

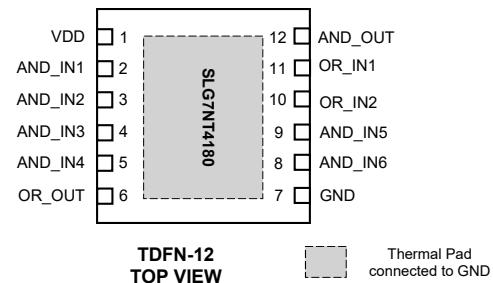
## General Description

Renesas GreenPAK 2 SLG7NT4180 is a low power and small form device. The SoC is housed in a 2.5mm x 2.5mm TDFN package which is optimal for using with small devices.

## Features

- Low Power Consumption
- 3.3V Supply Voltage
- RoHS Compliant / Halogen-Free
- Pb-Free TDFN-12 Package

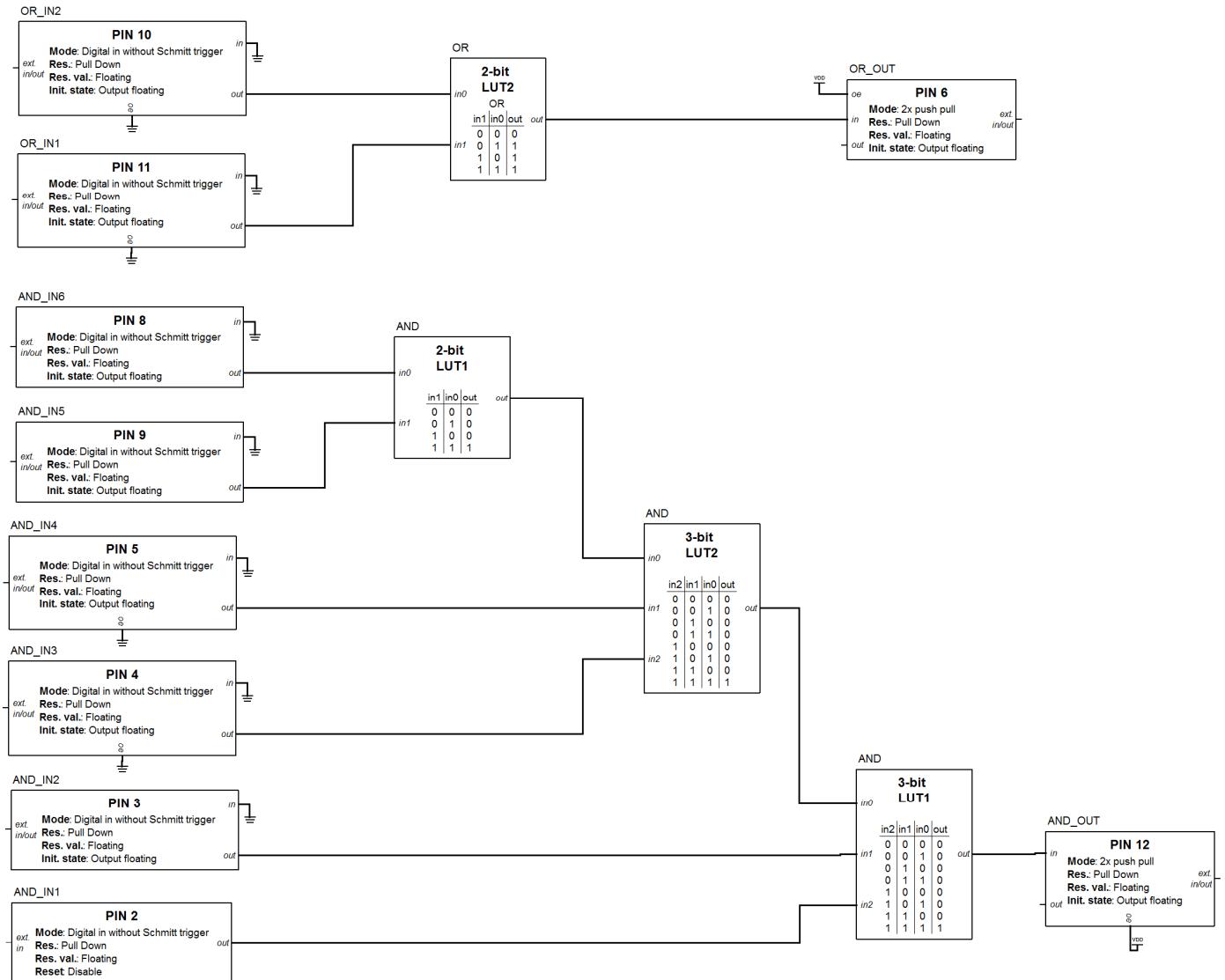
## Pin Configuration



## Output Summary

- 2 Outputs - Push Pull

## Block Diagram



**Pin Configuration**

| Pin #              | Pin Name           | Type   | Pin Description |
|--------------------|--------------------|--------|-----------------|
| 1                  | VDD                | PWR    | Supply Voltage  |
| 2                  | AND_IN1            | Input  | Digital Input   |
| 3                  | AND_IN2            | Input  | Digital Input   |
| 4                  | AND_IN3            | Input  | Digital Input   |
| 5                  | AND_IN4            | Input  | Digital Input   |
| 6                  | OR_OUT             | Output | Push Pull       |
| 7                  | GND                | GND    | Ground          |
| 8                  | AND_IN6            | Input  | Digital Input   |
| 9                  | AND_IN5            | Input  | Digital Input   |
| 10                 | OR_IN0             | Input  | Digital Input   |
| 11                 | OR_IN1             | Input  | Digital Input   |
| 12                 | AND_OUT            | Output | Push Pull       |
| Exposed Bottom Pad | Exposed Bottom Pad | GND    | Ground          |

**Ordering Information**

| Part Number   | Package Type                             |
|---------------|--|
| SLG7NT4180V   | V = TDFN-12                              |
| SLG7NT4180VTR | VTR = TDFN-12 - Tape and Reel (3k units) |

**Absolute Maximum Conditions**

| Parameter                 | Min. | Max. | Unit |
|---------------------------|------|------|------|
| $V_{HIGH}$ to GND         | -0.3 | 7    | V    |
| Voltage at input pins     | -0.3 | 7    | V    |
