



Dear Valued Customer

Doc. No.: 2223002
Issue date: March 1, 2023

Akihiro Hikasa
General Manager

High Power Device Division
Power Discrete Headquarters
ROHM Co., Ltd.

Notification of Product/Process Change

This is an announcement of change(s) to the process of the products currently supplied by ROHM Co., Ltd.

We request your acknowledgement of the receipt of this notification within the given period.

Please provide your your reply by October 1, 2023

| | | | |
|--------------------------------|--|----------------|--|
| Title of change | IGBT RGT-Series TO-252 assembly factory addition | | |
| Affected product(s) | Manufacturer part number | | Customer part number |
| | RGT8BM65DTL | | |
| Detailed description of change | Now | | After |
| | Assembly factory : ROHM Korea Corporation | | Assembly factory : ROHM Korea Corporation Sub contract assembly factory (GEM Electronics (Hefei) Co.,Ltd) |
| Reason for change | In order to increase the production capacity and secure a stable product supply. | | |
| Anticipated impact on quality | There is no difference and influence in electrical charecteristics and reliability level. (report in the attached file) | | |
| Identification of change | Changed products can be identified by part number and marking. | | |
| Planned first ship date : | March 1, 2024 | | Sample available schedule : March 1, 2023 |
| Attachments (data, report) | yes | 4M 2223002_4ME | Rlbl 2223002-3_Rlbl |
| Comments | *Samples : Within 3 weeks from request | | |

| | | | |
|---|---|------------|--|
| | | Reply date | |
| Customer reply | <input type="checkbox"/> 1. Approved. <input type="checkbox"/> 2. Accepted with conditions. | | |
| Condition for approval / reason for rejection | | | |
| Comments | | | |
| Customer company name | | | |
| Customer signature | | Department | |
| Customer signature | | Department | |



Electronics for the Future

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Only Accessible by XXXXX and ROHM

No.2223002

IGBT RGT-Series TO-252 assembly factory addition PCN Details

Jan. 2023
High power device div.
Discrete product development dept.

Contents

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- **Overview**
- **Outline of factory**
- **Outline of TO-252 OSAT* Partner**
- Affected product and changing points
- Additional approval OSAT

*OSAT : Outsourced Semiconductor Assembly and Test (Implementation of back-end processes by contractor)

Overview

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【Additional approval OSAT (Outsourced Semiconductor Assembly and Test) 】

● Situation and Purpose

Demand for IGBT (Insulated Gate Bipolar Transistor) is expected to increase due to the increase of demand for power devices.

In order to respond to the recent rapid increase in demand for power devices, ROHM will utilize the capacity of **our OSAT partner**.

This also act as our Business Continuity Planning (BCP) to mitigate the risks in the event of a disaster.

