SSC2003A SERIES

High-voltage High-current Darlington transistor Arrays

➢ Features

- 500mA Rated Collector Current (Single Output).
- High Voltage Outputs: 50V.
- Inputs Compatible with TTL/CMOS logic signal.
- Relay Driver Applications.

➢ Description

The SSC2003A series is high-voltage high-current Darlington transistor arrays each containing seven open collector common emitter pairs.Each pair is rated at 500mA. Suppression diodes are included for inductive load driving, the inputs and outputs are pinned in opposition to simplify board layout.

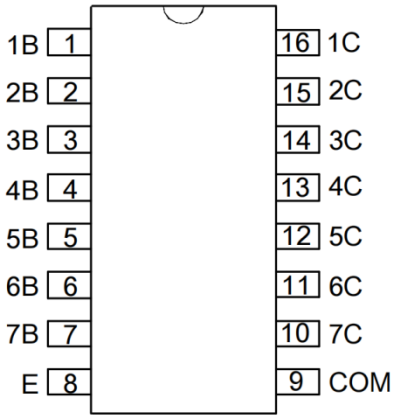
➢ Applications

- High pressure resistance
- Printer striker Applications
- Solenoid-Driver Applications
- LED-display-Driver Applications

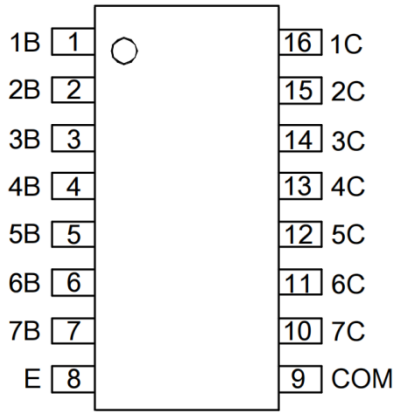
➢ Ordering Information

Device	Package	Shipping
SSC2003AS16	SOP16	3000/Tape&Reel
SSC2003AD16	DIP16	25/Tube

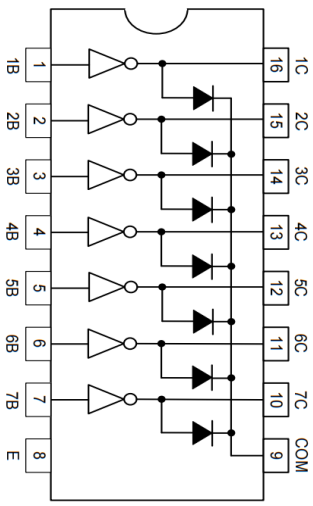
➢ Pin configuration



DIP-16



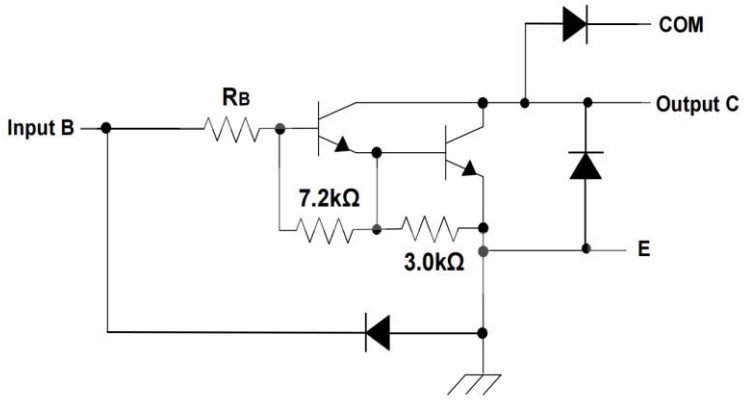
SOP16



➢ Pin Descriptions

Pin Number SOP16/DIP-16	Pin Name	Function
1	1B	Input Pair1
2	2B	Input Pair2
3	3B	Input Pair3
4	4B	Input Pair4
5	5B	Input Pair5
6	6B	Input Pair6
7	7B	Input Pair7
8	E	Common Emitter (Ground)
9	COM	Common Clamp Diodes
10	7C	Output Pair 7
11	6C	Output Pair 6
12	5C	Output Pair 5
13	4C	Output Pair 4
14	3C	Output Pair 3
15	2C	Output Pair 2
16	1C	Output Pair 1

