

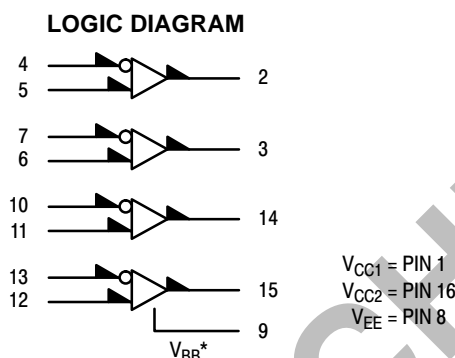
# MC10115

## 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.

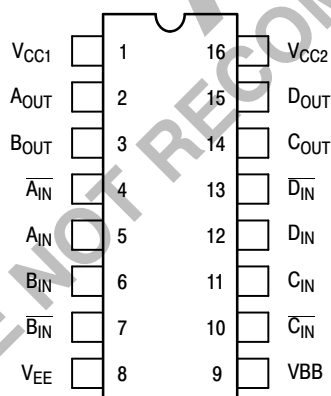
Active current sources provide the MC10115 with excellent common mode noise rejection. If any amplifier in a package is not used, one input of that amplifier must be connected to  $V_{BB}$  (pin 9) to prevent upsetting the current source bias network.

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



\* $V_{BB}$  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



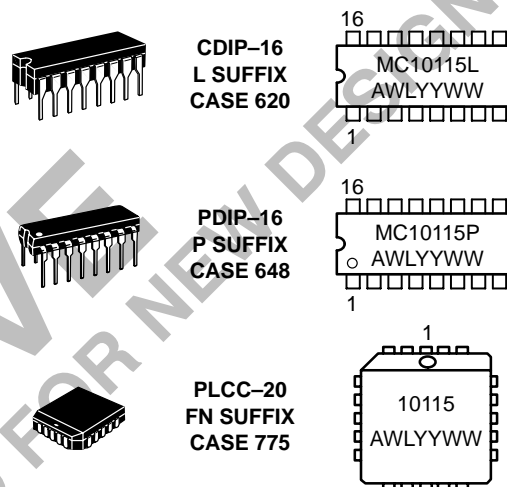
Pin assignment is for Dual-in-Line Package.  
 For PLCC pin assignment, see the Pin Conversion Tables on page 18 of the ON Semiconductor MECL Data Book (DL122/D).



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 <sub>E</sub>	8		29			26		29	mAdc
Input Current	I <sub>inH</sub>	4		150			95		95	μAdc
	I <sub>CBO</sub>	4		1.5			1.0		1.0	μAdc
Output Voltage      Logic 1	V <sub>OH</sub>	2	−1.060	−0.890	−0.960		−0.810	−0.890	−0.700	Vdc
Output Voltage      Logic 0	V <sub>OL</sub>	2	−1.890	−1.675	−1.850		−1.650	−1.825	−1.615	Vdc
Threshold Voltage    Logic 1	V <sub>OHA</sub>	2	−1.080		−0.980			−0.910		Vdc
Threshold Voltage    Logic 0	V <sub>OLA</sub>	2		−1.655			−1.630		−1.595	Vdc
Reference Voltage	V <sub>BB</sub>	9	1.420	1.280	−1.350		−1.230	1.295	−1.150	Vdc
Switching Times (50Ω Load)										ns
Propagation Delay	t <sub>4−2+</sub>	2	1.0	3.1	1.0		2.9	1.0	3.3	
	t <sub>4+2−</sub>	2	1.0	3.1	1.0		2.9	1.0	3.3	
Rise Time            (20 to 80%)	t <sub>2+</sub>	2	1.1	3.6	1.1		3.3	1.1	3.7	
Fall Time            (20 to 80%)	t <sub>2−</sub>	2	1.1	3.6	1.1		3.3	1.1	3.7	

## ELECTRICAL CHARACTERISTICS (continued)

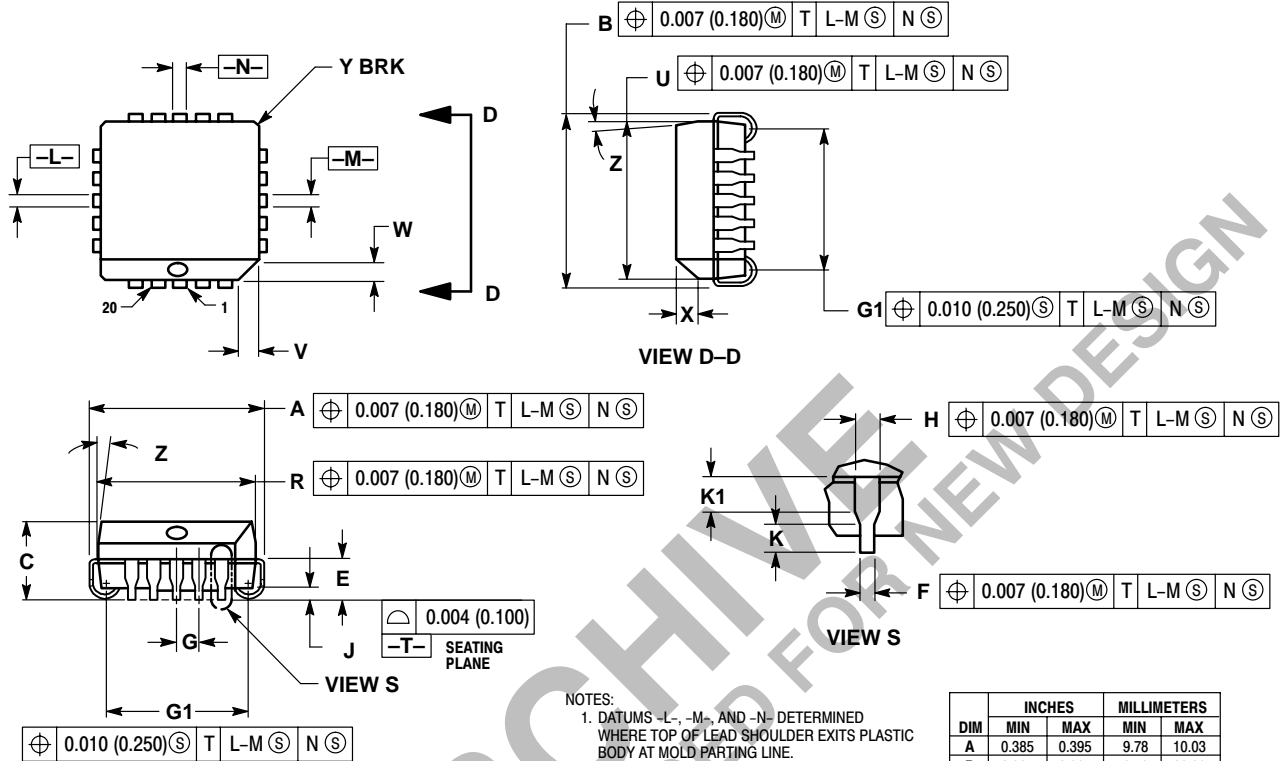
@ Test Temperature			TEST VOLTAGE VALUES (Volts)						(V <sub>CC</sub> ) Gnd	
			V <sub>IHmax</sub>	V <sub>ILmin</sub>	V <sub>IHAmin</sub>	V <sub>ILAmx</sub>	V <sub>BB</sub>	V <sub>EE</sub>		
			-30°C	-0.890	-1.890	-1.205	-1.500	From Pin 9		-5.2
			+25°C	-0.810	-1.850	-1.105	-1.475			-5.2
			+85°C	-0.700	-1.825	-1.035	-1.440			-5.2
Characteristic	Symbol	Pin Under Test	TEST VOLTAGE APPLIED TO PINS LISTED BELOW						(V <sub>CC</sub> ) Gnd	
			V <sub>IHmax</sub>	V <sub>ILmin</sub>	V <sub>IHAmin</sub>	V <sub>ILAmx</sub>	V <sub>BB</sub>	V <sub>EE</sub>		
Power Supply Drain Current	I <sub>E</sub>	8		4,7,10,13			5,6,11,12	8	1, 16	
Input Current	I <sub>inH</sub>	4	4	7,10,13			5,6,11,12	8	1, 16	
	I <sub>CBO</sub>	4		7,10,13			5,6,11,12	8,4	1, 16	
Output Voltage      Logic 1	V <sub>OH</sub>	2	7,10,13	4			5,6,11,12	8	1, 16	
Output Voltage      Logic 0	V <sub>OL</sub>	2	4	7,10,13			5,6,11,12	8	1, 16	
Threshold Voltage    Logic 1	V <sub>OHA</sub>	2		7,10,13		4	5,6,11,12	8	1, 16	
Threshold Voltage    Logic 0	V <sub>OLA</sub>	2		7,10,13	4		5,6,11,12	8	1, 16	
Reference Voltage	V <sub>BB</sub>	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 <sub>4-2+</sub>	2	4		2		5,6,11,12	8	1, 16	
	t <sub>4+2-</sub>	2	4		2		5,6,11,12	8	1, 16	
Rise Time              (20 to 80%)	t <sub>2+</sub>	2	4		2		5,6,11,12	8	1, 16	
Fall Time               (20 to 80%)	t <sub>2-</sub>	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

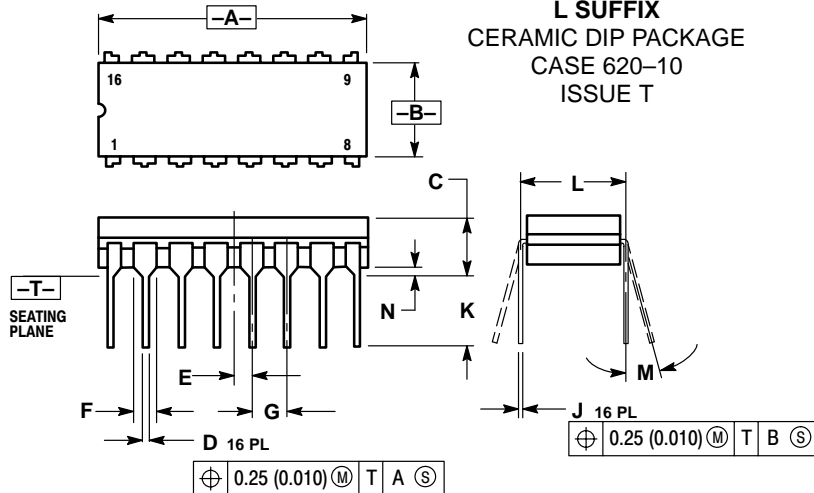
PLCC-20  
FN SUFFIX  
PLASTIC PLCC PACKAGE  
CASE 775-02  
ISSUE C



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

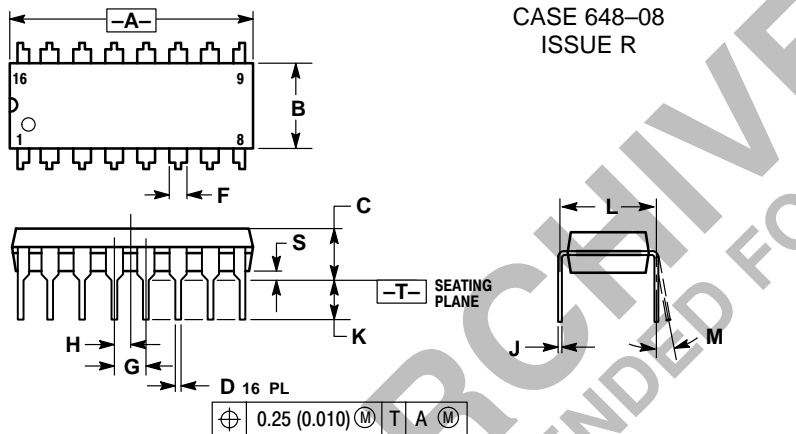
## CDIP-16 L SUFFIX CERAMIC DIP PACKAGE CASE 620-10 ISSUE T



- 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
J	0.125	0.170	3.18	4.31
K	0.300 BSC	---	7.62 BSC	---
L	0°	15°	0°	15°
M	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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