



(0.50 mm) .0197"

QTH-060-07-F-D-A

QTH-030-01-L-D-A

QTH-090-01-C-D-A

QTH SERIES

# HIGH SPEED GROUND PLANE HEADER

## SPECIFICATIONS

For complete specifications and recommended PCB layouts see [www.samtec.com?QTH](http://www.samtec.com?QTH)

### Insulator Material:

Liquid Crystal Polymer

### Terminal Material:

Phosphor Bronze

Plating: Au or Sn over 50µ" (1.27 µm) Ni

### Current Rating:

Contact:

2 A per pin

(1 pin powered per row)

Ground Plane:

25 A per ground plane

(1 ground plane powered)

### Operating Temp Range:

-55°C to +125°C

### Voltage Rating:

125 VAC (5 mm Stack Height)

Max Cycles: 100

RoHS Compliant: Yes

## Processing:

Lead-Free Solderable: Yes

### SMT Lead Coplanarity:

(0.10 mm) .004" max (030-060)

(0.15 mm) .006" max (090)

### Board Stacking:

For applications requiring more than two connectors per board contact [ipg@samtec.com](mailto:ipg@samtec.com)

### Board Mates:

QSH

### Cable Mates:

HQCD, HQDP

(See Also Available note)

**E.L.P.**  
EXTENDED LIFE PRODUCT

10 year Mixed Flowing Gas with 50µ" Gold  
Call Samtec for maximum mated cycles

Integral metal plane for power or ground

Standard Stack Heights from 5 mm to 25 mm

**Protocols Supported**

100 GbE  
Hypertransport™  
XAUI  
PCI Express®  
SATA  
InfiniBand™

Download app notes at  
[www.samtec.com/appnote](http://www.samtec.com/appnote)  
Contact SIG @ samtec.com  
for questions on protocols

| QTH/QSH<br>5 mm Stack Height | Type | Rated @ 3dB Insertion Loss |                    |
|------------------------------|------|----------------------------|--------------------|
|                              |      | with PCB effects*          | w/o PCB effects**  |
| Single-Ended Signaling       | -D   | 9 GHz / 18 Gbps            | 9.5 GHz / 19 Gbps  |
| Differential Pair Signaling  | -D   | 8 GHz / 16 Gbps            | 10.5 GHz / 21 Gbps |
| Differential Pair Signaling  | -DP  | 9.5 GHz / 19 Gbps          | 16.5 GHz / 33 Gbps |

\*Performance data includes effects of a non-optimized PCB.

\*\*Test board losses de-embedded from performance data.

Performance data for other stack heights and complete test data available at [www.samtec.com?QTH](http://www.samtec.com?QTH) or contact [sig@samtec.com](mailto:sig@samtec.com)

**Finalinch**  
CERTIFIED

**28+**  
Gbps

## RECOGNITIONS

For complete scope of recognitions see [www.samtec.com/quality](http://www.samtec.com/quality)



FILE NO. E111594 FILE NO. 090871\_0\_000

## ALSO AVAILABLE (MOQ Required)

- 15 mm, 22 mm and 30 mm stack height (Caution: Some automatic placement/inspection machines may have component height restrictions. Please consult machinery specifications.)
  - 30µ" (0.76 µm) Gold (Specify -H plating for Data Rate cable mating applications.)
  - Edge Mount & Guide Posts
  - 80 (-DP), 120, 150 positions per row
  - Retention Option
- Contact Samtec.

