TECH PUBLIC
台舟电子

# TPNCP163ASN Series
# With shutdown mode LDO

WWW.SOT23.COM.TW

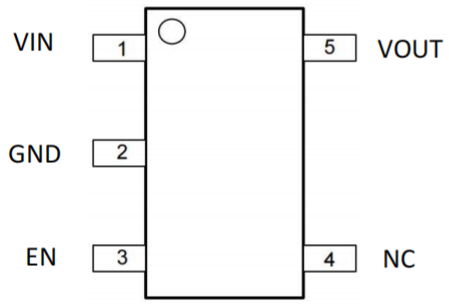
## Features

- 12μA Current at no Load
- ±2% Output Accuracy
- 250mA Output Current
- Current Limit Protection

## Applications

- Industrial Controls
- Home Automation
- Low Power Microcontrollers
- Portable, Battery Powered Equipment

## PIN CONFIGURATION




SOT23-5

| Pin Number SOT23-5 | Pin Name | Pin Function |
|---|---|---|
| 1 | VIN | Input of Supply Voltage |
| 2 | GND | Ground |
| 3 | EN | Enable ControlInput |
| 4 | NC | No Internal Connection |
| 5 | VOUT | Output of the Regulator |

## Ordering Information

TPNCP163ASN180T1G

OUTPUT VOLTAGE
180: 1.8V
300: 3.0V
330: 3.3V

## Marking:

TPNCP163ASN180T1G Marking:KAATPC
TPNCP163ASN300T1G Marking:KAFTPC
TPNCP163ASN330T1G Marking:KAGTPC

## Absolute Maximum Ratings

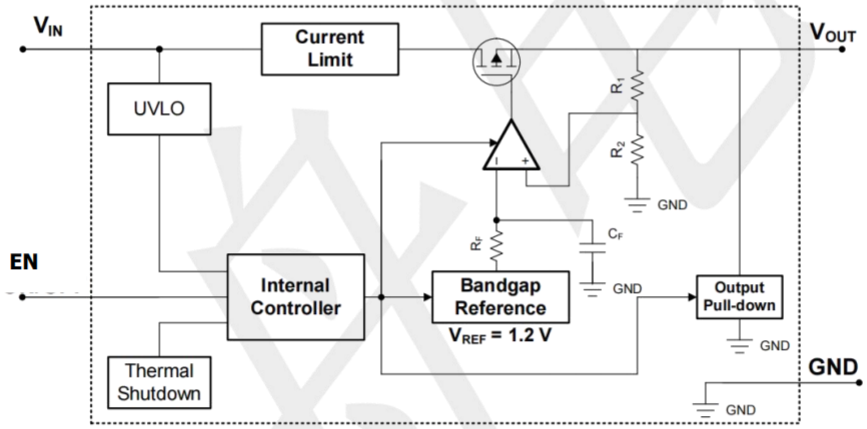
over operating free-air temperature range (unless otherwise noted)

| | | MIN | MAX | UNIT |
|---|---|---|---|---|
| $V_{IN}$ | Continuous input voltage range | -0.3 | 6 | V |
| $V_{OUT}$ | Output voltage range | -0.3 | 6 | |
| EN | EN pin voltage range | -0.3 | 6 | |
| Current | Maximum output current | Internally limited | | mA |
| Temperature | Operating junction, TJ | -40 | 150 | ℃ |
| | Storage, Tstg | -55 | 150 | |

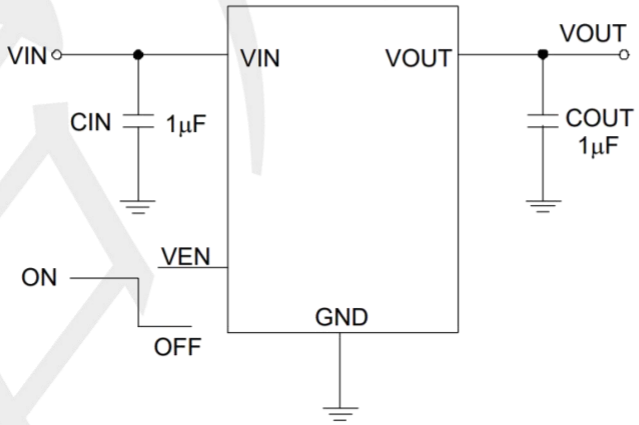
## ESD Ratings

| | | | VALUE | UNIT |
|---|---|---|---|---|
| V(ESD) | Electrostatic discharge | Human body model (HBM) | ±2000 | V |
| | | Machine Model (MM) | ±200 | |

## BLOCK DIAGRAM




## Typical Application Circuit



## Electrical Characteristics

(VIN=15V, VEN=5V, TA=25℃, unless otherwise specified)

| PARAMETER | SYMBOL | TEST Conditions | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Supply Voltage | VIN | | 2.2 | -- | 6 | V |
| Output current | IOUT | | 0 | -- | 250 | mA |
| DC Output Voltage Accuracy | | IOUT = 0.1mA | -2 | -- | 2 | % |
| Dropout Voltage (VIN-VOUT) | IOUT = 200mA | VOUT = 1.8V | -- | 180 | -- | mV |
| | | VOUT = 2.5V | -- | 110 | -- | |
| | | VOUT = 2.8V | -- | 90 | -- | |
| | | VOUT = 3.0V | -- | 90 | -- | |
| | | VOUT = 3.2V | -- | 85 | -- | |
| | | VOUT = 3.3V | -- | 80 | -- | |
| | | VOUT = 3.5V | -- | 75 | -- | |
| | | VOUT = 4.5V | -- | 70 | -- | |
| | | VOUT = 5.0V | -- | 65 | -- | |
| Ground Current (IOUT = 0mA) | IQ | VOUT = 3.3V | -- | 12 | -- | uA |
| Shutdown Ground Current | ISD | VEN = 0V, VOUT = 0V | -- | 0.01 | 0.5 | |
| VOUT Shutdown Leakage Current | ILEAK | | -- | 0.01 | 0.5 | |
| Enable Threshold Voltage | VIH | EN Rising | 1.2 | -- | -- | V |
| | VIL | EN Falling | -- | -- | 0.4 | |
| EN Input Current | IEN | VEN = 6V | -- | 10 | 100 | nA |
| Line Regulation | ΔLINE | IOUT =1mA, 3≤VIN≤6V | -- | 0.3 | -- | % |
| Load Regulation | ΔLOAD | 10mA≤ IOUT ≤ 100mA | -- | 0.3 | -- | |
| Output Current Limit | ILIM | VOUT=0.9× VOUT(NOM) | 250 | 300 | -- | mA |
| Power Supply Rejection Ratio | PSRR | VOUT =3.3V, IOUT =30mA, VIN = 6V, f = 1kHz | -- | 70 | -- | dB |
| Thermal Shutdown Temperature | TSD | IOUT =10mA | -- | 160 | -- | ℃ |
| Thermal Shutdown Hysteresis | ΔTSD | | -- | 15 | -- | |
| Package Thermal Resistance (Note 1) | TJA | Thermal Resistance Junction-toAmbient | -- | 200 | -- | ℃/W |

Note: 1. Test condition: For SOT23-5, the device is mounted on FR-4 substrate PC board, with minimum recommended pad layout.

## Typical Operating Characteristics (25 °C, unless otherwise noted)

Unless otherwise specified: TA = 25℃, VIN = VO(NOM) + 1 V, COUT = 1 μF, CIN = 1 μF all voltage options, EN pin tied to VIN.

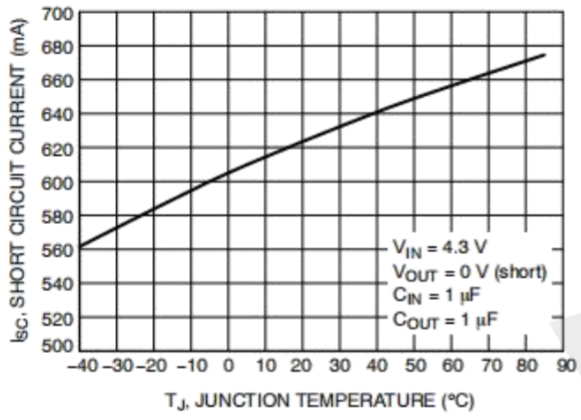



**Figure Short Circuit Current vs. Temperature**

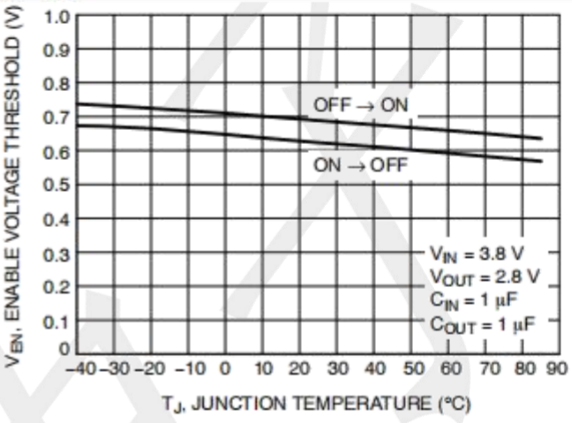



**Figure Enable Thresholds Voltage**

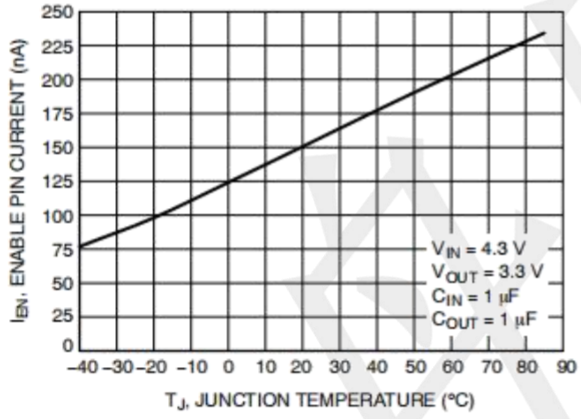



**Figure Current to Enable Pin vs. Temperature**

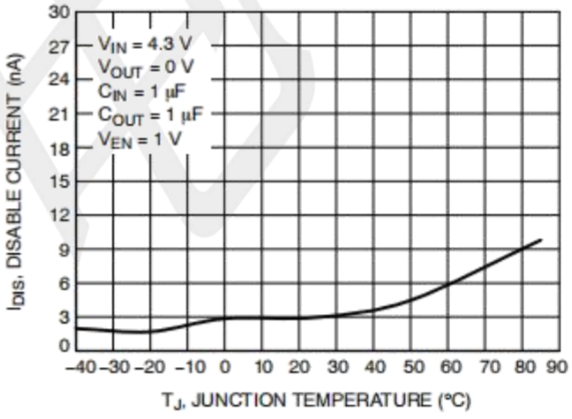



**Figure Disable Current vs. Temperature**

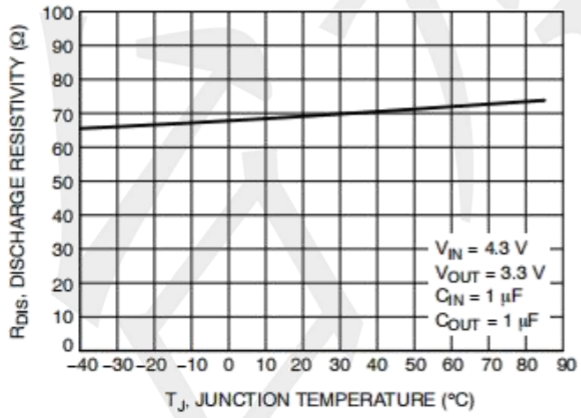



**Figure Discharge Resistance vs. Temperature**

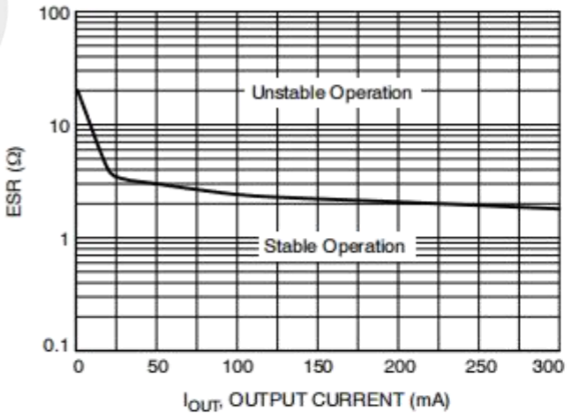
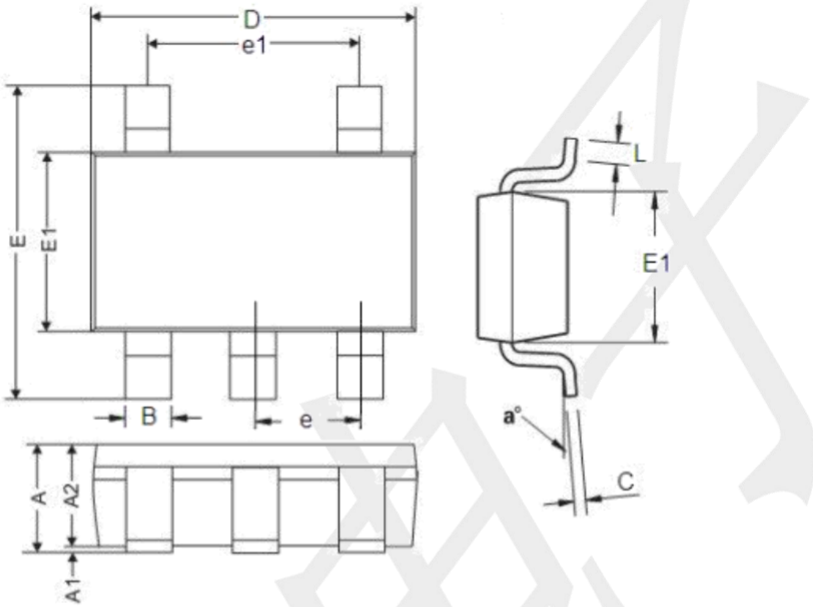



**Figure Maximum $C_{OUT}$ ESR Value vs. Load Current**

## Package informantion

SOT23-5




| 参数 | 尺寸 (mm) | | 尺寸 (Inch) | |
|---|---|---|---|---|
| | 最小值 | 最大值 | 最小值 | 最大值 |
| A | 0.9 | 1.45 | 0.0354 | 0.0570 |
| A1 | 0 | 0.15 | 0 | 0.0059 |
| A2 | 0.9 | 1.3 | 0.0354 | 0.0511 |
| B | 0.2 | 0.5 | 0.0078 | 0.0196 |
| C | 0.09 | 0.26 | 0.0035 | 0.0102 |
| D | 2.7 | 3.10 | 0.1062 | 0.1220 |
| E | 2.2 | 3.2 | 0.0866 | 0.1181 |
| E1 | 1.30 | 1.80 | 0.0511 | 0.0708 |
| e | 0.95REF | | 0.0374REF | |
| e1 | 1.90REF | | 0.0748REF | |
| L | 0.10 | 0.60 | 0.0039 | 0.0236 |
| a° | 0° | 30° | 0° | 30° |