

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)

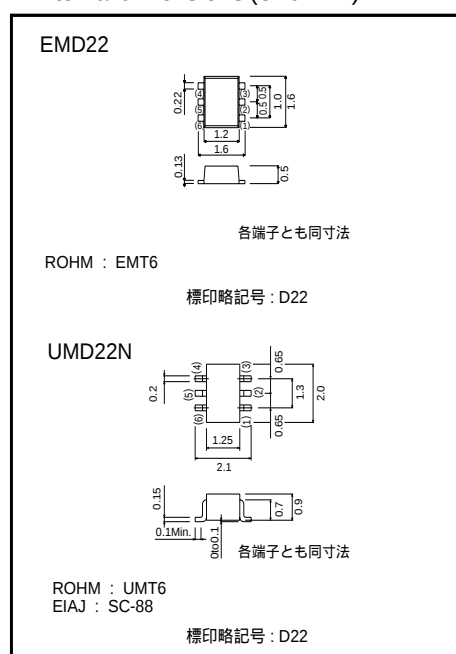
The following characteristics apply to both the DTr1 and DTr2, however, the “-” sign on DTr2 values for the PNP type have been omitted.

●Absolute maximum ratings (Ta = 25°C)

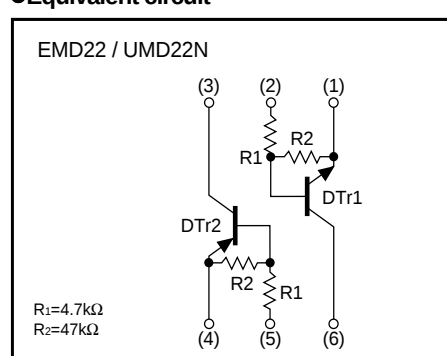
Parameter	Symbol	DTr 1	Unit
Supply voltage	V _{CC}	50	V
Input voltage	V _{IN}	-5 to +30	V
Output current	I _O	100	mA
	I _{C (MAX)}	100	
Power dissipation	P _d	150	mW
Junction temperature	T _J	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

Parameter	Symbol	DTr 2	Unit
Supply voltage	V _{CC}	-50	V
Input voltage	V _{IN}	-30 to +5	V
Output current	I _O	-100	mA
	I _{C (MAX)}	-100	
Power dissipation	P _d	150	mW
Junction temperature	T _J	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

●External dimensions (Unit : mm)



●Equivalent circuit



Transistors

●Electrical characteristics (Ta = 25°C)

DTr 1

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$	—	—	0.5	V	$V_{CC}=5V, I_o=100\mu A$
	$V_{I(on)}$	1.3	—	—		$V_o=0.3V, I_o=5mA$
Output voltage	$V_{O(on)}$	—	0.1	0.3	V	$I_o/I_i=5mA/0.25mA$
Input current	I_i	—	—	1.8	mA	$V_i=5V$
Output current	$I_{O(off)}$	—	—	0.5	μA	$V_{CC}=50V, V_i=0V$
DC current gain	G_i	80	—	—	—	$V_o=5V, I_o=10mA$
Input resistance	R_i	3.29	4.7	6.11	$k\Omega$	—
Resistance ratio	R_2/R_1	8	10	12	—	—
Transition frequency	f_T	—	250	—	MHz	$V_{CE}=10V, I_E=-5mA, f=100MHz$ *

*Transition frequency of the device

DTr 2

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$	—	—	-0.5	V	$V_{CC}=-5V, I_o=-100\mu A$
	$V_{I(on)}$	-1.3	—	—		$V_o=-0.3V, I_o=-5mA$
Output voltage	$V_{O(on)}$	—	-0.1	-0.3	V	$I_o/I_i=-5mA/-0.25mA$
Input current	I_i	—	—	-1.8	mA	$V_i=-5V$
Output current	$I_{O(off)}$	—	—	-0.5	μA	$V_{CC}=-50V, V_i=0V$
DC current gain	G_i	80	—	—	—	$V_o=-5V, I_o=-10mA$
Input resistance	R_i	3.29	4.7	6.11	$k\Omega$	—
Resistance ratio	R_2/R_1	8	10	12	—	—
Transition frequency	f_T	—	250	—	MHz	$V_{CE}=-10V, I_E=5mA, f=100MHz$ *

