



**THE DATASHEET OF
A6800SA-T**

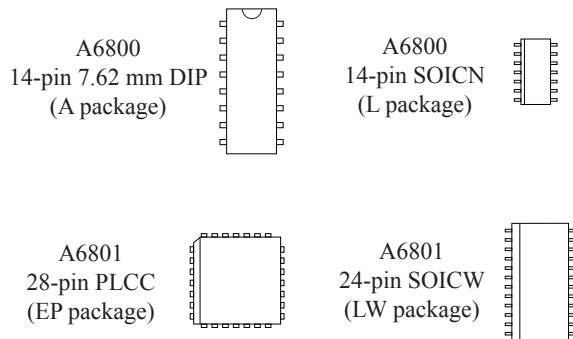


DABiC-5 Latched Sink Drivers

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



Approximate scale 1:1

Description

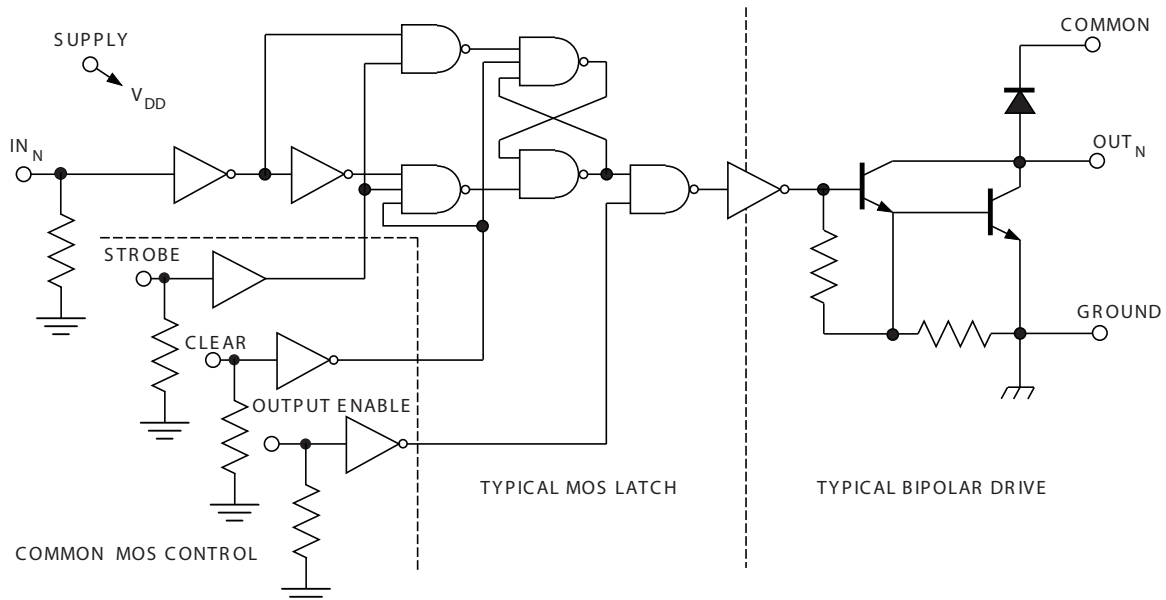
The A6800 and A6801 latched-input BiMOS ICs merge high-current, high-voltage outputs with CMOS logic. The CMOS input section consists of 4 or 8 data (D type) latches with associated common CLEAR, STROBE, and OUTPUT ENABLE circuitry. The power outputs are bipolar NPN Darlington. This merged technology 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 |

