

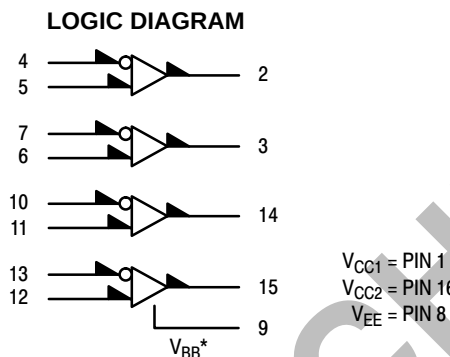
MC10115

Quad Line Receiver

The MC10115 is a quad differential amplifier designed for use in sensing differential signals over long lines. The base bias supply (V_{BB}) is made available at pin 9 to make the device useful as a Schmitt trigger, or in other applications where a stable reference voltage is necessary.

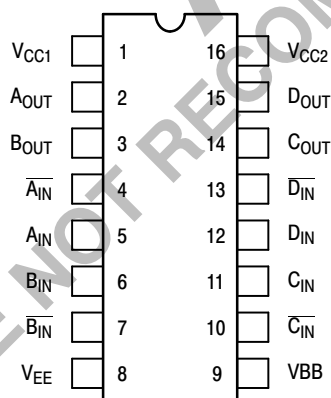
Active current sources provide the MC10115 with excellent common mode noise rejection. If any amplifier in a package is not used, one input of that amplifier must be connected to V_{BB} (pin 9) to prevent upsetting the current source bias network.

- $P_D = 110 \text{ mW typ/pkg (No Load)}$
- $t_{pd} = 2.0 \text{ ns typ}$
- $t_r, t_f = 2.0 \text{ ns typ (20\%–80\%)}$



* V_{BB} to be used to supply bias to the MC10115 only and bypassed (when used) with $0.01 \mu\text{F}$ to $0.1 \mu\text{F}$ capacitor to ground (0 V). V_{BB} can source $< 1.0 \text{ mA}$.
 When the input pin with the bubble goes positive, the output goes negative.

DIP PIN ASSIGNMENT



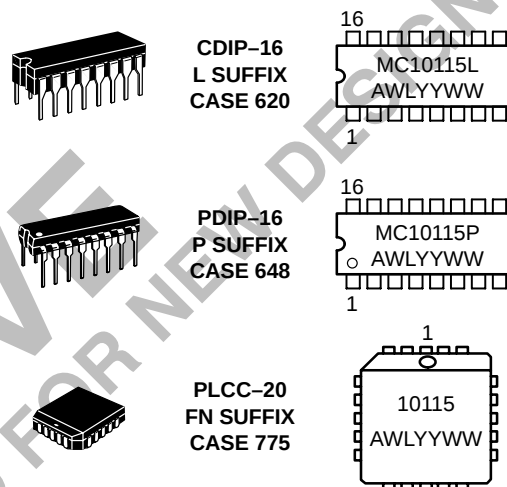
Pin assignment is for Dual-in-Line Package.
 For PLCC pin assignment, see the Pin Conversion Tables on page 18 of the ON Semiconductor MECL Data Book (DL122/D).



ON Semiconductor

<http://onsemi.com>

MARKING DIAGRAMS



A = Assembly Location
 WL = Wafer Lot
 YY = Year
 WW = Work Week

ORDERING INFORMATION

Device	Package	Shipping
MC10115L	CDIP-16	25 Units / Rail
MC10115P	PDIP-16	25 Units / Rail
MC10115FN	PLCC-20	46 Units / Rail

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Pin Under Test	Test Limits							Unit
			-30°C		+25°C			+85°C		
			Min	Max	Min	Typ	Max	Min	Max	
Power Supply Drain Current	I _E	8		29			26		29	mAdc
Input Current	I _{inH}	4		150			95		95	μAdc
	I _{CBO}	4		1.5			1.0		1.0	μAdc
Output Voltage Logic 1	V _{OH}	2	-1.060	-0.890	-0.960		-0.810	-0.890	-0.700	Vdc
Output Voltage Logic 0	V _{OL}	2	-1.890	-1.675	-1.850		-1.650	-1.825	-1.615	Vdc
Threshold Voltage Logic 1	V _{OHA}	2	-1.080		-0.980			-0.910		Vdc
Threshold Voltage Logic 0	V _{OLA}	2		-1.655			-1.630		-1.595	Vdc
Reference Voltage	V _{BB}	9	1.420	1.280	-1.350		-1.230	1.295	-1.150	Vdc
Switching Times (50Ω Load)										ns
Propagation Delay	t ₄₋₂₊	2	1.0	3.1	1.0		2.9	1.0	3.3	
	t ₄₊₂₋	2	1.0	3.1	1.0		2.9	1.0	3.3	
Rise Time (20 to 80%)	t ₂₊	2	1.1	3.6	1.1		3.3	1.1	3.7	
Fall Time (20 to 80%)	t ₂₋	2	1.1	3.6	1.1		3.3	1.1	3.7	

ELECTRICAL CHARACTERISTICS (continued)

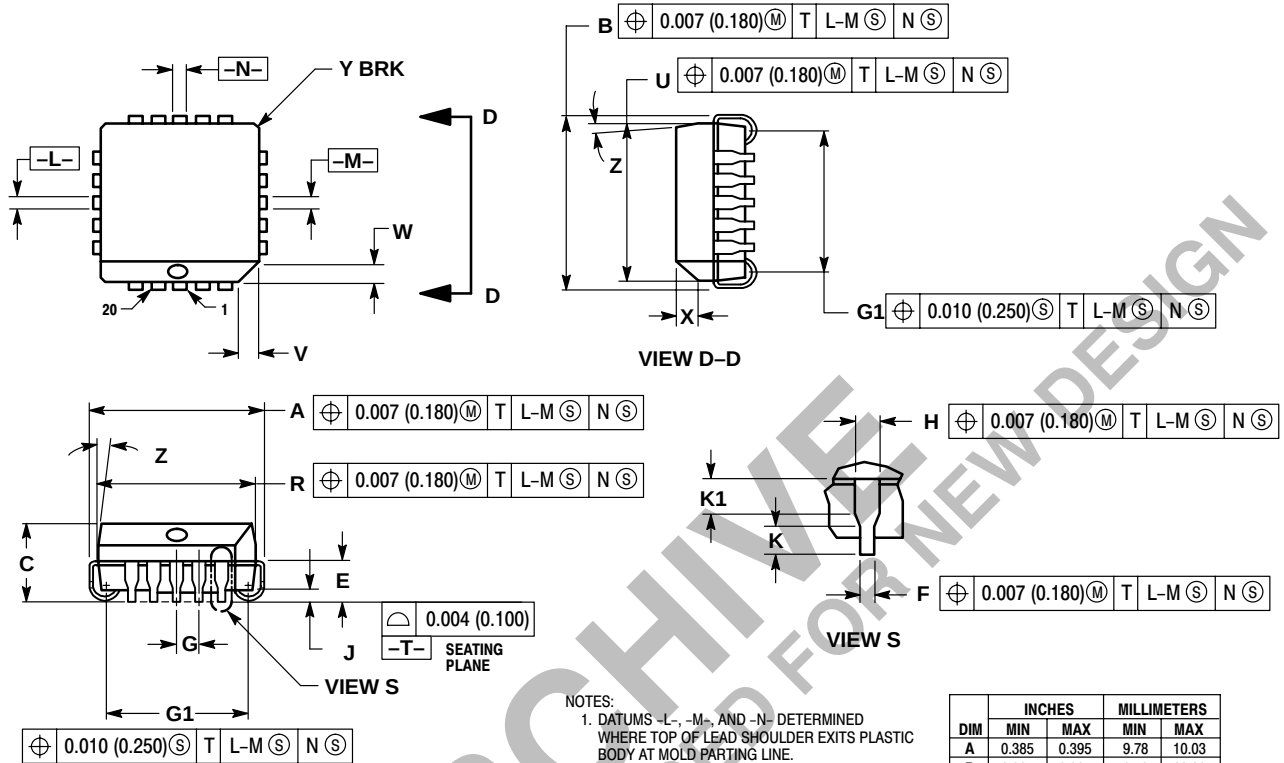
@ Test Temperature			TEST VOLTAGE VALUES (Volts)						(V _{CC}) Gnd	
			V _{IHmax}	V _{ILmin}	V _{IHamin}	V _{ILAmx}	V _{BB}	V _{EE}		
			-30°C	-0.890	-1.890	-1.205	-1.500	From Pin 9		-5.2
			+25°C	-0.810	-1.850	-1.105	-1.475			-5.2
			+85°C	-0.700	-1.825	-1.035	-1.440			-5.2
Characteristic	Symbol	Pin Under Test	TEST VOLTAGE APPLIED TO PINS LISTED BELOW							
			V _{IHmax}	V _{ILmin}	V _{IHamin}	V _{ILAmx}	V _{BB}	V _{EE}		
Power Supply Drain Current	I _E	8		4,7,10,13			5,6,11,12	8	1, 16	
Input Current	I _{inH}	4	4	7,10,13			5,6,11,12	8	1, 16	
	I _{CBO}	4		7,10,13			5,6,11,12	8,4	1, 16	
Output Voltage Logic 1	V _{OH}	2	7,10,13	4			5,6,11,12	8	1, 16	
Output Voltage Logic 0	V _{OL}	2	4	7,10,13			5,6,11,12	8	1, 16	
Threshold Voltage Logic 1	V _{OHA}	2		7,10,13		4	5,6,11,12	8	1, 16	
Threshold Voltage Logic 0	V _{OLA}	2		7,10,13	4		5,6,11,12	8	1, 16	
Reference Voltage	V _{BB}	9					5,6,11,12	8	1, 16	
Switching Times (50Ω Load)			Pulse In		Pulse Out			-3.2 V	+2.0 V	
Propagation Delay	t ₄₋₂₊	2	4		2		5,6,11,12	8	1, 16	
	t ₄₊₂₋	2	4		2		5,6,11,12	8	1, 16	
Rise Time (20 to 80%)	t ₂₊	2	4		2		5,6,11,12	8	1, 16	
Fall Time (20 to 80%)	t ₂₋	2	4		2		5,6,11,12	8	1, 16	

Each MECL 10,000 series circuit has been designed to meet the dc specifications shown in the test table, after thermal equilibrium has been established. The circuit is in a test socket or mounted on a printed circuit board and transverse air flow greater than 500 linear fpm is maintained. Outputs are terminated through a 50-ohm resistor to -2.0 volts. Test procedures are shown for only one gate. The other gates are tested in the same manner.

MC10115

PACKAGE DIMENSIONS

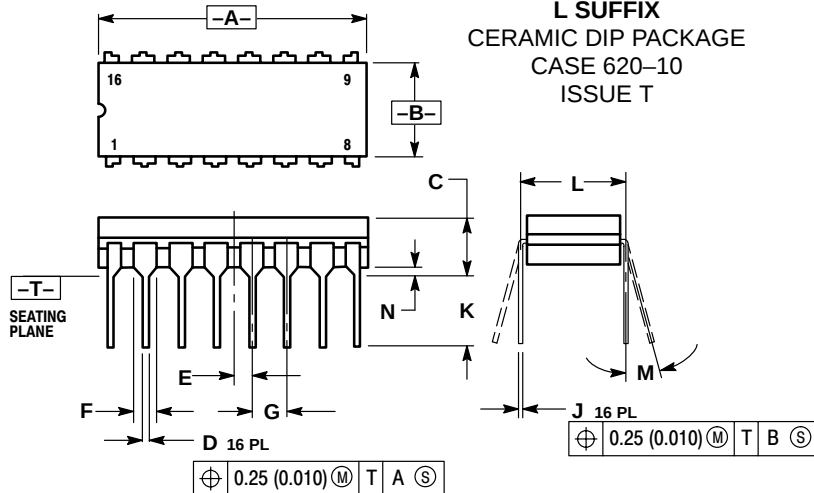
PLCC-20
FN SUFFIX
PLASTIC PLCC PACKAGE
CASE 775-02
ISSUE C



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.385	0.395	9.78	10.03
B	0.385	0.395	9.78	10.03
C	0.165	0.180	4.20	4.57
E	0.090	0.110	2.29	2.79
F	0.013	0.019	0.33	0.48
G	0.050 BSC		1.27 BSC	
H	0.026	0.032	0.66	0.81
J	0.020	---	0.51	---
K	0.025	---	0.64	---
R	0.350	0.356	8.89	9.04
U	0.350	0.356	8.89	9.04
V	0.042	0.048	1.07	1.21
W	0.042	0.048	1.07	1.21
X	0.042	0.056	1.07	1.42
Y	---	0.020	---	0.50
Z	2 °	10 °	2 °	10 °
G1	0.310	0.330	7.88	8.38
K1	0.040	---	1.02	---

MC10115

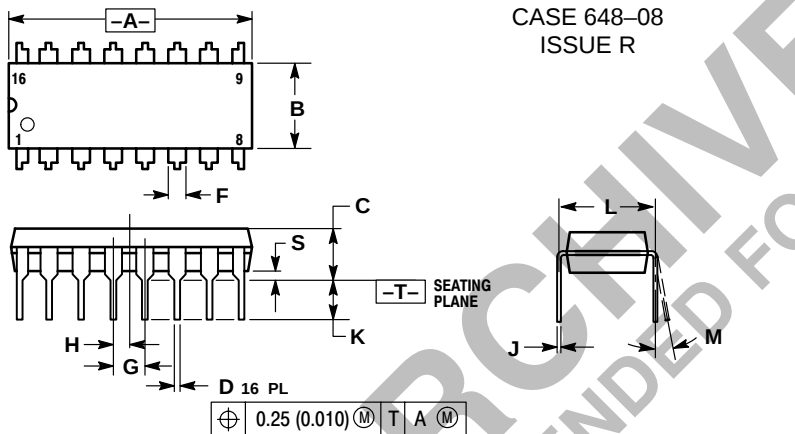
CDIP-16 L SUFFIX CERAMIC DIP PACKAGE CASE 620-10 ISSUE T



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. DIMENSION L TO CENTER OF LEAD WHEN FORMED PARALLEL.
 4. DIMENSION F MAY NARROW TO 0.76 (0.030) WHERE THE LEAD ENTERS THE CERAMIC BODY.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.750	0.785	19.05	19.93
B	0.240	0.295	6.10	7.49
C	---	0.200	---	5.08
D	0.015	0.020	0.39	0.50
E	0.050 BSC		1.27 BSC	
F	0.055	0.065	1.40	1.65
G	0.100 BSC		2.54 BSC	
H	0.008	0.015	0.21	0.38
K	0.125	0.170	3.18	4.31
L	0.300 BSC		7.62 BSC	
M	0°	15°	0°	15°
N	0.020	0.040	0.51	1.01

PDIP-16 P SUFFIX PLASTIC DIP PACKAGE CASE 648-08 ISSUE R



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. DIMENSION L TO CENTER OF LEADS WHEN FORMED PARALLEL.
 4. DIMENSION B DOES NOT INCLUDE MOLD FLASH.
 5. ROUNDED CORNERS OPTIONAL.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.740	0.770	18.80	19.55
B	0.250	0.270	6.35	6.85
C	0.145	0.175	3.69	4.44
D	0.015	0.021	0.39	0.53
F	0.040	0.70	1.02	1.77
G	0.100 BSC		2.54 BSC	
H	0.050 BSC		1.27 BSC	
J	0.008	0.015	0.21	0.38
K	0.110	0.130	2.80	3.30
L	0.295	0.305	7.50	7.74
M	0°	10°	0°	10°
S	0.020	0.040	0.51	1.01

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