PRELIMINARY
Notice: This is not a final specification.
Some parametric limits are subject to change.

M63805P/FP/KP

8-UNIT 300mA TRANSISTOR ARRAY

DESCRIPTION

M63805P/FP/KP are eight-circuit Single 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

- Three package configurations (P, FP, and KP)
- Medium breakdown voltage ($BV_{CEO} \geq 35V$)
- Synchronizing current ($I_{C(max)}$ = 300mA)
- With zener diodes
- Low output saturation voltage
- Wide operating temperature range (Ta = –40 to +85°C)

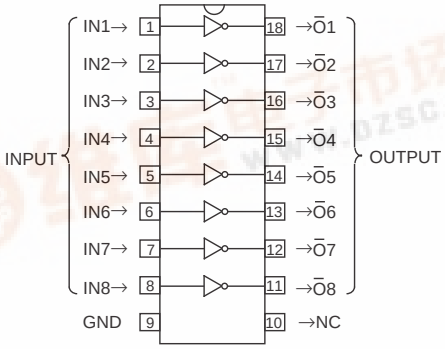
APPLICATION

Driving of digit drives of indication elements (LEDs and lamps) with small signals

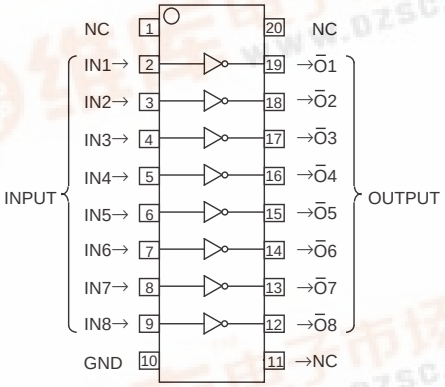
FUNCTION

The M63805P/FP/KP each have eight circuits consisting of NPN transistor. The transistor emitters are all connected to the GND pin. The transistors allow synchronous flow of 300mA collector current. A maximum of 35V voltage can be applied between the collector and emitter.

PIN CONFIGURATION



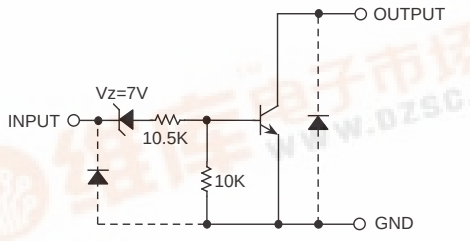
Package type 18P4G(P)



NC : No connection

Package type 20P2N-A(FP)
20P2E-A(KP)

CIRCUIT DIAGRAM



The eight circuits share the GND.

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

Unit: Ω

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M63805P/FP/KP

8-UNIT 300mA TRANSISTOR ARRAY

ABSOLUTE MAXIMUM RATINGS (Unless otherwise noted, Ta = –40 ~ +85°C)

Symbol	Parameter	Conditions		Ratings	Unit
V_{CEO}	Collector-emitter voltage	Output, H		–0.5 ~ +35	V
I_C	Collector current	Current per circuit output, L		300	mA
V_I	Input voltage			–0.5 ~ +35	V
P_d	Power dissipation	Ta = 25°C, when mounted on board	M63805P	1.79	W
			M63805FP	1.10	
			M63805KP	0.68	
T_{opr}	Operating temperature			–40 ~ +85	°C
T_{stg}	Storage temperature			–55 ~ +125	°C

RECOMMENDED OPERATING CONDITIONS (Unless otherwise noted, Ta = –40 ~ +85°C)

Symbol	Parameter		Test conditions	Limits			Unit
				min	typ	max	
V_O	Output voltage			0	—	35	V
I_C	Collector current (Current per 1 circuit when 8 circuits are coming on simultaneously)	M63805P	Duty Cycle no more than 50%	0	—	250	mA
			Duty Cycle no more than 100%	0	—	170	
		M63805FP	Duty Cycle no more than 30%	0	—	250	
			Duty Cycle no more than 100%	0	—	130	
		M63805KP	Duty Cycle no more than 12%	0	—	250	
			Duty Cycle no more than 100%	0	—	100	
V_{IN}	Input voltage			0	—	30	V

