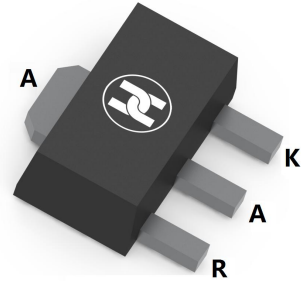
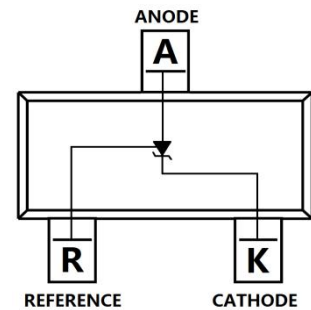


**ADJUSTABLE ACCURATE REFERENCE SOURCE**
**FEATURES**

- The effective temperature compensation in the working range of full temperature
- The typical value of the equivalent temperature factor in the whole temperature scope is 50 ppm/°C
- The output voltage can be adjusted to 36V
- Low dynamic output impedance, its typical value is 0.2Ω
- Trapping current capability is 1 to 100mA
- Low output noise voltage
- Fast on-state response
- Surface Mount device


**SOT-89**

**APPLICATION**

- Shunt Regulator
- High-Current Shunt Regulator
- Precision Current Limiter

**MECHANICAL DATA**

- Case: SOT-89
- Case Material: Molded Plastic. UL flammability
- Classification Rating: 94V-0
- Weight: 0.055 grams (approximate)
- Marking:431

**MAXIMUM RATINGS (Operating temperature range applies unless otherwise specified)**

Parameter	Symbol	Value	Unit
Cathode Voltage	$V_{KA}$	36	V
Cathode Current Range (Continuous)	$I_{KA}$	-100~+150	mA
Reference Input Current Range	$I_{ref}$	0.05~+10	mA
Power Dissipation	$P_D$	500	mW
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	250	°C/W
Operating Temperature	$T_{opr}$	-20~+85	°C
Junction Temperature	$T_J$	150	°C
Storage Temperature Range	$T_{STG}$	-55 ~+150	°C

