

# Trion® FPGA Selector Guide



## Trion Ordering Codes

| FPGA | LEs    | RAM (kbits) | RAM Blocks (5 Kb) | Multipliers | Package | Pins | GPIO | PLLs | Oscillator | LVDS TX Pairs | LVDS RX Pairs | MIPI TX | MIPI RX | DDR     | Temperature | Speed Grade | Ordering Code  |
|------|--------|-------------|-------------------|-------------|---------|------|------|------|------------|---------------|---------------|---------|---------|---------|-------------|-------------|----------------|
| T4   | 3,888  | 76.8        | 15                | 4           | FBGA    | 49   | 33   | 1    | 1          | -             | -             | -       | -       | -       | C           | 2           | T4F49C2        |
|      |        |             |                   |             | FBGA    | 81   | 55   | 1    | 1          | -             | -             | -       | -       | -       | I           | 2           | T4F49I2        |
|      |        |             |                   |             | FBGA    | 81   | 55   | 1    | 1          | -             | -             | -       | -       | -       | C           | 2           | T4F81C2        |
|      |        |             |                   |             | FBGA    | 81   | 55   | 1    | 1          | -             | -             | -       | -       | -       | I           | 2           | T4F81I2        |
| T8   | 7,384  | 122.88      | 24                | 8           | FBGA    | 49   | 33   | 1    | 1          | -             | -             | -       | -       | -       | C           | 2           | T8F49C2        |
|      |        |             |                   |             | FBGA    | 81   | 55   | 1    | 1          | -             | -             | -       | -       | -       | I           | 2           | T8F49I2        |
|      |        |             |                   |             | FBGA    | 81   | 55   | 1    | 1          | -             | -             | -       | -       | -       | C           | 2           | T8F81C2        |
|      |        |             |                   |             | FBGA    | 81   | 55   | 1    | 1          | -             | -             | -       | -       | -       | I           | 2           | T8F81I2        |
| T8   | 7,384  | 122.88      | 24                | 8           | LQFP    | 144  | 97   | 5    | -          | 6             | 6             | -       | -       | -       | C           | 3, 4, 4L    | T8Q144C3/4/4L  |
|      |        |             |                   |             | LQFP    | 144  | 97   | 5    | -          | 6             | 6             | -       | -       | -       | I           | 4, 4L       | T8Q144I4/4L    |
|      |        |             |                   |             | FBGA    | 169  | 73   | 5    | -          | 8             | 12            | 2       | 2       | -       | C           | 3, 4, 4L    | T13F169C3/4/4L |
|      |        |             |                   |             | FBGA    | 169  | 73   | 5    | -          | 8             | 12            | 2       | 2       | -       | I           | 4, 4L       | T13F169I4/4L   |
| T13  | 12,828 | 727.04      | 142               | 24          | FBGA    | 169  | 73   | 5    | -          | 8             | 12            | 2       | 2       | -       | Q           | 4           | T13F169Q4      |
|      |        |             |                   |             | FBGA    | 256  | 195  | 5    | -          | 13            | 13            | -       | -       | -       | C           | 3, 4, 4L    | T13F256C3/4/4L |
|      |        |             |                   |             | FBGA    | 256  | 195  | 5    | -          | 13            | 13            | -       | -       | -       | I           | 4, 4L       | T13F256I4/4L   |
| T20  | 19,728 | 1,044.48    | 204               | 36          | WLCSP   | 80   | 33   | 3    | -          | -             | -             | 1       | 1       | -       | I           | 4, 4L       | T20W80I4/4L    |
|      |        |             |                   |             | FBGA    | 169  | 73   | 5    | -          | 8             | 12            | 2       | 2       | -       | C           | 3, 4, 4L    | T20F169C3/4/4L |
|      |        |             |                   |             | FBGA    | 169  | 73   | 5    | -          | 8             | 12            | 2       | 2       | -       | I           | 4, 4L       | T20F169I4/4L   |
|      |        |             |                   |             | FBGA    | 169  | 73   | 5    | -          | 8             | 12            | 2       | 2       | -       | Q           | 4           | T20F169Q4      |
|      |        |             |                   |             | FBGA    | 256  | 195  | 5    | -          | 13            | 13            | -       | -       | -       | C           | 3, 4, 4L    | T20F256C3/4/4L |
|      |        |             |                   |             | FBGA    | 256  | 195  | 5    | -          | 13            | 13            | -       | -       | -       | I           | 4, 4L       | T20F256I4/4L   |
| T20  | 19,728 | 1,044.48    | 204               | 36          | FBGA    | 324  | 130  | 7    | -          | 20            | 26            | 2       | 2       | x8, x16 | C           | 3, 4, 4L    | T20F324C3/4/4L |
|      |        |             |                   |             | FBGA    | 324  | 130  | 7    | -          | 20            | 26            | 2       | 2       | x8, x16 | I           | 4, 4L       | T20F324I4/4L   |
| T20  | 19,728 | 1,044.48    | 204               | 36          | FBGA    | 400  | 230  | 7    | -          | 20            | 26            | -       | -       | x8, x16 | C           | 3, 4, 4L    | T20F400C3/4/4L |
|      |        |             |                   |             | FBGA    | 400  | 230  | 7    | -          | 20            | 26            | -       | -       | x8, x16 | I           | 4, 4L       | T20F400I4/4L   |

