

SED5031C_{oc}**CMOS 12 BIT THERMAL HEAD DRIVER**

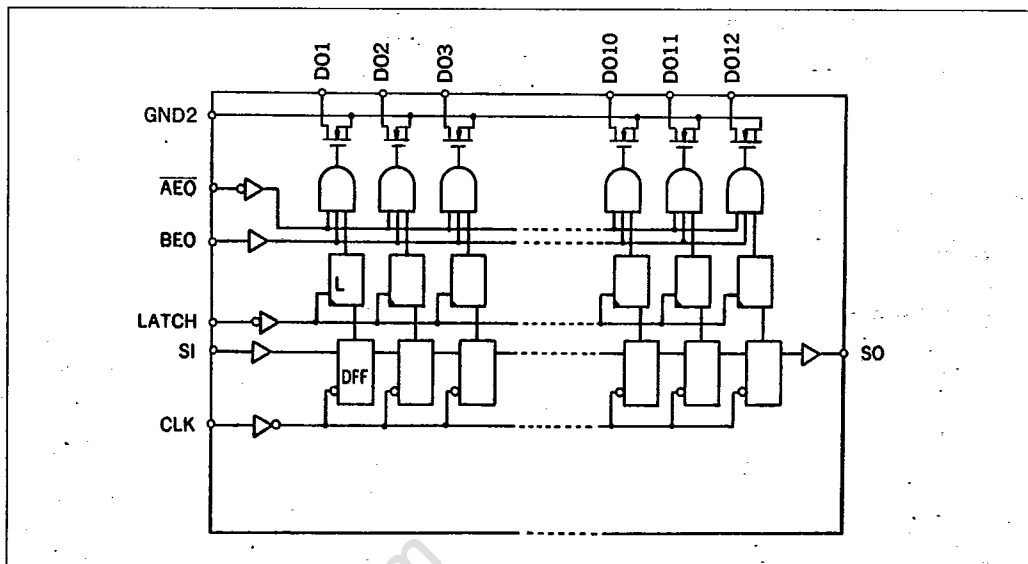
- Built in 12bit static shift register
- 12bit latch circuits
- Output control circuits and built in 12bit driver

DESCRIPTION

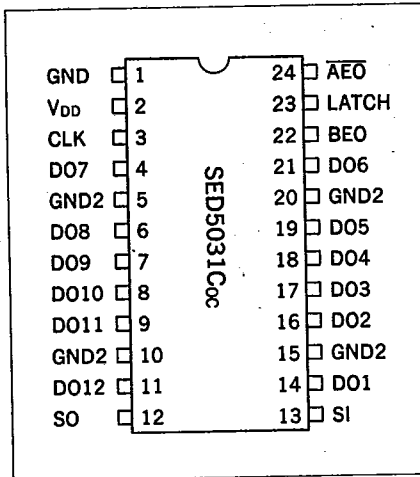
The SED5031C_{oc} is a low power CMOS 12bit thermal head driver. It contains a 12bit high speed shift register, 12bit latch, output control circuit and 12bit driver with a drive capability of 28V/150mA allowing direct connection with thermal heads.

FEATURES

- Built in 12bit static shift register
- Built in 12bit latch
- Built in output control circuit and 12bit driver
- High supply voltage for driver28V (Max)
- High output current150mA (Max)
- Low supply current0.3mA/2MHz (Typ)
- High speed operation7MHz (Max)
- Si gate CMOS process
- Package24-pin DIP (plastic)

BLOCK DIAGRAM

■ PIN CONFIGURATION



■ PIN DESCRIPTION

Pin No.	Pin Name	Function
CLK	3	Clock input for static shift register.
SI	13	Serial data input to shift register.
SO	12	Serial data output from shift register.
LATCH	23	Latch signal input. Data in the shift register is latched when this signal goes low.
AEO	24	Output enable A. Latched data is enabled for output to the driver when this signal is low. DO terminals are in the high impedance state when this signal is high.
BEO	22	Output enable B. Latched data is enabled for output when this signal is high. DO terminals are in the high impedance state when this signal is low.
DO _n	14, 16~19, 21 4, 6~9, 11	Parallel data output terminals. (Open drain NMOS transistor output)
V _{DD}	2	Power supply (+5V)
GND	1	Signal ground for input: 0V
GND2	5, 10, 15, 20	Ground for driver output terminals: 0V

■ ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Supply voltage	V _{DD}	-0.5 to 7.0	V
Voltage supplied to driver	B _{VDD}	28	V
Driver output current	I _{OLDD}	150	mA
Input voltage	V _I	-0.5 to V _{DD} +0.5	V
Input current	I _I	-20 to 20	mA
Output voltage	V _O	-0.5 to V _{DD} +0.5	V
Power dissipation	P _D	0.65 (T _a =80°C)	W
Operating temperature	T _{opr}	-10 to 80	°C
Storage temperature	T _{stg}	-65 to 150	°C
Soldering temperature and time	T _{sol}	260°C, 10s (at lead)	—

■ RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Supply voltage	V _{DD}		4.5	5.0	5.5	V
Input voltage	V _I		0	—	V _{DD}	V
Output high voltage DO _n	V _{OHD0}		0	12	24	V
Driver output current	I _{OLDD}		—	120	150	mA
Clock frequency	f _{CLK1}		—	2	7	MHz
	f _{CLK2} *	*for cascade connection	—	2	5	MHz
Clock pulse width	t _{WCLK}		70	—	—	ns
Setup time SI-CLK	t _{setup}		50	—	—	ns
Setup time CLK-LATCH	t _{CL}		100	—	—	ns
Hold time SI-CLK	t _{hold}		10	—	—	ns
Latch pulse width	t _{WLATCH}		50	—	—	ns

