Transistors

Power management
(dual digital transistors)

EMC4 / UMC4N / FMC4A

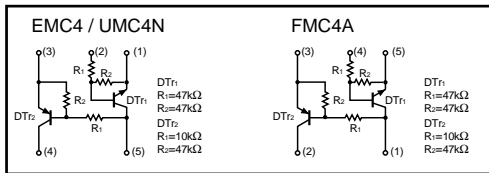● **Features**

1) Both the DTA114Y chip and DTC114E chip 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
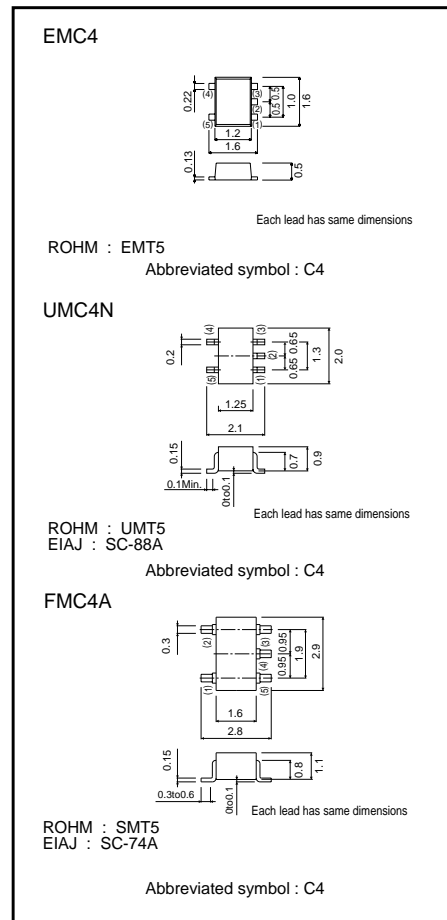NPN / PNP silicon transistor (Built-in resistor type.)

● **Equivalent circuit**

EMC4 / UMC4N

DTr$_1$ R$_1$=47kΩ R$_2$=47kΩ
DTr$_2$ R$_1$=10kΩ R$_2$=47kΩ

FMC4A

DTr$_1$ R$_1$=47kΩ R$_2$=47kΩ
DTr$_2$ R$_1$=10kΩ R$_2$=47kΩ

● **Packaging specifications**

Type	Package	Taping		
	Code	T2R	TR	T148
	Basic ordering unit (pieces)	8000	3000	3000
EMC4		◯	—	—
UMC4N		—	◯	—
FMC4A		—	—	◯

● **External dimensions** (Units : mm)

EMC4

ROHM : EMT5
Abbreviated symbol : C4

UMC4N

ROHM : UMT5
EIAJ : SC-88A
Abbreviated symbol : C4

FMC4A

ROHM : SMT5
EIAJ : SC-74A
Abbreviated symbol : C4

ROHM

Transistors

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

Parameter		Symbol	Limits		Unit	
			DTr$_1$	DTr$_2$		
Supply voltage		V$_{CC}$	50	−50	V	
Input voltage		V$_{IN}$	40	−40	V	
			−10	6		
Output current		I$_O$	30	−100	mA	
		I$_{C (Max.)}$	100	−100		
Power dissipation	EMC4, UMC4N	Pd	150 (TOTAL)		mW	*1
	FM4A		300 (TOTAL)			*2
Junction temperature		Tj	150		°C	
Storage temperature		Tstg	−55~+150		°C	

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

●**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$_O$=100μA
	V$_{I (on)}$	3	–	–		V$_O$=0.3V, I$_O$=2mA
Output voltage	V$_{O (on)}$	–	0.1	0.3	V	I$_O$=10mA, I$_I$=0.5mA
Input current	I$_I$	–	–	0.18	mA	V$_I$=5V
Output current	I$_{O (off)}$	–	–	0.5	μA	V$_{CC}$=50V, V$_I$=0V
DC current gain	G$_I$	68	–	–	–	V$_O$=5V, I$_O$=5mA
Transition frequency	f$_T$	–	250	–	MHz	V$_{CE}$=10mA, I$_E$=−5mA, f=100MHz *
Input resistance	R$_1$	32.9	47	61.1	kΩ	–
Resistance ratio	R$_2$/R$_1$	0.8	1	1.2	–	–

