



HY431

Adjustable Reference Source

DESCRIPTION

The HY431 is a three-terminal adjustable shunt regulator offering excellent temperature stability. This device has a typical dynamic output impedance of 0.2Ω. The device can be used as a replacement for zener diodes in many applications.

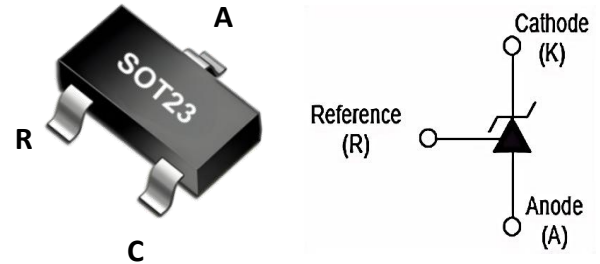
The HY431 meet the ROHS and Green Product requirement with full function reliability approved.

FEATURES

- *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
- *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

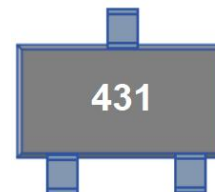
APPLICATION

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



MARKING

Type Code: Marking: 431



ABSOLUTE MAXIMUM RATINGS

(Operating temperature range applies unless otherwise specified)

SYMBOL	PARAMETER	VALUE	UNIT
VKA	Cathode Voltage	36	V
IKA	Cathode Current Range (Continuous)	-100 to +150	mA
Iref	Reference Input Current Range	0.05~+10	mA
PD	Power Dissipation	300	mW
TJ	Operating Junction Temperature	-40 ~ 125	°C
TSTG	Storage Temperature Range	-65 ~ 150	°C
RθJA	Thermal Resistance from Junction to Ambient	417	°C/W



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ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise specified)

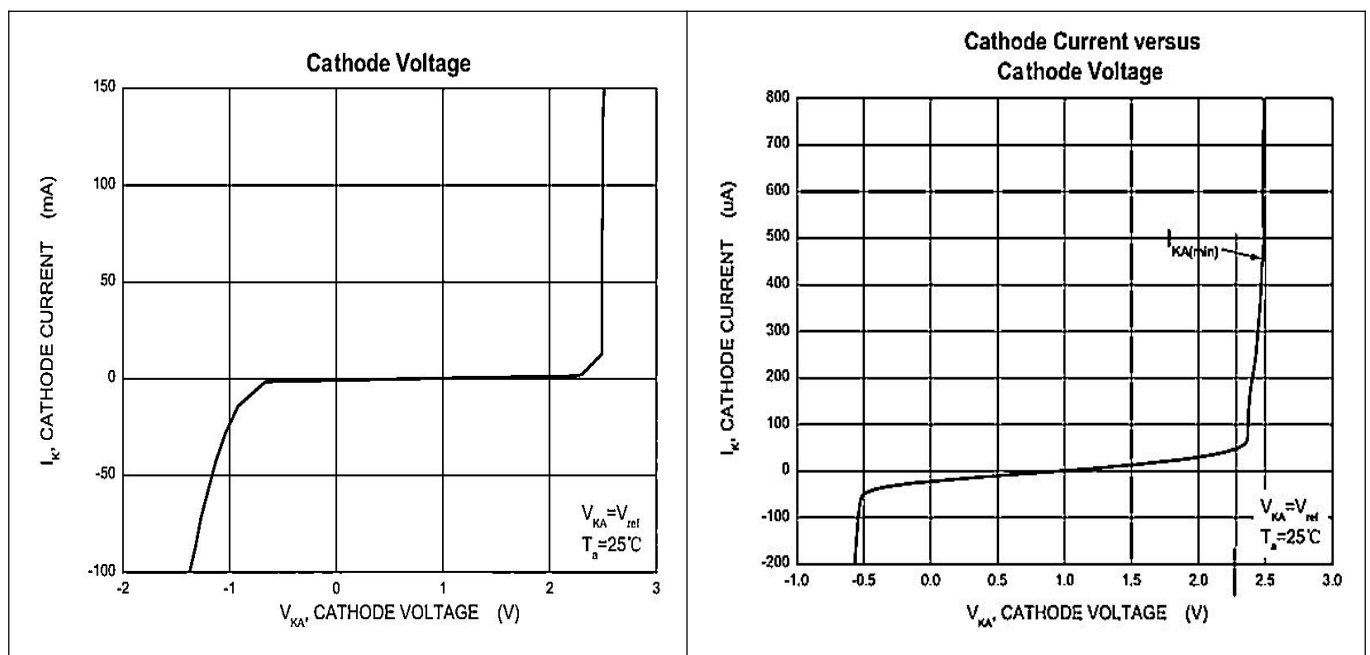
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Reference input voltage	Vref	VKA=VREF, IKA=10mA	0.5%	2.4875	2.5	2.5125	V
Deviation of reference input voltage over temperature (note)	Vref(dev)	VKA =VREF, IKA =10mA TMIN ≤ Ta ≤ TMAX		4.5	17		mV
Ratio of change in reference Input voltage to the change in cathode voltage	ΔVref /ΔVKA	IKA=10mA	ΔVKA=10V~VREF	-1	-2.7		mV/V
			ΔVKA=36V~10V	-0.5	-2		mV/V
Reference input current	Iref	IKA= 10mA,R1=10KΩ R2=∞		0.7	4		μA
Deviation of reference input current over full temperature range	Iref(dev)	IKA=10mA, R1=10KΩ R2=∞, TA=-40 to 85°C		0.4	1.2		μA
Minimum cathode current for regulation	IKA(min)	VKA=VREF		0.45	1		mA
Off-state cathode current	IKA(OFF)	VKA=36V ,VREF=0		0.05	1		μA
Dynamic impedance	ZKA	VKA=VREF, IKA=1 to 100mA f ≤ 1KHz		0.15	0.5		Ω

