

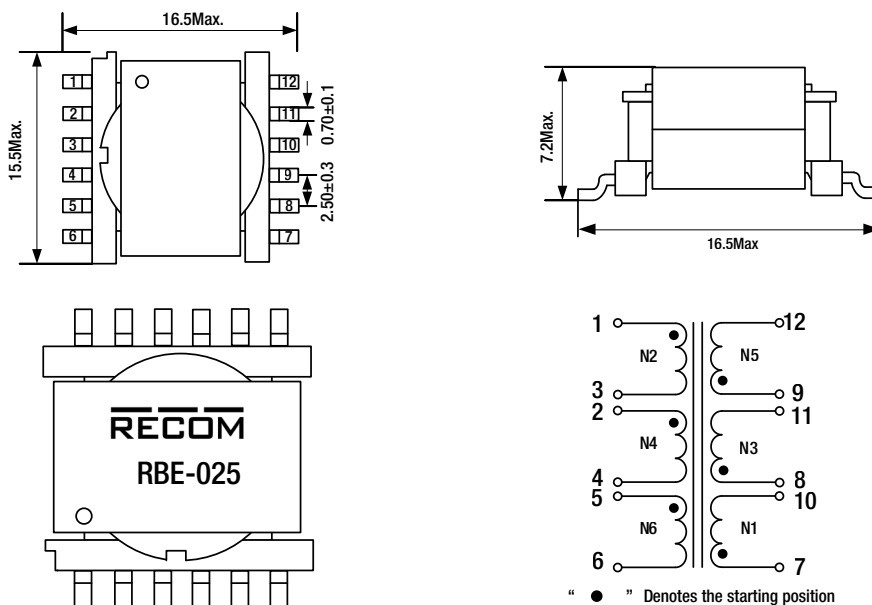
# RBE-025 ◊ Flyback Transformer

15W ◊ 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: 16.5mm × 15.5mm × 7.2mm

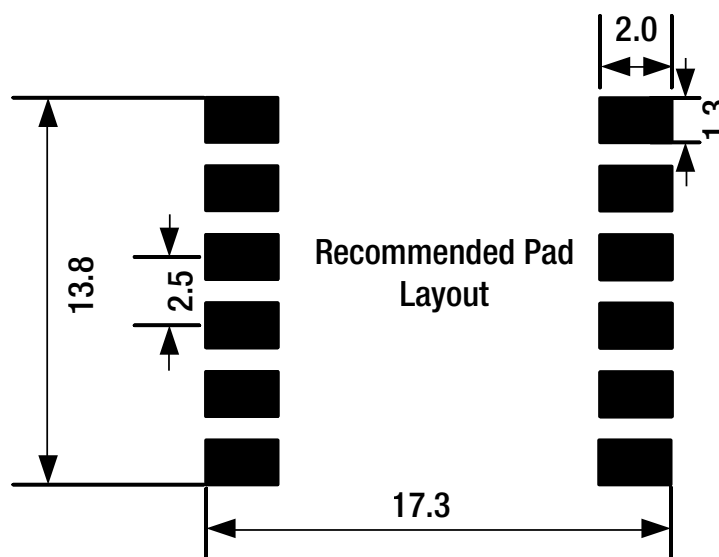
## DIMENSIONS AND SCHEMATIC DIAGRAM [mm]



## PRODUCT MARKING

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

## RECOMMENDED LAND PATTERN [mm]



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**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                   | 6.86 typ.            | μH   |
| Turns Ratio              | n                | N1:N2:N3:N4:N5:N6     | 1:1.75:1:1.75:1:2.25 |      |
| DC Resistance 1          | R <sub>DC1</sub> | 1-3, N2               | 0.060 max.           | Ω    |
| DC Resistance 2          | R <sub>DC2</sub> | 2-4, N4               | 0.075 max.           | Ω    |
| DC Resistance 3          | R <sub>DC3</sub> | 5-6, N6               | 0.52 max.            | Ω    |
| DC Resistance 4          | R <sub>DC4</sub> | 7-10, N1              | 0.035 max.           | Ω    |
| DC Resistance 5          | R <sub>DC5</sub> | 8-11, N3              | 0.040 max.           | Ω    |
| DC Resistance 6          | R <sub>DC6</sub> | 9-12, N5              | 0.045 max.           | Ω    |
| Interwinding Capacitance | C <sub>ww</sub>  | 1-8                   | 30 max.              | pF   |
| Leakage Inductance       | L <sub>s</sub>   | 1-3                   | 0.5 max.             | μH   |
| Isolation Test Voltage   | V <sub>T</sub>   | N2,4,6:N1,3,5/60s/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>     | 9-36  | VDC  |
| Output Voltage 1    | V <sub>OUT1</sub>   | 5     | VDC  |
| Output Current 1    | I <sub>OUT1</sub>   | 3000  | mA   |
| Switching Frequency | f <sub>switch</sub> | 330   | kHz  |

