

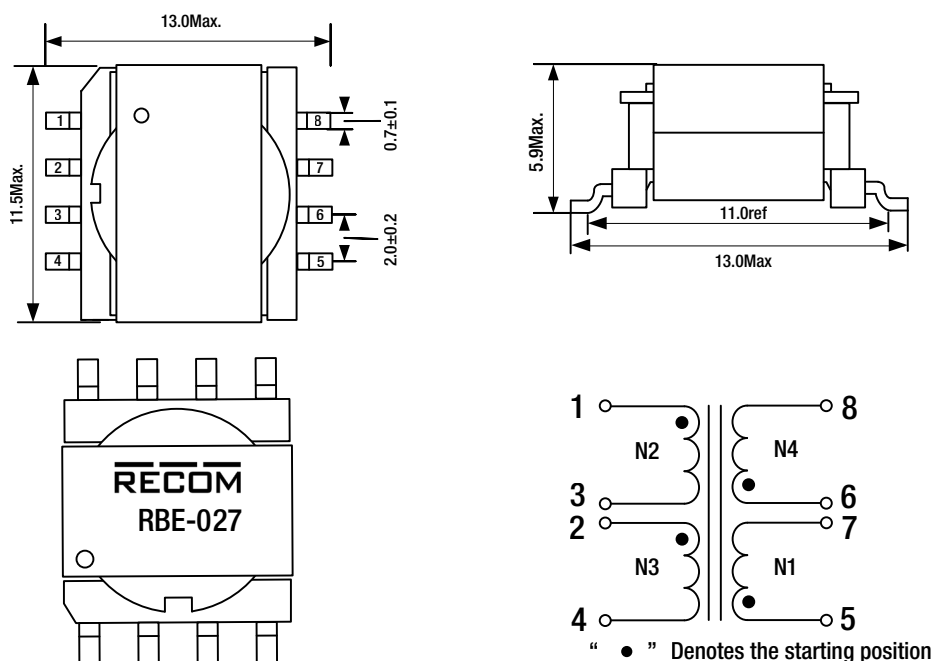
# RBE-027 ◇ Flyback Transformer

6W ◇ SMD ◇ 1.5kVDC Isolation

## FEATURES

- Small-sized isolation transformer
- SMD surface mount installation
- Isolation voltage: 1500VDC/1minute
- Operating temperature: -40~125°C
- Maximum product dimensions: 13.0mm × 11.5mm × 5.9mm

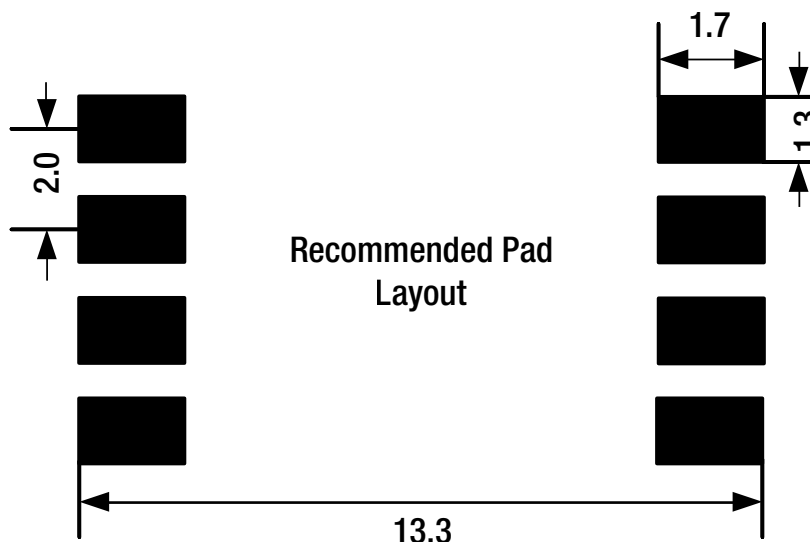
## DIMENSIONS AND SCHEMATIC DIAGRAM [mm]



## PRODUCT MARKING

|         |               |
|---------|---------------|
| Pin1    | ○             |
| Marking | Company Logo  |
|         | Product Model |