**ADJUSTABLE ACCURATE REFERENCE SOURCE**
**ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise specified)**

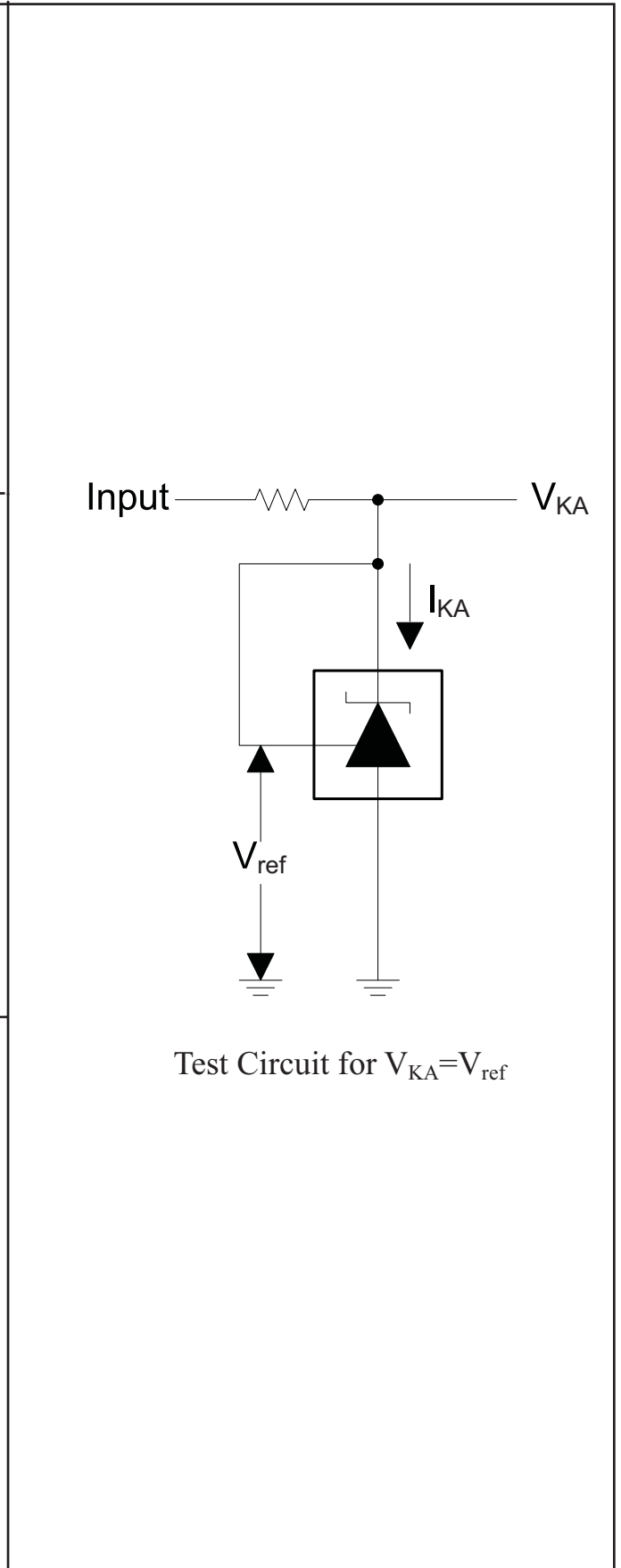
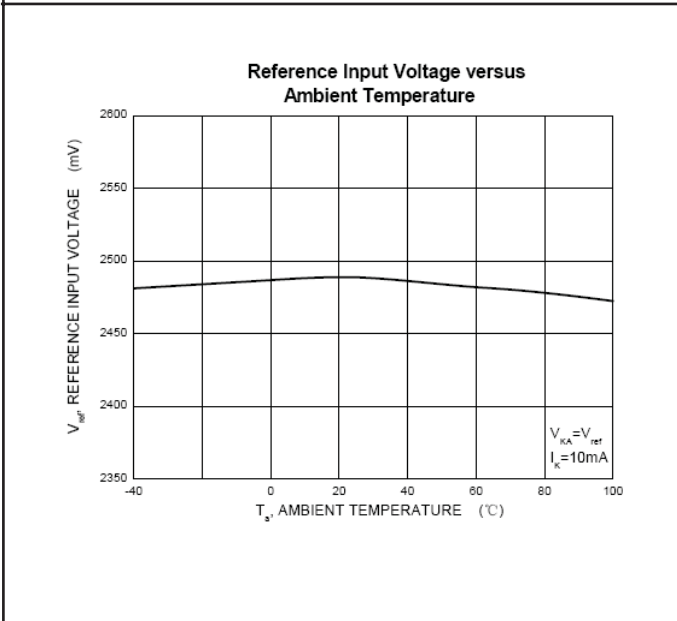
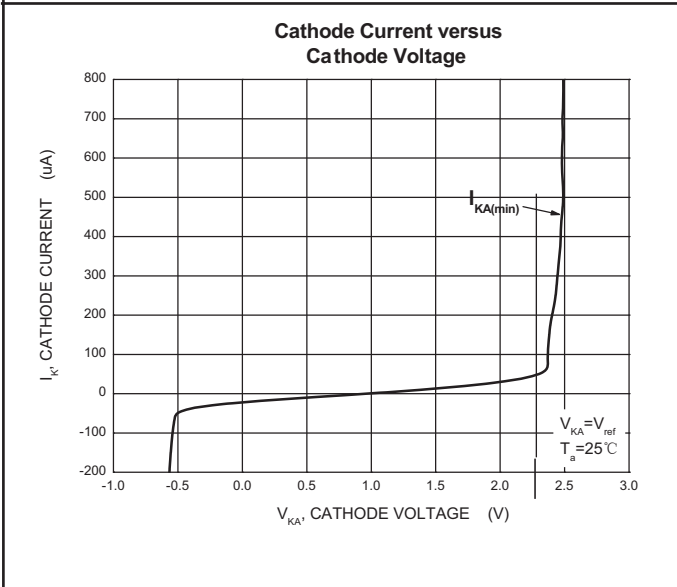
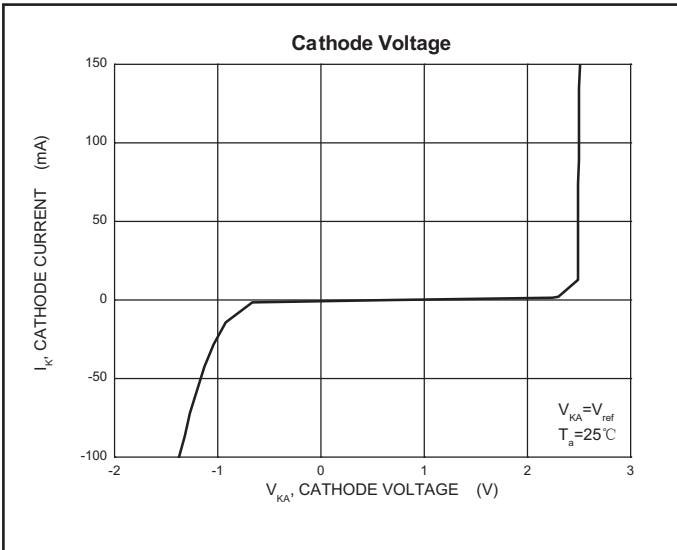
Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Reference Input Voltage	V <sub>ref</sub>	2.475	2.5	2.525	V	V <sub>KA</sub> =V <sub>REF</sub> , I <sub>KA</sub> =10mA
Deviation of reference input voltage over temperature	ΔV <sub>ref</sub> /ΔT		4.5	17	mV	V <sub>KA</sub> =V <sub>REF</sub> , I <sub>KA</sub> =10mA -25°C ≤ T <sub>A</sub> ≤ +85°C
Ratio of change in reference input voltage to the change in cathode voltage	ΔV <sub>ref</sub> /ΔV <sub>KA</sub>		-1.0	-2.7	mV/V	I <sub>KA</sub> =10mA, ΔV <sub>KA</sub> =10V-V <sub>REF</sub>
			-0.5	-2.0	mV/V	I <sub>KA</sub> =10mA, ΔV <sub>KA</sub> =36V-10V
Reference input current	I <sub>ref</sub>		1.5	4	μA	I <sub>KA</sub> =10mA, R <sub>1</sub> =10KΩ, R <sub>2</sub> =∞
Deviation of reference input current Over full temperature range	ΔI <sub>ref</sub> /ΔT		0.4	1.2	μA	I <sub>KA</sub> =10mA, R <sub>1</sub> =10KΩ, R <sub>2</sub> =∞, -25°C ≤ T <sub>A</sub> ≤ +85°C
Emitter cut-off current	I <sub>KA(min)</sub>		0.45	1.0	mA	V <sub>KA</sub> =V <sub>REF</sub>
Off-state Cathode Current	I <sub>KA(OFF)</sub>		0.05	1.0	μA	V <sub>KA</sub> =36V, V <sub>REF</sub> =0
Dynamic Impedance	Z <sub>KA</sub>		0.15	0.5	Ω	V <sub>KA</sub> =V <sub>REF</sub> , I <sub>KA</sub> =1~10mA, f ≤ 1.0kHz

