

M54537P/FP

7-UNIT 350mA TRANSISTOR ARRAY

DESCRIPTION

M54537P and M54537FP are seven-circuit transistor arrays. The circuits are made of NPN transistors. Both the semiconductor integrated circuits perform high-current driving with extremely low input-current supply.

FEATURES

- Medium breakdown voltage ($BV_{CEO} \geq 20V$)
- High-current driving ($I_{c(max)} = 350mA$)
- Driving available with PMOS IC output
- Low collector-emitter saturation voltage ($V_{CE(sat)}$ is 0.5V when I_c is 250mA)
- Wide operating temperature range ($T_a = -20$ to $+75^\circ C$)

APPLICATION

Drives of relays and printers, digit drives of indication elements (LEDs and lamps), and MOS-bipolar logic IC interfaces

FUNCTION

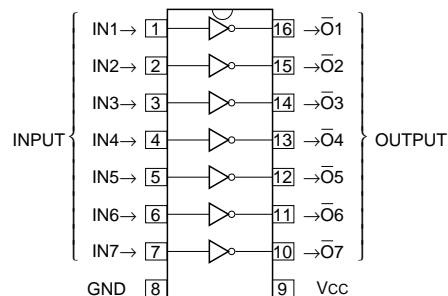
The M54537P and M54537FP each have seven circuits consisting of NPN transistors. Resistance of $2k\Omega$ is connected to the inputs. The output transistor emitters are connected to the GND pin (pin 8). V_{CC} is connected to pin 9.

The collector current is 350 mA maximum. Collector-emitter supply voltage is 20V maximum.

The collector-emitter saturation voltage is as low as 0.5 V or even lower, when I_c is 250mA.

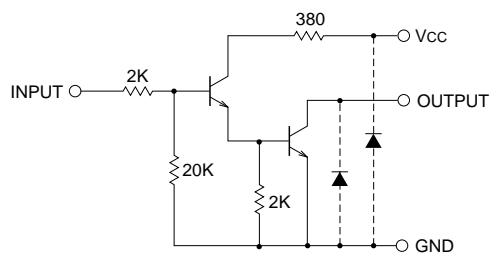
The M54537FP is enclosed in a molded small flat package, enabling space-saving design.

PIN CONFIGURATION



16P4(P)
Package type 16P2N-A(FP)

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_{CEO}	Collector-emitter voltage	Output, H	$-0.5 \sim +20$	V
I_C	Collector current	Current per circuit output, L	350	mA
V_i	Input voltage		$-0.5 \sim +10$	V
P_d	Power dissipation	$T_a = 25^\circ C$, when mounted on board	1.47(P)/1.00(FP)	W
T_{opr}	Operating temperature		$-20 \sim +75$	$^\circ C$
T_{stg}	Storage temperature		$-55 \sim +125$	$^\circ C$

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

Symbol	Parameter	Limits			Unit	
		min	typ	max		
Vcc	Supply voltage	3	—	8	V	
Vo	Output voltage	0	—	20	V	
Ic	Collector current (Current per 1 circuit when 7 circuits are coming on simultaneously)	Vcc = 6.5V, Duty Cycle P : no more than 40% FP : no more than 25%	0	—	250	mA
		Vcc = 6.5V, Duty Cycle P : no more than 60% FP : no more than 40%	0	—	150	
VIH	"H" input voltage	3	—	6	V	
VIL	"L" input voltage	0	—	0.3	V	

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

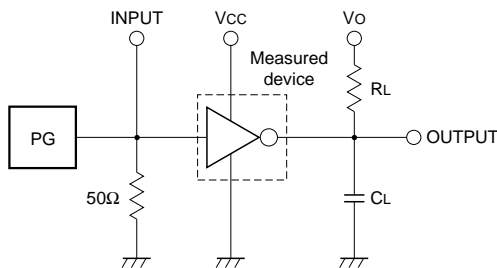
Symbol	Parameter	Test conditions	Limits			Unit
			min	typ*	max	
V (BR) CEO	Collector-emitter breakdown voltage	Vcc = 8V, ICEO = 100µA	20	—	—	V
VCE (sat)	Collector-emitter saturation voltage	Vi = 3V, Vcc = 6.5V, Ic = 250mA	—	0.28	0.5	V
		Vi = 3V, Vcc = 3V, Ic = 150mA	—	0.17	0.35	
Ii	Input current	Vcc = 8V, Vi = 3.2V	—	0.7	1.5	mA
		Vcc = 8V, Vi = 8V	—	2.9	5.6	
ICC	Supply current (one circuit coming on)	Vcc = 8V, Vi = 3.2V	—	17	27	mA
hFE	DC amplification factor	VCE = 4V, Vcc = 6.5V, Ic = 250mA, Ta = 25°C	1000	7000	—	—

