

EMZ7 / UMZ7N

Transistors

General purpose transistor (dual transistors)

EMZ7 / UMZ7N

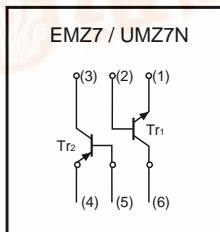
● Features

- 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 $V_{CE(sat)}$

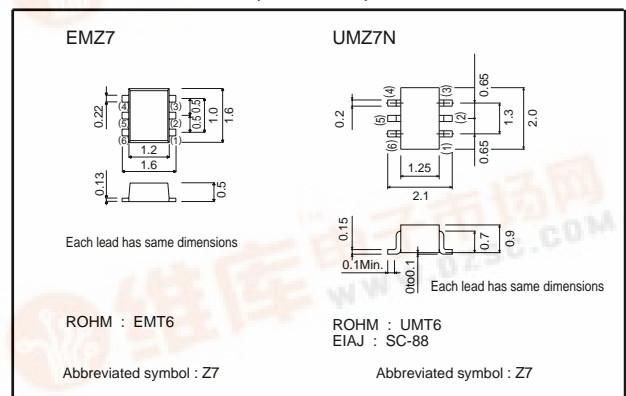
● Structure

NPN / PNP epitaxial planar silicon transistor

● Equivalent Circuit



● External dimensions (Units : mm)



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

Parameter	Symbol	Limits		Unit
		T_{r1}	T_{r2}	
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		$^\circ\text{C}$
Storage temperature	T_{stg}	-55-+150		$^\circ\text{C}$

*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	$I_C=10\mu A$
Collector-emitter breakdown voltage	BV_{CEO}	12	–	–	V	$I_C=1mA$
Emitter-base breakdown voltage	BV_{EBO}	6	–	–	V	$I_E=10\mu A$
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	$I_C=-10\mu A$
Collector-emitter breakdown voltage	BV_{CEO}	–12	–	–	V	$I_C=-1mA$
Emitter-base breakdown voltage	BV_{EBO}	–6	–	–	V	$I_E=-10\mu A$
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)

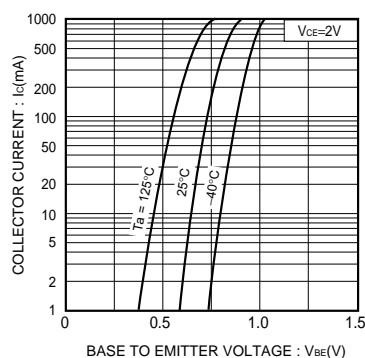


Fig.1 Grounded emitter propagation characteristics

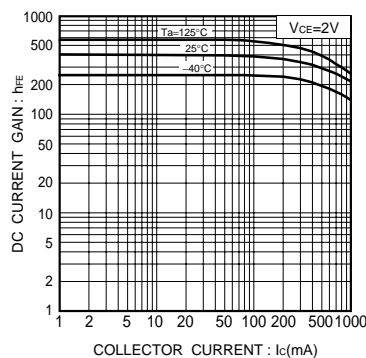


Fig.2 DC current gain vs. collector current

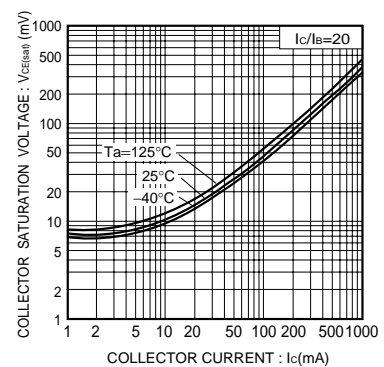


Fig.3 Collector-emitter saturation voltage vs. collector current (I)

Transistors

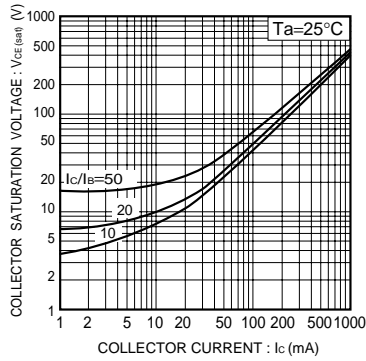


Fig.4 Collector-emitter saturation voltage vs. collector current (II)

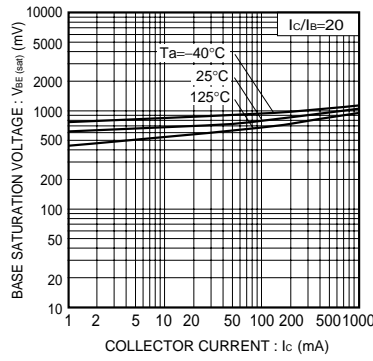


Fig.5 Base-emitter saturation voltage vs. collector current

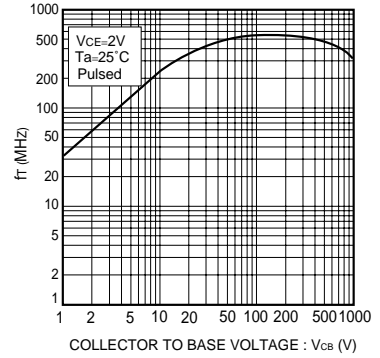


Fig.6 Collector output capacitance
Emitter input capacitance vs. base voltage

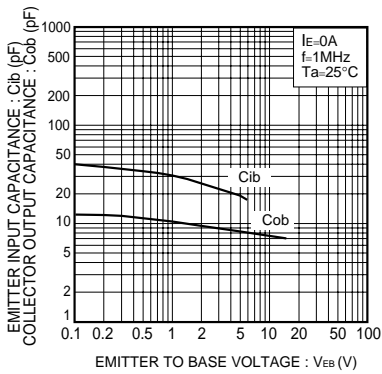


Fig.7 Collector output capacitance vs collector-base voltage
Emitter input capacitance vs emitter-base voltage

T_{r2} (PNP)

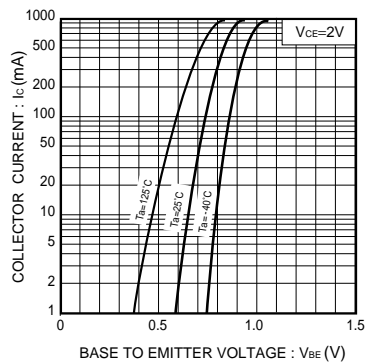


Fig.8 Grounded emitter propagation characteristics

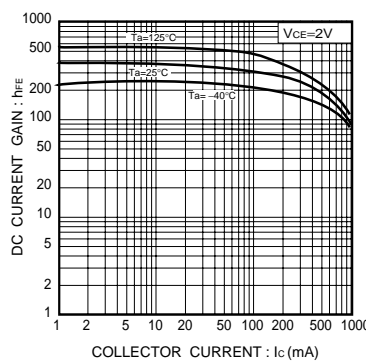


Fig.9 DC current gain vs. collector current

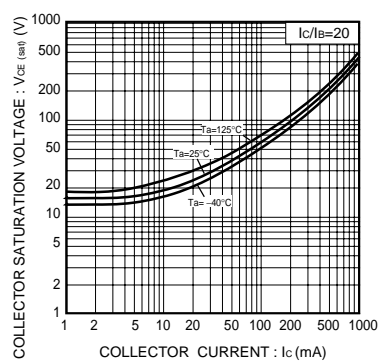


Fig.10 Collector-emitter saturation voltage vs. collector current (I)

Transistors

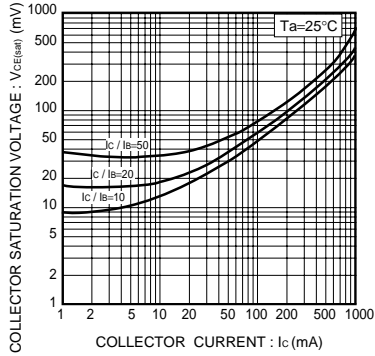


Fig.11 Collector-emitter saturation voltage vs. collector current

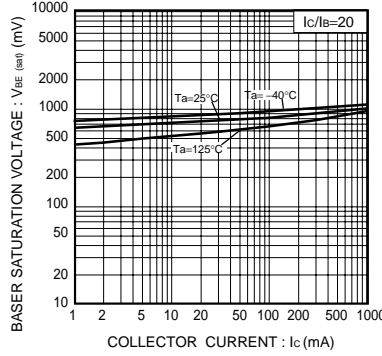


Fig.12 Base-emitter saturation voltage vs. collector current

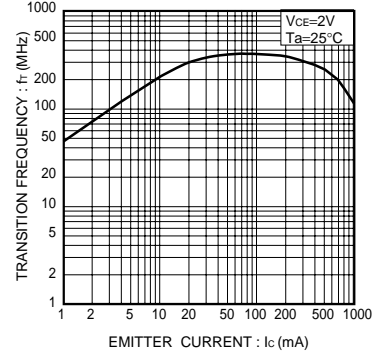


Fig.13 Gain bandwidth product vs. emitter current

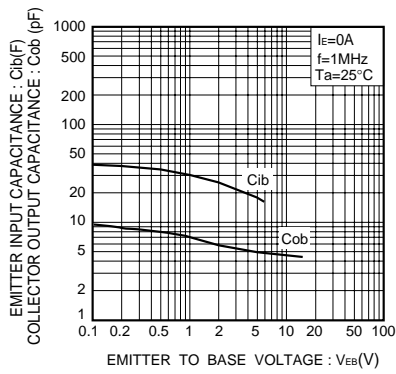


Fig.14 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage