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.

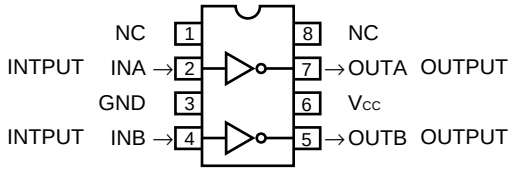
FEATURES

• Wide operating voltage range V_{CC} = 8V~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 (T_a = 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; T_a = 25°C (Note 1)	950	mW
T_{stg}	Storage temperature		–65 ~ 150	°C

Note 1: When T_a 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, T_a = 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

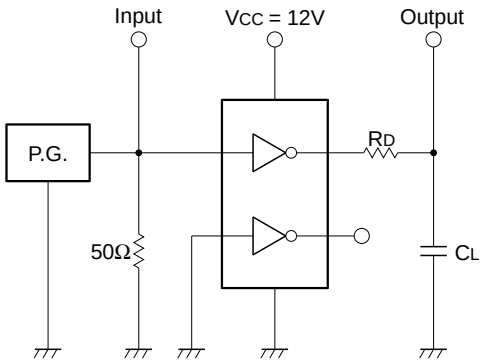
Note 2: Standard values are measured under V_{CC} = 12V and T_a = 25°C.

SWITCHING CHARACTERISTICS (V_{CC} = 12V, T_a = 25°C unless otherwise noted)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
t_{on}	Turn-on time	V_{CC} = 12V R_D = 10Ω (Note 3) C_L = 1000pF See test circuit.		8	30	ns
t_{off}	Turn-off time			12	30	ns
t_r	Rise time			26	50	ns
t_f	Fall time			35	50	ns

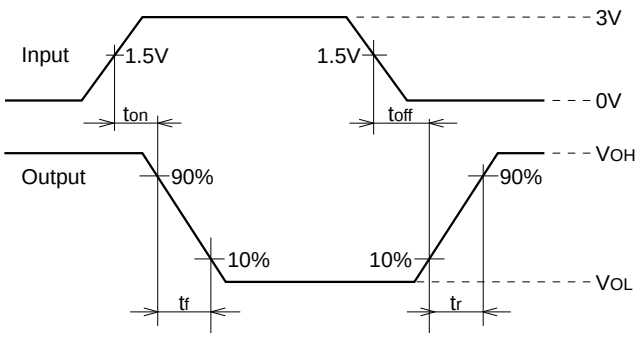
Note 3: When M66701 is activated at high speeds, overshoot or undershoot may occur. To prevent it, connect damping resistance R_D 10Ω~30Ω to output.

TEST CIRCUIT



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

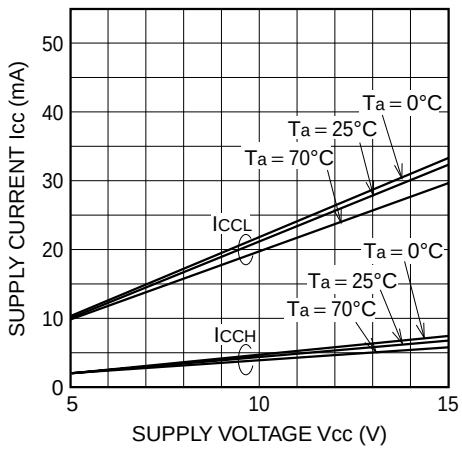
TIMING CHART



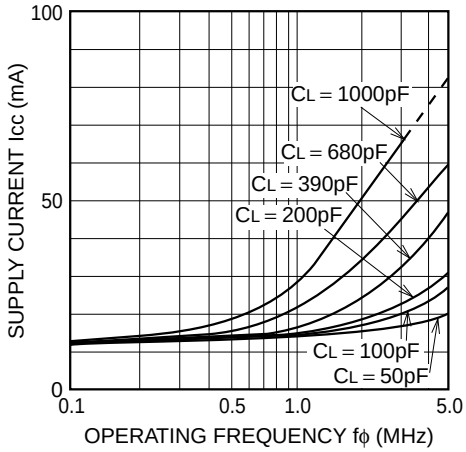
Input/Output Voltage Waveform

TYPICAL CHARACTERISTICS

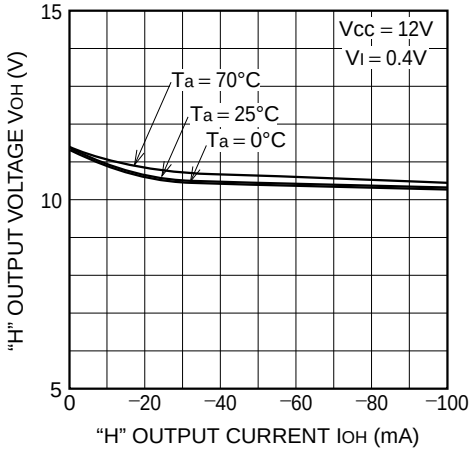
SUPPLY CURRENT VS SUPPLY VOLTAGE



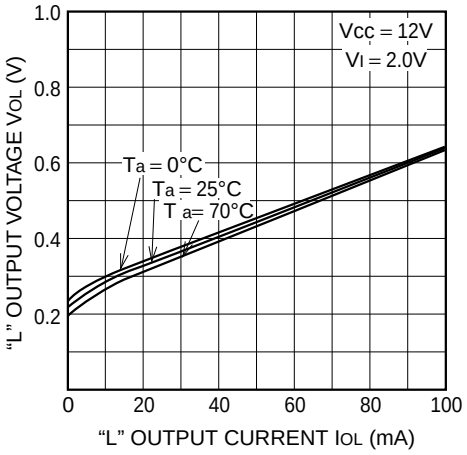
SUPPLY CURRENT VS OPERATING FREQUENCY



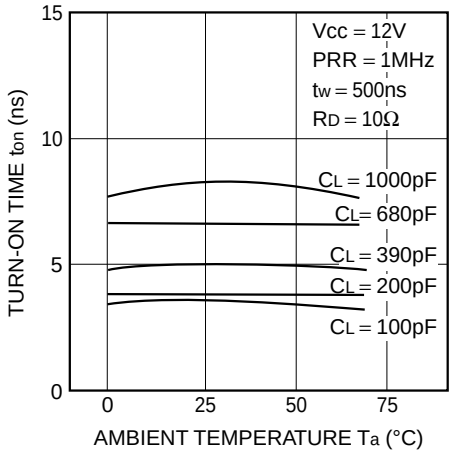
"H" OUTPUT VOLTAGE VS "H" OUTPUT CURRENT



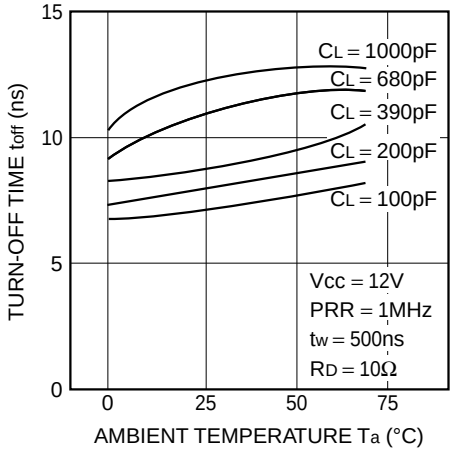
"L" OUTPUT VOLTAGE VS "L" OUTPUT CURRENT



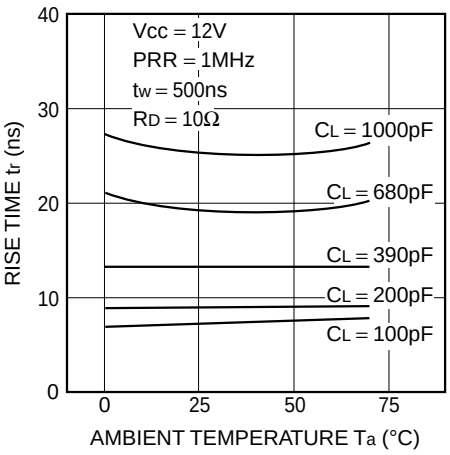
TURN-ON TIME VS AMBIENT TEMPERATURE



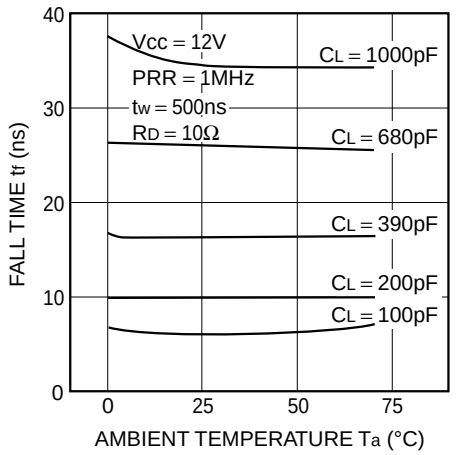
TURN-OFF TIME VS AMBIENT TEMPERATURE



RISE TIME VS AMBIENT TEMPERATURE



FALL TIME VS AMBIENT TEMPERATURE



APPLICATION CIRCUIT EXAMPLE