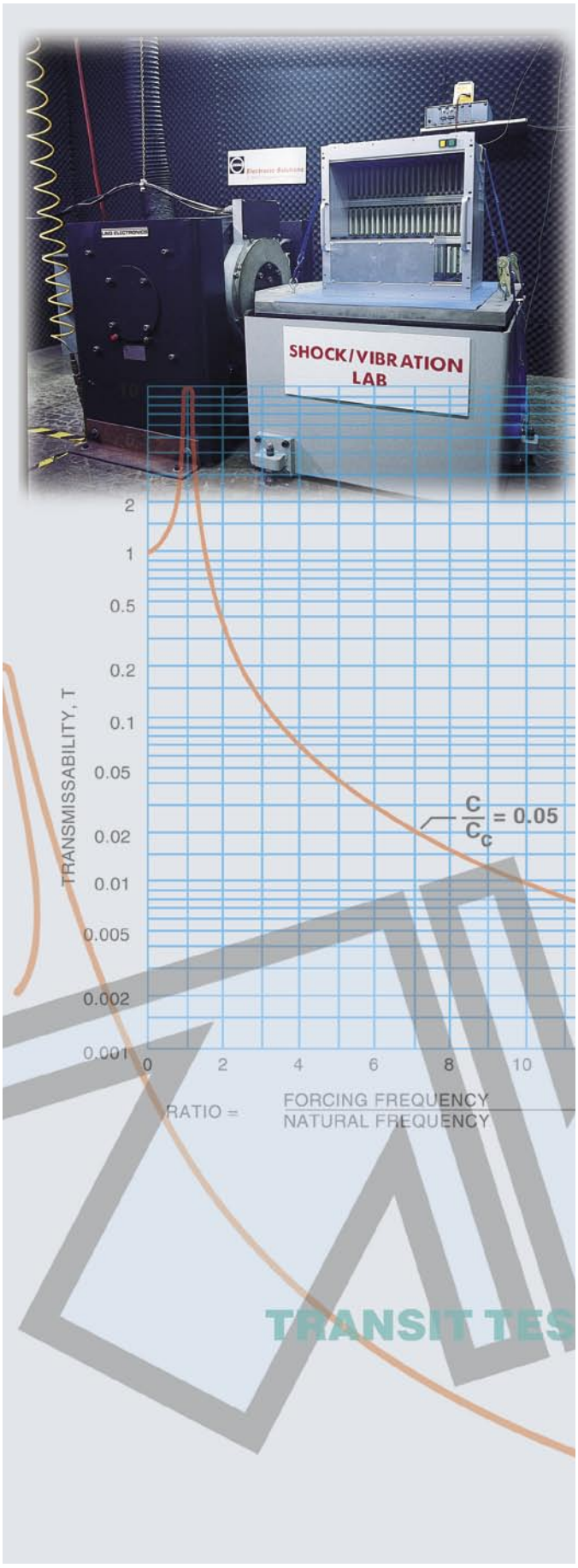
Typical Expected Performance-Shock and Vibration

Guides in Table below were subjected to increasing shock and vibration loads and inspected for relative PCB board movement. PCB simulators moved after the "g" levels shown. First number is for oscillations perpendicular to PCB. Second number is for oscillation parallel to PCB. Maximum random vibration level tested was 26.6 g, rms. Maximum shock level tested was 60g/6ms half sine pulse. Vibration spectrum was from 20 Hz – 2000 Hz per MIL-STD 810E for a duration of 30 minutes. PCB simulator weight was 7.5 oz.

