

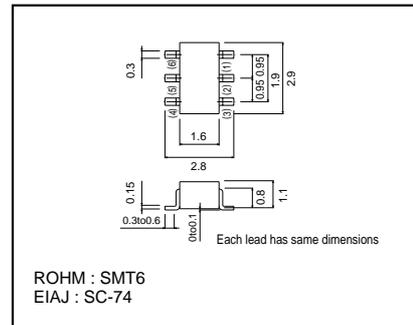
# Power management(dual digital transistors)

## 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.

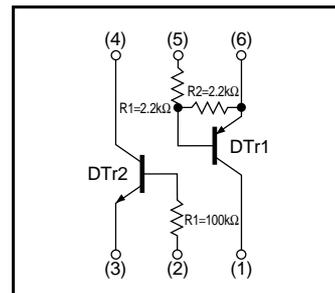
**●External dimensions (Unit : mm)**



**●Package, marking, and packaging specifications**

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

**●Equivalent circuit**



**●Absolute maximum ratings (Ta=25°C)**

DT1 (PNP)

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

DT2 (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.

## Transistors

## ●Electrical characteristics (Ta=25°C)

DT<sub>r1</sub>

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	V <sub>I(off)</sub>	–	–	–0.3	V	V <sub>CC</sub> = –5V , I <sub>O</sub> = –100μA
	V <sub>I(on)</sub>	–2	–	–		V <sub>O</sub> = –0.3V , I <sub>O</sub> = –20mA
Output voltage	V <sub>O(on)</sub>	–	–	–0.3	V	I <sub>O</sub> /I <sub>I</sub> = –50mA / –2.5mA
Input current	I <sub>I</sub>	–	–	–3	mA	V <sub>I</sub> = –5V
Output current	I <sub>O(off)</sub>	–	–	–0.5	μA	V <sub>CC</sub> = –50V , V <sub>I</sub> =0V
DC current gain	G <sub>I</sub>	82	–	–	–	I <sub>O</sub> = –50mA , V <sub>O</sub> = –5V *1
Transition frequency	f <sub>T</sub>	–	250	–	MHz	V <sub>CE</sub> = –10V , I <sub>E</sub> =50mA , f=100MHz *2
Input resistance	R <sub>1</sub>	1.54	2.2	2.86	kΩ	–
Resistance ratio	R <sub>2</sub> / R <sub>1</sub>	0.8	1.0	1.2	–	–

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

DT<sub>r2</sub>

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV <sub>CB0</sub>	50	–	–	V	I <sub>C</sub> =50μA
Collector-emitter breakdown voltage	BV <sub>CEO</sub>	50	–	–	V	I <sub>C</sub> =1mA
Emitter-base breakdown voltage	BV <sub>EB0</sub>	5	–	–	V	I <sub>E</sub> =50μA
Collector cutoff current	I <sub>CBO</sub>	–	–	0.5	μA	V <sub>CB</sub> =50V
Emitter cutoff current	I <sub>EBO</sub>	–	–	0.5	μA	V <sub>EB</sub> =4V
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	–	–	0.3	V	I <sub>C</sub> /I <sub>B</sub> =1mA/0.1mA
DC current transfer ratio	h <sub>FE</sub>	100	250	600	–	V <sub>CE</sub> =5V , I <sub>C</sub> =1mA
Transition frequency	f <sub>T</sub>	–	250	–	MHz	V <sub>CE</sub> =10V , I <sub>E</sub> =–5mA , f=100MHz *
Input resistance	R <sub>1</sub>	70	100	130	kΩ	–

\*Transition frequency of mounted transistor.

Transistors

●Electrical characteristic curves

DTr<sub>1</sub> (PNP)

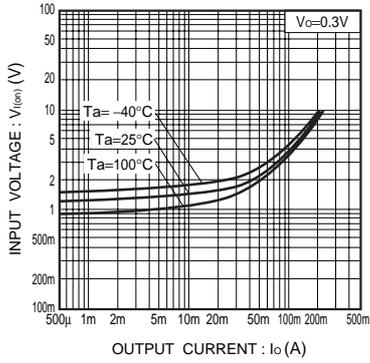


Fig.1 Input voltage vs. output current (ON characteristics)

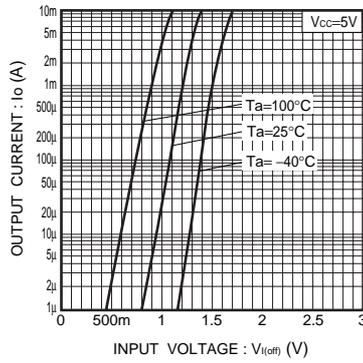


Fig.2 Output current vs. input voltage (OFF characteristics)

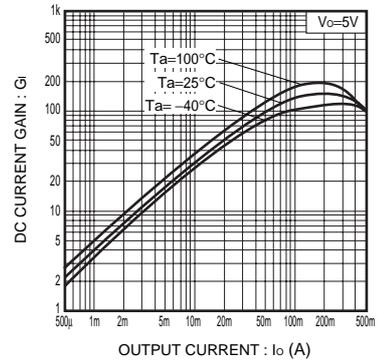


Fig.3 DC current gain vs. output current characteristics

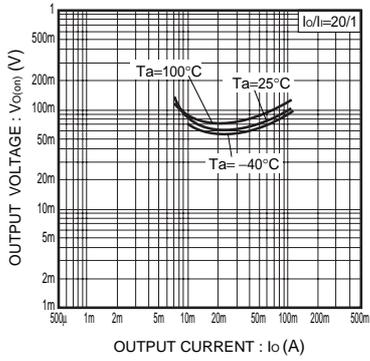


Fig.4 Output voltage vs. output current characteristics

DTr<sub>2</sub> (NPN)

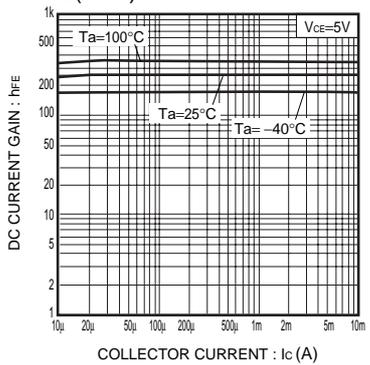


Fig.5 DC current gain vs. output current characteristics

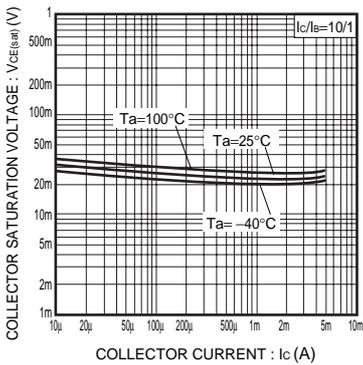


Fig.6 Output voltage vs. output current characteristics

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