# M54521P

## 5-UNIT 500mA DARLINGTON TRANSISTOR ARRAY

## DESCRIPTION

The M54521P, 5-channel sink driver, consists of 10 NPN transistors connected to form high current gain driver pairs.

## FEATURES

- Output sustaining voltage to 30V
- High output sink current to 500mA
- Wide operating temperature range (Ta = −20~+75℃)

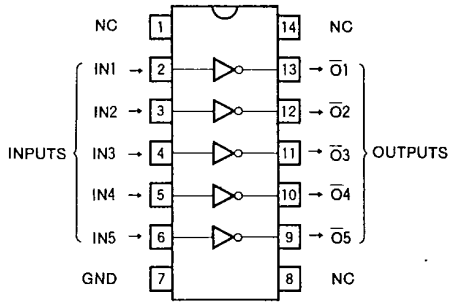
## APPLICATION

Relay and printer drivers, LED or incandescent display digit driver, Interfacing for standard MOS/BIPOLAR logics

## FUNCTION

The M54521P is comprised of five NPN darlington driver pairs. All emitters and the substrate are connected together to pin 7. The output are capable of sinking 500mA and will withstand 30V in the OFF state.

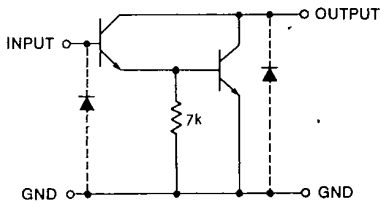
## PIN CONFIGURATION (TOP VIEW)



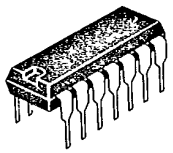

Outline 14P4

NC : NO CONNECTION

## CIRCUIT SCHEMATIC




Unit : Ω



14-pin molded plastic DIP

## ABSOLUTE MAXIMUM RATINGS ($T_a$=−20~+75℃, unless otherwise noted)

| Symbol | Parameter | Conditions | Ratings | Unit |
|---|---|---|---|---|
| $V_{CEO}$ | Output sustaining voltage | Transistor OFF | −0.5~+30 | V |
| $I_C$ | Collector current | Transistor ON | 500 | mA |
| $P_d$ | Power dissipation | $T_a$=25℃ | 1.47 | W |
| $T_{opr}$ | Operating ambient temperature range | | −20~+75 | ℃ |
| $T_{stg}$ | Storage temperature range | | −55~+125 | ℃ |

## RECOMMENDED OPERATIONAL CONDITIONS ($T_a$=−20~+75℃, unless otherwise noted)

| Symbol | Parameter | | Limits Min | Limits Typ | Limits Max | Unit |
|---|---|---|---|---|---|---|
| $V_O$ | Output voltage | | 0 | | 30 | V |
| $I_C$ | Collector current per channel | Percent duty cycle less than 10% | 0 | | 400 | mA |
| | | Percent duty cycle less than 55% | 0 | | 200 | |
| $I_{IH}$ | "H" Input current | $I_C$=200mA | 1 | | 5 | mA |
| | | $I_C$=400mA | 2 | | 5 | |
| $I_{IL}$ | "L" Input current | | | 0 | | μA |

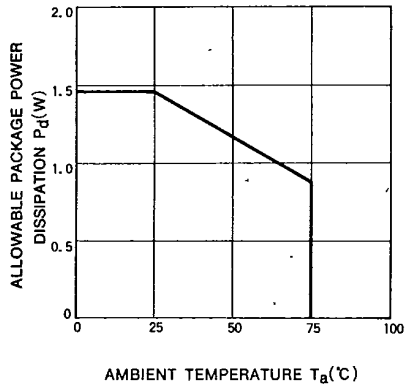
## ELECTRICAL CHARACTERISTICS ($T_a$=−20~+75℃, unless otherwise noted)

| Symbol | Parameter | Test conditions | Limits Min | Limits Typ* | Limits Max | Unit |
|---|---|---|---|---|---|---|
| $V_{(BR)CEO}$ | Output sustaining voltage | $I_{CEO}$=100μA | 30 | | | V |
| $V_{CE(sat)}$ | Output saturation voltage | $V_I$=2mA, $I_C$=400mA | | 1.0 | 2.4 | V |
| | | $V_I$=1mA, $I_C$=200mA | | 0.8 | 1.6 | |
| $V_I$ | Input voltage | $I_I$=1mA | 0.6 | 1.35 | 1.7 | V |

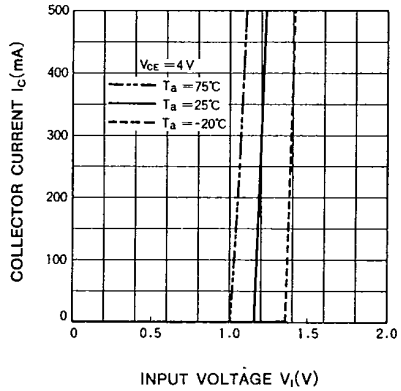
* : A typical value is at $T_a$=25℃.

## TYPICAL CHARACTERISTICS

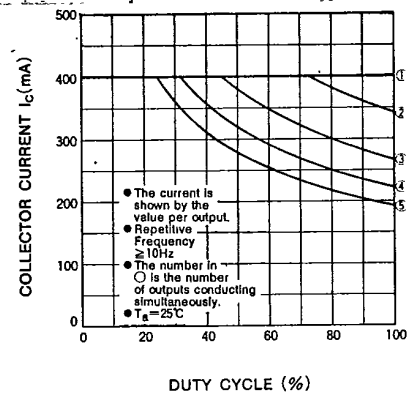
ALLOWABLE AVERAGE POWER DISSIPATION




OUTPUT CURRENT CHARACTERISTICS



ALLOWABLE COLLECTOR CURRENT AS A FUNCTION OF DUTY CYCLE

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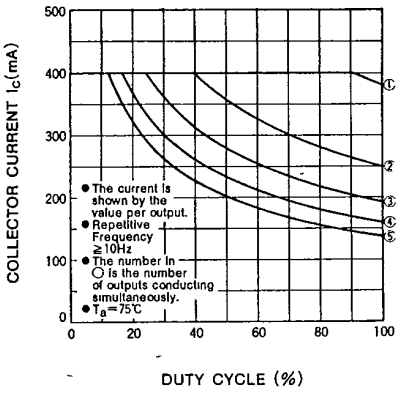

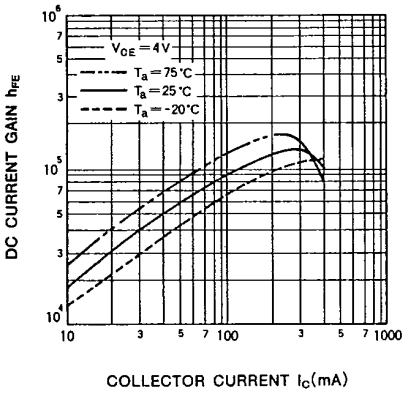
DC CURRENT GAIN CHARACTERISTICS