* : 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)

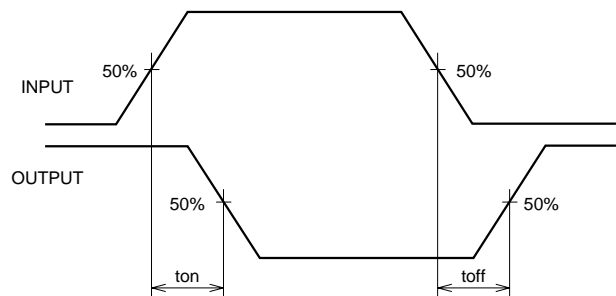
Symbol	Parameter	Test conditions	Limits			Unit
			min	typ	max	
ton	Turn-on time	CL = 15pF (note 1)	—	15	—	ns
toff	Turn-off time		—	840	—	ns

NOTE 1 TEST CIRCUIT



- (1) Pulse generator (PG) characteristics : PRR = 1kHz,
tw = 10µs, tr = 6ns, tf = 6ns, ZO = 50Ω
VP = 3VP-P
- (2) Input-output conditions : RL = 40Ω, Vo = 10V, Vcc = 6.5V
- (3) Electrostatic capacity CL includes floating capacitance at connections and input capacitance at probes

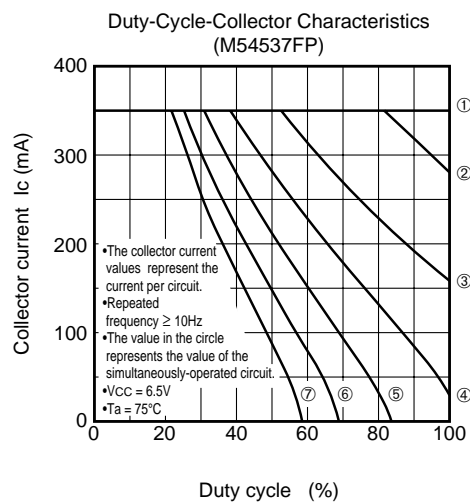
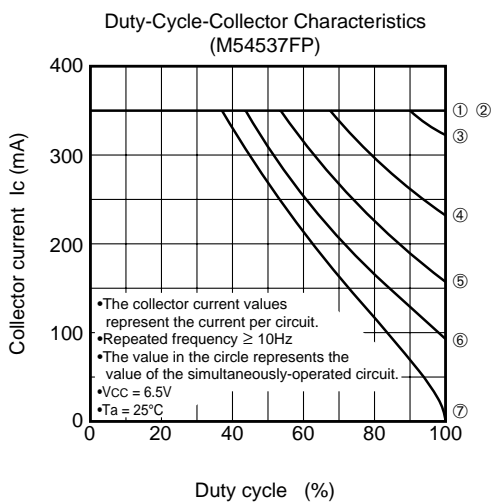
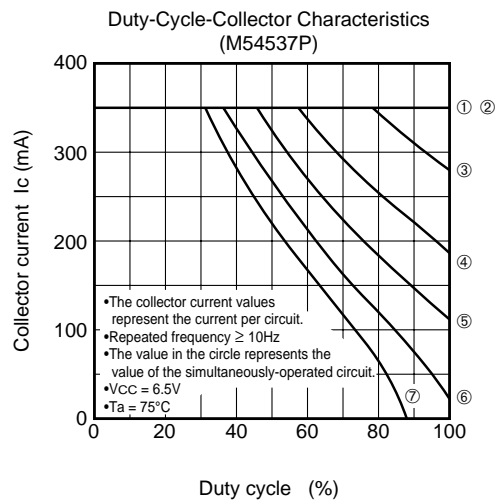
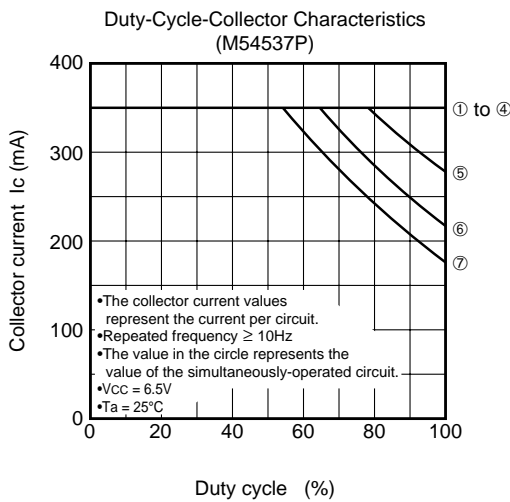
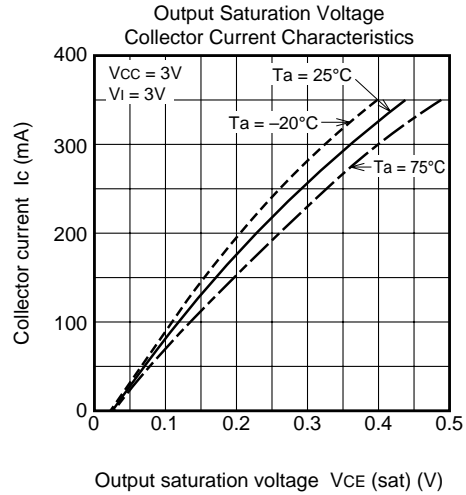
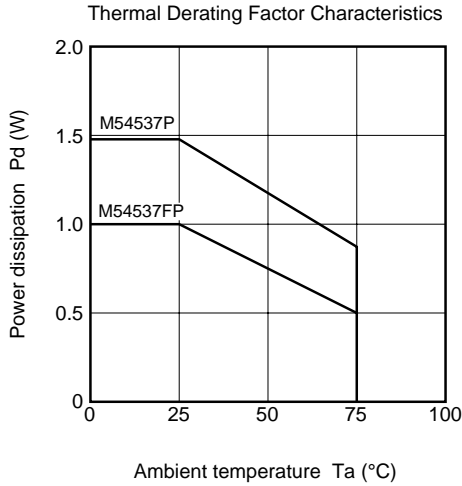
TIMING DIAGRAM



