

General purpose transistor (dual transistors)

EMZ1 / UMZ1N / IMZ1A

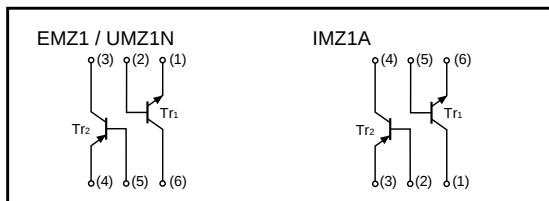
●Features

- 1) Both a 2SA1037AK chip and 2SC2412K chip in a EMT or UMT or SMT package.
- 2) Mounting possible with EMT3 or UMT3 or SMT3 automatic mounting machines.
- 3) Transistor elements are independent, eliminating interference.
- 4) Mounting cost and area can be cut in half.

●Structure

NPN / PNP epitaxial planar silicon transistor

●Equivalent circuit



●Absolute maximum ratings (Ta = 25°C)

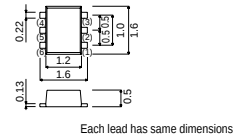
Parameter	Symbol	Limits		Unit
		Tr1	Tr2	
Collector-base voltage	V _{CBO}	60	-60	V
Collector-emitter voltage	V _{CEO}	50	-50	V
Emitter-base voltage	V _{EBO}	7	-6	V
Collector current	I _C	150	-150	mA
Power dissipation	EMZ1, UMZ1N	P _C	150 (TOTAL)	mW ^{*1} mW ^{*2}
	IMZ1A		300 (TOTAL)	
Junction temperature	T _j	150		°C
Storage temperature	T _{stg}	-55 to +150		°C

*1 120mW per element must not be exceeded.

*2 200mW per element must not be exceeded.

●External dimensions (Unit : mm)

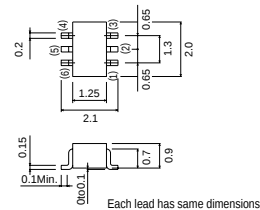
EMZ1



ROHM : EMT6

Abbreviated symbol : Z1

UMZ1N

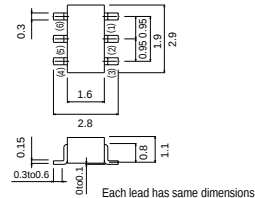


ROHM : UMT6

EIAJ : SC-88

Abbreviated symbol : Z1

IMZ1A



ROHM : SMT6

EIAJ : SC-74

Abbreviated symbol : Z1

Transistors

●Electrical characteristics (Ta = 25°C)

Tr1 (NPN)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	60	—	—	V	$I_C=50\mu A$
Collector-emitter breakdown voltage	BV_{CEO}	50	—	—	V	$I_C=1mA$
Emitter-base breakdown voltage	BV_{EBO}	7	—	—	V	$I_E=50\mu A$
Collector cutoff current	I_{CBO}	—	—	0.1	μA	$V_{CB}=60V$
Emitter cutoff current	I_{EBO}	—	—	0.1	μA	$V_{EB}=7V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	0.4	V	$I_C/I_E=50mA/5mA$
DC current transfer ratio	h_{FE}	120	—	560	—	$V_{CE}=6V, I_C=1mA$
Transition frequency	f_T	—	180	—	MHz	$V_{CE}=12V, I_E=-2mA, f=100MHz$
Output capacitance	C_{ob}	—	2	3.5	PF	$V_{CB}=12V, I_E=0A, f=1MHz$

