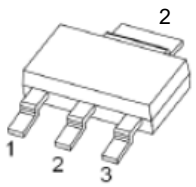
1A LOW DROPOUT LINEAR REGULATOR

CJT1117B-XXX

SOT - 223



1. ADJ / GND
2. OUTPUT
3. IN

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 to 125°C

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.

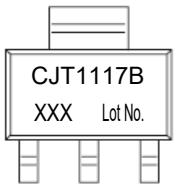
The CJT1117B-XXX series provides current limiting and thermal shutdown. Its circuit includes a trimmed bandgap. reference to assure output voltage accuracy to be within 1.5%. Current limit is trimmed to ensure specified. output current and controlled short-circuit current. On-chip thermal shutdown provides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

The CJT1117B-XXX has an adjustable version, th at 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

ORDERING INFORMATION

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

ABOSLUTE MAXIMUM RATINGS

(T_A = 25°C, unless otherwise specified)

Parameter	Symbol	Value	Unit
Input Voltage	V_{IN}	20	V
Maximum Junction Temperature	$T_{J\ MAX}$	150	℃
Storage Temperature	T_{STG}	-40~+150	℃
Soldering Temperature & Time	T_{solder}	260℃,10s	

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_{IN}	15	V
Operating Junction Temperature	T_J	-40~+125	℃
Operating Amibient Temperature	T_A	-40~+85	℃

ESD RATINGS

Parameter	Symbol	Value	Unit
Electrostatic discharge	$V_{ESD\text{-}HBM}$	2000	V
	$V_{ESD\text{-}MM}$	400	

Note: ESD testing is conducted in accordance with the relevant specifications formulated by the Joint Electronic Equipment Engineering Commission (JEDEC). The human body mode (HBM) electrostatic discharge test is based on the JESD22-114D test standard, using a 100pF capacitor and discharging to each pin of the device through a resistance of 1.5kΩ. The electrostatic discharge test in mechanical mode (MM) is based on the JESD22-115-A test standard and uses a 200pF capacitor to discharge directly to each pin of the device.

THERMAL METRIC

Parameter	Symbol	Value	Unit
Junction-to-ambient thermal resistance	$R_{\Theta JA}$	100	℃/W
Junction-to-case thermal resistance	$R_{\Theta JC}$	35	℃/W

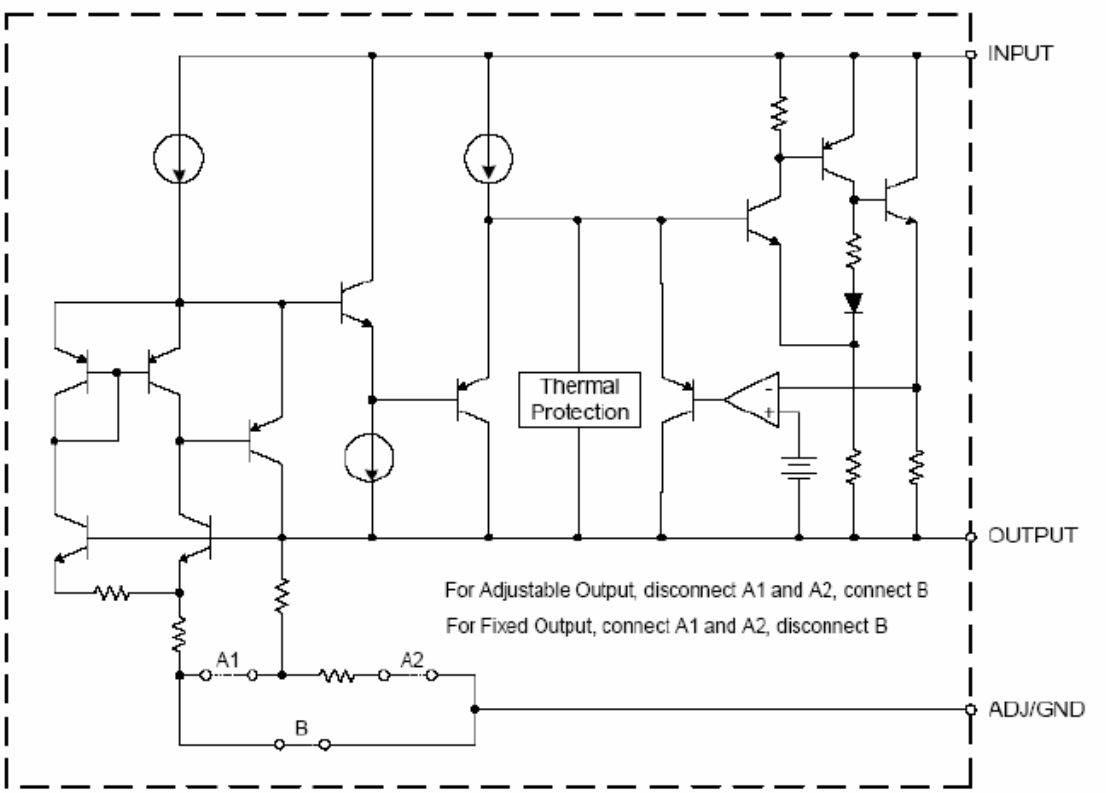
ELECTRICAL CHARACTERISTICS

V_{IN} ≤ 10V, T_J = 25°C, unless otherwise specified.