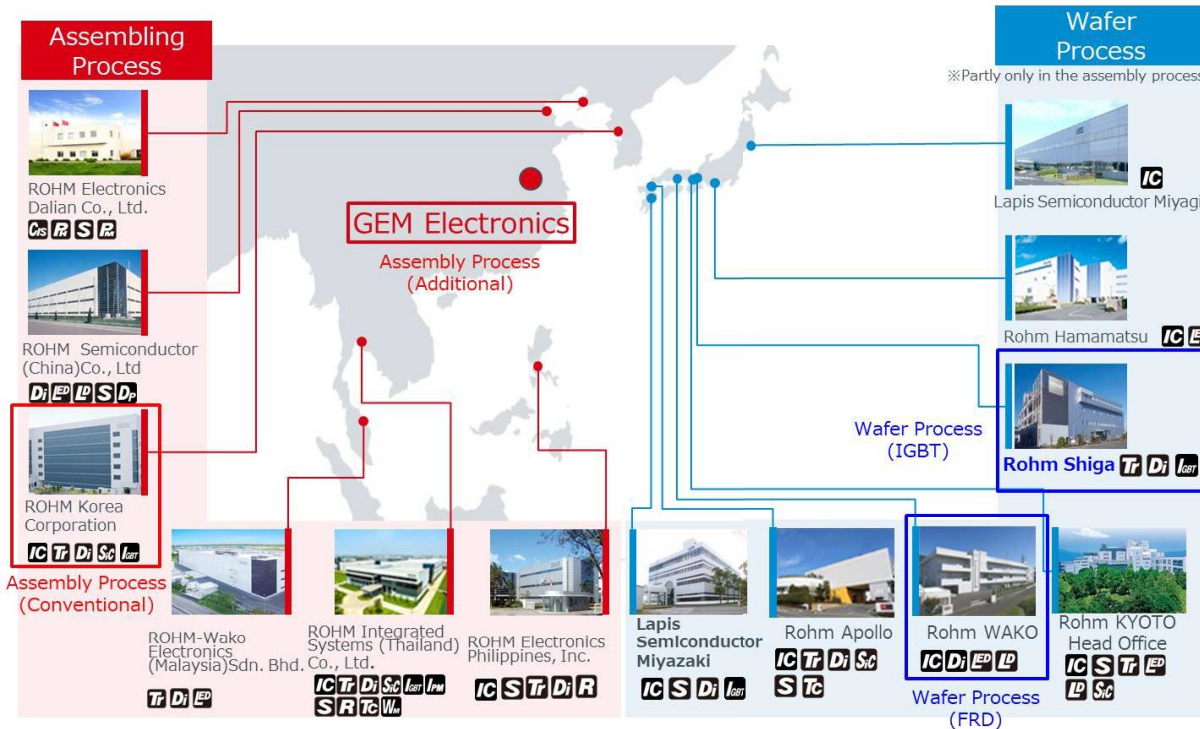
Outline of factory

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● Production base



Outline of TO-252 OSAT Partner

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■ Overview

| Category | Content | |
|----------------------------|---|---------|
| Headquarters | GEM Electronics Co., Ltd. (Taipei, Taiwan) | MAP |
| TO-252 Production Location | GEM Electronics Co., Ltd. (Hefei Factory/Anhui, China) | |
| Capacity | 4000Mpcs/year | |
| Technology | <ul style="list-style-type: none"> •Advanced Power Packages •Multi Chip Modules •Leaded : J-lead Wide-body •Leadless : PQFN5x6, PQFN3.3x3.3 •Bond-wireless : Flip chip, Cu clip, Al ribbon | |
| Products | <ul style="list-style-type: none"> •Computer, Smartphone, Tablet PC •LEC/Plasma Display •Electrical Appliances •Industrial Machinery, Solar Applications, Wind-power Generators •Hybrid EV | |
| Quality Certificates | ISO14001:2015, ISO 9001:2008, IATF 16949:2016 | |
| Number of Employees | Approximately 1600 (470 engineers) | |
| Hefei Factory Location | 77 Jinxiu Ave, Shushan Qu, Hefei Shi, Anhui Sheng, China | |

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Affected product and changing points

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ROHM Korea Corporation (ROHM Korea will be used from here on)
 GEM Electronics (Hefei) Co., Ltd (GEM will be used from here on)

| Product | Assembly process |
|---------------------------|---|
| Conventional product | ROHM Korea (Internal manufacturing site) |
| Additional product | GEM (OSAT) |

| ROHM Korea | GEM |
|-------------|---------------|
| RGT8BM65DTL | RGT8BM65DGTL1 |

(*)The object of this time PCN is above RGT8BM65DTL only.

< Conventional product > → < Additional product >
 product name : RGT8BM65D TL product name : RGT8BM65D G TL1

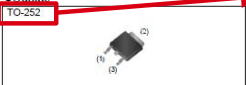
Verification of Datasheet Changes

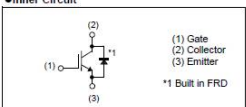
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ROHM RGT8BM65D
650V 8A Field Stop Trench IGBT Datasheet

| | |
|--------------------------|-------|
| V_{CES} | 650V |
| $I_C(100^\circ\text{C})$ | 8A |
| $V_{CE(sat)}$ (Typ.) | 1.65V |
| P_D | 62W |

●Outline
TO-252  **TO-252GE**

●Inner Circuit
 (1) Gate (2) Collector (3) Emitter *1 Built in FRD

●Packaging Specifications

| | |
|-----------------|-----------------------------------|
| Packaging | Taping |
| Reel Size (mm) | 330 |
| Tape Width (mm) | 16 |
| Type | Basic Ordering Unit (pcs) 2,500 |
| | Packing code TL TL1 |
| | Marking RGT8BM65D |

●Absolute Maximum Ratings (at $T_C = 25^\circ\text{C}$ unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|--------------------------------|---------------------------|-------------|------------------|
| Collector - Emitter Voltage | V_{CES} | 650 | V |
| Gate - Emitter Voltage | V_{GES} | ± 30 | V |
| Collector Current | $T_C = 25^\circ\text{C}$ | I_C | 12 A |
| | $T_C = 100^\circ\text{C}$ | I_C | 8 A |
| Pulsed Collector Current | I_{CP}^{-1} | 12 | A |
| Diode Forward Current | $T_C = 25^\circ\text{C}$ | I_F | 7 A |
| | $T_C = 100^\circ\text{C}$ | I_F | 4 A |
| Diode Pulsed Forward Current | I_{FP}^{-1} | 12 | A |
| Power Dissipation | $T_C = 25^\circ\text{C}$ | P_D | 62 W |
| | $T_C = 100^\circ\text{C}$ | P_D | 31 W |
| Operating Junction Temperature | T_J | -40 to +175 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | -55 to +175 | $^\circ\text{C}$ |

*1 Pulse width limited by t_{pmax} .

