

500mA Low Dropout Linear Regulator

FEATURES

- Low Dropout Voltage of 650mV at 500mA Output Current (3V Output Version).
- Guaranteed 500mA Output Current.
- Maximum Input Voltage is 8V
- Low Ground Current at 65 μ A.
- 2% Accuracy Output Voltage of 1.8V/ 2.0V /2.5V /2.7V/ 3.0V/ 3.3V/ 3.5V/ 3.7V/ 3.8V/ 5.0V/ 5.2V.
- Only needs 4.7 μ F Output Capacitor for Stability.
- Current and Thermal Limiting.

APPLICATIONS

- CD-ROM Drivers.
- LAN Cards.
- Microprocessor.
- RAM Module.
- Wireless Communication Systems.
- Battery Powered Systems.

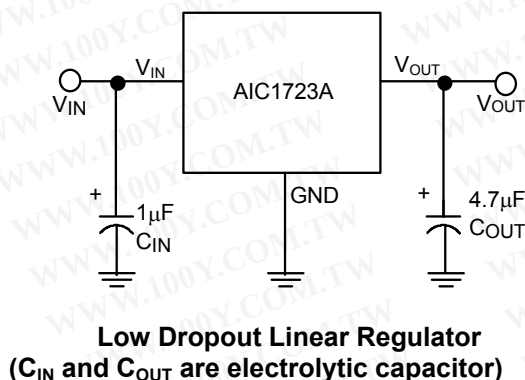
DESCRIPTION

The AIC1723A is a 3-pin low dropout linear regulator. The superior characteristics of the AIC1723A include zero base current loss, very low dropout voltage, and 2% accuracy output voltage. Typical ground current remains approximately 65 μ A, for loading ranging from zero to maximum. Dropout voltage turns substantially low when output current is 500mA. Built-in output current limiting and thermal limiting provide maximal protection to the AIC1723A against fault conditions.

The AIC1723A is available with popular SOT-23, SOT-223, SOT-89 and TO-252 packages.

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TYPICAL APPLICATION CIRCUIT



ORDERING INFORMATION

AIC1723A-XXXX XX

PACKING TYPE
 TR: TAPE & REEL
 TB: TUBE

PACKAGE TYPE
 E: TO-252
 U: SOT-23
 X: SOT-89
 Y: SOT-223

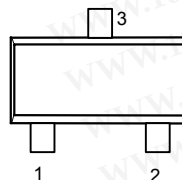
C: Commercial
 P: Lead Free Commercial

OUTPUT VOLTAGE

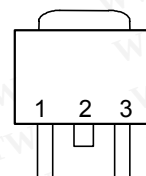
18: 1.8V
 20: 2.0V
 25: 2.5V
 27: 2.7V
 30: 3.0V
 33: 3.3V
 35: 3.5V
 37: 3.7V
 38: 3.8V
 50: 5.0V
 52: 5.2V

PIN CONFIGURATION

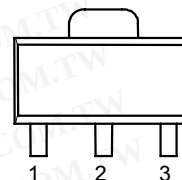
SOT-23 (CU & PU)
 TOP VIEW
 1: GND
 2: VOUT
 3: VIN



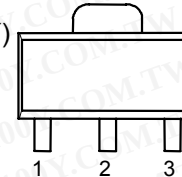
TO-252 (CE & PE)
 TOP VIEW
 1: VOUT
 2: GND
 3: VIN



SOT-89 (CX & PX)
 TOP VIEW
 1: GND
 2: VIN
 3: VOUT



SOT-223 (CY & PY)
 TOP VIEW
 1: VOUT
 2: GND
 3: VIN



Example: AIC1723A-18CETR

→ 1.8V Version, in TO-252 Package & Tape & Reel

Packing Type

AIC1723A-18PYTR

→ 1.8V Version, in SOT-223 Lead Free Package & Tape
 & Reel Packing Type

SOT-23 MARKING

Part No.	CU	PU	Part No.	CU	PU
AIC1723A-18XU	BT18	BT18P	AIC1723A-35XU	BT35	BT35P
AIC1723A-20XU	BT20	BT20P	AIC1723A-37XU	BT37	BT37P
AIC1723A-25XU	BT25	BT25P	AIC1723A-38XU	BT38	BT38P
AIC1723A-27XU	BT27	BT27P	AIC1723A-50XU	BT50	BT50P
AIC1723A-30XU	BT30	BT30P	AIC1723A-52XU	BT52	BT52P
AIC1723A-33XU	BT33	BT33P			

● SOT-89 MARKING

Part No.	CX	PX	Part No.	CX	PX
AIC1723A-18XX	AV18	AV18P	AIC1723A-35XX	AV35	AV35P
AIC1723A-20XX	AV20	AV20P	AIC1723A-37XX	AV37	AV37P
AIC1723A-25XX	AV25	AV25P	AIC1723A-38XX	AV38	AV38P
AIC1723A-27XX	AV27	AV27P	AIC1723A-50XX	AV50	AV50P
AIC1723A-30XX	AV30	AV30P	AIC1723A-52XX	AV52	AV52P
AIC1723A-33CY	AV33	AV33P			

● SOT-223 MARKING

Part No.	CY	PY	Part No.	CY	PY
AIC1723A-18XY	BU18	BU18P	AIC1723A-35XY	BU35	BU35P
AIC1723A-20XY	BU20	BU20P	AIC1723A-37XY	BU37	BU37P
AIC1723A-25XY	BU25	BU25P	AIC1723A-38XY	BU38	BU38P
AIC1723A-27XY	BU27	BU27P	AIC1723A-50XY	BU50	BU50P
AIC1723A-30XY	BU30	BU30P	AIC1723A-52XY	BU52	BU52P
AIC1723A-33XY	BU33	BU33P			

■ ABSOLUTE MAXIMUM RATINGS

Input Supply Voltage		-0.3~8V
Operating Temperature Range		-40°C~ 85°C
Junction Temperature		125°C
Storage Temperature Range		-65°C~150°C
Lead Temperature (Soldering, 10sec)		260°C
Thermal Resistance Junction to Ambient	SOT-23 Package	 180°C/W
(Assume no Ambient Airflow, no Heatsink)	TO-252 Package	 100°C/W
	SOT-89 Package	 160°C/W
	SOT-223 Package	 155°C/W

Absolute Maximum Rating are those value beyond which the life of a device may be impaired.

■ TEST CIRCUIT

Refer to the TYPICAL APPLICATION CIRCUIT

ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$, $C_{IN}=1\mu\text{F}$, $C_{OUT}=4.7\mu\text{F}$, unless otherwise specified.) (Note 1)

PARAMETER	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	No Load AIC1723A-52 AIC1723A-50 AIC1723A-38 AIC1723A-37 AIC1723A-35 AIC1723A-33 AIC1723A-30 AIC1723A-27 AIC1723A-25 AIC1723A-20 AIC1723A-18 $V_{IN}=8\text{V}$	-2		+2	%
Line Regulation	$I_L=1\text{mA}$, $1.8\text{V}\leq V_{OUT}\leq 3.2\text{V}$ $V_{IN}=4\text{V}\sim 8\text{V}$ $3.3\text{V}\leq V_{OUT}\leq 5.2\text{V}$ $V_{IN}=5.5\text{V}\sim 8\text{V}$		3 3	10 15	mV
Load Regulation (Note 2)	$I_L=0.1\sim 500\text{mA}$ $1.8\text{V}\leq V_{OUT}\leq 3.9\text{V}$ $V_{IN}=5\text{V}$ $4.0\text{V}\leq V_{OUT}\leq 5.2\text{V}$ $V_{IN}=7\text{V}$		10 20	30 50	mV
Current Limit (Note 3)	$V_{IN}=7\text{V}$, $V_{OUT}=0\text{V}$	500			mA
Dropout Voltage (Note 4)	$I_L=500\text{mA}$ $4.0\text{V}\leq V_{OUT}\leq 5.2\text{V}$ $3.0\text{V}\leq V_{OUT}\leq 3.9\text{V}$ $2.5\text{V}\leq V_{OUT}\leq 2.9\text{V}$ $2.0\text{V}\leq V_{OUT}\leq 2.4\text{V}$ $1.8\text{V}\leq V_{OUT}\leq 1.9\text{V}$		510 650 780 1100 1400		mV
Ground Current	$I_O=0.1\text{mA}\sim I_{MAX}$ $1.8\text{V}\leq V_{OUT}\leq 3.9\text{V}$ $V_{IN}=5\sim 8\text{V}$ $4.0\text{V}\leq V_{OUT}\leq 5.2\text{V}$ $V_{IN}=7\sim 8\text{V}$		65 65	90 90	μA
Thermal Shutdown Hysteresis	Guaranteed by design		20		$^{\circ}\text{C}$

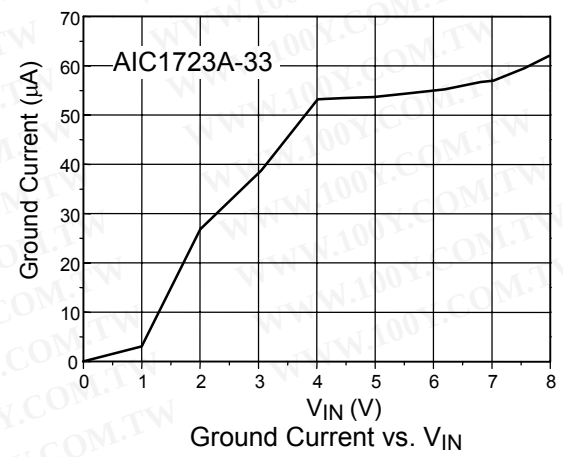
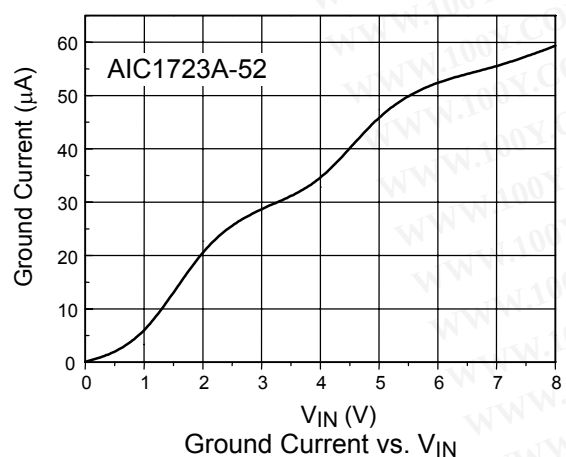
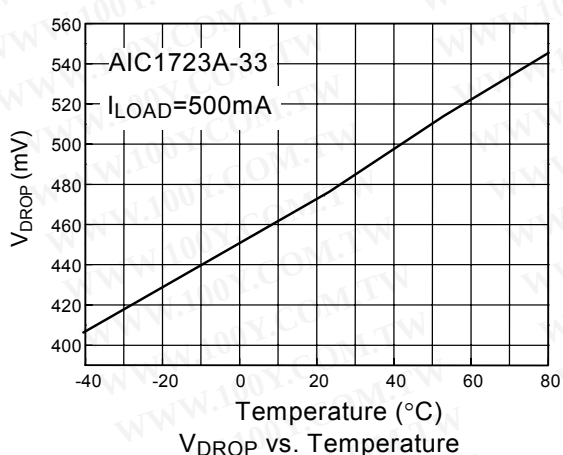
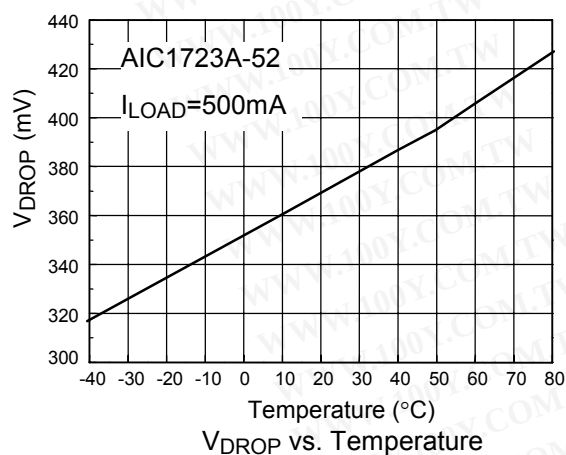
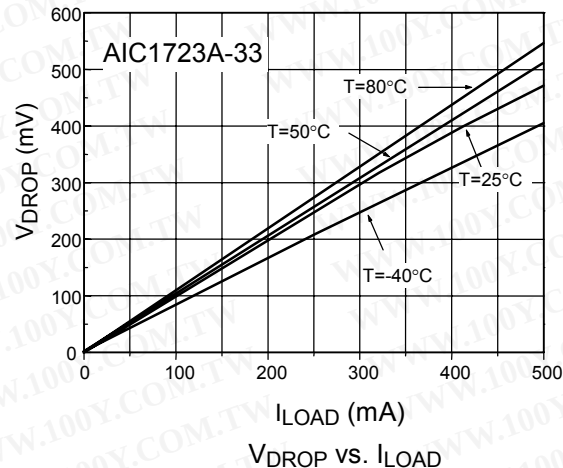
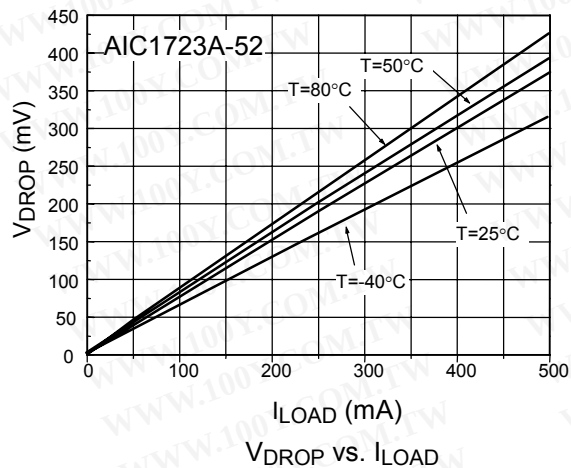
Note 1: Specifications are production tested at $T_A=25^{\circ}\text{C}$. Specifications over the -40°C to 85°C operating temperature range are assured by design, characterization and correlation with Statistical Quality Controls (SQC).

Note 2: Regulation is measured at constant junction temperature, using pulse testing with a low ON time.

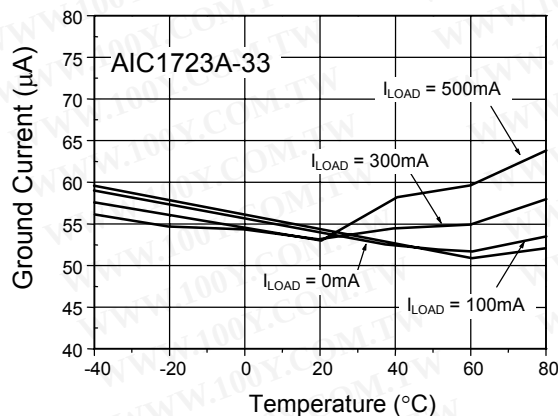
Note 3: Current limit is measured by pulsing a short time.

Note 4: Dropout voltage is defined as the input to output differential at which the output voltage drops 100mV below the value measured with a 1V differential.

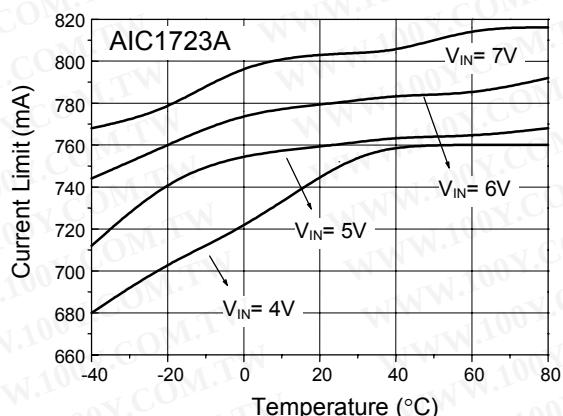
TYPICAL PERFORMANCE CHARACTERISTICS



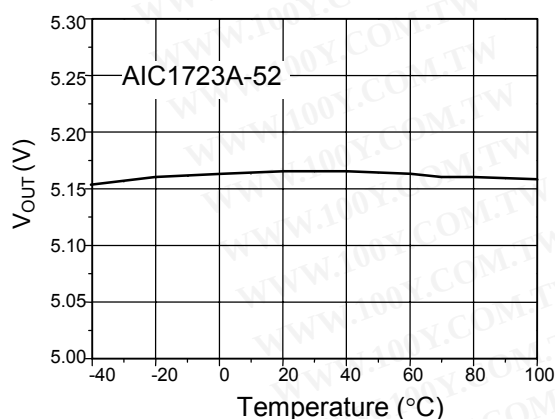
■ TYPICAL PERFORMANCE CHARACTERISTICS (Continued)



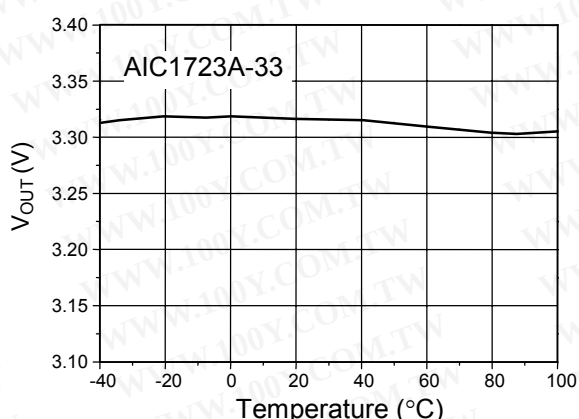
Ground Current vs. Temperature



Current Limit vs. Temperature

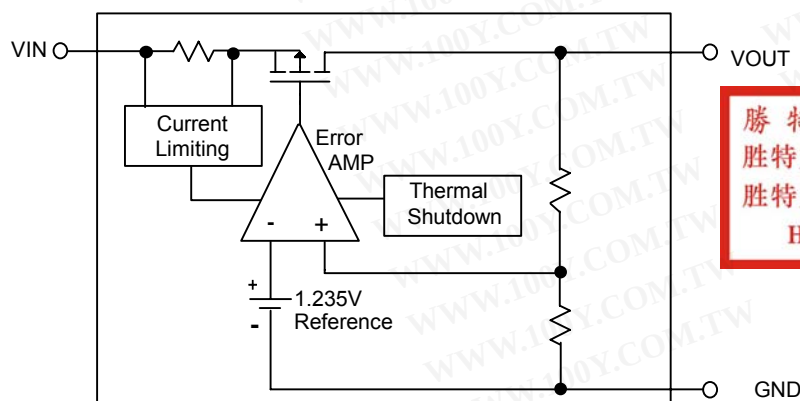


V_{OUT} vs. Temperature



V_{OUT} vs. Temperature

■ BLOCK DIAGRAM



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PIN DESCRIPTIONS

VOUT PIN - Output pin.

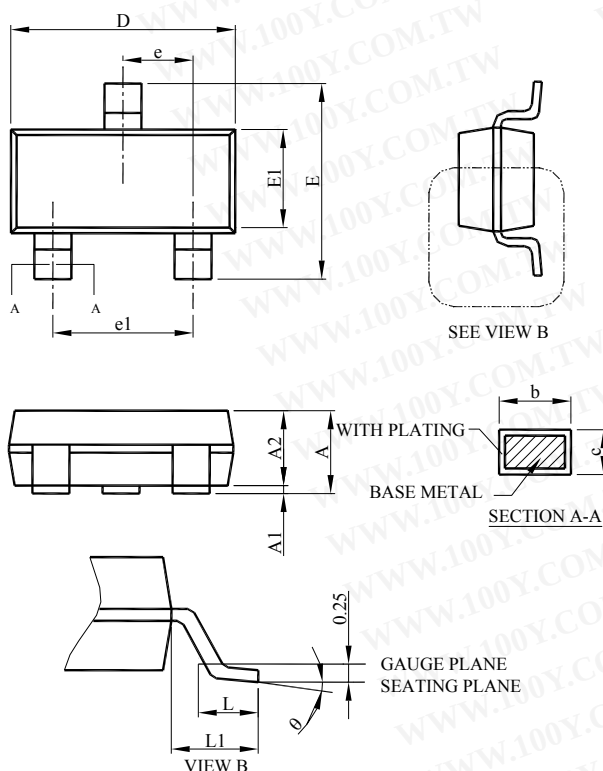
GND PIN - Power GND.

VIN PIN - Power Supply Input.

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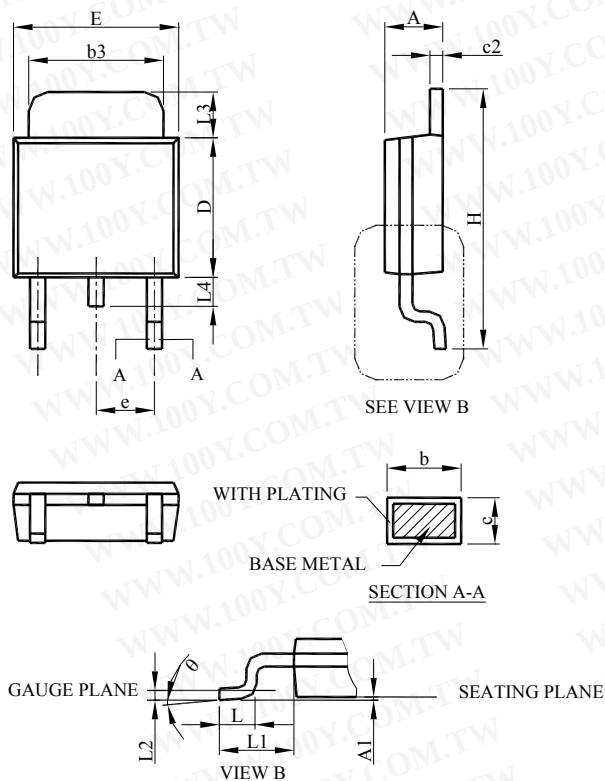
PHYSICAL DIMENSIONS (unit: mm)