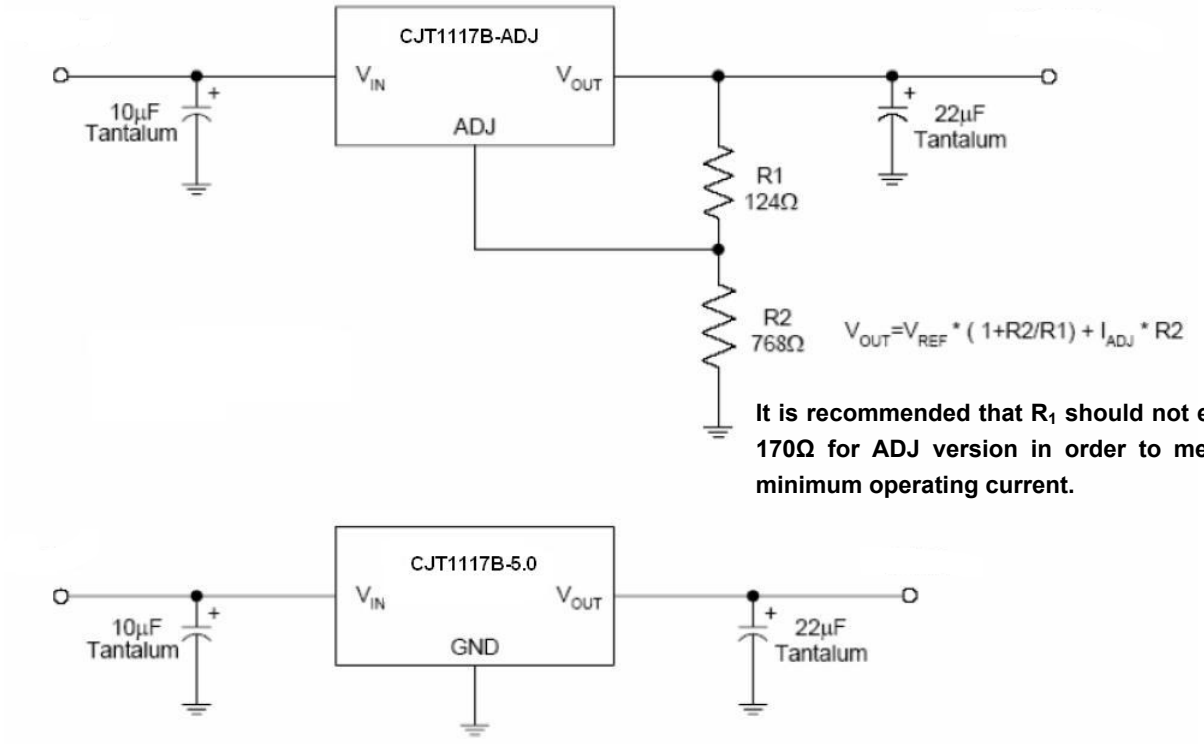
Parameter	Symbol	Part No.	Test Conditions	Min	Typ	Max	Unit
Reference Voltage	V_{IROC}	**CJT1117B-ADJ**	I_{OUT}=10mA, V_{IN} =3.23V	1.231	1.250	1.269	V
			10mA≤I_{OUT}≤1A, 2.75V≤V_{IN} -V_{OUT} ≤13.25V	1.225	1.250	1.275	
Output Voltage	V_O	**CJT1117B-1.8**	I_{OUT}=10mA, V_{IN}=3.8V	1.773	1.8	1.827	V
			10mA≤I_{OUT}≤1A, 3.3V≤V_{IN} ≤12V	1.764	1.8	1.836	
		CJT1117B-2.5	I_{OUT}=10mA, V_{IN}=4.5V	2.463	2.5	2.538	
			10mA≤I_{OUT}≤1A, 4V≤V_{IN} ≤12V	2.450	2.5	2.550	
		CJT1117B-3.3	I_{OUT}=10mA, V_{IN}=5.3V	3.251	3.3	3.350	
			10mA≤I_{OUT}≤1A, 4.8V≤V_{IN} ≤12V	3.234	3.3	3.366	
		CJT1117B-5.0	I_{OUT}=10mA, V_{IN}=7.0V	4.925	5.0	5.075	
			10mA≤I_{OUT}≤1A, 6.5V≤V_{IN} ≤12V	4.9	5.0	5.1	
Line Regulation	LNR	**CJT1117B-ADJ**	I_{OUT}=10mA, 1.5V≤V_{IN} -V_{OUT} ≤12V			0.2	%
		CJT1117B-1.8	I_{OUT}=10mA, 1.5V≤V_{IN} -V_{OUT} ≤10.2V			7	mV
		CJT1117B-2.5	I_{OUT}=10mA, 1.5V≤V_{IN} -V_{OUT} ≤9.5V			7	
		CJT1117B-3.3	I_{OUT}=10mA, 1.5V≤V_{IN} -V_{OUT} ≤8.7V			7	
		CJT1117B-5.0	I_{OUT}=10mA, 1.5V≤V_{IN} -V_{OUT} ≤7V			10	
Load Regulation	LDR	**CJT1117B-ADJ**	V_{IN}-V_{OUT}=1.5V, 10mA≤I_{OUT} ≤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**		ΔV_{REF}=1%, I_{OUT}=100mA		1.10		V
			ΔV_{REF}=1%, I_{OUT}=500mA		1.13		
			ΔV_{REF}=1%, I_{OUT}=1000mA		1.15	1.40	
Adjust Pin Current	I_{ADJ}		I_{OUT}=10mA (ADJ only)		60	120	μA
Adjust Pin Current Change	ΔI_{ADJ}		1.5V≤V_{IN} -V_{OUT} ≤12V, I_{OUT}=10mA (ADJ only)		1.7	5	μA
Minimum Load Current	I_L		V_{IN} = 5V, V_{ADJ} = 0V		2	7	mA
Quiescent Current	I_q		V_{IN}= V_{OUT}+1.25V (ADJ except)			10	mA
Current Limit	I_{Limit}		V_{IN} - V_{OUT} = 1.5V	1.20	1.50		A
Ripple Rejection	RR		f=120Hz,C_{OUT}=22μFTantalum, V_{IN}-V_{OUT}=3V, I_{OUT}=1A	60	75		dB
Temperature Stability					0.5		%
Long-Term Stability			T_A=125℃, 1000hrs		0.3		%
RMS Output Noise (% of VOUT)			T_A=25℃, 10Hz≤f ≤10kHz		0.003		%
Thermal Shutdown Temperature	T_{SD}				160		°C
Thermal Shutdown Hysteresis	ΔT_{SD}				25		°C