**CLASSIFICATION OF V<sub>ref</sub>**

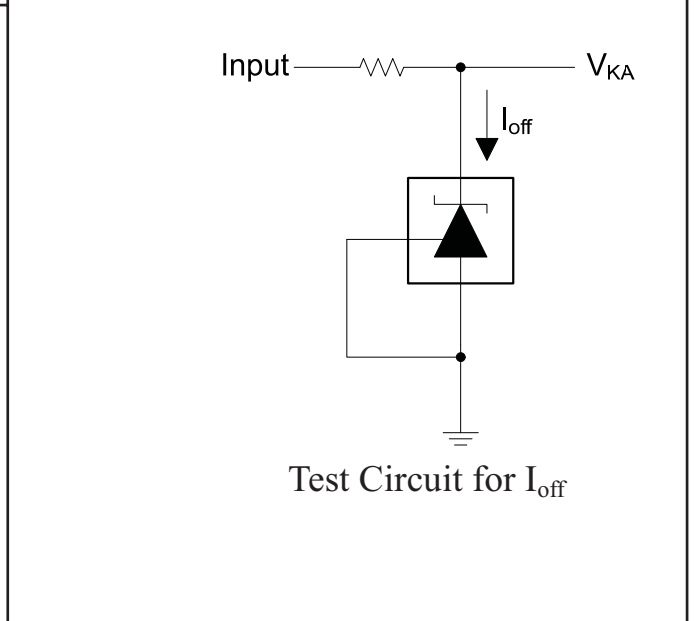
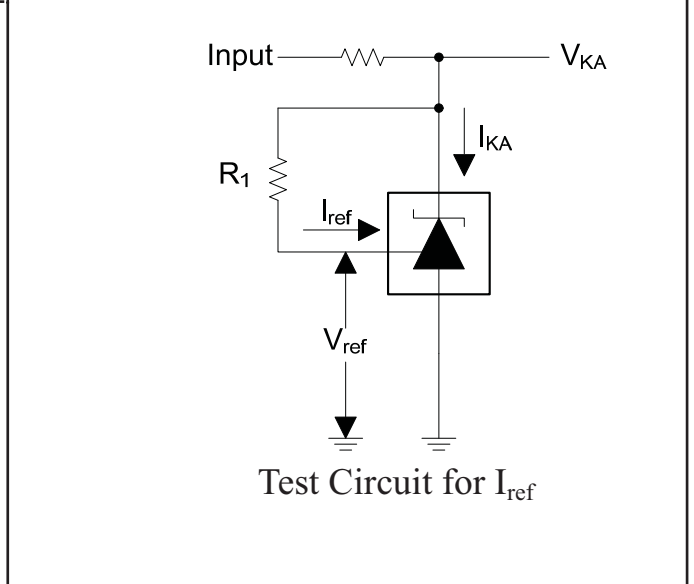
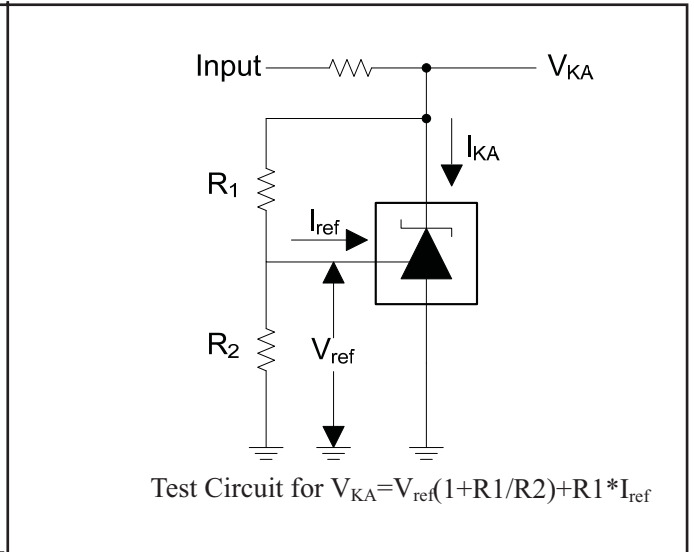
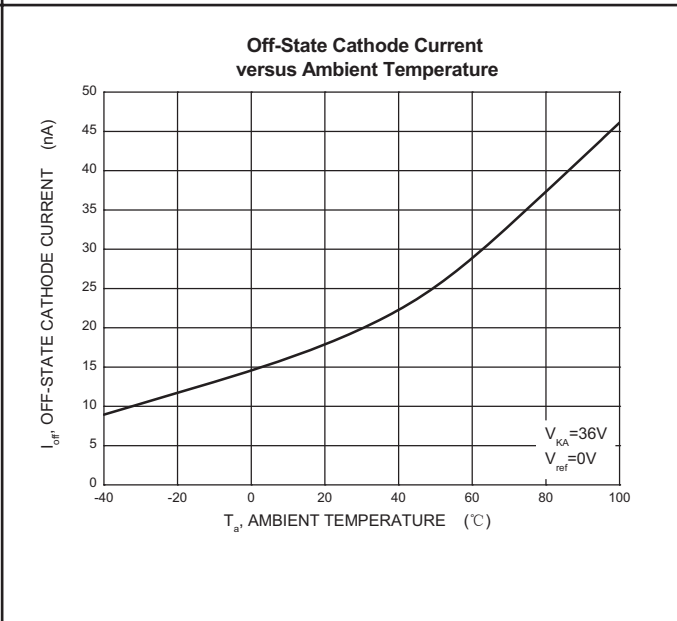
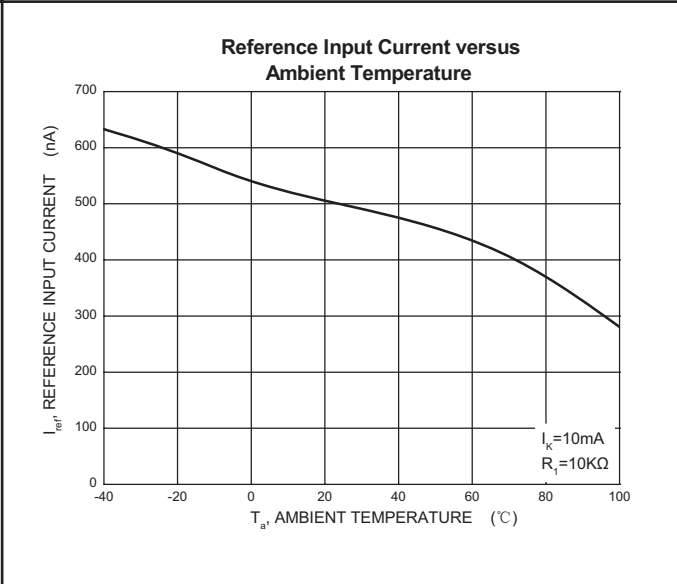
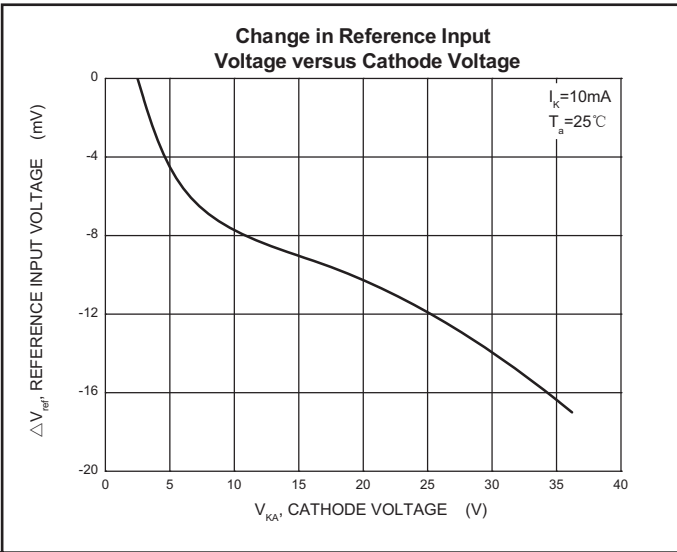
Rank	0.5%	1%
Range	2.487-2.513	2.475-2.525

