

POWEREX

MITSUBISHI SEMICONDUCTOR <TRANSISTOR ARRAY>

M54566P/FP

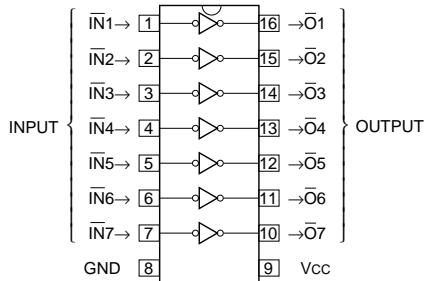
7-UNIT 400mA DARLINGTON TRANSISTOR ARRAY

DESCRIPTION

M54566P and M54566FP are seven-circuit collector-current-synchronized 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 ($BV_{CEO} \geq 50V$)
- High-current driving ($I_c(\max) = 400mA$)
- Active L-level input
- Wide operating temperature range ($T_a = -20$ to $+75^{\circ}C$)

PIN CONFIGURATION16P4(P)
Package type 16P2N-A(FP)**APPLICATION**

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

FUNCTION

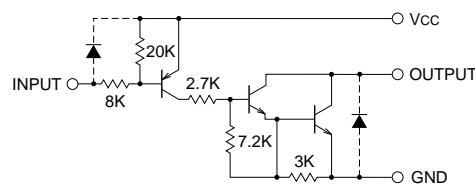
The M54566 is produced by adding PNP transistors to M54222 inputs. Seven circuits having active L-level inputs are provided.

Resistance of $8k\Omega$ is provided between each input and PNP transistor base. The input emitters are connected to Vcc 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-MOS IC output and absorb collector current.

The M54566FP is enclosed in a molded small flat package, enabling space-saving design.

CIRCUIT DIAGRAM

The seven circuits share the Vcc and GND.

The diode, indicated with the dotted line, is parasitic, and cannot be used.

Unit : Ω **ABSOLUTE MAXIMUM RATINGS** (Unless otherwise noted, $T_a = -20$ ~ $+75^{\circ}C$)

Symbol	Parameter	Conditions	Ratings	Unit
Vcc	Supply voltage		10	V
VCEO	Collector-emitter voltage	Output, H	-0.5 ~ +50	V
Ic	Collector current	Current per circuit output, L	400	mA
VI	Input voltage		-0.5 ~ Vcc	V
Pd	Power dissipation	Ta = 25°C, when mounted on board	1.47(P)/1.00(FP)	W
Topr	Operating temperature		-20 ~ +75	°C
Tstg	Storage temperature		-55 ~ +125	°C

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RECOMMENDED OPERATING CONDITIONS (Unless otherwise noted, Ta = -20 ~ +75°C)

Symbol	Parameter	Limits			Unit
		min	typ	max	
Vcc	Supply voltage	4	5	8	V
Vo	Output voltage	0	—	50	V
IC	Collector current (Current per 1 circuit when 7 circuits are coming on simultaneously)	Vcc = 5V, Duty Cycle P : no more than 10% FP : no more than 6%	0	—	350
		Vcc = 5V, Duty Cycle P : no more than 30% FP : no more than 20%	0	—	200
VIH	"H" input voltage	Vcc-0.2	—	Vcc	V
VIL	"L" input voltage	0	—	Vcc-3	V

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

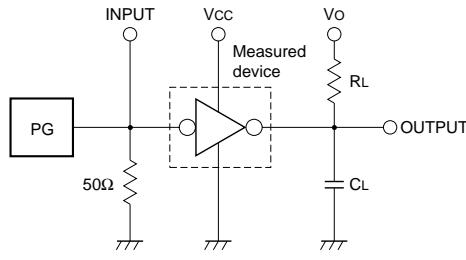
Symbol	Parameter	Test conditions	Limits			Unit
			min	typ*	max	
V (BR) CEO	Collector-emitter breakdown voltage	ICEO = 100µA	50	—	—	V
VCE (sat)	Collector-emitter saturation voltage	VI = Vcc-3V, IC = 350mA	—	1.1	2.2	V
		VI = Vcc-3V, IC = 200mA	—	0.9	1.6	
Ii	Input current	VI = Vcc-3.5V	—	-0.38	-0.58	mA
ICC	Supply current (one circuit coming on)	VCC = 5V, VI = Vcc-3.5V	—	1.4	3.0	mA
hFE	DC amplification factor	VCE = 4V, Vcc = 5V, IC = 350mA, Ta = 25°C	2000	10000	—	—

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

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

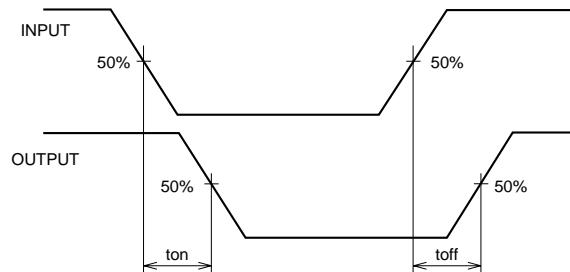
Symbol	Parameter	Test conditions	Limits			Unit
			min	typ	max	
ton	Turn-on time	CL = 15pF (note 1)	—	95	—	ns
toff	Turn-off time		—	2500	—	ns

NOTE 1 TEST CIRCUIT



- (1) Pulse generator (PG) characteristics : PRR = 1kHz, tw = 10µs, tr = 6ns, tf = 6ns, ZO = 50Ω, VI = 1 to 4V
- (2) Input-output conditions : RL = 30Ω, Vo = 10V, Vcc = 4V
- (3) Electrostatic capacity CL includes floating capacitance at connections and input capacitance at probes

TIMING DIAGRAM



TYPICAL CHARACTERISTICS

