

AZ10ELT20 AZ100ELT20

CMOS/TTL to Differential PECL Translator

FEATURES

- 0.5ns Typical Propagation Delay
- Differential PECL Outputs
- Flow Through Pinouts
- Operating Range of +3.0V to +5.5V
- Direct Replacement for ON Semiconductor MC10ELT20 & MC100ELT20
- Available in a 3x3mm MLP Package

PACKAGE AVAILABILITY

PACKAGE	PART NO.	MARKING
SOIC 8	AZ10ELT20D	AZM10ELT20
SOIC 8 T&R	AZ10ELT20DR1	AZM10ELT20
SOIC 8 T&R	AZ10ELT20DR2	AZM10ELT20
SOIC 8	AZ100ELT20D	AZM100ELT20
SOIC 8 T&R	AZ100ELT20DR1	AZM100ELT20
SOIC 8 T&R	AZ100ELT20DR2	AZM100ELT20
MLP 16	AZ10/100ELT20L	AZMT20
MLP 16 T&R	AZ10/100ELT20LR1	AZMT20
MLP 16 T&R	AZ10/100ELT20LR2	AZMT20
TSSOP 8	AZ10ELT20T	AZTLT20
TSSOP 8 T&R	AZ10ELT20TR1	AZTLT20
TSSOP 8 T&R	AZ10ELT20TR2	AZTLT20
TSSOP 8	AZ100ELT20T	AZHLT20
TSSOP 8 T&R	AZ100ELT20TR1	AZHLT20
TSSOP 8 T&R	AZ100ELT20TR2	AZHLT20
DIE	AZ10/100ELT20X	N/A

DESCRIPTION

The AZ10/100ELT20 is a CMOS/TTL to differential PECL translator. Because PECL (Positive ECL) levels are used, only V_{CC} and ground are required. The small outline packaging and the single gate of the ELT20 makes it ideal for those applications where space, performance and low power are at a premium.

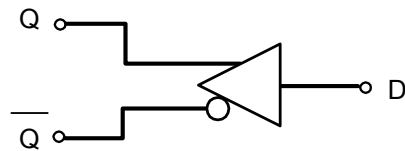
The ELT20 is available in both PECL standards: the 10ELT is compatible with PECL 10K logic levels while the 100ELT is compatible with PECL 100K logic levels.

NOTE: Specifications in PECL tables are valid when thermal equilibrium is established.

PIN DESCRIPTION

PIN	FUNCTION
Q, \bar{Q}	Differential PECL Outputs
D	TTL/CMOS Input
GND	Ground
V_{CC}	Positive Supply
NC	No Connect
10K	10K/100K Mode Select

BLOCK DIAGRAM



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Absolute Maximum Ratings are those values beyond which device life may be impaired.

Symbol	Characteristic	Value	Unit	
V _{CC}	DC Supply Voltage (Referenced to GND)	0 to +8.0	V	
V _{IN}	Input Voltage	0 to +6.0	V	
I _{OUT}	Current Applied to Output in Low Output State	— Continuous — Surge	50 100	mA
T _A	Operating Temperature Range (In Free-Air)	-40 to +85	°C	
T _{STG}	Storage Temperature Range	-65 to +150	°C	

TTL/CMOS INPUT DC CHARACTERISTICS (GND = 0.0V, V_{CC} = +3.0V to +5.5V)

Symbol	Characteristic	Min	Typ	Max	Unit	Condition
I _{IH}	Input HIGH Current			15	μA	V _{IN} = 2.7V
I _{IHH}	Input HIGH Current			20	μA	V _{IN} = V _{CC}
I _{IL}	Input LOW Current			-0.1	mA	V _{IN} = 0.5V
V _{IK}	Input Clamp Diode Voltage			-1.2	V	I _{IN} = -18mA
V _{IH}	Input HIGH Voltage	2.0			V	
V _{IL}	Input LOW Voltage			0.8	V	

10K LVPECL DC Characteristics (GND = 0.0V, V_{CC} = +3.3V)

Symbol	Characteristic	-40°C			0°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
V _{OH}	Output HIGH Voltage ^{1,2}	2170		2410	2245		2460	2295	2400	2490	2390		2580	mV
V _{OL}	Output LOW Voltage ^{1,2}	1350		1685	1350		1670	1350	1550	1670	1350		1705	mV
I _{CC}	Power Supply Current ³			16			16			16			16	mA

- Output parameters vary 1:1 with V_{CC}.
- Each output is terminated through a 50Ω resistor to V_{CC} - 2V.
- I_{CC} measurements must be done with outputs open.

10K PECL DC Characteristics (GND = 0.0V, V_{CC} = +5.0V)

Symbol	Characteristic	-40°C			0°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
V _{OH}	Output HIGH Voltage ^{1,2}	3870		4110	3945		4160	3995	4100	4190	4090		4280	mV
V _{OL}	Output LOW Voltage ^{1,2}	3050		3385	3050		3370	3050	3250	3370	3050		3405	mV
I _{CC}	Power Supply Current ³			16			16			16			16	mA

- Output parameters vary 1:1 with V_{CC}.
- Each output is terminated through a 50Ω resistor to V_{CC} - 2V.
- I_{CC} measurements must be done with outputs open.

100K LVPECL DC Characteristics (GND = 0.0V, V_{CC} = +3.3V)

Symbol	Characteristic	-40°C			0°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
V _{OH}	Output HIGH Voltage ^{1,2}	2160		2420	2205		2420	2235	2345	2420	2255		2420	mV
V _{OL}	Output LOW Voltage ^{1,2}	1400		1745	1400		1680	1400	1595	1680	1400		1680	mV
I _{CC}	Power Supply Current ³			16			16			16			16	mA

- Output parameters vary 1:1 with V_{CC}.
- Each output is terminated through a 50Ω resistor to V_{CC} - 2V.
- I_{CC} measurements must be done with outputs open.

100K PECL DC Characteristics (GND = 0.0V, V_{CC} = +5.0V)

Symbol	Characteristic	-40°C			0°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
V _{OH}	Output HIGH Voltage ^{1,2}	3860		4120	3905		4120	3935	4045	4120	3955		4120	mV
V _{OL}	Output LOW Voltage ^{1,2}	3100		3445	3100		3380	3100	3295	3380	3100		3380	mV
I _{CC}	Power Supply Current ³			16			16			16			16	mA

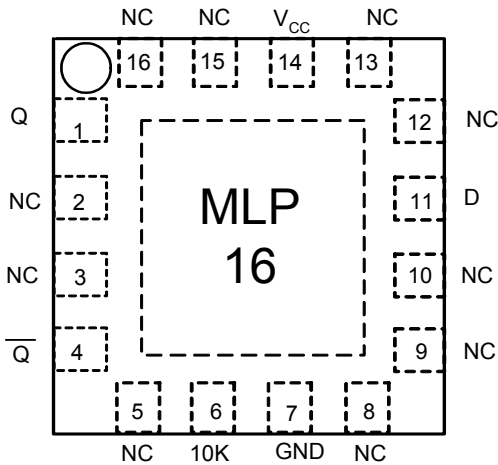
- Output parameters vary 1:1 with V_{CC}.
- Each output is terminated through a 50Ω resistor to V_{CC} - 2V.
- I_{CC} measurements must be done with outputs open.

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AC CHARACTERISTICS (GND = 0.0V, V_{CC} = +3.0V to +5.5V)

Symbol	Characteristic	-40°C		0°C		25°C			85°C		Unit	Condition
		Min	Max	Min	Max	Min	Typ	Max	Min	Max		
t _{PLH}	Propagation Delay ¹	0.2	0.7	0.2	0.7	0.2	0.4	0.7	0.2	0.7	ns	
t _{PHL}	Propagation Delay ¹	0.2	0.7	0.2	0.7	0.2	0.4	0.7	0.2	0.7	ns	
t _r /t _f	Output Rise/Fall Time	0.25	0.7	0.25	0.7	0.25	0.4	0.7	0.25	0.7	ns	20-80%
f _{MAX}	Maximum Frequency ²	350		350		350			350		MHz	
f _{MAX}	Maximum Frequency ³	670		800		800			800		MHz	

1. Propagation delay is measured from +1.5V on the input to 50% of the PECL output swing. Input rise/fall times are < 1ns/V.
2. Full swing PECL output.
3. Output at -3 dB.

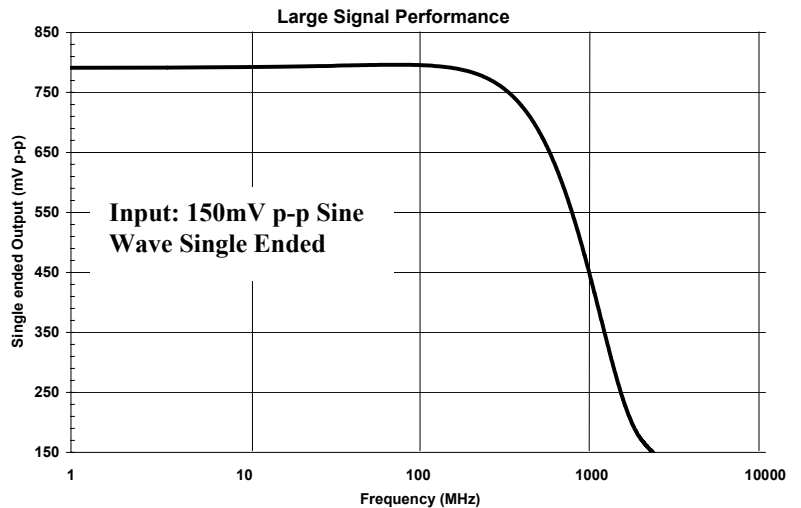
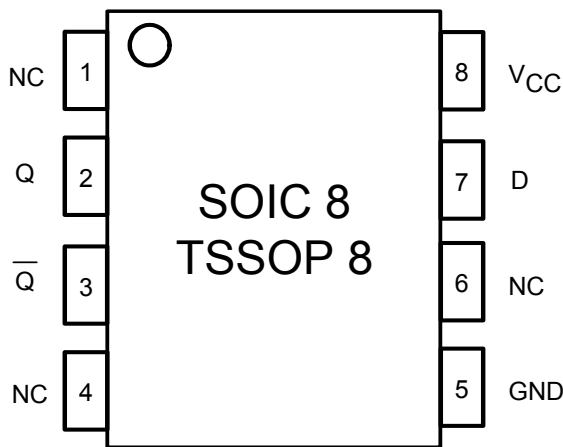


Top View

MLP 16 Package and DIE: 10K/100K Selection

Connect pin/pad 10K to GND to select 10K operation. Float (NC) pin/pad 10K to select 100K operation. GND connection must be less than 1Ω.

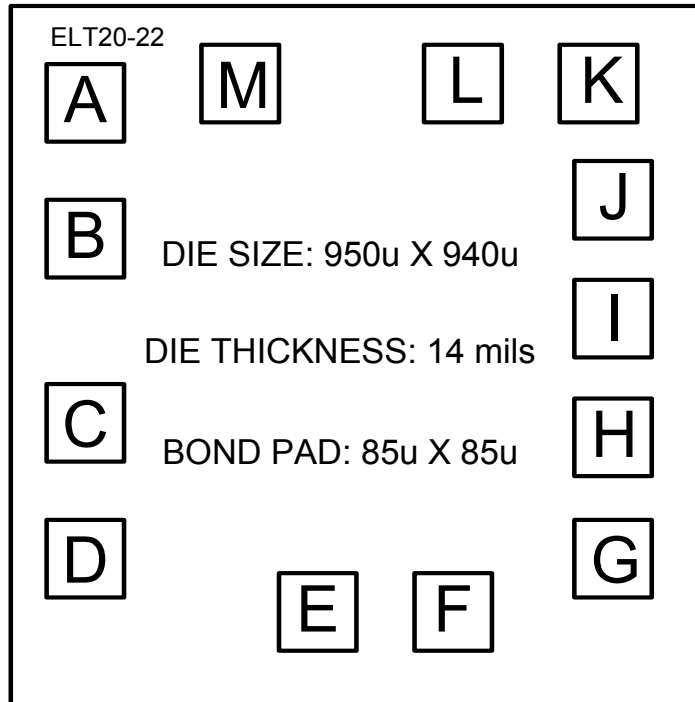
Pin 8 of the MLP 16 package may be connected to pin 7 (GND) with no effect on the circuit.



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DIE PAD COORDINATES

AZ10/100ELT20 DIE:



Note: Other die thicknesses available. Contact factory for further information.

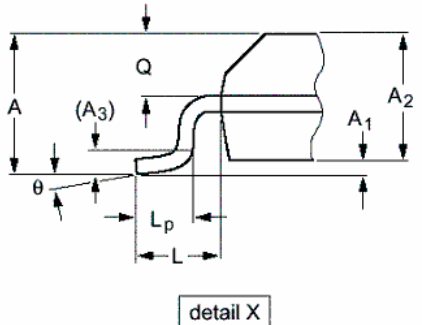
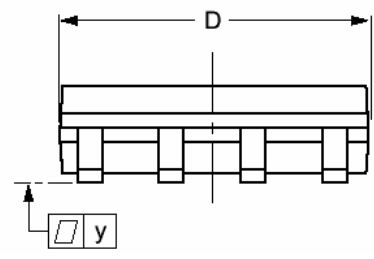
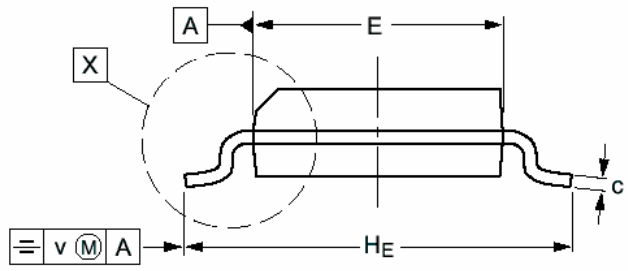
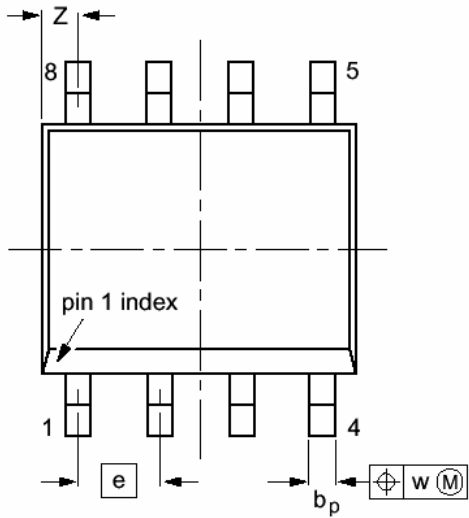
PAD CENTER COORDINATES

NAME	PAD DESIGNATION	X(Microns)	Y(Microns)
A	NC	-342.5	312.5
B	NC	-342.5	144.5
C	D	-342.5	-87.0
D	NC	-342.5	-255.0
E	V _{CC}	-33.5	-312.5
F	V _{CC}	126.5	-312.5
G	Q	312.5	-248.5
H	Q̄	312.5	-98.5
I	NC	312.5	51.5
J	NC	312.5	201.5
K	NC	302.5	342.5
L	10K	142.5	342.5
M	GND	-140.5	342.5

NC = No connect, leave open.

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**PACKAGE DIAGRAM
SOIC 8**

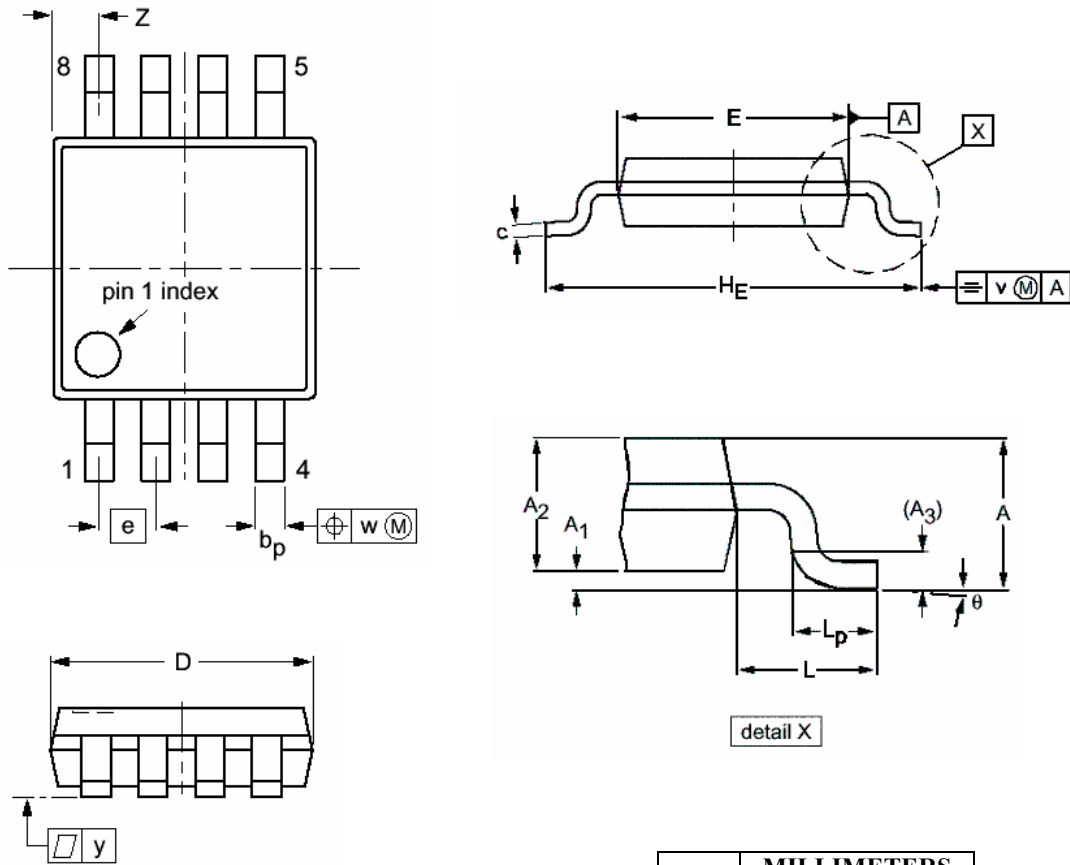


DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.35	1.75	.053	0.069
A ₁	0.10	0.25	0.004	0.010
A ₂	1.28	1.57	0.050	0.062
A ₃	0.25		0.01	
b _p	0.36	0.49	0.014	0.019
c	0.19	0.25	0.0075	0.0100
D	4.80	5.00	0.19	0.20
E	3.80	4.00	0.15	0.16
e	1.27		0.050	
H _E	5.80	6.20	0.228	0.244
L	1.05		0.041	
L _p	0.40	1.27	0.016	0.050
Q	0.60	0.70	0.024	0.028
v	0.25		0.01	
w	0.25		0.01	
y	0.10		0.004	
Z	0.30	0.70	0.012	0.028
θ	0°	8°	0°	8°

- NOTES:
1. DIMENSIONS D AND E DO NOT INCLUDE MOLD PROTRUSION.
 2. MAXIMUM MOLD PROTRUSION FOR D IS 0.15mm.
 3. MAXIMUM MOLD PROTRUSION FOR E IS 0.25mm.

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**PACKAGE DIAGRAM
TSSOP 8**



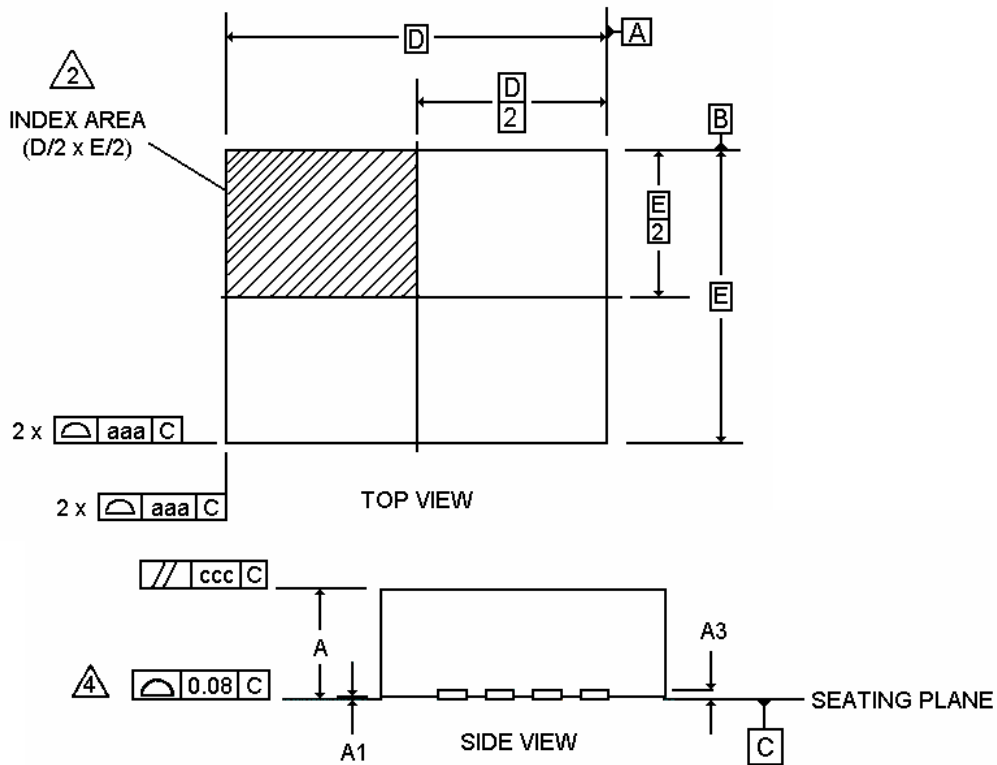
NOTES:

1. DIMENSIONS D AND E DO NOT INCLUDE MOLD PROTRUSION.
2. MAXIMUM MOLD PROTRUSION FOR D IS 0.15mm.
3. MAXIMUM MOLD PROTRUSION FOR E IS 0.25mm.

DIM	MILLIMETERS	
	MIN	MAX
A		1.10
A ₁	0.05	0.15
A ₂	0.75	0.95
A ₃	0.25	
b _p	0.22	0.40
c	0.13	0.23
D	2.90	3.10
E	2.90	3.10
e	0.65	
H _E	4.75	5.05
L	0.95	
L _p	0.40	0.70
v	0.10	
w	0.08	
y	0.10	
Z	0.38	0.64
θ	0°	6°

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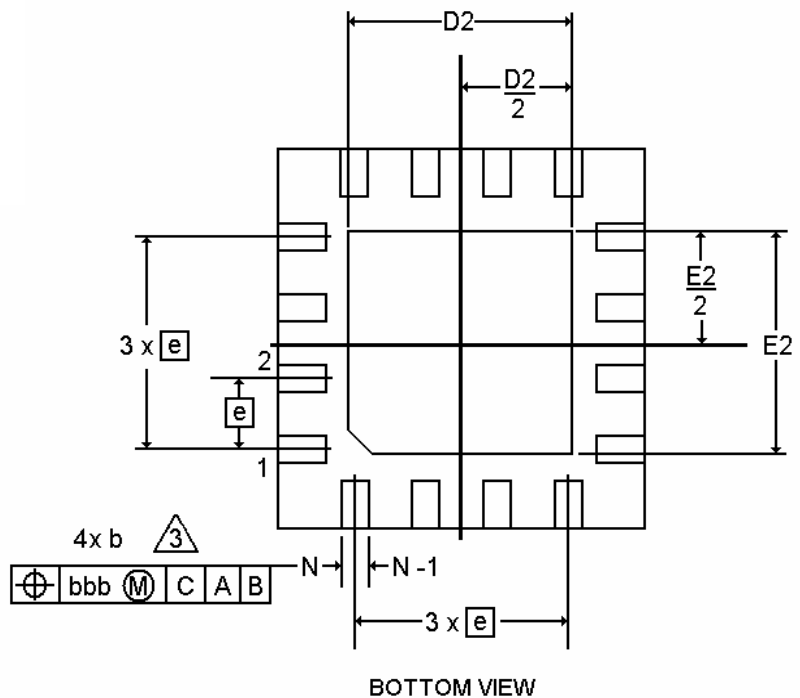
PACKAGE DIAGRAM
MLP 16



NOTES

1. DIMENSIONING AND TOLERANCING CONFORM TO ASME T14-1994.
2. THE TERMINAL #1 AND PAD NUMBERING CONVENTION SHALL CONFORM TO JESD 95-1 SPP-012.
3. DIMENSION *b* APPLIES TO METALLIZED PAD AND IS MEASURED BETWEEN 0.25 AND 0.30 mm FROM PAD TIP.
4. COPLANARITY APPLIES TO THE EXPOSED PAD AS WELL AS THE TERMINALS.

DIM	MILLIMETERS	
	MIN	MAX
A	0.80	1.00
A1	0.00	0.05
A3	0.25 REF	
<i>b</i>	0.18	0.30
D	2.90	3.10
D2	.25	1.95
E	2.90	3.10
E2	.25	1.95
<i>e</i>	0.50 BSC	
L	0.30	0.50
aaa	0.25	
bbb	0.10	
ccc	0.10	



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