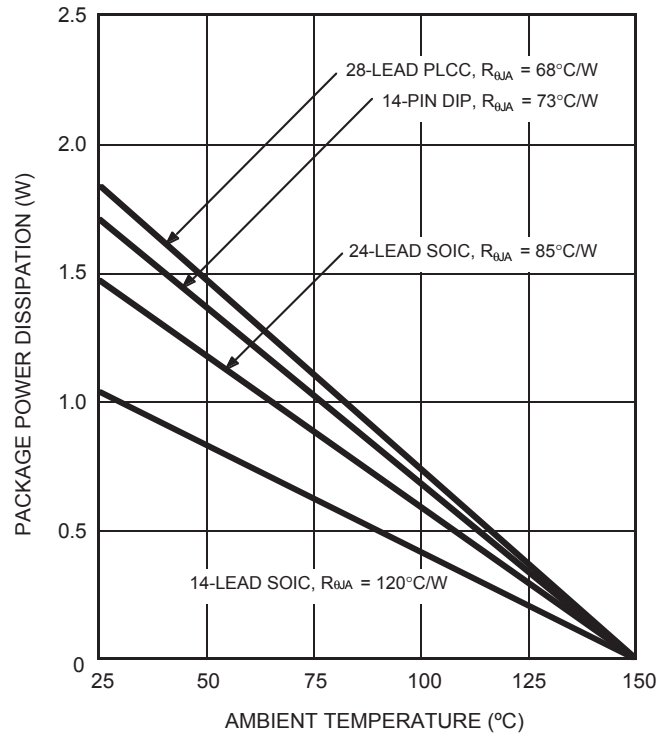
*Variant is in production but has been determined to be NOT FOR NEW DESIGN. This classification indicates that sale of the variant is currently restricted to existing customer applications. The variant should not be purchased for new design applications because obsolescence in the near future is probable.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

Absolute Maximum Ratings*

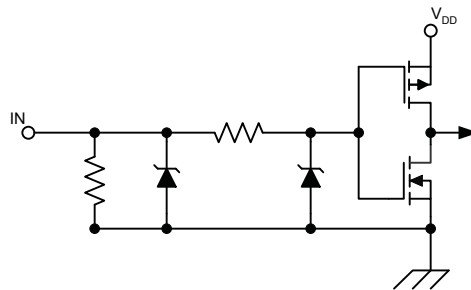
| Characteristic | Symbol | Notes | Rating | Units |
|-------------------------------|-------------|---------|------------------------|-------|
| Output Voltage | V_{CE} | | 50 | V |
| Supply Voltage | V_{DD} | | 7 | V |
| Input Voltage Range | V_{IN} | | -0.3 to $V_{DD} + 0.3$ | V |
| Continuous Collector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

*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 CHARACTERISTICS¹ Unless otherwise noted: $T_A = 25^\circ\text{C}$, logic supply operating voltage $V_{DD} = 3.0$ to 5.5V

| Characteristic | Symbol | Test Conditions | $V_{DD} = 3.3\text{V}$ | | | $V_{DD} = 5\text{V}$ | | | Units |
|--------------------------------------|---------------|--|------------------------|------|------|----------------------|------|------|------------------|
| | | | Min. | Typ. | Max. | Min. | Typ. | Max. | |
| Output Leakage Current | I_{CEX} | $V_{OUT} = 50\text{V}$ | – | – | 10 | – | – | 10 | μA |
| Output Sustaining Voltage | $V_{CE(SUS)}$ | $I_{OUT} = 350\text{mA}$, $L = 3\text{mH}$ | 35 | – | – | 35 | – | – | V |
| Collector-Emitter Saturation Voltage | $V_{CE(SAT)}$ | $I_{OUT} = 100\text{mA}$ | – | 0.8 | 1.0 | – | 0.8 | 1.0 | V |
| | | $I_{OUT} = 200\text{mA}$ | – | 0.9 | 1.1 | – | 0.9 | 1.1 | V |
| | | $I_{OUT} = 350\text{mA}$ (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 | – | – | $\text{k}\Omega$ |
| Logic Supply Current | $I_{DD(1)}$ | One output on, $I_{OUT} = 100\text{mA}$ | – | – | 1.0 | – | – | 1.0 | mA |
| | $I_{DD(0)}$ | All outputs off | – | 130 | 150 | – | 130 | 150 | μA |
| Clamp Diode Leakage Current | I_r | $V_r = 50\text{V}$ | – | – | 50 | – | – | 50 | μA |
| Clamp Diode Forward Voltage | V_f | $I_f = 350\text{mA}$ | – | – | 2.0 | – | – | 2.0 | V |
| Output Fall Time | t_f | $V_{CC} = 50\text{V}$, $R_1 = 500\Omega$, $C_1 \leq 30\text{pF}$ | – | 80 | – | – | 80 | – | ns |
| Output Rise Time | t_r | $V_{CC} = 50\text{V}$, $R_1 = 500\Omega$, $C_1 \leq 30\text{pF}$ | – | 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

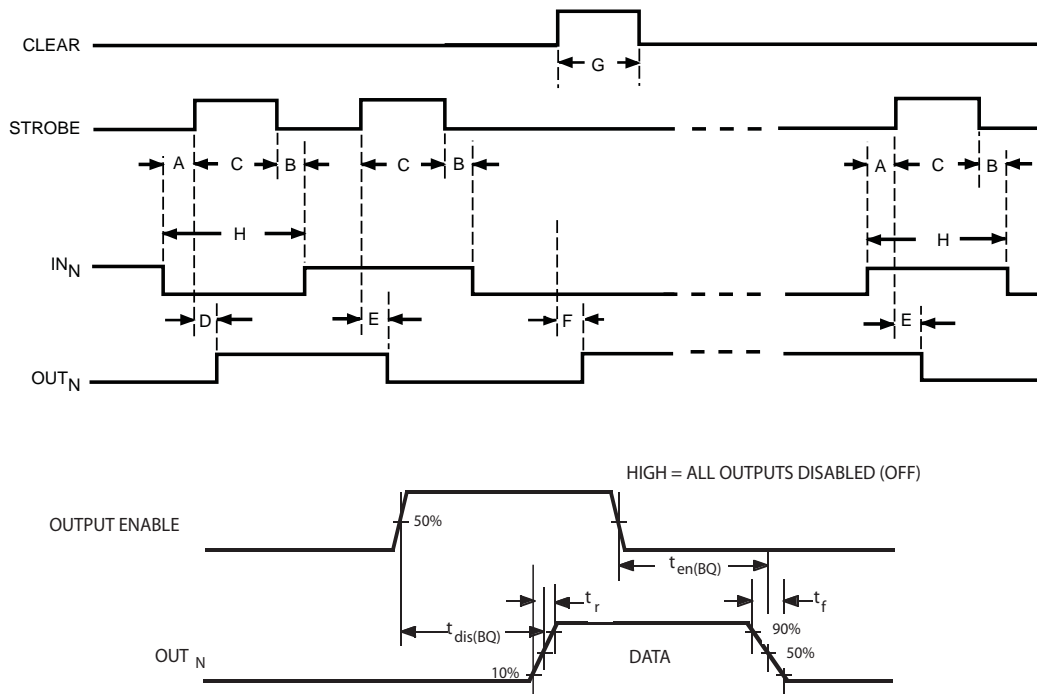
| IN_N | STROBE | CLEAR | OUTPUT ENABLE | OUT_N | |
|--------|--------|-------|------------------|---------|-----|
| | | | | t-1 | t |
| 0 | 1 | 0 | 0 | X | OFF |
| 1 | 1 | 0 | 0 | X | ON |
| X | X | 1 | X | X | OFF |
| X | X | X | 1 | X | OFF |
| X | 0 | 0 | 0 | ON | ON |
| X | 0 | 0 | 0 | OFF | OFF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

X = irrelevant

t-1 = previous output state

t = present output state

Timing Requirements and Specifications
(Logic Levels are V_{DD} and Ground)

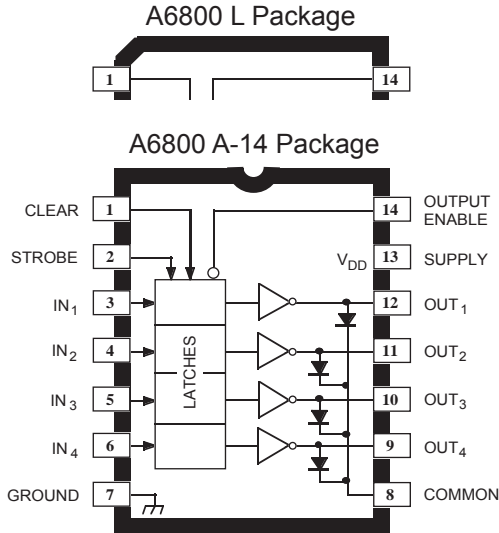


| Key | Description | Time (ns) |
|---------------|---|-----------|
| A | Minimum data active time before Strobe enabled (Data Set-Up Time) | 25 |
| B | Minimum data active time after Strobe disabled (Data Hold Time) | 25 |
| C | Minimum Strobe pulse width | 50 |
| D | Maximum time between Strobe activation 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: $V_{CC} = 5\text{ V}$, $V_{DD} = 5\text{ V}$, $R_1 = 500\ \Omega$, $C_1 \leq 30\text{ pF}$.

