

### Features

- 3V and 5V Input compatible
- Clocking speeds up to 10 MHz
- Reduced clock skew
- 20 ns Switching/delay time
- 2A Peak drive
- Low quiescent current
- Wide operating voltage—  
4.5V–16V

### Applications

- CCD Drivers requiring high-contrast imaging
- Differential line drivers
- Push-pull circuits

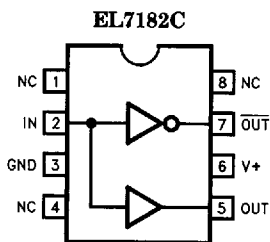
### Ordering Information

Part No.	Temp. Range	Pkg.	Outline #
EL7182CN	-40°C to +85°C	8-Pin P-DIP	MDP0031
EL7182CS	-40°C to +85°C	8-Pin SO	MDP0027

### General Description

The EL7182C is extremely well suited for driving CCD's, especially where high contrast imaging is desirable. The 16V supply rating is attractive for higher voltage CCD applications, as in color fax machines. The input is TTL and 3V compatible. The low quiescent current requirement is advantageous in portable/battery powered systems. The EL7182 is available in 8-pin P-DIP and 8-lead SO packages.

### Connection Diagram



# EL7182C

## 2-Phase, High Speed CCD Driver

### Absolute Maximum Ratings

Supply (V+ to Gnd)	16.5V	Operating Junction Temperature	125°C
Input Pins	-0.3V to +0.3V above V+	Power Dissipation	
Combined Peak Output Current	4A	SOIC	570 mW
Storage Temperature Range	-65°C to +150°C	PDIP	1050 mW
Ambient Operating Temperature	-40°C to +85°C		

#### Important Note:

All parameters having Min/Max specifications are guaranteed. The Test Level column indicates the specific device testing actually performed during production and Quality inspection. Elantec performs most electrical tests using modern high-speed automatic test equipment, specifically the LTX77 Series system. Unless otherwise noted, all tests are pulsed tests, therefore  $T_J = T_C = T_A$ .

Test Level	Test Procedure
I	100% production tested and QA sample tested per QA test plan QCX0002.
II	100% production tested at $T_A = 25^\circ\text{C}$ and QA sample tested at $T_A = 25^\circ\text{C}$ , $T_{MAX}$ and $T_{MIN}$ per QA test plan QCX0002.
III	QA sample tested per QA test plan QCX0002.
IV	Parameter is guaranteed (but not tested) by Design and Characterization Data.
V	Parameter is typical value at $T_A = 25^\circ\text{C}$ for information purposes only.

### DC Electrical Characteristics $T_A = 25^\circ\text{C}$ , $V = 15\text{V}$ unless otherwise specified

Parameter	Description	Test Conditions	Min	Typ	Max	Test Level	Units
<b>Input</b>							
$V_{IH}$	Logic "1" Input Voltage		2.4			I	V
$I_{IH}$	Logic "1" Input Current	@V+		0.1	10	I	$\mu\text{A}$
$V_{IL}$	Logic "0" Input Voltage				0.8	I	V
$I_{IL}$	Logic "0" Input Current	@0V		0.1	10	I	$\mu\text{A}$
$V_{HVS}$	Input Hysteresis			0.3		V	V
<b>Output</b>							
$R_{OH}$	Pull-Up Resistance	$I_{OUT} = -100\text{ mA}$		3	6	I	$\Omega$
$R_{OL}$	Pull-Down Resistance	$I_{OUT} = +100\text{ mA}$		4	6	I	$\Omega$
$I_{PK}$	Peak Output Current	Source Sink		2 2		IV	A
$I_{DC}$	Continuous Output Current	Source/Sink	100			I	mA
<b>Power Supply</b>							
$I_S$	Power Supply Current	Input High		2.5	5	I	mA
$V_S$	Operating Voltage		4.5		16	I	V

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# EL7182C

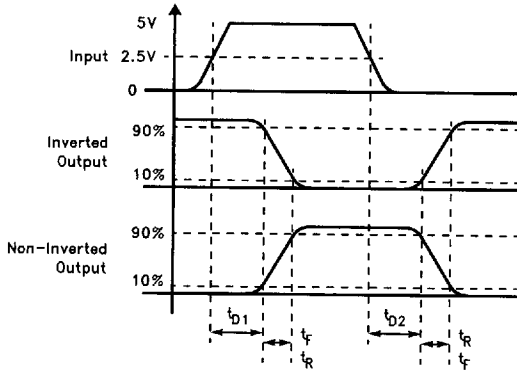
## 2-Phase, High Speed CCD Driver

EL7182C

### AC Electrical Characteristics $T_A = 25^\circ\text{C}$ , $V = 15\text{V}$ unless otherwise specified

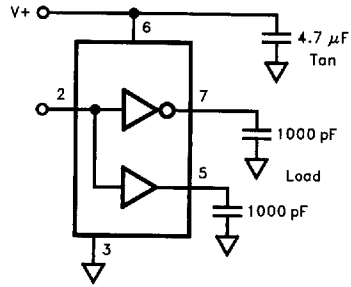
Parameter	Description	Test Conditions	Min	Typ	Max	Test Level	Units
<b>Switching Characteristics</b>							
$t_R$	Rise Time	$C_L = 500\text{ pF}$ $C_L = 1000\text{ pF}$		7.5 10	20	IV	ns
$t_F$	Fall Time	$C_L = 500\text{ pF}$ $C_L = 1000\text{ pF}$		10 13	20	IV	ns
$t_{D-ON}$	Turn-On Delay Time			18	25	IV	ns
$t_{D-OFF}$	Turn-Off Delay Time			20	25	IV	ns

**Timing Table**



7182-2

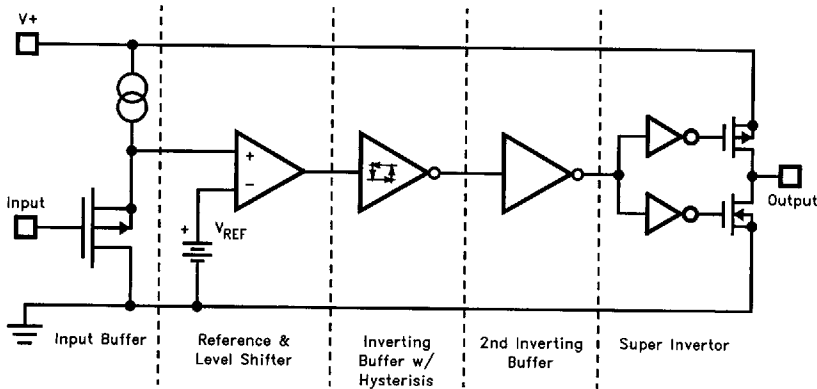
**Standard Test Configuration**



7182-3

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**Simplified Schematic**



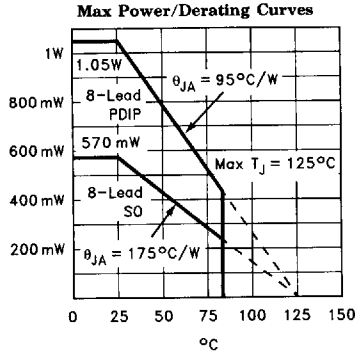
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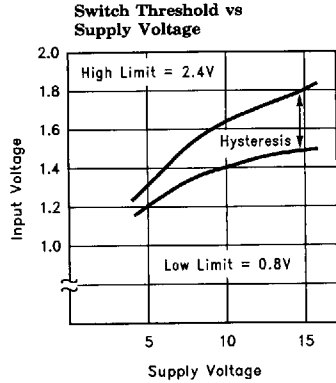
# EL7182C