## RECOMMENDED LAND PATTERN [mm]



**RBE-027** ♦ Flyback Transformer

6W ♦ SMD ♦ 1.5kVDC Isolation

**BASIC CHARACTERISTIC** (measured @ TAMB= 25°C, nominal Input and full load after warm-up time unless otherwise stated)

| Properties             |                  | Test Conditions   | Value       | Unit |
|------------------------|------------------|-------------------|-------------|------|
| Inductance             | L                | 1-3               | 48 typ.     | μH   |
| Turns Ratio            | n                | N1:N2:N3:N4       | 1:3.6:2.4:1 |      |
| DC Resistance 1        | R <sub>DC1</sub> | 1-3, N2           | 0.32 max.   | Ω    |
| DC Resistance 2        | R <sub>DC2</sub> | 2-4, N3           | 0.45 max.   | Ω    |
| DC Resistance 3        | R <sub>DC3</sub> | 5-7, N1           | 0.06 max.   | Ω    |
| DC Resistance 4        | R <sub>DC4</sub> | 6-8, N4           | 0.08 max.   | Ω    |
| Leakage Inductance     | L <sub>s</sub>   | 1-3               | 0.8 max.    | μH   |
| Isolation Test Voltage | V <sub>T</sub>   | N2,3:N1,4/60s/1mA | 1500        | VDC  |

**GENERAL INFORMATION**

|                                                    |              |
|----------------------------------------------------|--------------|
| Operating Temperature (including temperature rise) | -40~125°C    |
| Storage Temperature                                | -40~125°C    |
| Storage Conditions (in original packaging)         | <40°C/<75%RH |
| Moisture Sensitivity Level (MSL)                   | 1            |
| Insulation Grade                                   | Functional   |

**MATERIAL CERTIFICATION**

| ITEM     | UL NO   |
|----------|---------|
| 1 Bobbin | E41429  |
| 2 Wire   | E253843 |
| 3 Tape   | E165111 |
| 4 Glue   | E218090 |

**ENVIRONMENTAL COMPLIANCE**

|                |                                     |
|----------------|-------------------------------------|
| RoHS Approval  | Compliant [2011/65/EU&2015/863]     |
| REACH Approval | Conform or declared [(EC)1907/2006] |
| Halogen Free   | Conform [EN 14582:2016]             |

**TYPICAL APPLICATION**

| Parameter           |                     | Value | Unit |
|---------------------|---------------------|-------|------|
| Input Voltage       | V <sub>IN</sub>     | 18-75 | VDC  |
| Output Voltage 1    | V <sub>OUT1</sub>   | 5     | VDC  |
| Output Current 1    | I <sub>OUT1</sub>   | 1200  | mA   |
| Switching Frequency | f <sub>switch</sub> | 330   | kHz  |