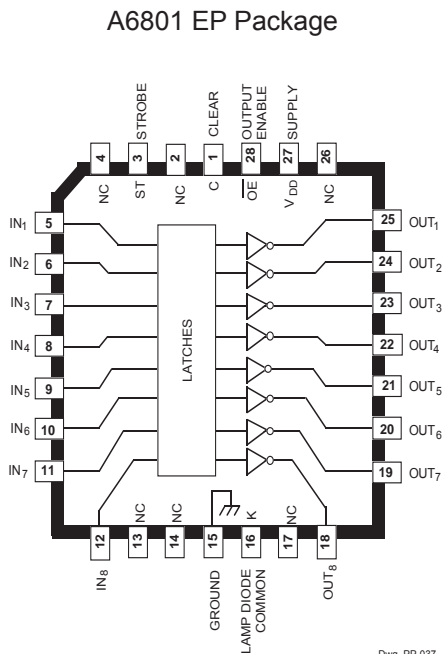
NOTE: Information present at an input is transferred to its latch when the STROBE is high. A high CLEAR input will set all latches to the output off condition regardless of the data or STROBE input levels. A high

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.

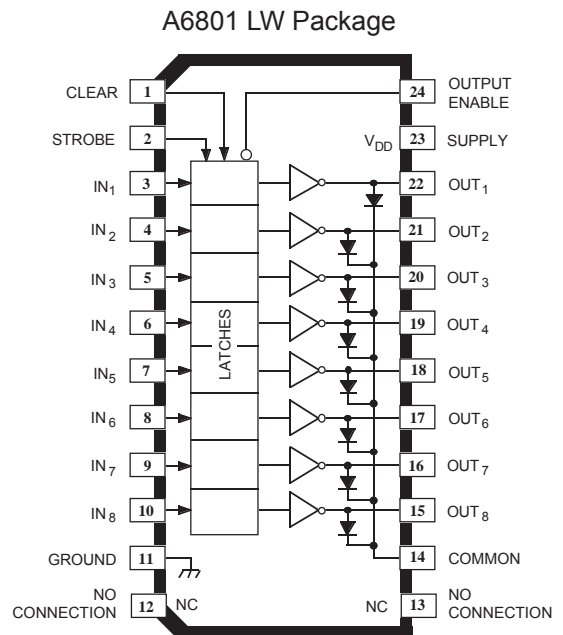


Dwg. PP-014A

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

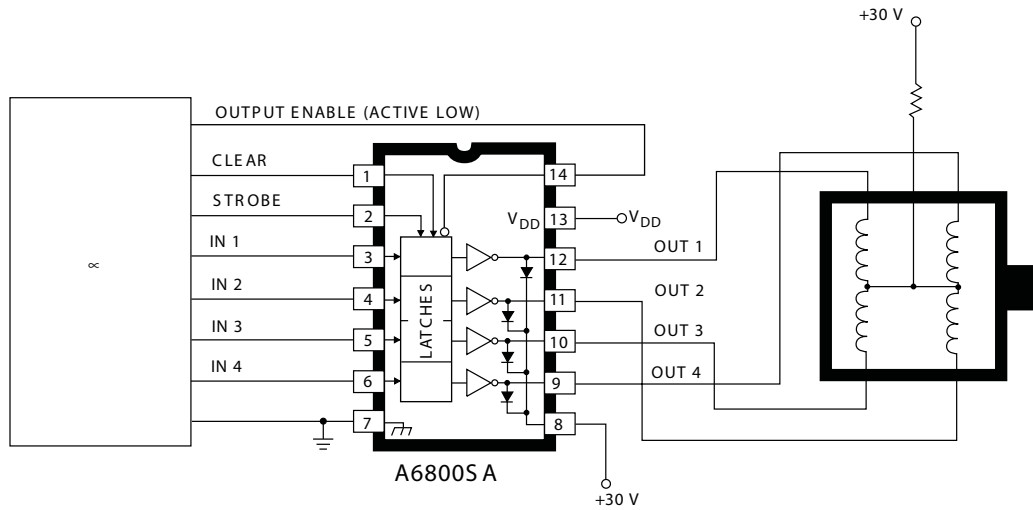


Dwg. PP-037



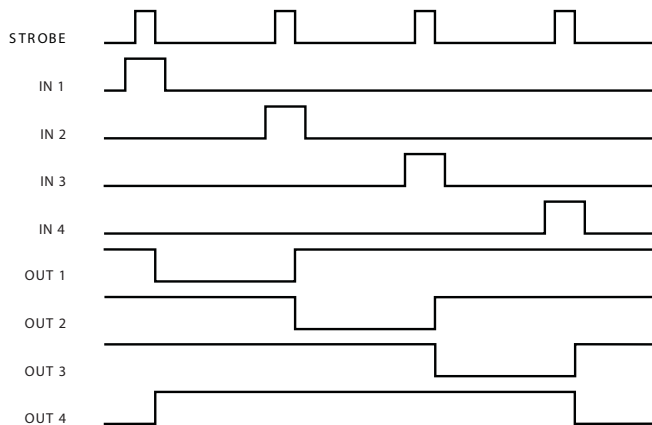
Dwg. PP-015-1

**TYPICAL APPLICATION
UNIPOLAR STEPPER-MOTOR DRIVE**



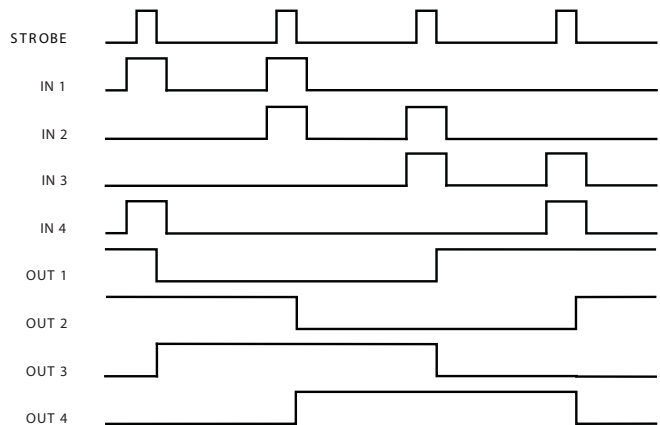
Dwg. No. B-1537

UNIPOLAR WAVE DRIVE



