

M54583WP

8-UNIT 400mA DARLIGNON TRANSISTOR ARRAY

DESCRIPTION

M54583WP is eight-circuit collector-current sink type Darlington transistor arrays. The circuits are made of PNP and NPN transistors. Both the semiconductor integrated circuits perform high-current driving with extremely low input-current supply.

FEATURES

- High breakdown voltage ($BV_{CEO} \geq 50V$)
- High-current driving ($I_c(\max) = 400mA$)
- Active L-level input
- With input clamping diodes

APPLICATIONS

Interfaces between microcomputers and high-voltage, high current drive systems, drives of relays and printers, and MOS-bipolar logic IC interfaces

FUNCTION

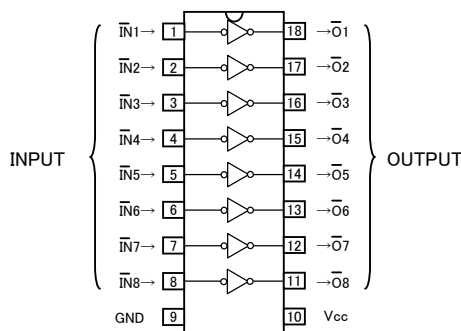
The M54583 is produced by adding PNP transistors to M54523 inputs. Eight circuits having active L-level inputs are provided.

Resistance of $7k\Omega$ and diode are provided in series between each input and PNP transistor base. The input diode is intended to prevent the flow of current from the input to the V_{CC} . Without this diode, the current flow from "H" input to the V_{CC} and the "L" input circuits is activated, in such case where one of the inputs of the 8 circuits is "H" and the others are "L" to save power consumption. The diode is inserted to prevent such misoperation.

This device is most suitable for a driver using NMOS IC output especially for the driver of current sink.

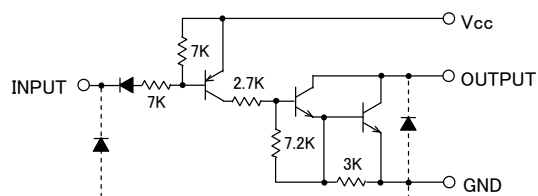
Collector current is 400mA maximum. Collector-emitter supply voltage is 50V.

PIN CONFIGURATION



Package type 18P4X

CIRCUIT DIAGRAM



The eight circuits share the V_{CC} and GND.
The diode, indicated with the dotted line, is parasitic, and cannot be used.

Unit: Ω

ABSOLUTE MAXIMUM RATINGS (Unless otherwise noted, $T_a = -20 \sim +75^\circ C$)

Symbol	Parameter	Conditions	Ratings	Unit
V_{CC}	Supply voltage		10	V
V_{CEO}	Collector-emitter voltage	Output, H	- 0.5 ~ + 50	V
V_i	Input voltage		- 0.5 ~ V_{CC}	V
I_c	Collector current	Current per circuit output, L	400	mA
P_d	Power dissipation	$T_a = 25^\circ C$, when mounted on board	1.79	W
T_{opr}	Operating temperature		- 20 ~ + 75	$^\circ C$
T_{stg}	Storage temperature		- 55 ~ + 125	$^\circ C$

8-UNIT 400mA DARLIGNON TRANSISTOR ARRAY

RECOMMENDED OPERATING (Unless otherwise noted, $T_a = -20 \sim +75^\circ\text{C}$)

Symbol	Parameter	Limits			Unit	
		min	typ	max		
V _{CC}	Supply voltage	4	5	8	V	
I _C	Collector current (Current per 1 circuit when 8 circuits are coming on simultaneously)	Duty Cycle no more than 10%	0	—	350	mA
		Duty Cycle no more than 34%	0	—	200	
V _{IH}	"H" input voltage	V _{CC} -0.7	—	V _{CC}	V	
V _{IL}	"L" input voltage	0	—	V _{CC} -3.6	V	

ELECTRICAL CHARACTERISTICS (Unless otherwise noted, $T_a = -20 \sim +75^\circ\text{C}$)

