

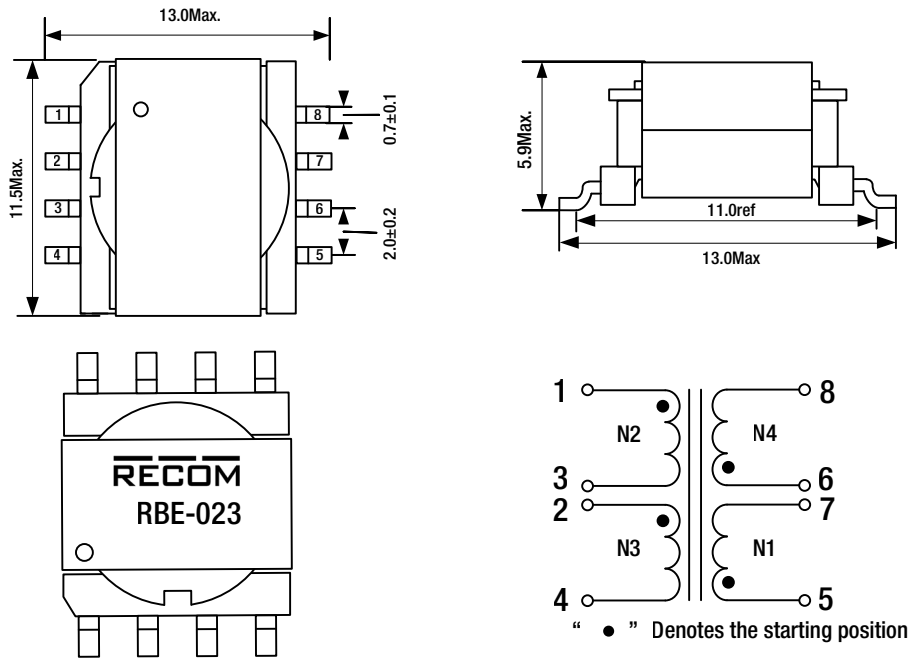
# RBE-023 ◊ Flyback Transformer

10W ◊ 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

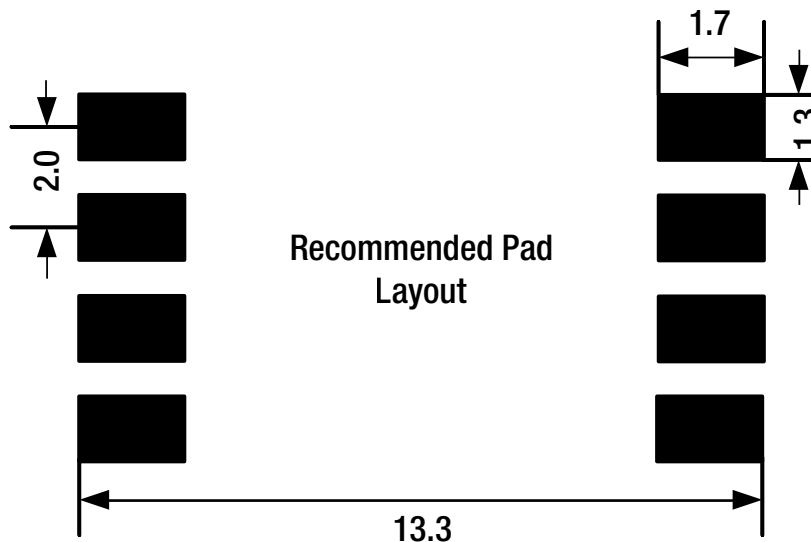
## DIMENSIONS AND SCHEMATIC DIAGRAM [mm]