## 2-Phase, High Speed CCD Driver

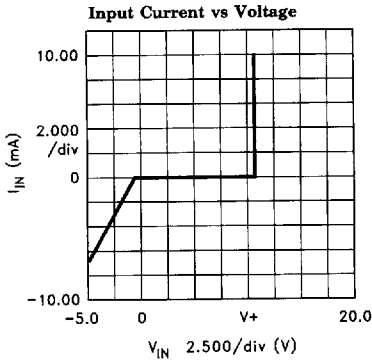
### Typical Performance Curve



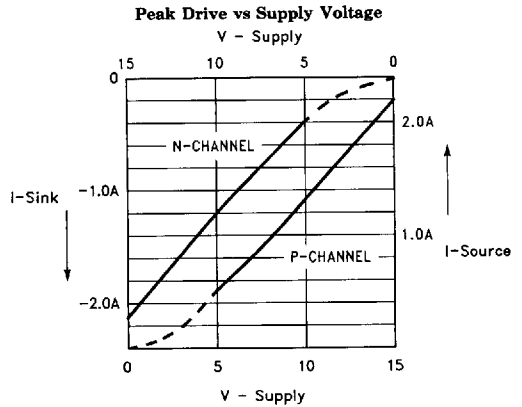
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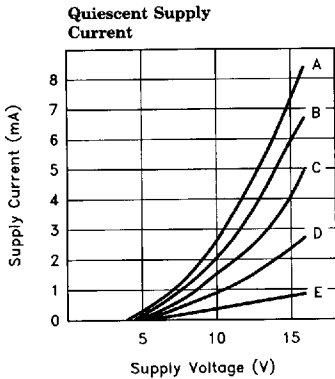
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7182-5



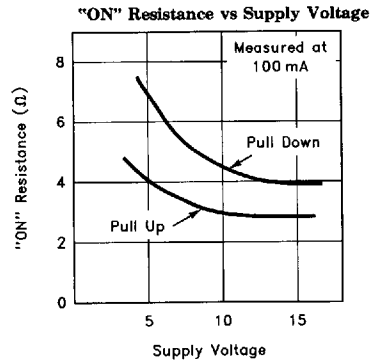
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**CASE:**

Input Level	Curve
GND	B
V+	D

7182-7



7182-16

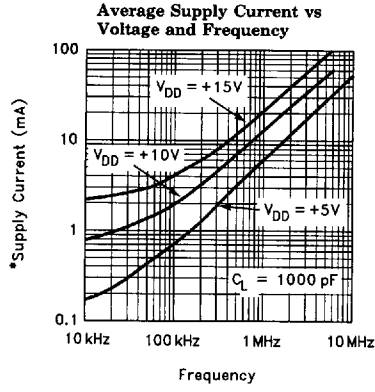
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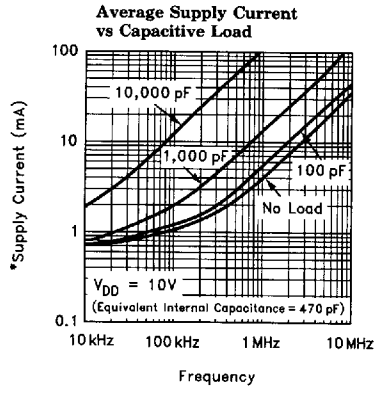
## 2-Phase, High Speed CCD Driver

EL7182C

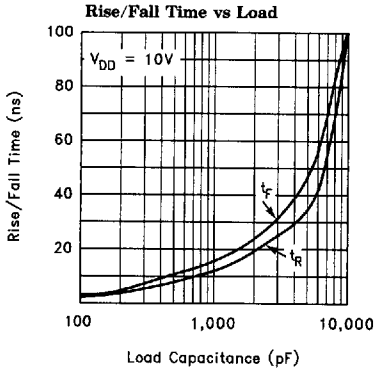
### Typical Performance Curve — Contd.



