



DESCRIPTION

The SL1117C series of positive fixed regulator is designed to provide 1A with high efficiency. All internal circuitry is designed to operate down to 1.3V input to output differential. On-chip trimming adjusts the reference voltage to 1.5% for SL1117C-3.3V and 1% for SL1117C-5.0V.

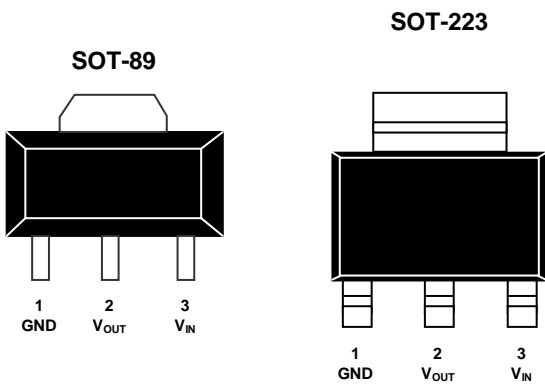
FEATURES

- ◆ Fixed Output
- ◆ Output Current of 1A
- ◆ Low Dropout, 1.3 V max at 1A Output Current
- ◆ 0.04% Line Regulation
- ◆ 0.2% Load Regulation
- ◆ 100% Thermal Limit Burn-In
- ◆ Fast Transient Response

APPLICATIONS

- ◆ High Efficiency Linear Regulators
- ◆ Post Regulators for Switching Supplies
- ◆ Adjustable Power Supply

PIN CONFIGURATION – Top View



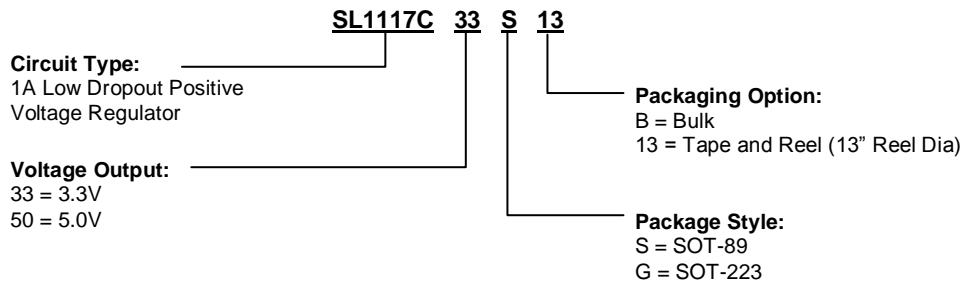
PACKAGE TOP MARKING:
(For both SOT-89 and SOT-223)

SL111733
YMXXXS

Line 1: Device
 SL111733 (for SL1117C-3.3V)
 SL111750 (for SL1117C-5.0V)

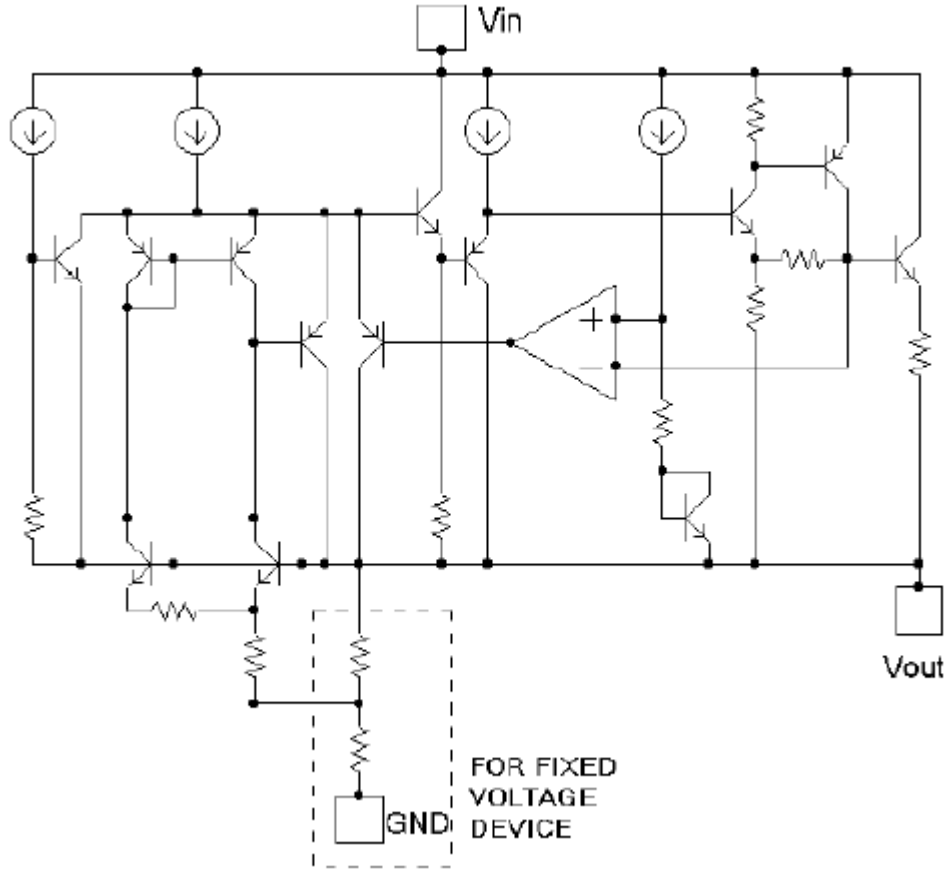
Line 2: Lot No. Code
 YMXXX – 5 Character Lot No.
 mark excluding 1st letter
 character of lot no.
 S – Split Code

ORDERING INFORMATION

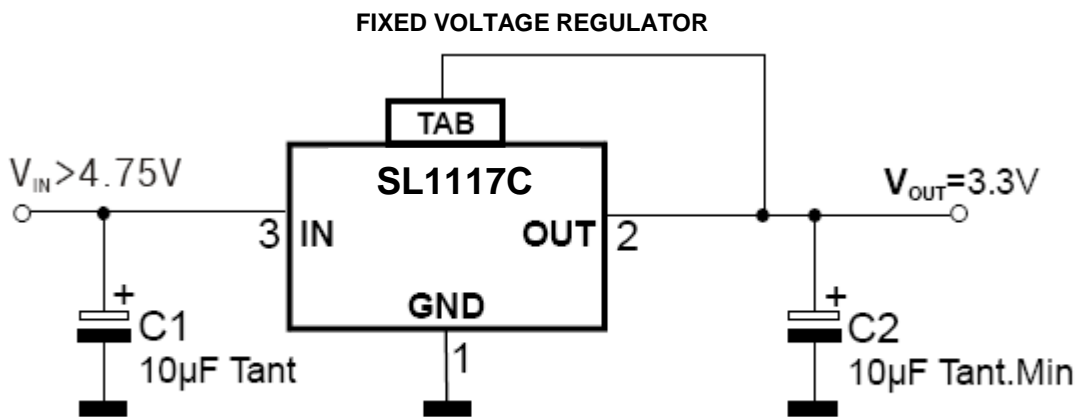




BLOCK DIAGRAM



TYPICAL APPLICATION DATA



NOTES:

- 1) $C1$ needed if device is far from filter capacitors
- 2) $C2$ minimum value required for stability



ABSOLUTE MAXIMUM RATINGS

| SYMBOL | PARAMETER | MAXIMUM | UNIT |
|-----------------------------------|--------------------------------------|----------------------|------|
| P _D | Power Dissipation | Internally Limited | W |
| V _{IN} | Input Voltage | 7 | V |
| V _{IN} -V _{OUT} | Voltage Difference | 5 | V |
| T _J | Operating Junction Temperature Range | | |
| | Control Section Power Transistor | 0 to 125 0 to 150 | °C |
| T _{STG} | Storage Temperature | -65 to 150 | °C |
| T _{LEAD} | Lead Temperature (Soldering, 10 sec) | 300 | °C |

