

M54566DP

7-UNIT 400mA DARLINGTON TRANSISTOR ARRAY

DESCRIPTION

M54566DP is seven-circuit collector current sink type darlington transistor arrays. The circuits are made of PNP and NPN transistors. Both the semiconductor integrated circuits perform high-current driving with extremely low input-current supply.

FEATURES

- High breakdown voltage ($BV_{CE0} \geq 50V$)
- High-current driving ($I_c(\max) = 400mA$)
- Active L-level input

APPLICATIONS

Interfaces between microcomputers and high-voltage, high-current drive systems, drives of relays and printers, and MOS-bipolar logic IC interfaces.

FUNCTION

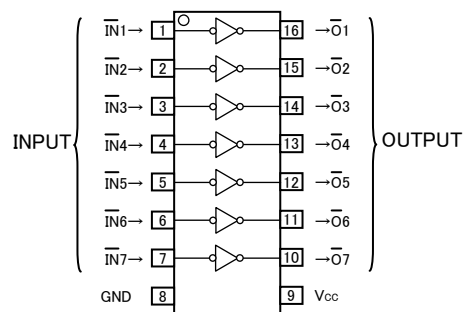
The M54566 is produced by adding PNP transistors to M54522 inputs. Seven circuits having active L-level inputs are provided.

Resistance of $8k\Omega$ is provided between each input and PNP transistor base. The input emitters are connected to V_{cc} pin (pin 9). Output transistor emitters are all connected to the GND pin (pin 8).

Collector current is 400mA maximum. Collector-emitter supply voltage is 50V maximum.

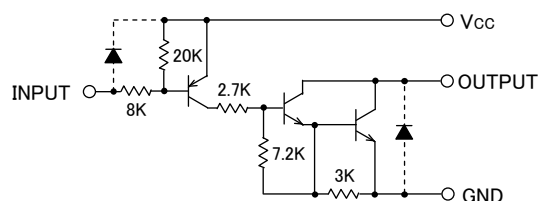
These ICs are optimal for drivers that are driven with N-MOSIC output and absorb collector current.

PIN CONFIGURATION



Package type 16P2X-B

CIRCUIT DIAGRAM



The seven circuits share the V_{cc} and GND. The diode, indicated with the dotted line, is parasitic, and cannot be used.

Unit: Ω

ABSOLUTE MAXIMUM RATINGS (Unless otherwise noted, $T_a = -20 \sim +75^\circ C$)

Symbol	Parameter	Conditions	Ratings	Unit
V_{cc}	Supply voltage		10	V
V_{CE0}	Collector-emitter voltage	Output, H	- 0.5 ~ + 50	V
I_c	Collector current	Current per circuit output, L	400	mA
V_i	Input voltage		- 0.5 ~ V_{cc}	V
P_d	Power dissipation	$T_a = 25^\circ C$, when mounted on board	1.00	W
T_{opr}	Operating temperature		- 20 ~ + 75	$^\circ C$
T_{stg}	Storage temperature		- 55 ~ + 125	$^\circ C$

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Limits			Unit	
		min	typ	max		
V _{CC}	Supply voltage	4	5	8	V	
V _O	Output voltage	0	—	50	V	
I _C	Collector current (Current per 1 circuit when 7 circuits are coming on simultaneously) V _{CC} =5V	Duty Cycle no more than 6%	0	—	350	mA
		Duty Cycle no more than 20%	0	—	200	
V _{IH}	“H” input voltage	V _{CC} -0.2	—	V _{CC}	V	
V _{IL}	“L” input voltage	0	—	V _{CC} -3	V	

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

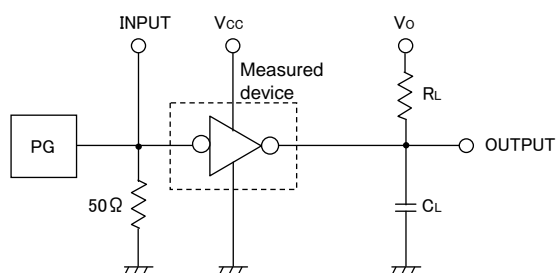
Symbol	Parameter	Test conditions	Limits			Unit
			min	typ*	max	
V _{(BR)CEO}	Collector-emitter breakdown voltage	I _{CEO} = 100 μA	50	—	—	V
V _{CE(sat)}	Collector-emitter saturation voltage	V _I = V _{CC} -3V	—	1.1	2.2	V
		I _C = 350mA I _C = 200mA	—	0.9	1.6	
I _I	Input current	V _I = V _{CC} -3.5V	—	-0.3	-0.58	mA
I _{CC}	Supply current (one circuit coming on)	V _{CC} = 5V, V _I = V _{CC} -3.5V	—	1.4	3.0	mA
h _{FE}	DC amplification factor	V _{CE} = 4V, V _{CC} = 5V, I _C = 350mA, T _a = 25°C	2000	10000	—	—

