Power management (dual digital transistors)

EMC3 / UMC3N / FMC3A

●Features

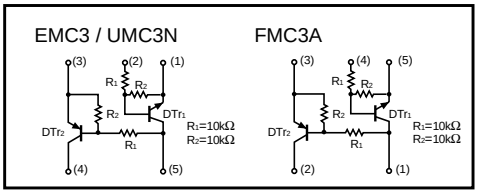
1) Both the DTA114E chip and DTC114E chip in a EMT or UMT or SMT package.
2) Ideal for power switch circuits.
3) Mounting cost and area can be cut in half.

●Structure

Epitaxial planar type
NPN / PNP silicon transistor (Built-in resistor type.)

The following characteristics apply to both DTr_1 and DTr_2, however, the "–" sign on DTr_2 values for the PNP type have been omitted.

●Equivalent circuit

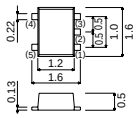


●Packaging specifications

Type	Package	Taping		
	Code	T2R	TR	T148
	Basic ordering unit (pieces)	8000	3000	3000
EMC3		○	—	—
UMC3N		—	○	—
FMC3A		—	—	○

●External dimensions (Units : mm)

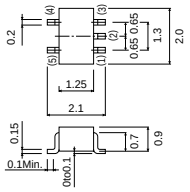
EMC3



Each lead has same dimensions

ROHM : EMT5
Abbreviated symbol : C3

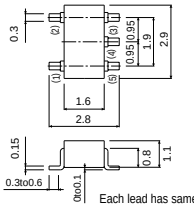
UMC3N



Each lead has same dimensions

ROHM : UMT5
EIAJ : SC-88A
Abbreviated symbol : C3

FMC3A



Each lead has same dimensions

ROHM : SMT5
EIAJ : SC-74A
Abbreviated symbol : C3

●Absolute maximum ratings (Ta = 25°C)

Parameter		Symbol	Limits	Unit
Supply voltage		V_{CC}	50	V
Input voltage		V_{IN}	40	V
			−10	
Output current		I_O	50	mA
		$I_{C\ (Max.)}$	100	
Power dissipation	EMC3, UMC3N	Pd	150 (TOTAL)	mW ∗1
	FMC3A		300 (TOTAL)	mW ∗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)

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=10mA
Output voltage	$V_{O\ (on)}$	−	0.1	0.3	V	I_O=10mA, I_I=0.5mA
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	30	−	−	−	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	0.8	1	1.2	−	−

∗ Transition frequency of the device

●Electrical characteristic curves

DTr1 (NPN)

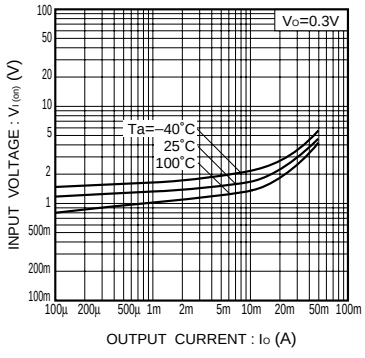


Fig.1 Input voltage vs. output current (ON characteristics)

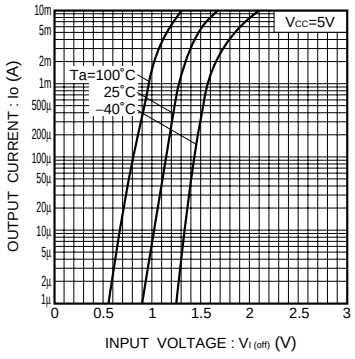


Fig.2 Output current vs. input voltage (OFF characteristics)

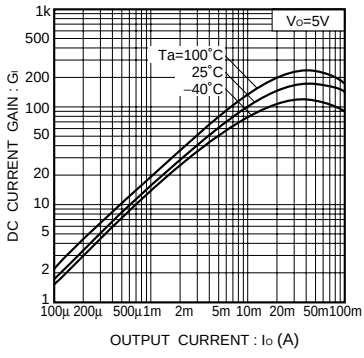


Fig.3 DC current gain vs. output current

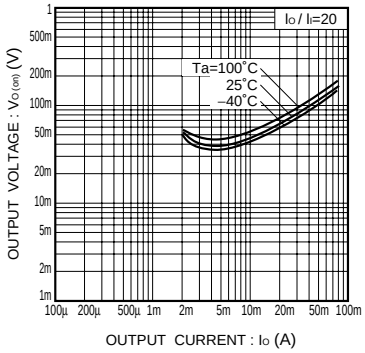


Fig.4 Output voltage vs. output current

DTr2 (PNP)

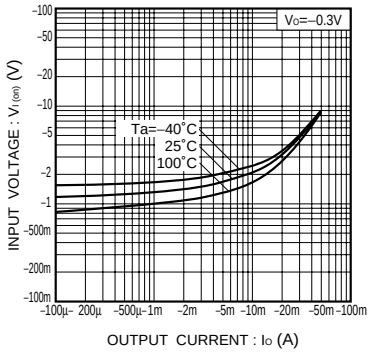


Fig.5 Input voltage vs. output current (ON characteristics)

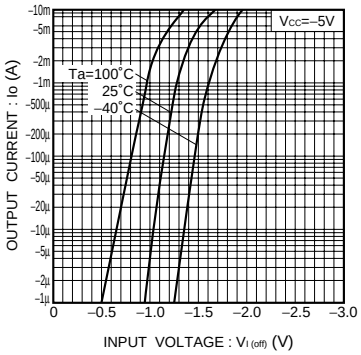


Fig.6 Output current vs. input voltage (OFF characteristics)

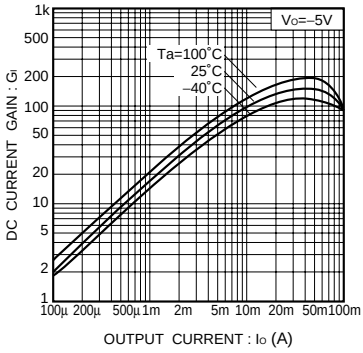


Fig.7 DC current gain vs. output current

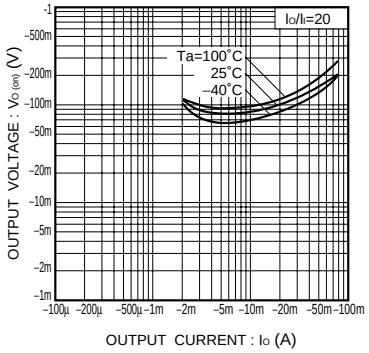


Fig.8 Output voltage vs. output current