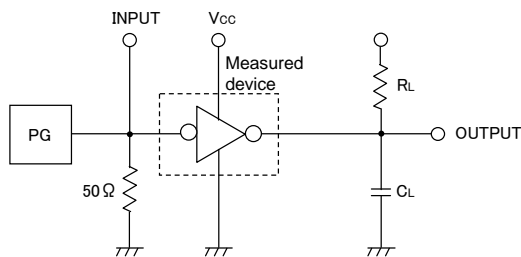
Symbol	Parameter	Test conditions	Limits			Unit	
			min	typ *	max		
V _{(BR)CEO}	Collector-emitter breakdown voltage	V _S = 50V, V _I = 0.2V	50	—	—	V	
V _{CE(sat)}	Collector-emitter saturation voltage	V _I = V _{CC} - 3.6V	I _C = 350mA	—	1.2	2.2	V
			I _C = 200mA	—	0.98	1.6	
I _I	Input current	V _I = V _{CC} - 3.6V	—	-320	-600	μA	
I _{CC}	Supply current (one circuit coming on)	V _{CC} = 5V, V _I = V _{CC} - 3.6V	—	1.9	3.0	mA	
hFE	DC amplification factor	V _{CE} = 4V, V _{CC} = 5V, I _C = 350mA, T _a = 25°C	2000	3500	—	—	

*: The typical values are those measured under ambient temperature (T_a) of 25°C. There is no guarantee that these values are obtained under any conditions.

SWITCHING CHARACTERISTICS (Unless otherwise noted, $T_a = 25^\circ\text{C}$)

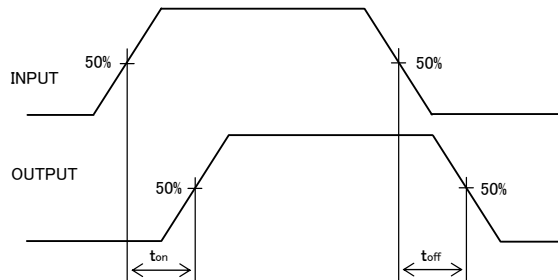
Symbol	Parameter	Test conditions	Limits			Unit
			min	typ	max	
t _{on}	Turn-on time	C _L = 15pF (note 1)	—	130	—	ns
t _{off}	Turn-off time		—	3200	—	ns

NOTE 1 TEST CIRCUIT

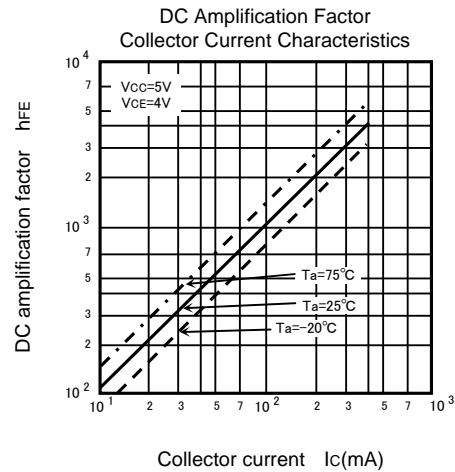
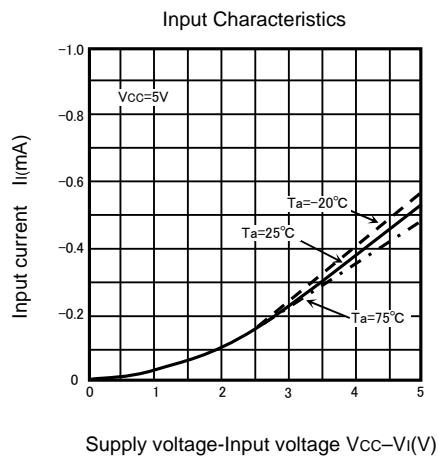
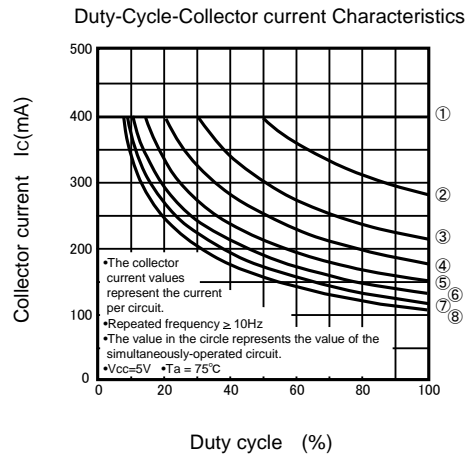
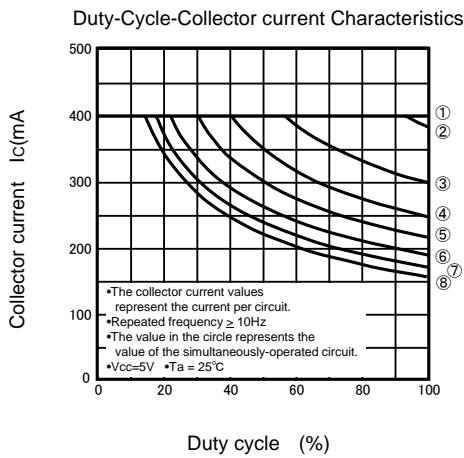
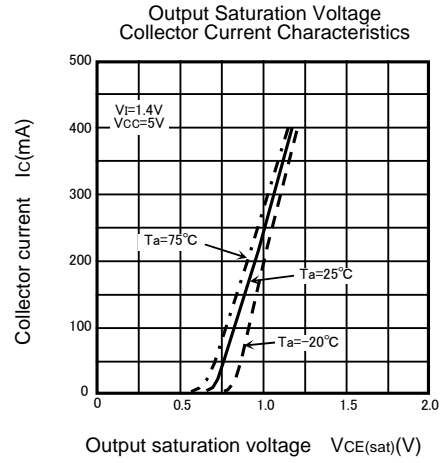
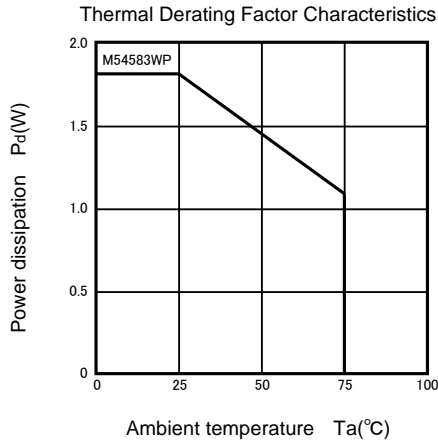


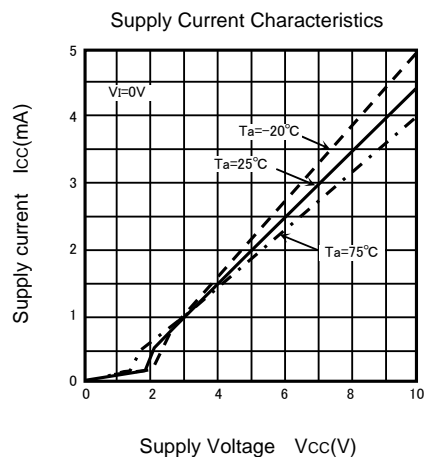
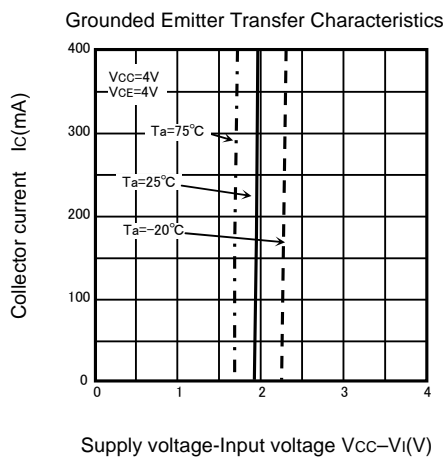
- (1) Pulse generator (PG) characteristics: PRR = 1kHz, t_w = 10 μs, t_r = 6ns, t_f = 6ns, Z_o = 50 Ω, V_i = 0.4 to 4V
- (2) Input-output conditions : R_L = 30 Ω, V_o = 10V, V_{CC} = 4V
- (3) Electrostatic capacity C_L includes floating capacitance at connections and input capacitance at probes

TIMING DIAGRAM



TYPICAL CHARACTERISTICS





M54583WP

8-UNIT 400mA DARLIGNON TRANSISTOR ARRAY

PACKAGE OUTLINE

18P4X

Plastic 18pin 300mil DIP

