ECL 10KH High-Speed Emitter-Coupled Logic Family MC10H104/MC10H107

Quad 2-Input AND Gate/Triple 2-Input Exclusive OR/NOR Gate

Features/Benefits

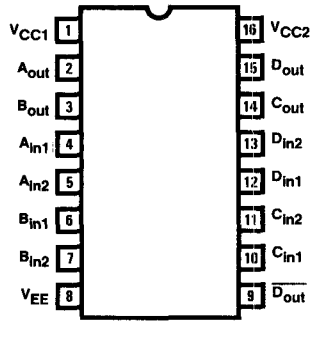
- Propagation delay, 1 ns typical
- Power dissipation 35 mW/gate typical
- Noise margin 150 mV
- Voltage compensated
- ECL 10K-compatible

Description

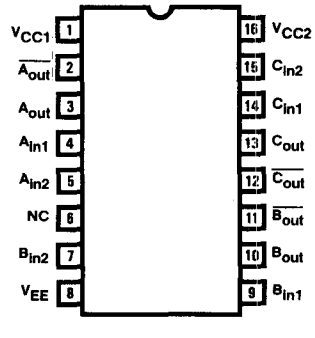
The MC10H104 and MC10H107 are members of Monolithic Memories' new ECL family. These ECL 10KH parts are functional/pinout duplications of the standard ECL 10K family parts with 100% improvement in propagation delay, and no increase in power-supply current.

Pin Configurations

MC10H104
Quad 2-Input AND Gate



MC10H107
Triple 2-Input Exclusive OR/NOR Gate

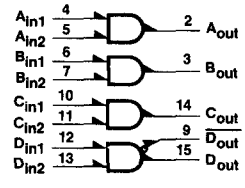


Ordering Information

PART NUMBER	PACKAGE	TEMPERATURE
MC10H104 MC10H107	J,N,NL(20)	Com

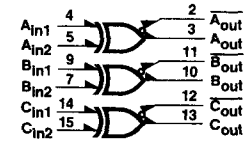
Logic Diagrams

MC10H104



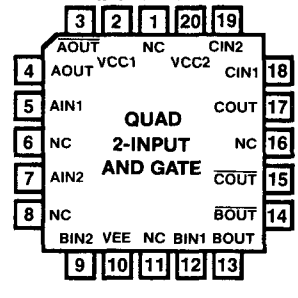
VCC1 = PIN 1
VCC2 = PIN 16
VEE = PIN 8

MC10H107

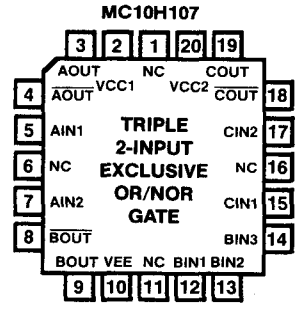


VCC1 = PIN 1
VCC2 = PIN 16
VEE = PIN 8
PIN 6 = NC

MC10H104



MC10H107



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TWX: 910-338-2376
Monolithic Memories MMI

Absolute Maximum Ratings

Power supply V_{EE} (V_{CC} = 0) ..... −8.0 V to 0 Vdc
Input voltage V_I (V_{CC} = 0) ..... 0 Vdc to V_{EE}
Output current:
Continuous ..... 50 mA
Surge ..... 100 mA

Operating Conditions

SYMBOL	PARAMETER		COMMERCIAL MIN	TYP	MAX	UNIT
V_{EE}	Supply Voltage		−5.46	−5.2	−4.94	V
T_A	Operating temperature range		0		75	°C
T_{STG}	Storage temperature range	Plastic	−55		150	°C
		Ceramic	−55		165	

Electrical Characteristics V_{EE} = −5.2 V ± 5% (See Note)

SYMBOL	PARAMETER		0° MIN	0° MAX	25° MIN	25° MAX	75° MIN	75° MAX	UNIT
I_E	Power supply current	MC10H104 MC10H107	− −	39 31	− −	35 28	− −	39 31	mA
I_{inH}	Input current HIGH		−	425	−	265	−	265	µA
I_{inL}	Input current LOW		0.5	−	0.5	−	0.3	−	µA
V_{OH}	HIGH output voltage		−1.02	−0.84	−0.98	−0.81	−0.92	0.735	Vdc
V_{OL}	LOW output voltage		−1.95	−1.63	−1.95	−1.63	−1.95	−1.60	Vdc
V_{IH}	HIGH input voltage		−1.17	−0.84	−1.13	−0.81	−1.07	−0.735	Vdc
V_{IL}	LOW input voltage		−1.95	−1.48	−1.95	−1.48	−1.95	−1.45	Vdc

Switching Characteristics V_{EE} = −5.2 V, ±5% (See Note)

SYMBOL	PARAMETER		0° MIN	0° MAX	25° MIN	25° MAX	75° MIN	75° MAX	UNIT
t_{pd}	Propagation delay	MC10H104	0.4	1.6	0.45	1.75	0.45	1.9	ns
		MC10H107	0.4	1.5	0.4	1.6	0.4	1.7	
t_r, t+	Rise time	MC10H104	0.5	1.6	0.5	1.7	0.5	1.8	ns
		MC10H107	0.5	1.5	0.5	1.6	0.5	1.7	
t_f, t−	Fall time	MC10H104	0.5	1.6	0.5	1.7	0.5	1.8	ns
		MC10H107	0.5	1.5	0.5	1.6	0.5	1.7	

Note: Each ECL 10KH 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 grater than 500 linear fpm is maintained. Outputs are terminated through a 50 Ω resistor to −2.0 V.