# STR2000 Series

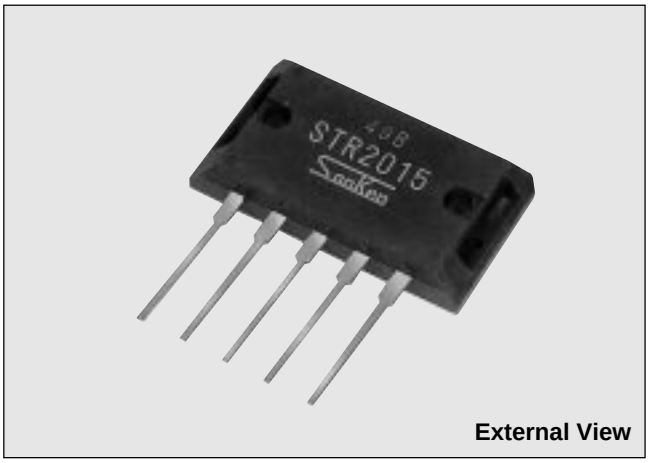
## Switching Type —— Chopper • Self Oscillation Type

### Features

- Requires only 3 external components
- Small size and high efficiency
- Low switching noise
- Variable output voltage
- Use of SANKEN's semiconductor elements ensures high reliability

### Applications

- For power supplies in office equipment such as electronic typewriters, printers, and copiers
- For power supplies in VCRs and personal CB radios (fixed station)



External View

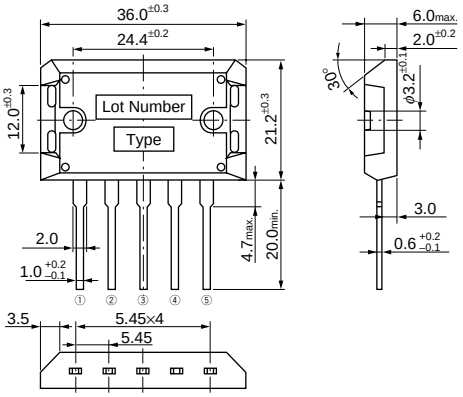
## ■Absolute Maximum Ratings (Ta=25°C)

| Parameter | Symbol | Ratings | | | | | Unit |
|---|---|---|---|---|---|---|---|
| | | STR2005 | STR2012 | STR2013 | STR2015 | STR2024 | |
| DC Input Voltage | $V_{IN}$ | 45 | | | | 50 | V |
| DC Output Current | $I_O$ | 2.0 (pulse 3.0) | | | | | A |
| Power Dissipation | $P_D$ | 75 ($T_C$=25°C) | | | | | W |
| | | 15 ($T_C$=100°C) | | | | | |
| Operating Temperature | Top | –20 to +100 | | | | | °C |
| Storage Temperature | Tstg | –20 to +125 | | | | | °C |
| Thermal Resistance ( junction-to-case) | Rth(j-c) | 1.25 | | | | | °C/W |

## ■Electrical Characteristics (Ta=25°C)

| Parameter | Symbol | Ratings | | | | | | | | | | | | | | | Unit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | STR2005 | | | STR2012 | | | STR2013 | | | STR2015 | | | STR2024 | | | |
| | | min | typ | max | min | typ | max | min | typ | max | min | typ | max | min | typ | max | |
| DC Input Voltage Range | $V_{IN}$ | 11 | | 40 | 18 | | 45 | 19 | | 45 | 21 | | 45 | 30 | | 50 | V |
| | Condition | $I_O$=1.0A | | | | | | | | | | | | | | | |
| Output Voltage | $V_O$ | 5.0 | 5.1 | 5.2 | 11.8 | 12.0 | 12.2 | 12.8 | 13.0 | 13.2 | 14.8 | 15.0 | 15.2 | 23.7 | 24.0 | 24.3 | V |
| | Condition | $V_{IN}$=20V, $I_O$=1.0A | | | $V_{IN}$=24V, $I_O$=1.0A | | | | | | $V_{IN}$=27V, $I_O$=1.0A | | | $V_{IN}$=35V, $I_O$=1.0A | | | |
| Efficiency | $\eta$ | | 72 | | | 85 | | | 85 | | | 85 | | | 85 | | % |
| | Condition | $V_{IN}$=20V, $I_O$=1.0A | | | $V_{IN}$=24V, $I_O$=1.0A | | | | | | $V_{IN}$=27V, $I_O$=1.0A | | | $V_{IN}$=35V, $I_O$=1.0A | | | |
| Line Regulation | $\Delta V_{OLINE}$ | | | 50 | | | 60 | | | 60 | | | 60 | | | 60 | mV |
| | Condition | $V_{IN}$=15 to 25V, $I_O$=1.0A | | | $V_{IN}$=20 to 28V, $I_O$=1.0A | | | | | | $V_{IN}$=23 to 31V, $I_O$=1.0A | | | $V_{IN}$=30 to 40V, $I_O$=1.0A | | | |
| Load Regulation | $\Delta V_{OLOAD}$ | | | 100 | | | 100 | | | 100 | | | 100 | | | 100 | mV |
| | Condition | $V_{IN}$=20V, $I_O$=0.5 to 1.5A | | | $V_{IN}$=24V, $I_O$=0.5 to 1.5A | | | | | | $V_{IN}$=27V, $I_O$=0.5 to 1.5A | | | $V_{IN}$=35V, $I_O$=0.5 to 1.5A | | | |
| Ripple Rejection | $R_{REJ}$ | | 45 | | | 45 | | | 45 | | | 45 | | | 45 | | dB |
| | Condition | f=100 to 120Hz | | | | | | | | | | | | | | | |
| Switching Frequency | f | | 25 | | | 25 | | | 25 | | | 25 | | | 25 | | kHz |
| | Condition | $V_{IN}$=20V, $I_O$=1.0A | | | $V_{IN}$=24V, $I_O$=1.0A | | | | | | $V_{IN}$=27V, $I_O$=1.0A | | | $V_{IN}$=35V, $I_O$=1.0A | | | |

## ■Outline Drawing/Terminal Connections (unit:mm)



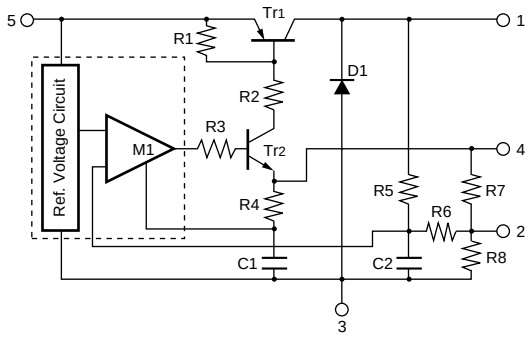

Plastic Mold Package Type
Flammability: UL94V-0

**Terminal Connections**

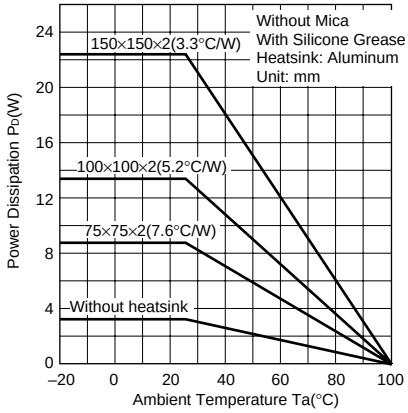
① Switching Output (backside of case)
② Output Voltage Adjustment
③ Ground
④ Output Voltage Detection
⑤ Input

Weight: Approx. 14.5g

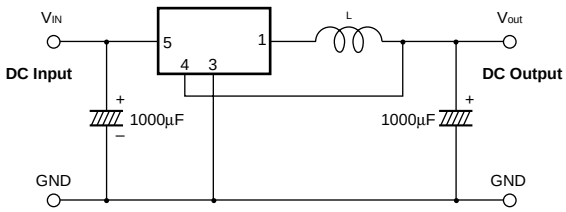
## ■Block Diagram




## ■Ta-PD Characteristics

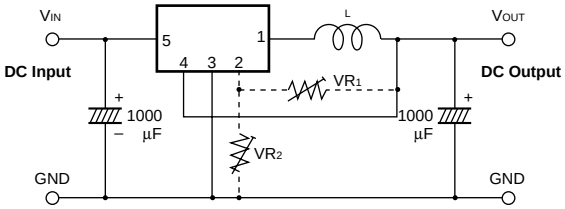



## ■Standard External Circuit




| Type | Inductance L |
|---|---|
| STR2005 | 200μH |
| STR2012 | 300μH |
| STR2013 | 300μH |
| STR2015 | 350μH |
| STR2024 | 400μH |