● SOT-23 (CU) (PU)



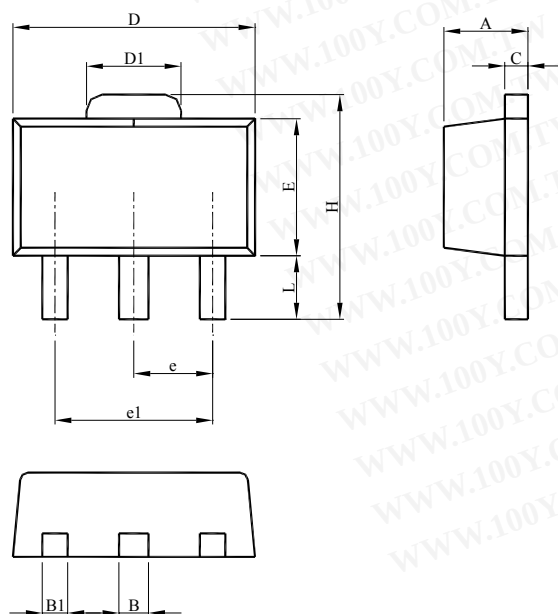
SYMBOL	SOT-23	
	MILLIMETERS	
	MIN.	MAX.
A	0.95	1.45
A1	0.05	0.15
A2	0.90	1.30
b	0.30	0.50
c	0.08	0.22
D	2.80	3.00
E	2.60	3.00
E1	1.50	1.70
e	0.95 BSC	
e1	1.90 BSC	
L	0.30	0.60
L1	0.60 REF	
θ	0°	8°

● TO-252 (CE) (PE)



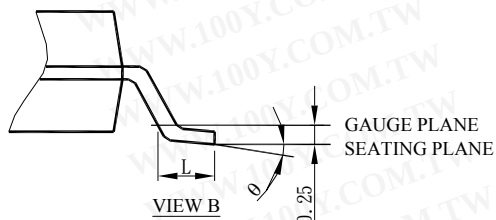
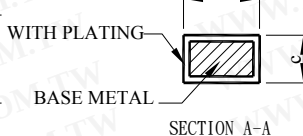
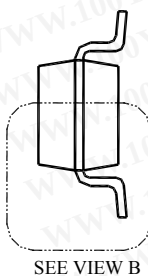
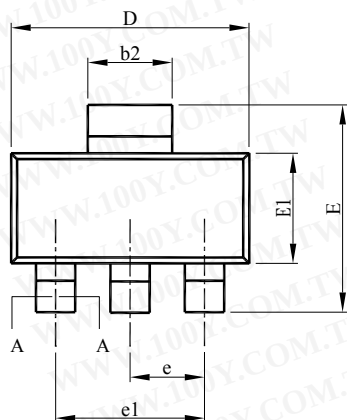
SYMBOL	TO-252-3L	
	MILLIMETERS	
	MIN.	MAX.
A	2.19	2.38
A1	0.00	0.13
b	0.64	0.89
b3	4.95	5.46
c	0.46	0.61
c2	0.46	0.89
D	5.33	6.22
E	6.35	6.73
e	2.28 BSC	
H	9.40	10.41
L	1.40	1.78
L1	2.67 REF	
L2	0.51 BSC	
L3	0.89	2.03
L4	--	1.02
θ	0°	8°

● SOT-89 (CX) (PX)



SYMBOL	SOT-89	
	MILLIMETERS	
	MIN.	MAX.
A	1.40	1.60
B	0.44	0.56
B1	0.36	0.48
C	0.35	0.44
D	4.40	4.60
D1	1.50	1.83
E	2.29	2.60
e	1.50 BSC	
e1	3.00 BSC	
H	3.94	4.25
L	0.89	1.20

● SOT-223 (CY) (PY)



SYMBOL	SOT-223	
	MILLIMETERS	
	MIN.	MAX.
A		1.80
A1	0.02	0.10
A2	1.55	1.65
b	0.66	0.84
b2	2.90	3.10
c	0.23	0.33
D	6.30	6.70
E	6.70	7.30
E1	3.30	3.70
e	2.30 BSC	
e1	4.60 BSC	
L	0.90	
θ	0°	8°

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