

Power management (dual digital transistors)

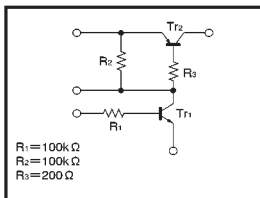
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FMQ2

●Features

- 1) Two digital transistors in a SMT package.
- 2) Up to 500 mA can be driven.
- 3) Low $V_{CE(sat)}$ of drive transistors for low power dissipation.

●Circuit schematic



●Package, marking, and packaging specifications

Part No.	FMQ2
Package	SMT5
Marking	Q2
Code	T148
Basic ordering unit (pieces)	3000

●Electrical characteristics ($T_a = 25^\circ\text{C}$)

Tr1

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-emitter breakdown voltage	BV_{CEO}	30	—	—	V	$I_C = 1\text{mA}$
Collector cutoff current	I_{CBO}	—	—	0.5	μA	$V_{CB} = 20\text{V}$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	0.3	V	$I_C = 1\text{mA}$, $I_E = 0.1\text{mA}$
DC current transfer ratio	h_{FE}	270	—	—	—	$V_{CE} = 2\text{V}$, $I_C = 1\text{mA}$
Transition frequency	f_T	—	250	—	MHz	$V_{CE} = 5\text{V}$, $I_E = 5\text{mA}$, $f = 50\text{MHz}$ *

*Transition frequency of the device.

Tr2

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-emitter breakdown voltage	BV_{CEO}	—30	—	—	V	$I_C = -1\text{mA}$
Collector cutoff current	I_{CBO}	—	—	—0.5	μA	$V_{CB} = -20\text{V}$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	—0.3	V	$I_C = -100\text{mA}$, $I_E = -10\text{mA}$
DC current transfer ratio	h_{FE}	120	—	—	—	$V_{CE} = -2\text{V}$, $I_C = -100\text{mA}$
Transition frequency	f_T	—	200	—	MHz	$V_{CE} = -5\text{V}$, $I_E = 50\text{mA}$, $f = 50\text{MHz}$ *

*Transition frequency of the device.

Resistor values

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Resistor 1	R_1	70	100	130	$k\Omega$	—
Resistor 2	R_2	70	100	130	$k\Omega$	—
Resistor 3	R_3	140	200	260	Ω	—

●Absolute maximum ratings ($T_a = 25^\circ\text{C}$)

DTTr1

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	40	V
Collector-emitter voltage	V_{CEO}	30	V
Emitter-base voltage	V_{EBO}	5	V
Collector current	I_C	30	mA

DTTr2

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	—40	V
Collector-emitter voltage	V_{CEO}	—30	V
Emitter-base voltage	V_{EBO}	—5	V
Collector current	I_C	—500	mA

Total

Parameter	Symbol	Limits	Unit
Power dissipation	P_d	300 (TOTAL)	mW *
Junction temperature	T_J	150	V
Storage temperature	T_{stg}	—55~+150	V

* 200mW per element must not be exceeded.