➢ Functional Block Diagram



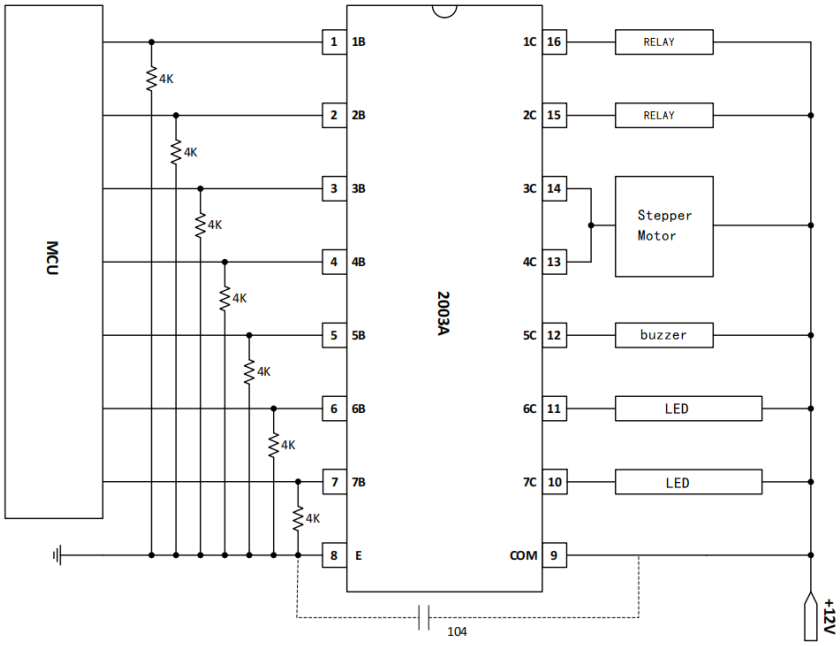
Note: All resistor values shown are nomial.R_B=2.7K.

The collentor-emitter diode is a parasitic structure and should not be used to conduct current . If the collector(s) go below ground an external Schoottky diode should be added to clamp negative undershoots.

➢ Marking Information

Marking	Designator	Description
SSC2003A YW	SSC	Logo
	2003A	Product model
	YW	Y: year:23 W: week:01~52

Typical application



➢ Absolute Maximum Ratings(T_A=25℃ unless otherwise noted)

Symbol	Parameter		Ratings	Unit
V_{CE}	Collector to emitter Voltage		50	V
V_{com}	Clamp diode reverse voltage		50	V
V_{IN}	Input voltage		30	V
I_{OK}	Output clamp current		350	mA
I_C	Collector current (continuous current)		500	mA/ch
I_B	Base current (continuous current)		25	mA
P_D	Power Dissipation	SOP16	1.25	W
		DIP16	1.47	
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance	SOP16	63	℃/W
		DIP16	50	
$R_{\theta JC}$	Junction-to-Case Thermal Resistance	SOP16	12	℃/W
		DIP16	15	
T_A	Operating Ambient temperature range		-40 to 105	°C
T_J	Operation junction temperature		-40 to 150	℃
T_{STG}	Storage temperature range		-60 to 150	℃

➢ Electronics Characteristics(T_A=25℃ unless otherwise noted)

Symbol	Parameter	Test Figure	Test Conditions	Min	Typ.	Max	Unit
$V_{I(ON)}$	On State Input Voltage	6	V_{CE} = 2V,I_C= 200mA			2.4	V
			V_{CE} = 2V,I_C= 250mA			2.7	
			V_{CE} = 2V,I_C= 300mA			3	
$V_{CE\ (SAT)}$	Collector Emitter Saturation Voltage	5	I_I = 250uA, I_C=100mA		0.85	1.1	V
			I_I = 350uA, I_C= 200mA		0.95	1.3	V
			I_I = 500uA, I_C= 350mA		1.1	1.6	V
I_{CEX}	Collector cutoff current	8	V_{CE} = 50V, I_I = 0 T_A = +25℃			50	uA
			V_{CE} =50V,I_I = 0 T_A = +85℃			100	
$I_{I(OFF)}$	Off State Input Current	3	V_{CE}=50V, I_C= 500uA	50	100		uA
V_F	Clamp forward voltage	8	I_F =350mA		1.5	2	V
I_I	Input current	4	VI = 3.85 V		0.93	1.35	mA
I_R	Clamp Reverse Current	7	V_R=50 V			100	uA
C_J	Input Capacitance	-	V_I=0V, f = 1MHZ		15	30	pF