Tr2 (PNP)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	-60	—	—	V	$I_C=-50\mu A$
Collector-emitter breakdown voltage	BV_{CEO}	-50	—	—	V	$I_C=-1mA$
Emitter-base breakdown voltage	BV_{EBO}	-6	—	—	V	$I_E=-50\mu A$
Collector cutoff current	I_{CBO}	—	—	-0.1	μA	$V_{CB}=-60V$
Emitter cutoff current	I_{EBO}	—	—	-0.1	μA	$V_{EB}=-6V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	-0.5	V	$I_C/I_E=-50mA/-5mA$
DC current transfer ratio	h_{FE}	120	—	560	—	$V_{CE}=-6V, I_C=-1mA$
Transition frequency	f_T	—	140	—	MHz	$V_{CE}=-12V, I_E=2mA, f=100MHz$
Output capacitance	C_{ob}	—	4	5	PF	$V_{CB}=-12V, I_E=0A, f=1MHz$

●Packaging specifications

Type	Package	Taping		
	Code	T2R	TR	T108
	Basic ordering unit (pieces)	8000	3000	3000
EMZ1		○	—	—
UMZ1N		—	○	—
IMZ1A		—	—	○

●Electrical characteristic curves

Tr1 (NPN)

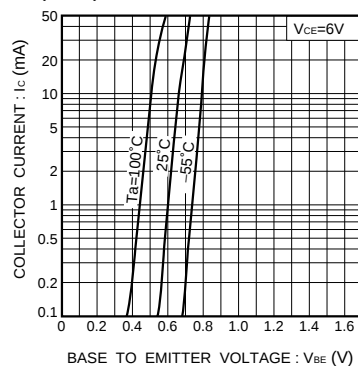


Fig.1 Grounded emitter propagation characteristics

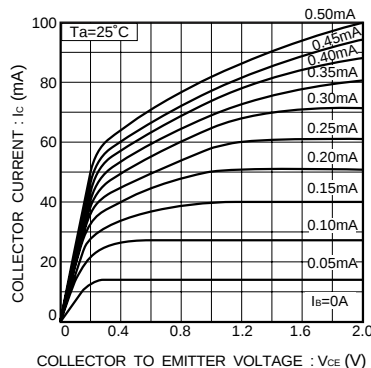


Fig.2 Grounded emitter output characteristics (I)

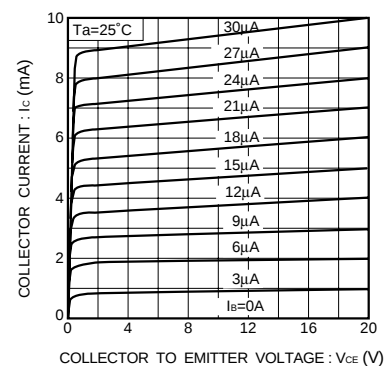


Fig.3 Grounded emitter output characteristics (II)

Transistors

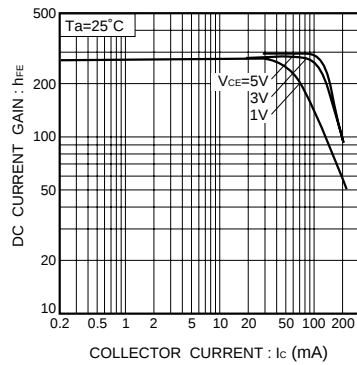


Fig.4 DC current gain vs. collector current (I)

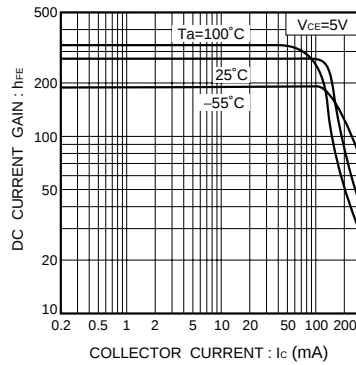


Fig.5 DC current gain vs. collector current (II)

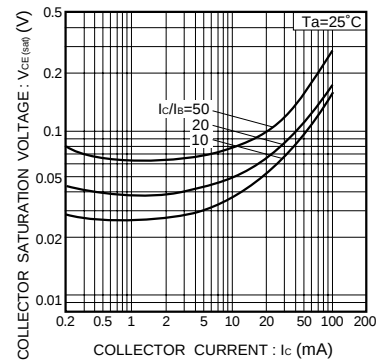


Fig.6 Collector-emitter saturation voltage vs. collector current (I)