Input: N2

Output 1: N1/N4

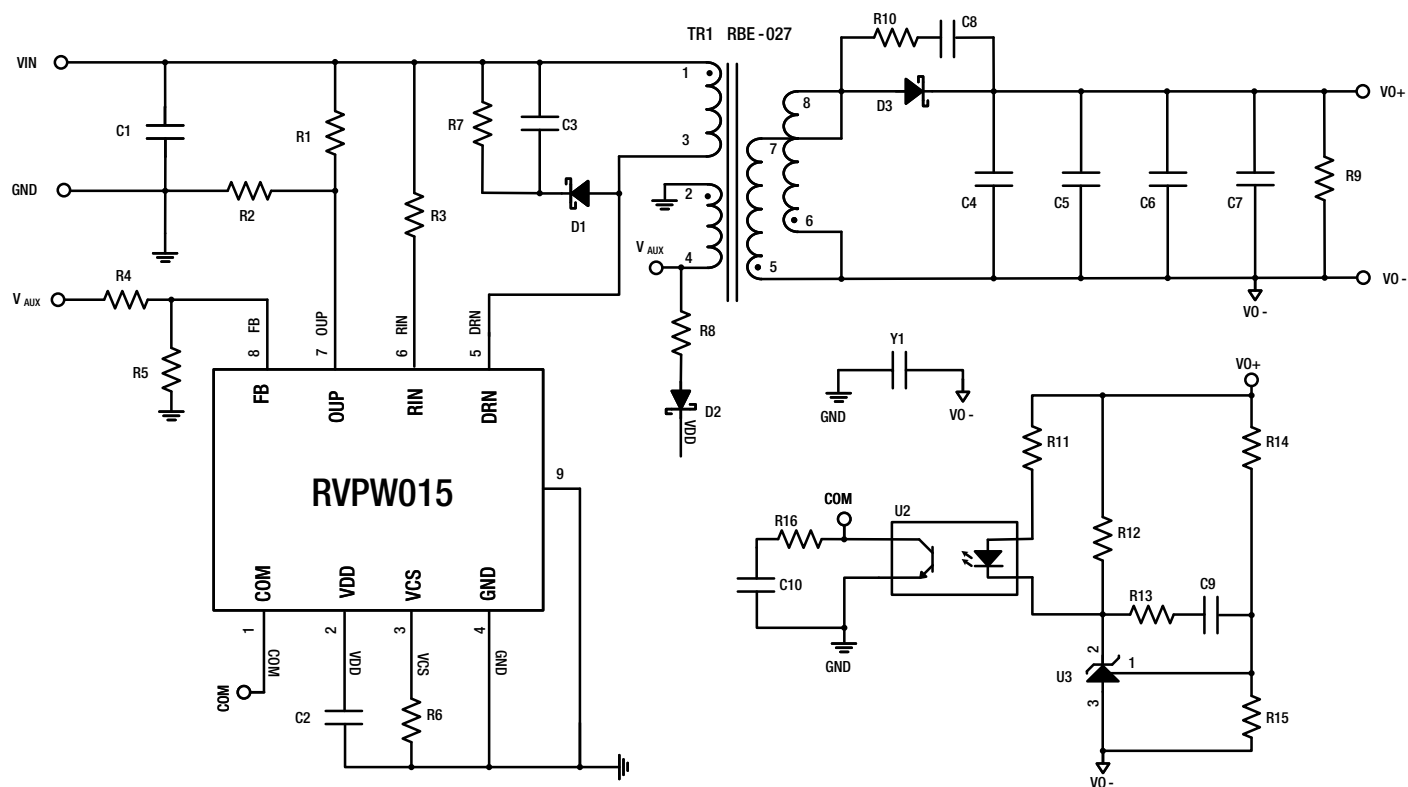
Auxiliary: N3

Table and graph show a typical application. Values may vary by application.

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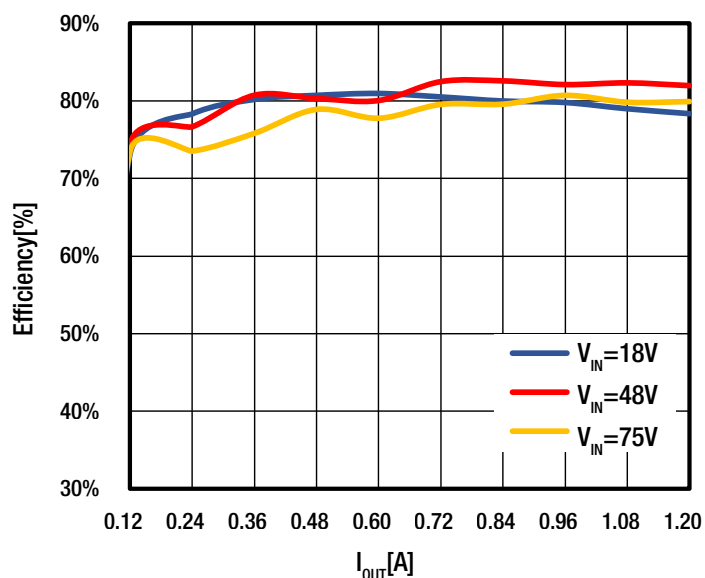
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## REFERENCE CIRCUIT DIAGRAM