T-51-15

■ ELECTRICAL CHARACTERISTICS

● DC Electrical Characteristics

(V_{DD}=5V, T_a=25°C)

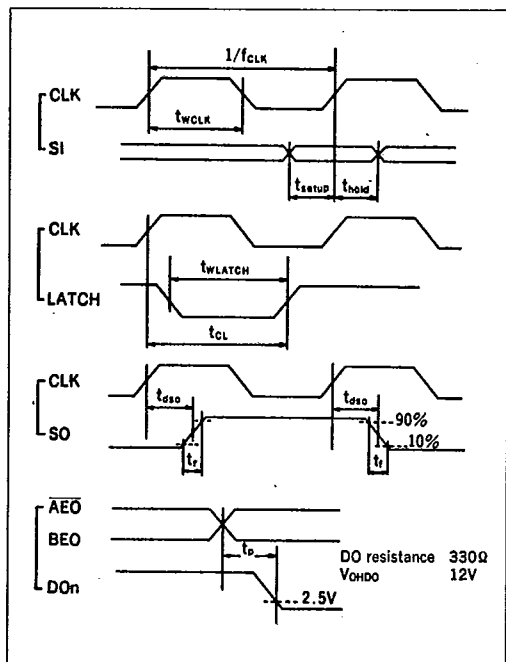
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input high voltage	V _{IH}		3.5	—	5.0	V
Input low voltage	V _{IL}		0	—	1.5	V
Input high current	I _{IH}	V _{IH} =5.3V	—	—	0.5	μA
Input low current	I _{IL}	V _{IL} =-0.8V	—	—	0.5	μA
Output high voltage (SO)	V _{OHSO}	V _{DD} =4.5V	4.45	—	—	V
Output low voltage (SO)	V _{OLSO}	V _{DD} =4.5V	—	—	0.05	V
Output high current (SO)	I _{OHSO}	V _{OH} =4.2V	0.5	2.5	—	mA
Output low current (SO)	I _{OLSO}	V _{OL} =0.4V	0.5	1.5	—	mA
Driver output voltage (DO _n)	V _{OLDO}	I _{OLDO} =120mA	—	0.7	1.0	V
Driver output current (DO _n)	I _{OLDO}	V _{OLDO} =1.0V	120	160	—	mA
V _{DD} supply current	I _{DD}	V _{DD} =5.5V, f _{CLK} =5MHz	—	1.5	5	mA
Output leakage	I _{LO}	V _{DD} =4.5V, V _{OH} =24V	—	—	50	μA

● AC Electrical Characteristics

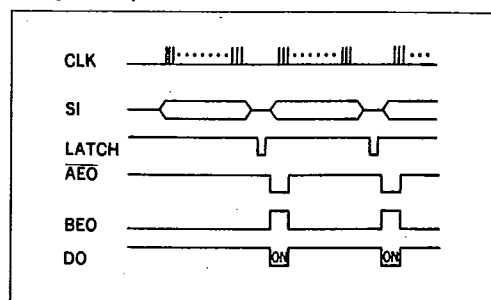
(V_{DD}=5V, T_a=80°C)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output rise time	t _r	C _L =13pF	—	20	35	ns
Output fall time	t _f		—	20	35	ns
Output (SO) delay time	t _{dso}		—	70	120	ns
Low level propagation time	t _p		—	0.2	1	μs

● Timing Chart



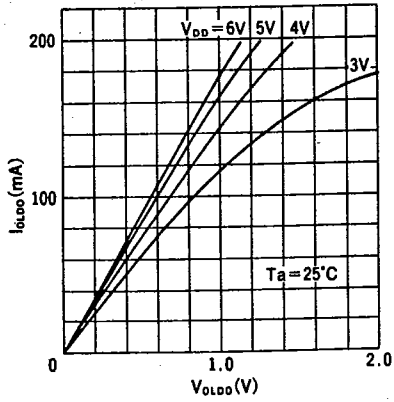
● Signal Sequence



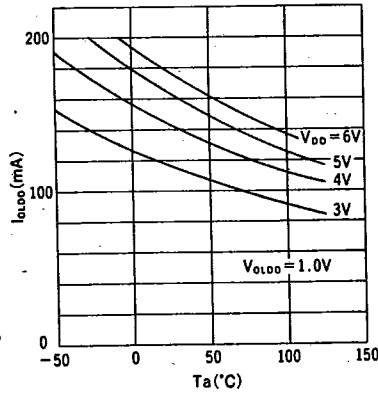
T-51-15

■ PERFORMANCE CURVES

Driver output current (I_{OL00})—Driver output voltage (V_{OL00})



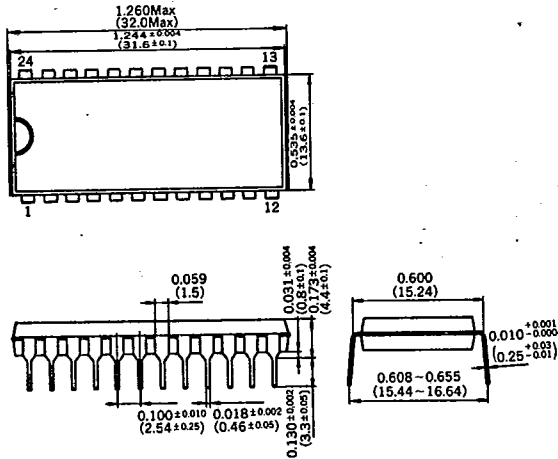
Driver output current (I_{OL00})—Ambient temperature (T_a)



■ PACKAGE DIMENSIONS

C24

24-pin DIP



unit : inch (mm)