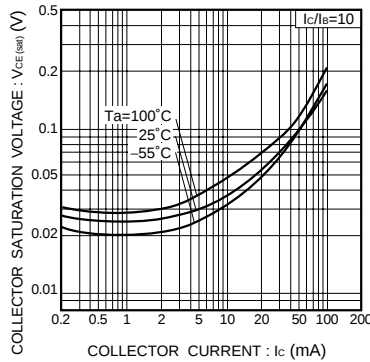


Fig.7 Collector-emitter saturation voltage vs. collector current (II)

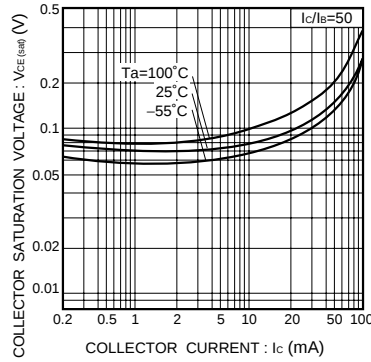


Fig.8 Collector-emitter saturation voltage vs. collector current (III)

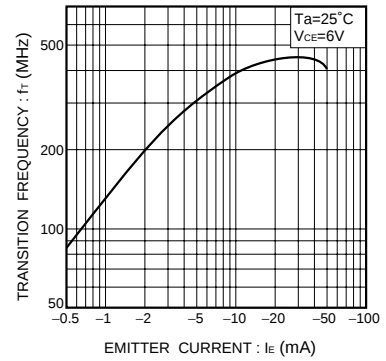


Fig.9 Gain bandwidth product vs. emitter current

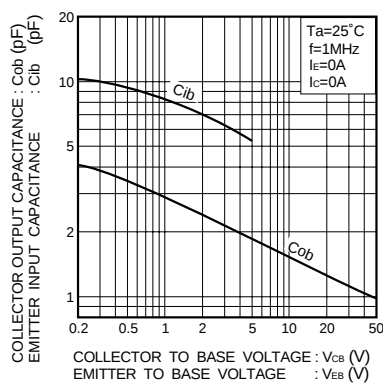
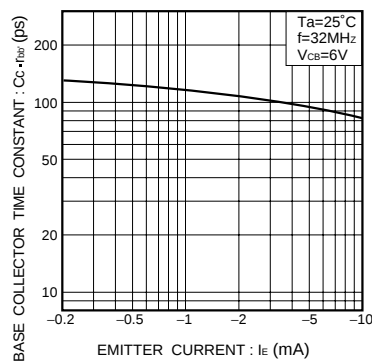
Fig.10 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

Fig.11 Base-collector time constant vs. emitter current

Transistors

Tr2 (PNP)

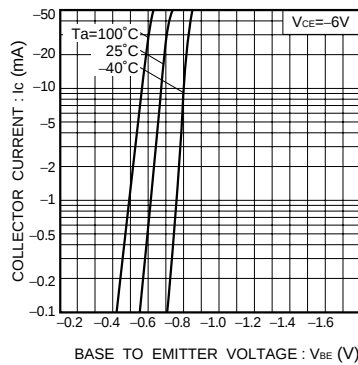


Fig.12 Grounded emitter propagation characteristics

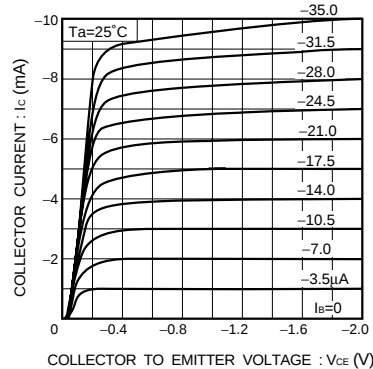


Fig.13 Grounded emitter output characteristics (I)

