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General purpose transistor (dual transistors)

EMZ7 / UMZ7N

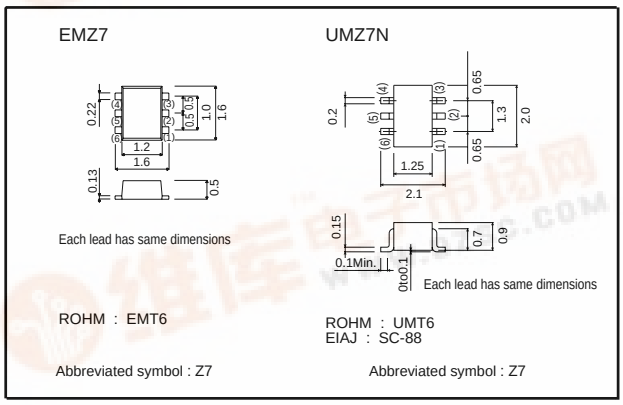
●Features

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 $V_{CE(sat)}$

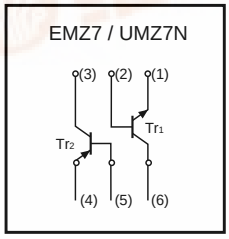
●Structure

NPN / PNP epitaxial planar silicon transistor

● External dimensions (Units : mm)



● Equivalent Circuit



● Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits		Unit
		Tr_1	Tr_2	
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	Tj	150		°C
Storage temperature	Tstg	–55~+150		°C

∗1 120mW per element must not be exceeded.

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● Electrical characteristics (Ta = 25°C)

Tr_1 (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	Cob	–	7.5	–	pF	V_{CB}=10V, I_E=0A, f=1MHz

Tr_2 (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	Cob	–	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

Tr_1 (NPN)

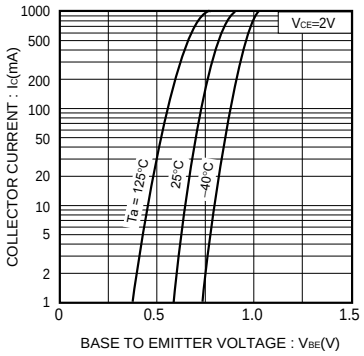

Fig.1 Grounded emitter propagation characteristics

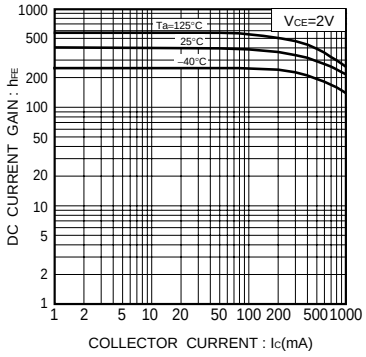

Fig.2 DC current gain vs. collector current

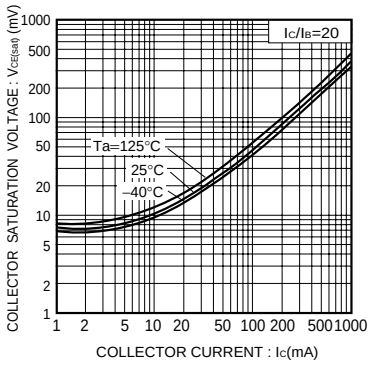

Fig.3 Collector-emitter saturation voltage vs. collector current (I)

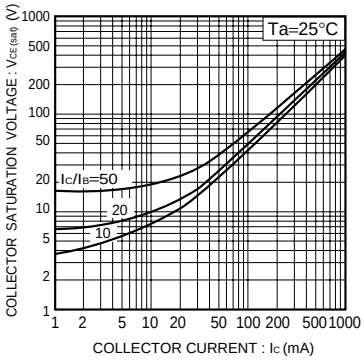

Fig.4 Collector-emitter saturation voltage vs. collector current (II)