Notes: TMIN=-25°C ,TMAX=85°C

CLASSIFICATION OF Vref

Rank	0.3%	0.5%	1%
Range	2.493-2.507	2.483-2.525	2.470-2.483

TYPICAL APPLICATIONS CIRCUIT(1)

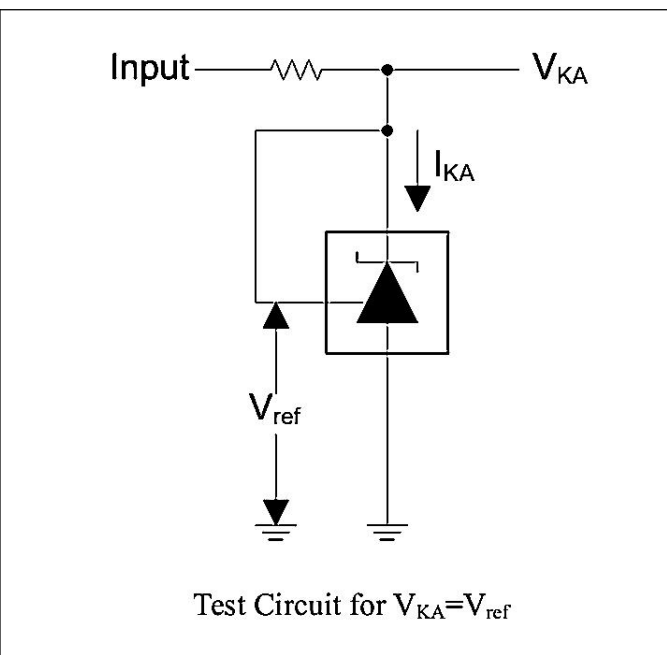
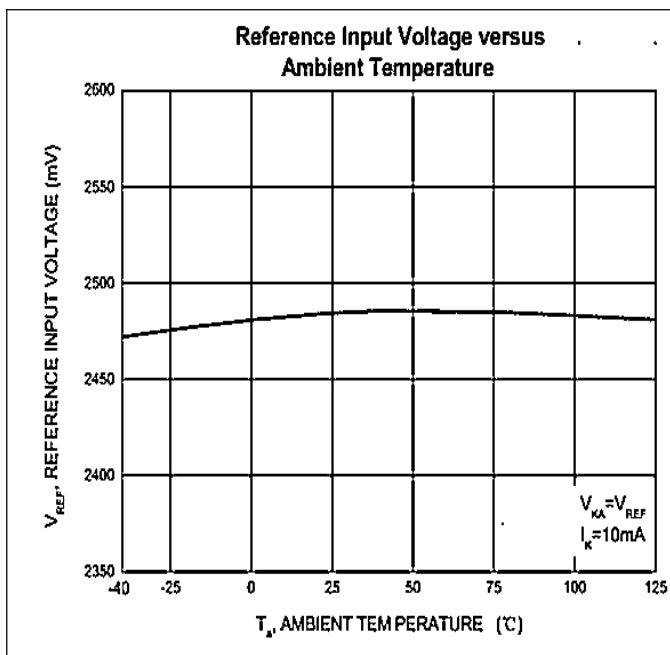




