



**RDL**<sup>®</sup>  
Radio Design Labs

SPECIALISTS IN PRACTICAL PRECISION ENGINEERING™

## EMC PRODUCTS

### Model TS-1D

### Transient Suppressor

### Model GB6

### Ground Bar

#### ANYWHERE YOU NEED...

- Immunity from Electrostatic Discharge
- Immunity from Induced Transient Voltage
- Immunity from RF Interference
- Immunity from Electromagnetic Pulse
- CE Compliance

#### *You Need The TS-1D!*

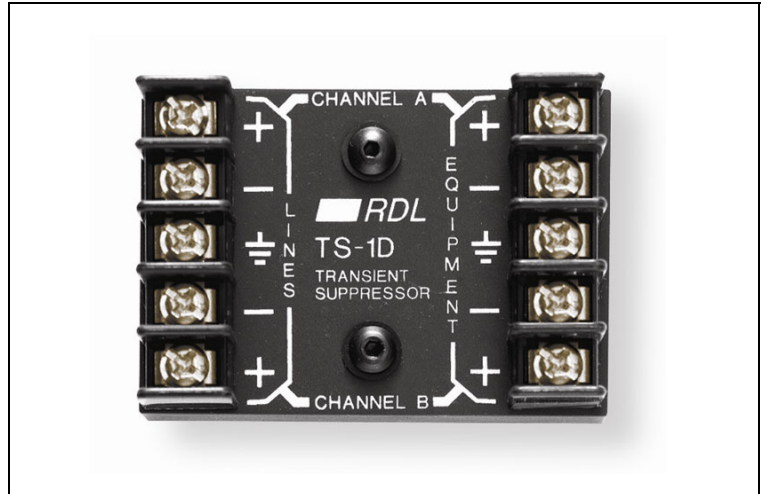
The TS-1D is a transient suppression module, which shunts high energy, high frequency signals to system ground while passing, unaffected, full spectrum audio signals. The TS-1D incorporates the latest in surface-mount, solid-state (no gas tube) technology to bring you an effective and economical solution for dealing with transients.

**APPLICATION:** The TS-1D is intended to protect audio input and output circuits from the effects of transients induced on the audio lines. Single or multiple TS-1Ds are typically mounted to good earth ground at the location that audio lines enter or exit an equipment rack. This protects wiring inside the rack against the effects of induced electrostatic discharge (ESD), transients, and RF interference. The TS-1D integrates classical inductance, capacitance and resistance (LCR) filter techniques with hi-speed, solid-state switching to suppress frequency (time) related interference signals. These are configured to form a *brick wall* to signals above 1 MHz (250 ns rise time). A transient voltage above the nominal operating level of 40 V<sub>peak</sub> will cause the circuit switch to close, shunting the transient current to ground while the transient power is dissipated harmlessly by high-voltage resistors. The switching time is about 450 ps.

The TS-1D contains four independent circuits. It may be used to protect four single-ended (unbalanced) lines or two balanced lines.

The TS-1D must be connected to a low-impedance ground system to operate properly. A ¼ inch (6.3 mm) ground bus with .144 inch (3.7 mm) holes is provided on the bottom of the TS-1D to facilitate mounting. The use of RDL's GB6 ground bar can accommodate multiple unit installation. The GB6 provides space for mounting six TS-1Ds and provides a low-impedance path to your ground system.

The TS-1D suppresses signals specified by IEC1000-4-2 levels 1 through 3, electrostatic discharge immunity; IEC1000-4-3 levels 1 through 3, radiated radio frequency electromagnetic field immunity; and IEC1000-4-4 levels 1 through 4, electrical fast transient/burst immunity.

