

Power management (dual digital transistors)

IMD16A

●Features

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

●Package, marking, and packaging specifications

Part No.	IMD16A
Package	SMT6
Marking	D16
Code	T108
Basic ordering unit (pieces)	3000

●Absolute maximum ratings (Ta=25°C)

DTr₁ (PNP)

Parameter	Symbol	Limits	Unit
Supply voltage	V_{CC}	-50	V
Input voltage	V_{IN}	-12	V
		5	
Output current	I_C	-500	mA

DTr₂ (NPN)

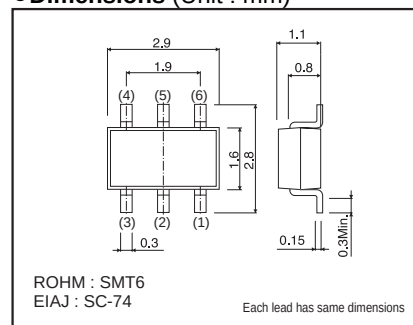
Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	50	V
Collector-emitter voltage	V_{CEO}	50	V
Emitter-base voltage	V_{EBO}	5	V
Collector current	I_C	100	mA

Total

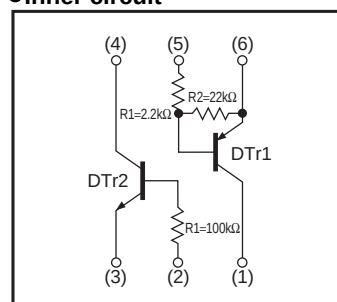
Parameter	Symbol	Limits	Unit
Collector power dissipation	P_d *	300(TOTAL)	mW
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

* 200mW per element must not be exceeded.

●Dimensions (Unit : mm)



●Inner circuit



●Electrical characteristics (Ta=25°C)

DT_{r1}

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	V _{I(off)}	–	–	–0.3	V	V _{CC} = –5V , I _O = –100μA
	V _{I(on)}	–2	–	–		V _O = –0.3V , I _O = –20mA
Output voltage	V _{O(on)}	–	–	–0.3	V	I _O /I _I = –50mA / –2.5mA
Input current	I _I	–	–	–3	mA	V _I = –5V
Output current	I _{O(off)}	–	–	–0.5	μA	V _{CC} = –50V , V _I =0V
DC current gain	G _I *1	82	–	–	–	I _O = –50mA , V _O = –5V
Transition frequency	f _T *2	–	250	–	MHz	V _{CE} = –10V , I _E =50mA , f=100MHz
Input resistance	R _I	1.54	2.2	2.86	kΩ	–
Resistance ratio	R ₂ / R ₁	8	10	12	–	–

*1 Measured using pulse current. *2 Transition frequency of mounted transistor.

DT_{r2}

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV _{CB0}	50	–	–	V	I _C =50μA
Collector-emitter breakdown voltage	BV _{CEO}	50	–	–	V	I _C =1mA
Emitter-base breakdown voltage	BV _{EB0}	5	–	–	V	I _E =50μA
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 /I _B =1mA/0.1mA
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 _I	70	100	130	kΩ	–

*Transition frequency of mounted transistor.

●Electrical characteristic curves
DTr1 (PNP)

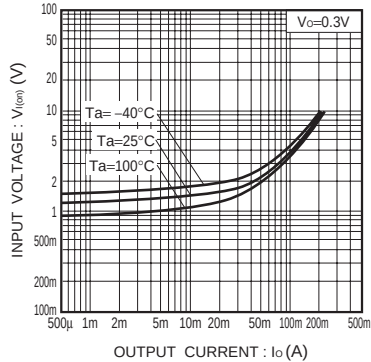


Fig.1 Input voltage vs. Output current (ON characteristics)

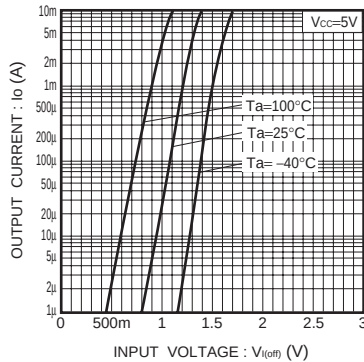


Fig.2 Output current vs. Input voltage (OFF characteristics)

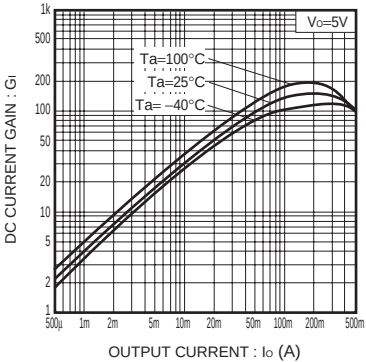


Fig.3 DC current gain vs. Output current characteristics

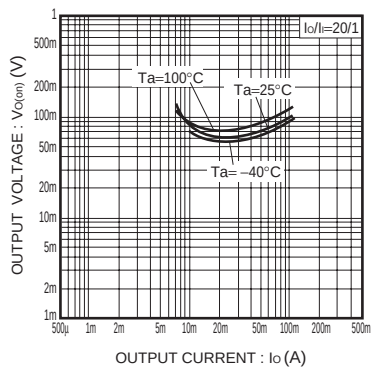


Fig.4 Output voltage vs. Output current characteristics

DTr2 (NPN)

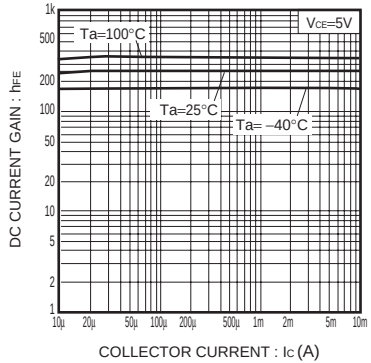


Fig.5 DC current gain vs. Output current characteristics

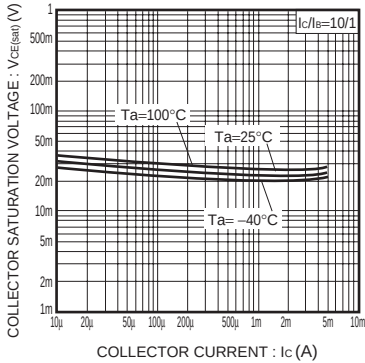


Fig.6 Output voltage vs. Output current characteristics

Notes

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Тел: +7 (812) 336 43 04 (многоканальный)

Email: org@lifeelectronics.ru

www.lifeelectronics.ru