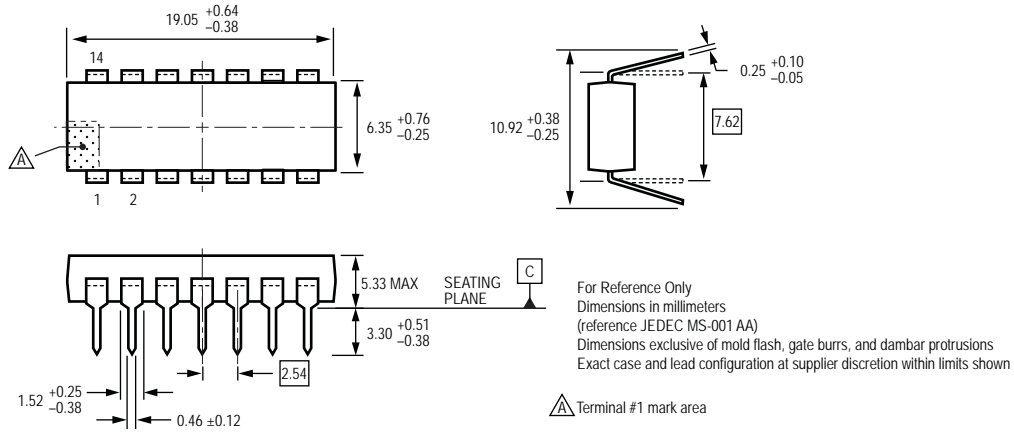
Dwg. GP-060

UNIPOLAR 2-PHASE DRIVE

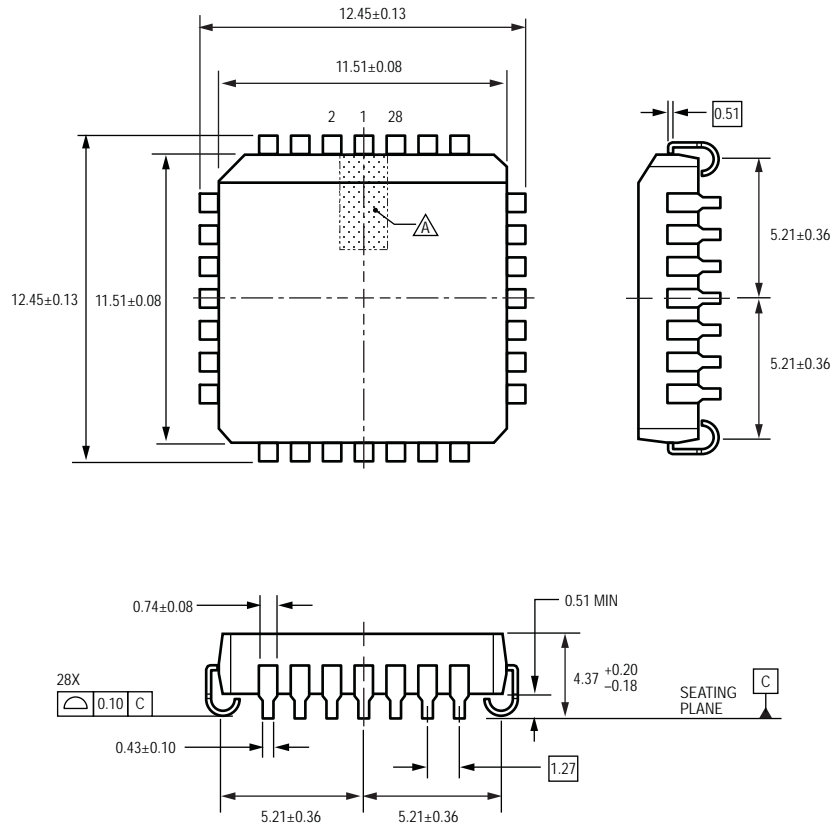


Dwg. GP-060-1

Package A (A6800) 14-pin DIP

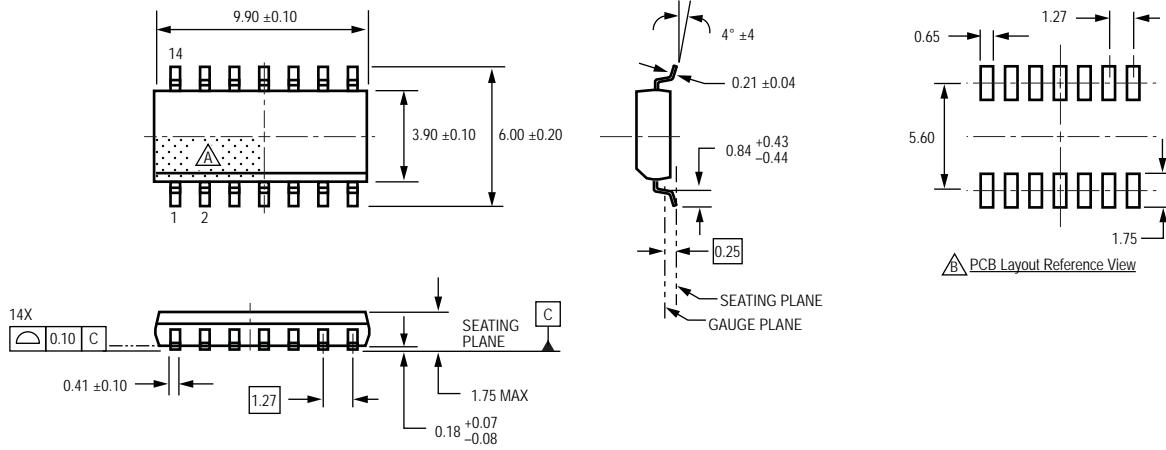


Package EP (A6801) 28-pin PLCC



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
△ Terminal #1 mark area

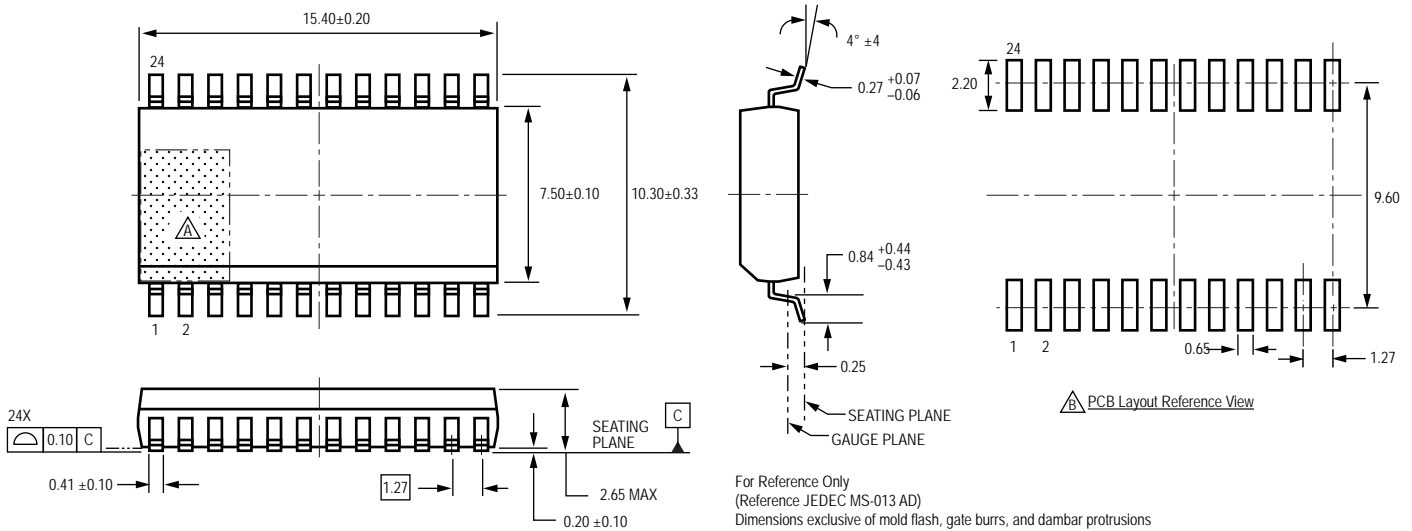
Package L (A6800) 14-pin SOICN



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

△ Terminal #1 mark area
△ 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

△ Terminal #1 mark area
△ 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

Copyright ©2003-2009, Allegro MicroSystems, Inc.

The products described here are manufactured under one or more U.S. patents or U.S. patents pending.

Allegro MicroSystems, Inc. reserves the right to make, from time to time, such departures from the detail specifications as may be required to permit improvements in the performance, reliability, or manufacturability of its products. Before placing an order, the user is cautioned to verify that the information being relied upon is current.

Allegro's products are not to be used in life support devices or systems, if a failure of an Allegro product can reasonably be expected to cause the failure of that life support device or system, or to affect the safety or effectiveness of that device or system.

The information included herein is believed to be accurate and reliable. However, Allegro MicroSystems, Inc. assumes no responsibility for its use; nor for any infringement of patents or other rights of third parties which may result from its use.

For the latest version of this document, visit our website:

www.allegromicro.com



Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

- ⊖ [View A6800SA-T on WIN SOURCE](#)
- ⊖ [Allegro MicroSystems, LLC Information](#)

Optimize Your Supply Chain with WIN SOURCE Solutions

- ✓ Global Sourcing Solution
- ✓ Obsolete Management
- ✓ Cost Control Management
- ✓ Shortage Management
- ✓ Alternative Solution
- ✓ Excess Inventory Management