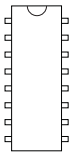
DABiC-5 Latched Sink Drivers

Features and Benefits

- 3.3 to 5 V logic supply range
- Up to 10 MHz data input rate
- High-voltage, high-current outputs
- Darlington current-sink outputs, with improved low-saturation voltages
- CMOS, TTL compatible inputs
- Output transient protection
- Internal pull-down resistors
- Low-power CMOS latches

Packages

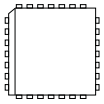
A6800
14-pin 7.62 mm DIP
(A package)



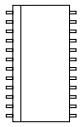
A6800
14-pin SOICN
(L package)



A6801
28-pin PLCC
(EP package)



A6801
24-pin SOICW
(LW package)



Approximate scale 1:1

Description

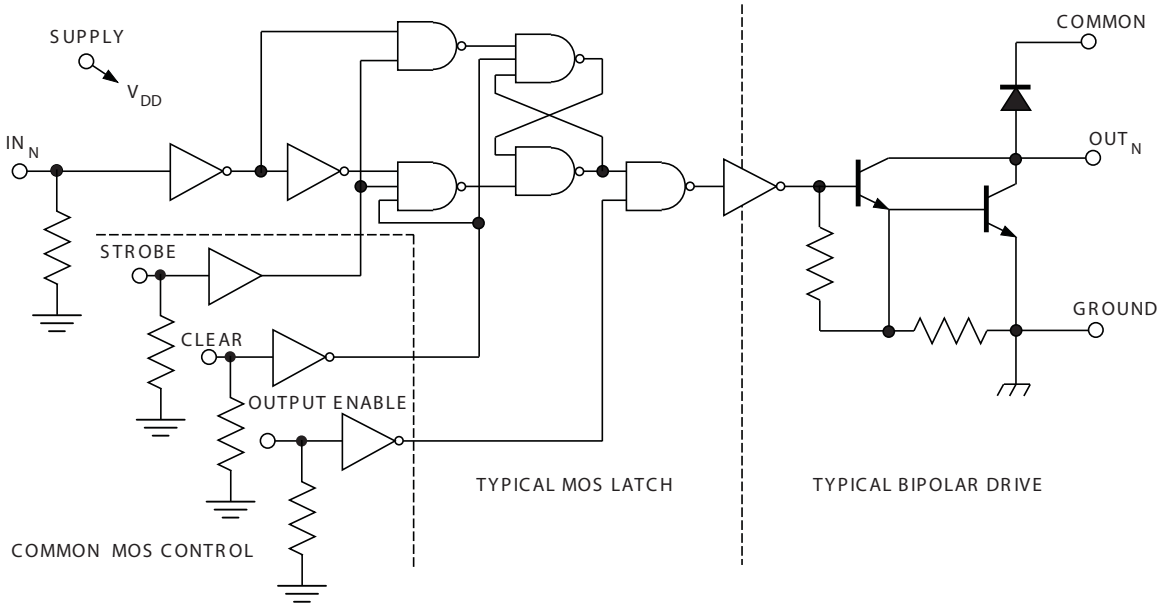
The A6800 and A6801 latched-input BiMOS ICs merge high-current, high-voltage outputs with CMOS logic. The CMOS input section consists of 4 or 8 data (D type) latches with associated common CLEAR, STROBE, and OUTPUT ENABLE circuitry. The power outputs are bipolar NPN Darlingtons. This merged technology provides versatile, flexible interface. These BiMOS power interface ICs greatly benefit the simplification of computer or microprocessor I/O. The A6800 ICs each contain four latched drivers. A6801 ICs contain eight latched drivers.

The CMOS inputs are compatible with standard CMOS circuits. TTL circuits may mandate the addition of input pull-up resistors. The bipolar Darlington outputs are suitable for directly driving many peripheral/power loads: relays, lamps, solenoids, small DC motors, and so forth.

All devices have open-collector outputs and integral diodes for inductive load transient suppression. The output transistors are capable of sinking 600 mA and can withstand at least 50 V in the off state. Because of limitations on package power dissipation, the simultaneous operation of all drivers at maximum rated current can only be accomplished by a reduction in duty cycle. Outputs may be paralleled for higher load current capability.