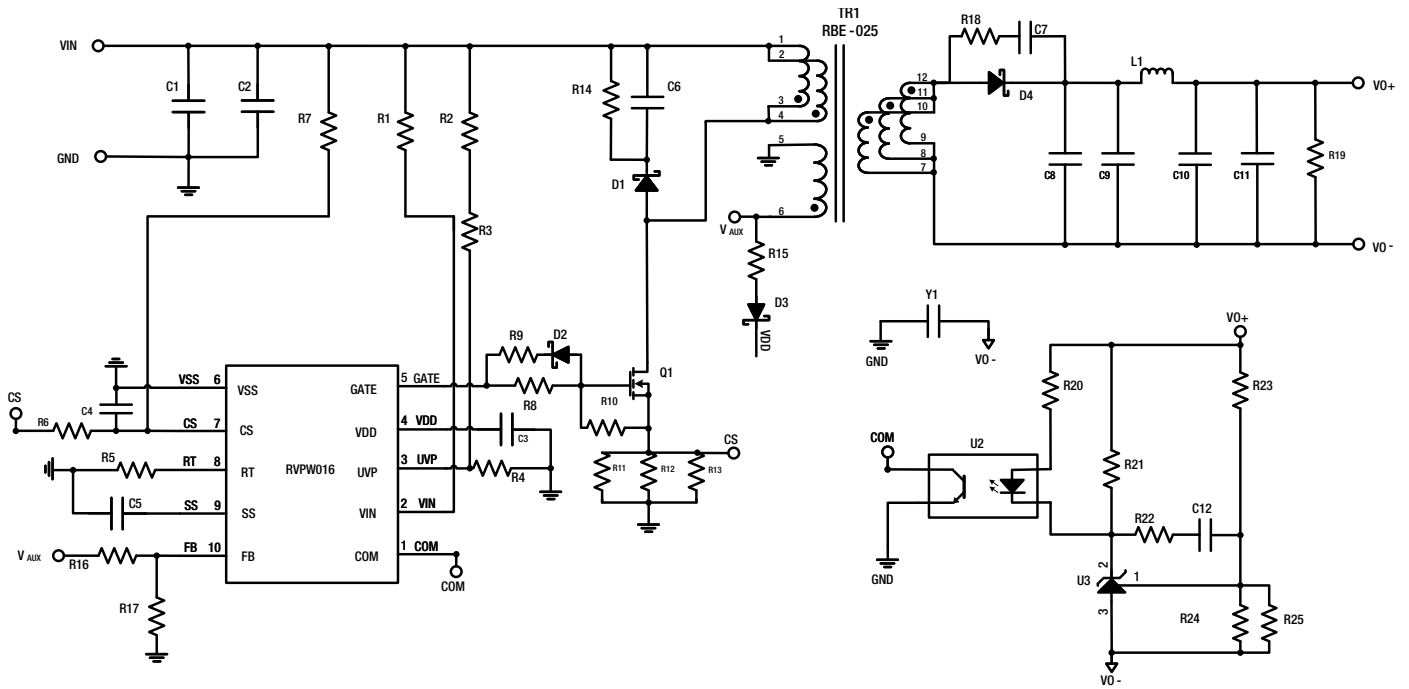
Input: N2/N4

Output 1: N1/N3/N5

Auxiliary: N6

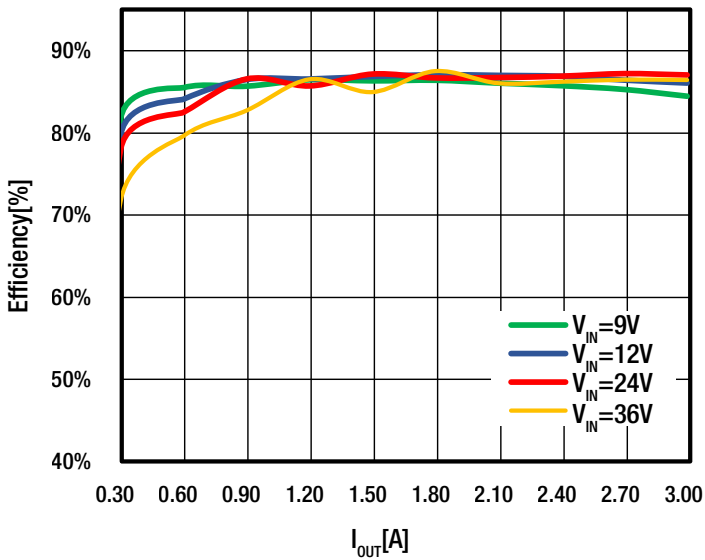
Table and graph show a typical application. Values may vary by application.

### REFERENCE CIRCUIT DIAGRAM

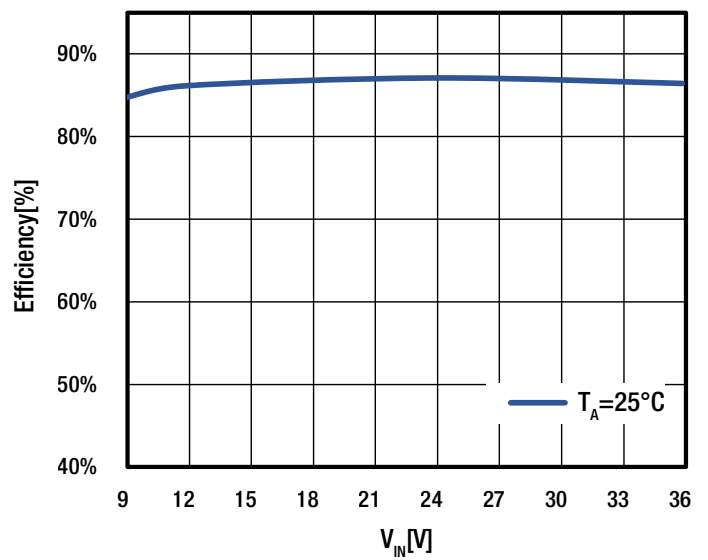