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FUNCTIONAL BLOCK DIAGRAM



TYPICAL APPLICATION CIRCUIT

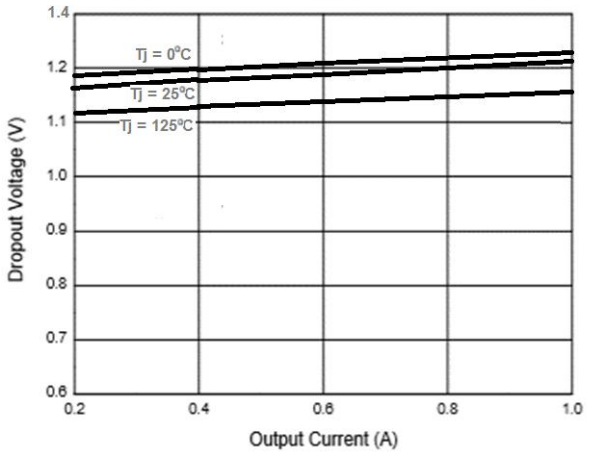


It is recommended that R_1 should not exceed 170Ω for ADJ version in order to meet the minimum operating current.

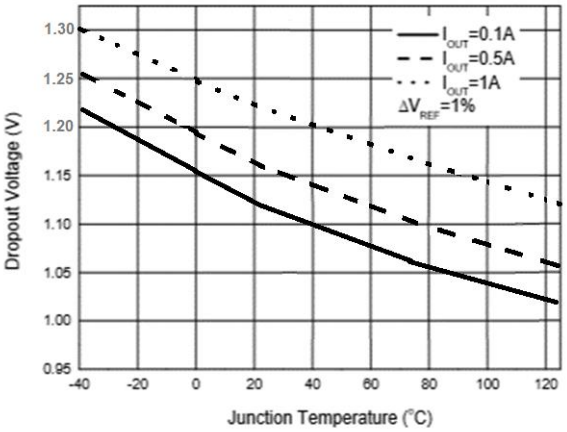
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Typical Characteristics

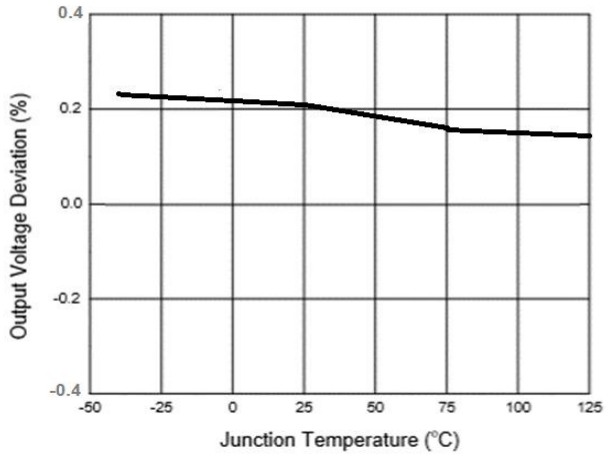
Dropout Voltage vs. Output Current



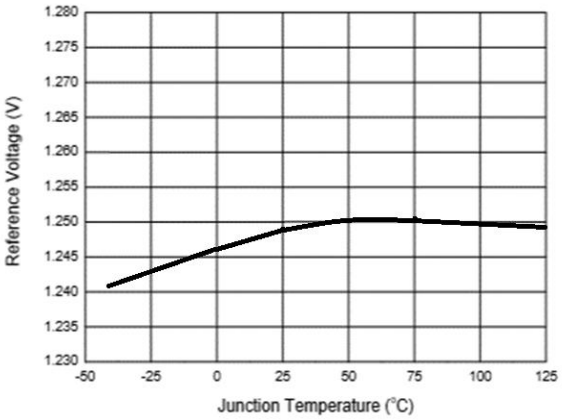
Dropout Voltage vs. Junction Temperature