Continued on the next page…

Functional Block Diagram



Description (continued)

The A6800SA is furnished in a 14-pin DIP with 7.62 mm (0.300 in.) row centers, the A6800SL and A6801SLW in surface-mountable SOICs; and the A6801SEP in a 28-lead PLCC. These devices are lead (Pb) free, with 100% matte tin plated leadframes.

Applications include:

- Relays
- Lamps
- Solenoids
- Small DC motors

Selection Guide

Part Number	Package	Packing
~~A6800SA-T*~~	14-pin DIP	25 per tube
A6800SLTR-T	14-pin SOIC	2500 per reel
A6801SEPTR-T	28-pin PLCC	800 per reel
A6801SLWTR-T	24-pin SOIC	1000 per reel

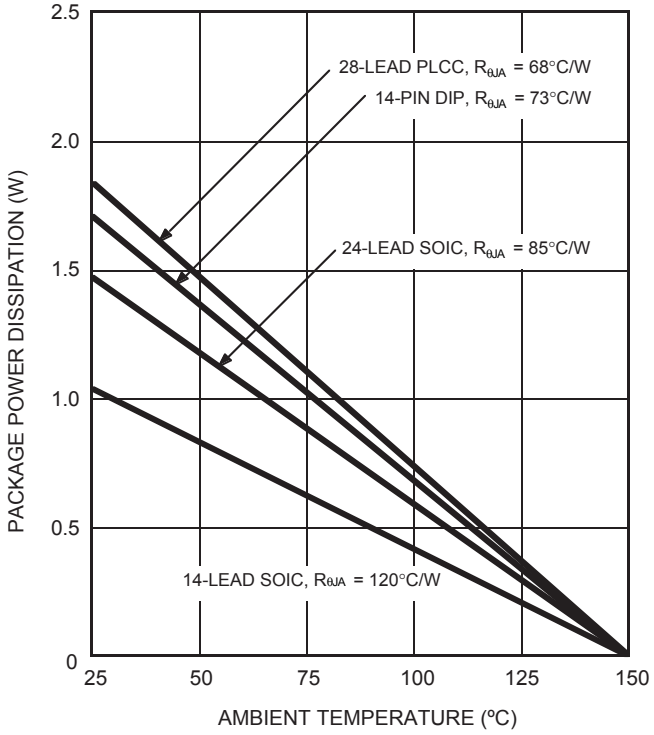
*Variant is in production but has been determined to be NOT FOR NEW DESIGN. This classification indicates that sale of the variant is currently restricted to existing customer applications. The variant should not be purchased for new design applications because obsolescence in the near future is probable. Samples are no longer available. Status change: May 4, 2009.

Absolute Maximum Ratings*

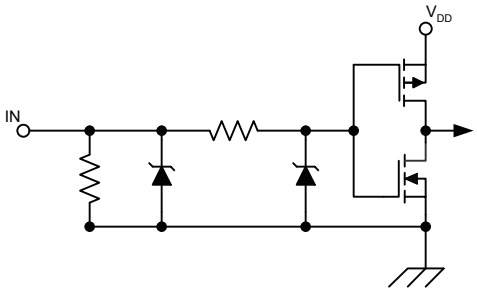
Characteristic	Symbol	Notes	Rating	Units
Output Voltage	V_{CE}		50	V
Supply Voltage	V_{DD}		7	V
Input Voltage Range	V_{IN}		–0.3 to V_{DD} + 0.3	V
Continuous Collector Current	I_C		600	mA
Operating Ambient Temperature	T_A	Range S	–20 to 85	ºC
Maximum Junction Temperature	T_J(max)		150	ºC
Storage Temperature	T_{stg}		–55 to 150	ºC

*Caution: CMOS devices have input-static protection, but are susceptible to damage when exposed to extremely high static-electrical charges.

Allowable Power Dissipation



Typical Input Circuit



ELECTRICAL CHARACTERISTICS[1] Unless otherwise noted: T_A = 25°C, logic supply operating voltage V_{DD} = 3.0 to 5.5 V

Characteristic	Symbol	Test Conditions	V_{DD} = 3.3 V			V_{DD} = 5 V			Units
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Output Leakage Current	I_{CEX}	V_{OUT} = 50 V	–	–	10	–	–	10	µA
Output Sustaining Voltage	$V_{CE(SUS)}$	I_{OUT} = 350 mA, L = 3 mH	35	–	–	35	–	–	V
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	I_{OUT} = 100 mA	–	0.8	1.0	–	0.8	1.0	V
		I_{OUT} = 200 mA	–	0.9	1.1	–	0.9	1.1	V
		I_{OUT} = 350 mA (See note 2)	–	1.0	1.3	–	1.0	1.3	V
Input Voltage	$V_{IN(1)}$		2.2	–	–	3.3	–	–	V
	$V_{IN(0)}$		–	–	1.1	–	–	1.7	V
Input Resistance	R_{IN}		50	–	–	50	–	–	kΩ
Logic Supply Current	$I_{DD(1)}$	One output on, I_{OUT} = 100 mA	–	–	1.0	–	–	1.0	mA
	$I_{DD(0)}$	All outputs off	–	130	150	–	130	150	µA
Clamp Diode Leakage Current	I_r	V_r = 50 V	–	–	50	–	–	50	µA
Clamp Diode Forward Voltage	V_f	I_f = 350 mA	–	–	2.0	–	–	2.0	V
Output Fall Time	t_f	V_{CC} = 50 V, R1 = 500 Ω, C1 ≤ 30 pF	–	80	–	–	80	–	ns
Output Rise Time	t_r	V_{CC} = 50 V, R1 = 500 Ω, C1 ≤ 30 pF	–	100	–	–	100	–	ns

[1] Operation of these devices with standard TTL or DTL may require the use of appropriate pull-up resistors to ensure a minimum logic 1.

[2] Because of limitations on package power dissipation, the simultaneous operation of multiple drivers can only be accomplished by reduction in duty cycle.

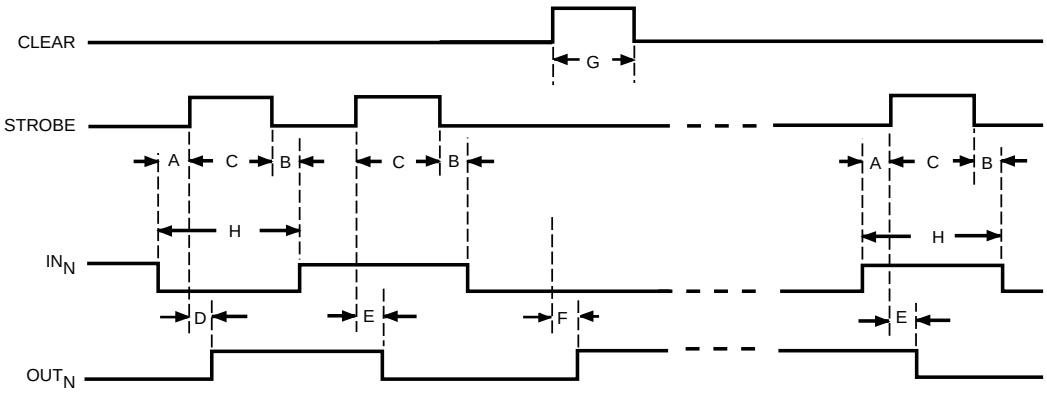
Truth Table

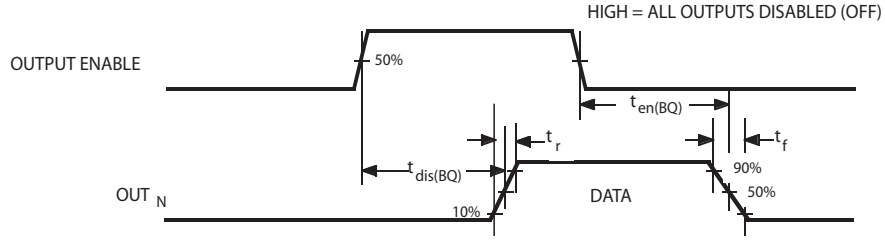
IN_N	STROBE	CLEAR	OUTPUT ENABLE	OUT_N	
				t-1	t
0	1	0	0	X	OFF
1	1	0	0	X	ON
X	X	1	X	X	OFF
X	X	X	1	X	OFF
X	0	0	0	ON	ON
X	0	0	0	OFF	OFF

X = irrelevant
t-1 = previous output state
t = present output state

Timing Requirements and Specifications

(Logic Levels are V_{DD} and Ground)