| QTH            | PINS PER ROW<br>NO. OF PAIRS                                                                                           | LEAD STYLE                    | PLATING OPTION                                                                                                                                                                                                                                                                                                                                                                                                                                     | TYPE                                                                              | A                                                                                                                                                                                                                                                       | OTHER OPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                |   |                  |     |             |             |     |             |             |     |              |              |     |              |              |     |              |              |     |              |              |     |              |              |
|----------------|------------------------------------------------------------------------------------------------------------------------|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---|------------------|-----|-------------|-------------|-----|-------------|-------------|-----|--------------|--------------|-----|--------------|--------------|-----|--------------|--------------|-----|--------------|--------------|-----|--------------|--------------|
|                | <b>-030, -060, -090</b><br>(60 total pins per bank = -D)<br><br><b>-020, -040, -060</b><br>(20 pairs per bank = -D-DP) | Specify LEAD STYLE from chart | <b>-F</b><br>= Gold Flash on Signal Pins and Ground Plane, Matte Tin on tails<br><br><b>-L</b><br>= 10µ" (0.25 µm) Gold on Signal Pins and Ground Plane, Matte Tin on tails<br><br><b>-C*</b><br>= Electro-Polished Selective 50µ" (1.27 µm) min Au over 150µ" (3.81 µm) Ni on Signal Pins in contact area, 10µ" (0.25 µm) min Au over 50µ" (1.27 µm) Ni on Ground Plane in contact area, Matte Tin over 50µ" (1.27 µm) min Ni on all solder tails | <b>-D</b><br>= Single-Ended<br><br><b>-D-DP</b><br>= Differential Pair (-01 only) | <b>-K</b><br>= (7.00 mm) .275" DIA Polyimide film Pick & Place Pad (N/A with -05 & -07 lead style)<br><br><b>-TR</b><br>= Tape & Reel (-090 positions maximum)<br><br><b>-L</b><br>= Latching Option (-01 lead style only) (N/A on -060 (-D-DP) & -090) | <table border="1"> <thead> <tr> <th>QTH LEAD STYLE</th> <th>A</th> <th>HEIGHT WITH QSH*</th> </tr> </thead> <tbody> <tr> <td>-01</td> <td>(4.27) .168</td> <td>(5.00) .197</td> </tr> <tr> <td>-02</td> <td>(7.26) .286</td> <td>(8.00) .315</td> </tr> <tr> <td>-03</td> <td>(10.27) .404</td> <td>(11.00) .433</td> </tr> <tr> <td>-04</td> <td>(15.25) .600</td> <td>(16.00) .630</td> </tr> <tr> <td>-05</td> <td>(18.26) .718</td> <td>(19.00) .748</td> </tr> <tr> <td>-07</td> <td>(24.24) .954</td> <td>(25.00) .984</td> </tr> <tr> <td>-09</td> <td>(13.26) .522</td> <td>(14.00) .551</td> </tr> </tbody> </table> <p>*Processing conditions will affect mated height.</p> | QTH LEAD STYLE | A | HEIGHT WITH QSH* | -01 | (4.27) .168 | (5.00) .197 | -02 | (7.26) .286 | (8.00) .315 | -03 | (10.27) .404 | (11.00) .433 | -04 | (15.25) .600 | (16.00) .630 | -05 | (18.26) .718 | (19.00) .748 | -07 | (24.24) .954 | (25.00) .984 | -09 | (13.26) .522 | (14.00) .551 |
| QTH LEAD STYLE | A                                                                                                                      | HEIGHT WITH QSH*              |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                   |                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |   |                  |     |             |             |     |             |             |     |              |              |     |              |              |     |              |              |     |              |              |     |              |              |
| -01            | (4.27) .168                                                                                                            | (5.00) .197                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                   |                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |   |                  |     |             |             |     |             |             |     |              |              |     |              |              |     |              |              |     |              |              |     |              |              |
| -02            | (7.26) .286                                                                                                            | (8.00) .315                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                   |                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |   |                  |     |             |             |     |             |             |     |              |              |     |              |              |     |              |              |     |              |              |     |              |              |
| -03            | (10.27) .404                                                                                                           | (11.00) .433                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                   |                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |   |                  |     |             |             |     |             |             |     |              |              |     |              |              |     |              |              |     |              |              |     |              |              |
| -04            | (15.25) .600                                                                                                           | (16.00) .630                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                   |                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |   |                  |     |             |             |     |             |             |     |              |              |     |              |              |     |              |              |     |              |              |     |              |              |
| -05            | (18.26) .718                                                                                                           | (19.00) .748                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                   |                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |   |                  |     |             |             |     |             |             |     |              |              |     |              |              |     |              |              |     |              |              |     |              |              |
| -07            | (24.24) .954                                                                                                           | (25.00) .984                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                   |                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |   |                  |     |             |             |     |             |             |     |              |              |     |              |              |     |              |              |     |              |              |     |              |              |
| -09            | (13.26) .522                                                                                                           | (14.00) .551                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                   |                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |   |                  |     |             |             |     |             |             |     |              |              |     |              |              |     |              |              |     |              |              |     |              |              |

-01 & -02

-03 thru -09

(0.76) .030  
(0.89) .035 DIA

(0.64) .025  
-L

\*Note: -C Plating passes 10 year MFG testing

Note: Some lengths, styles and options are non-standard, non-returnable.

## OTHER SOLUTIONS

- Board Spacing Standoffs. See SO Series.