*: The typical values are those measured under ambient temperature (T_a) of 25°C. There is no guarantee that these values are obtained under any conditions.

SWITCHING CHARACTERISTICS (Unless otherwise noted, T_a = 25°C)

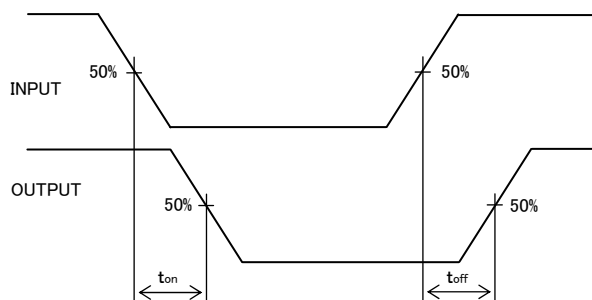
Symbol	Parameter	Test conditions	Limits			Unit
			min	typ	max	
t _{on}	Turn-on time	C _L = 15pF (note 1)	—	95	—	ns
t _{off}	Turn-off time		—	2500	—	ns

NOTE 1 TEST CIRCUIT

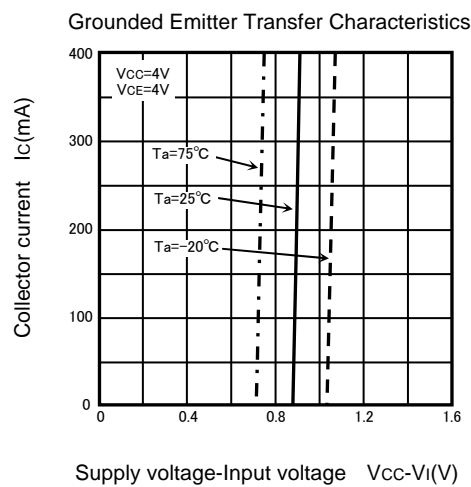
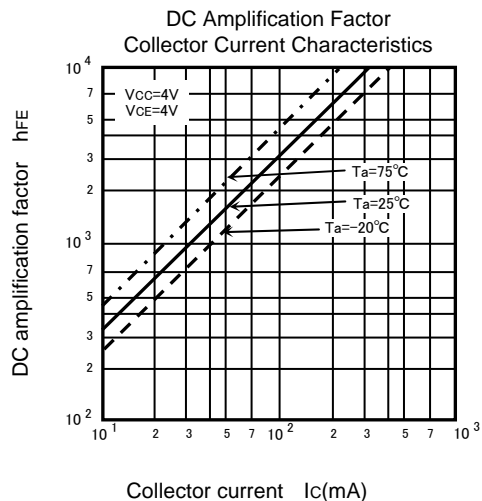
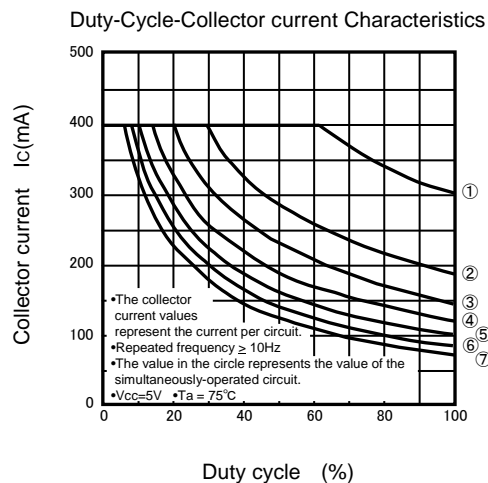
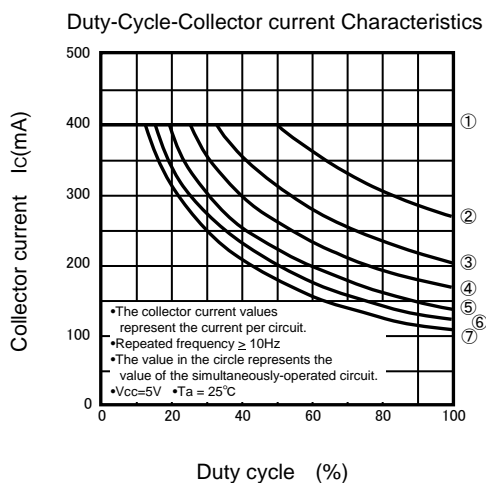
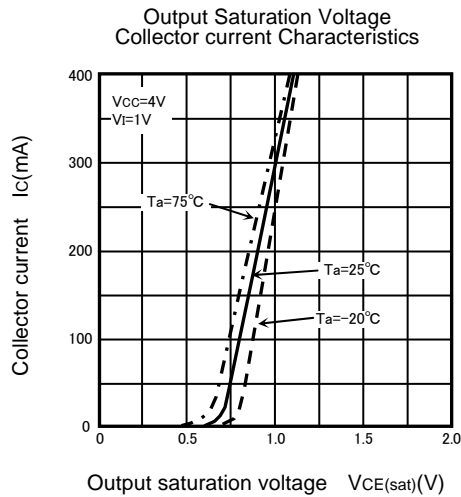
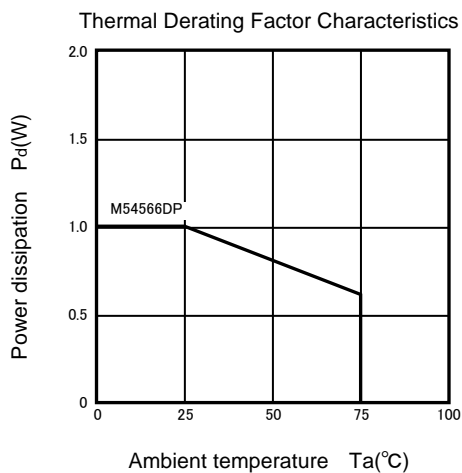


