Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

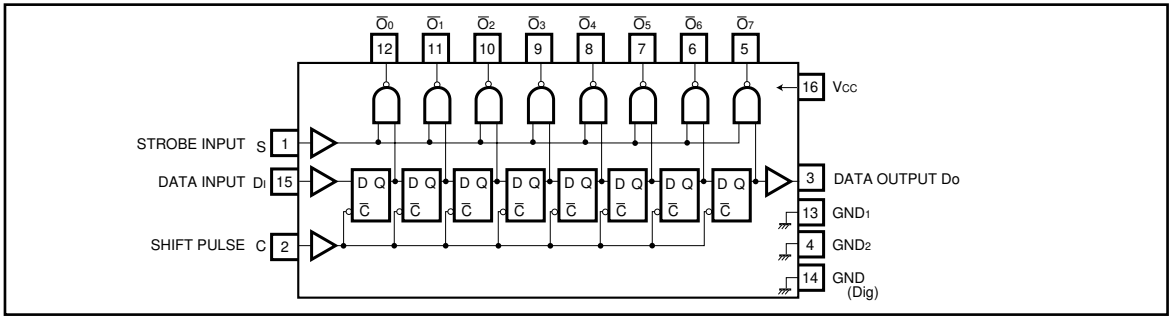
8-bit, serial IN, parallel OUT driver
BA823 / BA823F

The BA823 and BA823F are 8-bit serial input, parallel output drivers. These monolithic ICs were developed as drivers for thermal printing heads, LED character displays, and other similar applications.

●Applications
Thermal printing head drivers
LED character display drivers

●Features
1) Can drive up to 200 mA.
2) Controlling the strobe terminal with the drive timing pulse enables current to be reduced when drive is not being carried out.
3) Using the data output terminal for the next data input enables cascade connections.
4) The digital ground and power ground are separated.
5) TTL and CMOS drive possible.

●Block diagram



●Absolute maximum ratings (Ta = 25°C)

Parameter		Symbol	Limits	Unit
Power supply voltage		V_{CC}	7.0*1	V
Power dissipation	BA823	Pd	550*2	mW
	BA823F		500*3	
Input voltage		$V_{IN\ Max.}$	+ 0.3 ~ + 6.0	V
Operating temperature		Topr	– 20 ~ + 75	°C
Storage temperature		Tstg	– 55 ~ + 125	°C

*1 $\overline{O_0}$ to $\overline{O_7}$ output pins are 34V (max.).
*2 Reduced by 5.5mW for each increase in Ta of 1°C over 25°C.
*3 Reduced by 5mW for each increase in Ta of 1°C over 25°C.

● Usage conditions range

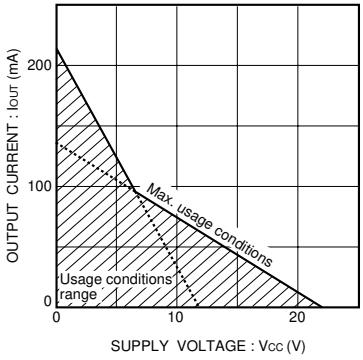


Fig. 1 Power supply voltage and output current usage conditions

Fig. 1 Power supply voltage and output current usage conditions (Per Circuit)
The maximum usage conditions, shown on the left, indicate the absolute maximums for power supply voltage and IC output current. Never exceed these usage conditions, under any circumstances.

● Electrical characteristics (unless otherwise noted, Ta = 25°C, V_{CC} = + 5.0V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions	Measurement circuit
Power supply voltage	V_{CC}	4.5	5.0	5.5	V	V_{CC} pin	Fig.2
Quiescent current 1	I_{Q1}	—	4	6	mA	When all data values are "0"	Fig.2
Quiescent current 2	I_{Q2}	—	8	11	mA	When all data values are "0"	Fig.2
Input low level voltage	V_{IL}	—	—	0.8	V	—	Fig.2
Input high level voltage	V_{IH}	2	—	—	V	—	Fig.2
Input high level current	I_{IH}	—	—	0.4	mA	V_{IN} = 4.5 V	Fig.2
Input high level current	I_{IH}	—	—	100	µA	V_{IN} = 2.0 V	Fig.2
Maximum output voltage	$V_{O\ OFF}$	—	—	21.8	V	$\overline{O_0}$ to $\overline{O_7}$ pins, I_O = 10µA	Fig.3
Output saturation voltage	$V_{O\ ON}$	—	0.8	1.3	V	When I_O = 100mA sink	Fig.3
Output current	I_{OL}	—	—	207	mA	Applied voltage V = 11.8V	Fig.3
"H" level data output voltage	V_{DOH}	2.4	—	—	V	R_L = 10kΩ	Fig.3
"L" level data output voltage	V_{DOL}	—	—	0.8	V	—	Fig.3
Minimum setup time	t_1	—	—	300	ns	V_{IH} = 2.0V, V_{IL} = 0.8V	—
Minimum shift pulse width	t_2	—	—	1	µs	V_{IH} = 2.0V, V_{IL} = 0.8V	—
Minimum timing time	t_3	—	—	1	µs	V_{IH} = 2.0V, V_{IL} = 0.8V	—
Maximum data transfer speed	$f_{Max.}$	500	—	—	kHz	V_{IH} = 2.0V, V_{IL} = 0.8V	—