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

Symbol	Parameter	Test conditions	Limits			Unit
			min	typ	max	
$V_{(BR)CEO}$	Collector-emitter breakdown voltage	I_{CEO} = 10μA	35	—	—	V
$V_{CE(sat)}$	Collector-emitter saturation voltage	I_{IN} = 1mA, I_C = 10mA	—	—	0.2	V
		I_{IN} = 2mA, I_C = 150mA	—	—	0.8	
$V_{IN(on)}$	"On" input voltage	I_{IN} = 1mA, I_C = 10mA	13	19	23	V
h_{FE}	DC amplification factor	V_{CE} = 10V, I_C = 10mA	50	—	—	—

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

Symbol	Parameter	Test conditions	Limits			Unit
			min	typ	max	
t_{on}	Turn-on time	C_L = 15pF (note 1)	—	140	—	ns
t_{off}	Turn-off time		—	240	—	ns

PRELIMINARY
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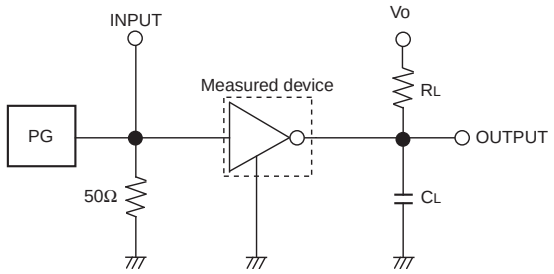
M63805P/FP/KP

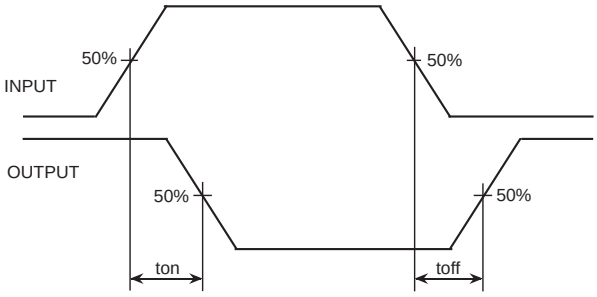
8-UNIT 300mA TRANSISTOR ARRAY

NOTE 1 TEST CIRCUIT



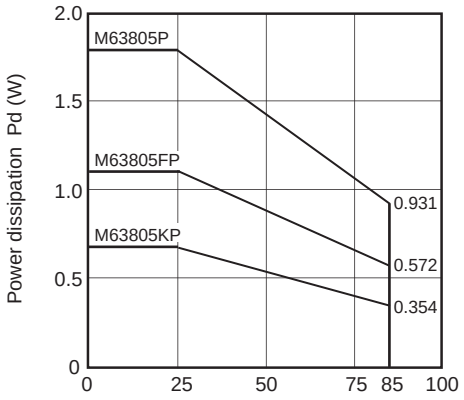
(1)Pulse generator (PG) characteristics : PRR = 1kHz,
tw = 10µs, tr = 6ns, tf = 6ns, Zo = 50Ω, V_{IH} = 18V
(2)Input-output conditions : R_L = 220Ω, Vo = 35V
(3)Electrostatic capacity C_L includes floating capacitance at connections and input capacitance at probes

TIMING DIAGRAM

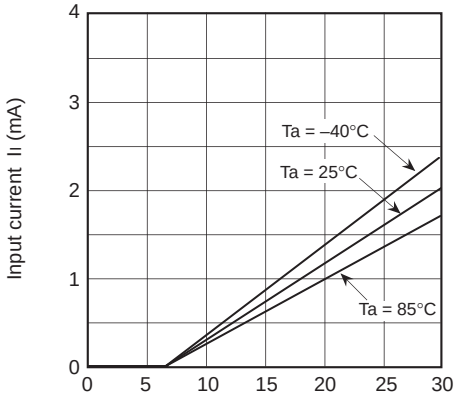


TYPICAL CHARACTERISTICS

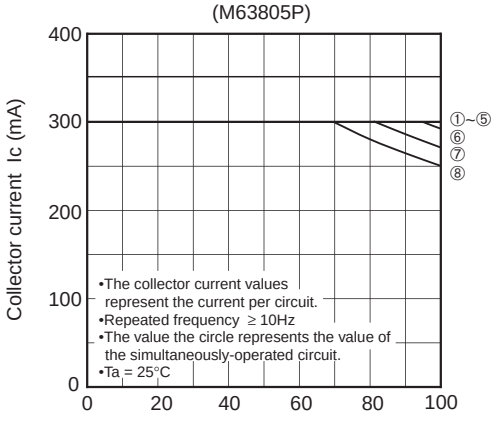
Thermal Derating Factor Characteristics



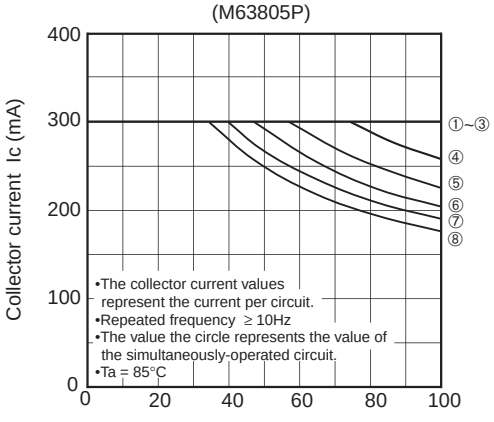
Input Characteristics



Duty Cycle-Collector Characteristics
(M63805P)



Duty Cycle-Collector Characteristics
(M63805P)



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PRELIMINARY
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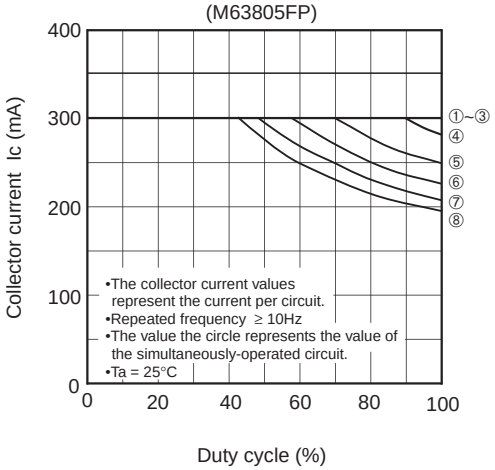
M63805P/FP/KP

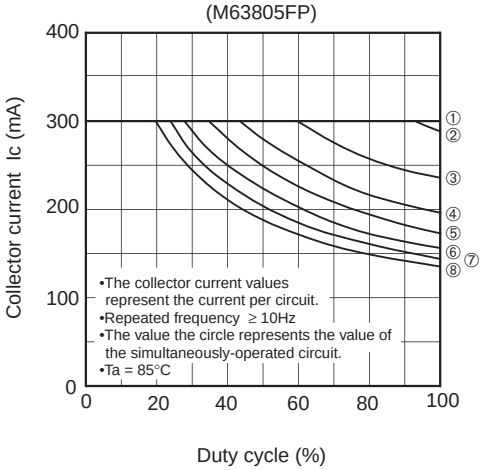
8-UNIT 300mA TRANSISTOR ARRAY

Duty Cycle-Collector Characteristics
(M63805FP)



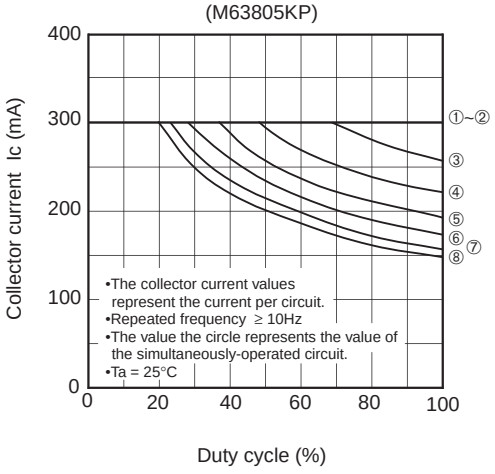
Duty cycle (%)

Duty Cycle-Collector Characteristics
(M63805FP)



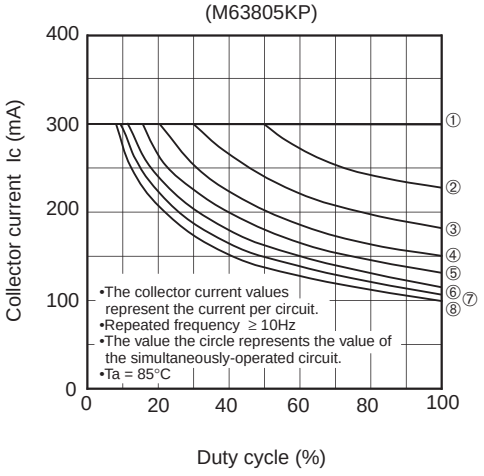
Duty cycle (%)

Duty Cycle-Collector Characteristics
(M63805KP)



