



Description

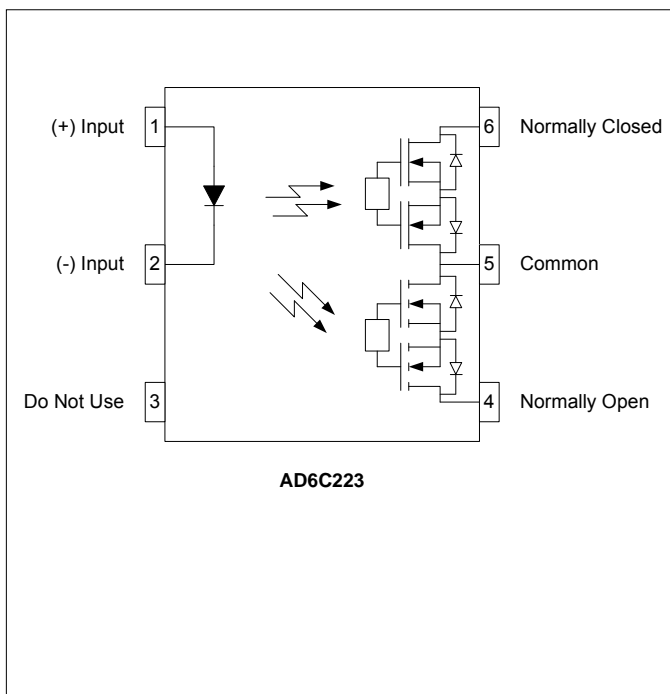
The AD6C223 is composed of two distinct relays; one normally open and one normally closed sharing a common input, making this a true 1 Form C device. Each relay has a bi-directional, single-pole, single-throw contact controlled simultaneously by an IR LED. The LED activates an integrated circuit, which in turn drives each pair of DMOS transistors. These transistors are protected with free-wheeling diodes that can handle up to 1.5A of inrush current, making the relay ideal for switching lamps and highly inductive loads.

The AD6C223 comes standard in a miniature 6 pin DIP package making it ideal for high-density board applications.

Applications

- Meter Reading Systems
- Multiplexers
- Data Acquisition
- Medical Equipment
- Battery Monitoring
- Home / Safety Security Systems

Schematic Diagram



Features

- True 1 Form C Device
- Low Input Control Current (5mA MAX)
- 150mA Maximum Continuous Load Current
- Low On Resistance (25Ω MAX – Both Poles)
- High Isolation Voltage (2.5kV_{RMS}, 3.75kV_{RMS} -H Option)
- Long Life / High Reliability
- RoHS / Pb-Free / REACH Compliant

Agency Approvals

UL/C-UL: File # E201932
 VDE: File # 40035191 (EN 60747-5-2)

Absolute Maximum Ratings

The values indicated are absolute stress ratings. Functional operation of the device is not implied at these or any conditions in excess of those defined in electrical characteristics section of this document. Exposure to absolute Maximum Ratings may cause permanent damage to the device and may adversely affect reliability.

Storage Temperature-55 to +125°C
 Operating Temperature-40 to +85°C
 Continuous Input Current50mA
 Transient Input Current500mA
 Reverse Input Control Voltage6V
 Input Power Dissipation40mW
 Output Power Dissipation800mW
 Solder Temperature – Wave (10sec).....260°C
 Solder Temperature – IR Reflow (10sec).....260°C