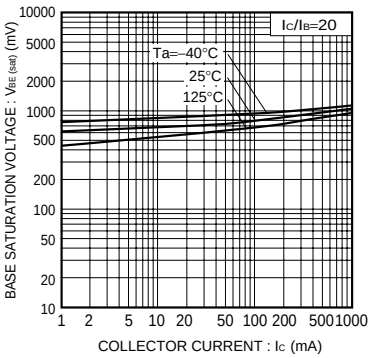

Fig.5 Base-emitter saturation voltage vs. collector current

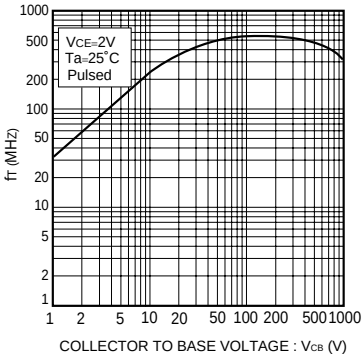

Fig.6 Collector output capacitance
Emitter input capacitance
vs. base voltage

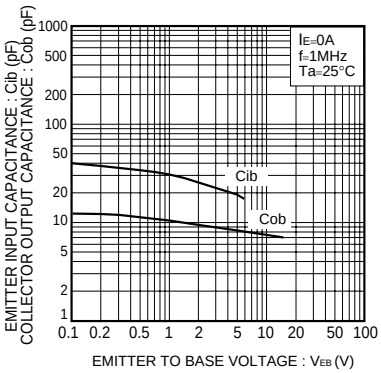

Fig.7 Collector output capacitance
vs collector-base voltage
Emitter input capacitance
vs emitter-base voltage

Tr2 (PNP)

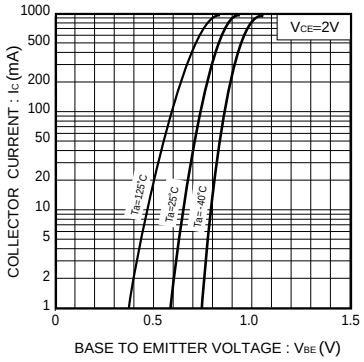

Fig.8 Grounded emitter propagation characteristics

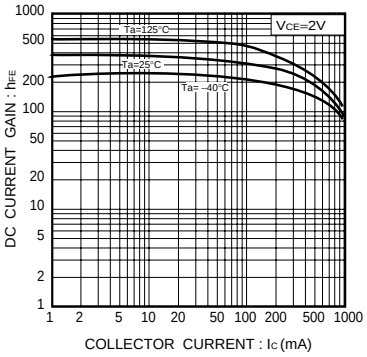

Fig.9 DC current gain vs. collector current

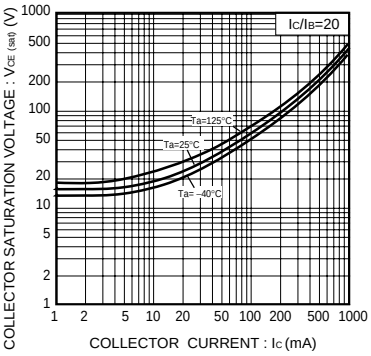

Fig.10 Collector-emitter saturation voltage vs. collector current (I)

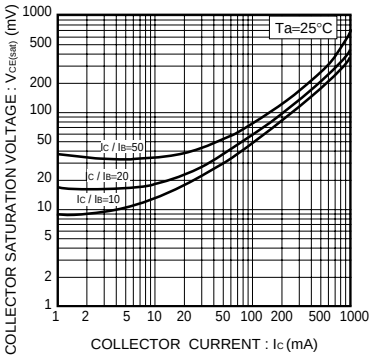

Fig.11 Collector-emitter saturation voltage vs. collector current

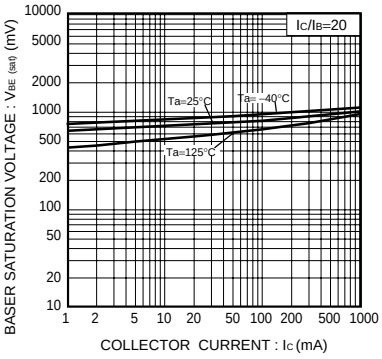

Fig.12 Base-emitter saturation voltage vs. collector current

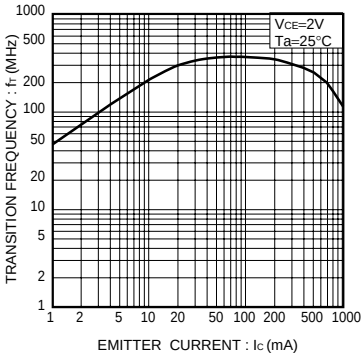

Fig.13 Gain bandwidth product vs. emitter current

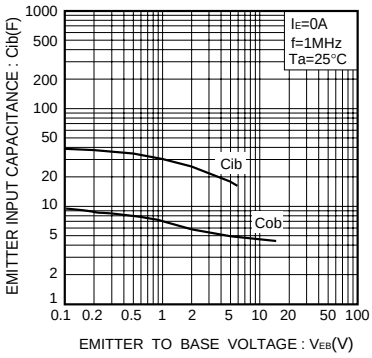

Fig.14 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage