



-DRAWING NOT TO SCALE-

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|--|---------------------------------|-----------|-----|
| | | | |
| TITLE: PACKAGE OUTLINE 12,16,20,24,28L TQFN 4x4x0.75mm | | | |
| APPROVAL | DOCUMENT CONTROL NO. 21-0139 | REV. V | 1/3 |

| COMMON DIMENSIONS | | | | | | | | | | | | | | | |
|-------------------|-----------|------|------|-----------|------|------|-----------|------|------|-----------|------|------|-----------|------|------|
| PKG | 12L 4x4 | | | 16L 4x4 | | | 20L 4x4 | | | 24L 4x4 | | | 28L 4x4 | | |
| REF. | MIN. | NDM. | MAX. | MIN. | NDM. | MAX. | MIN. | NDM. | MAX. | MIN. | NDM. | MAX. | MIN. | NDM. | MAX. |
| A | 0.70 | 0.75 | 0.80 | 0.70 | 0.75 | 0.80 | 0.70 | 0.75 | 0.80 | 0.70 | 0.75 | 0.80 | 0.70 | 0.75 | 0.80 |
| A1 | 0.0 | 0.02 | 0.05 | 0.0 | 0.02 | 0.05 | 0.0 | 0.02 | 0.05 | 0.0 | 0.02 | 0.05 | 0.0 | 0.02 | 0.05 |
| A2 | 0.20 REF | | | 0.20 REF | | | 0.20 REF | | | 0.20 REF | | | 0.20 REF | | |
| b | 0.25 | 0.30 | 0.35 | 0.25 | 0.30 | 0.35 | 0.20 | 0.25 | 0.30 | 0.18 | 0.23 | 0.30 | 0.15 | 0.20 | 0.25 |
| D | 3.90 | 4.00 | 4.10 | 3.90 | 4.00 | 4.10 | 3.90 | 4.00 | 4.10 | 3.90 | 4.00 | 4.10 | 3.90 | 4.00 | 4.10 |
| E | 3.90 | 4.00 | 4.10 | 3.90 | 4.00 | 4.10 | 3.90 | 4.00 | 4.10 | 3.90 | 4.00 | 4.10 | 3.90 | 4.00 | 4.10 |
| e | 0.80 BSC. | | | 0.65 BSC. | | | 0.50 BSC. | | | 0.50 BSC. | | | 0.40 BSC. | | |
| k | 0.25 | - | - | 0.25 | - | - | 0.25 | - | - | 0.25 | - | - | 0.25 | - | - |
| N | 12 | | | 16 | | | 20 | | | 24 | | | 28 | | |
| ND | 3 | | | 4 | | | 5 | | | 6 | | | 7 | | |
| NE | 3 | | | 4 | | | 5 | | | 6 | | | 7 | | |
| Jedec Var. | WGGB | | | WGGC | | | WGGD-1 | | | WGGD-2 | | | WGGE | | |

NOTES:

1. DIMENSIONING & TOLERANCING CONFORM TO ASME Y14.5M-2009.
2. ALL DIMENSIONS ARE IN MILLIMETERS. ANGLES ARE IN DEGREES.
3. N IS THE TOTAL NUMBER OF TERMINALS.
4. THE TERMINAL #1 IDENTIFIER AND TERMINAL NUMBERING CONVENTION SHALL CONFORM TO JESD 95-1 SPP-012. DETAILS OF TERMINAL #1 IDENTIFIER ARE OPTIONAL, BUT MUST BE LOCATED WITHIN THE ZONE INDICATED. THE TERMINAL #1 IDENTIFIER MAY BE EITHER A MOLD OR MARKED FEATURE.
5. DIMENSION b APPLIES TO METALLIZED TERMINAL AND IS MEASURED BETWEEN 0.25mm AND 0.30mm FROM TERMINAL TIP.
6. ND AND NE REFER TO THE NUMBER OF TERMINALS ON EACH D AND E SIDE RESPECTIVELY.
 7. DEPOPULATION IS POSSIBLE IN A SYMMETRICAL FASHION.
 8. DRAWING CONFORMS TO JEDEC MO220, EXCEPT FOR T2444-3, T2444-4 AND T2844-1.
 9. MARKING IS FOR PACKAGE ORIENTATION REFERENCE ONLY.
 10. WARPAGE SHALL NOT EXCEED 0.10mm.
 11. LEAD CENTERLINES TO BE AT TRUE POSITION AS DEFINED BY BASIC DIMENSION "e", ±0.05.
 12. NUMBER OF LEADS SHOWN ARE FOR REFERENCE ONLY.
 13. MATERIAL MUST COMPLY WITH BANNED AND RESTRICTED SUBSTANCES SPEC # 10-0131.
 14. ALL DIMENSIONS ARE THE SAME FOR LEADED (-) & PbfREE (+) PACKAGE CODES.



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REV. 2/3
V

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DIMENSION VARIATIONS

| PKG. CODES | EXPOSED PAD | | | | | | LEAD | | | | CORNER LEAD CHAMFER | | |
|---------------|-------------|------|------|------|------|------|------|------|------|------------------------------|---------------------|------|--|
| | D2 | | | E2 | | | L | | | R _{LEAD TIP RADIUS} | C | L4 | |
| | MIN. | NOM. | MAX. | MIN. | NOM. | MAX. | MIN. | NOM. | MAX. | REF. | REF. | REF. | |
| T1244-3 | 1.95 | 2.10 | 2.25 | 1.95 | 2.10 | 2.25 | 0.45 | 0.55 | 0.65 | - | - | - | |
| T1244-3C | 1.95 | 2.10 | 2.25 | 1.95 | 2.10 | 2.25 | 0.45 | 0.55 | 0.65 | - | - | - | |
| T1244-4 | 1.95 | 2.10 | 2.25 | 1.95 | 2.10 | 2.25 | 0.45 | 0.55 | 0.65 | - | - | - | |
| T1244-4C | 1.95 | 2.10 | 2.25 | 1.95 | 2.10 | 2.25 | 0.45 | 0.55 | 0.65 | - | - | - | |
| T1644-3 | 1.95 | 2.10 | 2.25 | 1.95 | 2.10 | 2.25 | 0.45 | 0.55 | 0.65 | - | - | - | |
| T1644-3C | 1.95 | 2.10 | 2.25 | 1.95 | 2.10 | 2.25 | 0.45 | 0.55 | 0.65 | - | - | - | |
| T1644-4 | 1.95 | 2.10 | 2.25 | 1.95 | 2.10 | 2.25 | 0.45 | 0.55 | 0.65 | - | - | - | |
| T1644-4A | 1.95 | 2.10 | 2.25 | 1.95 | 2.10 | 2.25 | 0.45 | 0.55 | 0.65 | - | - | - | |
| T1644-4C | 1.95 | 2.10 | 2.25 | 1.95 | 2.10 | 2.25 | 0.45 | 0.55 | 0.65 | - | - | - | |
| T2044-2 | 1.95 | 2.10 | 2.25 | 1.95 | 2.10 | 2.25 | 0.45 | 0.55 | 0.65 | - | - | - | |
| T2044-2C | 1.95 | 2.10 | 2.25 | 1.95 | 2.10 | 2.25 | 0.45 | 0.55 | 0.65 | - | - | - | |
| T2044-3 | 1.95 | 2.10 | 2.25 | 1.95 | 2.10 | 2.25 | 0.45 | 0.55 | 0.65 | - | - | - | |
| T2044-3C | 1.95 | 2.10 | 2.25 | 1.95 | 2.10 | 2.25 | 0.45 | 0.55 | 0.65 | - | - | - | |
| T2044-4 | 2.85 | 2.90 | 2.95 | 2.85 | 2.90 | 2.95 | 0.25 | 0.30 | 0.35 | 0.125 | - | - | |
| T2044-5 | 2.60 | 2.70 | 2.80 | 2.60 | 2.70 | 2.80 | 0.35 | 0.40 | 0.45 | 0.203 | - | - | |
| T2044-5C | 2.60 | 2.70 | 2.80 | 2.60 | 2.70 | 2.80 | 0.35 | 0.40 | 0.45 | 0.203 | - | - | |
| T2444-2 | 1.95 | 2.10 | 2.25 | 1.95 | 2.10 | 2.25 | 0.30 | 0.40 | 0.50 | - | 0.120 X 45° | 0.31 | |
| T2444-2C | 1.95 | 2.10 | 2.25 | 1.95 | 2.10 | 2.25 | 0.30 | 0.40 | 0.50 | - | 0.120 X 45° | 0.31 | |
| T2444-3 | 2.45 | 2.60 | 2.63 | 2.45 | 2.60 | 2.63 | 0.30 | 0.40 | 0.50 | - | 0.120 X 45° | 0.31 | |
| T2444-3C | 2.45 | 2.60 | 2.63 | 2.45 | 2.60 | 2.63 | 0.30 | 0.40 | 0.50 | - | 0.120 X 45° | 0.31 | |
| T2444-4 | 2.45 | 2.60 | 2.63 | 2.45 | 2.60 | 2.63 | 0.30 | 0.40 | 0.50 | - | 0.120 X 45° | 0.31 | |
| T2444-4C | 2.45 | 2.60 | 2.63 | 2.45 | 2.60 | 2.63 | 0.30 | 0.40 | 0.50 | - | 0.120 X 45° | 0.31 | |
| T2444N-4 | 2.45 | 2.60 | 2.63 | 2.45 | 2.60 | 2.63 | 0.30 | 0.40 | 0.50 | - | 0.120 X 45° | 0.31 | |
| T2444M-1 | 2.45 | 2.60 | 2.63 | 2.45 | 2.60 | 2.63 | 0.30 | 0.40 | 0.50 | - | 0.120 X 45° | 0.31 | |
| T2444MK-1 | 2.45 | 2.60 | 2.63 | 2.45 | 2.60 | 2.63 | 0.30 | 0.40 | 0.50 | - | 0.120 X 45° | 0.31 | |
| T2844-1 | 2.50 | 2.60 | 2.70 | 2.50 | 2.60 | 2.70 | 0.30 | 0.40 | 0.50 | - | - | - | |
| T2844-1C | 2.50 | 2.60 | 2.70 | 2.50 | 2.60 | 2.70 | 0.30 | 0.40 | 0.50 | - | - | - | |
| T2844N-1 | 2.65 | 2.70 | 2.75 | 2.65 | 2.70 | 2.75 | 0.30 | 0.40 | 0.50 | - | - | - | |

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REV. 3/3
V