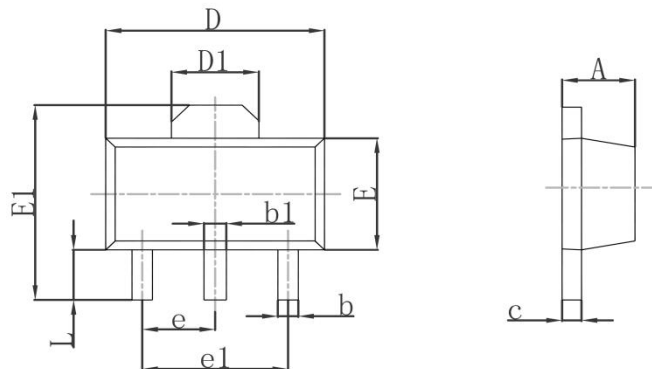
ADJUSTABLE ACCURATE REFERENCE SOURCE

Typical Characteristics

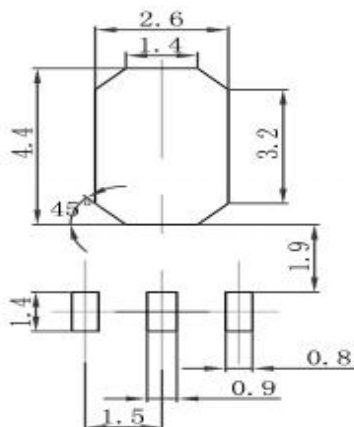


**ADJUSTABLE ACCURATE REFERENCE SOURCE**



**ADJUSTABLE ACCURATE REFERENCE SOURCE**
**SOT-89 Package Outline Dimensions**


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550REF		0.061REF	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500TYP		0.060TYP	
e1	3.000TYP		0.118TYP	
L	0.900	1.200	0.035	0.047