**SL1117C-3.3
ELECTRICAL CHARACTERISTICS**

at I_{LOAD} = 0 mA and T_J = +25°C unless otherwise specified.

| PARAMETER | TEST CONDITIONS | MIN | TYP | MAX | UNIT | |
|-----------------------------|---|-------|-------|-------|------|-------|
| Reference Voltage Note 1 | V _{IN} = 5V, I _{LOAD} = 10mA | 1.232 | 1.250 | 1.268 | V | |
| | V _{IN} = 2.65V to 6.3V, I _{LOAD} =10mA to 1A | * | 1.225 | 1.250 | | 1.275 |
| Output Voltage Note 1 | V _{IN} = V _{OUT} + 1.5V, Variator from nominal V _{OUT} | -1.5 | | +1.5 | % | |
| | V _{IN} = V _{OUT} + 1.5V to 7V, V _{IN} -V _{OUT} ≤ 5V I _{LOAD} = 0mA to 1A, Variator from nominal V _{OUT} | * | -2 | +2 | | |
| Line Regulation | I _{LOAD} = 10mA, (1.5V + V _{OUT}) ≤ V _{IN} ≤ 7V | * | 0.04 | 0.20 | % | |
| Load Regulation Note 1 | V _{IN} = V _{OUT} + 1.5V I _{LOAD} = 10mA to 1A | * | 0.2 | 0.40 | | |
| Minimum Load Current | V _{IN} = 5V, V _{ADJ} = 0V | * | 2 | 7 | mA | |
| Ground Pin Current | V _{IN} = V _{OUT} + 1.5V, I _{LOAD} = 10mA to 1A | * | 7 | 13 | mA | |
| Current Limit | (V _{IN} - V _{OUT}) = 1.5V | * | 1 | | A | |
| Ripple Rejection | V _{IN} = V _{OUT} + 1.5V I _{LOAD} = 1A | | 60 | 72 | dB | |
| Dropout Voltage Note 1,2 | V _{IN} ≥ 2.65V, I _{LOAD} = 1A | * | | 1.15 | 1.30 | V |
| Temperature Coefficient | V _{IN} -V _{OUT} = 1.5V, I _{LOAD} = 10mA | * | | 0.005 | | %/°C |

The * denotes the specifications which apply over the full temperature range.

NOTE 1: Low duty pulse testing with Kelvin connections required.

NOTE 2: ΔV_{OUT}, ΔV_{REF}=1%



SL1117C-5.0

ELECTRICAL CHARACTERISTICS

at $I_{LOAD} = 0\text{ mA}$ and $T_J = +25^\circ\text{C}$ unless otherwise specified.

| PARAMETER | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|-----------------------------|---|-------|-------|-------|------|
| Reference Voltage Note 1 | $V_{IN} = 5V, I_{LOAD} = 10\text{mA}$ | 1.238 | 1.250 | 1.262 | V |
| | $V_{IN} = 2.65V\text{ to }7V, I_{LOAD}=10\text{mA to }1A$ | * | 1.225 | 1.275 | |
| Output Voltage Note 1 | $V_{IN} = V_{OUT} + 1.5V,$ Variator from nominal V_{OUT} | -1 | | +1 | % |
| | $V_{IN} = V_{OUT} + 1.5V\text{ to }7V$ $I_{LOAD} = 0\text{mA to }1A,$ Variator from nominal V_{OUT} | * | -2 | +2 | |
| Line Regulation Note 1 | $I_{LOAD} = 10\text{mA}, (1.5V + V_{OUT}) \leq V \leq 7V$ | * | 0.04 | 0.20 | % |
| Load Regulation Note 1 | $V_{IN} = V_{OUT} + 1.5V$ $I_{LOAD} = 10\text{mA to }1A$ | * | 0.2 | 0.40 | |
| Minimum Load Current | $V_{IN} = 5V, V_{ADJ} = 0V$ | * | 3 | 7 | mA |
| Ground Pin Current | $V_{IN} = V_{OUT} + 1.5V,$ $I_{LOAD} = 10\text{mA to }1A$ | * | 7 | 13 | mA |
| Current Limit | $(V_{IN} - V_{OUT}) = 1.5V$ | * | 1 | | A |
| Ripple Rejection | $V_{IN} = V_{OUT} + 1.5V$ $I_{LOAD} = 1A$ | | 60 | 72 | dB |
| Dropout Voltage Note 1,2 | $V_{IN} \geq 2.65V, I_{LOAD} = 1A$ | * | 1.15 | 1.30 | V |
| Temperature Coefficient | $V_{IN}-V_{OUT} = 1.5V, I_{LOAD} = 10\text{mA}$ | * | 0.005 | | %/°C |

The * denotes the specifications which apply over the full temperature range.

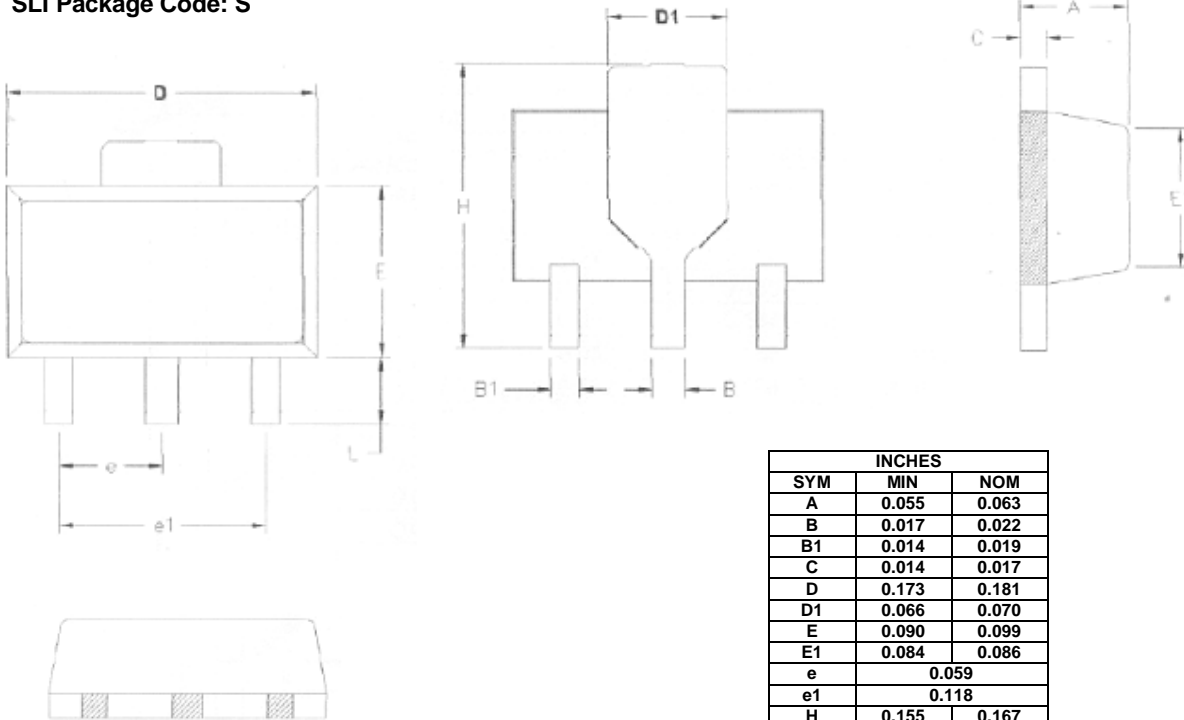
NOTE 1: Low duty pulse testing with Kelvin connections required.

NOTE 2: $\Delta V_{OUT}, \Delta V_{REF}=1\%$



SOT-89 PACKAGE DIMENSION

3-Lead SOT-89 Plastic
Surface Mounted Package
SLI Package Code: S



| INCHES | | |
|--------|-------|-------|
| SYM | MIN | NOM |
| A | 0.055 | 0.063 |
| B | 0.017 | 0.022 |
| B1 | 0.014 | 0.019 |
| C | 0.014 | 0.017 |
| D | 0.173 | 0.181 |
| D1 | 0.066 | 0.070 |
| E | 0.090 | 0.099 |
| E1 | 0.084 | 0.086 |
| e | 0.059 | |
| e1 | 0.118 | |
| H | 0.155 | 0.167 |
| L | 0.029 | 0.041 |

NOTES:

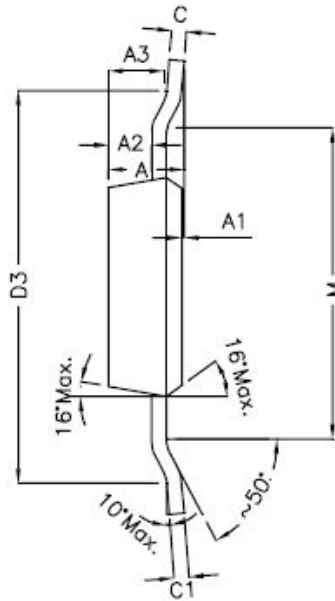
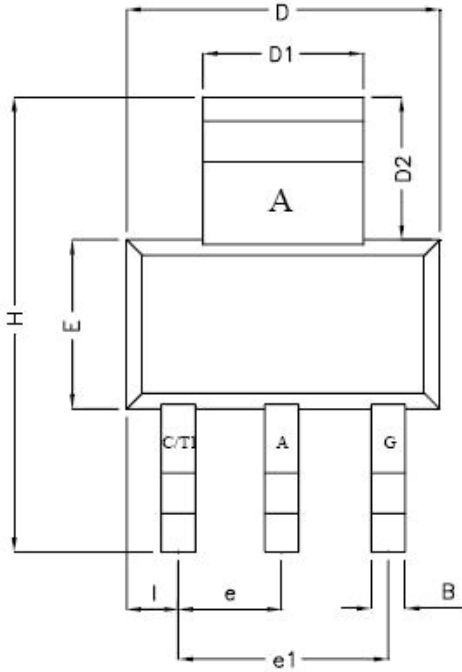
1. TOP PACKAGE ANGLE IS 9° +1°/-2° TOLERANCE. BOTTOM PACKAGE ANGLE IS 3° MAX.
2. PACKAGE CORNER RADIUS IS 5 MILS MAX ON ALL CORNERS.
3. SHINNY PACKAGE FINISH ON ALL SIDES EXCEPT TOP SIDE FINISH IS MINIMUM MATTE OF 10-14VDI.

