

Power management (dual digital transistors)

EMC2 / UMC2N / FMC2A

●Features

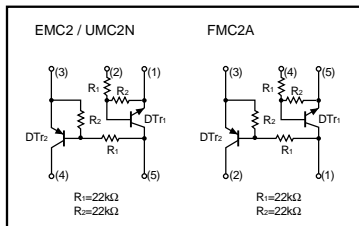
- 1) Includes a DTA124E and DTC124E transistor in a EMT or UMT or SMT package.
- 2) Ideal for power switch circuits.
- 3) Mounting cost and area can be cut in half.

●Structure

Epitaxial planar type
A PNP and a NPN digital transistor
(each with two built in resistors)

The following characteristics apply to both DT₁ and DT₂, however, the “+” sign on DT₂ values for the PNP type have been omitted.

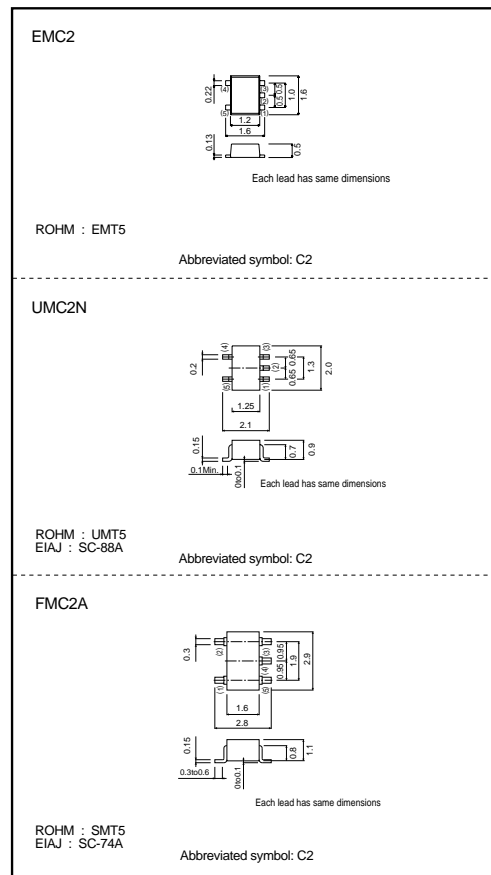
●Equivalent circuit



●Packaging specifications

Type	Packaging	Taping		
	Code	T2R	TR	T148
	Basic ordering unit (pieces)	8000	3000	3000
EMC2		○	-	-
UMC2N		-	○	-
FMC2A		-	-	○

●External dimensions (Units : mm)



Transistors

● Absolute maximum ratings (Ta = 25°C)

Parameter		Symbol	Limits	Unit
Supply voltage		V _{CC}	50	V
Input current		V _{IN}	40	V
			-10	
Output current		I _o	30	mA
		I _{C (Max.)}	100	
Power dissipation	EMC2, UMC2N	P _d	150 (TOTAL)	mW *1
	FMC2A		300 (TOTAL)	
Junction temperature		T _j	150	°C
Storage temperature		T _{stg}	-55~+150	°C

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

● 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 =100μA
	V _{I (on)}	3	-	-		V _O =0.2V, I _o =5mA
Output voltage	V _{O (on)}	-	0.1	0.3	V	I _o /I _i =10mA/0.5mA
Input current	I _i	-	-	0.36	mA	V _I =5V
Output current	I _{O (off)}	-	-	0.5	μA	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	kΩ	-
Resistance ratio	R ₂ /R ₁	0.8	1	1.2	-	-

* Transition frequency of the device

● Electrical characteristic curves

DT_{r1}

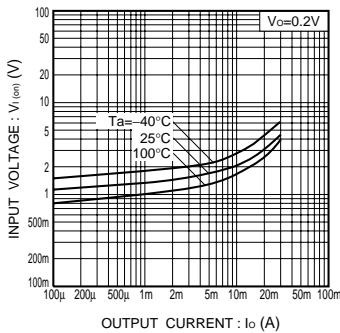


Fig.1 Input voltage vs. output current (ON characteristics)

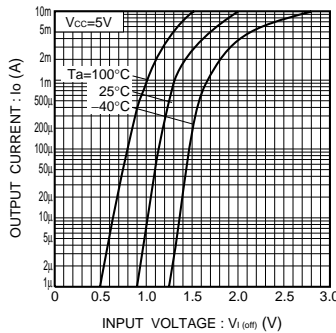


Fig.2 Output current vs. input voltage (OFF characteristics)

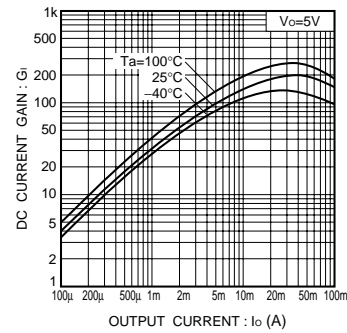


Fig.3 DC current gain vs. output current



Transistors

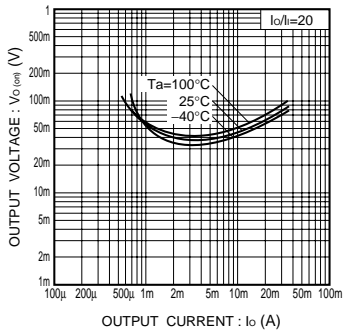


Fig.4 Output voltage vs. output current

DT₂

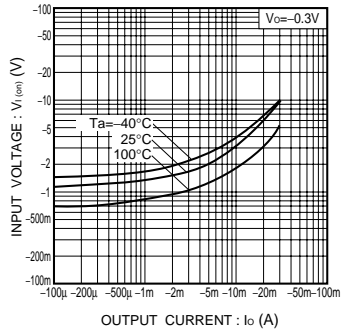


Fig.5 Input voltage vs. output current (ON characteristics)

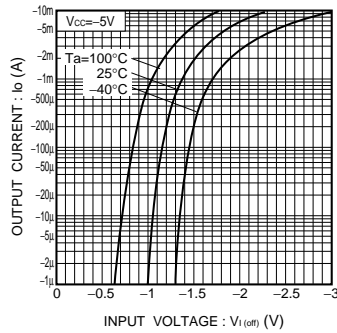


Fig.6 Output current vs. input voltage (OFF characteristics)

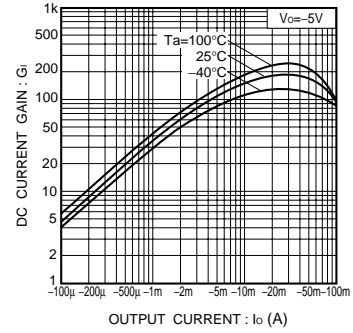


Fig.7 DC current gain vs. output current

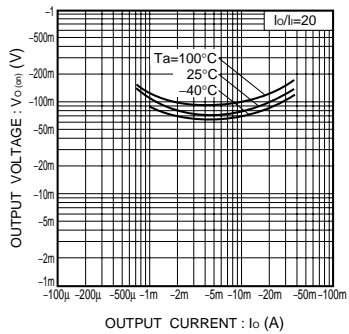


Fig.8 Output voltage vs. output current