Typical Curve:

Typical Efficiency vs. Output Current



Typical Efficiency vs. Input Voltage

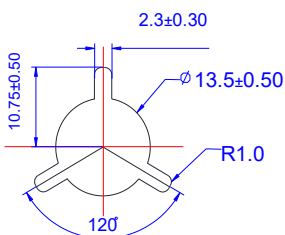
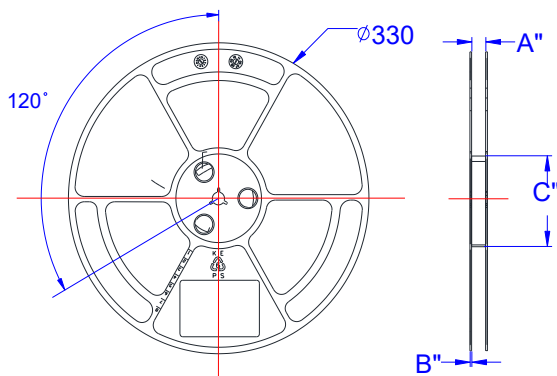
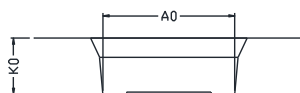
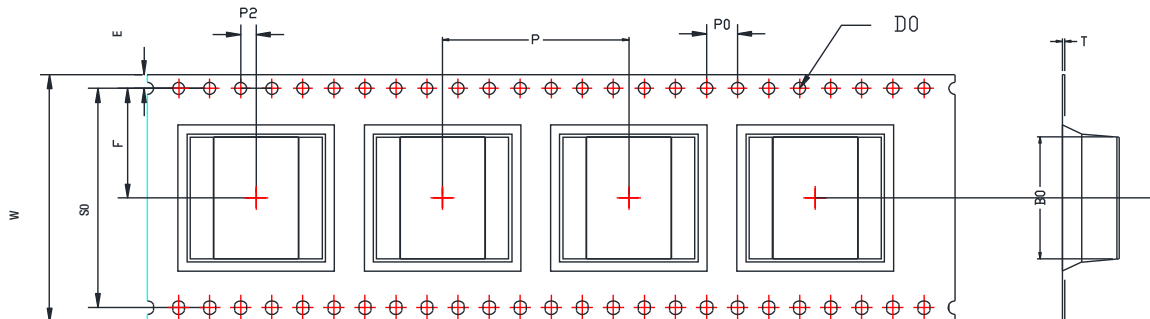