| Current at input pin      | -1.0 | 1.0  | mA   |
| Storage temperature range | -65  | 150  | °C   |
| Junction temperature      | --   | 150  | °C   |

**Electrical Characteristics**

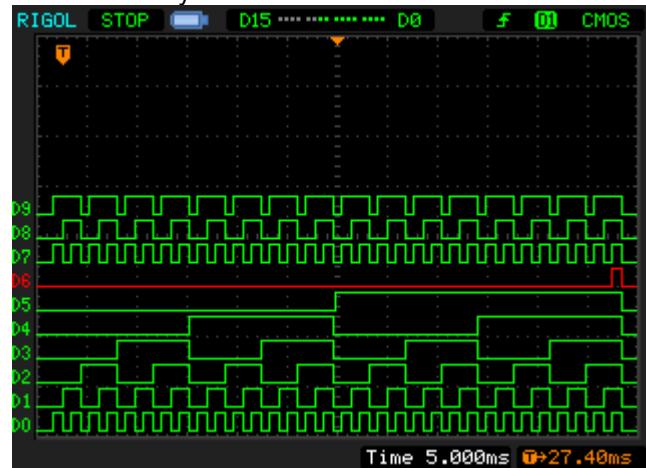
(@ 25°C, unless otherwise stated)

| Symbol   | Parameter  | Condition/Note  | Min. | Typ. | Max. | Unit |
|----------|--|---|------|------|------|------|
| $V_{DD}$ | Supply Voltage   |   | 3.0  | 3.3  | 3.6  | V    |
| $I_Q$    | Quiescent Current  | Static inputs and outputs                                 | --   | 1    | --   | µA   |
| $T_A$    | Operating Temperature                                      |   | -40  | 25   | 85   | °C   |
| $I_L$    | Input Leakage Current                                      | Leakage Current Inputs or outputs in High impedance state | -100 | --   | 100  | nA   |
| $V_{IH}$ | HIGH-Level Input Voltage                                   | Logic Input   | 1.8  | --   | --   | V    |
| $V_{IL}$ | LOW-Level Input Voltage                                    | Logic Input   | --   | --   | 1.10 | V    |
| $V_{OH}$ | HIGH-Level Output Voltage                                  | Push-Pull, $I_{OH} = 3\text{mA}$                          | 2.6  | --   | --   |      |
| $V_{OL}$ | LOW-Level Output Voltage                                   | Push-Pull, $I_{OL} = 3\text{mA}$                          | --   | --   | 0.32 | V    |
| $V_o$    | Maximal Voltage Applied to any PIN in High-Impedance State |   | --   | --   | VDD  | V    |
| $I_{OL}$ | LOW-Level Output Current                                   | Push-Pull, $V_{OL} = 0.4\text{V}$ , 1X Drive              | 3.6  | --   | --   | mA   |
| $T_{SU}$ | Start up Time  | After VDD reaches 1.6V level                              | --   | 7    | --   | ms   |

**SLG7NT4180 Functionality Waveform**

D0 – PIN2 (AND\_IN1)  
D1 – PIN3 (AND\_IN2)  
D2 – PIN4 (AND\_IN3)  
D3 – PIN5 (AND\_IN4)  
D4 – PIN9 (AND\_IN5)  
D5 – PIN8 (AND\_IN6)  
D6 – PIN12 (AND\_OUT)  
D7 – PIN10 (OR\_IN2)  
D8 – PIN11 (OR\_IN1)  
D9 – PIN6 (OR\_OUT)

