

MAGNETIC FIELD (B-dot) & SURFACE CURRENT (J-dot) SENSOR

MODEL B-S25

DESCRIPTION

The PROLYN Model B-S25 is a half loop high frequency sensor which can be used as a B-dot sensor or can be used to measure the time rate-of-change of surface current density since the magnetic field over a conductive sheet is related to surface current density. When mounted to a conducting surface the B-S25 produces a voltage output in response to a time variant B field. The loop area is encapsulated to provide breakdown resistance and protection from the environment.

The equation pertinent to this sensor when used as a B-dot sensor is provided on the Model B-24 data sheet. The equation relating to surface current density measurements is:

V\_o = A\_eq mu\_o dJ\_s sin theta / dt = sensor output (in volts)

where

- A\_eq = sensor equivalent area (m^2)
mu\_o = permeability of free space (4 pi x 10^-7 H/m)
J\_s = surface current density (Amps/m)
sin theta = angle between axis and J\_s vector

ELECTRICAL SPECIFICATIONS

Table with 2 columns: Specification and Value. Includes Equivalent Area (A\_eq, Differential) 4.5 x 10^-6 m^2, Frequency Response (3dB point) >11GHz, Risetime (tr 10-90) ~.032 NS, Maximum Output (peak) +/-500V RMS, Output Connector SMA (Male).

PHYSICAL SPECIFICATIONS

