

# 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.

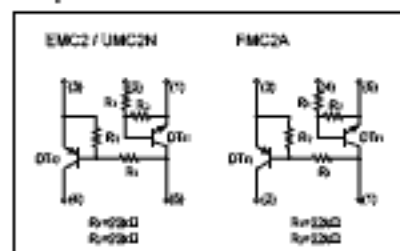
### ●Structure

Epitaxial planar type

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

The following characteristics apply to both DT<sub>N1</sub> and DT<sub>N2</sub>, however, the "-" sign on DT<sub>N2</sub> values for the PNP type have been omitted.

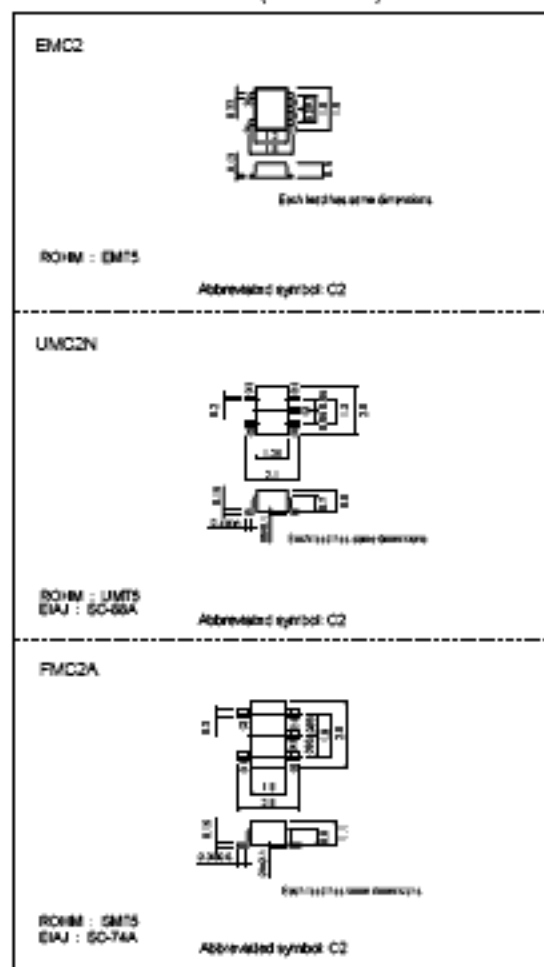
### ●Equivalent circuit



### ●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
	$I_o(\text{max.})$	100	
Power dissipation	EMC2, UMC2N	Pd	150 (TOTAL)
	FMC2A		300 (TOTAL)
Junction temperature	Tj	150	°C
Storage temperature	Tslg	-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	$V_{CC}=5V, I_o=100\mu A$
	$V_{i(on)}$	3	-	-		$V_o=0.2V, I_o=5mA$
Output voltage	$V_{o(max)}$	-	0.1	0.3	V	$I_o/I_L=10mA/0.5mA$
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	$V_{CC}=10mA, I_g=-5mA, f=100MHz$ *
Input resistance	$R_i$	15.4	22	28.6	k $\Omega$	-
Resistance ratio	$R_2/R_1$	0.8	1	1.2	-	-

\* Transition frequency of the device

## ●Electrical characteristic curves

DT-1

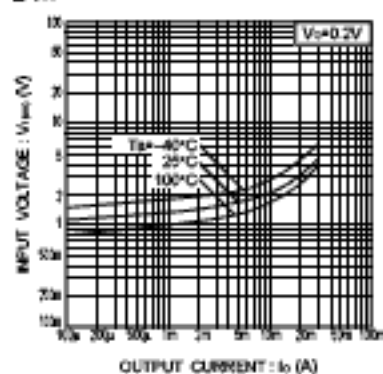


Fig.1 Input voltage vs. output current (ON characteristics)

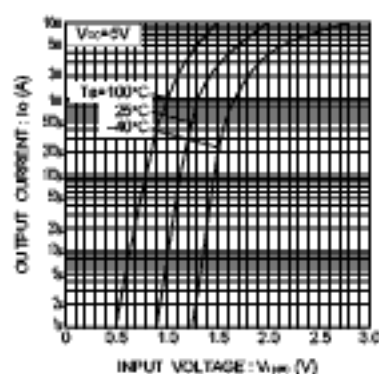


Fig.2 Output current vs. input voltage (OFF characteristics)

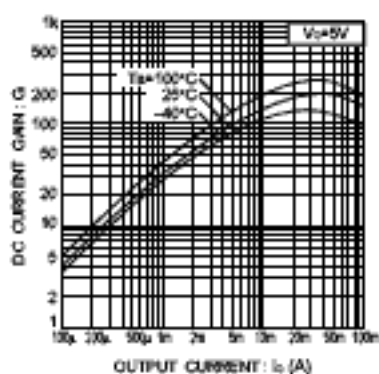


Fig.3 DC current gain vs. output current

# Transistors

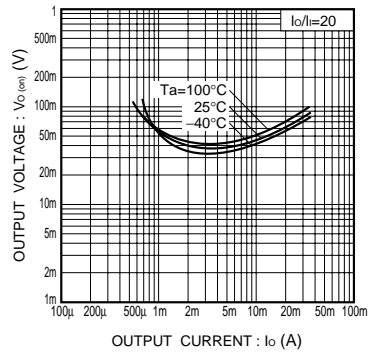


Fig.4 Output voltage vs. output current

DT<sub>r2</sub>

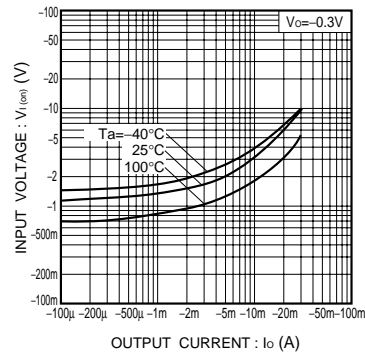


Fig.5 Input voltage vs. output current (ON characteristics)

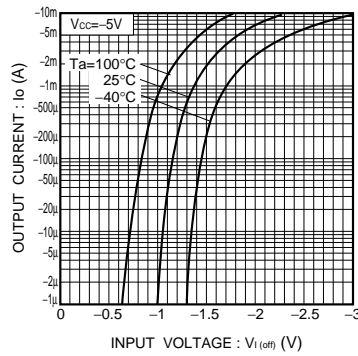


Fig.6 Output current vs. input voltage (OFF characteristics)

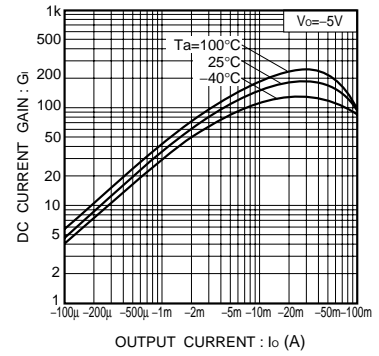


Fig.7 DC current gain vs. output current

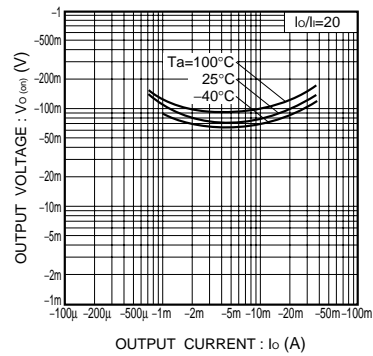


Fig.8 Output voltage vs. output current