## ■Variable Output Voltage Circuit

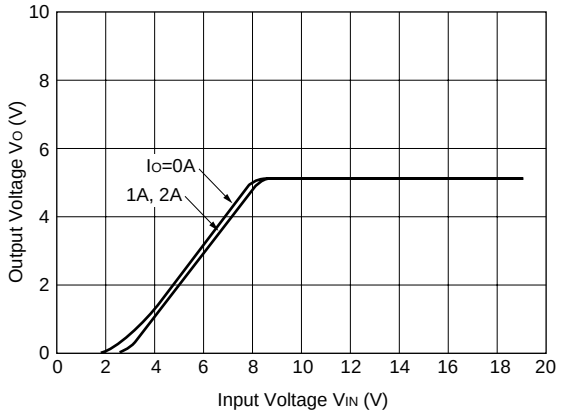



VR1 : VOUT down
VR2 : VOUT up

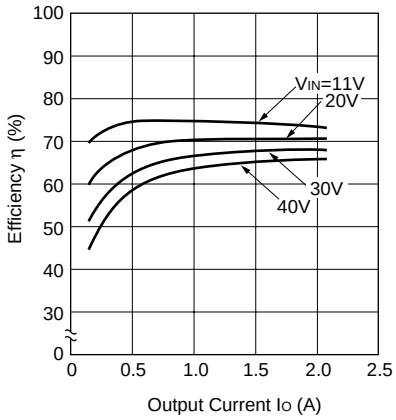
# STR2000 Series Typical Characteristics (Ta=25°C)

## ■STR2005

### Rise Characteristics

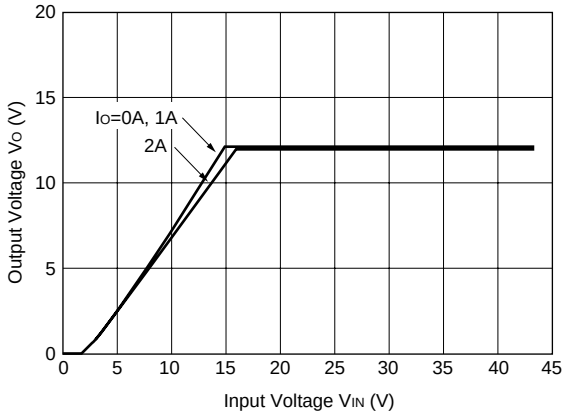



### Efficiency Characteristics

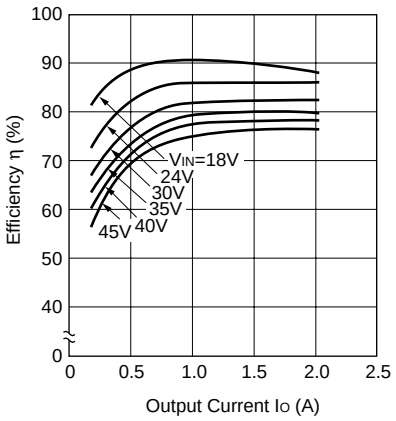



## ■STR2012

### Rise Characteristics

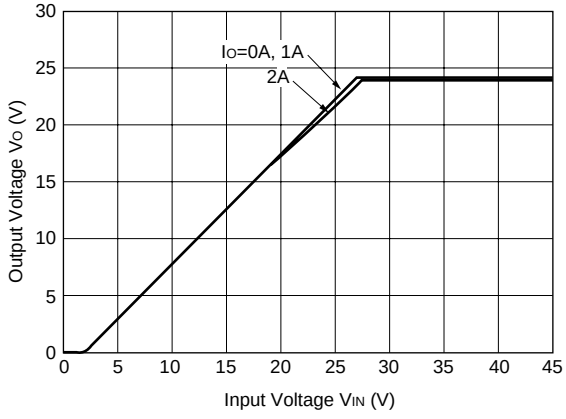



### Efficiency Characteristics




## ■STR2024

### Rise Characteristics




### Efficiency Characteristics