➢ **Switching Characteristics (**TA = +25°C, unless otherwise specified**)**

Parameter		Test Figure	Min	Typ.	Max	Unit
t PLH	Propagation delay time, low- to high-level output	9		1	10	us
t PHL	Propagation Delay Time, High to Low Level Output	9		1	10	us

➢ Parameter Measurement Information

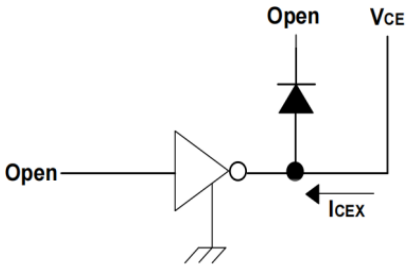


Fig.1 I_{CEX} Test Circuit

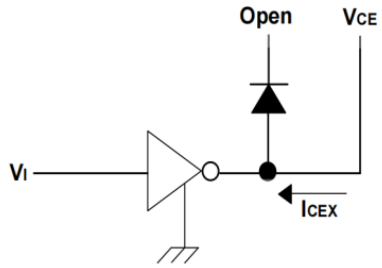


Fig.2 I_{CEX} Test Circuit

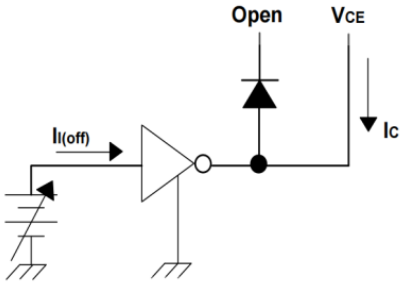


Fig.3 $I_{I(off)}$ Test Circuit

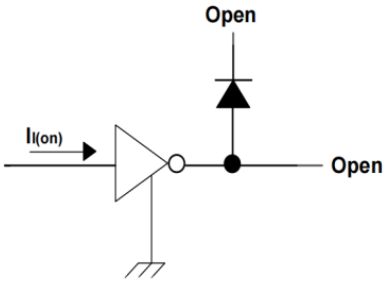


Fig.4 I_I Test Circuit

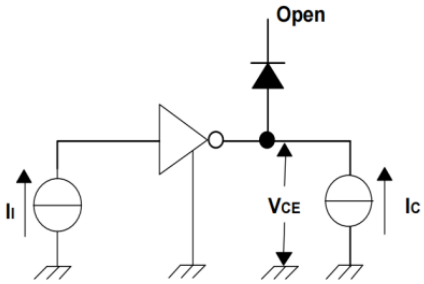


Fig. 5 h_{FE} , $V_{CE(sat)}$ Test Circuit

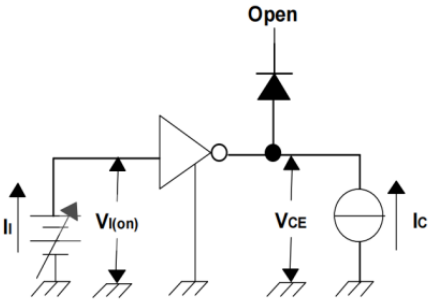


Fig. 6 $V_{I(on)}$ Test Circuit