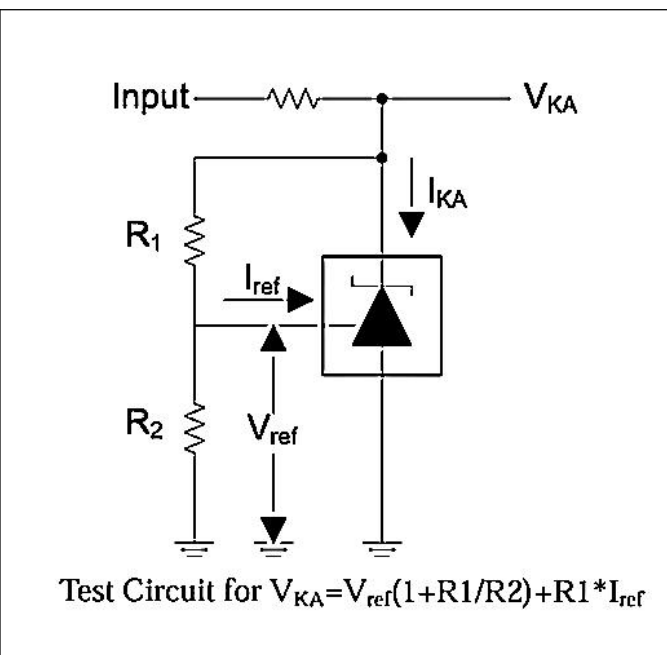
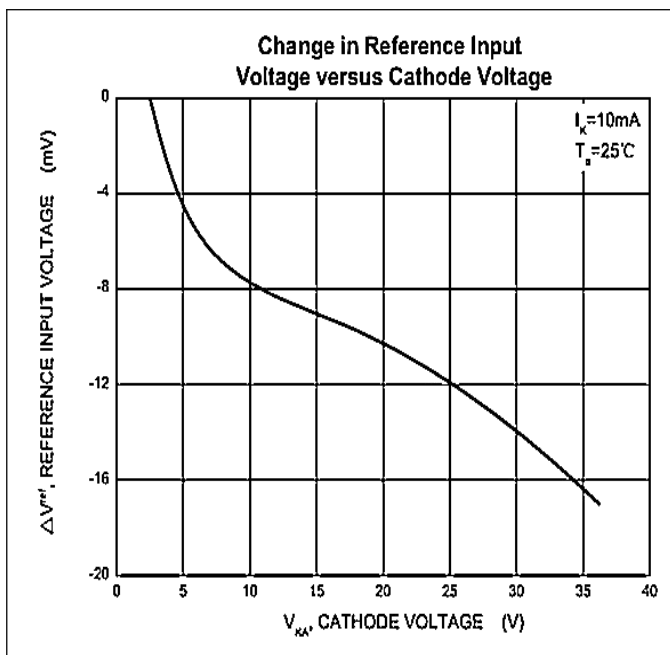
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■ **TYPICAL CHARACTERISTICS(1-1)**