Key	Description	Time (ns)
A	Minimum data active time before Strobe enabled (Data Set-Up Time)	25
B	Minimum data active time after Strobe disabled (Data Hold Time)	25
C	Minimum Strobe pulse width	50
D	Maximum time between Strobe activation and transition from output on to output off*	500
E	Maximum time between Strobe activation and transition from output off to output on*	500
F	Maximum time between Clear activation and transition from output on to output off*	500
G	Minimum Clear pulse width	50
H	Minimum data pulse width	100
$t_{dis(BQ)}$	Output Enable to output off delay*	500
$t_{en(BQ)}$	Output Enable to output on delay*	500

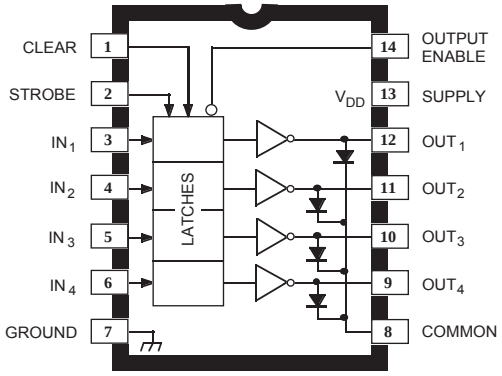
*Conditions for output transition testing are: V_{CC} = 50 V, V_{DD} = 5 V, R1 = 500 Ω, C1 ≤ 30 pF.

NOTE: Information present at an input is transferred to its latch when the STROBE is high. A high CLEAR input will set all latches to the output off condition regardless of the data or STROBE input levels. A high OUTPUT ENABLE will set all outputs to the off condition, regardless of any other input conditions. When the OUTPUT ENABLE is low, the outputs depend on the state of their respective latches.

A6800 L Package



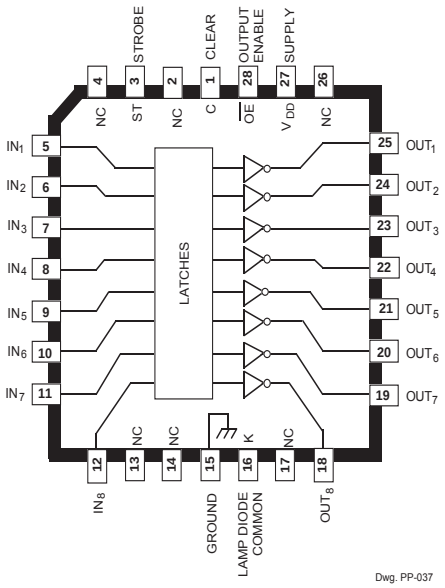
A6800 A-14 Package



Dwg. PP-014A

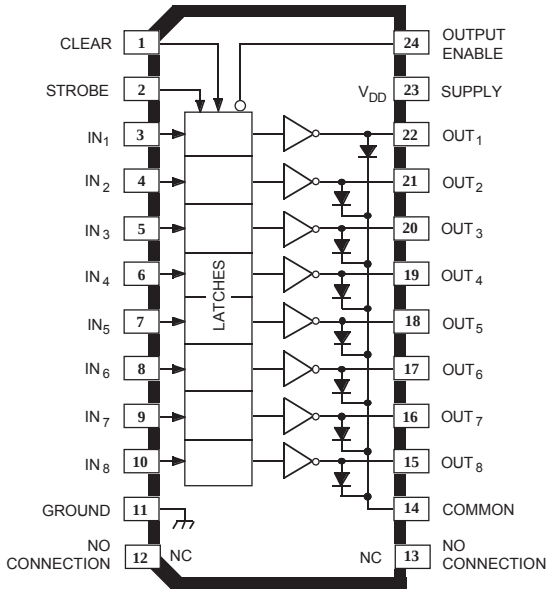
Note: The A6800 SOIC and DIP packages are electrically identical and share a common terminal number assignment.