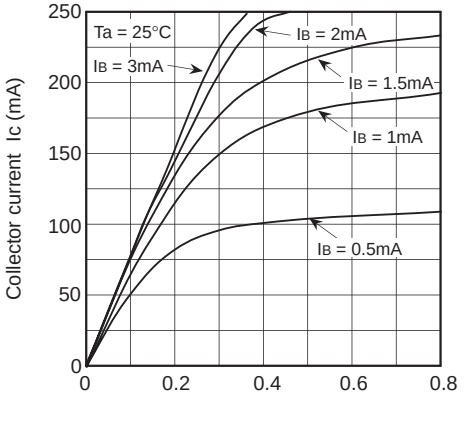
Duty cycle (%)

Duty Cycle-Collector Characteristics
(M63805KP)



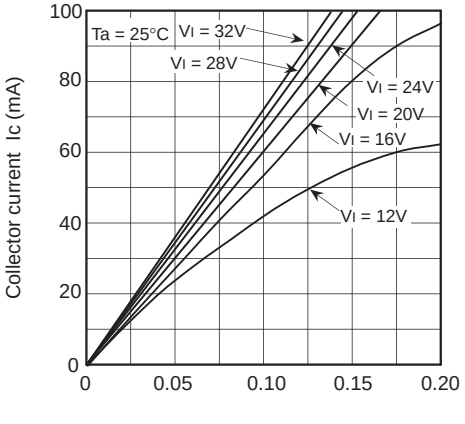
Duty cycle (%)

Output Saturation Voltage
Collector Current Characteristics



Output saturation voltage $V_{CE(sat)}$ (V)

Output Saturation Voltage
Collector Current Characteristics



Output saturation voltage $V_{CE(sat)}$ (V)

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PRELIMINARY
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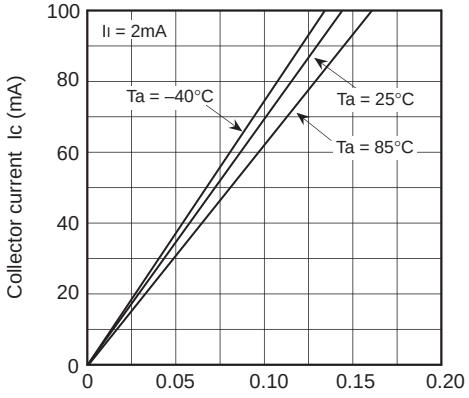
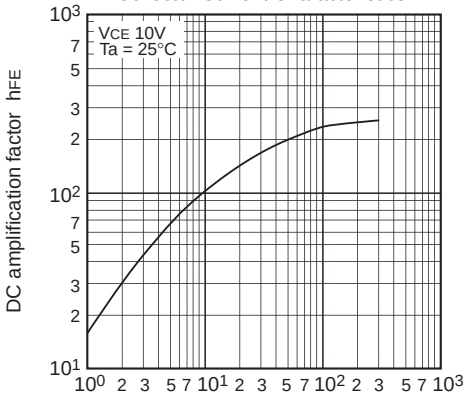
M63805P/FP/KP

8-UNIT 300mA TRANSISTOR ARRAY

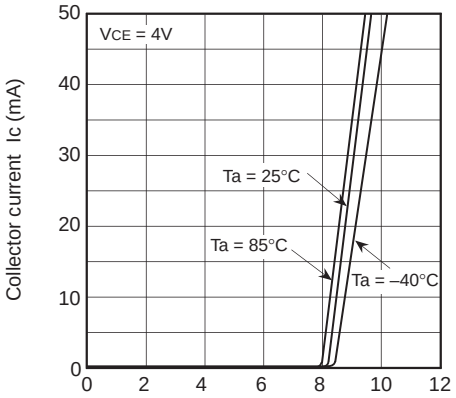
Output Saturation Voltage
Collector Current Characteristics



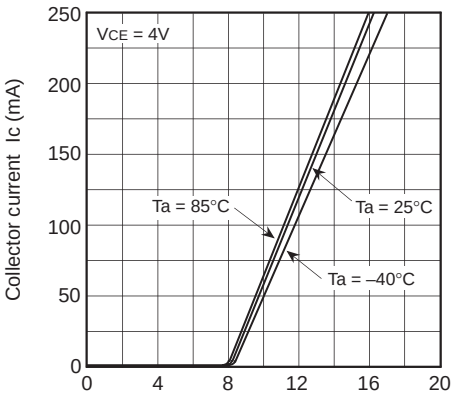
DC Amplification Factor
Collector Current Characteristics



Grounded Emitter Transfer Characteristics



Grounded Emitter Transfer Characteristics



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