■ **TYPICAL CHARACTERISTICS(2)**

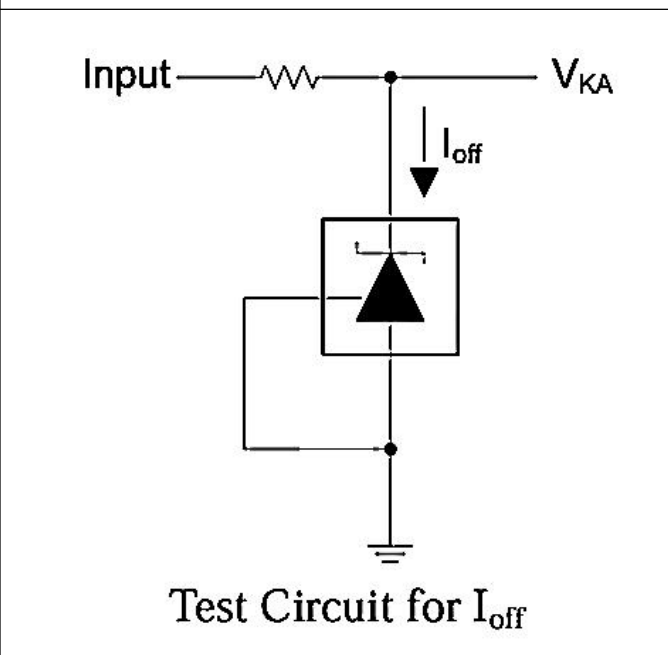
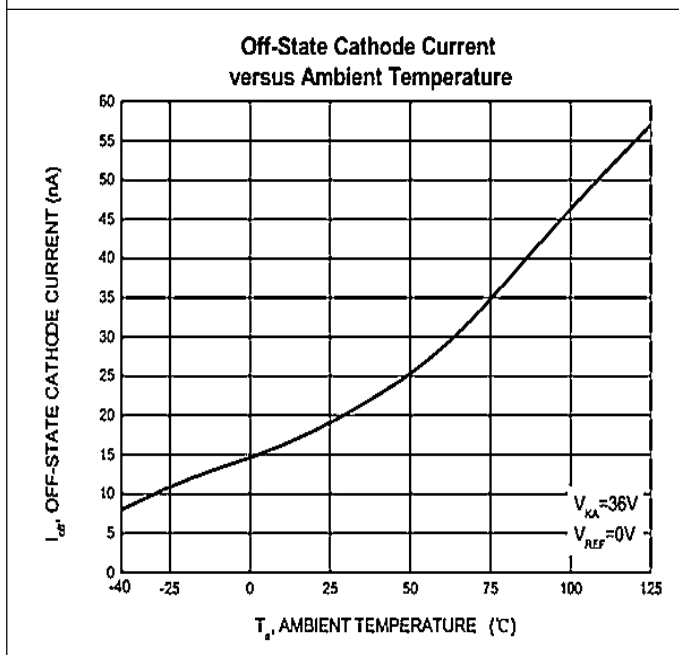
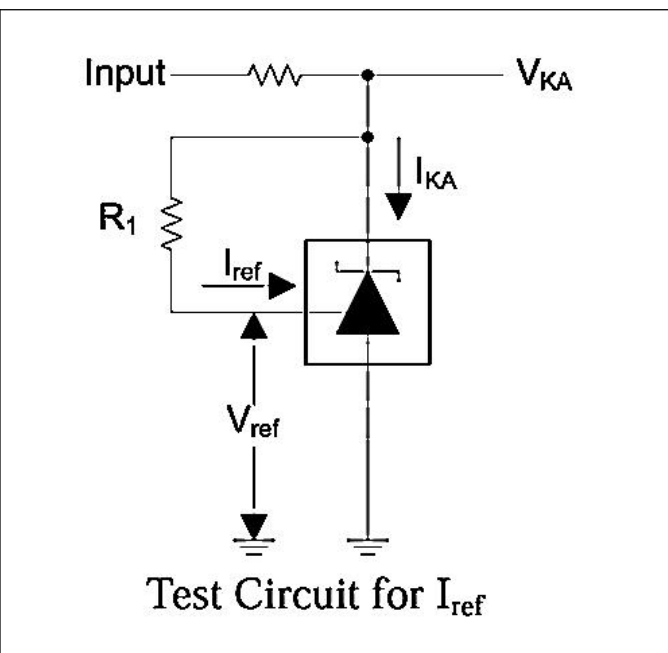
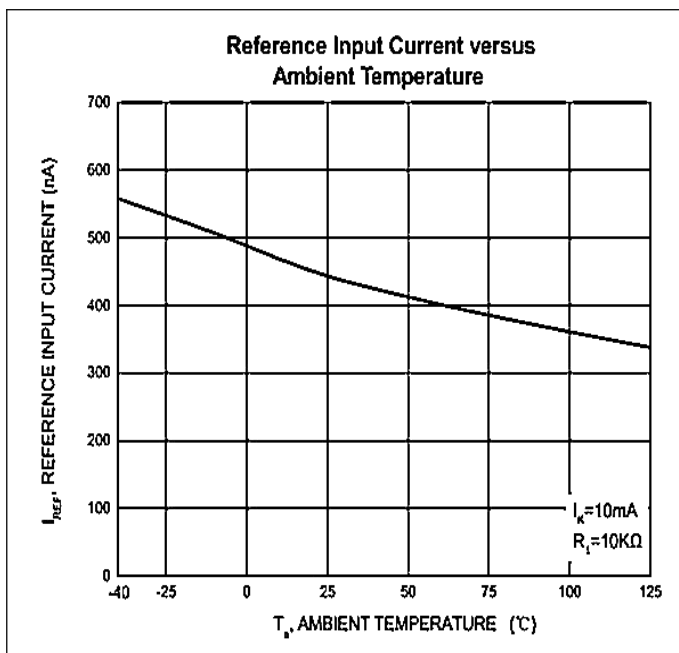