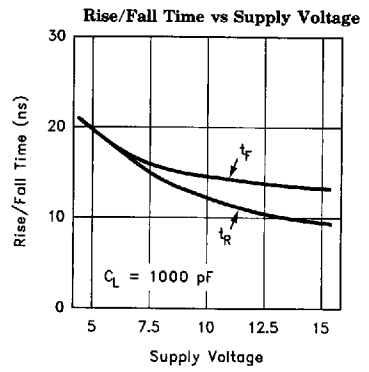
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7182-9



7182-14



7182-10

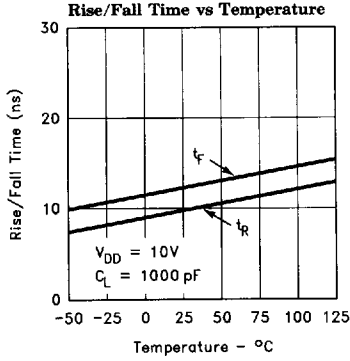
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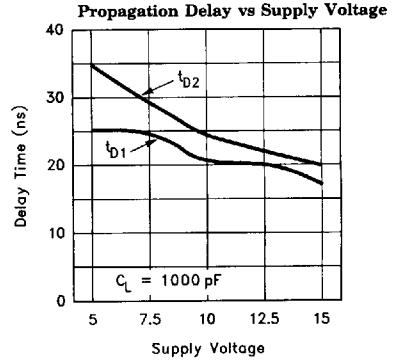
# EL7182C

## 2-Phase, High Speed CCD Driver

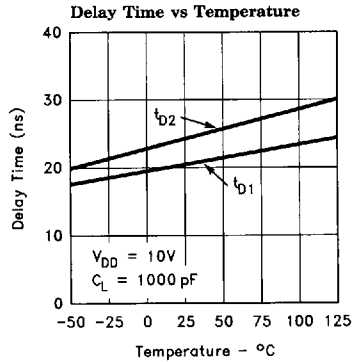
### Typical Performance Curve — Contd.



7182-12



7182-11



7182-13

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## Soldering Packages to PC Boards

### DIP Packages

**Wave soldering** is recommended for DIP packages. Solder plated boards are recommended. Rosin mildly activated (RMA) flux is needed. Wave soldering using a dual wave system at  $250^{\circ}\text{C} \pm 10^{\circ}\text{C}$  for two seconds per wave is preferable. Thorough cleaning of boards after soldering is required.

**Hand soldering**, Elantec's DIP packages will survive a peak temperature of  $300^{\circ}\text{C}$  (at leads) for a maximum period of 10 seconds.

### Surface Mount Packages

Wave soldering and vapor phase or infrared (IR) reflow can be used for soldering surface mount packages to PC boards. Solder plated boards are recommended for wave soldering and vapor phase or IR reflow methods.

**Wave Soldering:** Adhesive is used to hold components on the boards during wave soldering. Place components on the board and cure adhesive

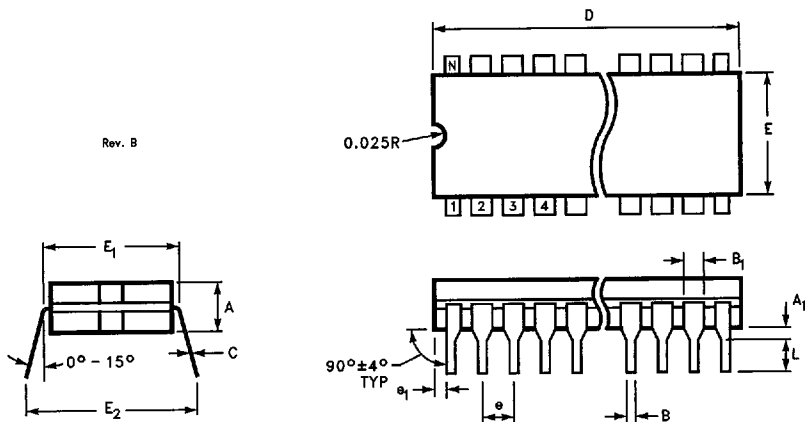
before wave soldering. Rosin mildly activated (RMA) flux or organic flux is needed. Wave soldering using a dual wave system at  $250^{\circ}\text{C} \pm 10^{\circ}\text{C}$  for a maximum of two seconds per wave is preferable. Thorough cleaning of boards after soldering is required.