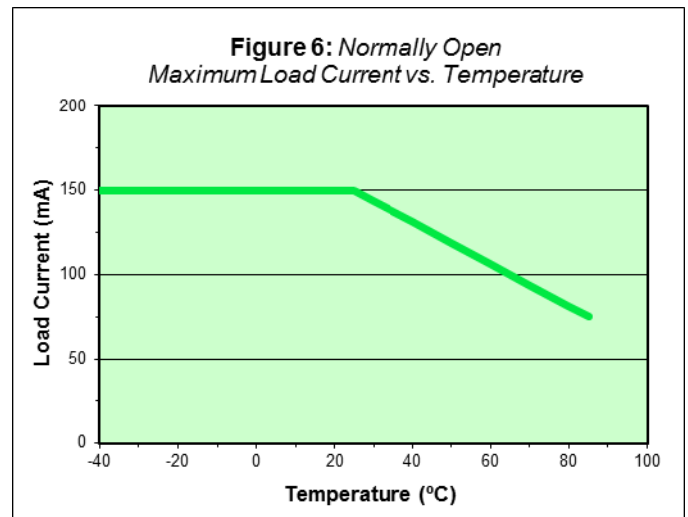
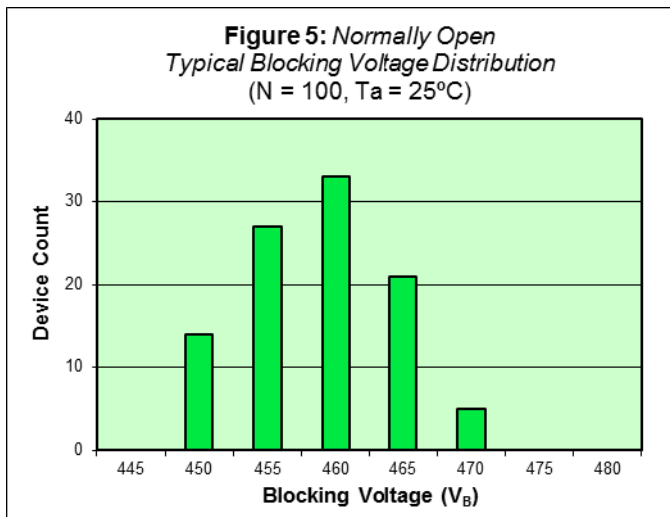
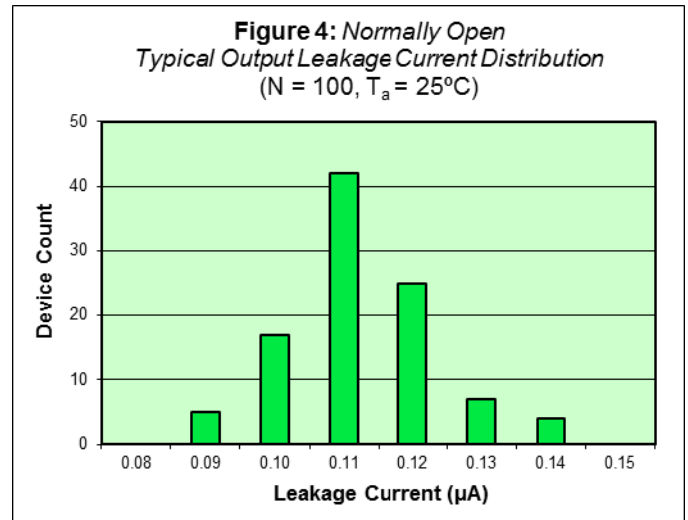
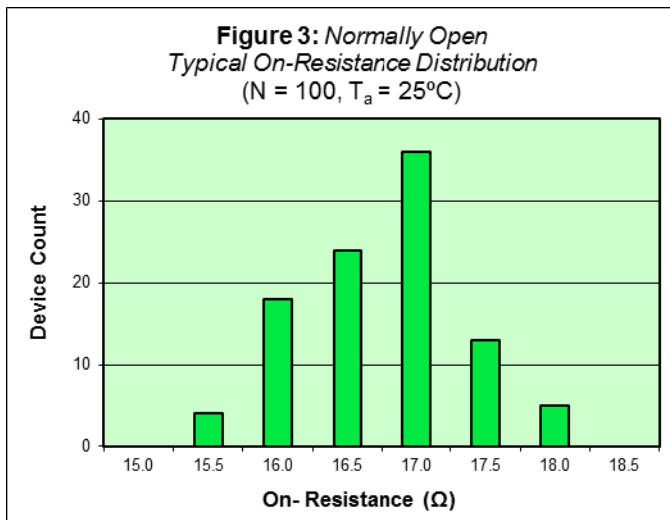
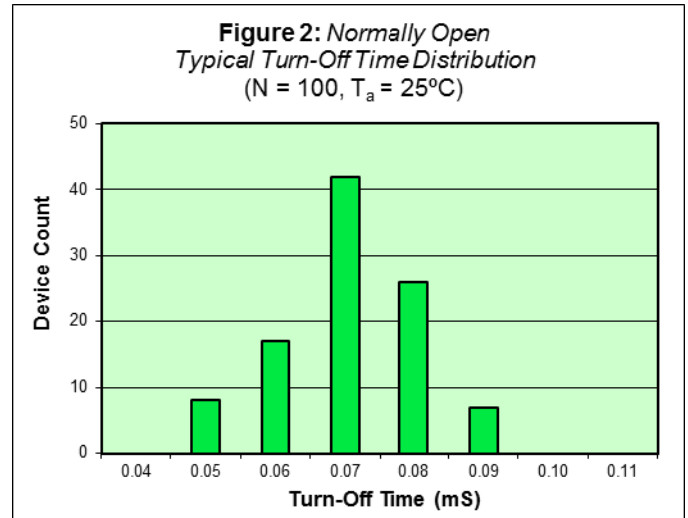
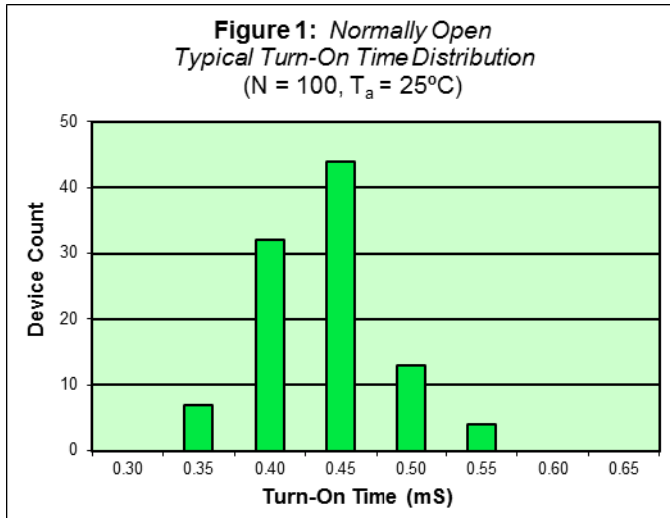
Ordering Information