## 1. Functionality waveform.



**Package Top Marking**

|           |       |     |
|-----------|-------|-----|
| Part Code | XXXXX |     |
| Datecode  | DD    | LLL |
| COO       | C     | R   |
|           | RR    |     |

XXXXX – Part ID Field: identifies the specific device configuration

DD – Date Code Field: Coded date of manufacture

LLL – Lot Code: Designates Lot #

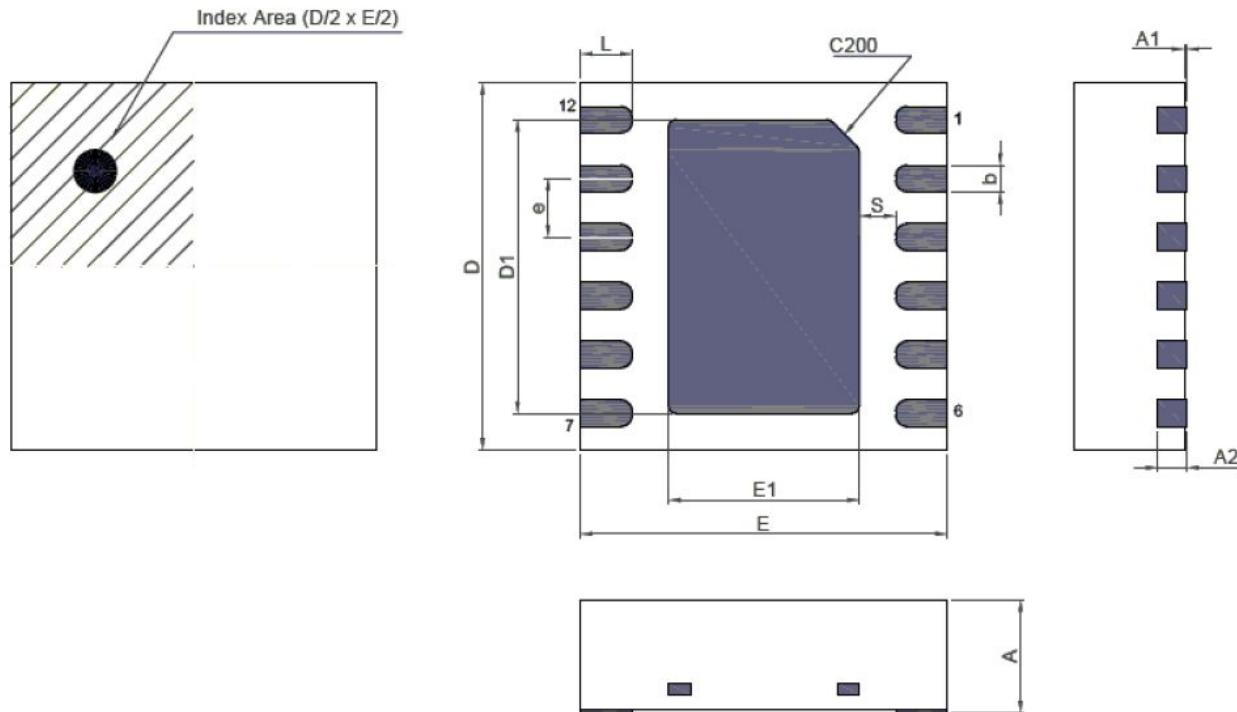
C – COO: Specifies Country of Origin

RR – Revision Code: Device Revision

| Datasheet Revision | Programming Code Number | Part Code | Revision | Date       |
|--------------------|-------------------------|-----------|----------|------------|
| 1.01               | 02                      | 4180V     | AA       | 02/25/2022 |

## Package Drawing and Dimensions

**12 Lead TDFN Package  
JEDEC MO-252, Variation 2525E**



Unit: mm

| Symbol | Min   | Nom. | Max   | Symbol | Min      | Nom. | Max  |
|--------|-------|------|-------|--------|----------|------|------|
| A      | 0.70  | 0.75 | 0.80  | D1     | 1.95     | 2.00 | 2.05 |
| A1     | 0.005 | -    | 0.060 | E1     | 1.25     | 1.30 | 1.35 |
| A2     | 0.15  | 0.20 | 0.25  | e      | 0.40 BSC |      |      |
| b      | 0.13  | 0.18 | 0.23  | L      | 0.30     | 0.35 | 0.40 |
| D      | 2.45  | 2.50 | 2.55  | S      | 0.18     | -    | -    |
| E      | 2.45  | 2.50 | 2.55  |        |          |      |      |

