Quick selection guide

For logic analyzer pod connection	Connection to system under test	Single-ended* or differential	Number of channels	Agilent model number or part number	Page
40-pin	Flying leads	Single-ended	17	E5383A	12
40-pin	Pro Series soft touch	Single-ended	34	E5404A	21
40-pin	Half-size soft touch	Single-ended	17	E5396A	23
40-pin	Soft touch connectorless	Single-ended	34	E5394A	20
40-pin	Samtec connector	Single-ended	34	E5385A	28
40-pin	Mictor connector	Single-ended	34	E5346A	28
40-pin	Mictor connector	Single-ended, low voltage	34	E5339A	28
40-pin	Mictor connector	Single-ended, no isolation networks	34	E5351A	32
90-pin	Flying leads	Single-ended	17	E5382A	61
90-pin	Flying leads	Differential	17	E5381A	64
90-pin	Pro Series soft touch	Differential	17	E5405A	42
90-pin	Pro Series soft touch	Single-ended	34	E5406A	42
90-pin	Half-size soft touch	Single-ended	17	E5398A	52
90-pin	Soft touch connectorless	Single-ended	34	E5390A	43
90-pin	Soft touch connectorless	Differential	17	E5387A	41
90-pin	Samtec connector	Single-ended	34	E5378A	57
90-pin	Samtec connector	Differential	17	E5379A	57
90-pin	Mictor connector	Single-ended	34	E5380A	59

* Isolation networks are included unless designated otherwise.

Agilent Technologies E5351A 38-Pin Adapter Cable

If the calculated electrical length of the required routing stub prohibits the use of the Agilent E5339A, E5346A, or E5385A, the Agilent E5351A can be used with the required isolation networks installed on the target.

The E5351A does not have its own internal isolation networks. When using the E5351A, place the SIP isolation networks, surface mount isolation network 5062-7396, or equivalent discrete components very near the target component for measurement.

Ensure that the stub length between the target component and the isolation network is short. The stub propagation delay should be less than 20% of the bus signal rise time, as mentioned before. The transmission line from the on-board isolation network to the Mictor connector should be designed for an impedance in the range of 80 to 100 ohms (closer to 100 ohms is better). This length should not exceed 3 to 4 inches, and all signal line lengths should be equal. Signal line length variation should not cause propagation delay variation to exceed 20 ps between signal lines.

Notes on Using Discrete Components

Discrete components can be used in the design of the RC network. Agilent Technologies recommends the circuit shown in Figure 5.25. To achieve the equivalent load shown in the figure, trace lengths should be minimized by locating the RC network very near the measured node. Actual load will be the stub length load added to the equivalent load in the figure.

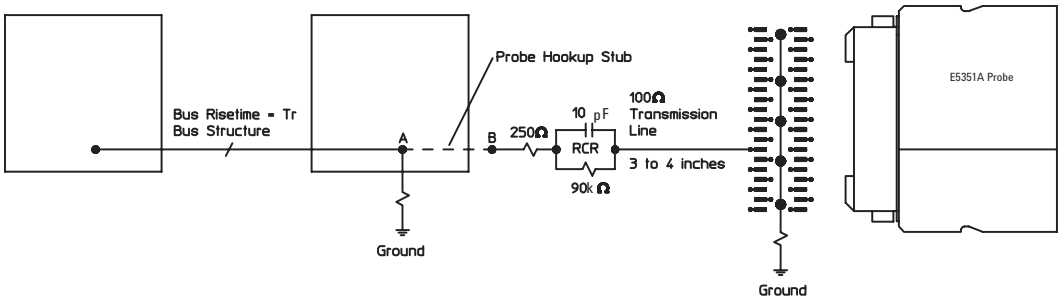

Figure 5.24. Agilent Technologies E5351A design rules

Options for On-Board Terminations for the E5351A

There are two options for isolating the E5351A on the target PC board:

- Use the surface mount isolation network, Agilent part number 5062-7396. Refer to Figure 5.26 for schematic and pinout.
- Use discrete components. Refer to Figure 5.25 for recommended components and equivalent load.

If you are operating at state speeds above 200 MHz, you should use discrete components for best results. Due to the added electrical length of the E5351A probe cable, the divider compensating capacitors in the SIP, and surface-mount isolation networks are not optimum for the E5351A, but they are usable up to 200 MHz clock rates.

Notes on Using the 5062-7396 SMT Part

Agilent currently recommends a two-step process in soldering the SMT part to the board. The first pass places solder paste on those pads with vias. Application of heat allows the via to fill with solder. (If only one solder step is used, the solder wicks away from the part into the via and a solid connection will not be made with the part.) The next pass places solder paste on all of the pads.

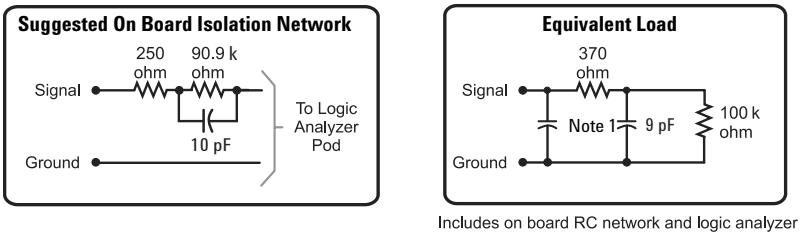

Figure 5.25. Suggested on-board isolation network and equivalent load when using discrete components to terminate the E5351A

Note 1: The effective input capacitance for on-board isolation networks is purely a function of geometry - 0.3 pF is about as low as can be achieved.

Note 2: The equivalent load is the same when using the surface-mount isolation network, 5062-7396.

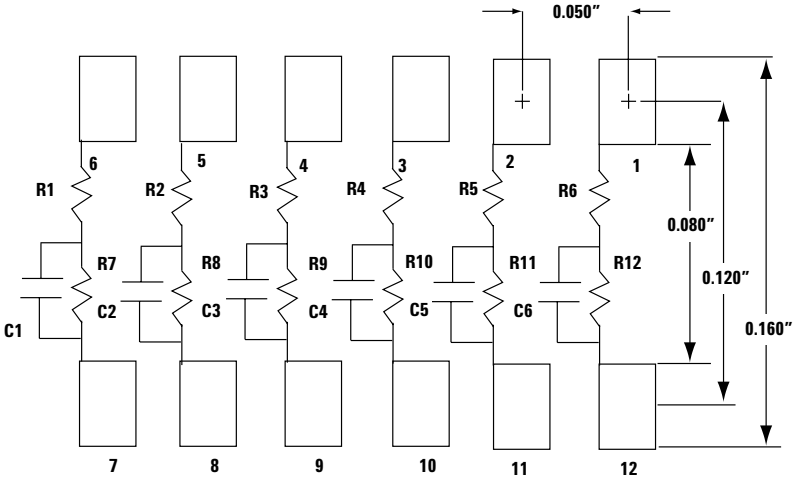

Figure 5.26. Recommended PC board pattern for 5062-7396 surface mount isolation network

As shown in Figure 5.26, the 5062-7396 SMT isolation network supports six logic analysis channels. The size of the part allows you to repeat the pattern in Figure 5.26 to accommodate multiple parts stacked end-to-end for the number of channels needed in your application. Three of these SMTs are required for each probe cable. The process for using the ceramic hybrid isolation network is similar to the process for an LCC package. Due to the small part size, thermal expansion mismatch during solder reflow should not be a problem. Capacitance also remains stable with temperature changes.