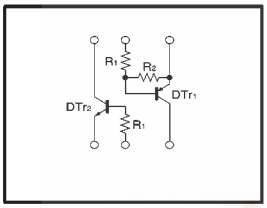
Power management (dual digital transistors)

IMD10A

●Features

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

●Circuit diagram



●Package, marking, and packaging specifications

Part No.	IMD10A
Package	SMT6
Marking	D10
Code	T108
Basic ordering unit (pieces)	3000

●Absolute maximum ratings (Ta=25℃)

DTr1

Parameter	Symbol	Limits	Unit
Supply voltage	V_{CC}	−50	V
Input voltage	V_{IN}	−5～+5	V
Collector current	I_C	−500	mA

DTr2

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	50	V
Collector-emitter voltage	V_{CEO}	50	V
Emitter-base voltage	V_{EBO}	5	V
Collector current	I_C	100	mA

Total

Parameter	Symbol	Limits	Unit	
Power dissipation	Pd	300 (TOTAL)	mW	*
Storage temperature	Tstg	−55～+150	℃	

* 200mW per element must not be exceeded.

●Electrical characteristics (Ta=25℃)

DTr1

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$	—	—	−0.3	V	V_{CC}=−5V , I_O=−100 μA
	$V_{I(on)}$	−1.5	—	—		V_O=−0.3V , I_O=−100mA
Output voltage	$V_{O(on)}$	—	−0.1	−0.3	V	I_O=−100mA , I_I=−5mA
Input current	I_I	—	—	−25	mA	V_I=−2V
Output current	$I_{O(off)}$	—	—	−0.5	μA	V_{CC}=−50V , V_I=0V
DC current gain	G_I	68	—	—	—	I_O=−100mA , V_O=−5V
Transition frequency	f_T	—	200	—	MHz	V_{CE}=−10V , I_E=50mA , f=100MHz *
Input resistance	R_1	70	100	130	Ω	—
Resistance ratio	R_2/R_1	80	100	120	—	—

*Transition frequency of the device.

DTr2

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	50	—	—	V	I_C=50 μA
Collector-emitter breakdown voltage	BV_{CEO}	50	—	—	V	I_C=1mA
Emitter-base breakdown voltage	BV_{EBO}	5	—	—	V	I_E=50 μA
Collector cutoff current	I_{CBO}	—	—	0.5	μA	V_{CB}=50V
Emitter cutoff current	I_{EBO}	—	—	0.5	μA	V_{EB}=4V
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	0.3	V	I_C=10mA , I_B=1mA
DC current transfer ratio	h_{FE}	100	250	600	—	V_{CE}=5V , I_C=1mA
Transition frequency	f_T	—	250	—	MHz	V_{CE}=10V , I_E=−5mA , f=100MHz *
Input resistance	R_1	7	10	13	kΩ	—

* Transition frequency of the device.