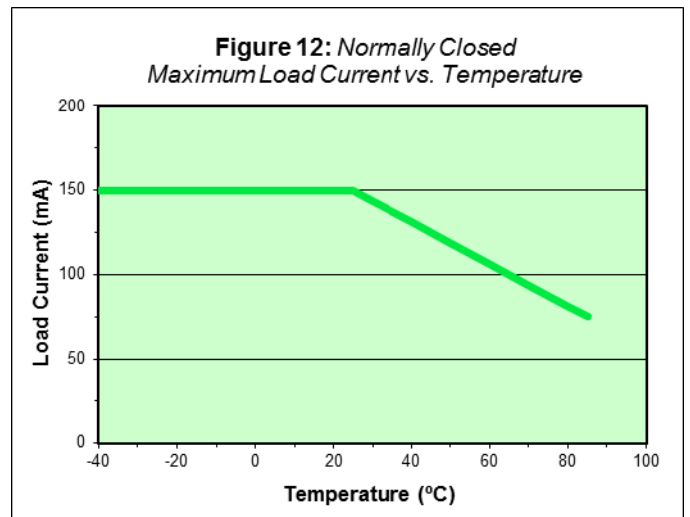
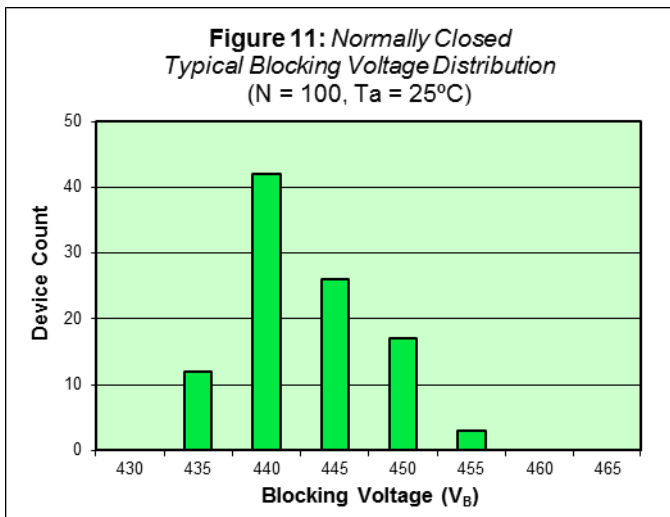
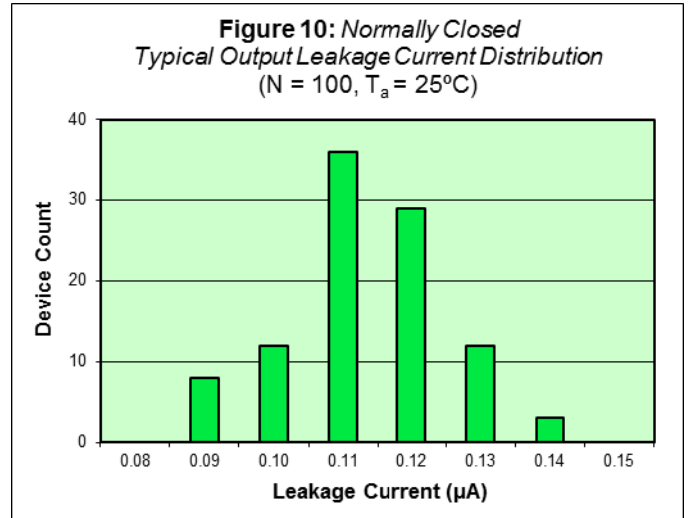
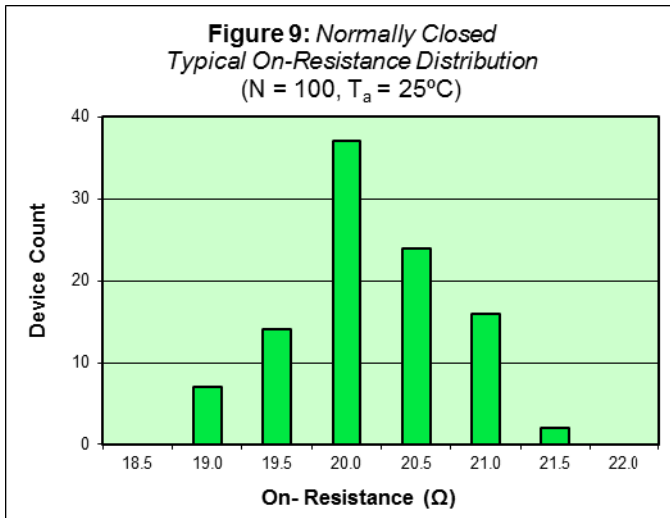
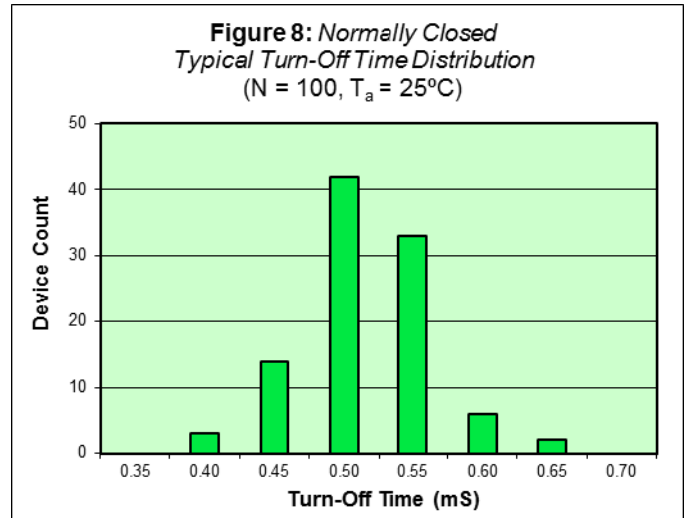
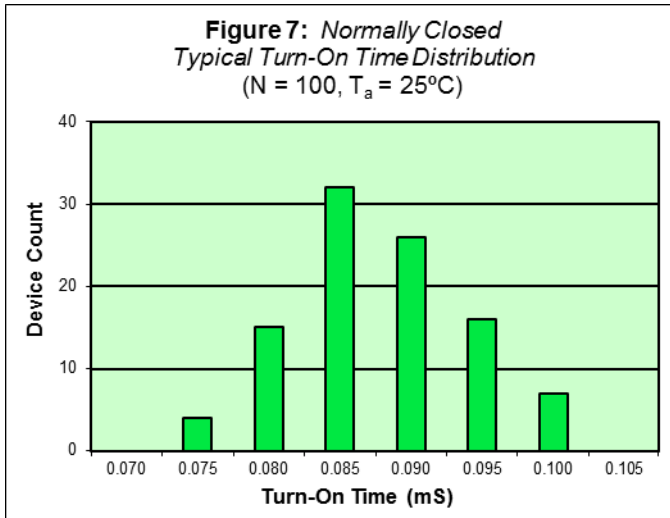
Part Number	Description
AD6C223	6 pin DIP, (50/Tube)
AD6C223-H	3.75kV _{RMS} Viso, 6 pin DIP, (50/Tube)
AD6C223-S	6 pin SMD, (50/Tube)
AD6C223-HS	3.75kV _{RMS} , 6 pin SMD, (50/Tube)
AD6C223-STR	6 pin SMD, Tape and Reel (1000/Reel)
AD6C223-HSTR	3.75kV _{RMS} , 6 pin SMD, Tape and Reel (1000/Reel)

