

# General purpose (dual digital transistors)

## EMD22 / UMD22N

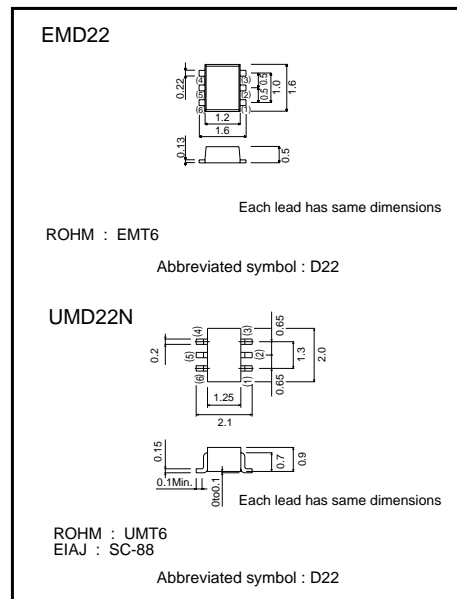
### ●Features

- 1) Both the DTA143Z chip and DTC143Z chip in an EMT or UMT package.
- 2) Mounting possible with EMT3 or UMT3 automatic mounting machines.
- 3) Transistor elements are independent, eliminating interference.
- 4) Mounting cost and area can be cut in half.

### ●Structure

A PNP and NPN digital transistor  
(each with a single built in resistor)

### ●External dimensions (Unit : mm)



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

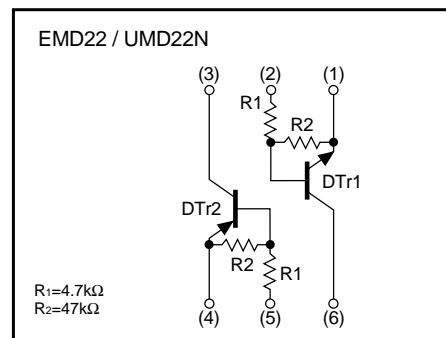
Parameter	Symbol	DTr 1	Unit
Supply voltage	V <sub>CC</sub>	50	V
Input voltage	V <sub>IN</sub>	-5 to +30	V
Output current	I <sub>o</sub>	100	mA
	I <sub>C (MAX)</sub>	100	
Power dissipation	P <sub>d</sub>	150	mW *
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

\*120mW per element must not be exceeded

Parameter	Symbol	DTr 2	Unit
Supply voltage	V <sub>CC</sub>	-50	V
Input voltage	V <sub>IN</sub>	-30 to +5	V
Output current	I <sub>o</sub>	-100	mA
	I <sub>C (MAX)</sub>	-100	
Power dissipation	P <sub>d</sub>	150	mW *
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

\*120mW per element must not be exceeded

### ●Equivalent circuit



R<sub>1</sub>=4.7kΩ  
R<sub>2</sub>=47kΩ

## Transistors

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

DTr 1

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	V <sub>I (off)</sub>	–	–	0.5	V	V <sub>CC</sub> =5V, I <sub>O</sub> =100μA
	V <sub>I (on)</sub>	1.3	–	–		V <sub>O</sub> =0.3V, I <sub>O</sub> =5mA
Output voltage	V <sub>O (on)</sub>	–	0.1	0.3	V	I <sub>O</sub> /I <sub>I</sub> =5mA/0.25mA
Input current	I <sub>I</sub>	–	–	1.8	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>	80	–	–	–	V <sub>O</sub> =5V, I <sub>O</sub> =10mA
Input resistance	R <sub>1</sub>	3.29	4.7	6.11	kΩ	–
Resistance ratio	R <sub>2</sub> /R <sub>1</sub>	8	10	12	–	–
Transition frequency	f <sub>T</sub>	–	250	–	MHz	V <sub>CE</sub> =10V, I <sub>E</sub> =–5mA, f=100MHz *

\*Transition frequency of the device

DTr 2

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	V <sub>I (off)</sub>	–	–	–0.5	V	V <sub>CC</sub> =–5V, I <sub>O</sub> =–100μA
	V <sub>I (on)</sub>	–1.3	–	–		V <sub>O</sub> =–0.3V, I <sub>O</sub> =–5mA
Output voltage	V <sub>O (on)</sub>	–	–0.1	–0.3	V	I <sub>O</sub> /I <sub>I</sub> =–5mA/–0.25mA
Input current	I <sub>I</sub>	–	–	–1.8	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>	80	–	–	–	V <sub>O</sub> =–5V, I <sub>O</sub> =–10mA
Input resistance	R <sub>1</sub>	3.29	4.7	6.11	kΩ	–
Resistance ratio	R <sub>2</sub> /R <sub>1</sub>	8	10	12	–	–
Transition frequency	f <sub>T</sub>	–	250	–	MHz	V <sub>CE</sub> =–10V, I <sub>E</sub> =5mA, f=100MHz *