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| FPGA | LEs     | RAM (kbits) | RAM Blocks (5 Kb) | Multipliers | Package | Pins | GPIO | PLLs | Oscillator | LVDS TX Pairs | LVDS RX Pairs | MIPI TX | MIPI RX | DDR     | Temperature | Speed Grade | Ordering Code   |       |               |               |
|------|---------|-------------|-------------------|-------------|---------|------|------|------|------------|---------------|---------------|---------|---------|---------|-------------|-------------|-----------------|-------|---------------|---------------|
| T35  | 31,680  | 1,475       | 288               | 120         | FBGA    | 324  | 130  | 7    | -          | 20            | 26            | 2       | 2       | x8, x16 | C           | 3, 4, 4L    | T35F324C3/4/4L  |       |               |               |
|      |         |             |                   |             |         |      |      |      |            |               |               |         |         |         |             |             | I               | 4, 4L | T35F324I4/4L  |               |
|      |         |             |                   |             | FBGA    | 400  | 230  | 7    | -          | 20            | 26            | -       | -       | x8, x16 | C           | 3, 4, 4L    | T35F400C3/4/4L  |       |               |               |
|      |         |             |                   |             |         |      |      |      |            |               |               |         |         |         |             |             |                 | I     | 4, 4L         | T35F400I4/4L  |
| T55  | 54,195  | 2,765       | 540               | 150         | FBGA    | 324  | 130  | 7    | -          | 20            | 26            | 2       | 2       | x8, x16 | C           | 3, 4, 4L    | T55F324C3/4/4L  |       |               |               |
|      |         |             |                   |             |         |      |      |      |            |               |               |         |         |         |             |             | I               | 4, 4L | T55F324I4/4L  |               |
|      |         |             |                   |             | FBGA    | 484  | 256  | 8    | -          | 40            | 40            | -       | -       | x16/x32 | C           | 3, 4, 4L    | T55F484C3/4/4L  |       |               |               |
|      |         |             |                   |             |         |      |      |      |            |               |               |         |         |         |             |             |                 | I     | 4, 4L         | T55F484I4/4L  |
|      |         |             |                   |             | FBGA    | 576  | 278  | 8    | -          | 52            | 52            | 3       | 3       | x16/x32 | C           | 3, 4, 4L    | T55F576C3/4/4L  |       |               |               |
|      |         |             |                   |             |         |      |      |      |            |               |               |         |         |         |             |             |                 | I     | 4, 4L         | T55F576I4/4L  |
| T85  | 84,096  | 4,055       | 792               | 240         | FBGA    | 324  | 130  | 7    | -          | 20            | 26            | 2       | 2       | x8, x16 | C           | 3, 4, 4L    | T85F324C3/4/4L  |       |               |               |
|      |         |             |                   |             |         |      |      |      |            |               |               |         |         |         |             |             | I               | 4, 4L | T85F324I4/4L  |               |
|      |         |             |                   |             | FBGA    | 484  | 256  | 8    | -          | 40            | 40            | -       | -       | x16/x32 | C           | 3, 4, 4L    | T85F484C3/4/4L  |       |               |               |
|      |         |             |                   |             |         |      |      |      |            |               |               |         |         |         |             |             |                 | I     | 4, 4L         | T85F484I4/4L  |
|      |         |             |                   |             | FBGA    | 576  | 278  | 8    | -          | 52            | 52            | 3       | 3       | x16/x32 | C           | 3, 4, 4L    | T85F576C3/4/4L  |       |               |               |
|      |         |             |                   |             |         |      |      |      |            |               |               |         |         |         |             |             |                 | I     | 4, 4L         | T85F576I4/4L  |
| T120 | 112,128 | 5,407       | 1,056             | 320         | FBGA    | 324  | 130  | 7    | -          | 20            | 26            | 2       | 2       | x8, x16 | C           | 3, 4, 4L    | T120F324C3/4/4L |       |               |               |
|      |         |             |                   |             |         |      |      |      |            |               |               |         |         |         |             |             | I               | 4, 4L | T120F324I4/4L |               |
|      |         |             |                   |             | FBGA    | 484  | 256  | 8    | -          | 40            | 40            | -       | -       | x16/x32 | C           | 3, 4, 4L    | T120F484C3/4/4L |       |               |               |
|      |         |             |                   |             |         |      |      |      |            |               |               |         |         |         |             |             |                 | I     | 4, 4L         | T120F484I4/4L |
|      |         |             |                   |             | FBGA    | 576  | 278  | 8    | -          | 52            | 52            | 3       | 3       | x16/x32 | C           | 3, 4, 4L    | T120F576C3/4/4L |       |               |               |
|      |         |             |                   |             |         |      |      |      |            |               |               |         |         |         |             |             |                 | I     | 4, 4L         | T120F576I4/4L |

## Package Dimensions

| Package       | Pitch | Dimensions (mm) |
|---------------|-------|-----------------|
| 49-ball FBGA  | 0.4   | 3x3             |
| 80-ball WLCSP | 0.4   | 3.6x4.5         |
| 81-ball FBGA  | 0.5   | 5x5             |
| 144-pin LQFP  | 0.5   | 20x20           |

| Package       | Pitch | Dimensions (mm) |
|---------------|-------|-----------------|
| 169-ball FBGA | 0.65  | 9x9             |
| 324-ball FBGA | 0.65  | 12x12           |
| 576-ball FBGA | 0.65  | 16x16           |

| Package       | Pitch | Dimensions (mm) |
|---------------|-------|-----------------|
| 256-ball FBGA | 0.8   | 13x13           |
| 400-ball FBGA | 0.8   | 16x16           |
| 484-ball FBGA | 0.8   | 18x18           |

Trion FPGA — **T20 F256 C 3** — Speed Grade

2, 3, 4, 4L

Package Code

Operating Temperature

C: Commercial ( $T_j = 0^\circ\text{C}$  to  $85^\circ\text{C}$ )

I: Industrial ( $T_j = -40^\circ\text{C}$  to  $100^\circ\text{C}$ )

Q: Automotive ( $T_j = -40^\circ\text{C}$  to  $105^\circ\text{C}$ )