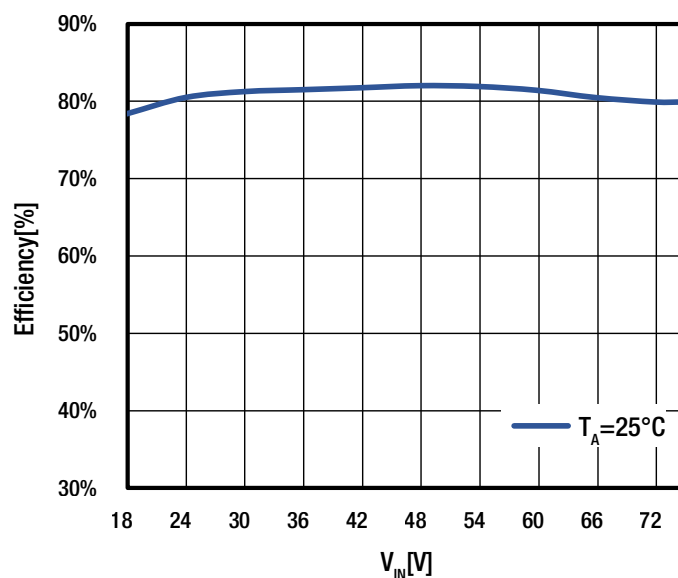


Typical Curve:

Typical Efficiency vs. Output Current



Typical Efficiency vs. Input Voltage

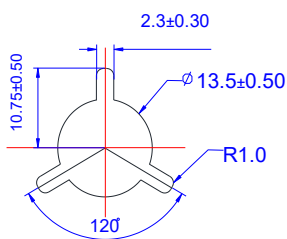
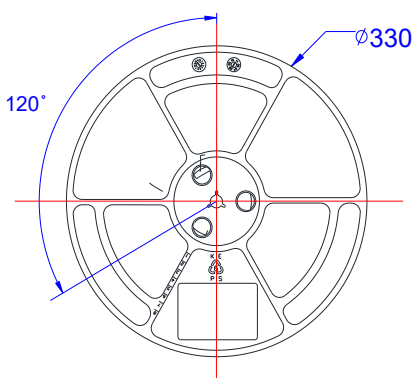
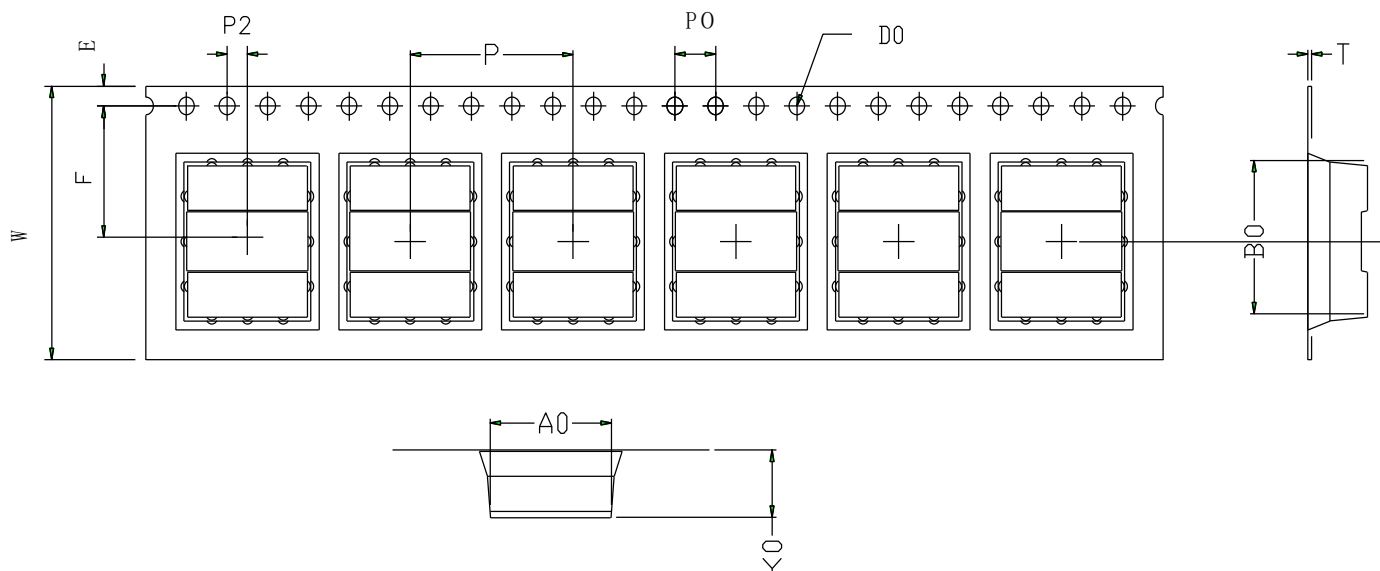


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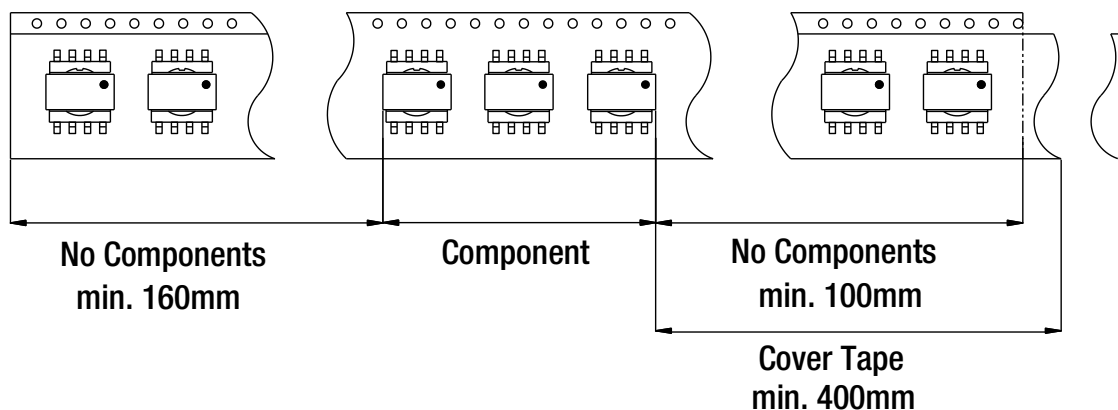
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## PACKAGING SPECIFICATION - TAPE & REEL [mm]

| ITRM | W              | A0             | B0             | K0             | K1             | P              | F              | E              | D0             | D1             | P0             | P2             | T              |
|------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| DIM  | 24.00          | 11.50          | 13.10          | 6.10           | --             | 16.00          | 11.50          | 1.75           | 1.50           | --             | 4.00           | 2.00           | 0.40           |
| TOLE | +0.30<br>-0.30 | +0.15<br>-0.15 | +0.15<br>-0.15 | +0.10<br>-0.10 | +0.10<br>-0.10 | +0.10<br>-0.10 | +0.10<br>-0.10 | +0.10<br>-0.10 | +0.10<br>-0.00 | +0.10<br>-0.00 | +0.10<br>-0.10 | +0.15<br>-0.15 | +0.05<br>-0.05 |