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■ **TYPICAL CHARACTERISTICS(2-1)**

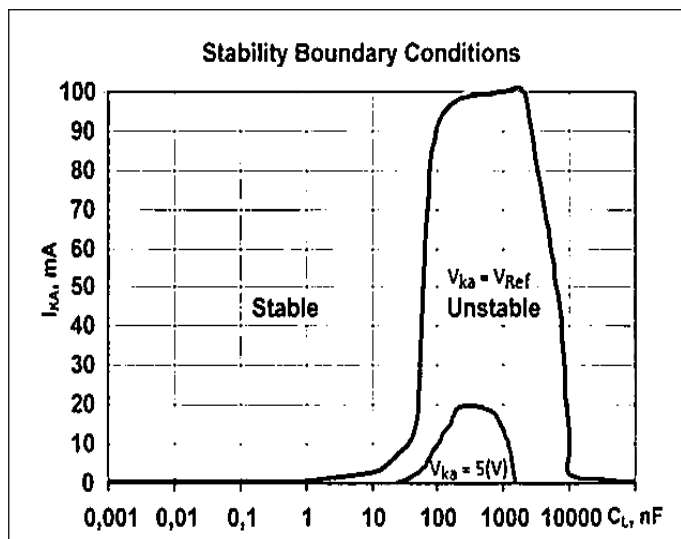




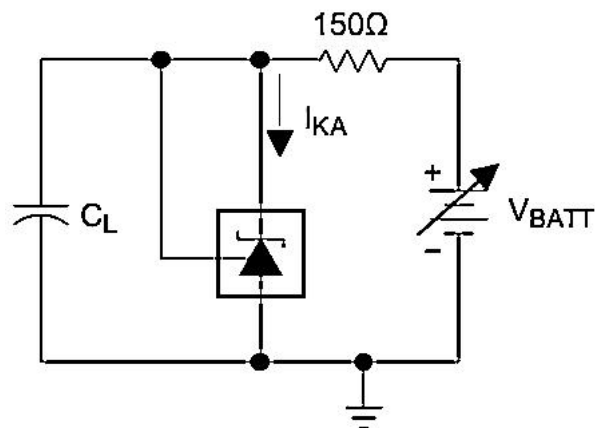
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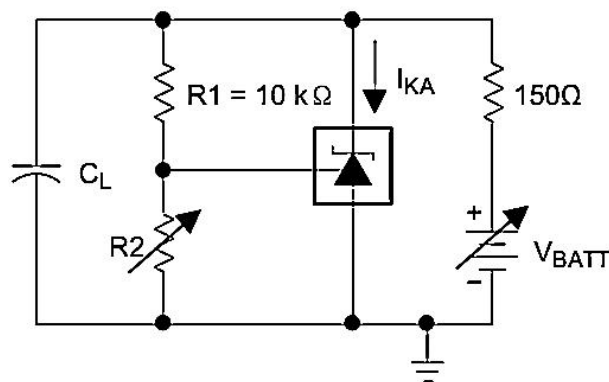