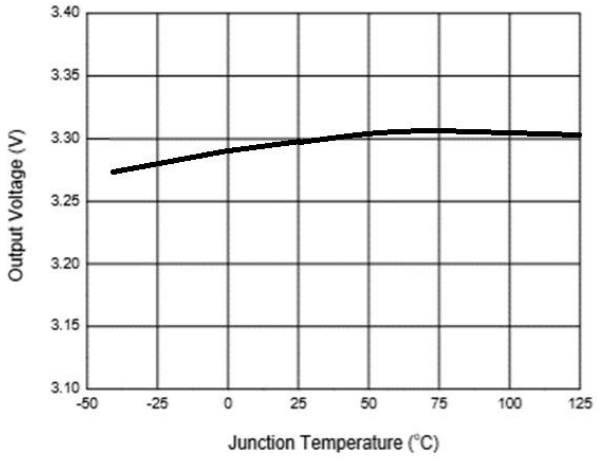
Load Regulation vs. Junction Temperature



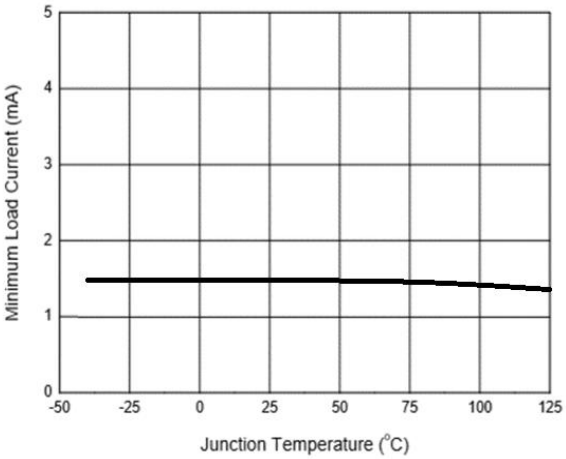
Reference Voltage vs. Junction Temperature