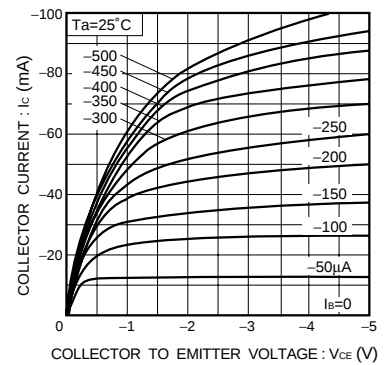


Fig.14 Grounded emitter output characteristics (II)

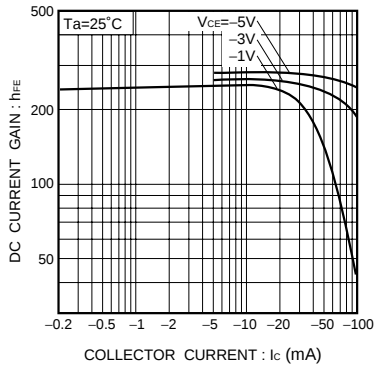


Fig.15 DC current gain vs. collector current (I)

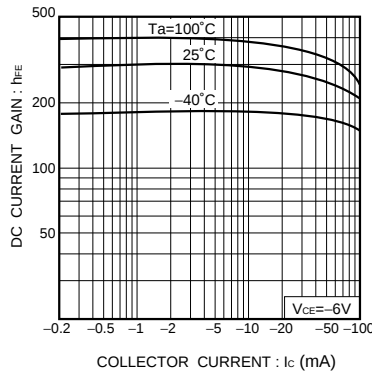


Fig.16 DC current gain vs. collector current (II)

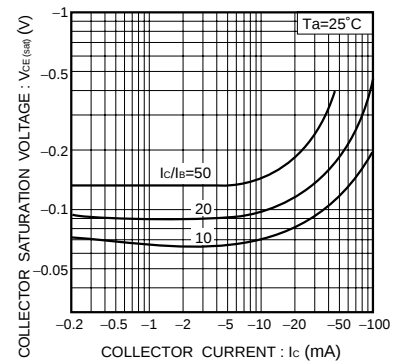


Fig.17 Collector-emitter saturation voltage vs. collector current (I)

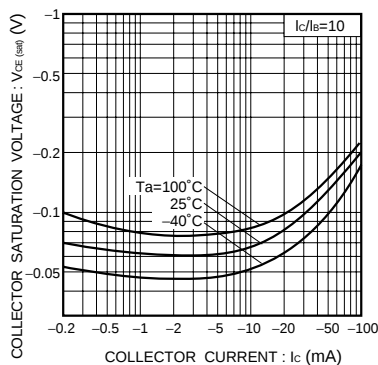


Fig.18 Collector-emitter saturation voltage vs. collector current (II)

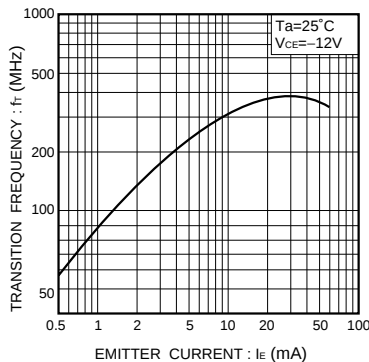
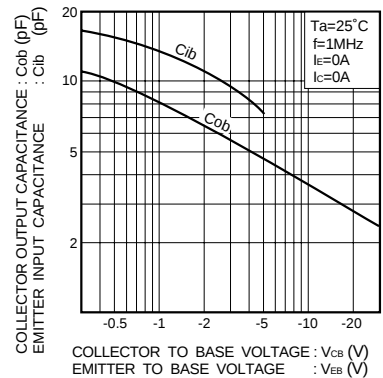


Fig.19 Gain bandwidth product vs. emitter current

Fig.20 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

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