**Reflow Soldering:** Screen solder paste on board and attach components to board. Solder paste with RMA flux is recommended. Bake boards at  $65^{\circ}\text{C}$ – $90^{\circ}\text{C}$  for 15 minutes. Preheat boards to within  $60^{\circ}\text{C}$ – $70^{\circ}\text{C}$  of the solder temperature. To reflow solder paste with vapor phase method, the solder paste temperature must be maintained at or above  $200^{\circ}\text{C}$  for at least 30 seconds. The components temperature can not exceed  $215^{\circ}\text{C}$ . For the IR reflow method, the solder paste temperature must be maintained at or above  $200^{\circ}\text{C}$  for at least 30 seconds. The components temperature can not exceed  $220^{\circ}\text{C}$ . The temperature/time ramp-up during vapor phase or IR reflow shall be no greater than  $2^{\circ}\text{C}/\text{sec}$ .

**Hand soldering**, Elantec's surface mount packages will survive a peak temperature of  $260^{\circ}\text{C}$  (at leads) for a maximum period of 10 seconds.

# Package Outlines

Rev. B



## MDP0016 Rev. B

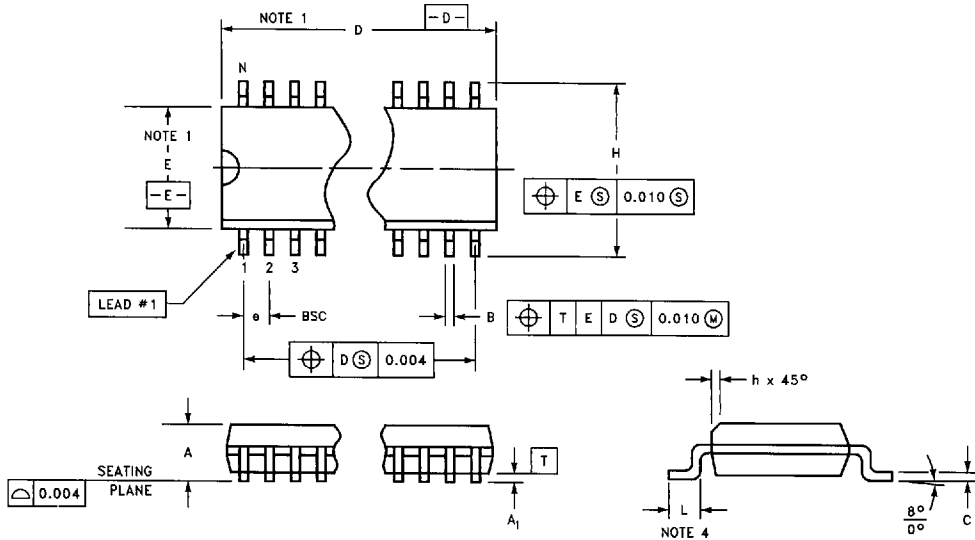
### CerDIP Package

Lead Finish (Coml)—Tin Plate or Hot Solder DIP

Lead Finish (Mil)—Hot Solder DIP

Common Dimensions	Min	Max	Min	Max	Min	Max	Min	Max
A	0.140	0.160	0.140	0.160	0.140	0.160	0.140	0.160
A <sub>1</sub>	0.115	0.055	0.020	0.050	0.015	0.060	0.020	0.050
B	0.016	0.023	0.016	0.021	0.014	0.026	0.016	0.021
B <sub>1</sub>	0.050	0.065	0.050	0.060	0.038	0.068	0.050	0.060
C	0.008	0.012	0.008	0.012	0.008	0.018	0.008	0.012
D	0.375	0.395	0.760	0.785	0.940	0.960	1040.925	1.060
E	0.245	0.265	0.220	0.291	0.220	0.310	0.2780	0.298
E <sub>1</sub>	0.300	0.320	0.300	0.320	0.290	0.320	0.300	0.320
E <sub>2</sub>	0.340	0.390	0.340	0.390	0.360	0.410	0.340	0.390
e	0.090	0.110	0.090	0.110	0.090	0.110	0.090	0.110
e <sub>1</sub>	0.020	0.055	0.078	0.098	0.068	0.098	0.078	0.098
L	0.125	0.150	0.125	0.150	0.125	0.150	0.130	0.150
N	8-Lead		14-Lead		18-Lead		20-Lead	





