

MITSUBISHI (DGT L LOGIC)

M54527P**6-UNIT 150mA DARLINGTON TRANSISTOR ARRAY WITH CLAMP DIODE****DESCRIPTION**

The M54527P, 6-channel sink driver, consists of 12 NPN transistors connected to form high current gain driver pairs.

FEATURES

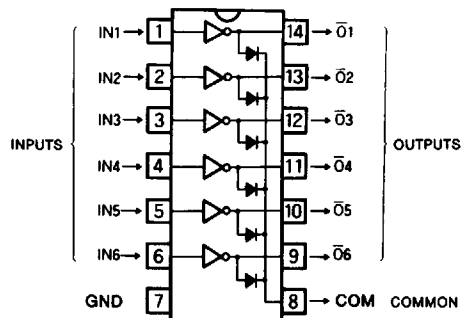
- High output sustaining voltage to 40V
- Output sink current to 150mA
- PMOS compatible input
- Integral diode for transient suppression
- Wide input voltage range from -40V to $+40\text{V}$
- Wide operating temperature range ($T_a = -20 \sim +75^\circ\text{C}$)

APPLICATION

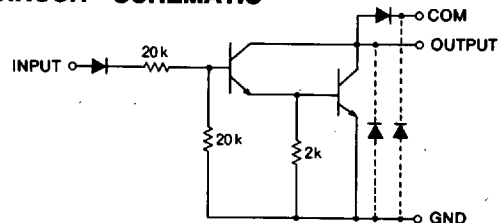
Relay and printer driver, LED or incandescent display digit driver, interfacing for standard MOS/BIPOLAR logics

FUNCTION

The M54527P is comprised of six darlington driver pairs. Each input has a diode and $20\text{k}\Omega$ resistor in series to allow a negative voltage input. Between pin 8 and each output, there are integral diodes for inductive load transient suppression. All emitters and the substrate are connected together to pin 7. The outputs are capable of sinking 150mA and will withstand 40V in the OFF state.

PIN CONFIGURATION (TOP VIEW)

Outline 14P4

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	$-0.5 \sim +40$	V
I_C	Collector current per channel	Transistor ON	150	mA
V_I	Input voltage		$-40 \sim +40$	V
$I_{F(D)}$	Clamp diode forward current		150	mA
$V_{R(D)}$	Clamp diode reverse voltage		$-0.5 \sim +40$	V
P_d	Power dissipation	$T_a = 25^\circ\text{C}$	1.47	W
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	Percent duty cycle less than 50%	0		150	mA
V_{IH}	"H" input voltage	$I_C = 150\text{mA}$	7		35	V
V_{IL}	"L" input voltage	$I_{oleak} = 50\mu\text{A}$	0		1	V

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6-UNIT 150mA DARLINGTON TRANSISTOR ARRAY WITH CLAMP DIODE

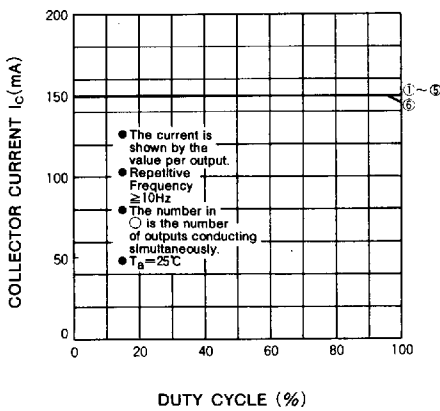
ELECTRICAL CHARACTERISTICS (T_a = -20~+75°C, unless otherwise noted)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ*	Max	
V _{(BR)CEO}	Output sustaining voltage	I _{CEO} = 100μA	40			V
V _{CE(sat)}	Output saturation voltage	V _I = 7V, I _C = 150mA		1.4	1.7	V
		V _I = 7V, I _C = 100mA		1.2	1.4	V
I _I	Input current	V _I = 18V		0.9	1.8	mA
		V _I = 35V		1.9	5	mA
I _R	Input leakage current	V _I = -35V			-20	μA
V _{F(D)}	Clamp diode forward voltage	I _{R(D)} = 150mA		1.15	1.6	V
I _{R(D)}	Clamp diode leakage current	V _{R(D)} = 40V			100	μA
h _{FE}	DC forward current gain	V _{CE} = 4V, I _C = 150mA, T _a = 25°C	800	2500		—

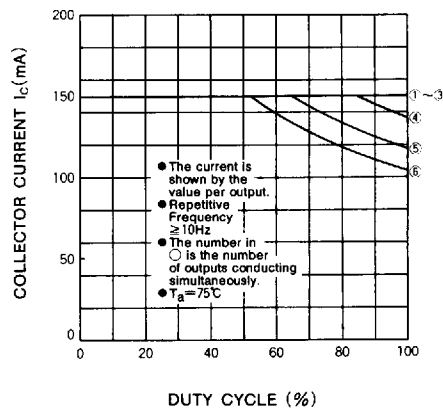
* : Typical values are at T_a = 25°C.

TYPICAL CHARACTERISTICS

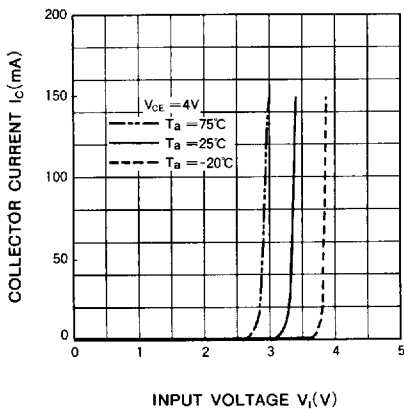
ALLOWABLE COLLECTOR CURRENT AS A FUNCTION OF DUTY CYCLE



ALLOWABLE COLLECTOR CURRENT AS A FUNCTION OF DUTY CYCLE



OUTPUT CURRENT CHARACTERISTICS



DC CURRENT GAIN CHARACTERISTICS