A6801 EP Package



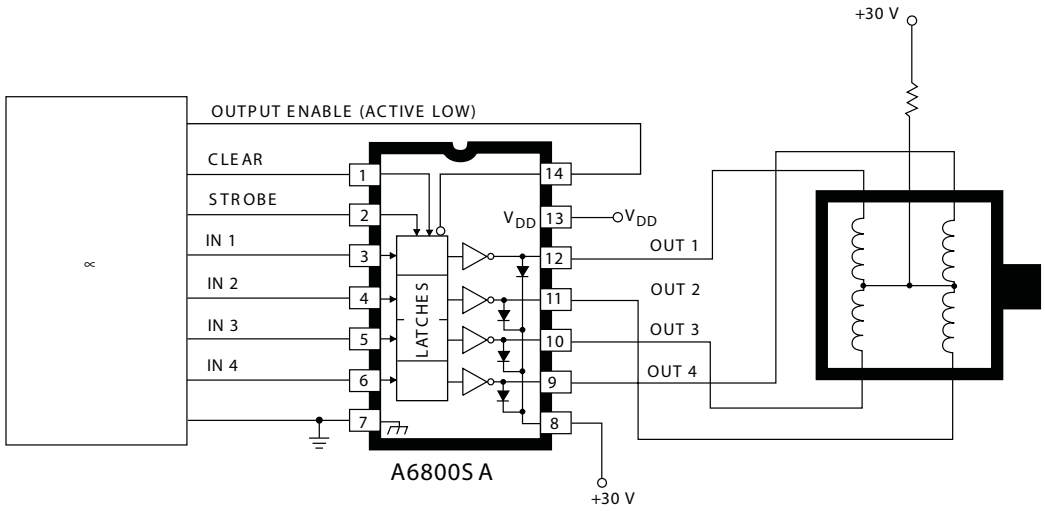
Dwg. PP-037

A6801 LW Package



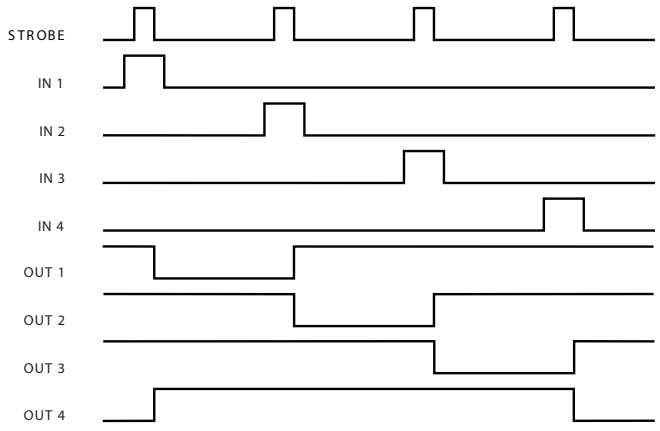
Dwg. PP-015-1

TYPICAL APPLICATION
UNIPOLAR STEPPER-MOTOR DRIVE



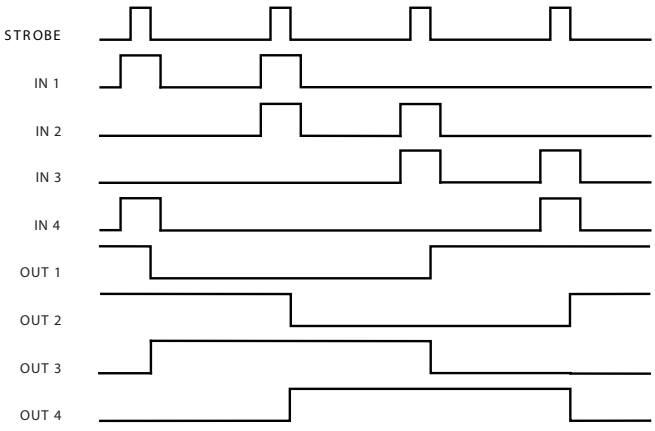
Dwg. No. B-1537

UNIPOLAR WAVE DRIVE



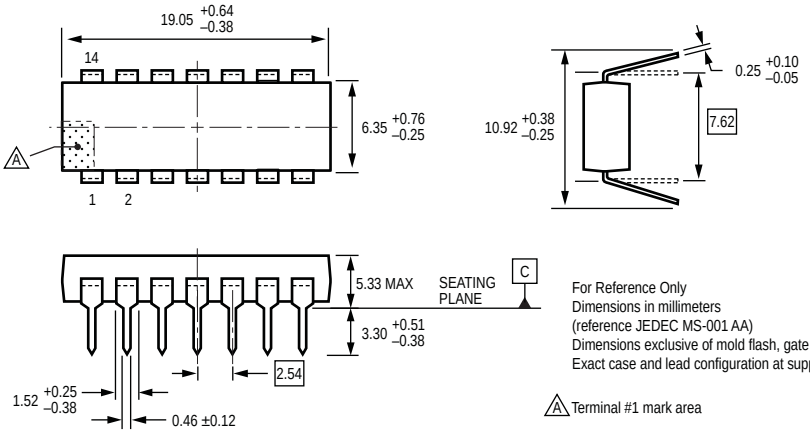
Dwg. GP-060

UNIPOLAR 2-PHASE DRIVE

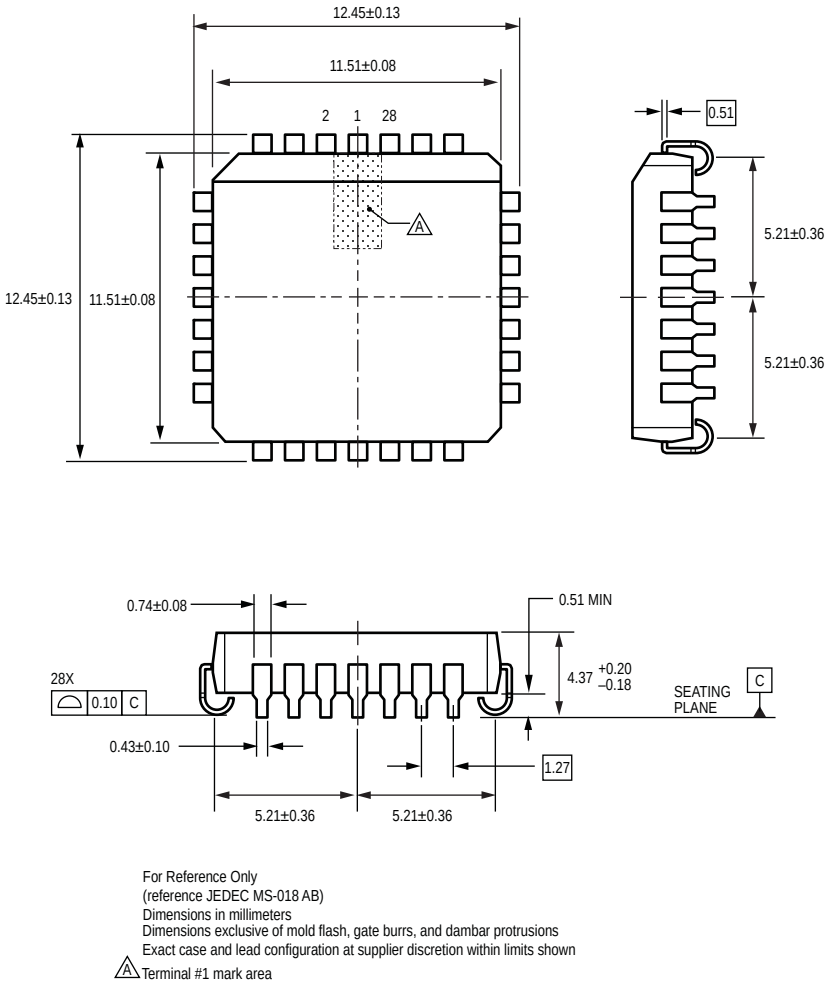


Dwg. GP-060-1

Package A (A6800) 14-pin DIP

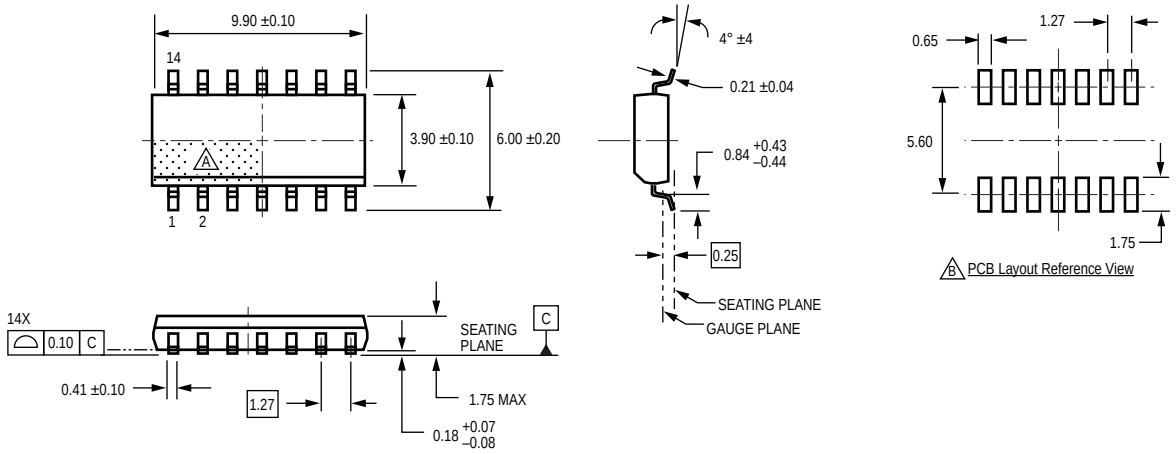


Package EP (A6801) 28-pin PLCC



For Reference Only
(reference JEDEC MS-018 AB)
Dimensions in millimeters
Dimensions exclusive of mold flash, gate burrs, and dambar protrusions
Exact case and lead configuration at supplier discretion within limits shown
A Terminal #1 mark area

Package L (A6800) 14-pin SOICN

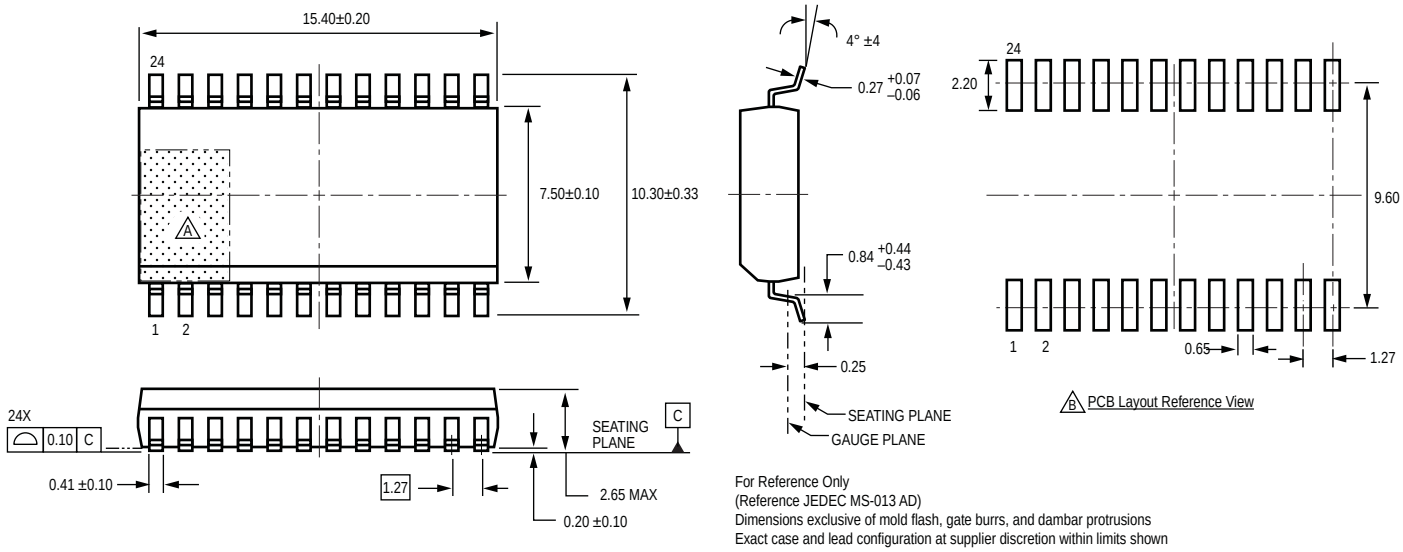


For Reference Only
Dimensions in millimeters
(reference JEDEC MS-012 AB)
Dimensions exclusive of mold flash, gate burrs, and dambar protrusions
Exact case and lead configuration at supplier discretion within limits shown

A Terminal #1 mark area

B Reference pad layout (reference IPC SOIC127P600X175-14M)
All pads a minimum of 0.20 mm from all adjacent pads; adjust as necessary to meet application process requirements and PCB layout tolerances

Package LW (A6801) 24-pin SOICW



For Reference Only
(Reference JEDEC MS-013 AD)
Dimensions exclusive of mold flash, gate burrs, and dambar protrusions
Exact case and lead configuration at supplier discretion within limits shown

A Terminal #1 mark area

B Reference pad layout (reference IPC SOIC127P1030X265-24M)
All pads a minimum of 0.20 mm from all adjacent pads; adjust as necessary to meet application process requirements and PCB layout tolerances

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