REV. C

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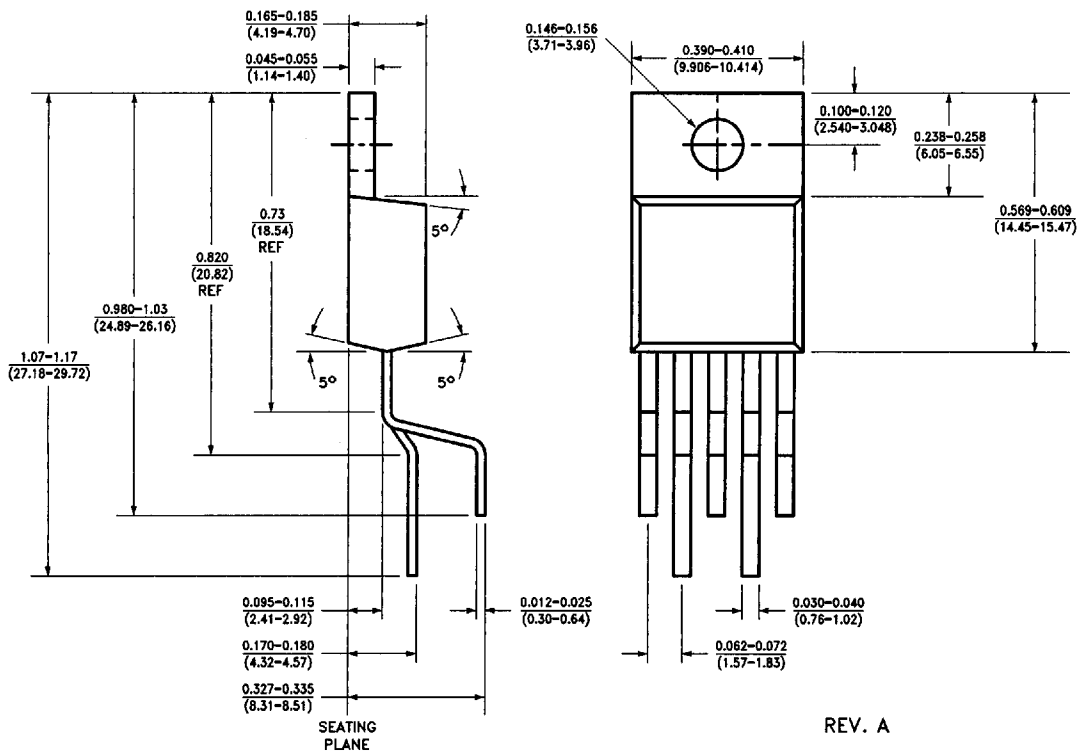
- Note 1: These dimensions do not include mold flash or protrusions. Mold flash protrusion shall not exceed .006" on any side.
- Note 2: SO-8, SO-14, SO-16 packages are narrow body (0.150").
- Note 3: Dimensions and tolerancing per ANSI Y14.5M-1982.
- Note 4: Flat area of lead foot.
- Note 5: SOL-24T2 (thermal package) has 2 fused leads on each side of package.
- Note 6: SOL-20T (thermal package) has 4 fused leads on each side of package.
- Note 7: SOL-28T contains a thermal metal slug.