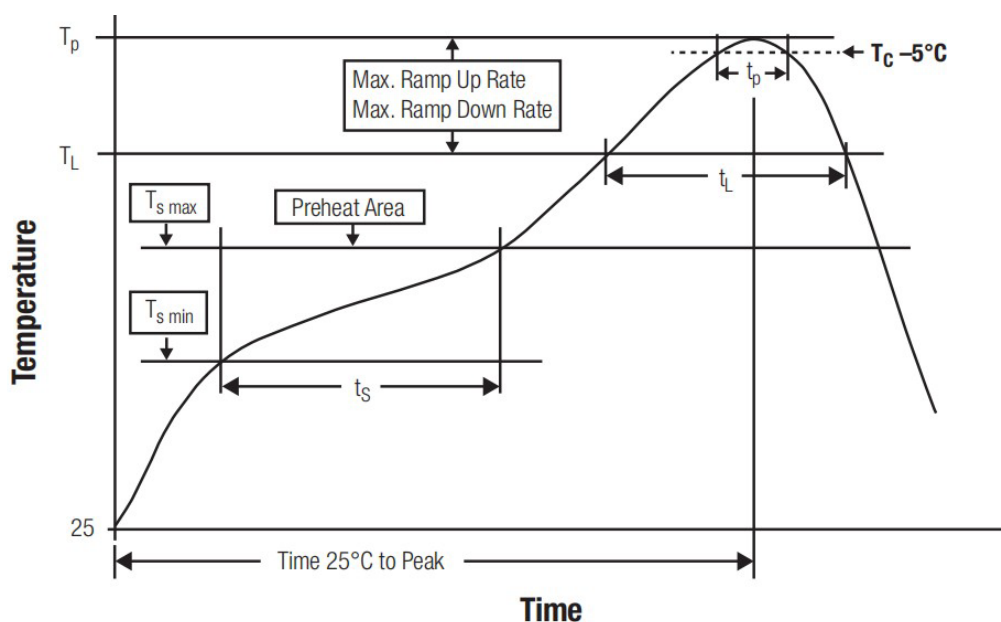
|              |      |      |      |      |      |
|--------------|------|------|------|------|------|
|              |      | ✓    |      |      |      |
| SPEC         | 16   | 24   | 32   | 44   | 56   |
| DIM A" ± 0.5 | 16.5 | 24.5 | 32.5 | 44.5 | 56.5 |
| DIM B" ± 0.3 | 2.10 | 2.10 | 2.10 | 2.10 | 2.10 |
| DIM C" ± 0.5 | 100  | 100  | 100  | 100  | 100  |



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## REFLOW SOLDERING



| Profile Feature                                      |              | Value                                           |
|------------------------------------------------------|--------------|-------------------------------------------------|
| Preheat Temperature Min                              | $T_{s \min}$ | 150°C                                           |
| Preheat Temperature Max                              | $T_{s \max}$ | 200°C                                           |
| Preheat Time $t_s$ from $T_{s \min}$ to $T_{s \max}$ | $t_s$        | 100 seconds                                     |
| Ramp-up Rate ( $T_L$ to $T_P$ )                      |              | 3°C/second max.                                 |
| Liquidous Temperature                                | $T_L$        | 217°C                                           |
| Time $t_L$ maintained above $T_L$                    | $t_L$        | 100 seconds                                     |
| Peak package body temperature                        | $T_P$        | $T_P \leq T_C$ , see Table below                |
| Time within 5°C of actual peak temperature           | $t_p$        | 30 seconds                                      |
| Ramp-down Rate ( $T_P$ to $T_L$ )                    |              | 6°C/second max.                                 |
| Time 25°C to peak temperature                        |              | 5 minutes max.                                  |
| Reflow soldering temperature                         |              | Peak Temperature $\leq 245^\circ\text{C}$ (10s) |
| Reflow Soldering Cycles                              |              | Recommended $\leq 2$ Cycles                     |

Refer to IPC/JEDEC J-STD-020F

## PACKAGE CLASSIFICATION REFLOW TEMPERATURE ( $T_C$ )

| Properties                                           | Volume mm <sup>3</sup> <350 | Volume mm <sup>3</sup> 350-2000 | Volume mm <sup>3</sup> >2000 |
|------------------------------------------------------|-----------------------------|---------------------------------|------------------------------|
| PB-Free Assembly   Package Thickness < 1.6 mm        | 260°C                       | 260°C                           | 260°C                        |
| PB-Free Assembly   Package Thickness 1.6 mm - 2.5 mm | 260°C                       | 250°C                           | 245°C                        |
| PB-Free Assembly   Package Thickness > 2.5 mm        | 250°C                       | 245°C                           | 245°C                        |

Refer to IPC/JEDEC J-STD-020F

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**ORDER INFORMATION**

| Order Code      | Marking Code* | Weight (g/pcs) | Package Type         | Quantity (pcs/Reel) |
|-----------------|---------------|----------------|----------------------|---------------------|
| RBE-027-UH5S-R  | RBE-027       | 1.4g           | Tape & Reel          | 500pcs              |
| RBE-027-UH5S-CT | RBE-027       | 1.4g           | Moisture Barrier Bag | 5pcs                |

\*Marking Code

RBE-027 — Product Code

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