Guide Series	Mat'l	Random Vibration G-rms ⊥ ∥	Shock G/6ms
16/18 B	BeCu	8.3(26.6)	60
16/18 S	Steel	8.3(26.6)	60
21B	BeCu	23.2(26.6)	60
35-1B	BeCu	23.2(26.6)	60
35-2B	BeCu	23.2(26.6)	60
35-2CR	S.S.	19.0(26.6)	60
35-6B	BeCu	12.1(19.0)	60
35-6S	Steel	19.0(26.6)	60
35-7B	BeCu	23.2(19.0)	60
24B	BeCu	26.6(26.6)	60
24S	Steel	26.6(26.6)	60
25B	BeCu	12.1(26.6)	60
25S	Steel	12.1(26.6)	60
127B	BeCu	23.2(26.6)	60
127S	Steel	23.2(26.6)	60
28/29B	BeCu	N/D	60
40	Al	26.6(26.6)	60
40-5	Al	26.6(26.6)	60
41	Al	26.6(26.6)	60
42-5	Al	26.6(26.6)	60



Typical Expected Performance- Thermal Resistance

Thermal resistance is a measure of the ability of heat to flow from the PCB to the heat sink. The retainer applies pressure between the board and the heatsink for maximum heat flow or low resistance. A schematic diagram of the test apparatus is shown in figure 7. It was determined experimentally that approximately 70 percent of the heat flows directly from the card to the heat sink and the remaining 30 percent flows through the card retainer to the heat sink. The thermal resistance is by conduction only and no thermal grease was used. The PCB card was .063" thick 6061 Aluminum. Thermal resistance values are for one retainer as shown in figure 8.

Sample thermal calculation:

A pair of 6" 40-5 series wedge-loks are used to secure a circuit board that dissipates 60W of power. Estimate the temperature difference between the board and the heat sink assuming conduction only. The dissipative components are located on the edge of the board closest to the heat sink.

From figure 8. $R=1.66\ \frac{°Cin}{W}$ *for a 40-5-12-LF Wedge-Lok.*

$$R_6 = 1.66\ \frac{°Cin}{W}\ x\frac{1}{6in} = 0.28\ \frac{°C}{W}$$

$$T = \frac{Q}{2} R_{62}$$

Where: T *is the temperature difference in centigrade*

R *is the thermal resistance per unit length*

R_6 *is the thermal resistance for a six inch Wedge-Lok*

Q *is the power dissipation in Watts*

$$T = \frac{60W}{2}\ x\ .28\ \frac{°C}{W} = 8.4\ °C$$

Note: The power dissipated is divided by two because there are a pair of Wedge-Loks.

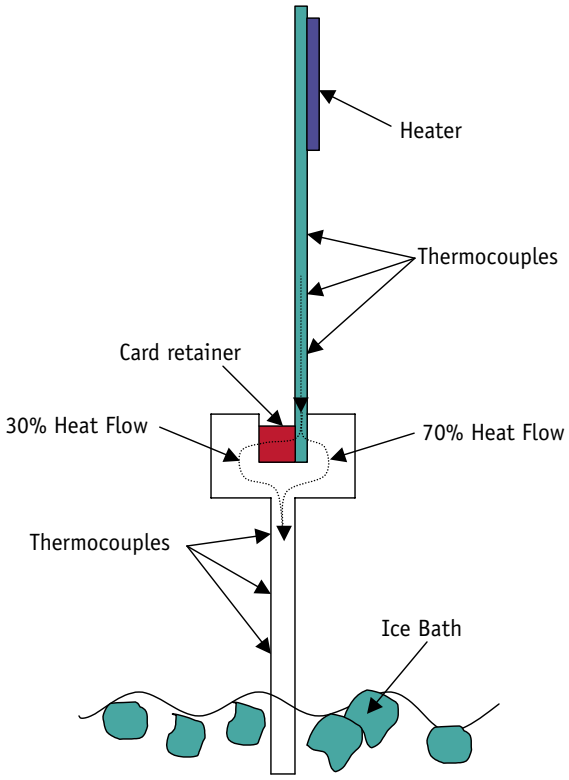


Figure 7. Thermal Test Apparatus Schematic Diagram

Figure 8. Thermal Resistance