

7-UNIT 50mA TRANSISTOR ARRAY

DESCRIPTION

The M54514AP, 7-channel sink drivers, consists of 7 NPN transistors with 2.8k Ω series input resistors.

FEATURES

- Output breakdown voltage to 20V
- 50mA output sink current capability
- Low output saturation voltage
- Wide operating temperature range ($T_a = -20 \sim +75^\circ\text{C}$)

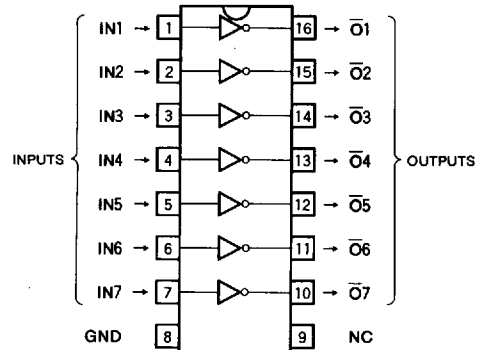
APPLICATION

LED or incandescent display digit driver

FUNCTION

The M54514AP is comprised of seven NPN drivers. Each input has a voltage divider by 2.8k Ω and 10k Ω resistors. All emitters and the substrate are connected together to pin 8. The open collector outputs are capable of sinking 50mA and will withstand 20V in the OFF state.

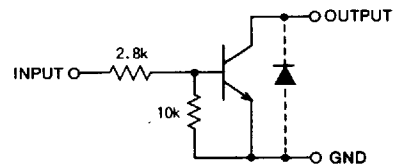
PIN CONFIGURATION (TOP VIEW)



Outline 16P4

NC : No connection

CIRCUIT SCHEMATIC



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_{CEO} | Output sustaining voltage | Transistor OFF | -0.5 ~ +20 | V |
| I_C | Collector current | Transistor ON | 50 | mA |
| V_i | Input voltage | | 10 | V |
| P_d | Power dissipation | $T_a = 25^\circ\text{C}$ | 1.47 | W |
| T_{opr} | Operating temperature | | -20 ~ +75 | $^\circ\text{C}$ |
| T_{stg} | Storage temperature | | -55 ~ +125 | $^\circ\text{C}$ |

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

| Symbol | Parameter | Limits | | | Unit |
|----------|-------------------------------|--------|-----|-----|------|
| | | Min | Typ | Max | |
| V_O | Output voltage | 0 | | 20 | V |
| I_C | Collector current per channel | 0 | | 20 | mA |
| V_{IH} | "H" Input voltage | 2.4 | | 8 | V |
| V_{IL} | "L" Input voltage | | | | |

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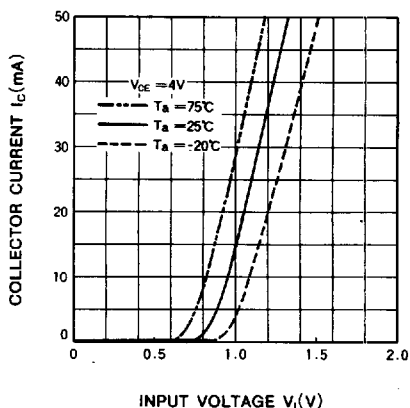
ELECTRICAL CHARACTERISTICS (T_a = -20~+75°C, unless otherwise noted)

| Symbol | Parameter | Test conditions | | Limits | | | Unit |
|----------------------|---------------------------|---|----------------------|--------|------|------|------|
| | | | | Min | Typ* | Max | |
| I _{o(Leak)} | Output leakage current | V _{CE} =20V | | | | 20 | μA |
| V _{CE(sat)} | Output saturation voltage | V _i =2.4V | I _C =20mA | | 0.04 | 0.17 | V |
| | | | I _C =40mA | | 0.08 | 0.23 | |
| I _i | Input current | V _i =2.4V | | | 0.7 | 1.1 | mA |
| h _{FE} | DC forward current gain | V _{CE} =4V, I _C =40mA, T _a =25°C | | 80 | 200 | | — |

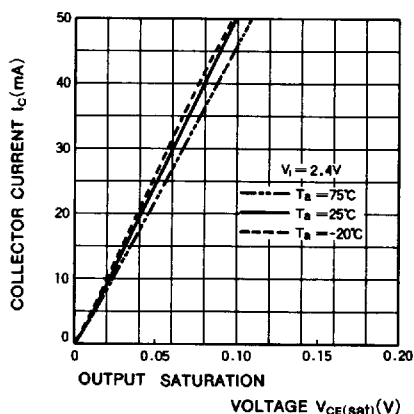
* : A typical value at T_a=25°C.

TYPICAL CHARACTERISTICS

OUTPUT CURRENT CHARACTERISTICS



OUTPUT CHARACTERISTICS



DC CURRENT GAIN CHARACTERISTICS

