

Dual Supply ECL-TTL 1:8 Clock Driver

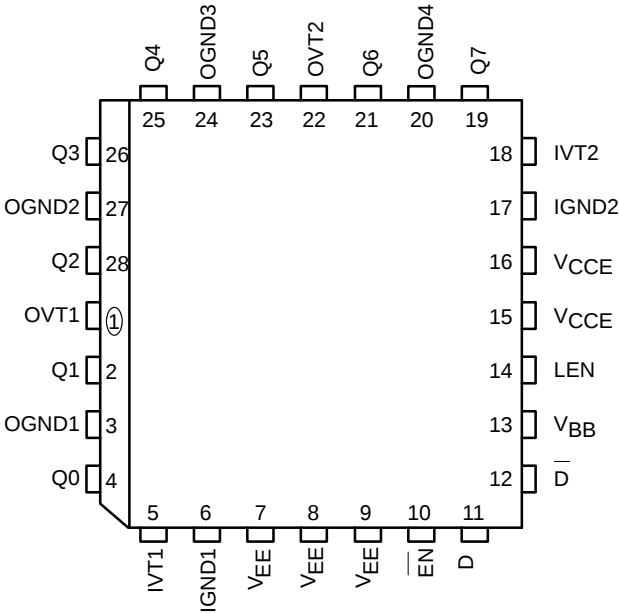
The MC10H/100H643 is a dual supply, low skew translating 1:8 clock driver. Devices in the Motorola H600 translator series utilize the 28-lead PLCC for optimal power pinning, signal flow through and electrical performance. The dual-supply H643 is similar to the H641, which is a single-supply 1:9 version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

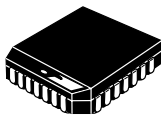
- ECL/TTL Version of Popular ECLinPS™ E111
- Low Skew Within Device 0.5ns
- Guaranteed Skew Spec Part-to-Part 1.0ns
- Latch
- Differential Internal Design
- V_{BB} Output
- Dual Supply
- Reset/Enable
- Multiple TTL and ECL Power/Ground Pins

Pinout: 28-Lead PLCC (Top View)



MC10H643
MC100H643

DUAL SUPPLY
ECL-TTL 1:8
CLOCK DRIVER



FN SUFFIX
PLASTIC PACKAGE
CASE 776-02

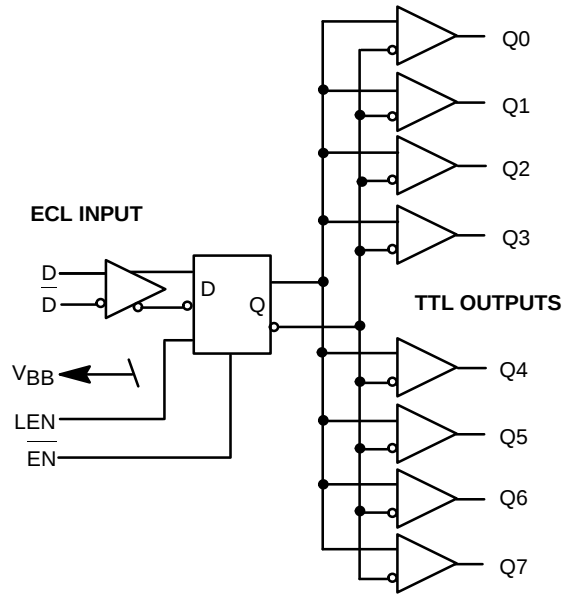
PIN NAMES

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, D	Signal Input (ECL)
V _{BB}	V _{BB} Reference Output
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 $\pm$ 5%; V_{EE} = -5.2V $\pm$ 5% (10H Version); V_{EE} = -4.5V $\pm$ 0.3V (100H Version))

Symbol	Characteristic		0°C		25°C		85°C		Unit	Condition
			Min	Max	Min	Max	Min	Max		
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 $\pm$ 5%; V_{EE} = -5.2V $\pm$ 10% (10H); -4.5V $\pm$ 0.3V (100H); V_{CCE} = GND)

Symbol	Characteristic	0°C		25°C		85°C		Unit	Condition
		Min	Max	Min	Max	Min	Max		
t_{PLH}	Propagation Delay to Output D LEN EN	4.0 3.5 3.5	5.0 5.5 5.5	4.1 3.5 3.5	5.1 5.5 5.5	4.4 3.9 3.9	5.4 5.9 5.9	ns	CL = 50pF
t_{SKEW}	Within-Device Skew	—	0.5	—	0.5		0.5	ns	Note 1
t_w	Pulse Width Out HIGH or LOW @ $f_{out} = 50\text{MHz}$	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 EN	1.25 1.25	— —	1.25 1.25	— —	1.25 1.25	— —	ns	
t_{pw}	Minimum Pulse Width LEN EN	1.5 1.5	— —	1.5 1.5	— —	1.5 1.5	— —	ns	
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 output waveform.

TRUTH TABLE

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

DC CHARACTERISTICS (IVT = OVT = 5.0V $\pm 5\%$; V_{EE} = -5.2V $\pm 5\%$ (10H Version); V_{EE} = -4.5V $\pm 0.3\text{V}$ (100H Version))

Symbol	Characteristic	0°C		25°C		85°C		Unit	Condition
		Min	Max	Min	Max	Min	Max		
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
I _{OS}	Output Short Circuit Current	-100	-225	-100	-225	-100	-225	mA	V _{OUT} = 0V

10H DC CHARACTERISTICS (IVT = OVT = 5.0V $\pm 5\%$; V_{EE} = -5.2V $\pm 5\%$ (10H Version); V_{EE} = -4.5V $\pm 0.3\text{V}$ (100H Version))

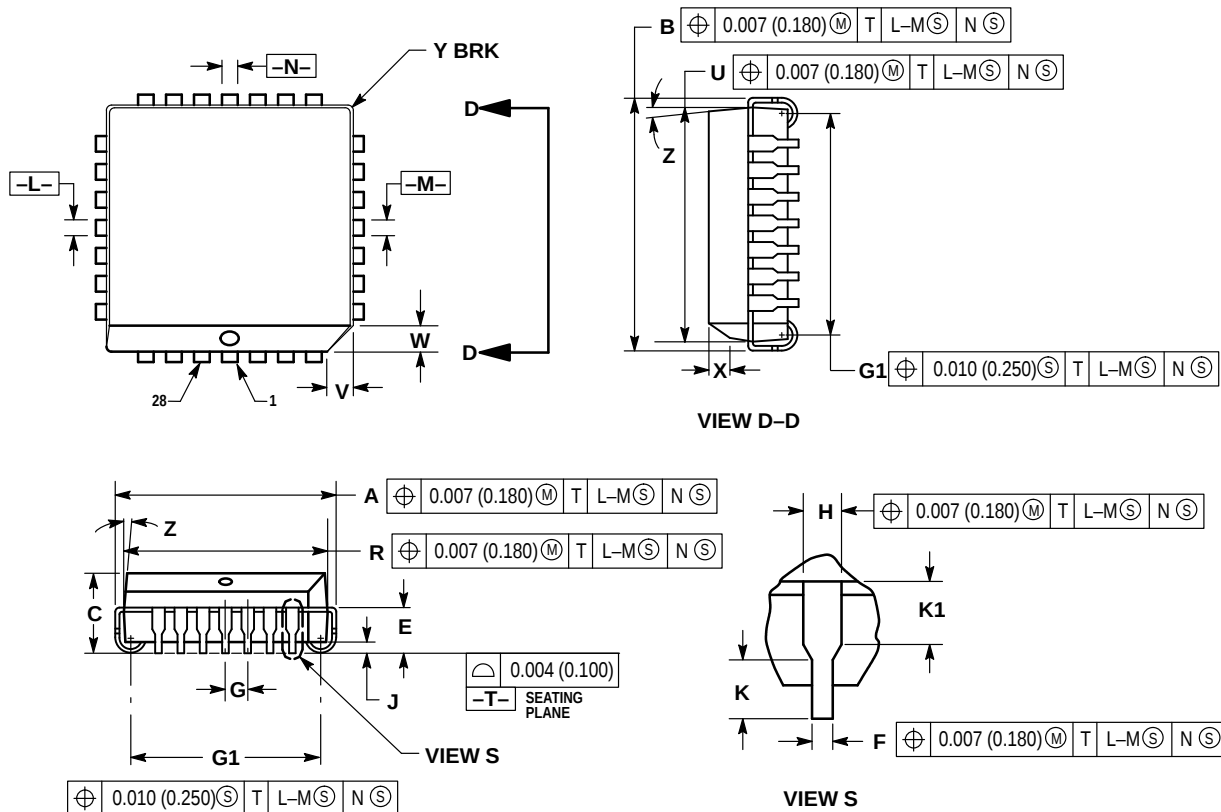
Symbol	Characteristic	0°C		25°C		85°C		Unit	Condition
		Min	Max	Min	Max	Min	Max		
I _{IH} I _{IL}	Input HIGH Current Input LOW Current	— 0.5	225 —	— 0.5	175 —	— 0.5	175 —	μA	
V _{IH} V _{IL}	Input HIGH Voltage Input LOW Voltage	-1170 -1950	-840 -1480	-1130 -1950	-810 -1480	-1070 -1950	-735 -1450	mV	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

100H DC CHARACTERISTICS (IVT = OVT = 5.0V $\pm 5\%$; V_{EE} = -5.2V $\pm 5\%$ (10H); V_{EE} = -4.5V $\pm 0.3\text{V}$ (100H))

Symbol	Characteristic	0°C		25°C		85°C		Unit	Condition
		Min	Max	Min	Max	Min	Max		
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).

DIM	INCHES		MILLIMETERS	
	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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