PST4-02 Thermal Test Die

The Kokomo Semiconductor PST series of Thermal Test Die is used to determine thermal characteristics of a package, such as thermal resistance Junction to Case (Θ jc) or Junction to Ambient (Θ ja). These Thermal Test Die incorporate a heating element and typically, two independent methods for on-die temperature monitoring.

Resistive heating in the PST4 is accomplished by driving a current through a doped silicon well between a pair of bus bars, labeled Rs and Rf. The 4 R labeled pads accommodate Kelvin connections, if desired.

At the top and bottom of the die are a pair of pads, labeled D in the diagram, which connect a serial five-diode temperature sense network. Again, a four-pad layout allows Kelvin connections, if desired. A second temperature monitoring circuit uses a bridge network by connecting the "V" at the top of the die and the "G" at the bottom of the die with one sense pin "S" at the top of the die and the other sense pin "S" at the bottom of the die.

The PST4 incorporates a feature not found on some of the smaller PST die (PST1 to PST3). The five-diode string from the center is duplicated in all four corners. The corner diode strings are connected in series such that each corner can be monitored individually while driven by a single current source.

➤ Options Available

- Five-inch wafer, no bumps, nitride passivation, 162-micron square passivation openings for wire bonding
- Five-inch wafer, FOC bump, 63Sn/37Pb solder, UBM diameter – 178 microns, bump height – 140 microns
- Five-inch wafer, FOC bump, lead free solder (Sn/Ag/Cu), UBM diameter – 178 microns, bump height – 140 microns.

➤ IC Fab Information

- Wafer size 5-inch (125 mm)
- Die thickness 610-660 microns
- Metal thickness 17k angstroms
- Metal composition Al/Cu/Si (98/1/1)
- Passivation thickness 10k angstroms
- Passivation type Nitride
- Silicon orientation 1-1-1
- Silicon type P
The test die offered on this web site is to be used to characterize assembly processes and materials. Applying the data from the test die to a functional system is the responsibility of the user. Kokomo Semiconductor makes no warranty, express or implied including the implied warranties of merchantability and fitness for a particular purpose, that the user’s system designed using that data will perform as intended.