

M66701P

DUAL HIGH-SPEED CCD CLOCK DRIVER

DESCRIPTION

M66701P Semiconductor Integrated Circuit is built in facsimiles and photocopiers to drive CCD linear image sensor data transfer clocks at high speeds. Because this IC takes in data on the TTL (transistor-transistor logic) level, it can be driven directly by a TTL integrated circuit.

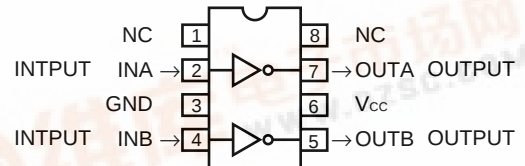
FEATURES

- Wide operating voltage range $V_{CC} = 8V \sim 13.2V$

APPLICATION

Driving of CCD image sensors in facsimiles, image scanners and photocopiers

PIN CONFIGURATION (TOP VIEW)



Outline 8P4

NC: No Connection

ABSOLUTE MAXIMUM RATINGS (Ta = 0 ~ 70°C unless otherwise noted)

Symbol	Parameter	Conditions	Ratings	Unit
V _{CC}	Supply voltage		-0.5 ~ +15	V
V _I	Input voltage		-0.5 ~ +15	V
V _O	Output voltage	Output: "H"	V _{CC}	V
P _d	Power dissipation	For single integrated circuit; Ta = 25°C (Note 1)	950	mW
T _{stg}	Storage temperature		-65 ~ 150	°C

Note 1: When Ta is 25°C or higher, conduct derating as follows: 7.7mW/°C (P) /14.4mW/°C (WP).

RECOMMENDED OPERATIONAL CONDITIONS

Symbol	Parameter	Limits			Unit
		Min.	Typ.	Max.	
V _{CC}	Supply voltage	8.0	12.0	13.2	V
V _{IH}	"H" input voltage	2.0			V
V _{IL}	"L" input voltage			0.8	V
T _{opr}	Operating temperature	0		70	°C

ELECTRICAL CHARACTERISTICS (V_{CC} = 8.0 ~ 13.2V, Ta = 0 ~ 70°C unless otherwise noted)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ. (Note 2)	Max.	
V _{IH}	"H" input voltage		2.0			V
V _{IL}	"L" input voltage				0.8	V
V _{IC}	Input clamp voltage	I _{IC} = -18mA		-0.82	-1.5	V
V _{OH}	"H" output voltage	V _I = 0.4V, I _{OH} = -1mA	V _{CC} - 1	11.3		V
V _{OL}	"L" output voltage	V _I = 2.0V, I _{OL} = +1mA		0.23	0.5	V
I _{IH}	"H" input current	V _I = 5.5V			100	μA
I _{IL}	"L" input current	V _{CC} = 12V, V _I = 0.4V		-0.13	-0.4	mA
I _{CC H}	"H" supply current	V _{CC} = 12V, V _I = 0.0V		5.3	8	mA
I _{CC L}	"L" supply current	V _{CC} = 12V, V _I = 4.5V		26	35	mA

Note 2: Standard values are measured under V_{CC} = 12V and Ta = 25°C.



MITSUBISHI <DIGITAL ASSP>

M66701P

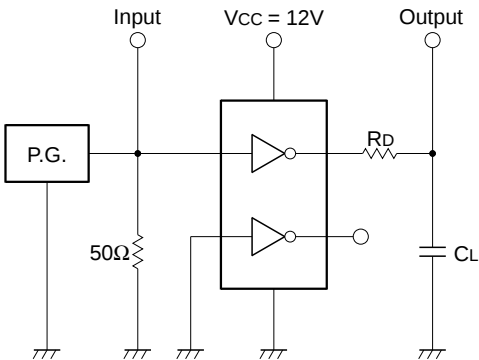
DUAL HIGH-SPEED CCD CLOCK DRIVER

SWITCHING CHARACTERISTICS (Vcc = 12V, Ta = 25°C unless otherwise noted)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
ton	Turn-on time	Vcc = 12V R _D = 10Ω (Note 3) C _L = 1000pF See test circuit.		8	30	ns
toff	Turn-off time			12	30	ns
tr	Rise time			26	50	ns
tf	Fall time			35	50	ns