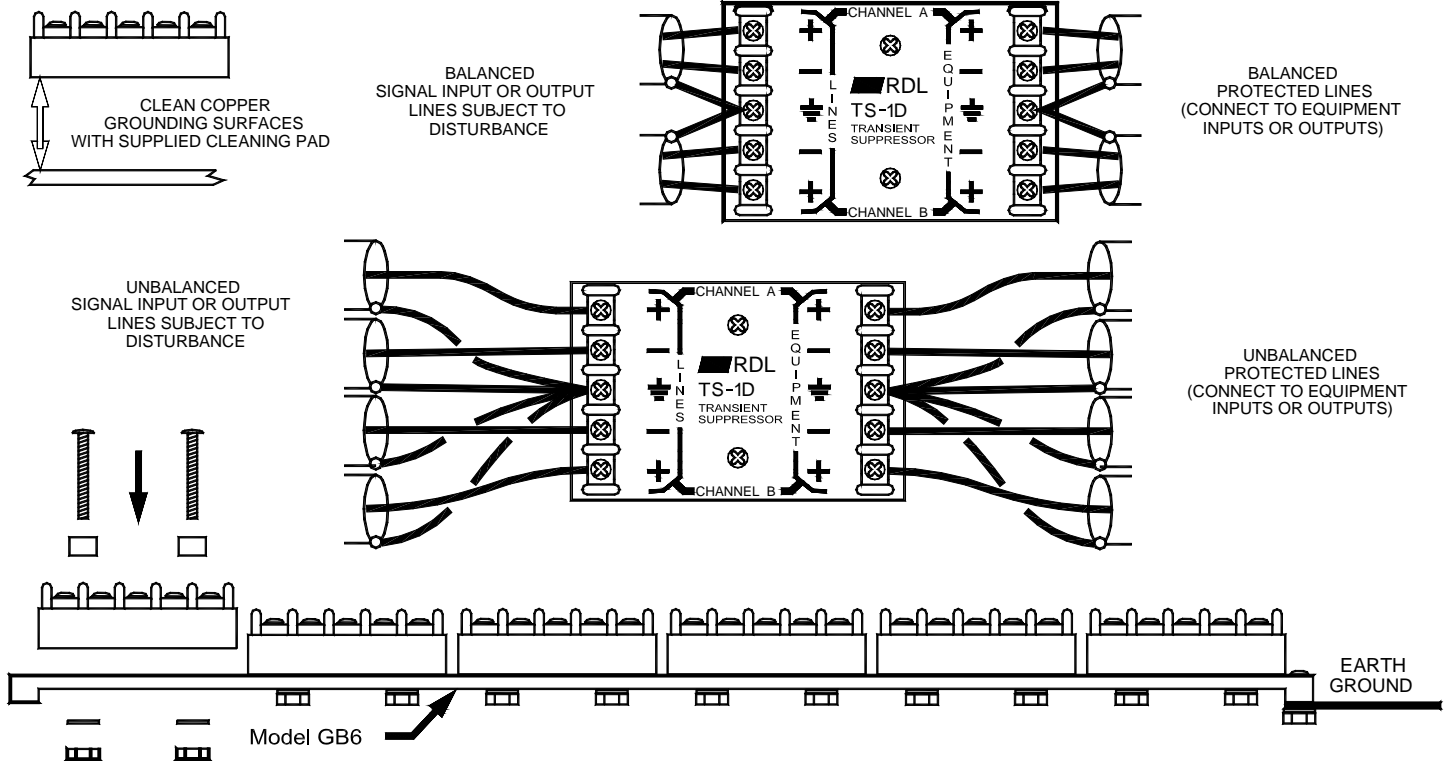


**INSTALLATION/OPERATION**

**EMC PRODUCTS**  
**Model TS-1D Transient Suppressor**  
**Model GB6 Ground Bar**



EN55103-1 E1-E5; EN55103-2 E1-E4  
Typical Performance reflects product at publication time exclusive of EMC data, if any, supplied with product. Specifications are subject to change without notice.



**TYPICAL PERFORMANCE**

**Audio:**

Frequency Response: 10 Hz – 50 kHz  $\pm 0.25$  dB  
 Insertion Loss: < 0.3 dB (into balanced bridging input)  
 < 1.0 dB (into 150  $\Omega$  or 600  $\Omega$  balanced input)  
 0.6 dB (600  $\Omega$  balanced source into 600  $\Omega$  load)

**Electrical:**

Circuits (4): For connecting as 4 unbalanced or 2 balanced audio lines  
 Equivalent series resistance, input to output: 20  $\Omega$   
 Equivalent circuit: 300 kHz LP filter, 6 dB/octave, integral shunt high voltage switch  
 Maximum working signal: 30 Vp, 60 V p-p  
 HV switch clamp: 24 V actuation; 48 V maximum  
 Transient energy: 0.1 joule

**Physical:**

Case material: Electromagnetically inert plastic composition  
 Size: 0.9 in H (22.9 mm) x 1.75 in W (44.5 mm) x 2.5 in D (63.5 mm) (including terminal strip)  
 Ground bus (integral): 110 alloy copper, 0.25 in W (6.3 mm) x 1.6 in D (40.64 mm), drilled (2 places) for #6 (3.7 mm) clearance  
 #6 (3.5 mm) captive screw terminals

Input/output signal termination:

**GB6 Ground Bar:**

Size: .378 in H (9.6 mm) x 1.5 in W (38.1 mm) x 11.87 in D (301.5 mm)  
 Material: 110 Alloy Copper  
 Capacity: Mounts up to 6 TS-1D Suppressors  
 EMC Suppression: IEC1000-4-2 levels 1 through 3; < 1 V