NOTE: Suffixes listed above are not included in marking on device for part number identification

Electrical Characteristics, $T_A = 25^\circ\text{C}$ (unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Units	Test Conditions
Input Specifications						
LED Forward Voltage	V_F	-	1.2	1.5	V	$I_F = 10\text{mA}$
LED Reverse Voltage	BV_R	6	-	-	V	$I_R = 10\mu\text{A}$
Turn-On Current (Form A – Normally Open)	$I_{F(NO)}$	-	2	5	mA	$I_O = 150\text{mA}$
Turn-On Current (Form B – Normally Closed)	$I_{F(NC)}$	-	0.5	-	mA	$I_O = 150\text{mA}$
Turn-Off Current (Form A – Normally Open)	$I_{OFF(NO)}$	-	0.5	-	mA	$I_O = 150\text{mA}$
Turn-Off Current (Form B – Normally Open)	$I_{OFF(NC)}$	-	2	5	mA	$I_O = 150\text{mA}$
Output Specifications – Form A (Normally Open)						
Blocking Voltage	V_B	400	-	-	V	$I_O = 1\mu\text{A}$
Continuous Load Current	I_O	-	-	150	mA	$I_F = 5\text{mA}$
On Resistance	R_{ON}	-	18	25	Ω	$I_F = 5\text{mA}, I_O = 150\text{mA}$
Leakage Current	I_{leak}	-	0.2	1	μA	$I_F = 0\text{mA}, V_O = 400\text{V}$
Output Capacitance	C_{OUT}	-	10	-	pF	$V_O = 25\text{V}, f = 1.0\text{MHz}$
Offset Voltage	V_{OFFSET}	-	-	0.2	mV	$I_F = 5\text{mA}$
Turn-On Time	T_{ON}	-	1	5	mS	$I_F = 5\text{mA}, I_O = 150\text{mA}$
Turn-Off Time	T_{OFF}	-	0.07	5	mS	$I_F = 0\text{mA}, I_O = 150\text{mA}$
Output Specifications – Form B (Normally Closed)						
Blocking Voltage	V_B	400	-	-	V	$I_F = 5\text{mA}, I_O = 1\mu\text{A}$
Continuous Load Current	I_O	-	-	150	mA	$I_F = 0\text{mA}$
On Resistance	R_{ON}	-	20	25	Ω	$I_F = 0\text{mA}, I_O = 150\text{mA}$
Leakage Current	I_{leak}	-	0.2	1	μA	$I_F = 5\text{mA}, V_O = 400\text{V}$
Output Capacitance	C_{OUT}	-	10	-	pF	$V_O = 25\text{V}, f = 1.0\text{MHz}, I_F = 5\text{mA}$
Offset Voltage	V_{OFFSET}	-	-	0.2	mV	$I_F = 0\text{mA}$
Turn-On Time	T_{ON}	-	0.1	5	mS	$I_F = 0\text{mA}, I_O = 150\text{mA}$
Turn-Off Time	T_{OFF}	-	0.5	5	mS	$I_F = 5\text{mA}, I_O = 150\text{mA}$
Coupled Specifications						
Coupled Capacitance	$C_{COUPLED}$	-	3	-	pF	
Contact Transient Ratio	-	2,000	7,000	0	V/μS	$dV = 50\text{V}$
Isolation Specifications						
Isolation Voltage	V_{ISO}	2,500	-	-	V_{RMS}	$RH \leq 50\%, t = 1\text{min}$
-H Option	V_{ISO}	3,750	-	-	V_{RMS}	$RH \leq 50\%, t = 1\text{min}$
Input-Output Resistance	R_{I-O}	-	10^{12}	-	Ω	$V_{I-O} = 500V_{DC}$

AD6C223 Performance & Characteristics Plots, $T_A = 25^\circ\text{C}$ (unless otherwise specified)


AD6C223 Performance & Characteristics Plots, Cont... $T_A = 25^\circ\text{C}$ (unless otherwise specified)


AD6C223 Solder Temperature Profile Recommendations
(1) Infrared Reflow:

Refer to the following figure as an example of an optimal temperature profile for single occurrence infrared reflow. Soldering process should not exceed temperature or time limits expressed herein. Surface temperature of device package should not exceed 250°C:

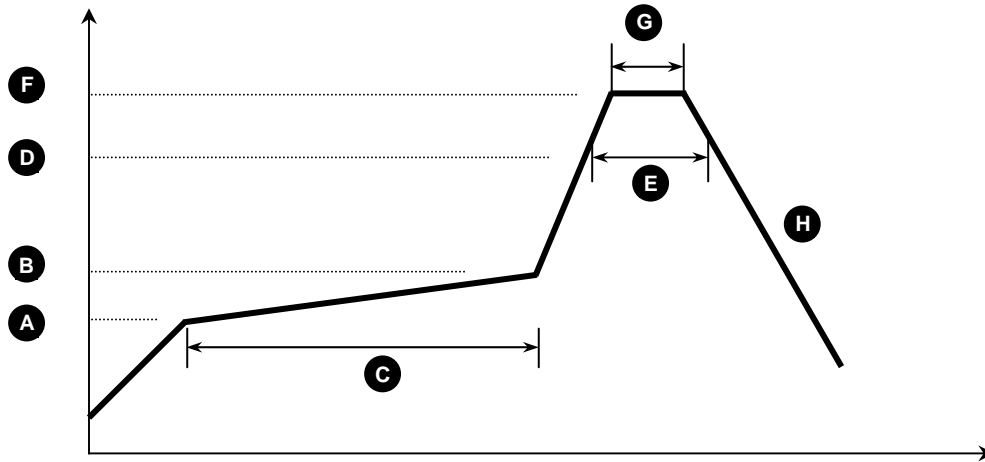


Figure 1

Process Step	Description	Parameter
A	Preheat Start Temperature (°C)	150°C
B	Preheat Finish Temperature (°C)	180°C
C	Preheat Time (s)	90 - 120s
D	Melting Temperature (°C)	230°C
E	Time above Melting Temperature (s)	30s
F	Peak Temperature, at Terminal (°C)	260°C
G	Dwell Time at Peak Temperature (s)	10s
H	Cool-down (°C/s)	<6°C/s

(2) Wave Solder:

Maximum Temperature: 260°C (at terminal)
 Maximum Time: 10s
 Pre-heating: 100 - 150°C (30 - 90s)
 Single Occurrence

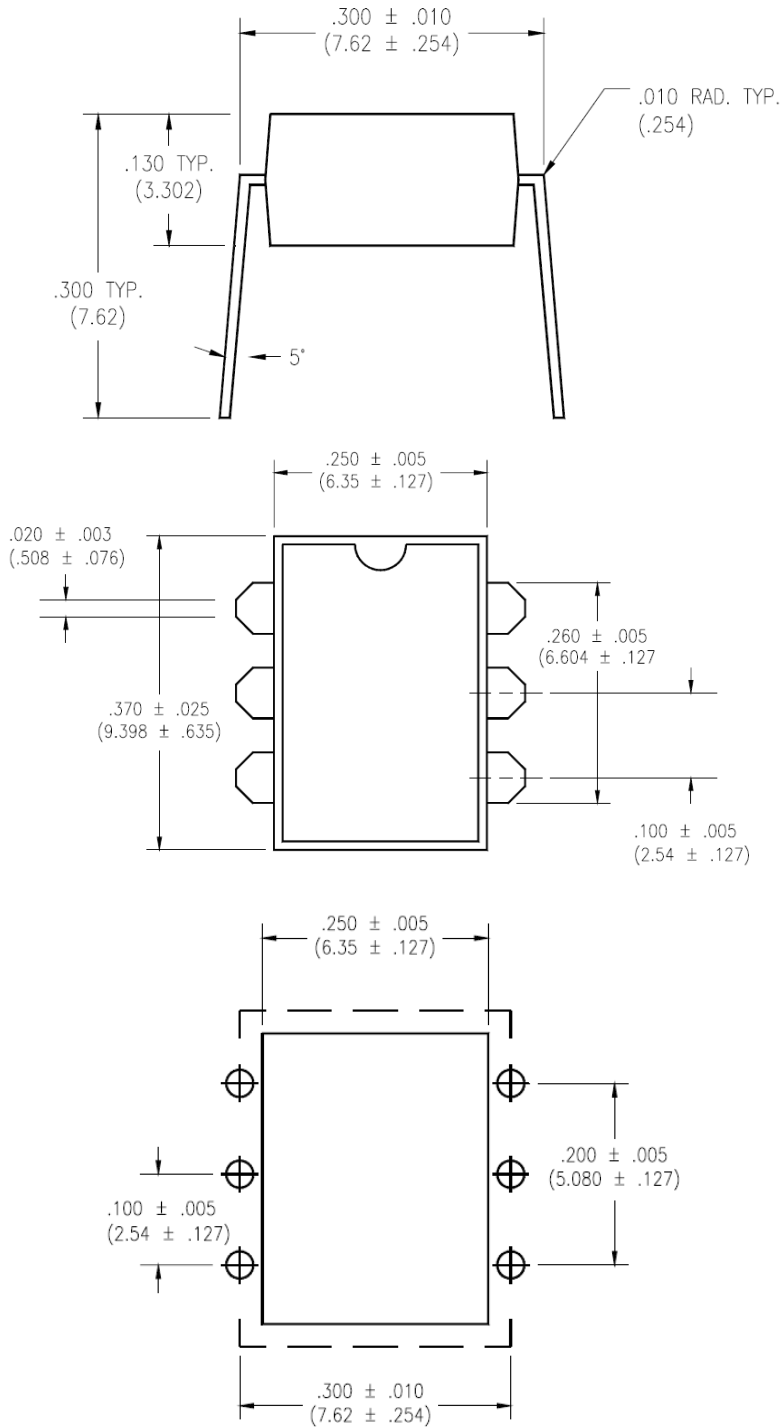
(3) Hand Solder:

Maximum Temperature: 350°C (at tip of soldering iron)
 Maximum Time: 3s
 Single Occurrence

AD6C223 Package Dimensions

6 PIN DIP Package

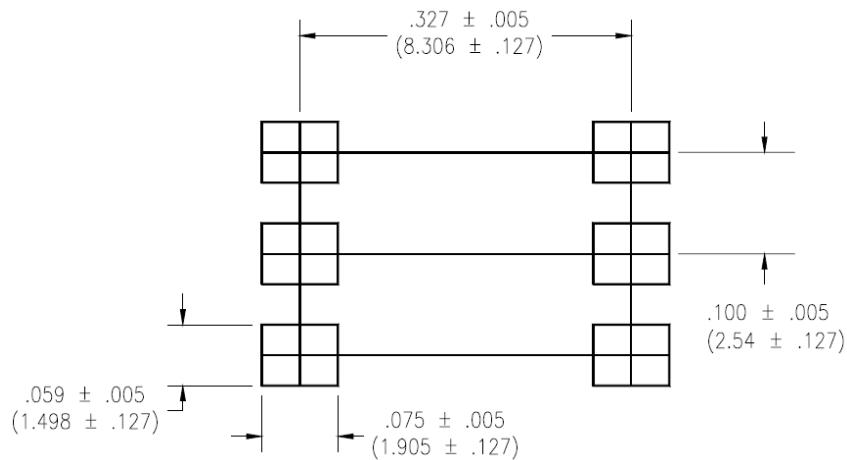
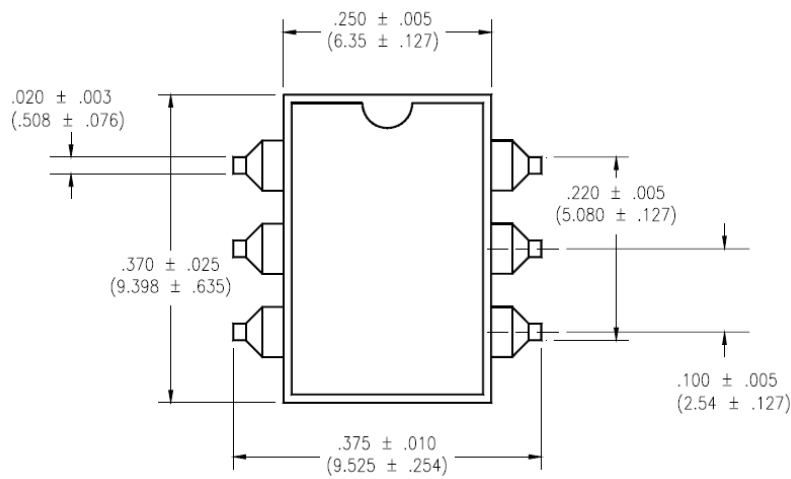
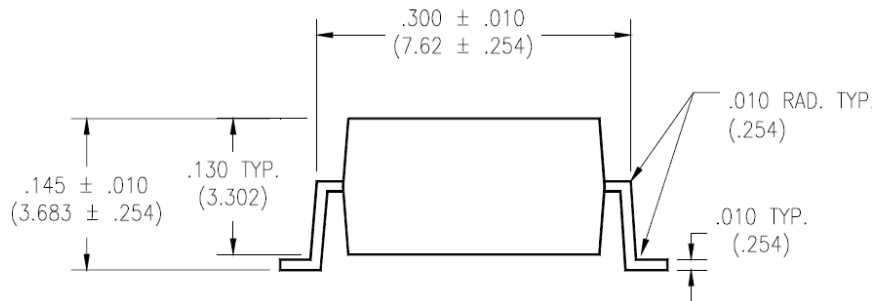
Note: All dimensions in inches ["] with millimeters in parenthesis ()
Device Weight: 0.45g