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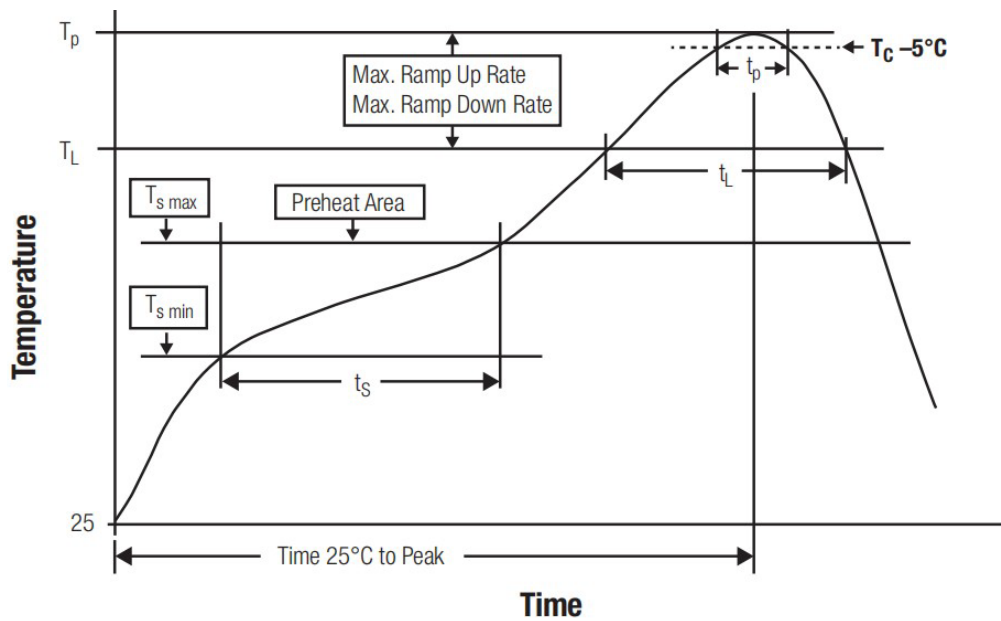
## PACKAGING SPECIFICATION - TAPE & REEL [mm]

| ITRM | W     | A0    | B0    | K0    | K1    | P     | F     | E     | S0    | D0    | P0    | P2    | T     |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| DIM  | 32.00 | --    | --    | 7.40  | --    | 24.00 | 14.20 | 1.75  | 28.40 | 1.50  | 4.00  | 2.00  | 0.40  |
| TOLE | +0.30 | +0.15 | +0.15 | +0.10 | +0.10 | +0.10 | +0.10 | +0.10 | +0.10 | +0.10 | +0.10 | +0.15 | +0.05 |
|      | -0.30 | -0.15 | -0.15 | -0.10 | -0.10 | -0.10 | -0.10 | -0.10 | -0.00 | -0.00 | -0.10 | -0.15 | -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  |

### REFLOW SOLDERING



| Profile Feature  |                     | Value   |
|--|---------------------|---|
| Preheat Temperature Min  | $T_{s \text{ min}}$ | 150°C   |
| Preheat Temperature Max  | $T_{s \text{ max}}$ | 200°C   |
| Preheat Time $t_s$ from $T_{s \text{ min}}$ to $T_{s \text{ max}}$ | $t_s$               | 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-025-UB5S-R | RBE-025       | 3.0g           | Tape & Reel  | 300pcs              |

\*Marking Code

RBE-025—— Product Code

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