■ No changes in the electrical specification.

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Assembly Process changing point (4M comparison)

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ROHM Korea Corporation
GEM Electronics (Hefei) Co., Ltd

| | | Target | Assembly Factory | | Concerns | Verification | Judgement |
|--------|----------|-----------------------------|----------------------------|------------------------|--------------------|---|-----------|
| | | | Conventional | Additional | | | |
| | | | ROHM Korea | GEM | | | |
| 4 M | Man | Operator | License system | License system | Operational skills | No difference in learning level and skill | OK |
| | Machine | Production equipment | Equipment owned by ROHM | Equipment owned by GEM | product quality | Process changing point verification | OK |
| | Material | Process material | Material used by ROHM | Material used by GEM | product quality | | |
| | | Wafer | *Wafer provided by ROHM | | | | |
| Method | Method | Operation standards of ROHM | Operation standards of GEM | product quality | | | |

TO-252 Package Outline and Marking comparison

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ROHM Korea

Type Name: RGT8BM
 65D

Dot Marking

Production Year and Week

Serial Number

GEM

Type Name: RGT8BM
 65D

Y: Production Year
 WW: Production Week

XXX: Serial Number

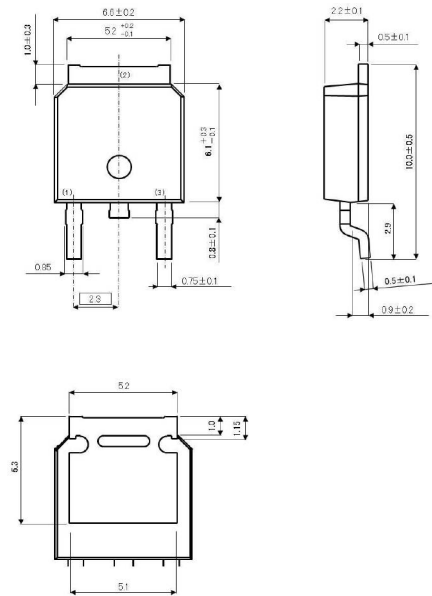
TO-252 External dimensions comparison

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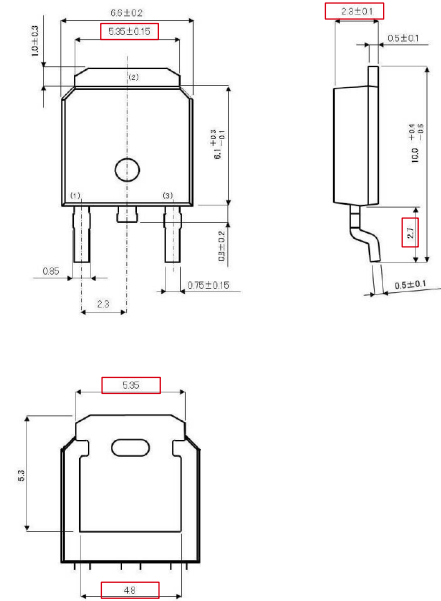
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ROHM Korea



