

Power management (dual digital transistors)

UMC2N / FMC2A

●Features

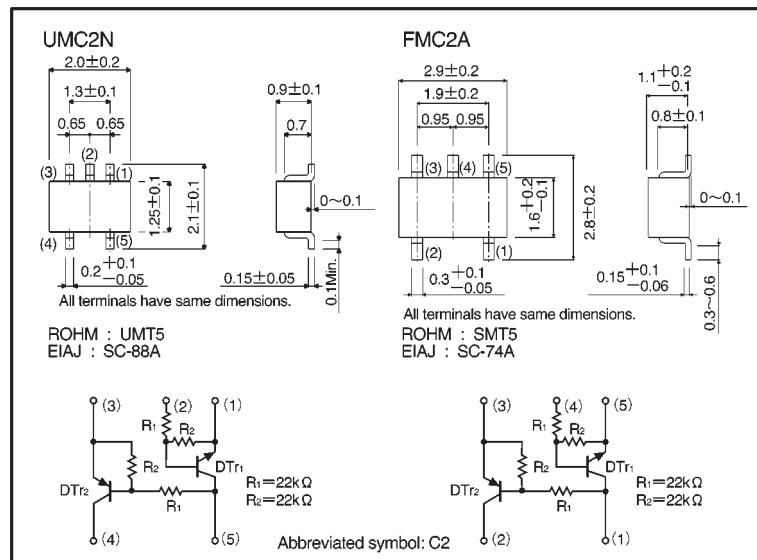
- Includes a DTA124E and a DTC124E transistor in a single UMT and a SMT package.
- Ideal for power switch circuits.
- Mounting cost and area can be cut in half.

●Structure

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

The following characteristics apply to both the DT_{r1} and DT_{r2} , however, the “_” sign on DT_{r2} values for the PNP type have been omitted.

●External dimensions (Units: mm)



●Absolute maximum ratings ($T_a = 25^\circ\text{C}$)

Parameter		Symbol	Limits	Unit
Supply voltage		V_{cc}	50	V
Input current	V_{IN}		40	V
			-10	
Output current	I_o $I_{C(\text{Max.})}$		30	mA
			100	
Power dissipation	UMC2N FMC2A	P_d	150 (TOTAL)	mW
			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 ($T_a = 25^\circ\text{C}$)

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

* Transition frequency of the device

● Packaging specifications

Part No.	Packaging type	Taping	
		Code	TR
UMC2N	Basic ordering unit (pieces)	3000	3000
FMC2A		—	○

● Electrical characteristic curves

DTr1

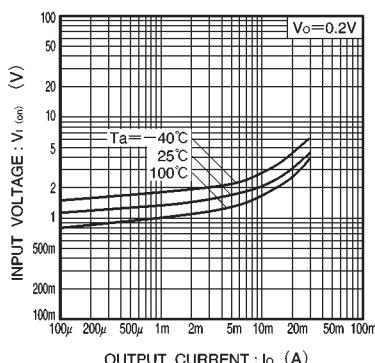


Fig.1 Input voltage vs. output current (ON characteristics)

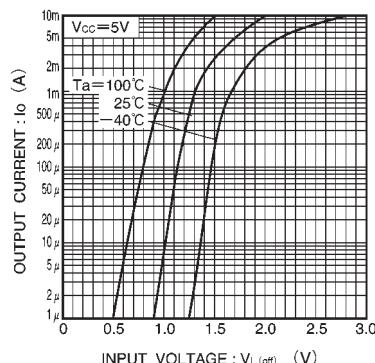


Fig.2 Output current vs. input voltage (OFF characteristics)

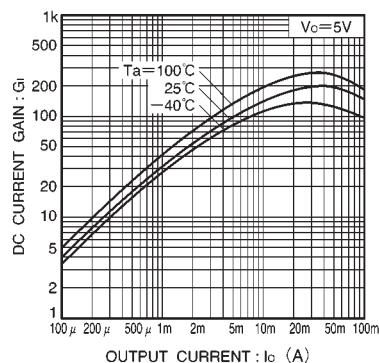


Fig.3 DC current gain vs. output current

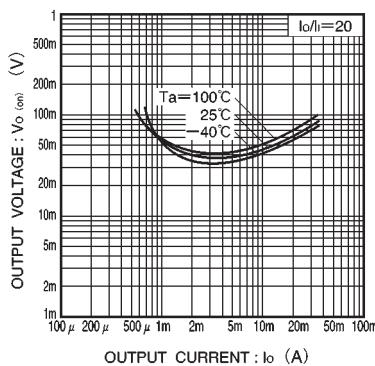


Fig.4 Output voltage vs. output current

DTr2

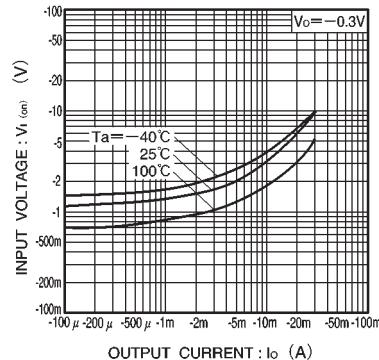


Fig.5 Input voltage vs. output current
(ON characteristics)

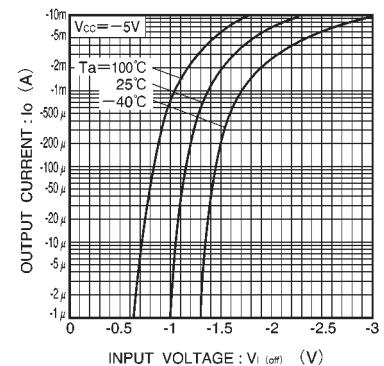


Fig.6 Output current vs. input voltage
(OFF characteristics)

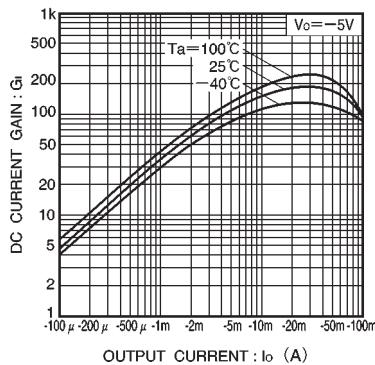


Fig.7 DC current gain vs. output current

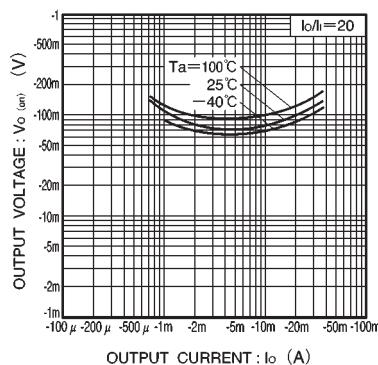


Fig.8 Output voltage vs. output current