

MITSUBISHI (DGT L LOGIC)

M54583P

8-UNIT 400mA DARLINGTON TRANSISTOR ARRAY

DESCRIPTION

The M54583P, 8-channel source driver, is composed of 16 NPN and PNP current sink darlington transistors which form high current gain driver pairs at low input current.

FEATURES

- High output sustaining voltage to 50V
- High output source current to 400mA
- "L" active level input
- Internal input diodes
- Wide operating temperature range ($T_a = -20 \sim +75^\circ\text{C}$)

APPLICATION

Interfacing for microcomputer and high voltage and high current driver system, Interfacing for standard MOS/BIPO-LAR logics, Relay

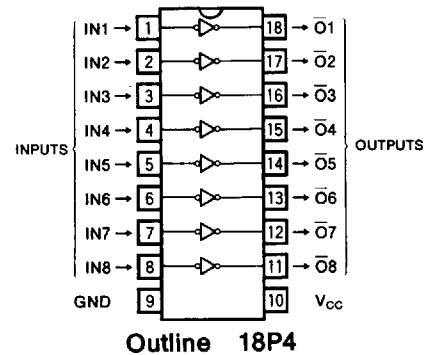
FUNCTION

The driver of the M54583P is composed of an input circuit of the M54523P with additional PNP transistors and "L" active input. A resistor of $7k\Omega$ is connected between the input and the base of PNP transistors. The input diode is intended to prevent the flow of current from the input to the V_{CC} . Without this diode, the current flows from "H" input to the V_{CC} and the "L" input circuit is activated, in such a 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.

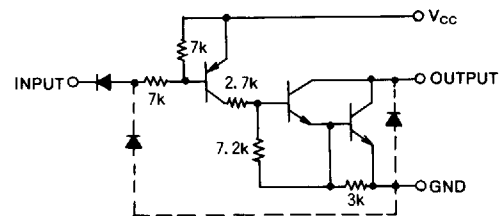
The outputs are capable of driving 400mA and are rated for operation with output voltage up to 50V.

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

PIN CONFIGURATION (TOP VIEW)



CIRCUIT SCHEMATIC (EACH CIRCUIT)



V_{CC} and GND are common to the 8 pairs.

The diodes shown by broken line are parasite diodes and must not be used.

Unit : Ω

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

Symbol	Parameter	Conditions	Ratings	Unit
V_{CC}	Supply voltage		$-0.5 \sim +10$	V
V_{CEO}	Output sustaining voltage	Transistor OFF	$-0.5 \sim +50$	V
V_i	Input voltage		$-0.5 \sim V_{CC}$	V
I_C	Collector current per channel	Transistor ON	400	mA
P_d	Power dissipation	$T_a = 25^\circ\text{C}$	1.79	W
T_{opr}	Operating temperature		$-20 \sim +75$	$^\circ\text{C}$
T_{stg}	Storage temperature		$-55 \sim +125$	$^\circ\text{C}$

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

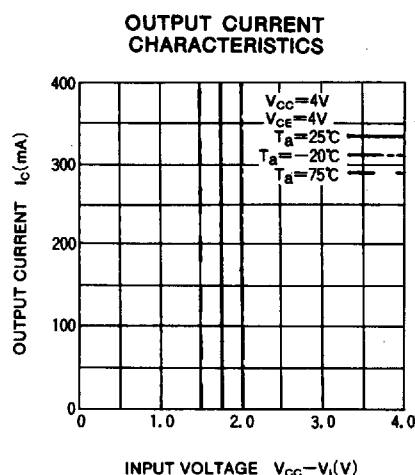
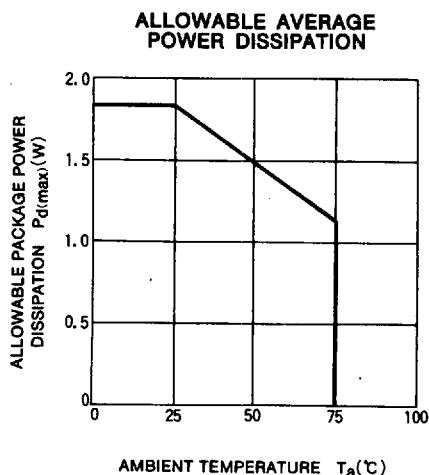
Symbol	Parameter		Limits			Unit
			Min	Typ	Max	
V_{CC}	Supply voltage		4	5	8	V
I_C	Collector current per channel	Percent duty cycle less than 10%, $V_{CC}=5\text{V}$	0		350	mA
		Percent duty cycle less than 34%, $V_{CC}=5\text{V}$	0		200	
V_{IH}	"H" Input voltage	$I_{O(\text{leak})} \leq 50\mu\text{A}$	$V_{CC}-0.7$		V_{CC}	V
V_{IL}	"L" Input voltage	$I_C \leq 350\text{mA}$	0		$V_{CC}-3.6$	V

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

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ*	Max	
$I_{O(\text{leak})}$	Output leakage current	$V_{CE0}=50\text{V}$			100	μA
$V_{CE(\text{sat})}$	Output saturation voltage	$V_I = V_{CC}-3.6\text{V}$		1.1	2.2	V
		$I_C = 350\text{mA}$		0.98	1.6	
I_I	Input current	$V_I = V_{CC}-3.6\text{V}$		-320	-600	μA
I_{CC}	Supply current (an only input)	$V_{CC}=5\text{V}$, $V_I = V_{CC}-3.6\text{V}$			3	mA
h_{FE}	DC forward current gain	$V_{CE}=4\text{V}$, $V_{CC}=5\text{V}$, $I_C=350\text{mA}$, $T_a=25^\circ\text{C}$	2000			—

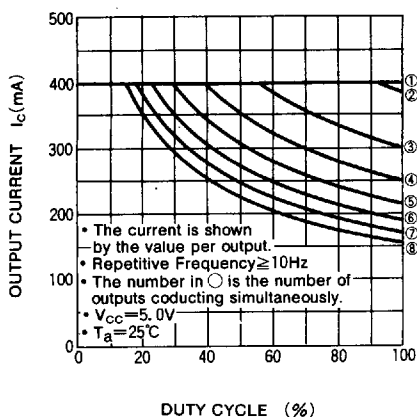
* : Typical values are at $T_a=25^\circ\text{C}$.

TYPICAL CHARACTERISTICS

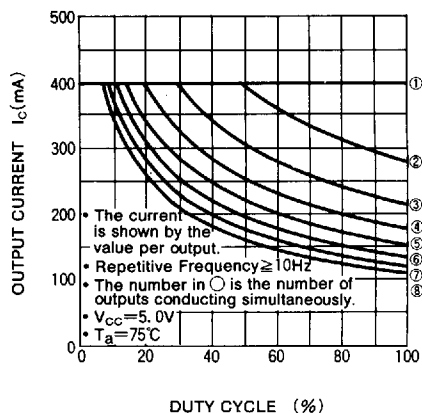


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**ALLOWABLE OUTPUT CURRENT
AS A FUNCTION OF DUTY CYCLE**



**ALLOWABLE OUTPUT CURRENT
AS A FUNCTION OF DUTY CYCLE**



**DC CURRENT GAIN
CHARACTERISTICS**