## PRODUCT MARKING

Pin1	○
Marking	Company Logo
	Product Model

## RECOMMENDED LAND PATTERN [mm]



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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	11 typ.	μH
Turns Ratio	n	N1:N2:N3:N4	1:1.67:1:1	
DC Resistance 1	R <sub>DC1</sub>	1-3, N2	0.09 max.	Ω
DC Resistance 2	R <sub>DC2</sub>	2-4, N3	0.33 max.	Ω
DC Resistance 3	R <sub>DC3</sub>	5-7, N1	0.065 max.	Ω
DC Resistance 4	R <sub>DC4</sub>	6-8, N4	0.083 max.	Ω
Interwinding Capacitance	C <sub>vw</sub>	1-8	30 max.	pF
Leakage Inductance	L <sub>s</sub>	1-3	0.38 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>	18-36	VDC
Output Voltage 1	V <sub>OUT1</sub>	5	VDC
Output Current 1	I <sub>OUT1</sub>	2000	mA
Switching Frequency	f <sub>switch</sub>	330	kHz

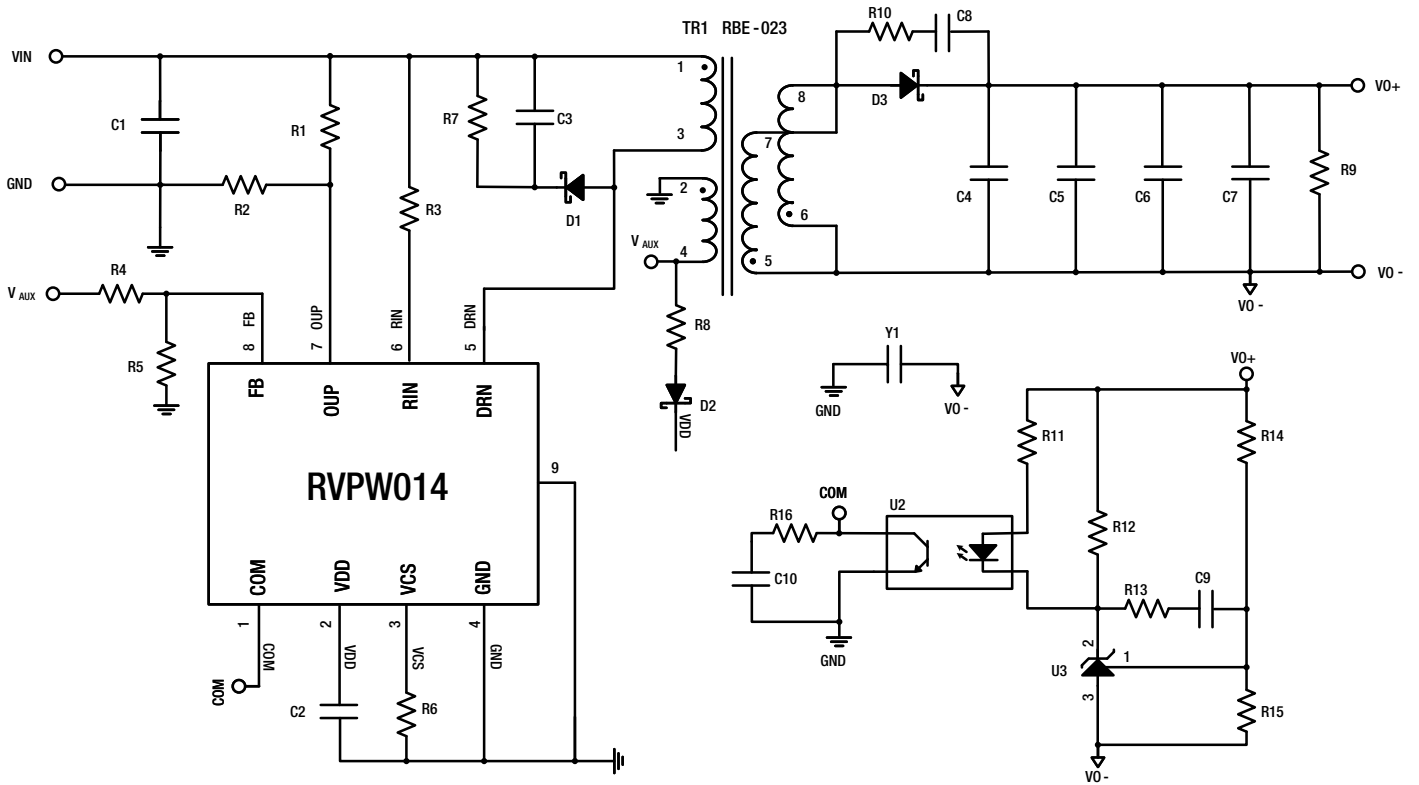
Input: N2

Output 1: N1/N4

Auxiliary: N3

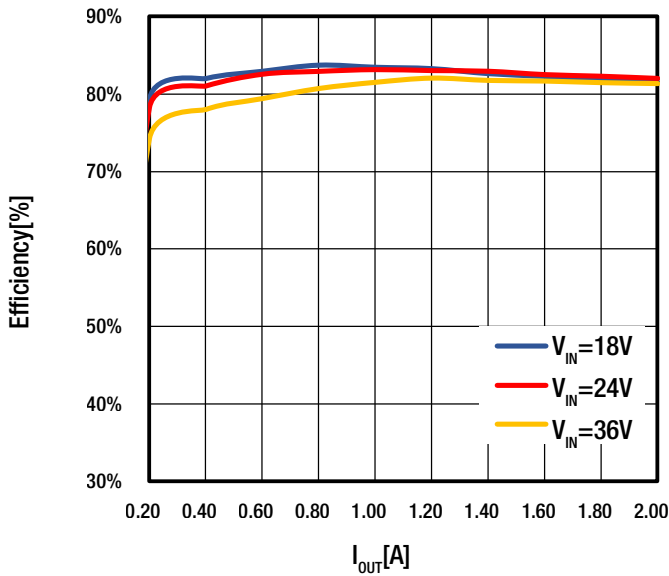
Table and graph show a typical application. Values may vary by application.

### REFERENCE CIRCUIT DIAGRAM

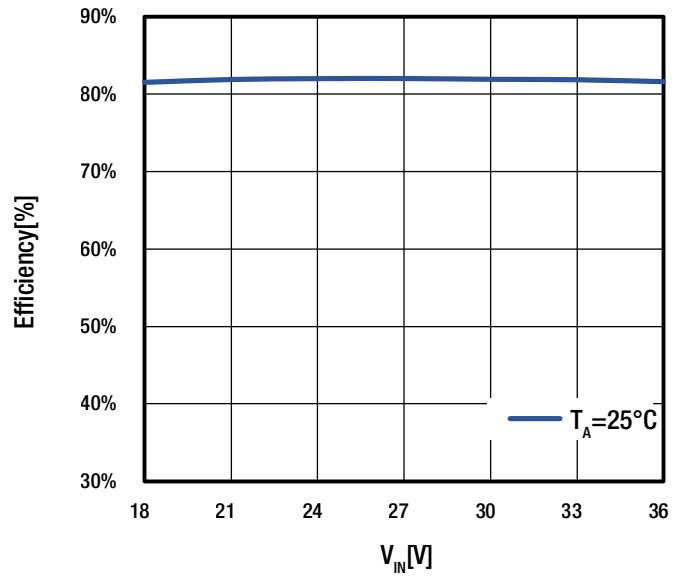


Typical Curve:

Typical Efficiency vs. Output Current



Typical Efficiency vs. Input Voltage

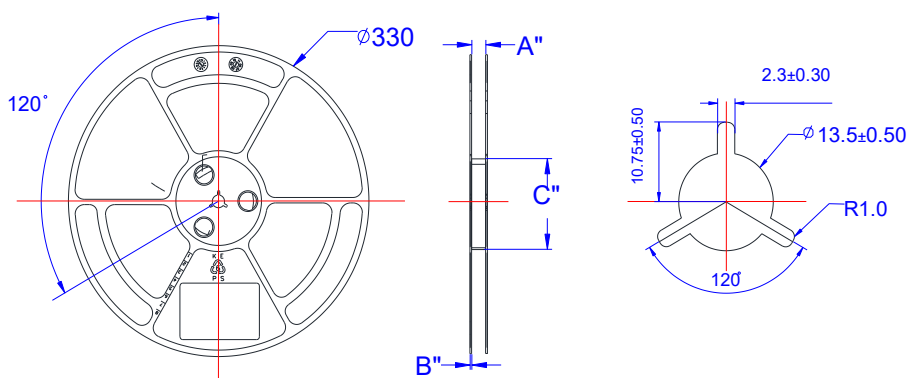
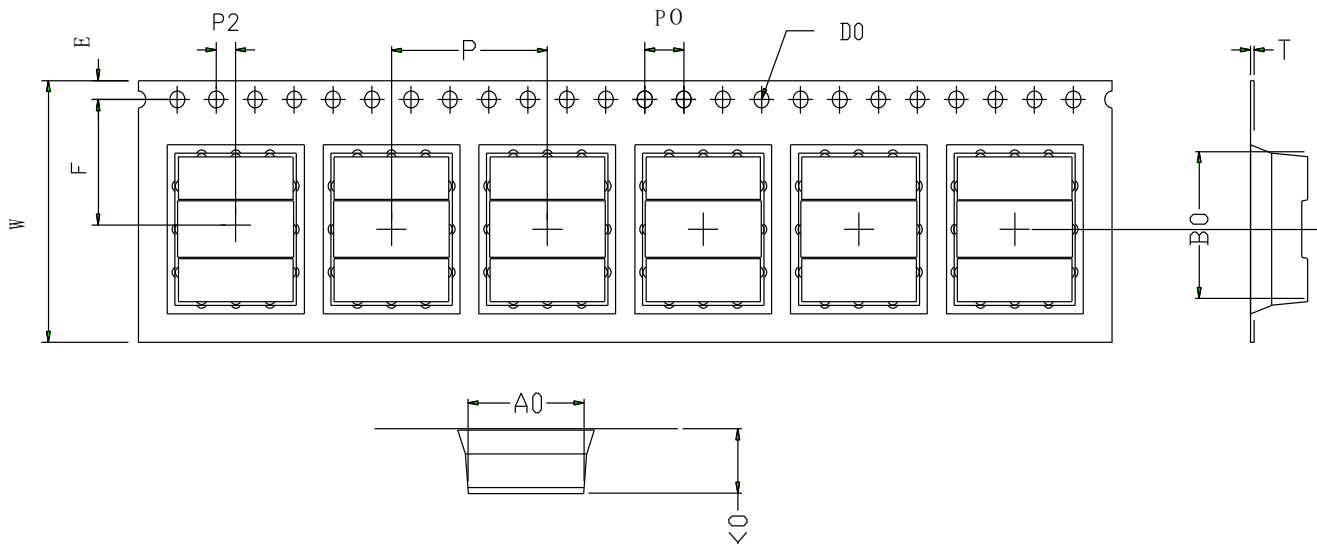


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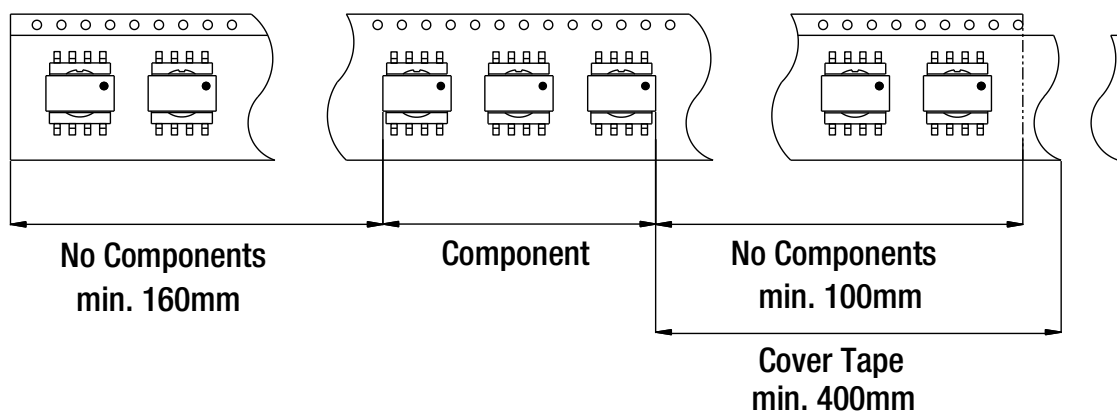
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## PACKAGING SPECIFICATION - TAPE & REEL [mm]