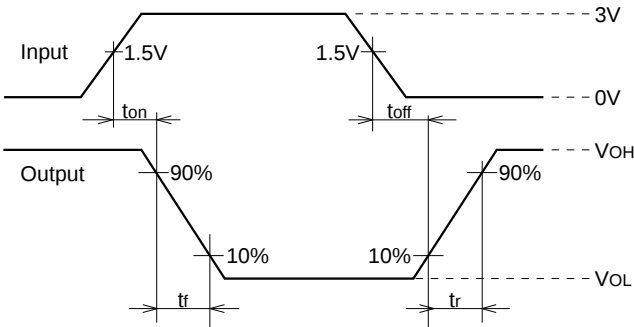
Note 3: When M66701 is activated at high speeds, overshoot or undershoot may occur. To prevent it, connect damping resistance R_D 10Ω–30Ω to output.

TEST CIRCUIT



PG (pulse generator) output conditions are as follows:
 Rise time: $t_r \leq 6\text{ ns}$
 Fall time: $t_f \leq 6\text{ ns}$
 Repeat frequency: $\text{PRR} = 1\text{ MHz}$
 Pulse width: $t_w = 500\text{ ns}$
 Pulse amplitude: $V_P = 3V_{P-P}$

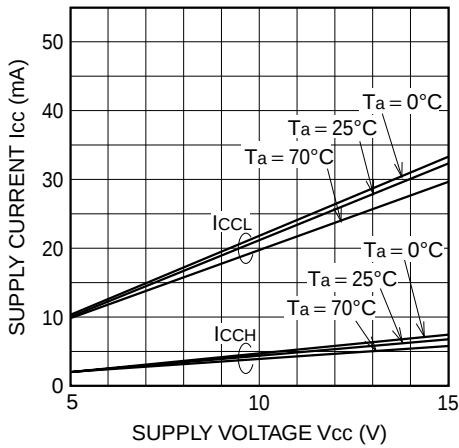
TIMING CHART



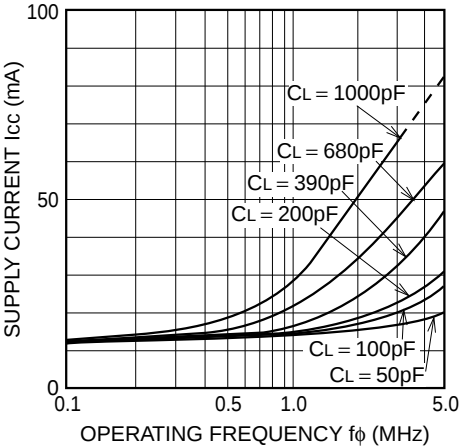
Input/Output Voltage Waveform

TYPICAL CHARACTERISTICS

SUPPLY CURRENT VS SUPPLY VOLTAGE

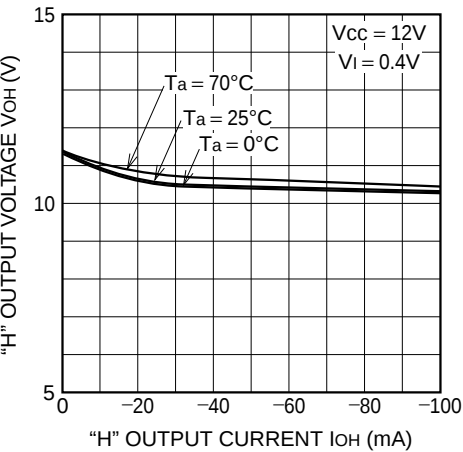


SUPPLY CURRENT VS OPERATING FREQUENCY

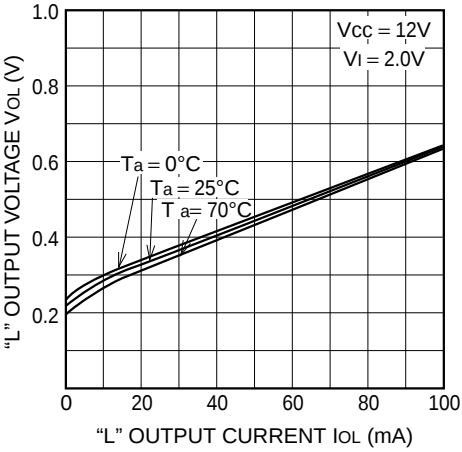


DUAL HIGH-SPEED CCD CLOCK DRIVER

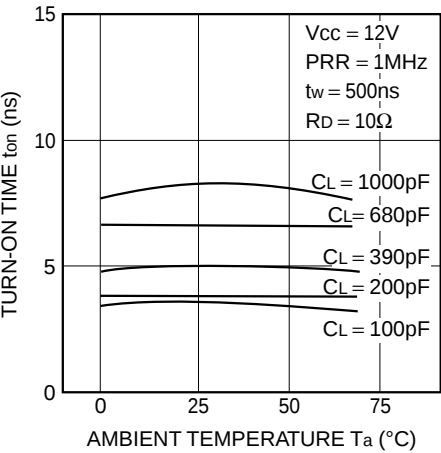
“H” OUTPUT VOLTAGE VS “H” OUTPUT CURRENT



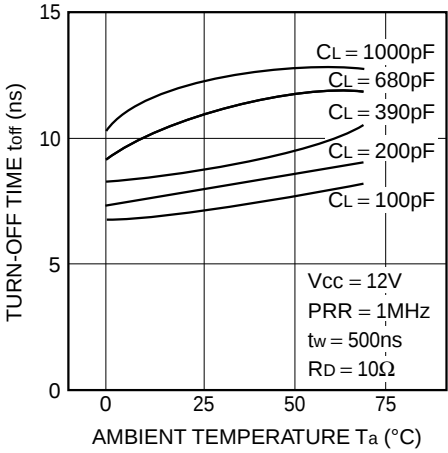
“L” OUTPUT VOLTAGE VS “L” OUTPUT CURRENT



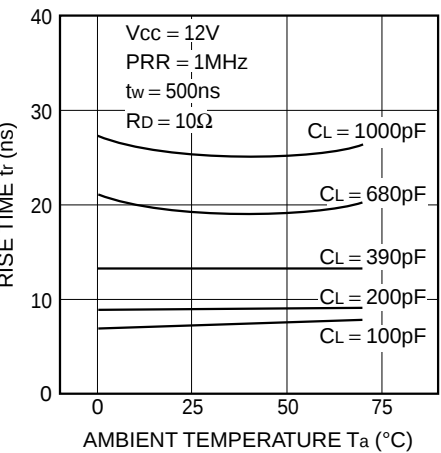
TURN-ON TIME VS AMBIENT TEMPERATURE



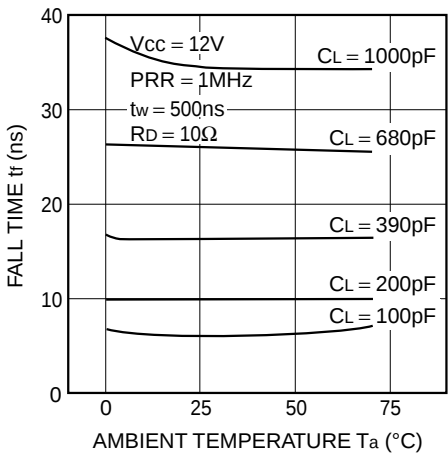
TURN-OFF TIME VS AMBIENT TEMPERATURE



RISE TIME VS AMBIENT TEMPERATURE



FALL TIME VS AMBIENT TEMPERATURE



APPLICATION CIRCUIT EXAMPLE