**MDP0027 Rev. C**  
**Package Outline—SOIC**  
 Lead Finish—Solder Plate

Symbol	Lead Count													
	SOL-28		SOL-20		SOL-16		SO-16		SO-14		SO-8		SOL-24	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
A	0.096	0.104	0.096	0.104	0.096	0.104	0.061	0.068	0.061	0.068	0.061	0.068	0.096	0.104
A <sub>1</sub>	0.004	0.011	0.004	0.011	0.004	0.011	0.004	0.010	0.004	0.010	0.004	0.010	0.004	0.011
B	0.014	0.019	0.014	0.019	0.014	0.019	0.014	0.019	0.014	0.019	0.014	0.019	0.014	0.019
C	0.009	0.012	0.009	0.012	0.009	0.012	0.008	0.010	0.008	0.010	0.008	0.010	0.009	0.012
D	0.696	0.712	0.498	0.510	0.397	0.430	0.386	0.394	0.337	0.344	0.189	0.196	0.598	0.614
E	0.291	0.299	0.291	0.299	0.291	0.299	0.150	0.157	0.150	0.157	0.150	0.157	0.291	0.299
e	0.050 BSC		0.050 BSC		0.050 BSC		0.050 BSC		0.050 BSC		0.050 BSC		0.050 BSC	
H	0.398	0.414	0.398	0.414	0.398	0.414	0.230	0.244	0.230	0.244	0.230	0.244	0.398	0.414
h	0.010	0.016	0.010	0.016	0.010	0.016	0.010	0.016	0.010	0.016	0.010	0.016	0.010	0.016
L	0.016	0.024	0.016	0.024	0.016	0.024	0.016	0.024	0.016	0.024	0.016	0.024	0.016	0.024

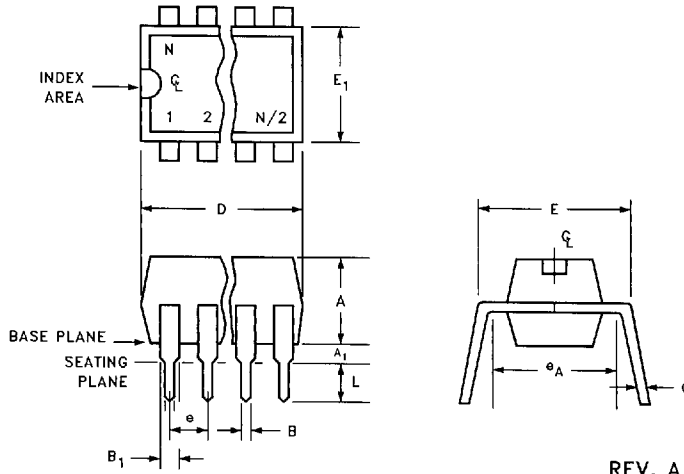
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**Package Outlines**



**MDP0028 Rev. A**  
**5-Lead TO-220**  
 Lead Finish—Solder Plate

REV. A



REV. A

MDP0031 Rev. A  
Plastic Package  
Lead Finish—Hot Solder DIP

Common Dimensions	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
$A_1$	0.020	0.040	0.020	0.040	0.020	0.040	0.020	0.040	0.020	0.040
$A$	0.125	0.145	0.125	0.145	0.125	0.145	0.125	0.145	0.125	0.145
$B$	0.016	0.020	0.016	0.020	0.016	0.020	0.016	0.020	0.015	0.021
$B_1$	0.050	0.070	0.050	0.070	0.050	0.070	0.050	0.070	0.050	0.070
$C$	0.008	0.012	0.008	0.012	0.008	0.012	0.008	0.012	0.008	0.012
$D$	0.350	0.385	0.745	0.755	0.745	0.755	0.875	0.905	0.925	1.045
$E$	0.295	0.320	0.295	0.320	0.295	0.320	0.295	0.320	0.295	0.320
$E_1$	0.245	0.255	0.245	0.255	0.245	0.255	0.245	0.255	0.245	0.255
$e$	0.100 Typ		0.100 Typ		0.100 Typ		0.100 Typ		0.100 Typ	
$e_A$	0.300 Ref		0.300 Ref		0.300 Ref		0.300 Ref		0.300 Ref	
$L$	0.115	0.135	0.115	0.135	0.115	0.135	0.115	0.135	0.115	0.135
$N$	8		14		16		18		20	

Note: Package outline exclusive of any mold flashes. Mold flash protrusion shall not exceed 0.006" on any side.