■ TYPICAL CHARACTERISTICS(Con.t)



JSCJ recommend capacitance should be less than 1/10 of the left boundary or more than 10 times of the right boundary.



Test Circuit for $V_{KA} = V_{ref}$



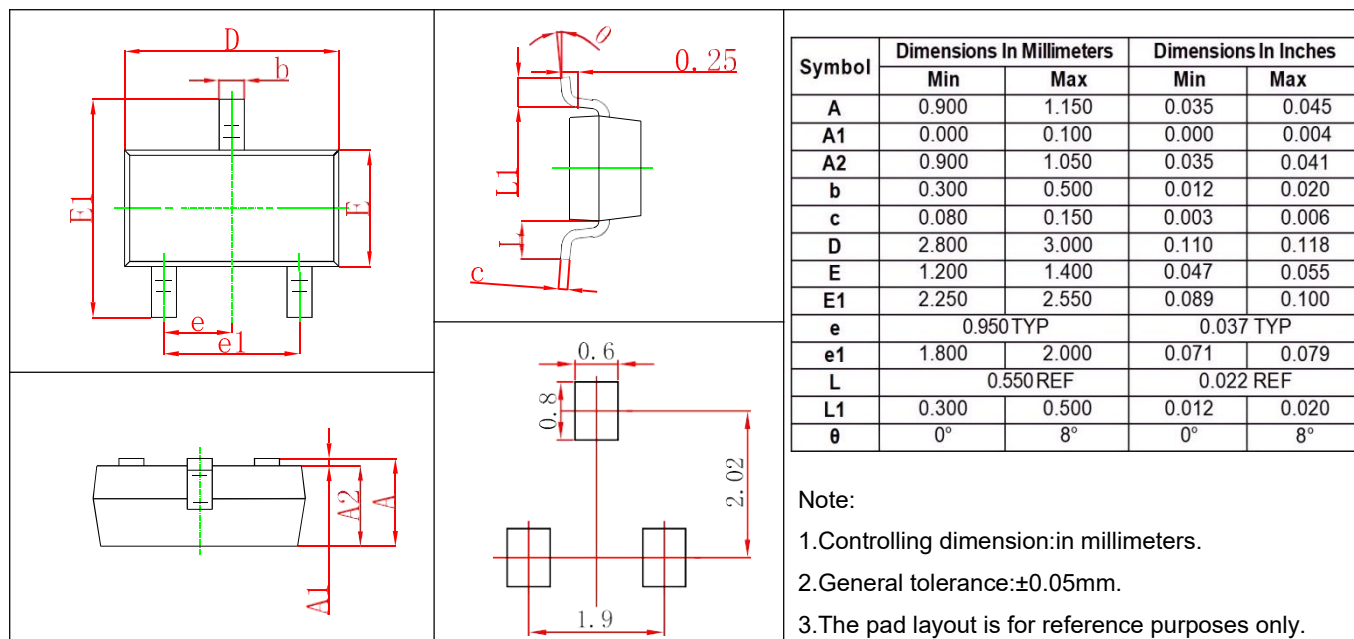
Test Circuit for $V_{KA} = V_{ref}(1 + R1/R2) + R1 * I_{ref}$