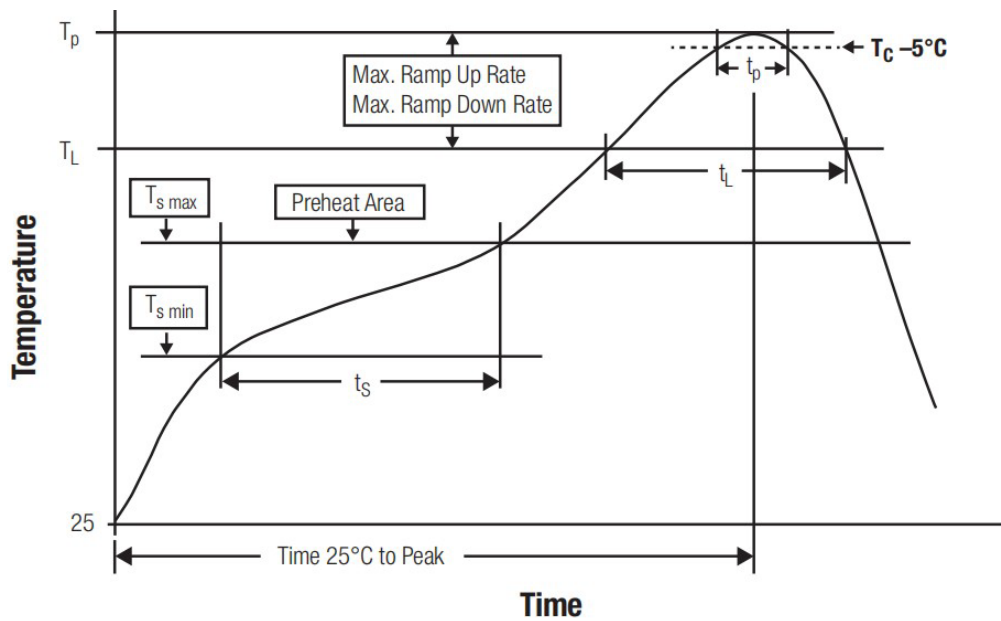
ITRM	W	A0	B0	K0	K1	P	F	E	D0	D1	P0	P2	T
DIM	24.00	11.50	13.10	6.10	--	16.00	11.50	1.75	1.50	--	4.00	2.00	0.40
TOLE	+0.30 -0.30	+0.15 -0.15	+0.15 -0.15	+0.10 -0.10	+0.10 -0.10	+0.10 -0.10	+0.10 -0.10	+0.10 -0.10	+0.10 -0.00	+0.10 -0.00	+0.10 -0.10	+0.15 -0.15	+0.05 -0.05



		✓			
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 $\text{mm}^3 < 350$	Volume $\text{mm}^3 350-2000$	Volume $\text{mm}^3 > 2000$
PB-Free Assembly   Package Thickness $< 1.6 \text{ mm}$	260°C	260°C	260°C
PB-Free Assembly   Package Thickness $1.6 \text{ mm} - 2.5 \text{ mm}$	260°C	250°C	245°C
PB-Free Assembly   Package Thickness $> 2.5 \text{ mm}$	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-023-WB5S-R	RBE-023	1.3g	Tape & Reel	500pcs
RBE-023-WB5S-CT	RBE-023	1.3g	Moisture Barrier Bag	5pcs

\*Marking Code

RBE-023—— Product Code

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