NOTE: ALL DIMENSION ARE IN INCHES



SOT-223 PACKAGE DIMENSION

3-Lead SOT-223 Plastic
Surface Mounted Package
SLI Package Code: G



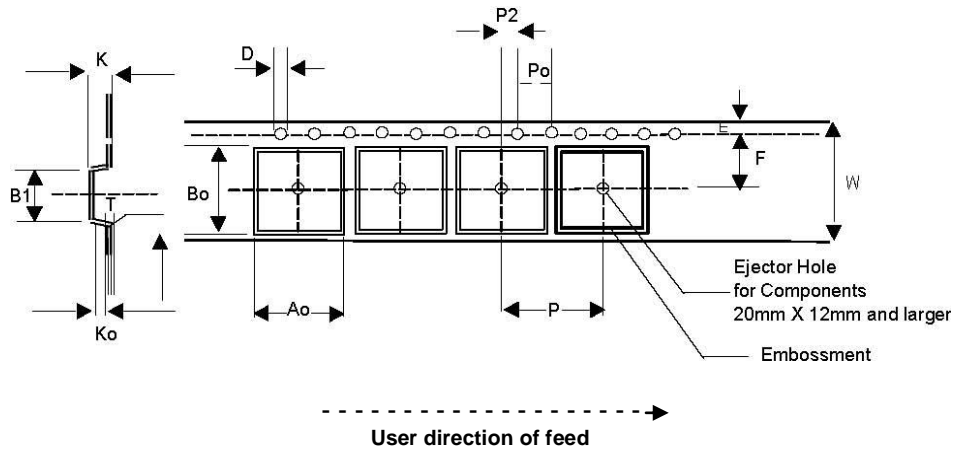
1. SPECIFICATIONS

| SYMBOL | MIN. | NOMINAL | MAX. |
|---|------|---------|------|
| A | 1.5 | 1.6 | 1.7 |
| A1 | 0.02 | | 0.1 |
| A2 | 0.81 | | 1.09 |
| A3 | 1.1 | 1.2 | 1.3 |
| B | 0.65 | 0.7 | 0.85 |
| C | 0.24 | 0.3 | 0.36 |
| C1 | 0.24 | 0.3 | 0.36 |
| D | 6.3 | 6.5 | 6.7 |
| D1 | 2.95 | 3.0 | 3.15 |
| D2 | 1.65 | 1.75 | 1.85 |
| D3 | 5.9 | 6.0 | 6.1 |
| E | 3.3 | 3.5 | 3.7 |
| e | 2.2 | 2.3 | 2.4 |
| e1 | 4.5 | 4.6 | 4.7 |
| H | 6.7 | 7.0 | 7.3 |
| I | 0.85 | 0.95 | 1.05 |
| M | 4.6 | 4.7 | 4.8 |
| 2. Branding area no ejector mark. | | | |
| 3. Maxs burrs, 0.1 mm on plastic and leads | | | |
| 4. General tolerance of +/-0.1mm unless otherwise specified. | | | |
| 5. External radii, max. R0.2 mm on plastic and Max. R0.35mm on lead form. | | | |
| 6. Lead Finish Leads electrolytic matte Sn plated 5 to 20 microns thick (Alternative : Leads Electrolytic Sn/Pb (90%/10%) plated 5 to 20 microns thick.) | | | |
| 7. A = Anode Lead | | | |
| 8. C/T1 = Cathode Lead | | | |
| 9. G = Gate Lead | | | |
| 10. Control unit : Millimeters | | | |



PACKAGE MECHANICAL DRAWING

Surface Mountable Tape & Reel Specifications in mm (inch)
(SOT-89 and SOT-223)

