

| 22 layers Class 2 | | | GND | | | | | POSSIBLE VIAS 1808 (.018 PAD .008 HOLE) 2010 (.020 PAD .010 HOLE) | | | | |
|---|------------|--------|--------------------------------|-----------------------------------|--|--|--|---|-------------------------------------|-------------|-------------------------------------|--|
| 1 | copper | 0.0005 | .008 hole 1-2 u .018 pad | .008 hole 1-3u .018 pad | | | .012 hole 1 thru 22 .020pad | 1 | SURFACE | | | |
| | dielectric | 0.003 | | | | | | | | 2 | GND /PWR PLANE | |
| 2 | copper | 0.0007 | | | | | | | | 3 | Pair Layer 1 (3.5trace---5.5 space) | |
| | dielectric | 0.005 | | | | | | | | 4 | PLANE | |
| 3 | copper | 0.0007 | | .008 hole 1 thru 7 .018 pad | | | | 5 | Pair Layer 2 (3.5trace---5.5 space) | | | |
| | dielectric | 0.005 | | | | | | | 6 | PLANE | | |
| 4 | copper | 0.0007 | | | | | | | | 7 | Pair Layer 3 (3.5trace---5.5 space) | |
| | dielectric | 0.005 | | | | | | | | 8 | PLANE | |
| 5 | copper | 0.0007 | | | | | | 9 | Pair Layer 4 (3.5trace---5.5 space) | | | |
| | dielectric | 0.005 | | | | | | | 10 | PLANE | | |
| 6 | copper | 0.0007 | | | | | | | | 11 | Pair Layer 5 (3.5trace---5.5 space) | |
| | dielectric | 0.005 | | | | | | | | 12 | GND /PWR PLANE | |
| 7 | copper | 0.0007 | | | | | | 13 | Pair Layer 6 (3.5trace---5.5 space) | | | |
| | dielectric | 0.005 | | | | | | | 14 | PLANE | | |
| 8 | copper | 0.0007 | | | | | | | | 15 | Pair Layer 7 (3.5trace---5.5 space) | |
| | dielectric | 0.005 | | | | | | | | 16 | PLANE | |
| 9 | copper | 0.0007 | | | | | | 17 | Pair Layer 8 (3.5trace---5.5 space) | | | |
| | dielectric | 0.005 | | | | | | | 18 | PLANE | | |
| 10 | copper | 0.0007 | | | | | | | | 19 | Pair Layer 9 (3.5trace---5.5 space) | |
| | dielectric | 0.005 | | | | | | | | 20 | PLANE | |
| 11 | copper | 0.0007 | | | | | | 21 | other layer | | | |
| | dielectric | 0.005 | | | | | | | 22 | SURFACE/GND | | |
| 12 | copper | 0.0007 | | | | | | | | | | |
| | dielectric | 0.005 | | | | | | | | | | |
| 13 | copper | 0.0007 | | | | | | | | | | |
| | dielectric | 0.005 | | | | | | | | | | |
| 14 | copper | 0.0007 | | | | | | | | | | |
| | dielectric | 0.005 | | | | | | | | | | |
| 15 | copper | 0.0007 | | | | | | | | | | |
| | dielectric | 0.005 | | | | | | | | | | |
| 16 | copper | 0.0007 | | | | | | | | | | |
| | dielectric | 0.005 | | | | | | | | | | |
| 17 | copper | 0.0007 | | | | | | | | | | |
| | dielectric | 0.005 | | | | | | | | | | |
| 18 | copper | 0.0007 | | | | | | | | | | |
| | dielectric | 0.005 | | | | | | | | | | |
| 19 | copper | 0.0007 | | | | | | | | | | |
| | dielectric | 0.005 | | | | | | | | | | |
| 20 | copper | 0.0007 | | | | | | | | | | |
| | dielectric | 0.004 | | | | | | | | | | |
| 21 | copper | 0.0007 | | | | | | | | | | |
| | dielectric | 0.003 | | | | | | | | | | |
| 22 | copper | 0.0005 | | | | | | | | | | |
| | | | | | | | | | | | | |
| 0.004 ***plus plating (.001)x4 places on lyrs 2, 6, 7, 11 | | | | | | | | | | | | |
| thk | 0.119 | | 0.0357 | 0.0471 | | | | | | | | |

thk 0.004 ***plus plating (.001)x4 places on lyrs 2, 6, 7, 11 0.119 0.0357 0.0471

| 20 layers Class 2 | | | GND | | | | | POSSIBLE VIAS (.018 PAD .008 HOLE) (.020 PAD .010 HOLE) | | 1808 2010 |
|----------------------|------------|--------|--|-----------------------------------|-----------------------------------|--|---|---|-------------------------------------|--------------|
| 1 | copper | 0.0005 | .008 hole 1-2 u .018 pad | .008 hole 1-3u .018 pad | | | .008 hole 1 thru 20 .018 pad | 1 | SURFACE | |
| | dielectric | 0.003 | | | | | | 2 | GND /PWR PLANE | |
| 2 | copper | 0.0007 | | | | | | 3 | Pair Layer 1 (3.5trace---5.5 space) | |
| | dielectric | 0.005 | | | | | | 4 | PLANE | |
| 3 | copper | 0.0007 | | .008 hole 1 thru 7 .018 pad | .008 hole 1 thru 9 .018 pad | | | 5 | Pair Layer 2 (3.5trace---5.5 space) | |
| | dielectric | 0.005 | | | | | | 6 | PLANE | |
| 4 | copper | 0.0007 | | | | | | 7 | Pair Layer 3 (3.5trace---5.5 space) | |
| | dielectric | 0.005 | | | | | | 8 | PLANE | |
| 5 | copper | 0.0007 | | | | | | 9 | Pair Layer 4 (3.5trace---5.5 space) | |
| | dielectric | 0.005 | | | | | | 10 | PLANE | |
| 6 | copper | 0.0007 | | | | | | 11 | Pair Layer 5 (3.5trace---5.5 space) | |
| | dielectric | 0.005 | | | | | | 12 | GND /PWR PLANE | |
| 7 | copper | 0.0007 | | | | | | 13 | Pair Layer 6 (3.5trace---5.5 space) | |
| | dielectric | 0.005 | | | | | | 14 | PLANE | |
| 8 | copper | 0.0007 | | | | | | 15 | Pair Layer 7 (3.5trace---5.5 space) | |
| | dielectric | 0.005 | | | | | | 16 | PLANE | |
| 9 | copper | 0.0007 | | | | | | 17 | Pair Layer 8 (3.5trace---5.5 space) | |
| | dielectric | 0.005 | | | | | | 18 | PLANE | |
| 10 | copper | 0.0007 | | | | | | 19 | other layer | |
| | dielectric | 0.005 | | | | | | 20 | SURFACE/GND | |
| 11 | copper | 0.0007 | | | | | | | | |
| | dielectric | 0.005 | | | | | | | | |
| 12 | copper | 0.0007 | | | | | | | | |
| | dielectric | 0.005 | | | | | | | | |
| 13 | copper | 0.0007 | | | | | | | | |
| | dielectric | 0.005 | | | | | | | | |
| 14 | copper | 0.0007 | | | | | | | | |
| | dielectric | 0.005 | | | | | | | | |
| 15 | copper | 0.0007 | | | | | | | | |
| | dielectric | 0.005 | | | | | | | | |
| 16 | copper | 0.0007 | | | | | | | | |
| | dielectric | 0.005 | | | | | | | | |
| 17 | copper | 0.0007 | | | | | | | | |
| | dielectric | 0.005 | | | | | | | | |
| 18 | copper | 0.0007 | | | | | | | | |
| | dielectric | 0.004 | | | | | | | | |
| 19 | copper | 0.0007 | | | | | | | | |
| | dielectric | 0.003 | | | | | | | | |
| 20 | copper | 0.0005 | | | | | | | | |
| | | | | | | | | | | |
| | | | .004 ***plus plating (.001)x4 places on lyrs 2, 6, 7, 11 | | | | | | | |
| thk | | | 0.1076 | | 0.0357 | | 0.0471 | | | |

thk 0.1076 0.0357 0.0471

Notes: 6=99.5 diff 5=93 diff
Maximum number of lamination cycle for any set of laminate to experience is 4 times.
we can do up to three on two halves and the final will be the fourth for both halves and we can split it anywhere
4 mil drill requires 12 mil pad size (minimum); can drill and plate through a maximum 0.040" total board/copper thickness.
6 mil drill requires 14 mil pad size (minimum); can drill and plate through a maximum 0.060" total board/copper thickness.
8 mil drill requires 18 mil pad size (minimum); can drill and plate through a maximum 0.080" total board/copper thickness.
10 mil drill requires 20 mil pad size (minimum); can drill and plate through a maximum 0.110" total board/copper thickness.
You will have to use 12 mil or larger drill if you need make the board thick than the proposed 20-layer, 0.107" thick board.
Diff pair to pair should be three times dielectric (15)
PART # TLK2711JR-ZQE) VIA IN PADS .006 HOLE .011 PADS (CELL=BGA80) .01969 PITCH 1/2 MM (16 TIMES)

| | |
|------------|--------|
| copper | 0.0007 |
| dielectric | 0.005 |

0.0057

every layer we add requires one copper and one dielectric for a totalof .0057" thicker