●Measurement circuits

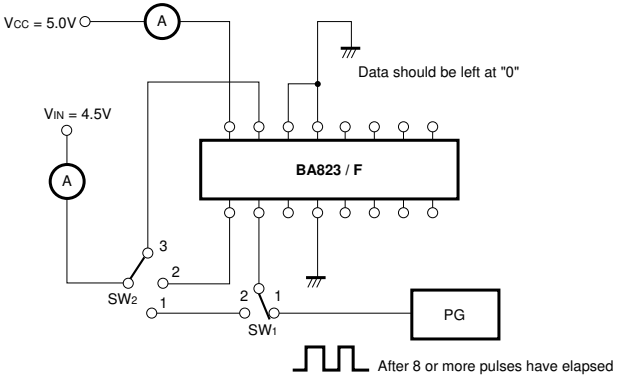


Fig. 2 I_{CC} and I_{IH} measurement circuit

Item	SW_1	SW_2
I_{CC}	1	1
I_{IH}	2	1 ~ 3

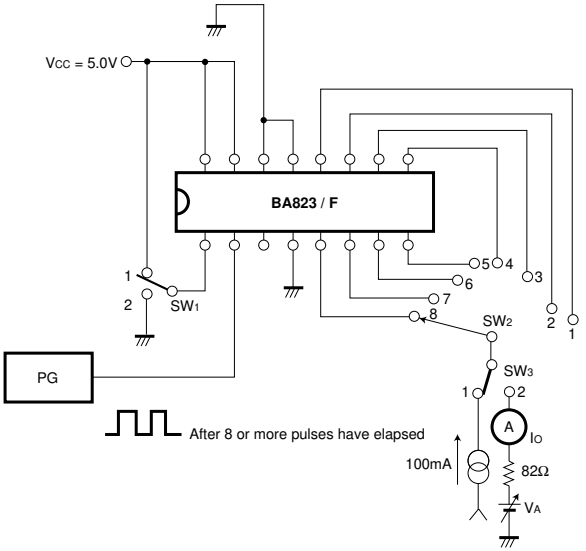


Fig. 3 $V_{O\ ON}$, $V_{O\ OFF}$ and I_{OL} measurement circuit

Item	SW_1	SW_2	SW_3
$V_{O\ ON}$	1	1 ~ 8	1
I_{OL}	1	1 ~ 8	2
$V_{O\ OFF}$	2	1 ~ 8	2

When tested at $V_{O\ OFF}$: I_O = 10μA
When tested at $I_{O\ ON}$: V_A = 30V

●Input conditions

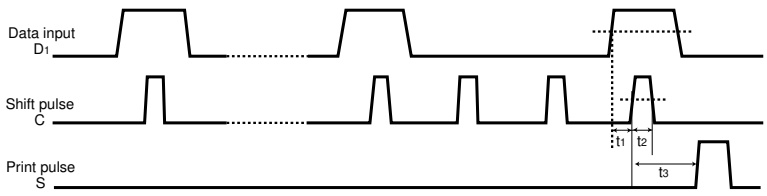
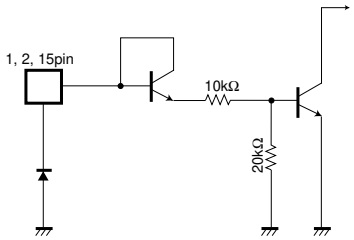


