

# HIGH FREQUENCY MAGNETICS

## Surface Mount Wideband Signal Splitter

- Surface-mount, equal-ratio 3-port hybrid transformer designed for both analog and digital applications requiring signal splitting or combining
- Extremely wide frequency response
- Very fast rise time
- Operating temperature range  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
- Meets IEC 695, 2-2 flammability requirements
- PWB Process Capability: standard printed wiring board assembly techniques, total-immersion cleaning
- Reliability testing: shock, vibration, temperature cycling, temperature - humidity - bias
- Tape and reel packaging: 24 mm wide by 16 mm pitch; 13 inch OD, 4 inch ID; 350 transformers per reel, max Meets ANSI/EIA 481-2 Carrier Tape Standards for JEDEC SO package

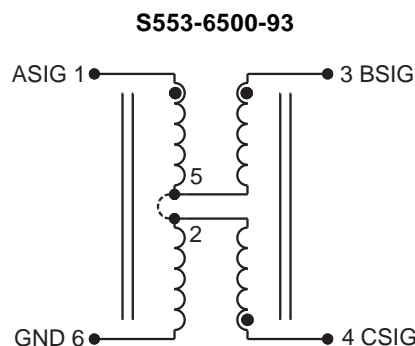
### ELECTRICAL SPECIFICATIONS at $25^{\circ}\text{C}$

Part Number	Impedance Ratio	Nominal Signal Split dB	3dB Bandwidth typ	Pulse Rise Time ns typ
		(1-6) : (3-6) + (4-6)	(1-6) to (3-6) (1-6) to (4-6)	(1-6) to (3-6) (1-6) to (4-6)
S553-6500-93	$75\Omega : 75\Omega + 75\Omega$	3.0	20 kHz - 800 MHz	0.5

Return Loss (RL) typ			Transhybrid Loss (THL) typ		
Port	RL>20 db	RL>30 db	Port	THL>20 db	THL>30 db
A	100 kHz - 500 MHz	400 kHz - 200 MHz	B to C	100 kHz - 800 MHz	300 kHz - 500 MHz
B	200 kHz - 500 MHz	2 MHz - 300 MHz			
C	200 kHz - 500 MHz	2 MHz - 300 MHz			

Port A = ASIG to GND  
 Port B = BSIG to GND  
 Port C = CSIG to GND

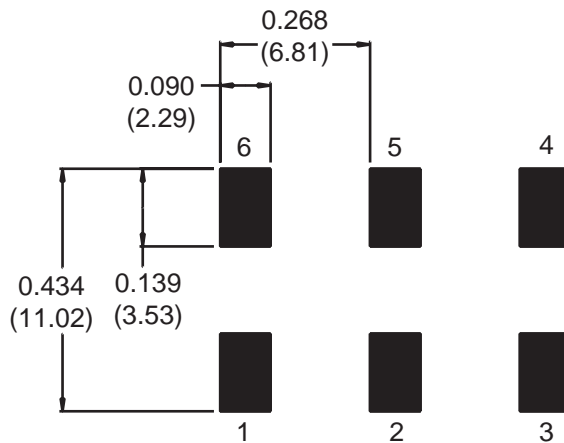
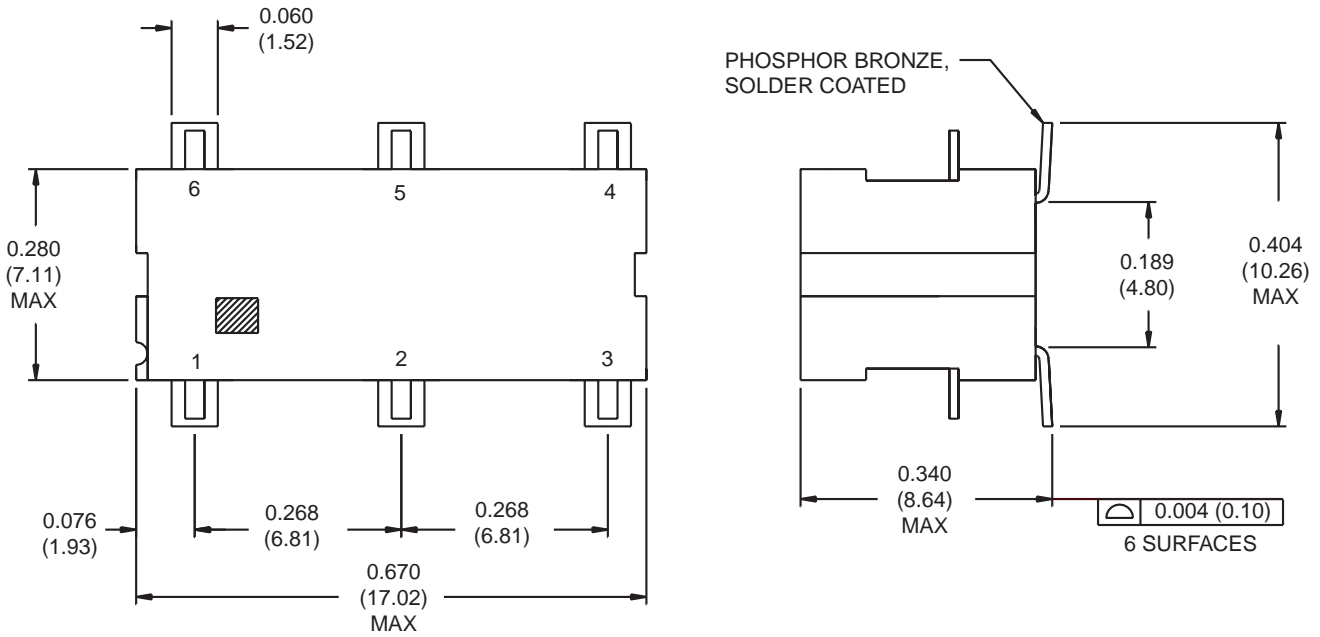
### SCHEMATIC



