

General purpose transistor (dual transistors)

EMZ7 / UMZ7N

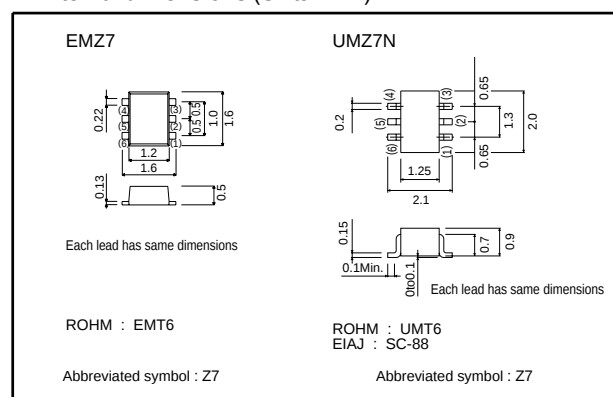
●Features

- 1) Both a 2SA2018 chip and 2SC5585 chip in a EMT or UMT package.
- 2) Mounting possible with EMT3 or UMT3 automatic mounting machines.
- 3) Transistor elements are independent, eliminating interference.
- 4) Mounting cost and area can be cut in half.
- 5) Low $V_{CE(sat)}$

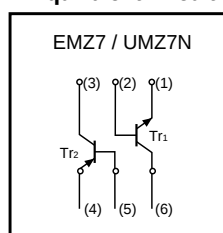
●Structure

NPN / PNP epitaxial planar silicon transistor

● External dimensions (Units : mm)



● Equivalent Circuit



● Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits		Unit
		Tr1	Tr2	
Collector-base voltage	V_{CBO}	15	-15	V
Collector-emitter voltage	V_{CEO}	12	-12	V
Emitter-base voltage	V_{EBO}	6	-6	V
Collector current	I_C	500	-500	mA
Collector power dissipation	P_C	150(TOTAL)		mW *1
Junction temperature	T_j	150		°C
Storage temperature	T_{stg}	-55~+150		°C

*1 120mW per element must not be exceeded.

Transistors

● Electrical characteristics (Ta=25°C)

Tr1 (NPN)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV _{CBO}	15	—	—	V	I _C =10μA
Collector-emitter breakdown voltage	BV _{CEO}	12	—	—	V	I _C =1mA
Emitter-base breakdown voltage	BV _{EBO}	6	—	—	V	I _E =10μA
Collector cutoff current	I _{CBO}	—	—	0.1	μA	V _{CB} =15V
Emitter cutoff current	I _{EBO}	—	—	0.1	μA	V _{EB} =6V
Collector-emitter saturation voltage	V _{CE(sat)}	—	90	250	mV	I _C /I _B =200mA/10mA
DC current transfer ratio	h _{FE}	270	—	680	—	V _{CE} /I _C =2V/10mA
Transition frequency	f _T	—	320	—	MHz	V _{CE} =2V, I _C =10mA, f=100MHz
Output capacitance	C _{ob}	—	7.5	—	pF	V _{CB} =10V, I _E =0A, f=1MHz

Tr2 (PNP)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV _{CBO}	−15	—	—	V	I _C =−10μA
Collector-emitter breakdown voltage	BV _{CEO}	−12	—	—	V	I _C =−1mA
Emitter-base breakdown voltage	BV _{EBO}	−6	—	—	V	I _E =−10μA
Collector cutoff current	I _{CBO}	—	—	−0.1	μA	V _{CB} =−15V
Emitter cutoff current	I _{EBO}	—	—	−0.1	μA	V _{EB} =−6V
Collector-emitter saturation voltage	V _{CE(sat)}	—	−100	−250	mV	I _C /I _B =−200mA/−10mA
DC current transfer ratio	h _{FE}	270	—	680	—	V _{CE} /I _C =−2V/−10mA
Transition frequency	f _T	—	260	—	MHz	V _{CE} =−2V, I _C =10mA, f=100MHz
Output capacitance	C _{ob}	—	6.5	—	pF	V _{CB} =−10V, I _E =0A, f=1MHz

● Packaging specifications

Part No.	Packaging type	Taping	
	Code	TR	T2R
	Basic ordering unit (pieces)	3000	8000
UMZ7N		○	—
EMZ7		—	○

● Electrical characteristic curves

Tr1 (NPN)

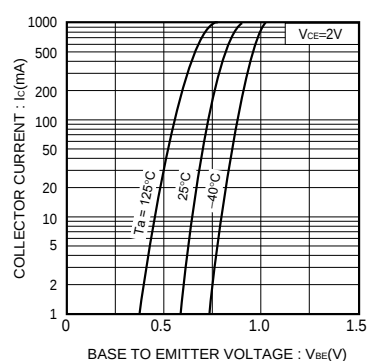


Fig.1 Grounded emitter propagation characteristics

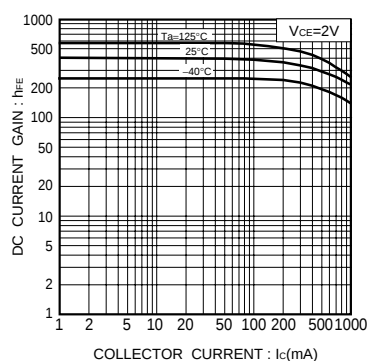


Fig.2 DC current gain vs. collector current

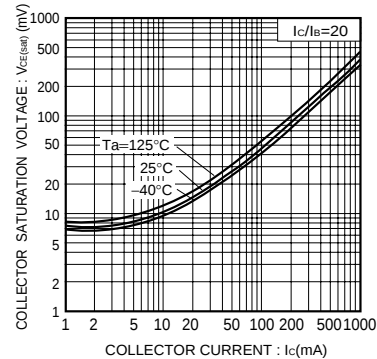


Fig.3 Collector-emitter saturation voltage vs. collector current (I)

Transistors

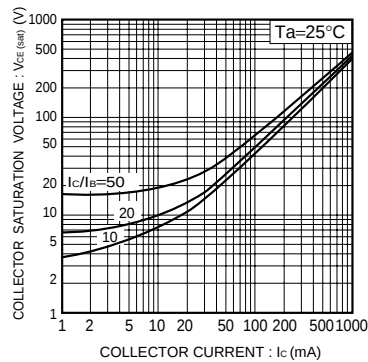


Fig.4 Collector-emitter saturation voltage vs. collector current (II)

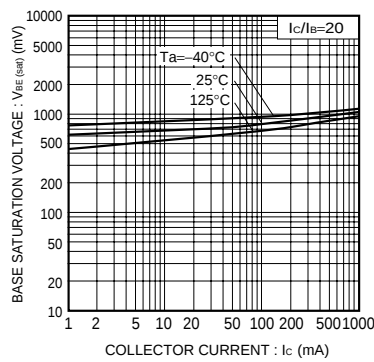


Fig.5 Base-emitter saturation voltage vs. collector current

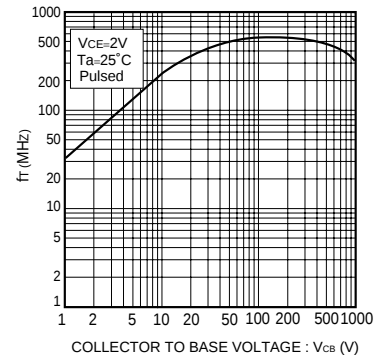


Fig.6 Collector output capacitance Emitter input capacitance vs. base voltage

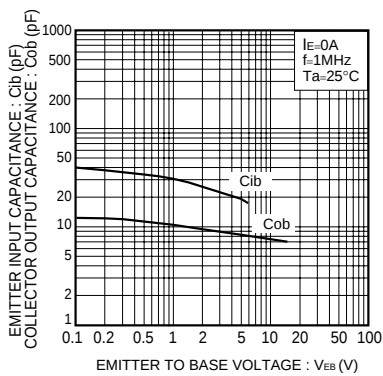


Fig.7 Collector output capacitance vs collector-base voltage Emitter input capacitance vs emitter-base voltage