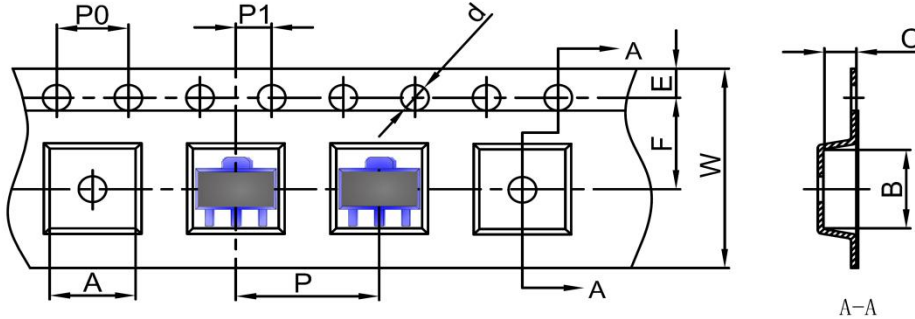
**SOT-89 Suggested Pad Layout**

**Note:**

1. Controlling dimension: in millimeters
2. General tolerance:  $\pm 0.05\text{mm}$
3. The pad layout is for reference purposes only

ADJUSTABLE ACCURATE REFERENCE SOURCE

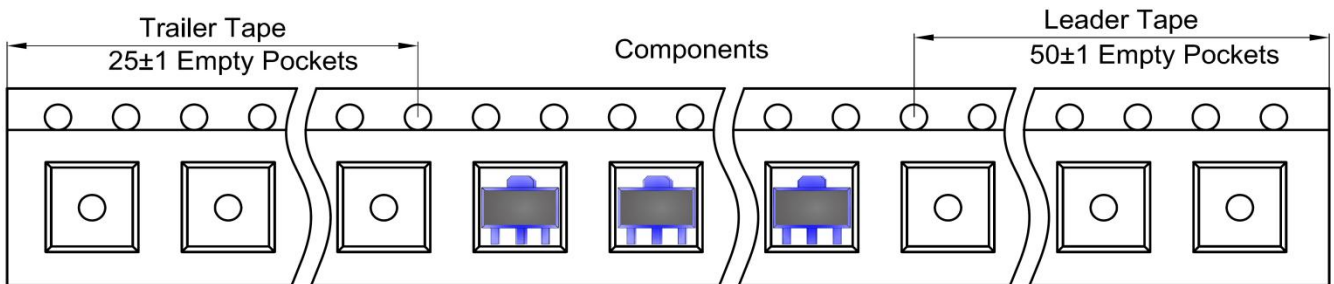
### SOT-89 Tape and Reel

#### SOT-89 Embossed Carrier Tape

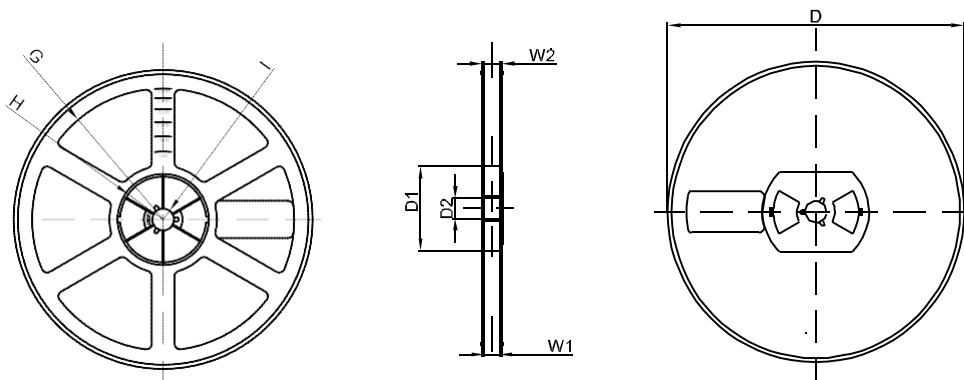


DIMENSIONS ARE IN MILLIMETER										
TYPE	A	B	C	d	E	F	P0	P	P1	W
SOT-89	4.85	4.45	1.85	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

#### SOT-89 Tape Leader and Trailer



#### SOT-89 Reel



DIMENSIONS ARE IN MILLIMETER								
REEL OPTION	D	D1	D2	G	H	I	W1	W2
7" DIA	Ø178	54.40	13.00	R78	R25.60	R6.50	13.20	16.50
TOLERANCE	±2	±1	±1	±1	±1	±1	±1	±1