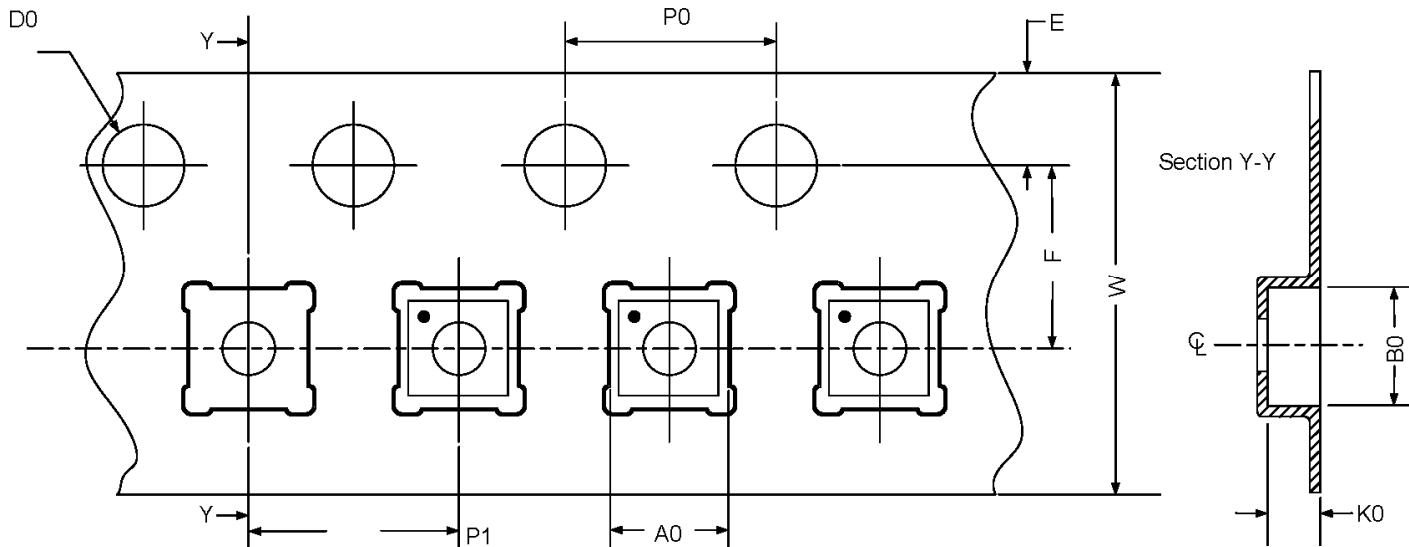
## Tape and Reel Specification

| Package Type                        | # of Pins | Nominal Package Size (mm) | Max Units |         | Reel & Hub Size (mm) | Trailer A |             | Leader B |             | Pocket (mm) |       |
|-------------------------------------|-----------|---------------------------|-----------|---------|----------------------|-----------|-------------|----------|-------------|-------------|-------|
|                                     |           |                           | per reel  | per box |                      | Pockets   | Length (mm) | Pockets  | Length (mm) | Width       | Pitch |
| TDFN 12L<br>2.5x2.5mm<br>0.4P Green | 12        | 2.5x2.5x0.75              | 3000      | 3000    | 178/60               | 42        | 168         | 42       | 168         | 8           | 4     |

## Carrier Tape Drawing and Dimensions

| Package Type                        | Pocket BTM Length (mm) | Pocket BTM Width (mm) | Pocket Depth (mm) | Index Hole Pitch (mm) | Pocket Pitch (mm) | Index Hole Diameter (mm) | Index Hole to Tape Edge (mm) | Index Hole to Pocket Center (mm) | Tape Width (mm) |
|-------------------------------------|------------------------|-----------------------|-------------------|-----------------------|-------------------|--------------------------|------------------------------|----------------------------------|-----------------|
|                                     | A0                     | B0                    | K0                | P0                    | P1                | D0                       | E                            | F                                | W               |
| TDFN 12L<br>2.5x2.5mm<br>0.4P Green | 2.75                   | 2.75                  | 1.05              | 4                     | 4                 | 1.55                     | 1.75                         | 3.5                              | 8               |

Refer to EIA-481 Specifications



## Recommended Reflow Soldering Profile

Please see IPC/JEDEC J-STD-020: latest revision for reflow profile based on package volume of 4.6875 mm<sup>3</sup> (nominal). More information can be found at [www.jedec.org](http://www.jedec.org).

**Datasheet Revision History**

| <b>Date</b> | <b>Version</b> | <b>Change</b>                 |
|-------------|----------------|-------------------------------|
| 04/15/2013  | 0.10           | New design                    |
| 04/16/2013  | 0.11           | OR Gate is added              |
| 05/06/2013  | 0.12           | Updated Device Revision Table |
| 06/05/2013  | 1.0            | Production release            |
| 02/25/2022  | 1.01           | Updated Company name and logo |

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