GEM



TO-252 Material for Assembly Comparison

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■ Material

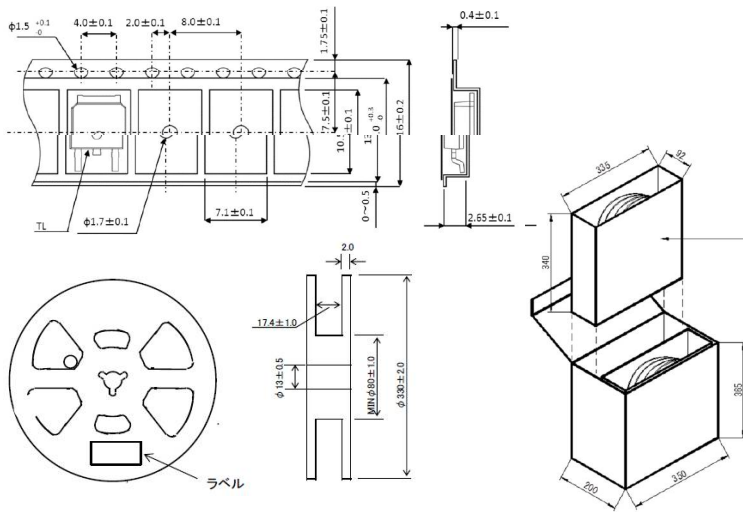
| Category | ROHM Korea | | GEM | |
|------------------|---------------|------------|---|------------|
| | Model (Specs) | Supplier | Model (Specs) | Supplier |
| Frame | Cu Alloy | Supplier A | Cu Alloy (Only the shape is different) | Supplier B |
| Solder | Pb-Sn-Ag | Supplier C | Pb-Sn-Ag (Same specs) | Supplier C |
| Wire | Al | Supplier D | Al (Same specs) | Supplier E |
| Resin | Epoxy Resin | Supplier F | Epoxy Resin (Same material group) | Supplier F |
| Terminal Plating | Sn100% | - | Sn100% (Same Specs) | - |

TO-252 Inner Box Outer Box Taping comparison

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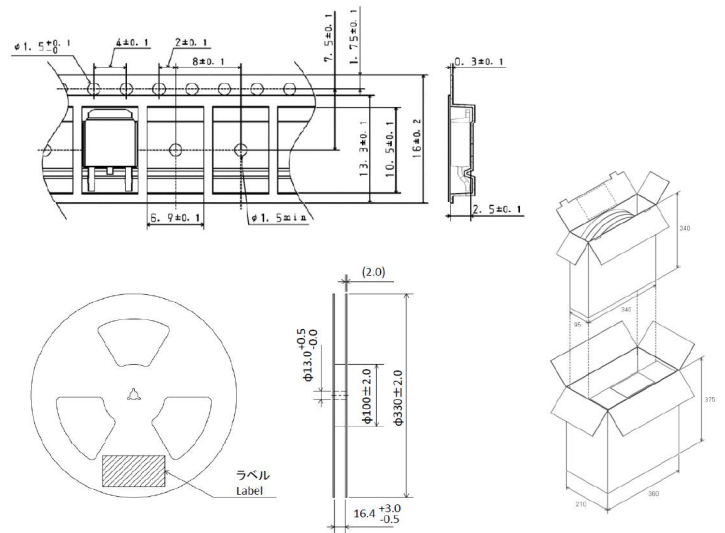
TO-252 Korea Code: TL



Outer box: 20K pcs (2500 pcs per reel × 8 reels)
Carrier tape material: polystyrene

TO-252 GEM Code: TL1

[Unit: mm]



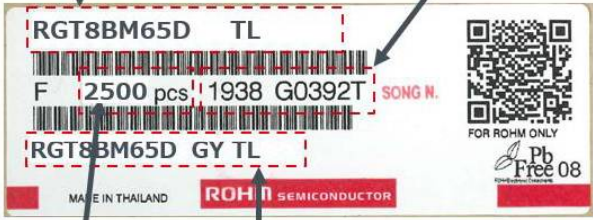

Outer box: 20K pcs (2500 pcs per reel × 8 reels)
Carrier tape material: polystyrene

TO-252 Label specifications comparison

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Label Specifications

| TO-252 (ROHM Korea) | TO-252GE (GEM) |
|--|---|
| <p>Part Number</p> <p>Lot Number</p>  <p>Quantity</p> <p>ROHM Internal Part Number</p> | <p>Part Number</p> <p>Lot Number</p>  <p>Quantity</p> <p>ROHM Internal Part Number</p> |

The image shows two side-by-side labels for TO-252 and TO-252GE components. The TO-252 (ROHM Korea) label (left) contains the following information: Part Number 'RGT8BM65D TL', Lot Number '1938 G0392T', Quantity '2500 pcs', and ROHM Internal Part Number '1938 G0392T'. It also features a QR code, 'SONG N.', 'Pb Free 08', and 'MADE IN THAILAND'. The TO-252GE (GEM) label (right) contains: Part Number 'RGT8BM65D G TL1', Lot Number '2214 M002FG', Quantity '2,500 pcs', and ROHM Internal Part Number '2206002'. It also features a QR code, 'ACC QC01', 'Pb Free', and 'MADE IN CHINA'. Arrows point from text labels to the corresponding fields on each label.



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ROHM Co.,Ltd. © ROHM Co., Ltd.

| Public (External) PN | Replacement |
|----------------------|---------------|
| RGT8BM65DTL | RGT8BM65DGTL1 |