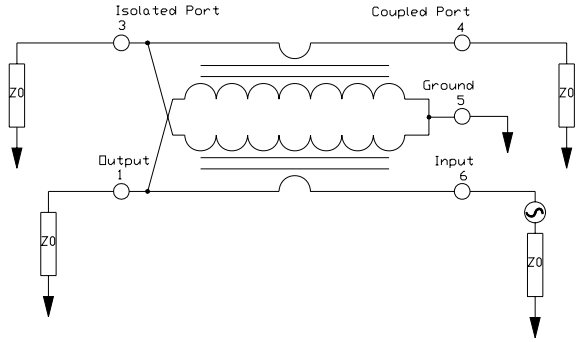
* Monitored during production tune/test.

| Parameter | Test Conditions | Units | Min | Typ | Max |
|---|---|---|---|---|---|
| Main Line Loss<br>(Pin 6-1) forward * | 5 - 870 MHz<br>870 - 1002 MHz<br>1002 - 1200 MHz | dB<br>dB<br>dB | -<br>-<br>- | 0.5<br>1.0<br>1.3 | 1.0<br>1.2<br>1.6 |
| Main Line Loss<br>(Pin 3-4) Reverse * | 5 - 870 MHz<br>870 - 1002 MHz<br>1002 - 1200 MHz | dB<br>dB<br>dB | -<br>-<br>- | 0.5<br>1.0<br>1.3 | 1.0<br>1.2<br>1.6 |
| Coupling -17.5dB<br>(Pin 6-4) Forward * | 5 - 1002 MHz<br>1002 - 1200 MHz | dB<br>dB | -<br>- | 17.5<br>17.5 | ±0.5<br>±1.0 |
| Coupling -17.5dB<br>(Pin 1-3) Reverse * | 5 - 200 MHz<br>200 - 500 MHz<br>500 - 870 MHz<br>870 - 1002 MHz<br>1002 - 1200 MHz | dB<br>dB<br>dB<br>dB<br>dB | -<br>-<br>-<br>-<br>15.0 | 17.5<br>18.5<br>19.5<br>18.5<br>17.5 | ±0.7<br>±1.5<br>±1.5<br>±1.5<br>19.5 |
| Input Return Loss<br>(Pin 6) * | 5 - 870 MHz<br>870 - 1002 MHz<br>1002 - 1200 MHz | dB<br>dB<br>dB | 22<br>20<br>16 | 27<br>26<br>24 | -<br>-<br>- |
| Output Return Loss<br>(Pin 1) * | 5 - 870 MHz<br>870 - 1002 MHz<br>1002 - 1200 MHz | dB<br>dB<br>dB | 22<br>18<br>15 | 33<br>33<br>21 | -<br>-<br>- |
| Coupling Return Loss<br>(Pin 4) * | 5 - 870 MHz<br>870 - 1002 MHz<br>1002 - 1200 MHz | dB<br>dB<br>dB | 22<br>20<br>18 | 28<br>23<br>23 | -<br>-<br>- |
| Directivity | 5 - 870 MHz<br>870 - 1002 MHz<br>1002 - 1200 MHz | dB<br>dB<br>dB | 30<br>8<br>4 | 40<br>15<br>10 | -<br>-<br>- |
| Inductance @ 5 MHz<br>(Pins 6-1 & 4-3) | 5 MHz | nH | 240 | 245 | 260 |

## Recommended Maximum Ratings

| Parameter | Value |
|---|---|
| RF power | 250mW |
| DC current | 30mA |
| Operating Temperature | -40°C to +85°C |
| Storage Temperature | -40°C to +85°C |