Output Voltage vs. Junction Temperature

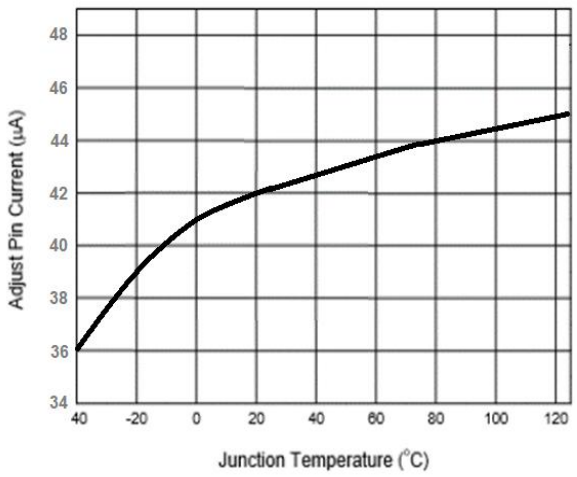


Minimum Load Current vs. Junction Temperature

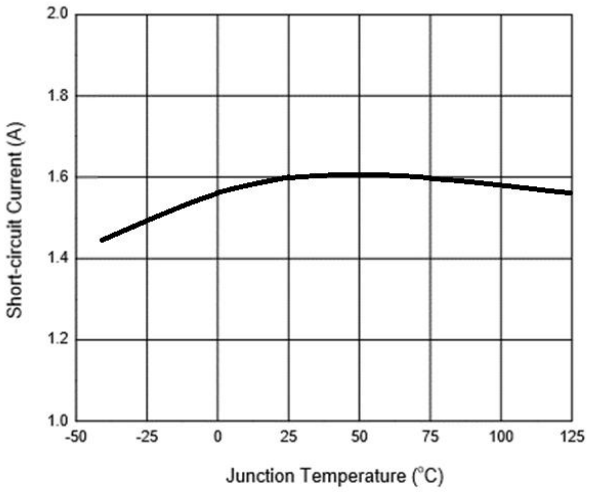


Typical Characteristics

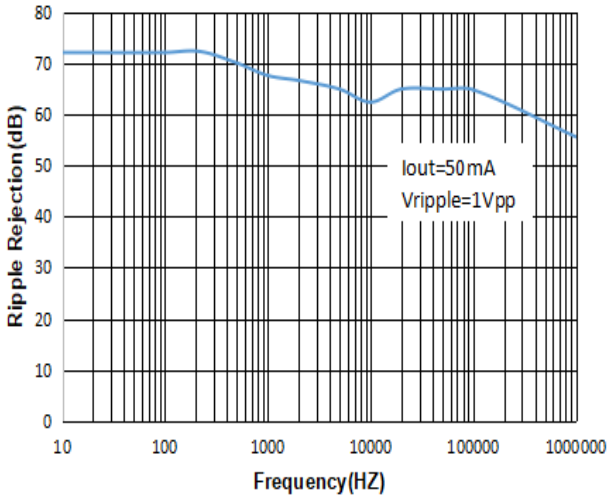
Adjust Pin Current vs. Junction Temperature



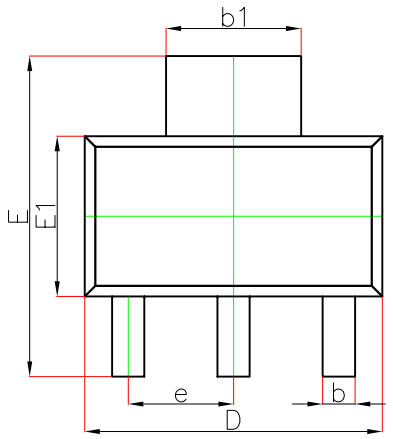
Short-circuit Current vs. Junction Temperature

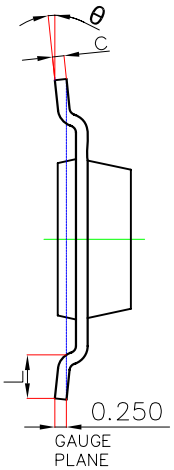


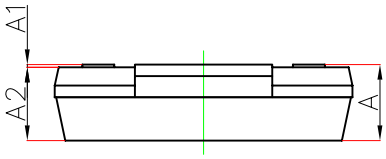
PSRR Vs.Frequency



SOT-223 Package Outline Dimensions

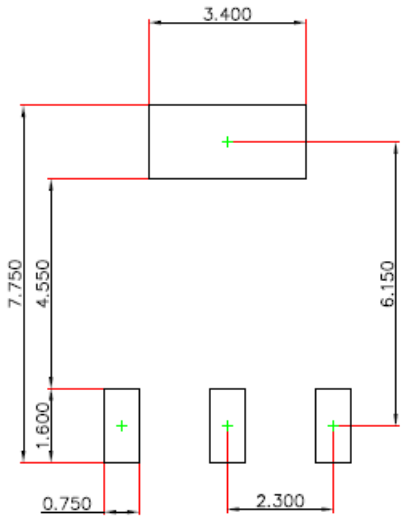






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	——	1.800	——	0.071
A1	0.020	0.100	0.001	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.840	0.026	0.033
b1	2.900	3.100	0.114	0.122
c	0.200	0.350	0.009	0.014
D	6.300	6.700	0.248	0.264
E	6.700	7.300	0.264	0.287
E1	3.300	3.700	0.130	0.146
e	2.300(BSC)		0.091(BSC)	
L	0.750	——	0.030	——
θ	0°	10°	0°	10°

SOT-223 Suggested Pad Layout

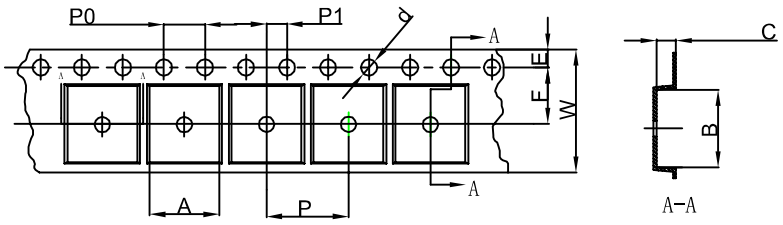


NOTE:

1. Controlling dimension: in millimeters.
2. General tolerance: ±0.05mm.
3. The pad layout is for reference purposes only.

