

# General purpose (dual digital transistors)

## EMD2 / UMD2N / IMD2A

### ●Features

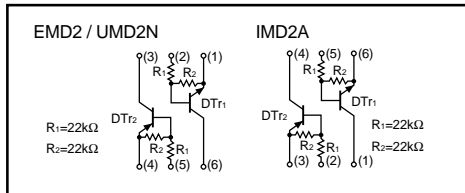
- 1) Both the DTA124E chip and DTC124E chip in a EMT or UMT or SMT package.
- 2) Mounting possible with EMT3 or UMT3 or SMT3 automatic mounting machines.
- 3) Transistor elements are independent, eliminating interference.
- 4) Mounting cost and area can be cut in half.

### ●Structure

Epitaxial planar type  
NPN / PNP silicon transistor (Built-in resistor type)

The following characteristics apply to both the DT<sub>r1</sub> and DT<sub>r2</sub>, however, the “-” sign on DT<sub>r2</sub> values for the PNP type have been omitted.

### ●Equivalent circuit

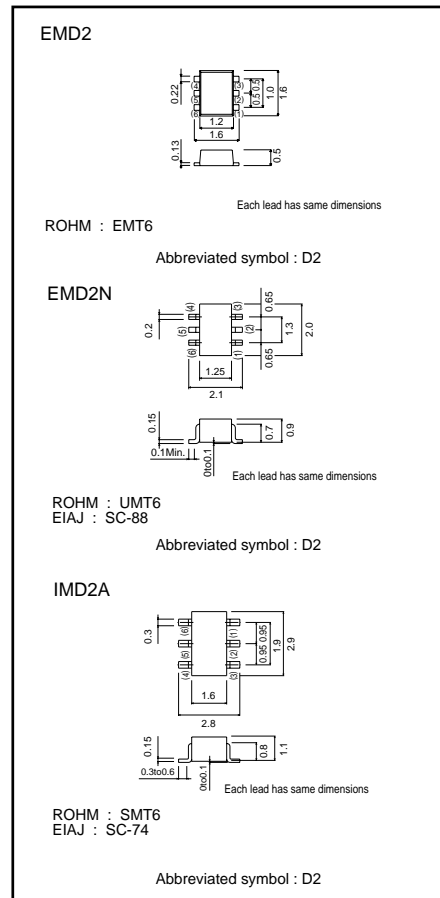


### ●Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits	Unit
Supply voltage	V <sub>CC</sub>	50	V
Input voltage	V <sub>IN</sub>	40	V
		-10	
Output current	I <sub>o</sub>	30	mA
	I <sub>C (Max.)</sub>	100	
Power dissipation	EMD2, UMD2N	150 (TOTAL)	*1 mW
	IMD2A	300 (TOTAL)	*2 mW
Junction temperature	T <sub>J</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55~+150	°C

\*1 120mW per element must not be exceeded.  
\*2 200mW per element must not be exceeded.

### ●External dimensions (Units : mm)



Transistors

●Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$	–	–	0.5	V	$V_{CC}=5V, I_o=100\mu A$
	$V_{I(on)}$	3	–	–		$V_o=0.2V, I_o=10mA$
Output voltage	$V_{O(on)}$	–	0.1	0.3	V	$I_o=10mA, I_i=0.5mA$
Input current	$I_i$	–	–	0.36	mA	$V_i=5V$
Output current	$I_{O(off)}$	–	–	0.5	$\mu A$	$V_{CC}=50V, V_i=0V$
DC current gain	$G_i$	56	–	–	–	$V_o=5V, I_o=5mA$
Transition frequency	$f_T$	–	250	–	MHz	$V_{CE}=10mA, I_E=-5mA, f=100MHz$ *
Input resistance	$R_1$	15.4	22	28.6	k $\Omega$	–
Resistance ratio	$R_2/R_1$	0.8	1	1.2	–	–

\* Transition frequency of the device

●Packaging specifications

Type	Package	Taping		
	Code	T2R	TR	T108
	Basic ordering unit (pieces)	8000	3000	3000
EMD2	○	—	—	—
UMD2N	—	○	—	—
IMD2A	—	—	—	○

●Electrical characteristic curves

DT<sub>r1</sub> (NPN)

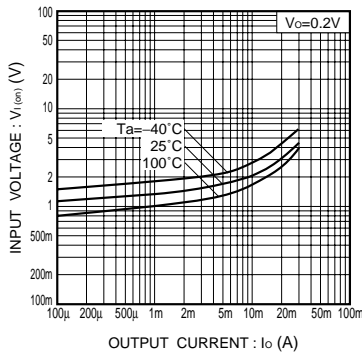


Fig.1 Input voltage vs. output current (ON characteristics)

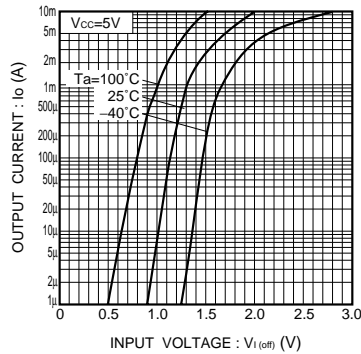


Fig.2 Output current vs. input voltage (OFF characteristics)

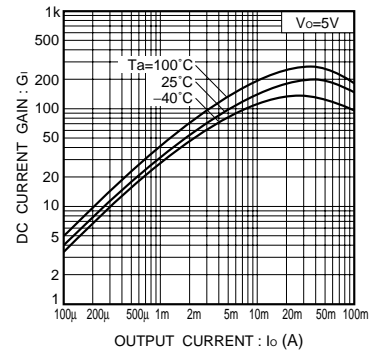


Fig.3 DC current gain vs. output current

Transistors

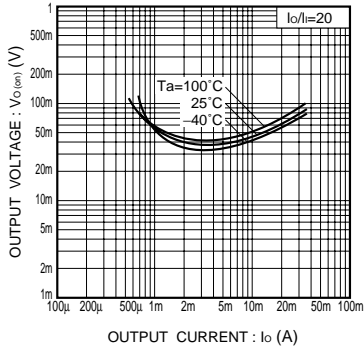


Fig.4 Output voltage vs. output current

DT<sub>r2</sub> (PNP)

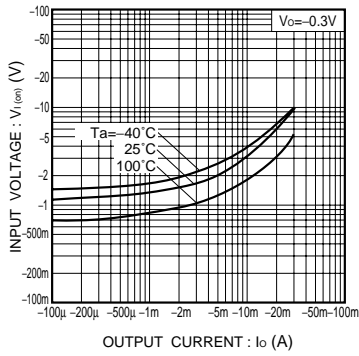


Fig.5 Input voltage vs. output current (ON characteristics)

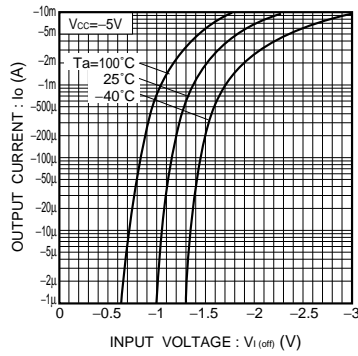


Fig.6 Output current vs. input voltage (OFF characteristics)

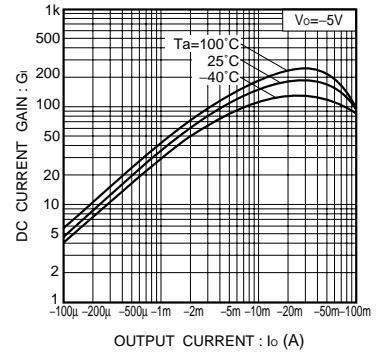


Fig.7 DC current gain vs. output current

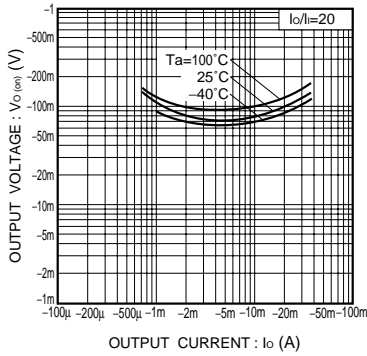


Fig.8 Output voltage vs. output current