

MITSUBISHI (DGTL LOGIC)

**M54661P****4-UNIT HIGH VOLTAGE 1.5A DARLINGTON TRANSISTOR ARRAY  
WITH CLAMP DIODE****DESCRIPTION**

The M54661P, 4-channel sink driver, consists of 4 PNP and 8 NPN transistors to form four high current gain driver pairs.

**FEATURES**

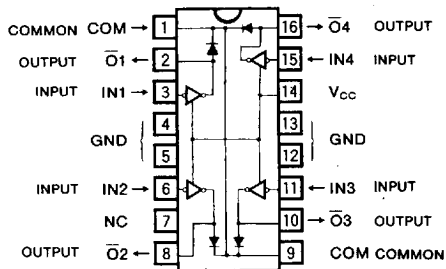
- High output sustaining voltage to 80V
- High output current to 1.5A
- Integral diodes for transient suppression
- NMOS Compatible input
- Wide operating temperature range ( $T_a = -20 \sim +75^\circ\text{C}$ )

**APPLICATION**

Relay and printer driver, LED or incandescent display digit driver

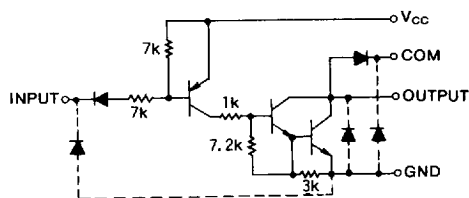
**FUNCTION**

The M54661P is comprised of four PNP invertors with  $7k\Omega$  series input resistors and NPN darlington sink drivers. Each output has an integral diode for inductive load transient suppression and the anodes of the diode connected to pins 1 and 9. The outputs are capable of sinking 1.5A and will withstand 80V 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 :  $\Omega$ **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	$-0.5 \sim +80$	V
$V_i$	Input voltage		$-0.5 \sim 30$	V
$I_C$	Collector current	Transistor ON	1.5	A
$V_R$	Clamp diode reverse voltage		80	V
$I_F$	Clamp diode forward current	Pulse width $\leq 10\text{ms}$ , Percent duty cycle $\leq 5\%$	1.5	A
		Pulse width $\leq 100\text{ms}$ , Percent duty cycle $\leq 5\%$	1.25	
$P_d$	Power dissipation	$T_a = 25^\circ\text{C}$	1.92	W
$T_{opr}$	Operating temperature		$-20 \sim +75$	$^\circ\text{C}$
$T_{stg}$	Storage temperature		$-55 \sim +125$	$^\circ\text{C}$

4-UNIT HIGH VOLTAGE 1.5A DARLINGTON TRANSISTOR ARRAY WITH CLAMP DIODE

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

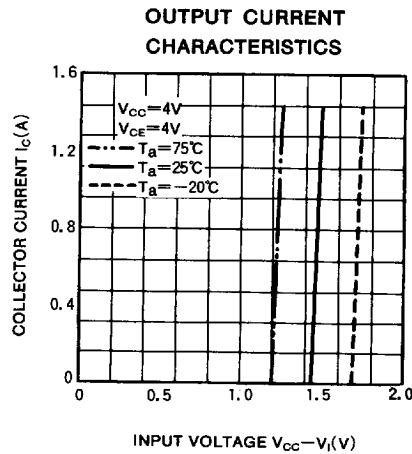
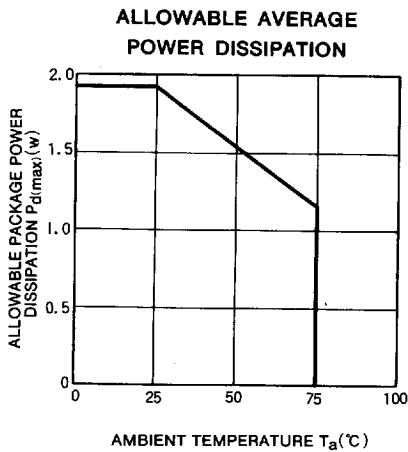
Symbol	Parameter		Limits			Unit
			Min	Typ	Max	
$V_{CC}$	Supply voltage		4	5	6	V
$V_O$	Output voltage		0		80	V
$I_C$	Collector current per channel	All units ON Percent duty cycle $\leq 4\%$	0		1.25	A
		All units ON Percent duty cycle $\leq 18\%$	0		0.7	
$V_{IH}$	"H" Input voltage	$I_{O(leak)} = 50\mu\text{A}$	$V_{CC} - 0.5$		$V_{CC}$	V
$V_{IL}$	"L" Input voltage	$I_C = 1.25\text{A}$	0		$V_{CC} - 3.5$	V

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

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ*	Max	
$V_{(BR)CEO}$	Output sustaining voltage	$I_{CEO} = 100\mu\text{A}$	80			V
$I_{CC}$	Supply current	$V_{CC} = 6\text{V}$ , $V_I = 0.5\text{V}$ (per channel)		4.6	7.5	mA
$V_{CE(sat)}$	Output saturation voltage	$V_{CC} = 4\text{V}$ $V_I = 0.5\text{V}$ $I_C = 1.25\text{A}$			2.2	V
		$I_C = 0.7\text{A}$			1.7	
$I_i$	Input current	$V_I = V_{CC} - 3.5\text{V}$			-0.6	mA
		$V_I = V_{CC} - 6\text{V}$			-0.95	
$V_R$	Clamp diode reverse voltage	$I_R = 100\mu\text{V}$	80			V
$V_F$	Clamp diode forward voltage	$I_F = 1.25\text{A}$			2.3	V
$h_{FE}$	DC forward current gain	$V_{CC} = 4\text{V}$ , $V_{CE} = 4\text{V}$ , $I_C = 1\text{A}$ , $T_a = 25^\circ\text{C}$	4000			—

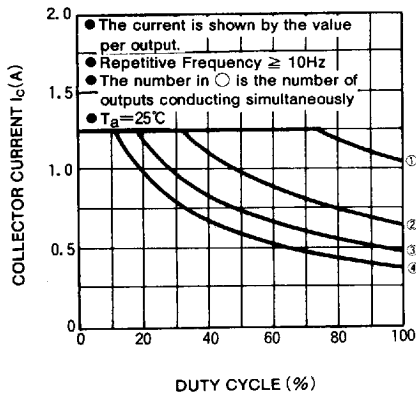
\* : A typical value is at  $T_a = 25^\circ\text{C}$ .

TYPICAL CHARACTERISTICS

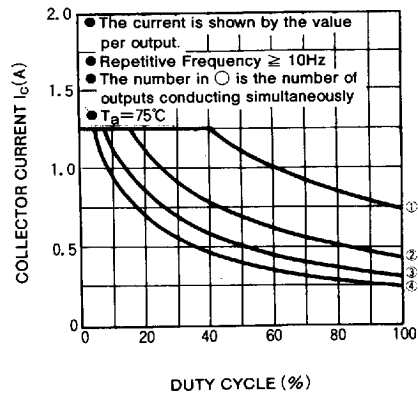


4-UNIT HIGH VOLTAGE 1.5A DARLINGTON TRANSISTOR ARRAY WITH CLAMP DIODE

ALLOWABLE COLLECTOR CURRENT AS A FUNCTION OF DUTY CYCLE



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DC CURRENT GAIN CHARACTERISTICS