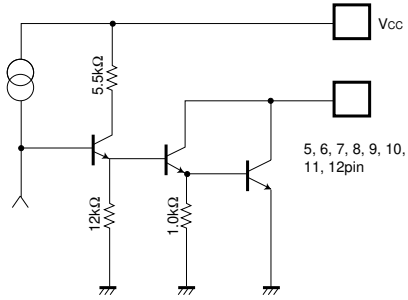
Fig. 4

● Input / output circuits

(a) Input circuit



(b) Output circuit



(c) Data output circuit

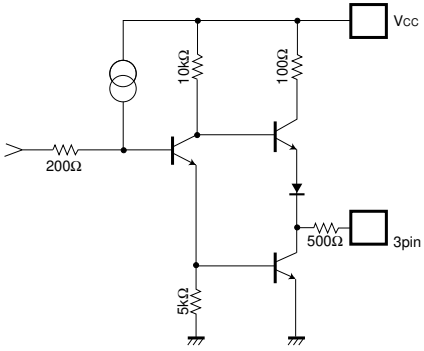


Fig.5

● Electrical characteristic curves

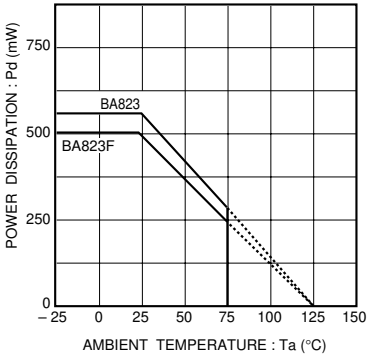


Fig. 6 Power dissipation vs. ambient temperature

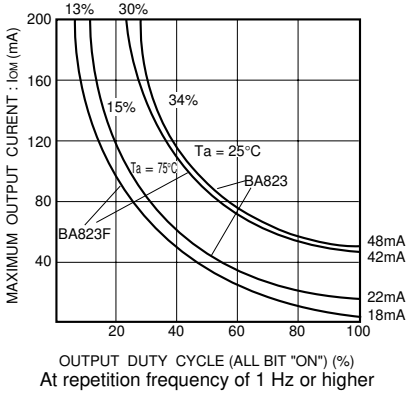


Fig. 7 Output conditions

●Pin descriptions

Pin No.	Pin name	Code	Function
2	SHIFT PULSE	C	Shift pulse of shift register
15	DATA INPUT	D_I	Data input of shift pulse registered using shift pulse rise
1	STROBE	S	When "1", the content of the shift register is output
12	OUTPUT	$\overline{O}_0$	"0" when the content of the register is "1" on the 1st bit
11	OUTPUT	$\overline{O}_1$	"0" when the content of the register is "1" on the 2nd bit
10	OUTPUT	$\overline{O}_2$	"0" when the content of the register is "1" on the 3rd bit
9	OUTPUT	$\overline{O}_3$	"0" when the content of the register is "1" on the 4th bit
8	OUTPUT	$\overline{O}_4$	"0" when the content of the register is "1" on the 5th bit
7	OUTPUT	$\overline{O}_5$	"0" when the content of the register is "1" on the 6th bit
6	OUTPUT	$\overline{O}_6$	"0" when the content of the register is "1" on the 7th bit
5	OUTPUT	$\overline{O}_7$	"0" when the content of the register is "1" on the 8th bit
3	DATA OUTPUT	D_O	Has passed the $\overline{O}_7$ output circuit and becomes the input for the next step
16	V_{CC}	V_{CC}	Normally 5.0V used (±10%)
13	GND	GND_1	$\overline{O}_0$ to $\overline{O}_3$ output circuit GND
4	GND	GND_2	$\overline{O}_4$ to $\overline{O}_7$ output circuit GND
14	GND	GND (Dig)	Logic circuit GND

