

MITSUBISHI (DGTL LOGIC)

**M54513P****8-UNIT 50mA TRANSISTOR ARRAY****DESCRIPTION**

The M54513P, 8-channel sink drivers, consists of 8 NPN transistors with  $2\text{ k}\Omega$  series input resistors.

**FEATURES**

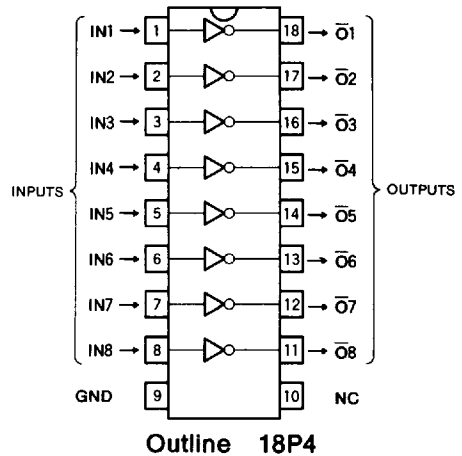
- High output sustaining voltage of 40V
- 50mA output sink current capability
- Wide operating temperature range ( $T_a = -20 \sim +75^\circ\text{C}$ )

**APPLICATION**

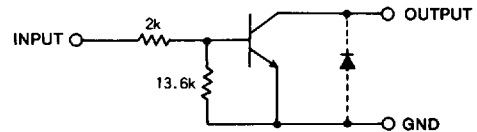
LED or incandescent display digit driver

**FUNCTION**

The M54513P is comprised of eight NPN drivers. Each input has a voltage divider by  $2\text{ k}\Omega$  and  $13.6\text{ k}\Omega$  resistors. All emitters and the substrate are connected together to pin 9. The open collector outputs are capable of sinking 50mA and will withstand 40V in the OFF state.

**PIN CONFIGURATION (TOP VIEW)**

NC : No connection

**CIRCUIT SCHEMATIC**

The diodes shown by broken line are parasite diodes and must not be used Unit :  $\Omega$

**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	$-0.5 \sim +40$	V
$I_C$	Collector current	Transistor ON	50	mA
$V_i$	Input voltage		10	V
$T_{Opr}$	Operating temperature		$-20 \sim +75$	$^\circ\text{C}$
$T_{stg}$	Storage temperature		$-55 \sim +125$	$^\circ\text{C}$

**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		40	V
$I_C$	Collector current per channel	0		20	mA
$V_{IH}$	"H" Input voltage	2		8	V
$V_{IL}$	"L" Input voltage	0		0.2	V

## 8-UNIT 50mA TRANSISTOR ARRAY

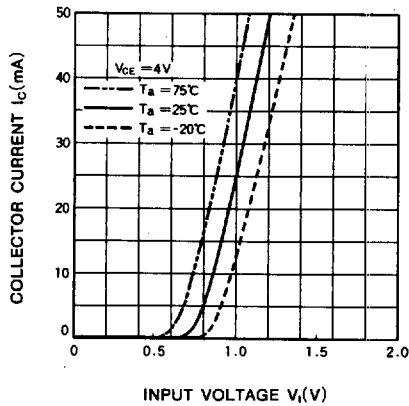
ELECTRICAL CHARACTERISTICS ( $T_a = -20 \sim +75^\circ\text{C}$ , unless otherwise noted)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ*	Max	
$I_{C(Leak)}$	Output leakage current	$V_{CE} = 40\text{V}$			50	$\mu\text{A}$
$V_{CE(sat)}$	Output saturation voltage	$V_i = 2\text{V}, I_C = 12\text{mA}$		30	100	mV
		$V_i = 2.5\text{V}, I_C = 30\text{mA}$		70	170	
$I_i$	Input current	$V_i = 2.5\text{V}$		0.85	1.7	mA
$h_{FE}$	DC forward current gain	$V_{CE} = 4\text{V}, I_C = 30\text{mA}, T_a = 25^\circ\text{C}$	80	200		—

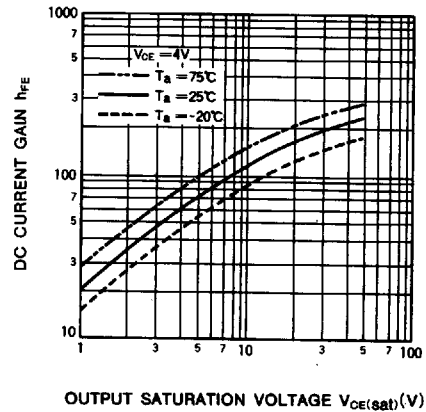
\* : A typical value at  $T_a = 25^\circ\text{C}$ .

## TYPICAL CHARACTERISTICS

OUTPUT CURRENT CHARACTERISTICS



DC CURRENT GAIN CHARACTERISTICS



OUTPUT CHARACTERISTICS

