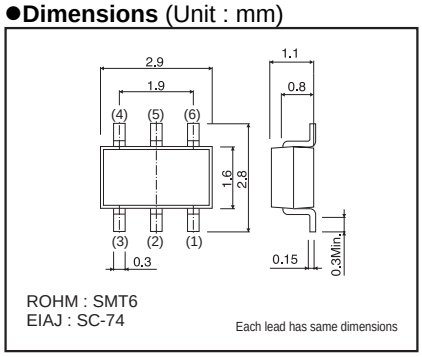
Power management (dual digital transistors)

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.

●Dimensions (Unit : mm)



●Package, marking, and packaging specifications

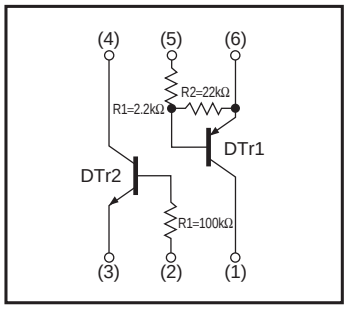
Part No.	IMD16A
Package	SMT6
Marking	D16
Code	T108
Basic ordering unit (pieces)	3000

●Absolute maximum ratings (Ta=25°C)

DTr_1 (PNP)

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

●Inner circuit



DTr_2 (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	Pd ✻	300(TOTAL)	mW
Junction temperature	Tj	150	°C
Storage temperature	Tstg	–55 to +150	°C

✻ 200mW per element must not be exceeded.

●Electrical characteristics (Ta=25°C)

DTr1

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_1	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.

DTr2

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	50	–	–	V	I_C=50µA
Collector-emitter breakdown voltage	BV_{CEO}	50	–	–	V	I_C=1mA
Emitter-base breakdown voltage	BV_{EBO}	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_1	70	100	130	kΩ	–

✻Transition frequency of mounted transistor.

●Electrical characteristic curves

DTr1 (PNP)

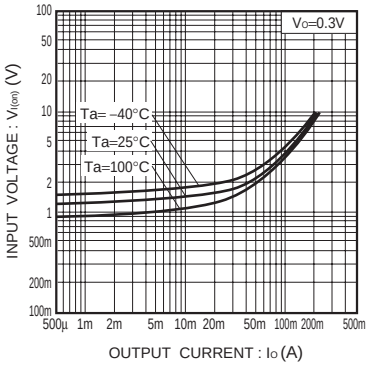


Fig.1 Input voltage vs. Output current (ON characterisitics)

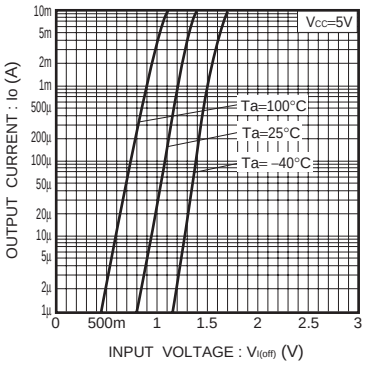


Fig.2 Output current vs. Input voltage (OFF characteristics)

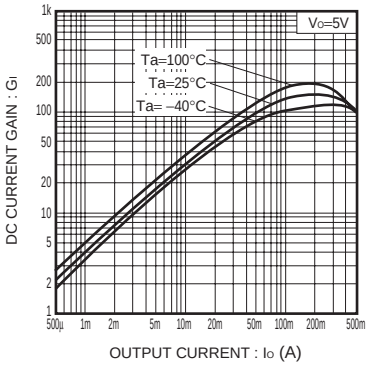


Fig.3 DC current gain vs. Output current characteristics

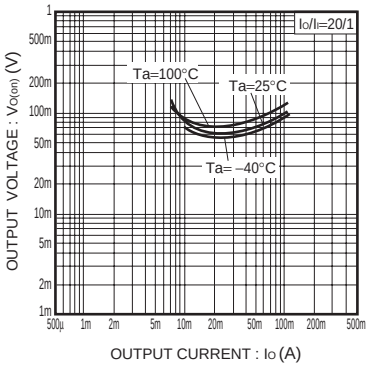


Fig.4 Output voltage vs. Output current characteristics

DTr2 (NPN)

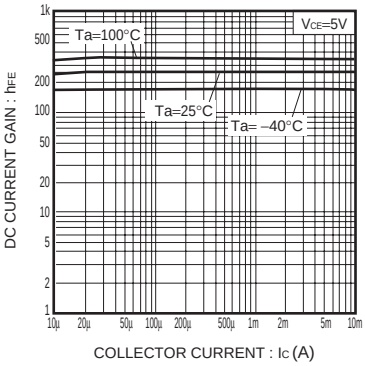


Fig.5 DC current gain vs. Output current characteristics

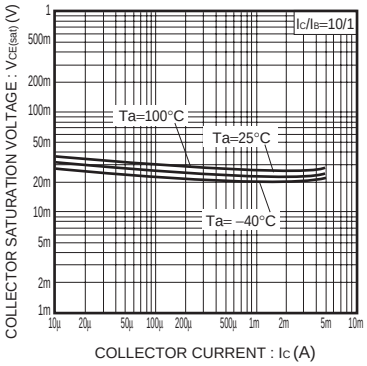


Fig.6 Output voltage vs. Output current characteristics

Notes

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