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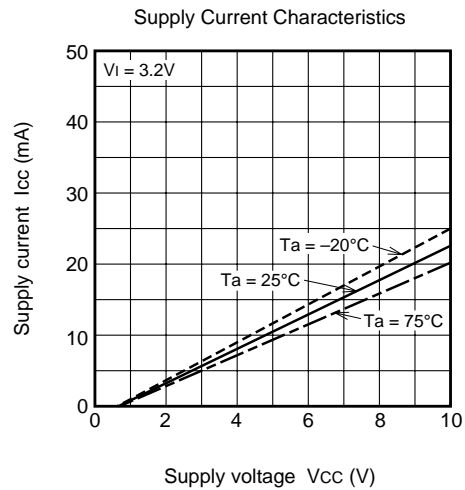
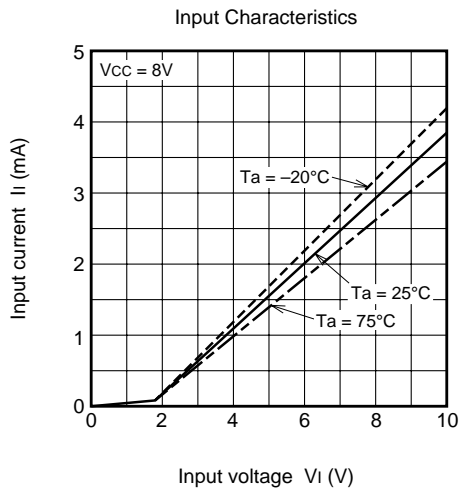
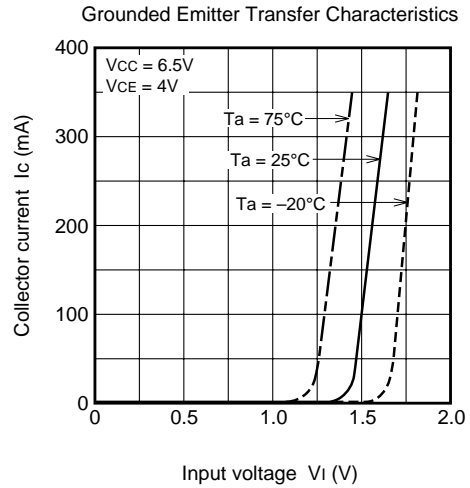
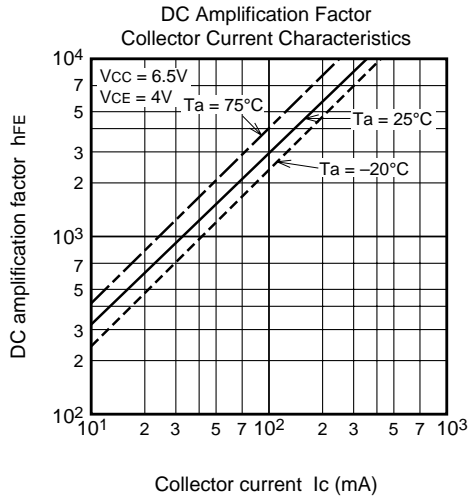
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TYPICAL CHARACTERISTICS



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