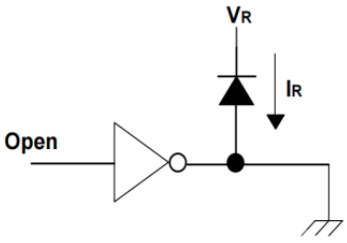


Fig. 7 I_R Test Circuit

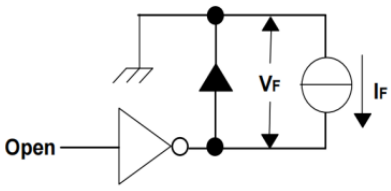
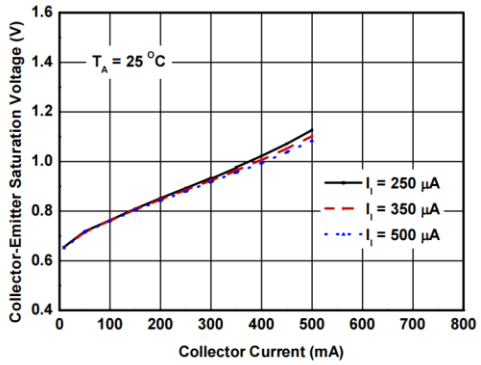
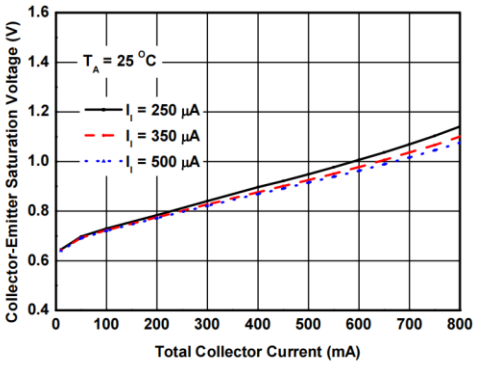


Fig. 8 V_F Test Circuit

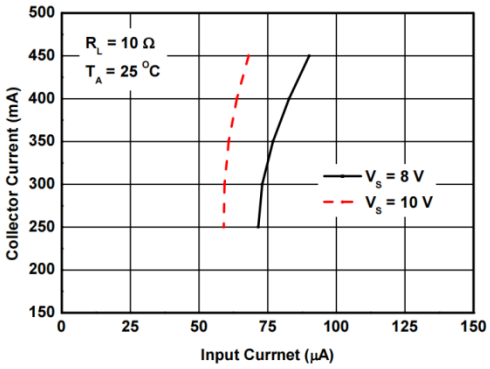
➢ Typical Characteristics(T_A=25℃ unless otherwise noted)



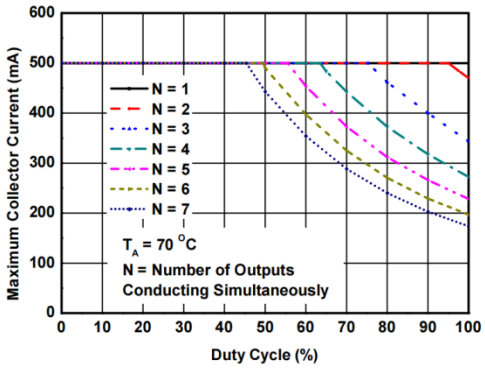
Collector-Emitter Saturation Voltage vs. Collector Current (One Darlington)



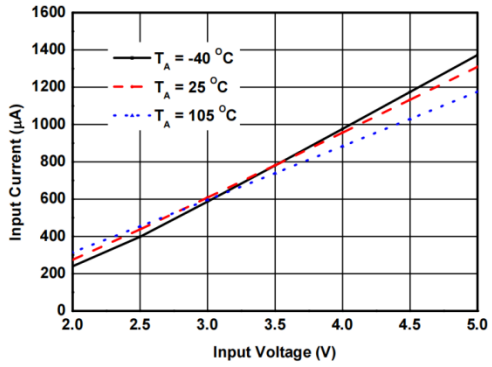
Collector-Emitter Saturation Voltage vs. Collector Current (Two Darlington in Parallel)



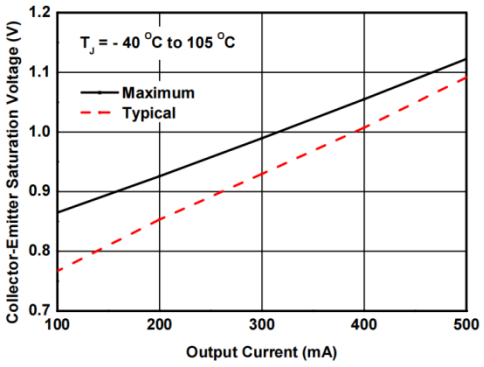
Collector Current vs. Input Current



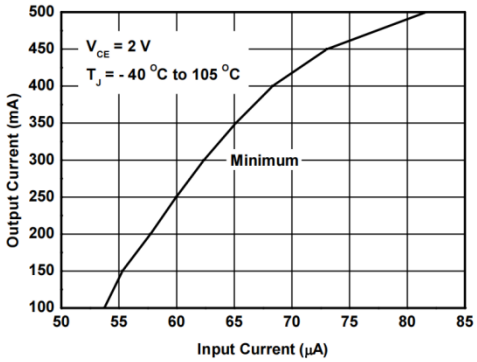
Maximum Collector Current vs. Duty Cycle