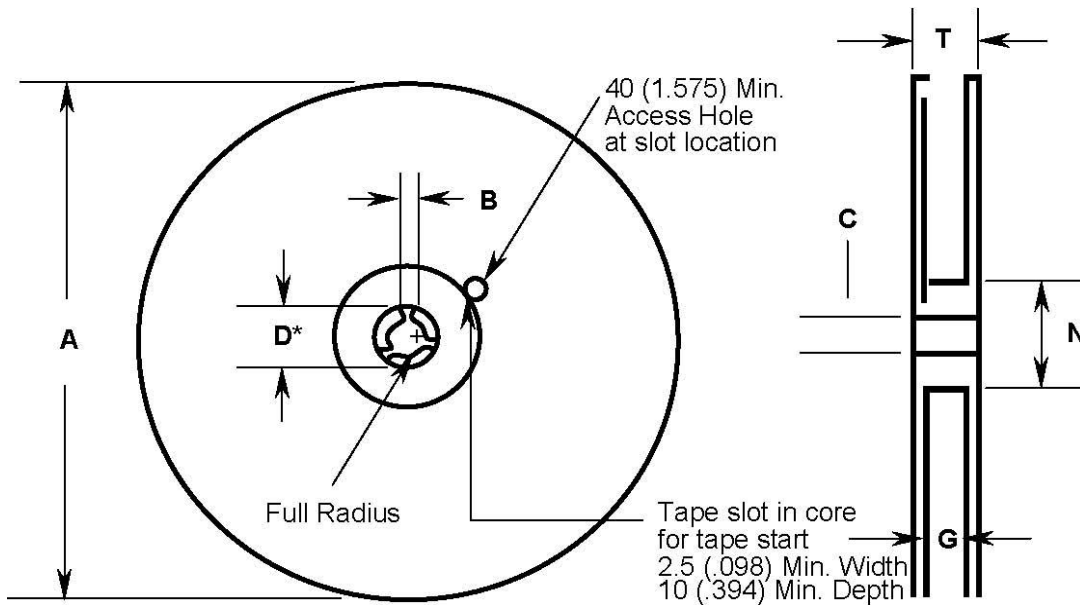


| Tape Size (W) | D | E | P0 | T (Max) | A0, B0, K0 | T1 (Max) | Constant Dimensions |
|-----------------|--------------------------|--------------------------|-------------------------|-----------------|------------|-----------------|---------------------|
| 8, 12, 16, 24mm | 1.55±0.05 (.061±.002) | 1.75±0.10 (.069±.004) | 4.0±0.10 (.157±.004) | 0.400 (.016) | See Note | 0.100 (.004) | |

| Tape Size (W) | B1 Max. | D1 Min. | F | K Max. | P2 | |
|---------------|---------------|---------------|-------------------------|---------------|-----------|---------------------|
| 8 mm | 4.2 (.165) | 1.0 (.039) | 3.5±0.05 (.138±.002) | 2.4 (.094) | 2.0±.05 | |
| 12 mm | 8.2 (.323) | 1.5 (.059) | 5.5±0.05 (.217±.002) | 4.5 (.177) | .079±.002 | Variable Dimensions |

| Per Package Requirement | | | | | |
|-------------------------|-------------------|---------------------|------------------|----------|------|
| Components | Tape Width (W) mm | Cavity Pitch (P) mm | Devices per Reel | | |
| | | | 7" Reel | 13" Reel | |
| SOT-89 | 3L | 12 | 8 | - | 2500 |
| SOT-223 | 3L | 12 | 8 | - | 2000 |

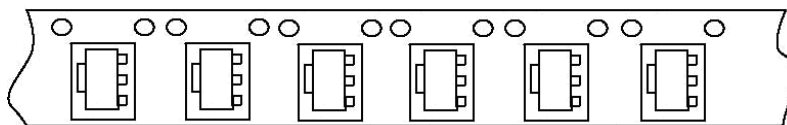
Note: A0 B0 K0 are determined by component size. The clearance between the component and the cavity must be within 0.05 [.002] min. to 0.50 [.020] max. for 8mm tape, 0.05 [.002] min to 0.65 [.026] max for 12mm tape.



| REEL DIMENSIONS | | | | | | | |
|-----------------|-----------------|---------------|--------------------------|----------------|---------------|---------------------------------------|----------------|
| Tape Size | A Max. | B Min. | C | D* Min. | N Min. | G | T Max. |
| 8mm | 330 (12.992) | 1.5 (.059) | 13.0±0.20 (.152±.008) | 20.2 (.795) | 50 (1.973) | 8.4±1.5 0.0 (.331±.059) 0.0 | 14.4 (.567) |
| 12mm | 330 (12.992) | 1.5 (.059) | 13.0±0.20 (.152±.008) | 20.2 (.795) | 50 (1.973) | 12.4±2.0 0.0 (.488±.078) 0.0 | 14.4 (.567) |

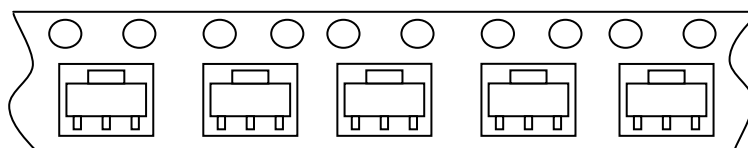
MECHANICAL POLARIZATION

SOT-89 DEVICE



User direction of feed ----->

SOT-223 DEVICE



User direction of feed ----->