*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

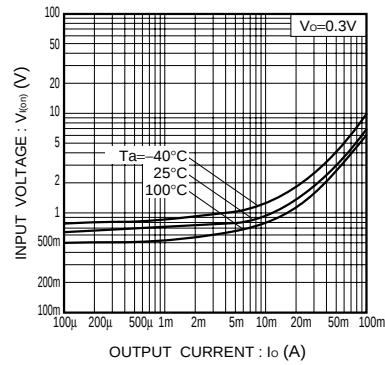


Fig.1 Input voltage vs. output current (ON characteristics)

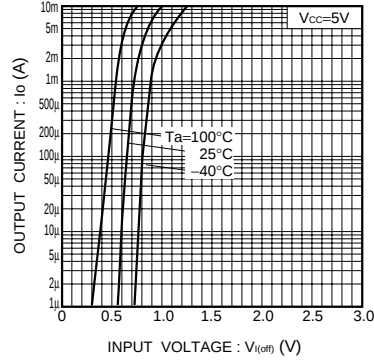


Fig.2 Output current vs. input voltage (OFF characteristics)

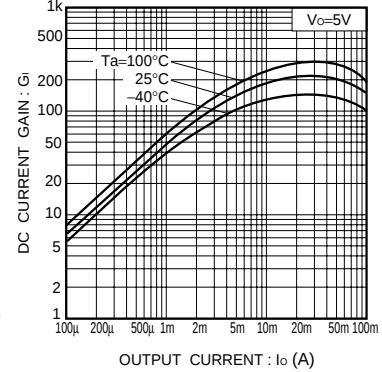


Fig.3 DC current gain vs. output current

DTr 2

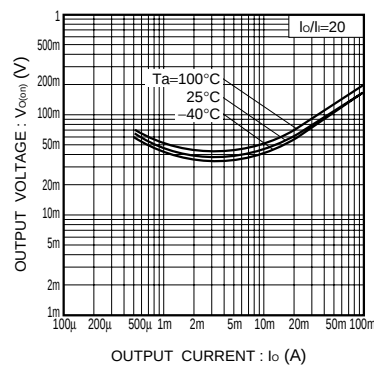


Fig.4 Output voltage vs. output current

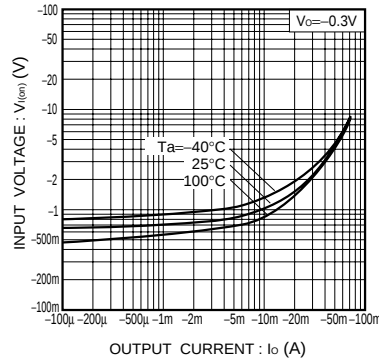


Fig.5 Input voltage vs. output current (ON characteristics)

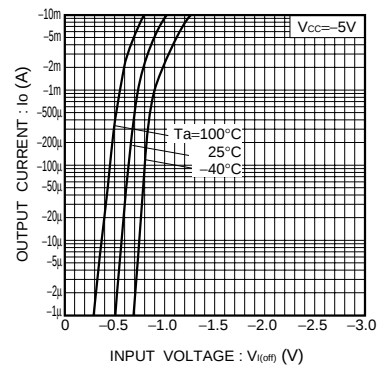


Fig.6 Output current vs. input voltage (OFF characteristics)

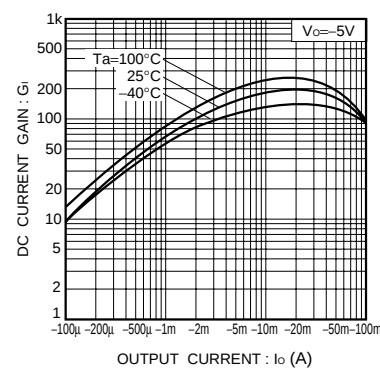


Fig.7 DC current gain vs. output current

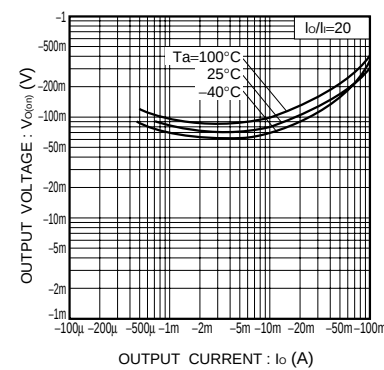


Fig.8 Output voltage vs. output current