Input Current vs. Input Voltage



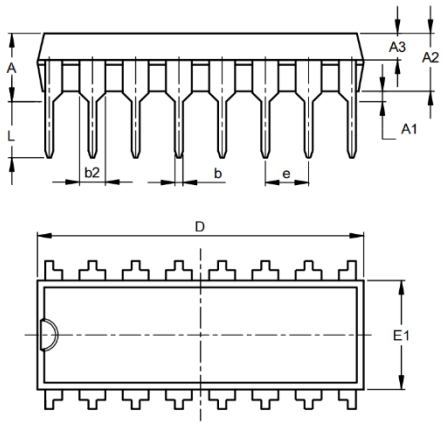
Collector-Emitter Saturation Voltage vs. Output Current



Output Current vs. Input Current

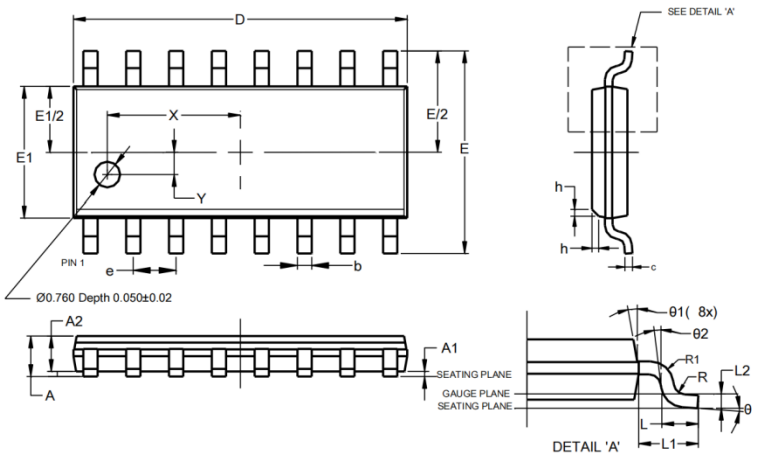
➢ Package Information

(1) Package Type: DIP16

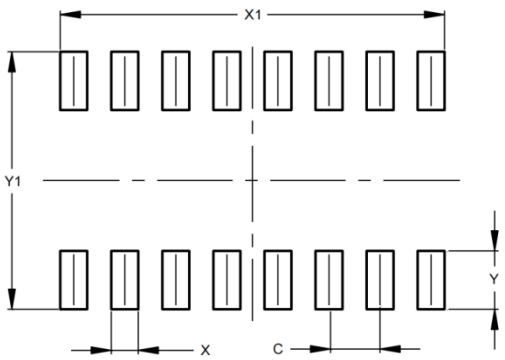


PDIP-16			
Dim	Min	Max	Nom
A	3.60	4.00	3.80
A1	0.51	-	-
A2	3.20	3.40	3.30
A3	1.47	1.57	1.52
b	0.44	0.53	-
b2	1.52BSC		
c	0.25	0.31	-
D	18.90	19.30	19.10
E1	6.15	6.55	6.35
E2a	7.62 BSC		
E2b	7.62	9.30	-
E2c	0.00	0.84	-
e	2.54BSC		
L	3.00	-	-
All Dimensions in mm			

(2) Package Type: SOP16



SO-16			
Dim	Min	Max	Typ
A	--	1.260	--
A1	0.10	0.23	--
A2	1.02	--	--
b	0.31	0.51	--
c	0.10	0.25	--
D	9.80	10.00	--
E	5.90	6.10	--
E1	3.80	4.00	--
e	1.27 BSC		
h	0.15	0.25	0.20
L	0.40	1.27	--
L1	1.04 REF		
L2	0.25 BSC		
R	0.07	--	--
R1	0.07	--	--
X	3.945 REF		
Y	0.661 REF		
θ	0°	8°	--
θ1	5°	15°	--
θ2	0°	--	--
All Dimensions in mm			



Dimensions	Value (in mm)
C	1.270
X	0.670
X1	9.560
Y	1.450
Y1	6.400

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