

*V_{BB} to be used to supply bias to the MC10H125 only and bypassed (when used) with 0.01 μ F to 0.1 μ F capacitor to ground (0 V). V_{BB} can source < 1.0 mA.

Figure 1. Logic Diagram

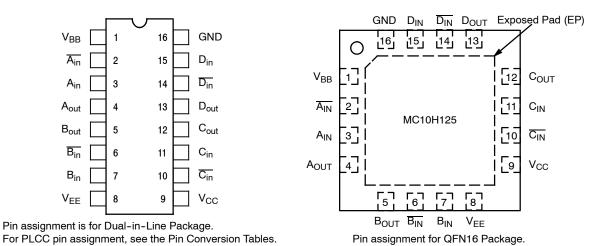


Figure 2. Pin Assignment

Table 1. DIP CONVERSION TABLES

16-Pin DIL to 20-Pin PLCC																				
16 PIN DIL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
20 PIN PLCC	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20				
20-Pin DIL to 20-Pin PLCC										-										
20 PIN DIL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
20 PIN PLCC	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

Table 2. MAXIMUM RATINGS

Symbol	Characteristic	Rating	Unit
V _{EE}	Power Supply (V _{CC} = 5.0 V)	-8.0 to 0	Vdc
V _{CC}	Power Supply (V _{EE} = -5.2 V)	0 to +7.0	Vdc
VI	Input Voltage (V _{CC} = 5.0 V)	0 to V _{EE}	Vdc
T _A	Operating Temperature Range	0 to +75	°C
T _{stg}	Storage Temperature Range - Plastic - Ceramic	-55 to +150 -55 to +165	°C °C

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Table 3. ELECTRICAL CHARACTERISTICS (V_{EE} = -5.2 V +5%; V_{CC} = 5.0 V + 5.0 %) (Note 2)

		0 °		2	5°	75°		
Symbol	Characteristic	Min	Max	Min	Max	Min	Max	Unit
Ι _Ε	Negative Power Supply Drain Current	-	44	-	40	-	44	mA
I _{CCH}	Positive Power Supply	-	63	-	63	-	63	mA
I _{CCL}	Drain Current	-	40	-	40	-	40	mA
I _{inH}	Input Current	-	225	-	145	-	145	μΑ
I _{CBO}	Input Leakage Current	-	1.5	-	1.0	-	1.0	μΑ
V _{OH}	High Output Voltage I _{OH} = -1.0 mA	2.5	-	2.5	-	2.5	-	Vdc
V _{OL}	Low Output Voltage I _{OL} = +20 mA	-	0.5	-	0.5	-	0.5	Vdc
V _{IH}	High Input Voltage (Note 1)	-1.17	-0.84	-1.13	-0.81	-1.07	-0.735	Vdc
V_{IL}	Low Input Voltage (Note 1)	-1.95	-1.48	-1.95	-1.48	-1.95	-1.45	Vdc
Ios	Short Circuit Current	60	150	60	150	50	150	mA
V _{BB}	Reference Voltage	-1.38	-1.27	-1.35	-1.25	-1.31	-1.19	Vdc
V_{CMR}	Common Mode Range (Note 3)	-	-	-2.85	to +0.3			V
		Typical						
V _{PP}	Input Sensitivity (Note 4)			1	50			mV

When V_{BB} is used as the reference voltage.
 Each MECL 10H[™] series circuit has been designed to meet the 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.

^{3.} Differential input not to exceed 1.0 Vdc.

^{4.} 150 mV_{p-p} differential input required to obtain full logic swing on output.

Table 4. AC CHARACTERISTICS

		0 °		25°		75°		
Symbol	Characteristic	Min	Max	Min	Max	Min	Max	Unit
t _{pd}	Propagation Delay	0.8	3.3	0.85	3.35	0.9	3.4	ns
t _r	Rise Time (Note 5)	0.3	1.2	0.3	1.2	0.3	1.2	ns
t _f	Fall Time (Note 5)	0.3	1.2	0.3	1.2	0.3	1.2	ns

NOTE: Device will meet the specifications after thermal equilibrium has been established when mounted in a test socket or printed circuit board with maintained transverse airflow greater than 500 lfpm. Electrical parameters are guaranteed only over the declared operating temperature range. Functional operation of the device exceeding these conditions is not implied. Device specification limit values are applied individually under normal operating conditions and not valid simultaneously.

5. Output Voltage = 1.0 V to 2.0 V. R_L = 500 Ω to GND and C_L = 25 pF to GND. Refer to Figure 1.

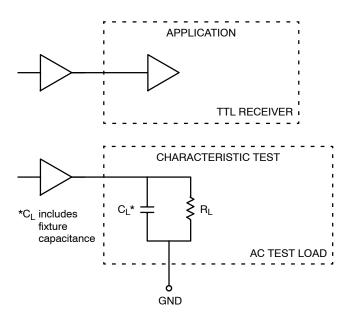


Figure 1. TTL Output Loading Used for Device Evaluation

APPLICATION INFORMATION

The MC10H125 incorporates differential inputs and Schottky TTL "totem pole" outputs. Differential inputs allow for use as an inverting/non-inverting translator or as a differential line receiver. The V_{BB} reference voltage is available on Pin 1 for use in single-ended input biasing. The outputs of the MC10H125 go to a low-logic level whenever the inputs are left floating, and a high-logic output level is achieved with a minimum input level of 150 mV_{p-p}.

An advantage of this device is that MECL-level information can be received, via balanced twisted pair lines, in the TTL equipment. This isolates the MECL-logic from the noisy TTL environment. Power supply requirements are ground, +5.0 V and -5.2 V.

ORDERING INFORMATION

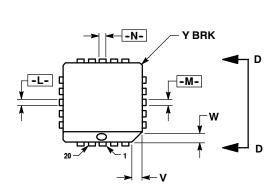
Device	Package	Shipping [†]
MC10H125FN	PLLC-20	46 Units / Rail
MC10H125FNG	PLLC-20 (Pb-Free)	46 Units / Rail
MC10H125FNR2	PLLC-20	500 / Tape & Reel
MC10H125FNR2G	PLLC-20 500 / Tape & Re (Pb-Free)	
MC10H125L	CDIP-16	25 Unit / Rail
MC10H125M	SOEIAJ-16	50 Unit / Rail
MC10H125MG	SOEIAJ-16 (Pb-Free)	50 Unit / Rail
MC10H125MEL	SOEIAJ-16	2000 / Tape & Reel
MC10H125MELG	SOEIAJ-16 (Pb-Free)	2000 / Tape & Reel
MC10H125P	PDIP-16	25 Unit / Rail
MC10H125PG	PDIP-16 (Pb-Free)	25 Unit / Rail
MC10H125MNG	QFN-16, 3 x 3 mm (Pb-Free)	123 Units / Rail
MC10H125MNTXG	QFN-16, 3 x 3 mm (Pb-Free)	3000 / Tape & Reel

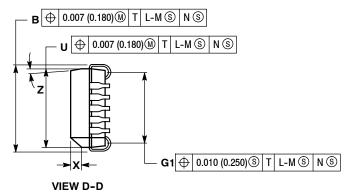
[†]For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

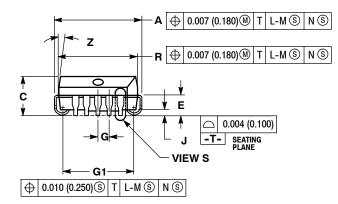
PACKAGE DIMENSIONS

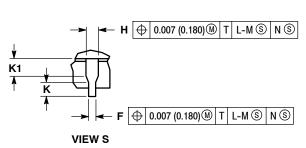
20 LEAD PLLC

CASE 775-02 **ISSUE F**









NOTES:

- 1. DIMENSIONS AND TOLERANCING PER ANSI Y14.5M, 1982
- 2. DIMENSIONS IN INCHES.
 3. DATUMS -L-, -M-, AND -N- DETERMINED WHERE TOP OF LEAD SHOULDER EXITS PLASTIC BODY AT MOLD
- PARTING LINE.

 4. DIMENSION G1, TRUE POSITION TO BE MEASURED AT DATUM -T-, SEATING PLANE.

 5. DIMENSIONS R AND U DO NOT INCLUDE MOLD FLASH.
- ALLOWABLE MOLD FLASH IS 0.010 (0.250) PER SIDE.

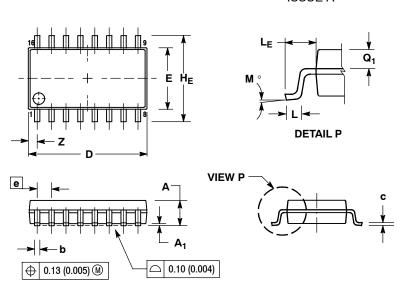
 6. DIMENSIONS IN THE PACKAGE TOP MAY BE SMALLER DIMENSIONS IN THE PACKAGE TOP MAY BE SMALLEH THAN THE PACKAGE BOTTOM BY UP TO 0.012 (0.300). DIMENSIONS R AND U ARE DETERMINED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY EXCLUSIVE OF MOLD FLASH, TIE BAR BURRS, GATE BURRS AND INTERLEAD FLASH, BUT INCLUDING ANY MISMATCH BETWEEN THE TOP AND BOTTOM OF THE PLASTIC BODY. PLASTIC BODY.
- PLASTIC BODY.

 7. DIMENSION H DOES NOT INCLUDE DAMBAR
 PROTRUSION OR INTRUSION. THE DAMBAR
 PROTRUSION(S) SHALL NOT CAUSE THE H DIMENSION
 TO BE GREATER THAN 0.037 (0.940). THE DAMBAR
 INTRUSION(S) SHALL NOT CAUSE THE H DIMENSION TO
 BE SMALLER THAN 0.025 (0.635).

	INC	HES	MILLIMETERS			
DIM	MIN	MAX	MIN	MAX		
Α	0.385	0.395	9.78	10.03		
В	0.385	0.395	9.78	10.03		
С	0.165	0.180	4.20	4.57		
Е	0.090	0.110	2.29	2.79		
F	0.013	0.021	0.33	0.53		
G	0.050	BSC	1.27	BSC		
Н	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		
Χ	0.042	0.056	1.07	1.42		
Υ		0.020		0.50		
Z	2°	10°	2°	10 °		
G1	0.310	0.330	7.88	8.38		
K1	0.040		1.02			

PACKAGE DIMENSIONS

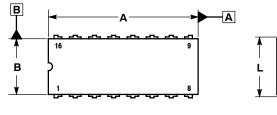
SOEIAJ-16 CASE 966-01 **ISSUE A**

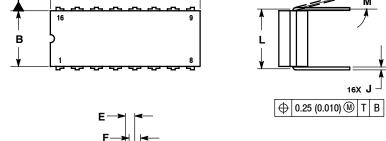


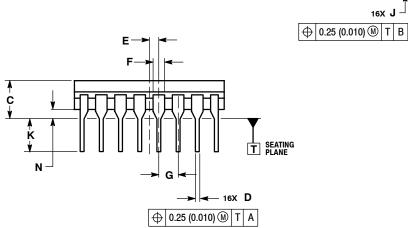
- NOTES:
 1. DIMENSIONING AND TOLERANCING PER ANSI
- DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 CONTROLLING DIMENSION: MILLIMETER.
 DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS AND ARE MEASURED AT THE PARTING LINE. MOLD FLASH OR PROTRUSIONS SHALL NOT EXCEED 0.15 (0.006) PER SIDE.
 TERMINAL NUMBERS ARE SHOWN FOR REFERENCE ONLY.
 THE LEAD WIDTH DIMENSION (b) DOES NOT INCLUDE DAMBAR PROTRUSION. SHALL BE 0.08 (0.003)
- DAMBAR PROTRUSION SHALL BE 0.08 (0.003) TOTAL IN EXCESS OF THE LEAD WIDTH IOIAL IN EXCESS OF THE LEAD WIDTH DIMENSION AT MAXIMUM MATERIAL CONDITION. DAMBAR CANNOT BE LOCATED ON THE LOWER RADIUS OR THE FOOT. MINIMUM SPACE BETWEEN PROTRUSIONS AND ADJACENT LEAD TO BE 0.46 (0.018).

	MILLIN	IETERS	INCHES		
DIM	MIN	MAX	MIN	MAX	
Α		2.05		0.081	
A ₁	0.05	0.20	0.002	0.008	
b	0.35	0.50	0.014	0.020	
С	0.10	0.20	0.007	0.011	
D	9.90	10.50	0.390	0.413	
E	5.10	5.45	0.201	0.215	
е	1.27	BSC	0.050 BSC		
HE	7.40	8.20	0.291	0.323	
L	0.50	0.85	0.020	0.033	
LE	1.10	1.50	0.043	0.059	
М	0 °	10 °	0 °	10°	
Q_1	0.70	0.90	0.028	0.035	
Z		0.78		0.031	









NOTES:

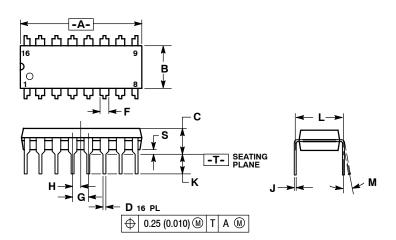
- DIMENSIONING AND TOLERANCING PER

- DIMENSIONING AND TOLEHANCING PER ASME Y14-5M, 1994.
 CONTROLLING DIMENSION: INCH.
 DIMENSION L TO CENTER OF LEAD WHEN FORMED PARALLEL.
 DIMENSION F MAY NARROW TO 0.76 (0.030)
 WHERE THE LEAD ENTERS THE CERAMIC
- BODY.
 THIS DRAWING REPLACES OBSOLETE CASE OUTLINE 620-10.

	INC	HES	MILLIMETERS			
DIM	MIN	MAX	MIN	MAX		
Α	0.750	0.785	19.05	19.93		
В	0.240	0.295	6.10	7.49		
С		0.200		5.08		
D	0.015	0.020	0.39	0.50		
Ε	0.050	BSC	1.27 BSC			
F	0.055	0.065	1.40	1.65		
G	0.100	BSC	2.54 BSC			
Н	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		

PACKAGE DIMENSIONS

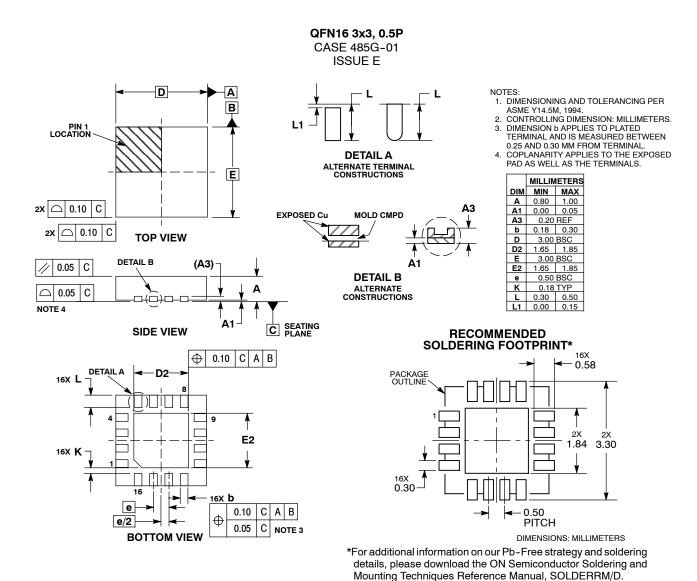
PDIP-16 CASE 648-08 **ISSUE T**



- 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.

	INC	HES	MILLIM	ETERS	
DIM	MIN	MAX	MIN	MAX	
Α	0.740	0.770	18.80	19.55	
В	0.250	0.270	6.35	6.85	
С	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		
Н	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	
М	0°	10 °	0°	10 °	
S	0.020	0.040	0.51	1 01	

PACKAGE DIMENSIONS



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