- (1) Pulse generator (PG) characteristics: PRR = 1kHz, t_w = 10 μs, t_r = 6ns, t_f = 6ns, Z_o = 50 Ω, V_I = 1 to 4V
- (2) Input-output conditions : R_L = 30 Ω, V_O = 10V, V_{CC} = 4V
- (3) Electrostatic capacity C_L includes floating capacitance at connections and input capacitance at probes

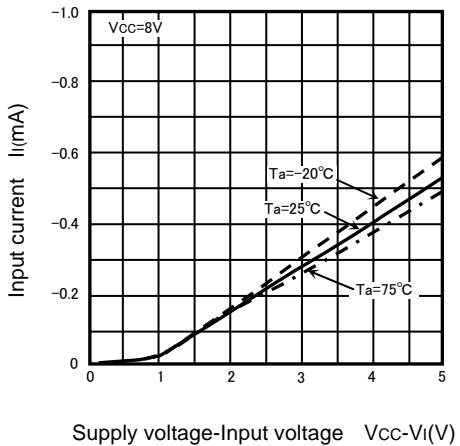
TIMING DIAGRAM



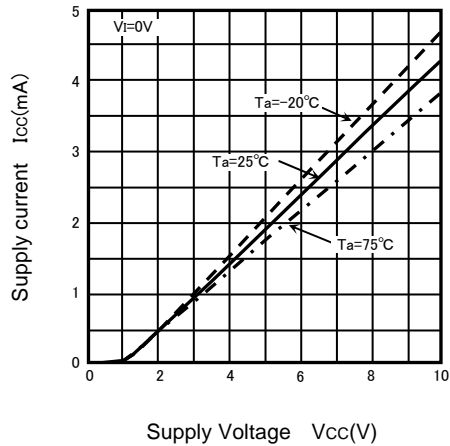
TYPICAL CHARACTERISTICS



Input Characteristics



Supply Current Characteristics



PRELIMINARY

7-UNIT 400mA DARLINGTON TRANSISTOR ARRAY

PACKAGE OUTLINE

16P2X-B

Plastic 16pin 225mil SOP