T_{R2} (PNP)

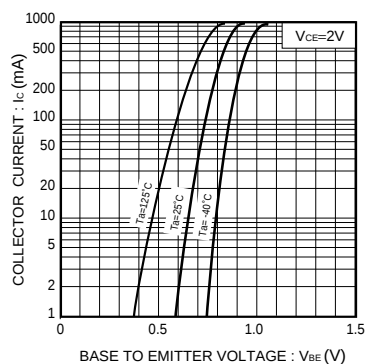


Fig.8 Grounded emitter propagation characteristics

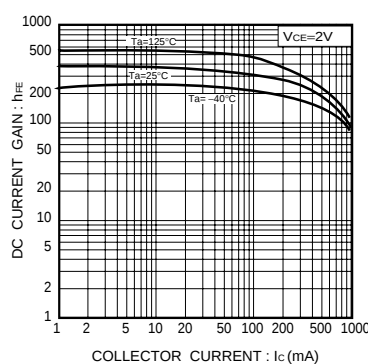


Fig.9 DC current gain vs. collector current

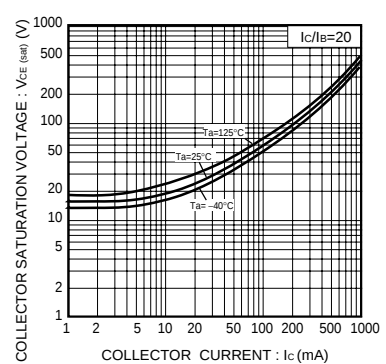


Fig.10 Collector-emitter saturation voltage vs. collector current (I)

Transistors

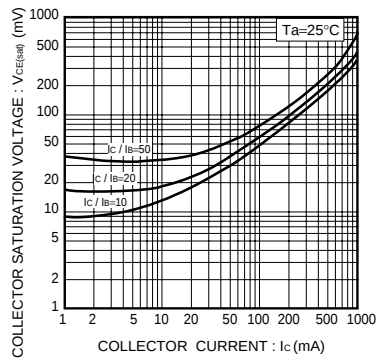


Fig.11 Collector-emitter saturation voltage vs. collector current

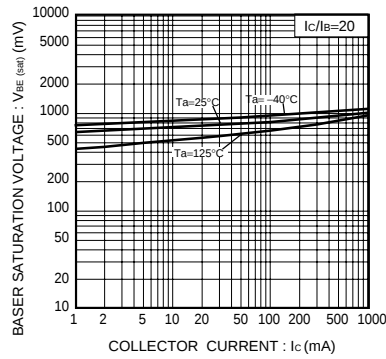


Fig.12 Base-emitter saturation voltage vs. collector current

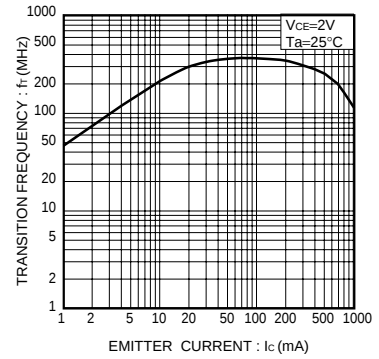


Fig.13 Gain bandwidth product vs. emitter current

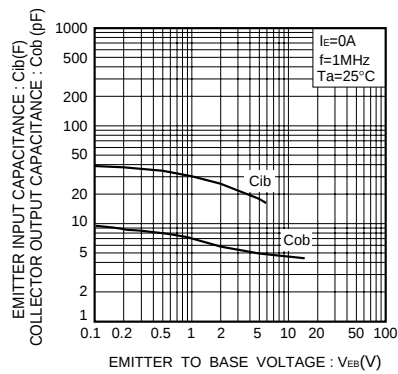


Fig.14 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage