Dual Supply ECL-TTL 1:8 Clock Driver

MC10H643
MC100H643

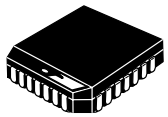
DUAL SUPPLY
ECL–TTL 1:8
CLOCK DRIVER

The MC10H/100H643 is a dual supply, low skew translating 1:8 clock driver. Devices in the Motorola H600 translator series utilize the 28–lead PLCC for optimal power pinning, signal flow through and electrical performance. The dual–supply H643 is similar to the H641, which is a single–supply 1:9 version of the same function.

The device features a 48mA TTL output stage, with AC performance specified into a 50pF load capacitance. A Latch is provided on–chip. When LEN is LOW (or left open, in which case it is pulled LOW by the internal pulldowns) the latch is transparent. A HIGH on the enable pin (EN) forces all outputs LOW.

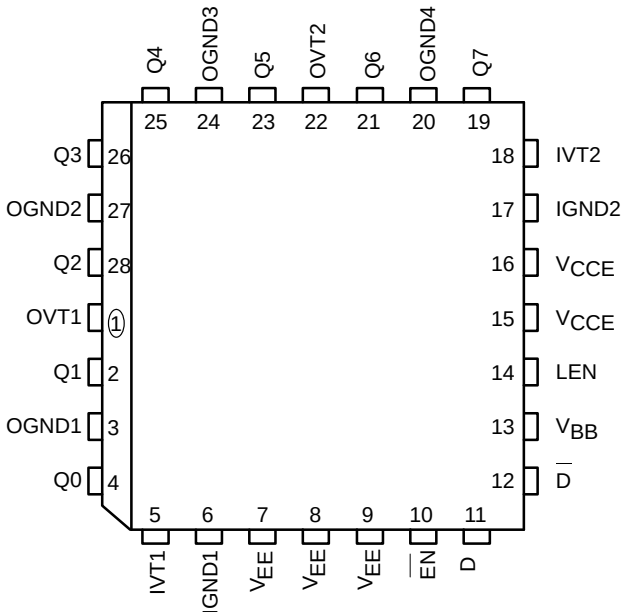
The 10H version is compatible with MECL 10H™ ECL logic levels. The 100H version is compatible with 100K levels.

- ECL/TTL Version of Popular ECLinPS™ E111
- Low Skew Within Device 0.5ns
- Guaranteed Skew Spec Part–to–Part 1.0ns
- Latch
- Differential Internal Design
- V_{BB} Output
- Dual Supply
- Reset/Enable
- Multiple TTL and ECL Power/Ground Pins



FN SUFFIX
PLASTIC PACKAGE
CASE 776–02

Pinout: 28–Lead PLCC (Top View)



PIN NAMES

PIN	FUNCTION
OGND	TTL Output Ground (0V)
OVT	TTL Output V_{CC} (+5.0V)
IGND	Internal TTL GND (0V)
IVT	Internal TTL V_{CC} (+5.0V)
V_{EE}	ECL V_{EE} (–5.2/–4.5V)
V_{CCE}	ECL Ground (0V)
D, $\overline{D}$	Signal Input (ECL)
V_{BB}	V_{BB} Reference Output
$\overline{Q0}$–Q7	Signal Outputs (TTL)
EN	Enable Input (ECL)
LEN	Latch Enable Input (ECL)

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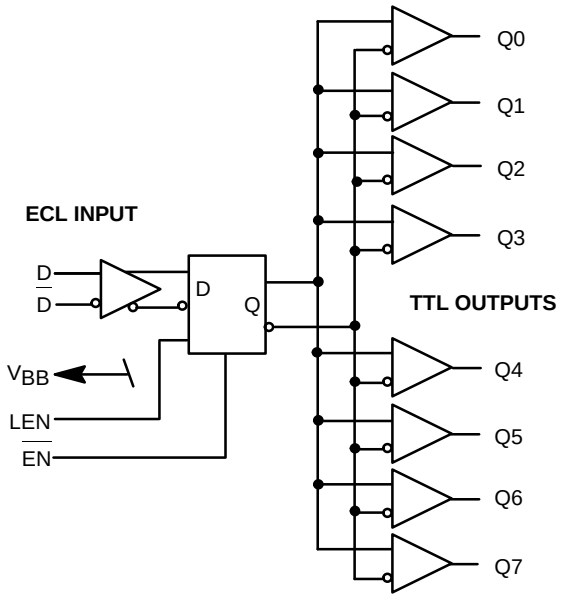
LOGIC DIAGRAM



DC CHARACTERISTICS (IVT = OVT = 5.0V ±5%; V_{EE} = –5.2V ±5% (10H Version); V_{EE} = –4.5V ±0.3V (100H Version))

Symbol	Characteristic		0°C Min	0°C Max	25°C Min	25°C Max	85°C Min	85°C Max	Unit	Condition
I_{EE}	Power Supply Current	ECL	–	42	–	42	–	42	mA	V_{EE} Pins
I_{CCL}		TTL	–	106	–	106	–	106	mA	Total all OVT
I_{CCH}			–	95	–	95	–	95	mA	and IVT pins

AC CHARACTERISTICS (IVT = OVT = 5.0V ±5%; V_{EE} = –5.2V ±10% (10H); –4.5V ±0.3V (100H); V_{CCE} = GND)

Symbol	Characteristic	0°C Min	0°C Max	25°C Min	25°C Max	85°C Min	85°C Max	Unit	Condition
t_{PLH}	Propagation Delay to Output								
	D	4.0	5.0	4.1	5.1	4.4	5.4		
	LEN	3.5	5.5	3.5	5.5	3.9	5.9	ns	CL = 50pF
	EN	3.5	5.5	3.5	5.5	3.9	5.9		
t_{SKEW}	Within–Device Skew	–	0.5	–	0.5		0.5	ns	Note 1
tw	Pulse Width Out HIGH or LOW @ f_{out} = 50MHz	9.0	11.0	9.0	11.0	9.0	11.0	ns	CL = 50pF Note 2
t_s	Setup Time D	0.75	–	0.75	–	0.75	–	ns	
t_h	Hold Time D	0.75	–	0.75	–	0.75	–	ns	
t_{RR}	Recovery Time								
	LEN	1.25	–	1.25	–	1.25	–	ns	
	EN	1.25	–	1.25	–	1.25	–		
t_{pw}	Minimum Pulse Width								
	LEN	1.5	–	1.5	–	1.5	–	ns	
	EN	1.5	–	1.5	–	1.5	–		
t_r t_f	Rise / Fall Times 0.8 V – 2.0 V	–	1.2	–	1.2	–	1.2	ns	CL = 50pF

1. Within–Device skew defined as identical transitions on similar paths through a device.
2. Pulse width is defined relative to 1.5V measurement points on the ouput waveform.

TRUTH TABLE

D	LEN	$\overline{EN}$	Q
L	L	L	L
H	L	L	H
X	H	L	Q_O
X	X	H	L

DC CHARACTERISTICS (IVT = OVT = 5.0V ±5%; V_{EE} = –5.2V ±5% (10H Version); V_{EE} = –4.5V ±0.3V (100H Version))

		0°C		25°C		85°C			
Symbol	Characteristic	Min	Max	Min	Max	Min	Max	Unit	Condition
V_{OH}	Output HIGH Voltage	2.5 2.0	– –	2.5 2.0	– –	2.5 2.0	– –	V	I_{OH} = –3.0mA I_{OH} = –15mA
V_{OL}	Output LOW Voltage	–	0.5	–	0.5	–	0.5	V	I_{OH} = 48mA
IOS	Output Short Circuit Current	–100	–225	–100	–225	–100	–225	mA	V_{OUT} = 0V

10H DC CHARACTERISTICS (IVT = OVT = 5.0V ±5%; V_{EE} = –5.2V ±5% (10H Version); V_{EE} = –4.5V ±0.3V (100H Version))

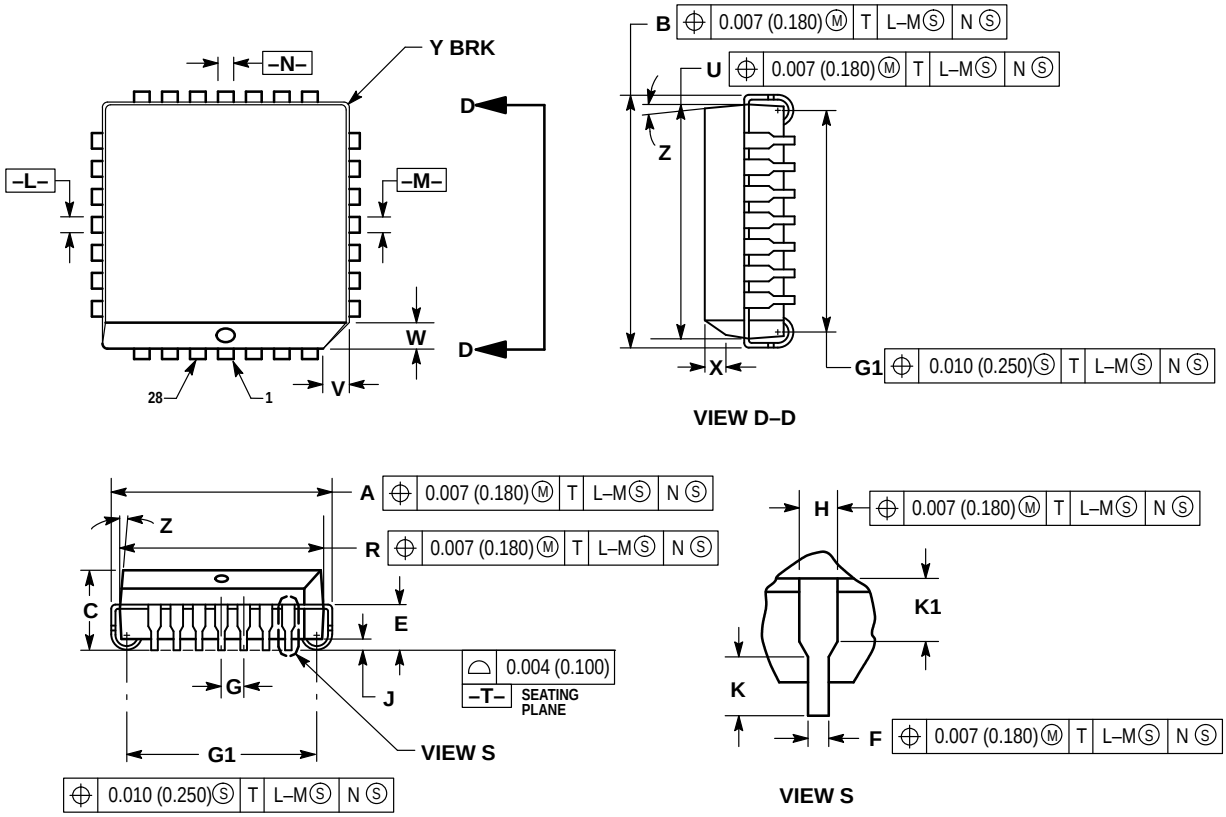
		0°C		25°C		85°C			
Symbol	Characteristic	Min	Max	Min	Max	Min	Max	Unit	Condition
I_{IH} I_{IL}	Input HIGH Current Input LOW Current	– 0.5	225 –	– 0.5	175 –	– 0.5	175 –	µA	
V_{IH} V_{IL}	Input HIGH Voltage Input LOW Voltage	–1170 –1950	–840 –1480	–1130 –1950	–810 –1480	–1070 –1950	–735 –1450	mV	
V_{BB}	Output Reference Voltage	–1380	–1270	–1350	–1250	–1310	–1190	mV	

100H DC CHARACTERISTICS (IVT = OVT = 5.0V ±5%; V_{EE} = –5.2V ±5% (10H); V_{EE} = –4.5V ±0.3V (100H))

		0°C		25°C		85°C			
Symbol	Characteristic	Min	Max	Min	Max	Min	Max	Unit	Condition
I_{IH} I_{IL}	Input HIGH Current Input LOW Current	– 0.5	225 –	– 0.5	175 –	– 0.5	175 –	µA	
V_{IH} V_{IL}	Input HIGH Voltage Input LOW Voltage	–1165 –1810	–880 –1475	–1165 –1810	–880 –1475	–1165 –1810	–880 –1475	mV	
V_{BB}	Output Reference Voltage	–1380	–1260	–1380	–1260	–1380	–1260	mV	

OUTLINE DIMENSIONS

FN SUFFIX
PLASTIC PLCC PACKAGE
CASE 776–02
ISSUE D



NOTES:
1. DATUMS –L–, –M–, AND –N– DETERMINED WHERE TOP OF LEAD SHOULDER EXITS PLASTIC BODY AT MOLD PARTING LINE.
2. DIMENSION G1, TRUE POSITION TO BE MEASURED AT DATUM –T–, SEATING PLANE.
3. DIMENSIONS R AND U DO NOT INCLUDE MOLD FLASH. ALLOWABLE MOLD FLASH IS 0.010 (0.250) PER SIDE.
4. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
5. CONTROLLING DIMENSION: INCH.
6. THE PACKAGE TOP MAY BE SMALLER 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.
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).

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.485	0.495	12.32	12.57
B	0.485	0.495	12.32	12.57
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	0.450	0.456	11.43	11.58
U	0.450	0.456	11.43	11.58
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	0.410	0.430	10.42	10.92
K1	0.040	—	1.02	—

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