SOT-223 Tape and Reel

SOT-223 Embossed Carrier Tape

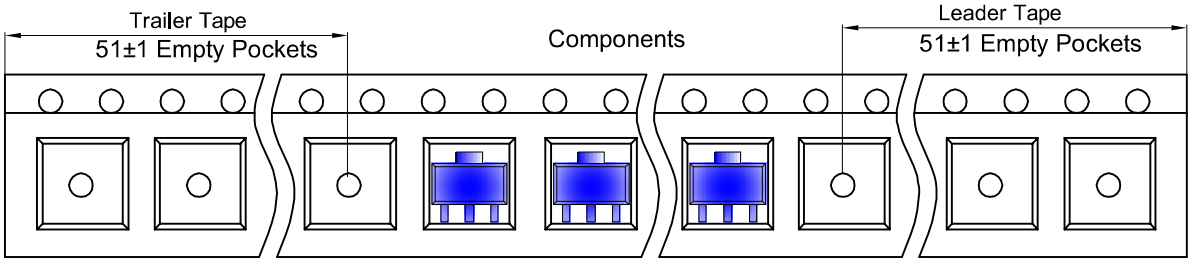


Packaging Description:

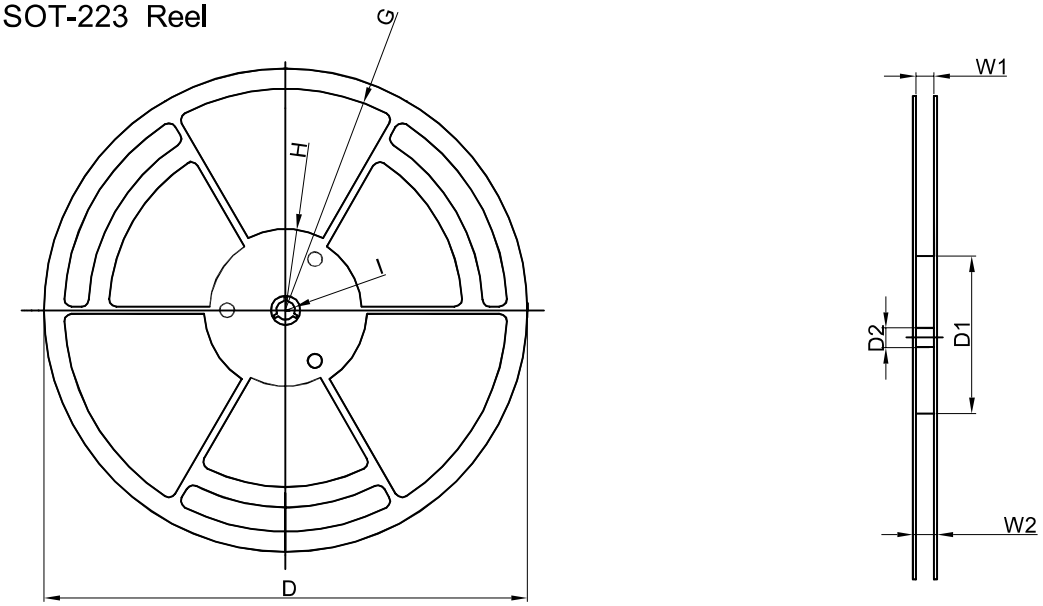
SOT-223 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts 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	φ330.00	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)**
2,500 pcs	13 inch	5,000 pcs	360×360×65	25,000 pcs	378×358×382

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DISCLAIMER

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