* Transition frequency of the device

DTr$_2$

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input voltage	V$_{I (off)}$	–	–	−0.3	V	V$_{CC}$=−5V, I$_O$=−100μA
	V$_{I (on)}$	−1.4	–	–		V$_O$=−0.3V, I$_O$=−1mA
Output voltage	V$_{O (on)}$	–	−0.1	−0.3	V	I$_O$=−5mA, I$_I$=−0.25mA
Input current	I$_I$	–	–	−0.88	mA	V$_I$=−5V
Output current	I$_{O (off)}$	–	–	−0.5	μA	V$_{CC}$=−50V, V$_I$=0V
DC current gain	G$_I$	68	–	–	–	V$_O$=−5V, I$_O$=−5mA
Transition frequency	f$_T$	–	250	–	MHz	V$_{CE}$=10mA, I$_E$=−5mA, f=100MHz *
Input resistance	R$_1$	7	10	13	kΩ	–
Resistance ratio	R$_2$/R$_1$	3.7	4.7	5.7	–	–

* Transition frequency of the device

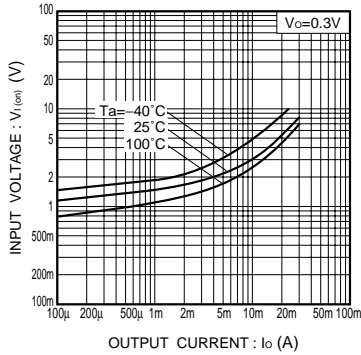●**Electrical characteristic curves**

DTr₁ (NPN)

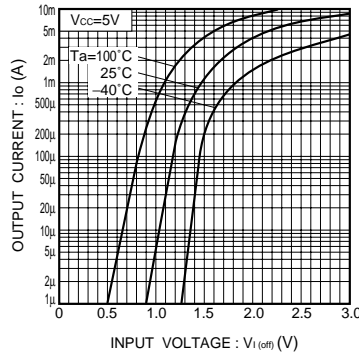Fig.1 Input voltage vs. output current
(ON characteristics)

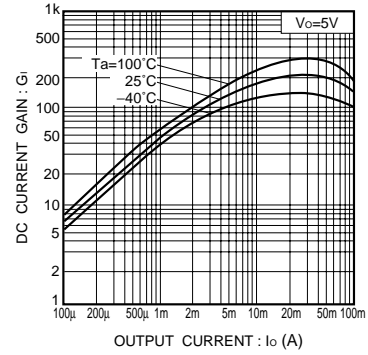Fig.2 Output current vs. input voltage
(OFF characteristics)

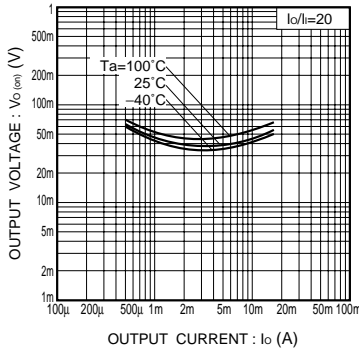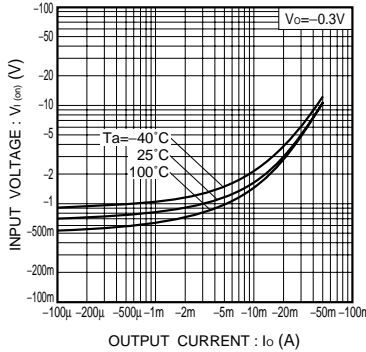Fig.3 DC current gain vs. output
current

DTr₂ (PNP)

Fig.4 Output voltage vs. output
current

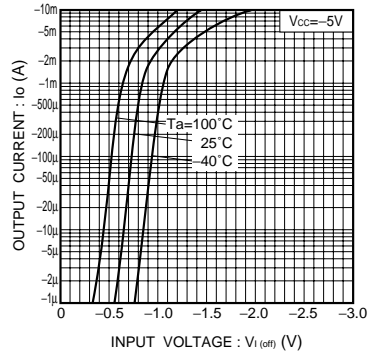Fig.5 Input voltage vs. output current
(ON characteristics)

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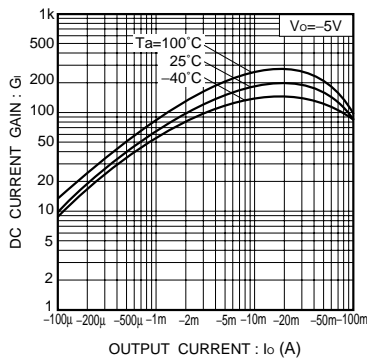(OFF characteristics)

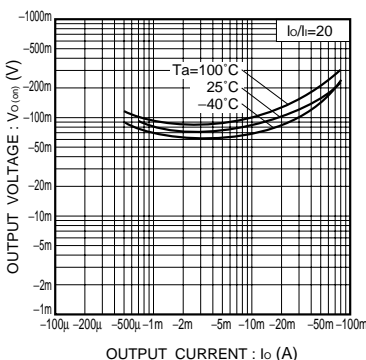Fig.7 DC current gain vs. output
current

Fig.8 Output voltage vs. output
current

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