TM00152

#### MECHANICAL

S553-6500-93



SUGGESTED PCB PAD LAYOUT

Unless otherwise specified, dimensions are nominal and in inches (millimeters).

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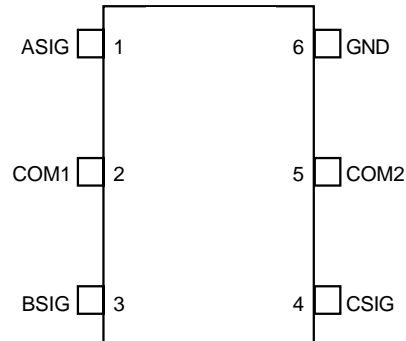
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### APPLICATIONS NOTES

The S553-6500-93 hybrid transformer operates with 75Ω terminations over an extremely wide frequency spectrum (3 dB response: 20 kHz to 800 MHz).

It can also be used as a pulse transformer with very fast pulses (typical rise time: 0.5 ns). The transformer operates as either a signal splitter or a signal combiner. As a signal splitter, the transformer provides two identical output signals (which are in phase with each other) from a single input. Each of the two output signals is 3 dB down from the input signal (half the power of the input signal). There is a high degree of separation or transhybrid loss between the two output signals. As a signal combiner, the transformer provides a single output signal from two identical input signals (which are in phase with each other). The output signal has twice the power of either input signal.

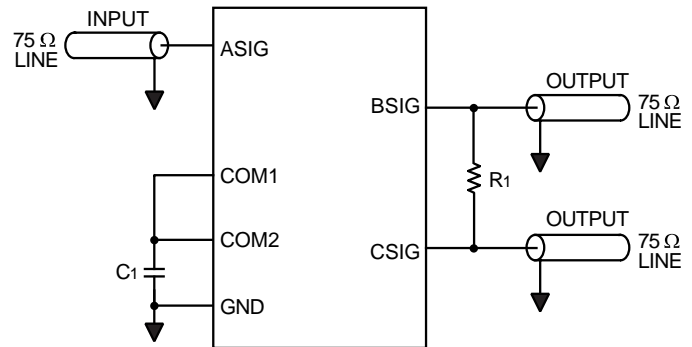
### PIN DIAGRAM



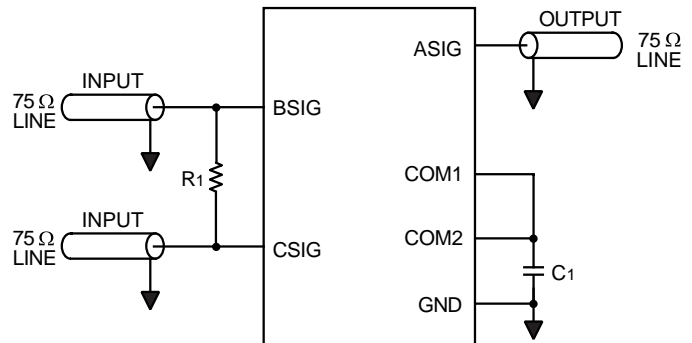
### PIN DESCRIPTIONS AND TERMINATIONS

Pin	Symbol	Name and Function
1	ASIG	A signal. Input for splitter configuration. Output for combiner application.
2	COM1	Common point of transformer 1. Must be connected externally to COM2.
3	BSIG	B signal. Output for splitter configuration. Input for combiner application.
4	CSIG	C signal. Output for splitter configuration. Input for combiner application.
5	COM2	Common point of transformer 2. Must be connected externally to COM1.
6	GND	Ground. Connect to circuit ground.
	R1	162Ω external resistor.
	C1	7 pF external capacitor.

### SIGNAL SPLITTER



### SIGNAL COMBINER





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