\*Transition frequency of the device

## ●Packaging specifications

Type	Package	Taping	
	Code	T2R	TR
	Basic ordering unit (pieces)	8000	3000
EMD22	○	—	—
UMD22N	—	○	—

Transistors

●Electrical characteristic curves

DTr 1

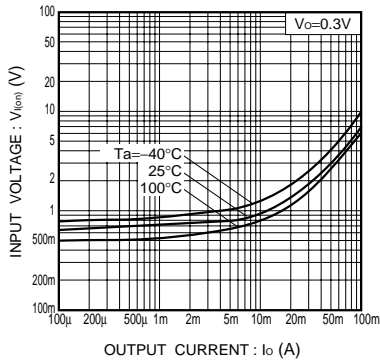


Fig.1 Input voltage vs. output current (ON characteristics)

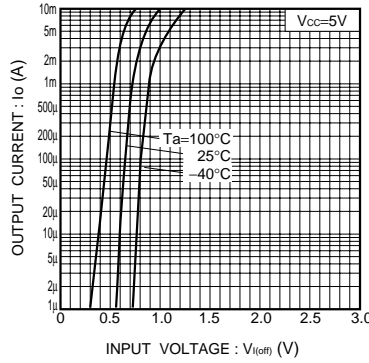


Fig.2 Output current vs. input voltage (OFF characteristics)

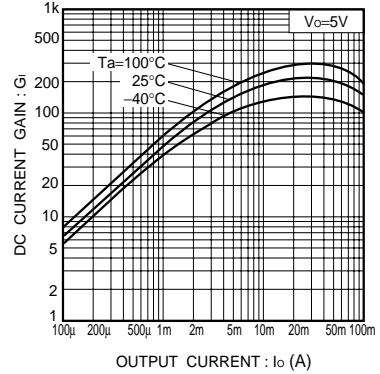


Fig.3 DC current gain vs. output current

DTr 2

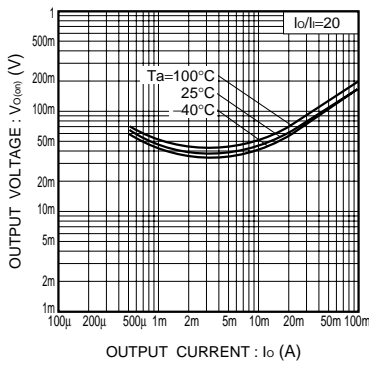


Fig.4 Output voltage vs. output current

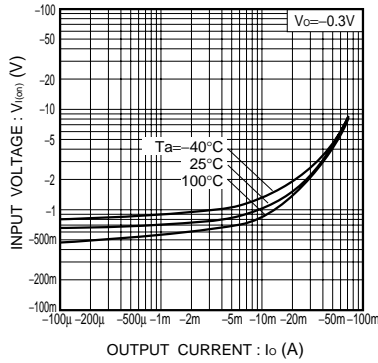


Fig.5 Input voltage vs. output current (ON characteristics)

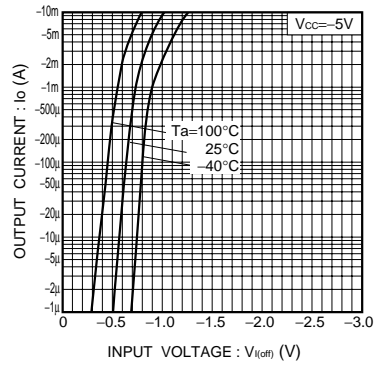


Fig.6 Output current vs. input voltage (OFF characteristics)

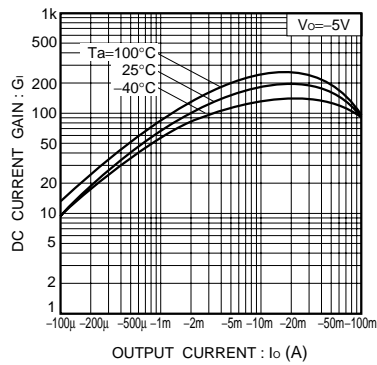


Fig.7 DC current gain vs. output current

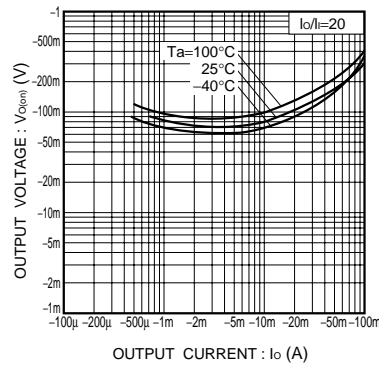


Fig.8 Output voltage vs. output current

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