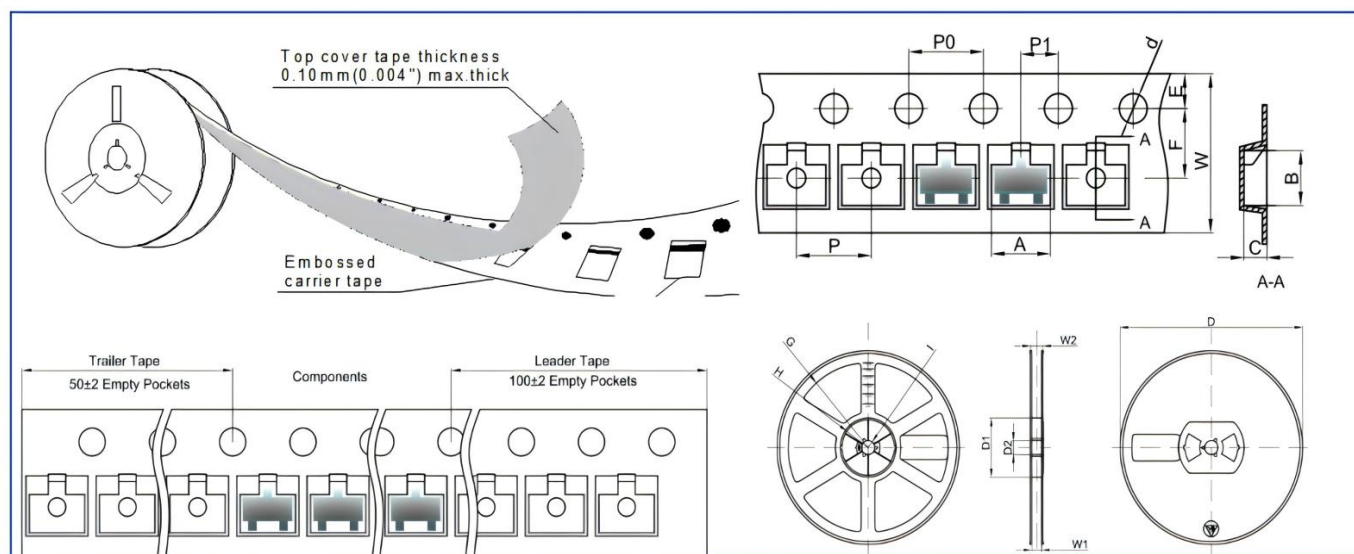
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■ SOT23 PACKAGE OUTLINE DIMENSIONS



■ REEL PACKING



Dimensions are in millimeter										
PKG TYPE	A	B	C	d	E	F	Po	P	P1	W
SOT-23	3.15	2.77	1.22	Φ1.50	1.75	3.50	4.00	4.00	2.00	8.00
Reel Optiom	D	D1	D2	G	H	I	W1	W2	Q.TY PER REEL	
7" Dia	Φ178.0	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30	3000PCS	
13" Dia	φ330.0	/	13.00	/	/	R6.50	9.50	12.30	10000PCS	