AD6C223 Package Dimensions

6 PIN SMD Surface Mount Package (-S)

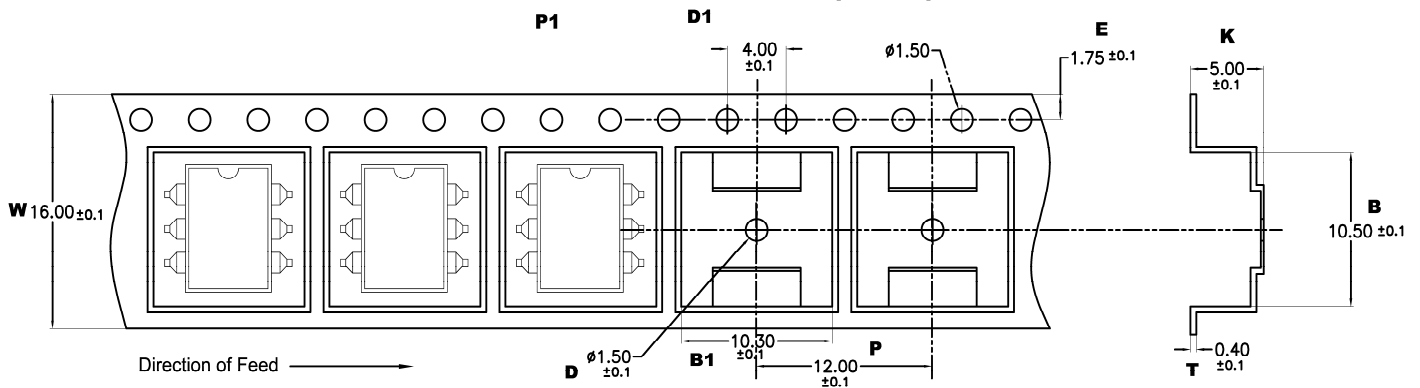
Note: All dimensions in inches ["] with millimeters in parenthesis ()
Device Weight: 0.45g



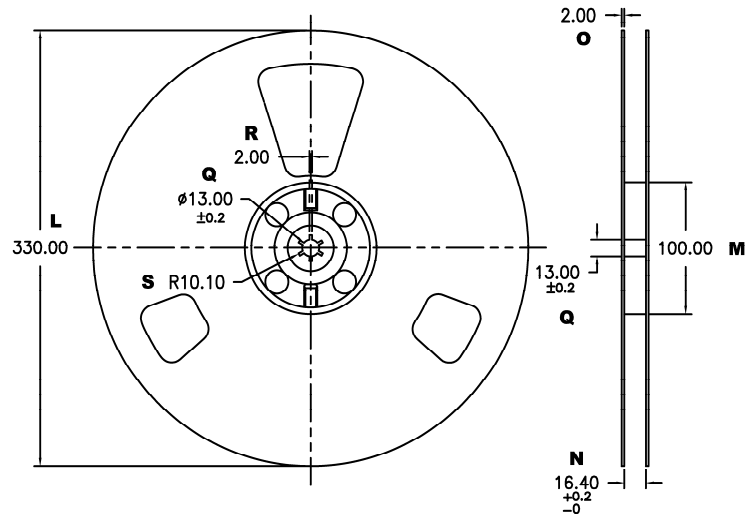
AD6C223 Package Dimensions

6 PIN SMD Tape & Reel (-STR)

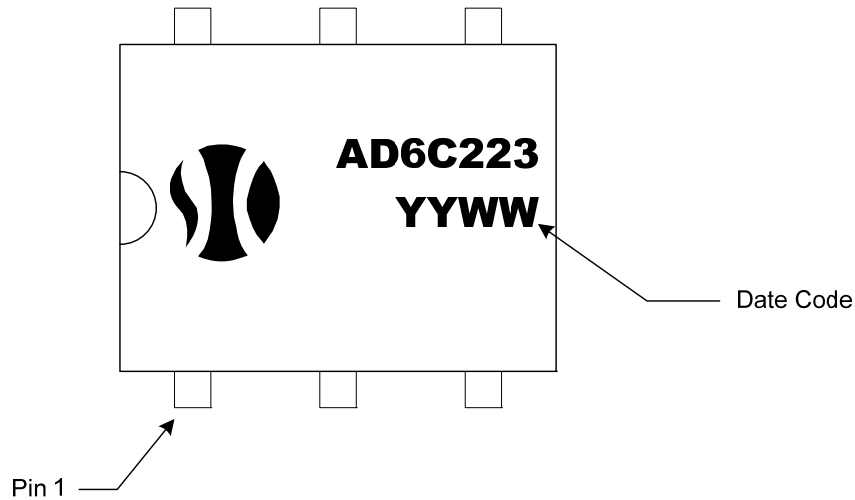
Note: All dimensions in millimeters

Outline and Dimension (Tape)


W	B	B1	P	P1	K	E	T	D	D1
16.00 ± 0.1	10.50 ± 0.1	10.30 ± 0.1	12.00 ± 0.1	4.00 ± 0.1	5.00 ± 0.1	1.75 ± 0.1	0.40 ± 0.1	1.50 ± 0.1	1.50 ± 0.1

Outline and Dimensions (Reel)

Packaging: 1,000 pcs / reel

L	M	N	O	Q	R	S
330.00	100.00	16.40 +0.2	2.00 ± 0.1	13.00 ± 0.2	2.00	10.00

AD6C223 Package Marking**DISCLAIMER**

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