



1A LOW DROPOUT LINEAR REGULATOR

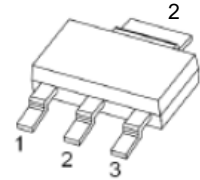
CJT1117B-XXX

FEATURES

- Low Dropout Voltage: 1.15V(typ.) at 1A Output Current
- Trimmed Current Limit
- On-Chip Thermal Shutdown
- Three-Terminal Adjustable or Fixed 1.25V, 1.8V, 2.5V, 3.3V, 5V
- Operation Junction Temperature: -40°C to 125°C

SOT -223

1. ADJ/GND
2. OUTPUT
3. IN



GENERAL DESCRIPTION

The CJT1117B-XXX is a series of low dropout three-terminal regulators with a dropout of 1.15V(typ.) at 1A output current.

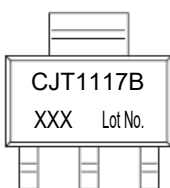
The CJT1117B-XXX series provides current limiting and thermal shutdown. Its circuit includes a trimmed bandgap reference to assure output voltage accuracy to be within 1.5%. Current limit is trimmed to ensure specified output current and controlled short-circuit current. On-chip thermal shutdown provides protection against any combination of overload and ambient temperature that would create excessive junction temperature.

The CJT1117B-XXX has an adjustable version, that can provide the output voltage from 1.25V to 5V with only 2 external resistors.

APPLICATIONS

- PC Motherboard
- LCD Monitor
- Graphic Card
- DVD-Video Player
- NIC/Switch
- Telecom Modem
- ADSL Modem
- Printer and Other Peripheral Equipment

MARKING



CJT1117B = Device code

XXX: output voltage

MAXIMUM RATINGS

ORDERING INFORMATION

| Package | Operating Junction Temperature Range | Part NO. |
|---------|--------------------------------------|--------------|
| SOT-223 | -40 to 125°C | CJT1117B-ADJ |
| | | CJT1117B-1.8 |
| | | CJT1117B-2.5 |
| | | CJT1117B-3.3 |
| | | CJT1117B-5.0 |

ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|-----------------|---------------------------|---------------------------|
| Input Voltage | V_i | 20 | V |
| Thermal Resistance from Junction to Ambient | $R_{\theta JA}$ | 100 | $^\circ\text{C}/\text{W}$ |
| Operating Ambient Temperature | T_A | -40~+85 | $^\circ\text{C}$ |
| Operating Junction Temperature | T_j | -40~+125 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | -40~+125 | $^\circ\text{C}$ |
| Soldering Temperature & Time | T_{solder} | 260 $^\circ\text{C}$,10s | |
| ESD Voltage (Machine Model) | V_{ESD} | 400 | V |

Note: Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional of the device at these or any other conditions beyond those indicated under "Recommended Operating Conditions" is not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.

RECOMMENDED OPERATING CONDITIONS

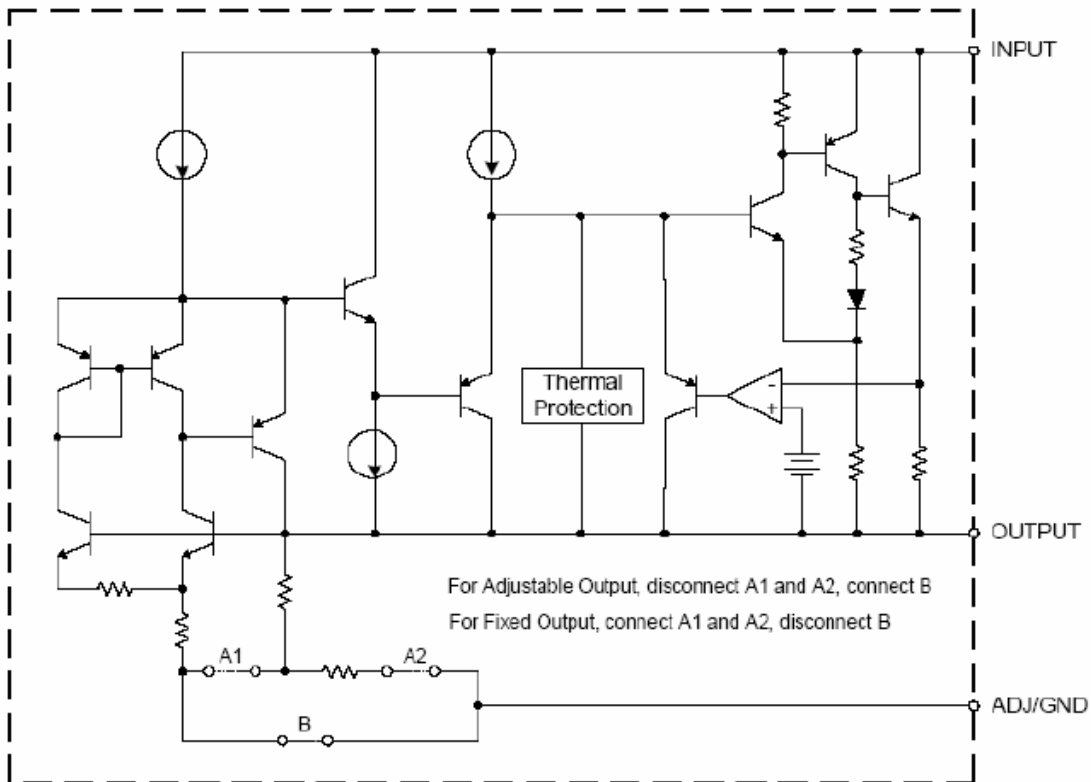
| Parameter | Symbol | Value | Unit |
|--------------------------------|--------|----------|------------------|
| Input Voltage | V_i | 15 | V |
| Operating Junction Temperature | T_j | -40~+125 | $^\circ\text{C}$ |

ELECTRICAL CHARACTERISTICS

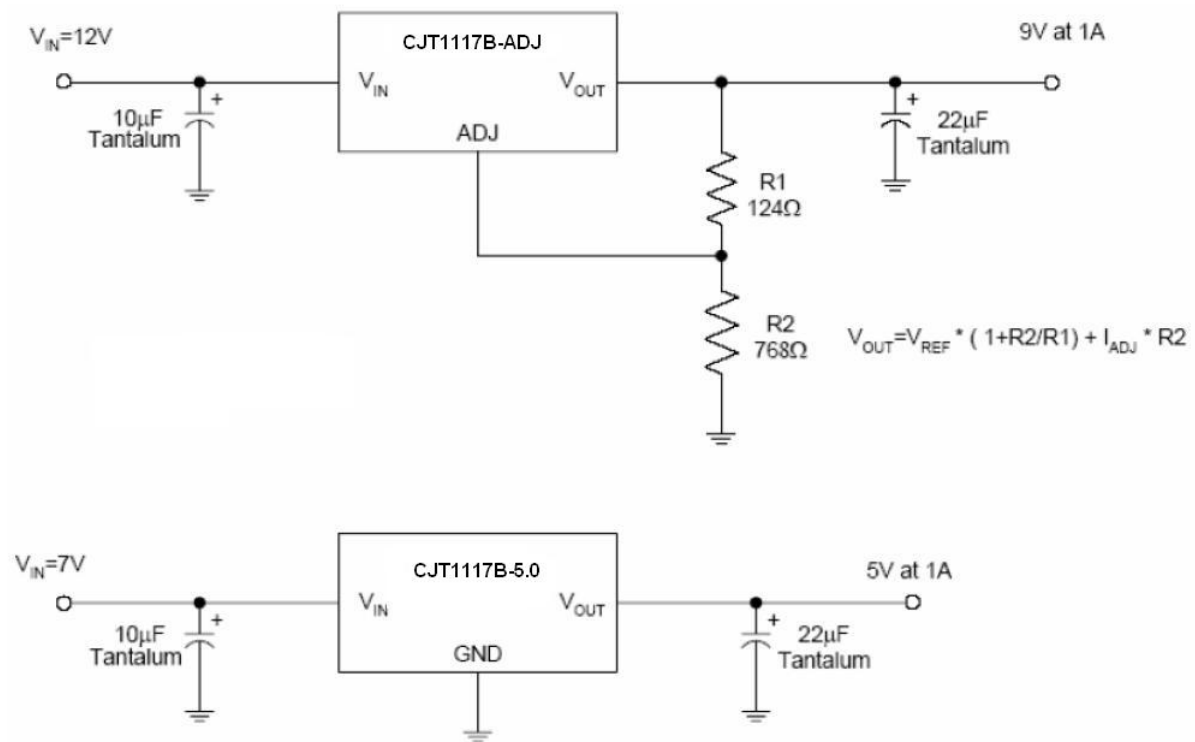
$V_{IN} \leq 10V$, $T_J = 25^\circ C$ unless otherwise specified.

| Parameter | Symbol | Part No. | Test Conditions | Min | Typ | Max | Unit |
|------------------------------------|------------|--------------|--|-------|-------|-------|------------|
| Reference Voltage | V_{IROC} | CJT1117B-ADJ | $I_{OUT} = 10mA$, $V_{IN} = 3.23V$ | 1.231 | 1.250 | 1.269 | V |
| | | | $10mA \leq I_{OUT} \leq 1A$, $2.75V \leq V_{IN} - V_{OUT} \leq 13.25V$ | 1.225 | 1.250 | 1.275 | |
| Output Voltage | V_O | CJT1117B-1.8 | $I_{OUT} = 10mA$, $V_{IN} = 3.8V$ | 1.773 | 1.8 | 1.827 | V |
| | | | $10mA \leq I_{OUT} \leq 1A$, $3.3V \leq V_{IN} \leq 12V$ | 1.764 | 1.8 | 1.836 | |
| | | CJT1117B-2.5 | $I_{OUT} = 10mA$, $V_{IN} = 4.5V$ | 2.463 | 2.5 | 2.538 | |
| | | | $10mA \leq I_{OUT} \leq 1A$, $4V \leq V_{IN} \leq 12V$ | 2.450 | 2.5 | 2.550 | |
| | | CJT1117B-3.3 | $I_{OUT} = 10mA$, $V_{IN} = 5.3V$ | 3.251 | 3.3 | 3.350 | |
| | | | $10mA \leq I_{OUT} \leq 1A$, $4.8V \leq V_{IN} \leq 12V$ | 3.234 | 3.3 | 3.366 | |
| | | CJT1117B-5.0 | $I_{OUT} = 10mA$, $V_{IN} = 7.0V$ | 4.925 | 5.0 | 5.075 | |
| | | | $10mA \leq I_{OUT} \leq 1A$, $6.5V \leq V_{IN} \leq 12V$ | 4.9 | 5.0 | 5.1 | |
| Line Regulation | LNR | CJT1117B-ADJ | $I_{OUT} = 10mA$, $1.5V \leq V_{IN} - V_{OUT} \leq 12V$ | | | 0.2 | % |
| | | CJT1117B-1.8 | $I_{OUT} = 10mA$, $1.5V \leq V_{IN} - V_{OUT} \leq 10.2V$ | | | 7 | mV |
| | | CJT1117B-2.5 | $I_{OUT} = 10mA$, $1.5V \leq V_{IN} - V_{OUT} \leq 9.5V$ | | | 7 | |
| | | CJT1117B-3.3 | $I_{OUT} = 10mA$, $1.5V \leq V_{IN} - V_{OUT} \leq 8.7V$ | | | 7 | |
| | | CJT1117B-5.0 | $I_{OUT} = 10mA$, $1.5V \leq V_{IN} - V_{OUT} \leq 7V$ | | | 10 | |
| Load Regulation | LDR | CJT1117B-ADJ | $V_{IN} - V_{OUT} = 1.5V$, $10mA \leq I_{OUT} \leq 1A$ | | | 0.4 | % |
| | | CJT1117B-1.8 | | | | 7.2 | mV |
| | | CJT1117B-2.5 | | | | 10 | |
| | | CJT1117B-3.3 | | | | 13.2 | |
| | | CJT1117B-5.0 | | | | 20 | |
| Dropout Voltage | V_D | | $\Delta V_{REF} = 1\%$, $I_{OUT} = 1.0A$ | | | 1.3 | V |
| Adjust Pin Current | | | | | 60 | 120 | μA |
| Minimum Load Current | I_L | | $1.5V \leq V_{IN} - V_{OUT} \leq 12V$ (ADJ only) | | 1.7 | 5 | μA |
| Quiescent Current | I_q | | $V_{IN} = V_{OUT} + 1.25V$ (ADJ except) | | | 10 | mA |
| Ripple Rejection | RR | | $f = 120Hz$, $C_{OUT} = 22\mu F$ Tantalum, $V_{IN} - V_{OUT} = 3V$, $I_{OUT} = 1A$ | 60 | 75 | | dB |
| Temperature Stability | | | | | 0.5 | | % |
| Long-Term Stability | | | $T_A = 125^\circ C$, 1000hrs | | 0.3 | | % |
| RMS Output Noise (% of V_{OUT}) | | | $T_A = 25^\circ C$, $10Hz \leq f \leq 10kHz$ | | 0.003 | | % |
| Thermal Shutdown Hysteresis | | | | | 25 | | $^\circ C$ |

FUNCTIONAL BLOCK DIAGRAM

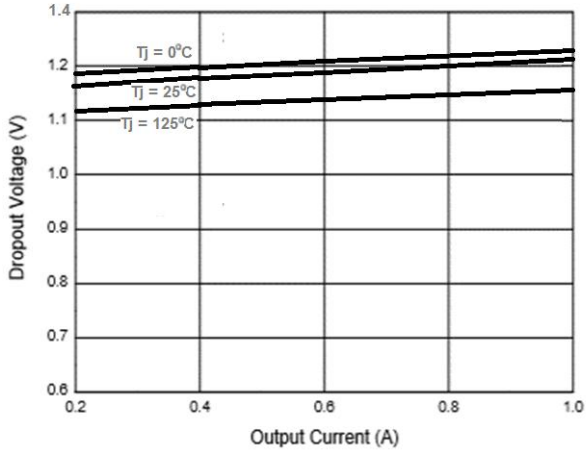


TYPICAL APPLICATION CIRCUIT

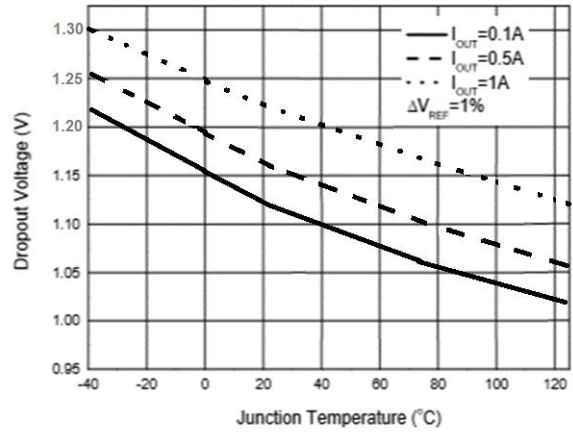


Typical Characteristics

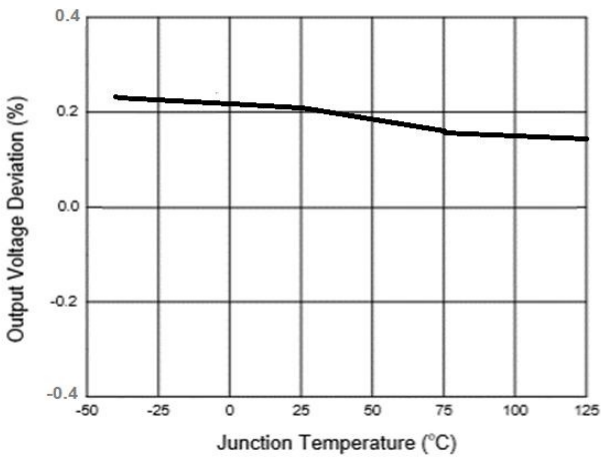
Dropout Voltage vs. Output Current



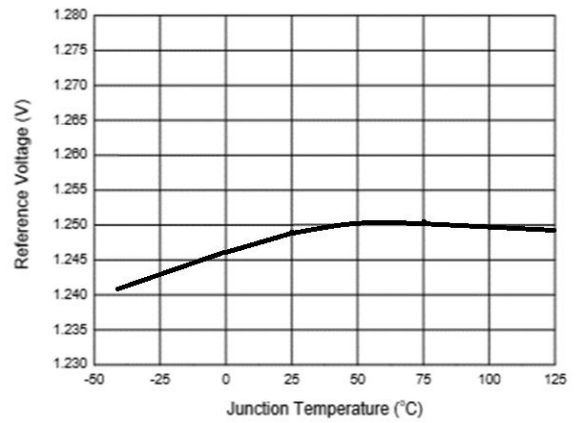
Dropout Voltage vs. Junction Temperature



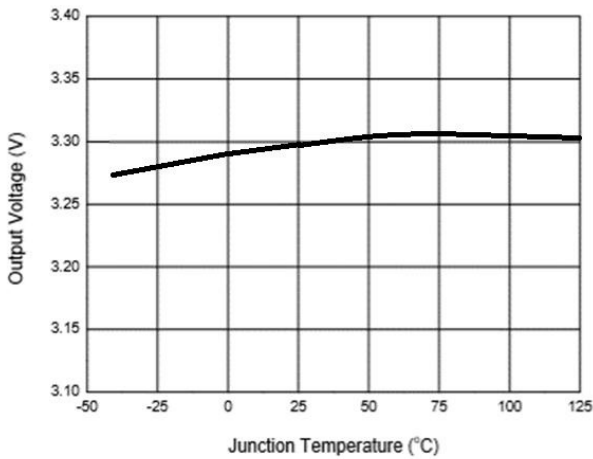
Load Regulation vs. Junction Temperature



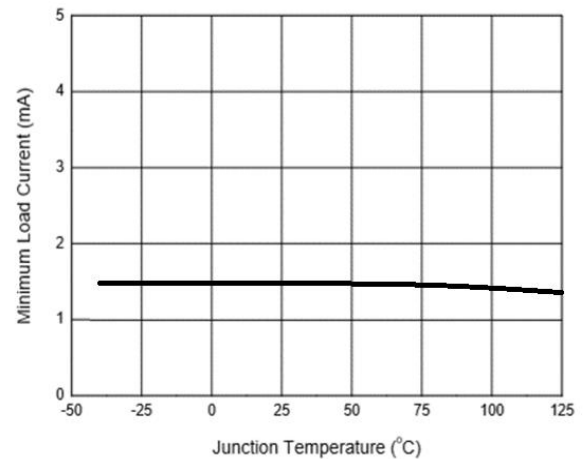
Reference Voltage vs. Junction Temperature



Output Voltage vs. Junction Temperature

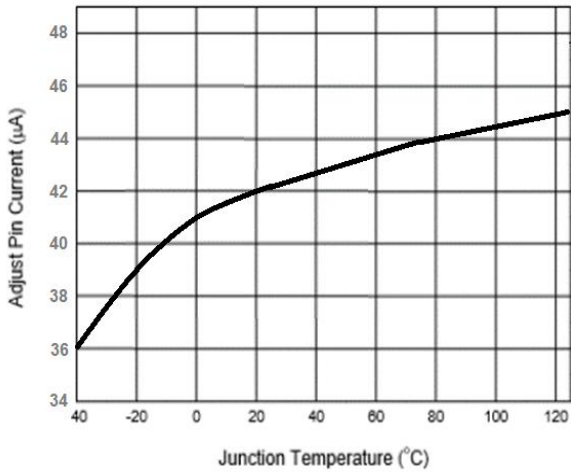


Minimum Load Current vs. Junction Temperature

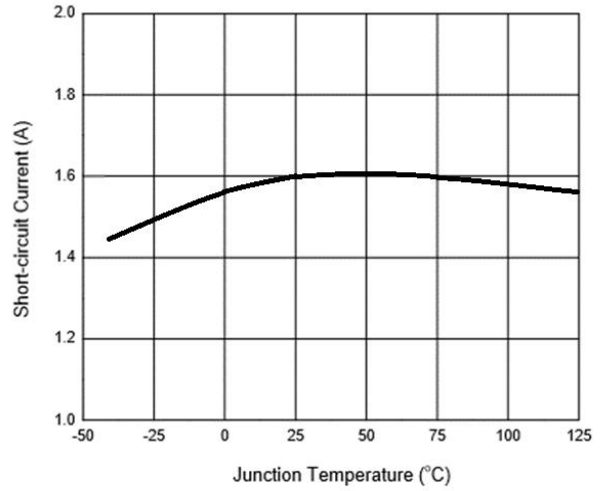


Typical Characteristics

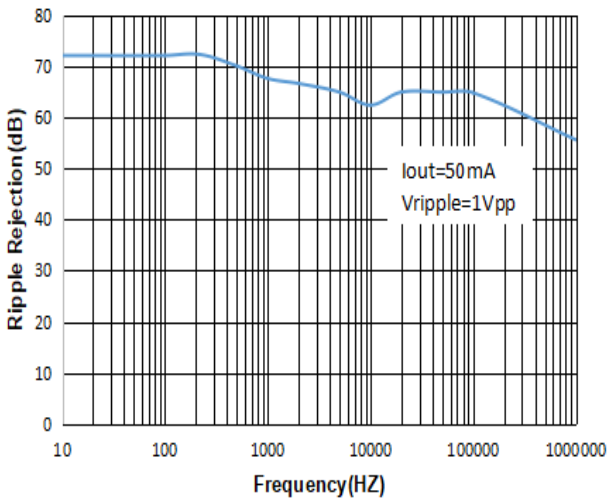
Adjust Pin Current vs. Junction Temperature



Short-circuit Current vs. Junction Temperature

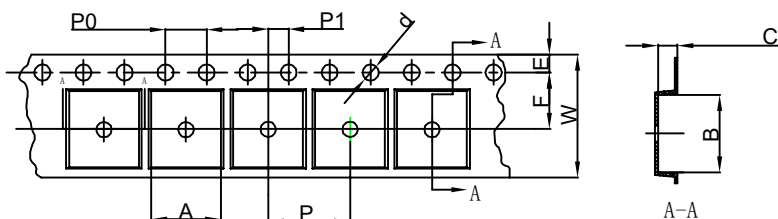


PSRR Vs. Frequency



SOT-223 Tape and Reel

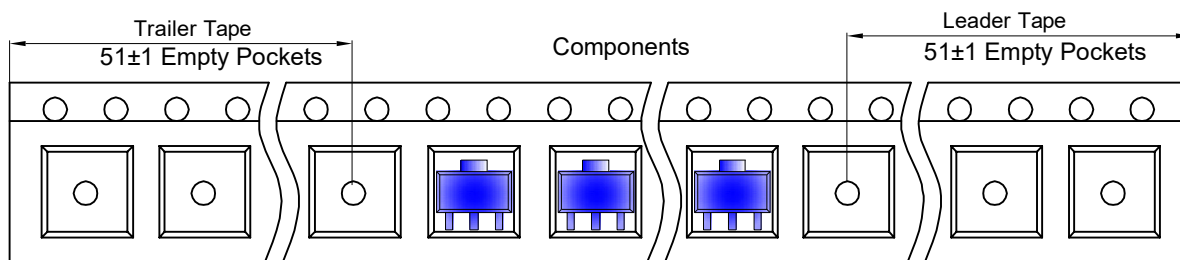
SOT-223 Embossed Carrier Tape



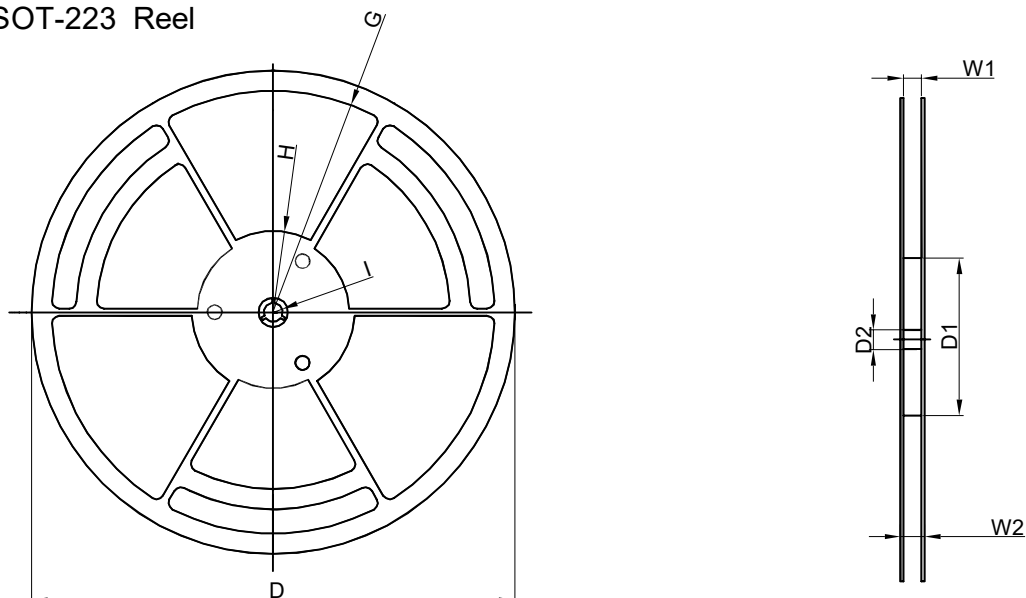
Packaging Description:
 SOT-223 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 2,500 units per 13" or 33.0cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

| Dimensions are in millimeter | | | | | | | | | | |
|------------------------------|-------|-------|------|-------|------|------|------|------|------|-------|
| Pkg type | A | B | C | d | E | F | P0 | P | P1 | W |
| SOT-223 | 6.765 | 7.335 | 1.88 | Ø1.50 | 1.75 | 5.50 | 4.00 | 8.00 | 2.00 | 12.00 |

SOT-223 Tape Leader and Trailer



SOT-223 Reel



| Dimensions are in millimeter | | | | | | | | |
|------------------------------|---------|--------|-------|---------|--------|-------|-------|-------|
| Reel Option | D | D1 | D2 | G | H | I | W1 | W2 |
| 13" Dia | Ø330.00 | 100.00 | 13.00 | R151.00 | R56.00 | R6.50 | 12.40 | 17.60 |

| REEL | Reel Size | Box | Box Size(mm) | Carton | Carton Size(mm) | G.W.(kg) |
|-----------|-----------|-----------|--------------|------------|-----------------|----------|
| 2,500 pcs | 13 inch | 2,500 pcs | 336×336×48 | 20,000 pcs | 445×355×365 | |