## Application Circuit





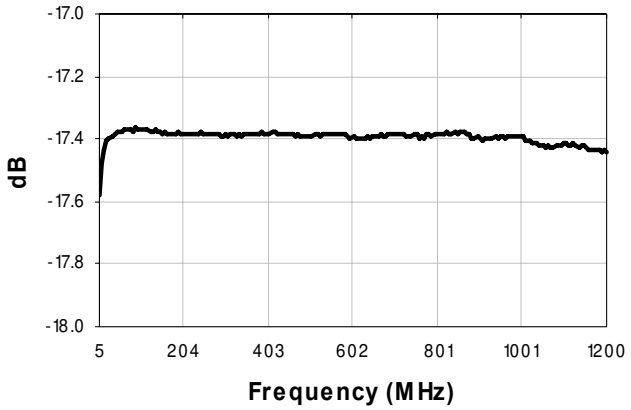

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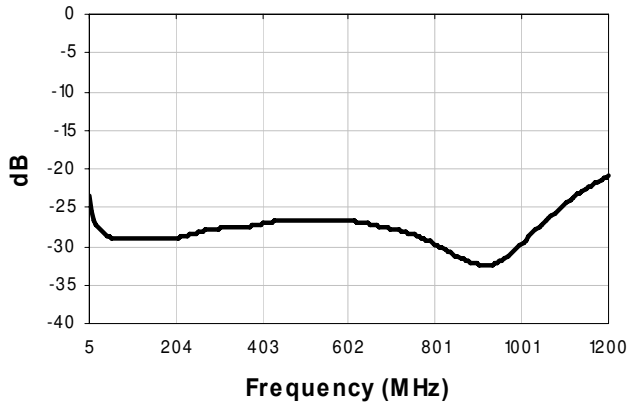
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## Typical Performance Curves: $T_A$ = 25°C, 0dBm, $Z_0$ = 75Ω, $P_{in}$ = 0dBm

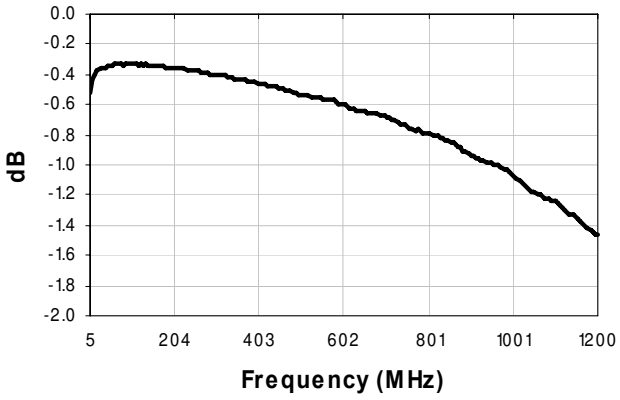
### Coupling Forward (Pin 6 to 4)



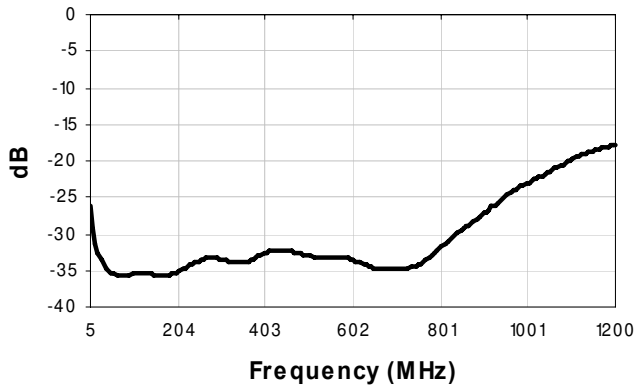

### Return Loss: Input (Pin 6)



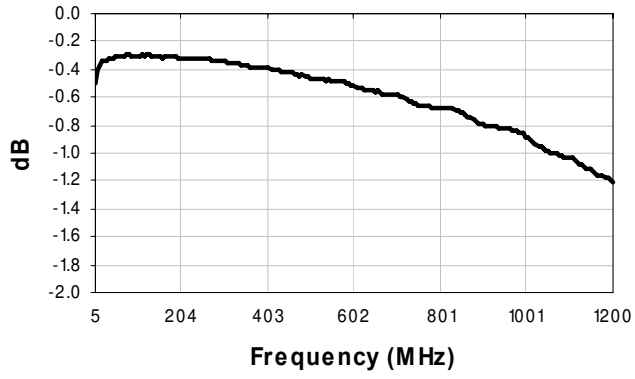

### Main Line Loss Forward (Pin 6-1)



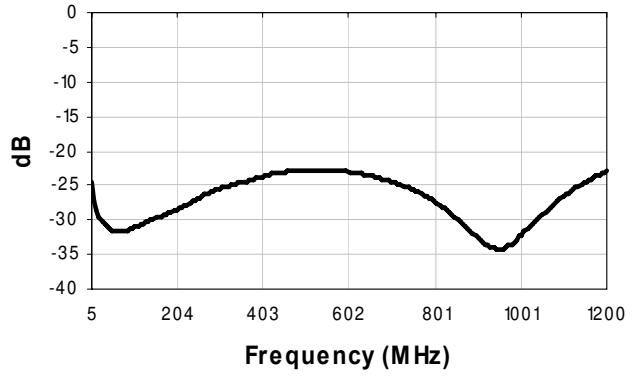

### Return Loss: Output (Pin 1)




### Main Line Loss Reverse (Pin 3-4)




### Return Loss: Coupled (Pin 4)






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