

Features

- Logic AND/NAND input
- 3V and 5V Input compatible
- Clocking speeds up to 20 MHz
- 20 ns Switching/delay time
- 2A Peak drive
- Isolated drains
- Low output impedance
- Low quiescent current
- Wide operating voltage—
4.5V–16V

Applications

- CCD Drivers
- Short circuit protected switching
- Under-voltage shut-down circuits
- Switch-mode power supplies
- Motor controls
- Power MOSFET switching
- Switching capacitive loads
- Shoot-thru protection
- Latching drivers

Ordering Information

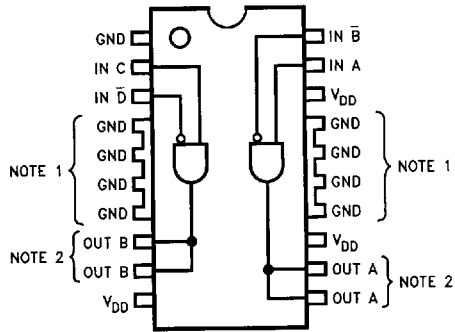
Part No.	Temp. Range	Pkg.	Outline #
EL7243CM	-40°C to +85°C	20-Lead Thermal SOL	MDP0027*

General Description

The EL7243C dual input, 2-channel driver achieves the same excellent switching performance of the EL7212 family while providing added flexibility. The power package makes this part extremely well suited for high frequency and heavy loads as in CCD applications. The 2-input logic and configuration is applicable to numerous power MOSFET drive circuits. As with other Elantec drivers, the EL7243C is excellent for driving large capacitive loads with minimal delay and switching times. "Shoot-thru" protection and latching circuits can be implemented by simply "cross-coupling" the 2-channels.

Connection Diagram

20-Lead Thermal SOL Package
EL7243C



Note 1: Pins 4–7 and 14–17 are electrically connected.

Note 2: Output pins must be tied together.

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EL7243C

Dual Input, High Speed, Dual Channel 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	20-pin "Batwing" SOIC	1500 mW
Storage Temperature Range	-65°C to +150°C		
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 $T_A = 25^\circ\text{C}$, $V_{DD} = 15\text{V}$ unless otherwise specified

Parameter	Description	Test Conditions	Min	Typ	Max	Test Level	Units
Input							
V_{IH}	Logic "1" Input Voltage		2.4			I	V
I_{IH}	Logic "1" Input Current	@ V_{DD}		0.1	10	I	μA
V_{IL}	Logic "0" Input Voltage				0.8	I	V
I_{IL}	Logic "0" Input Current	@0V		0.1	10	I	μA
V_{HVS}	Input Hysteresis			0.3		V	V
Output							
R_{OH}	Pull-Up Resistance	$I_{OUT} = -100\text{ mA}$		3	6	I	Ω
R_{OL}	Pull-Down Resistance	$I_{OUT} = +100\text{ mA}$		4	6	I	Ω
I_{PK}	Peak Output Current	Source Sink		2 2		IV	A
I_{DC}	Continuous Output Current	Source/Sink	200			I	mA
Power Supply							
I_S	Power Supply Current	Inputs High		1	2.5	I	mA
V_S	Operating Voltage		4.5		16	I	V

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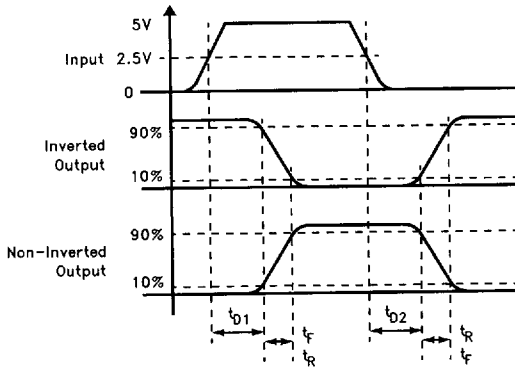
EL7243C

Dual Input, High Speed, Dual Channel CCD Driver

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

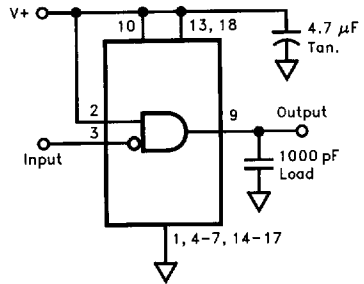
Parameter	Description	Test Conditions	Min	Typ	Max	Test Level	Units
Switching Characteristics							
t_R	Rise Time	$C_L = 500\text{ pF}$ $C_L = 1000\text{ pF}$			10 20	IV	ns
t_F	Fall Time	$C_L = 500\text{ pF}$ $C_L = 1000\text{ pF}$			10 20	IV	ns
t_{D-ON}	Turn-On Delay Time			20	25	IV	ns
t_{D-OFF}	Turn-Off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

Timing Table



7243-2

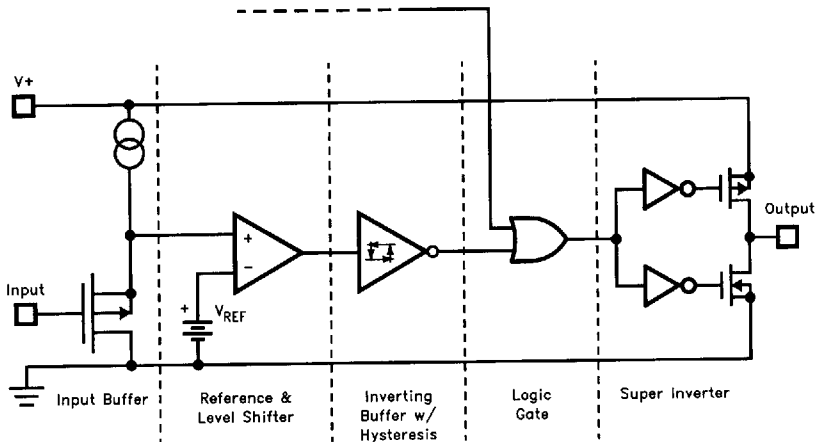
Standard Test Configuration



Pins 19, 20 connected to V^+ .

7243-3

Simplified Schematic



7243-4

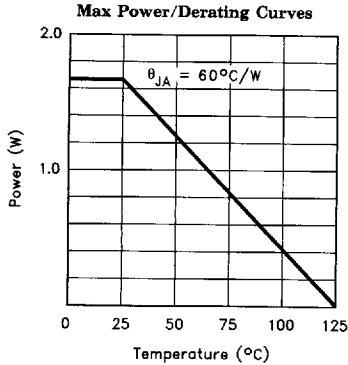
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EL7243C

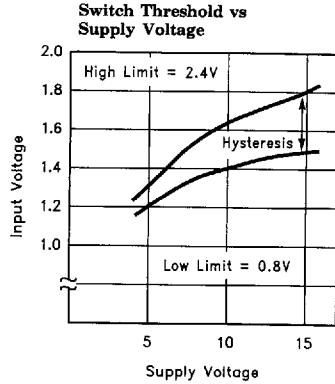
Dual Input, High Speed, Dual Channel CCD Driver

EL7243C

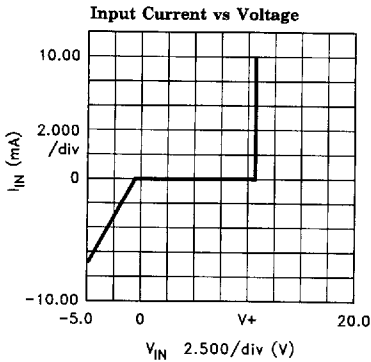
Typical Performance Curves



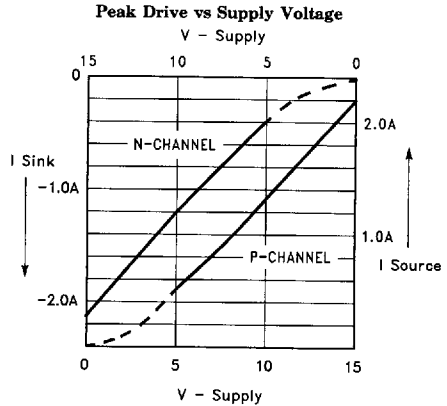
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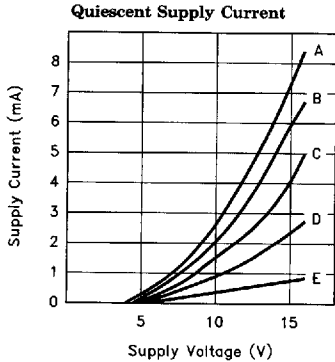
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7243-7

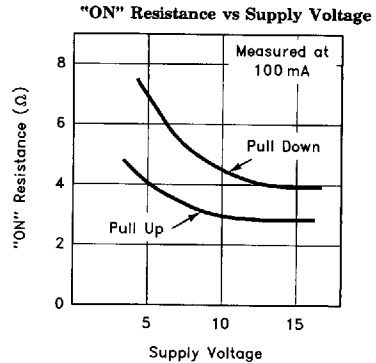


7243-8



CASE:

A	ALL INPUTS GND
B	3 INPUTS GND
C	2 INPUTS GND
D	1 INPUT GND
E	ALL INPUTS V+



7243-9

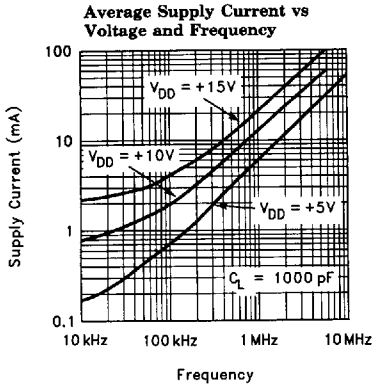
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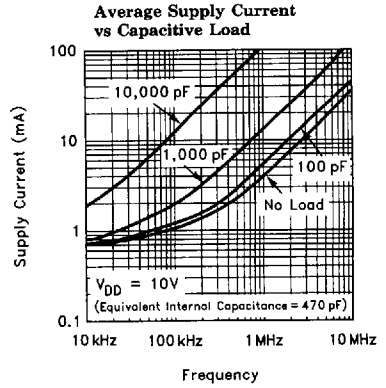
EL7243C

Dual Input, High Speed, Dual Channel CCD Driver

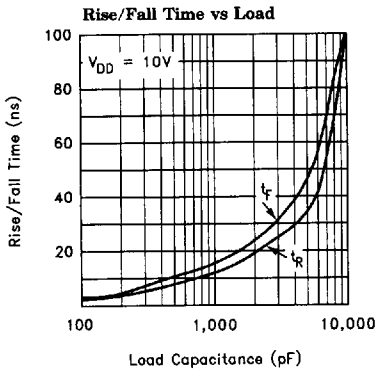
Typical Performance Curves — Contd.



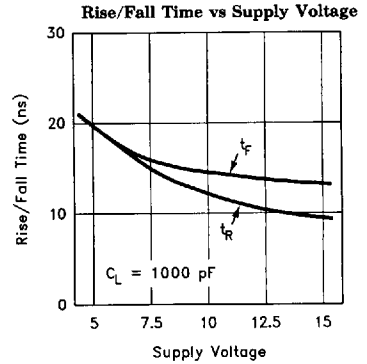
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7243-12



7243-13



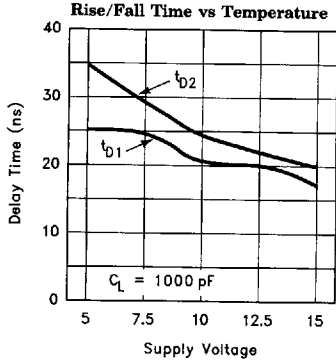
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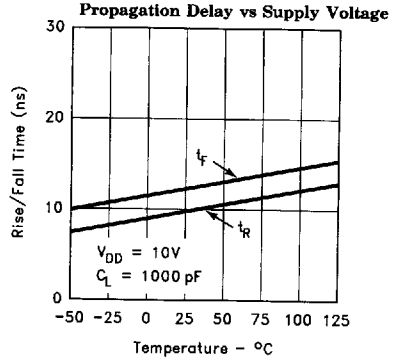
EL7243C

Dual Input, High Speed, Dual Channel CCD Driver

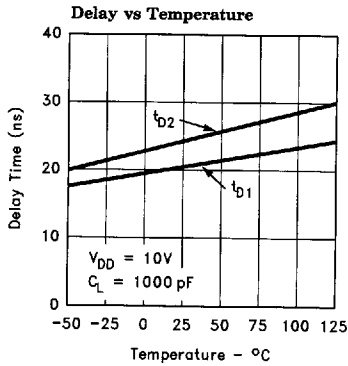
Typical Performance Curves — Contd.



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7243-16



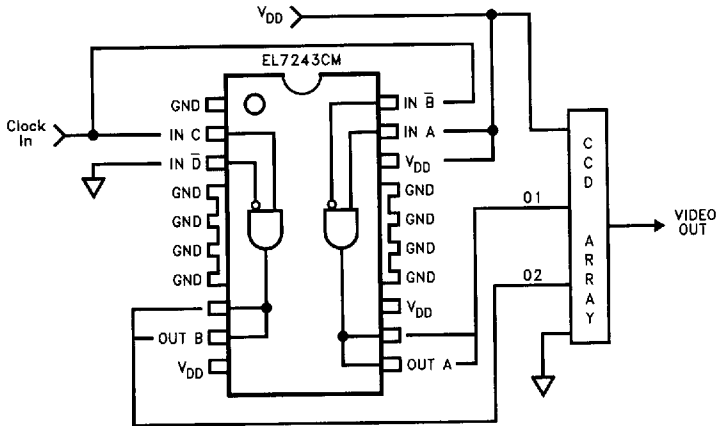
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EL7243C

Dual Input, High Speed, Dual Channel CCD Driver

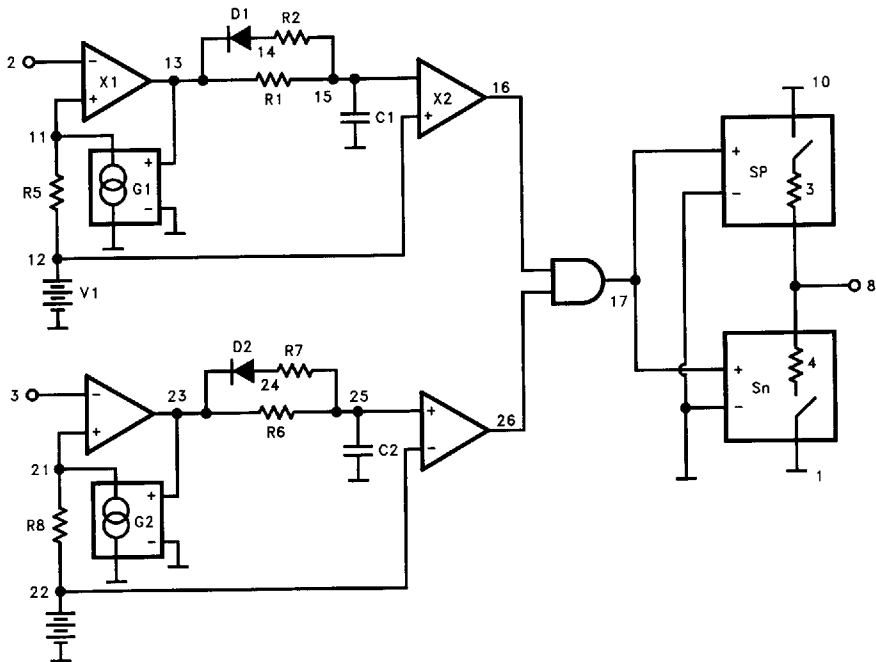
Applications Information

Typical CCD Configuration



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EL7243 Macromodel



7243-19

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EL7243C

Dual Input, High Speed, Dual Channel CCD Driver

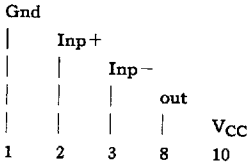
EL7243C

EL7243 Macromodel

* EL7243 Macromodel

* Revision A, January 1996

* Connections



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.subckt M7243
V1 12 1 1.6
R1 13 15 1k
R2 14 15 5k
R5 11 12 100
C1 15 1 43.3pF
D1 14 13 dmod
X1 13 11 2 1 comp1
X2 16 12 15 1 comp1
V2 22 1 1.6
R6 23 25 1K
R7 24 25 5K
R8 21 22 100
C2 25 1 43.3pF
D2 24 23 dmod
X3 23 21 3 1 comp1
X4 26 25 22 1 comp1
X5 16 26 17 1 And-gate
sp 10 8 17 1 spmod
sn 8 1 17 1 snmod
g1 11 1 13 1 938u
g2 21 1 23 1 938u
.model dmod d
.model spmod vswitch ron = 3 roff = 2meg von = 1 voff = 1.5
.model snmod vswitch ron = 4 roff = 2meg von = 3 voff = 2
.ends M7243

* AND Gate Subcircuit*
.subckt And-gate inp1 inp2 out-AS Vss-A
el out-A Vss-A table {v(inp1)*v(inp2)} = (0, 3.2) (3.2, 0)
Rout-a out-a vss-a 10 meg
rinpa inp1 vss-a 10 meg
rinpb inp2 vss-a 10 meg
.ends and-gate

* Comparator Subcircuit *
.subckt comp1 out inp inm vss
el out vss table {(v(inp)-v(inm))*5000} = (0,0) (3.2, 3.2)
Rout out vss 10meg
Rinp inp vss 10meg
Rinm inm vss 10meg
.ends omp1
    
```

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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°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

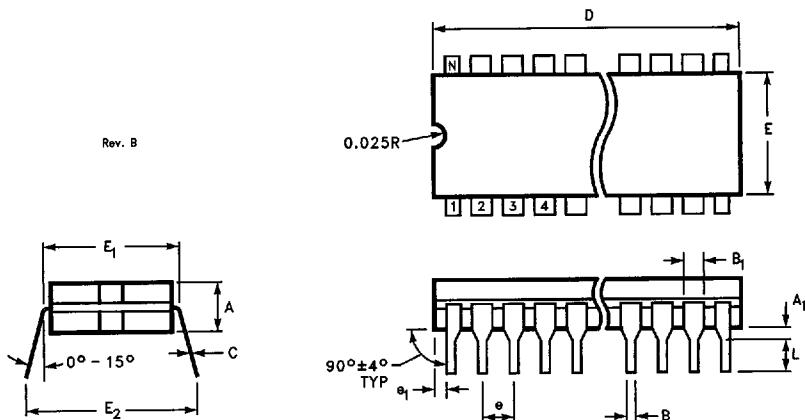
before wave soldering. Rosin mildly activated (RMA) flux or organic flux is needed. Wave soldering using a dual wave system at $250^{\circ}\text{C} \pm 10^{\circ}\text{C}$ for a maximum of two seconds per wave is preferable. Thorough cleaning of boards after soldering is required.

Reflow Soldering: Screen solder paste on board and attach components to board. Solder paste with RMA flux is recommended. Bake boards at 65°C – 90°C for 15 minutes. Preheat boards to within 60°C – 70°C of the solder temperature. To reflow solder paste with vapor phase method, the solder paste temperature must be maintained at or above 200°C for at least 30 seconds. The components temperature can not exceed 215°C . For the IR reflow method, the solder paste temperature must be maintained at or above 200°C for at least 30 seconds. The components temperature can not exceed 220°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°C (at leads) for a maximum period of 10 seconds.

Package Outlines

Rev. B



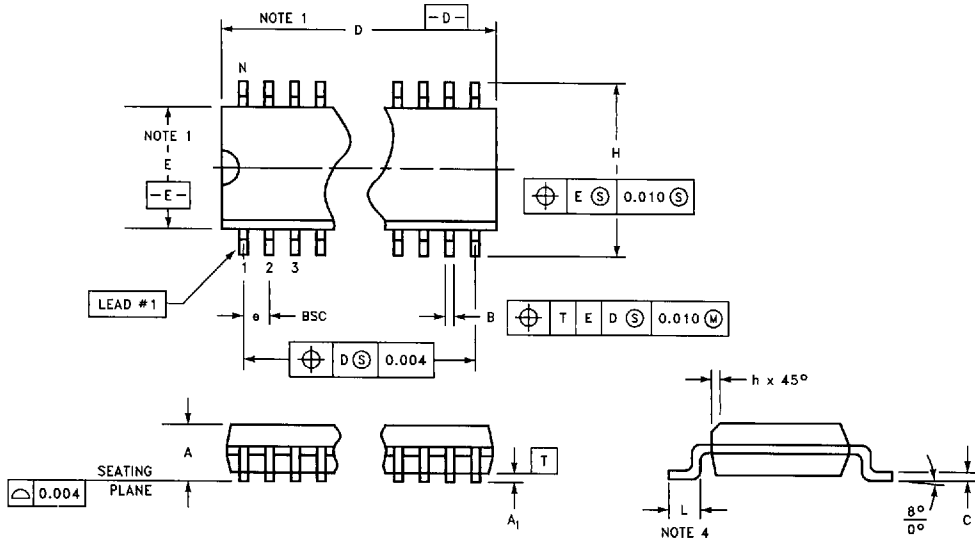
MDP0016 Rev. B

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 ₁	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 ₁	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 ₁	0.300	0.320	0.300	0.320	0.290	0.320	0.300	0.320
E ₂	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 ₁	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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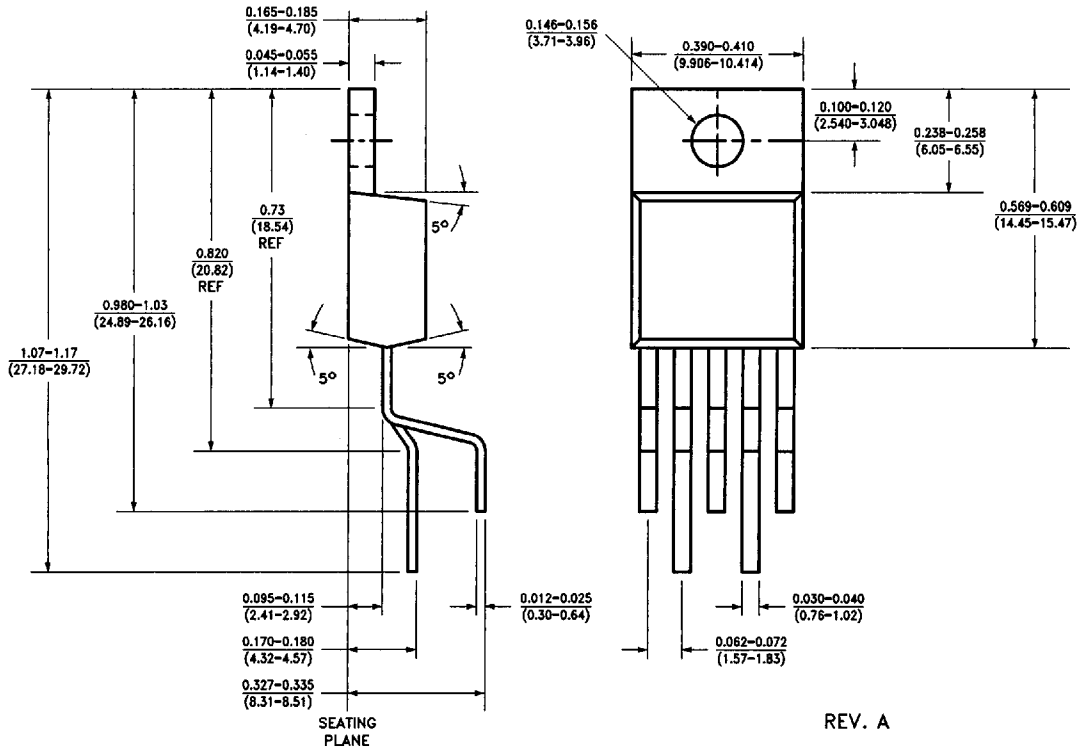
- Note 1: These dimensions do not include mold flash or protrusions. Mold flash protrusion shall not exceed .006" on any side.
- Note 2: SO-8, SO-14, SO-16 packages are narrow body (0.150").
- Note 3: Dimensions and tolerancing per ANSI Y14.5M-1982.
- Note 4: Flat area of lead foot.
- Note 5: SOL-24T2 (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 ₁	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

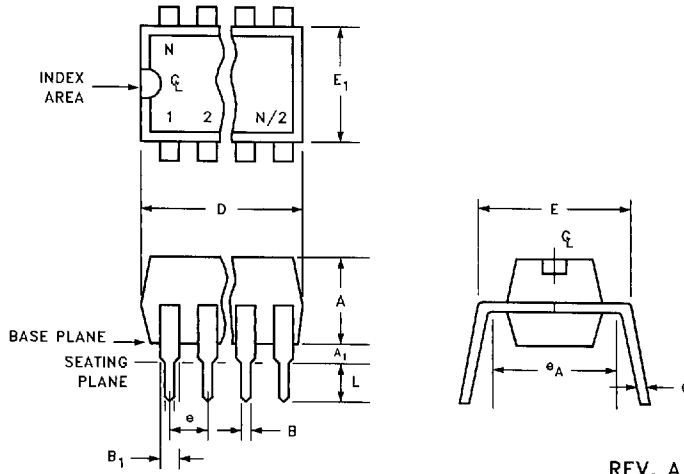
3129557 0005559 T20

Package Outlines



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

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.