●Timing chart

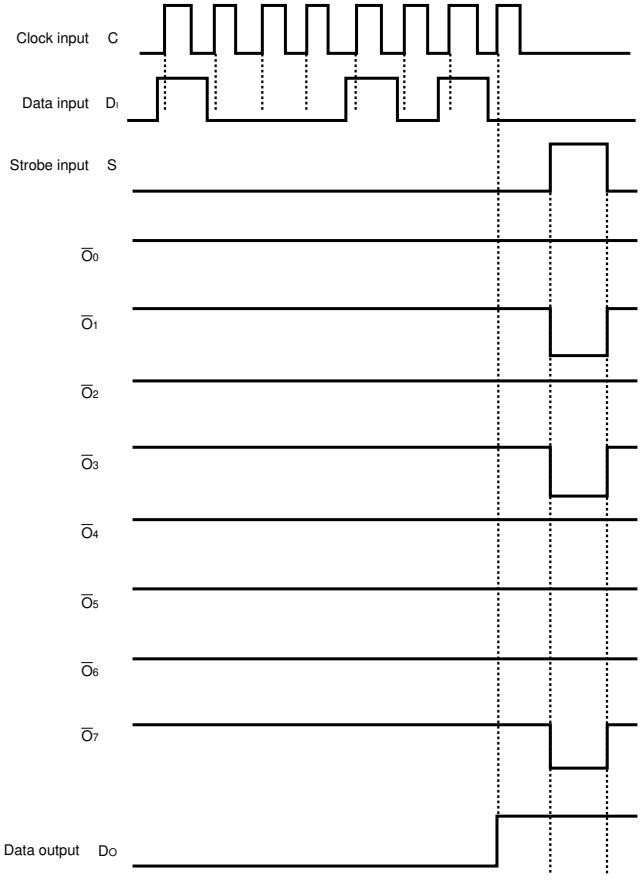


Fig.8

●Application example

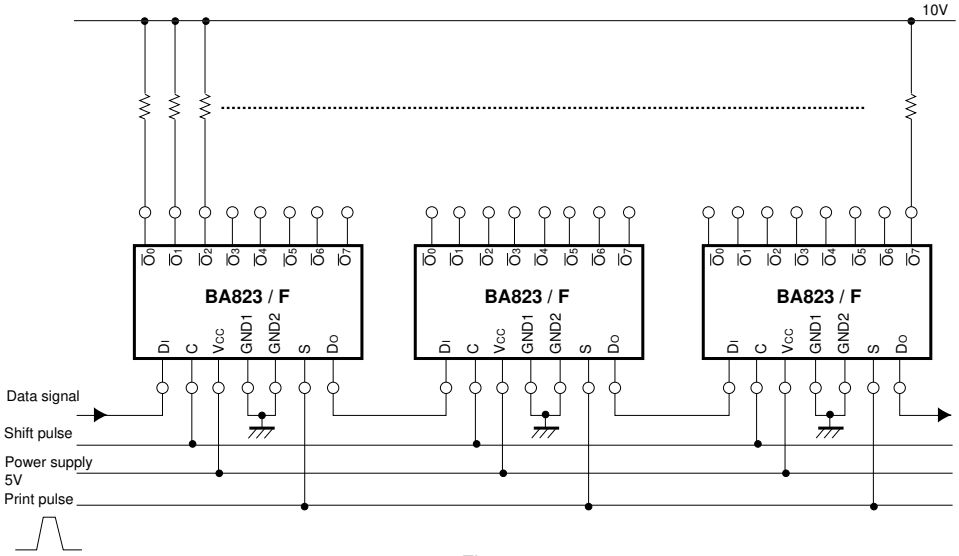


Fig.9

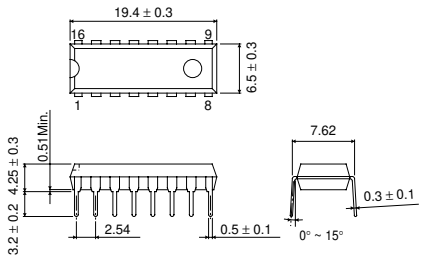
Example of printing using a strobe pulse
This offers the advantage that the common line (large current) of the heat element does not need to be switched.

●Circuit operation

The BA823 has the internal configuration shown in the logic diagram, with the following three input pins: clock C, data DI, and strobe S. Data input is synchronized to the clock, with data being read serially at the rising edge. The content of the set shift register appears at output terminals $\overline{O_0}$ to $\overline{O_7}$, as shown in the timing chart in Figure 8, depending on the strobe input, with that pulse width being the same as that of the strobe input. The data output pin D_O is used when ICs are connected in cascade format, and when the output for the last stage of the shift register appears, is connected to the next data input pin D_I. When these clock and strobe latches and power switch are used in common, the output pins can be increased by eight bits each.

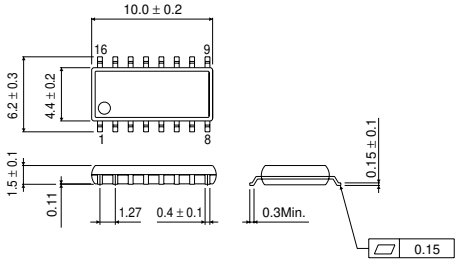
●External dimensions (Units: mm)

BA823



DIP16

BA823F



SOP16