General purpose transistor (dual transistors)

UMZ1N / IMZ1A

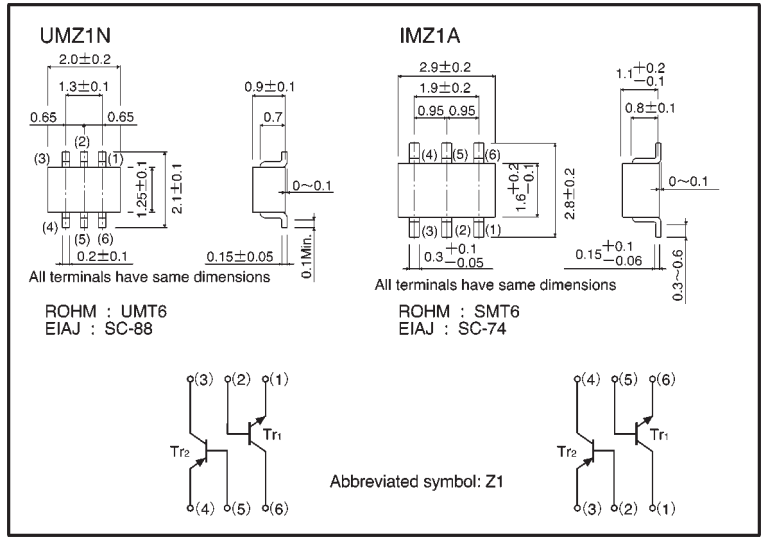
●Features

1) Both a 2SA1037AK chip and 2SC241ZK chip in a UMT or SMT package.
2) Mounting possible with 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

●External dimensions (Units: mm)



●Absolute maximum ratings (Ta = 25°C)

Parameter		Symbol	Limits		Unit
			Tr1	Tr2	
Collector-base voltage		VCBO	60	−60	V
Collector-emitter voltage		VCEO	50	−50	V
Emitter-base voltage		VEBO	7	−6	V
Collector current		IC	150	−150	mA
Collector power dissipation	UMZ1N	PC	150(TOTAL)		mW ∗1
	IMZ1A		300(TOTAL)		mW ∗2
Junction temperature		Tj	150		℃
Storage temperature		Tstg	−55～+150		℃

∗1 120mW per element must not be exceeded.
∗2 200mW per element must not be exceeded.

(96-525-AC22)

●Electrical characteristics (Ta = 25°C)

Tr_1 (NPN)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	60	—	—	V	I_C=50 μA
Collector-emitter breakdown voltage	BV_{CEO}	50	—	—	V	I_C=1mA
Emitter-base breakdown voltage	BV_{EBO}	7	—	—	V	I_E=50 μA
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_B=50mA/5mA
DC current transfer ratio	h_{FE}	120	—	560	—	V_{CE}/I_C=6V/1mA
Transition frequency	f_T	—	180	—	MHz	V_{CE}=12V, I_C=−2mA, f=100MHz
Output capacitance	Cob	—	2	3.5	pF	V_{CB}=12V, I_E=0A, f=1MHz

Tr_2 (PNP)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	−60	—	—	V	I_C=−50 μA
Collector-emitter breakdown voltage	BV_{CEO}	−50	—	—	V	I_C=−1mA
Emitter-base breakdown voltage	BV_{EBO}	−6	—	—	V	I_E=−50 μA
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_B=−50mA/−5mA
DC current transfer ratio	h_{FE}	120	—	560	—	V_{CE}/I_C=−6V/−1mA
Transition frequency	f_T	—	140	—	MHz	V_{CE}=−12V, I_C=2mA, f=100MHz
Output capacitance	Cob	—	4	5	pF	V_{CB}=−12V, I_E=0A, f=1MHz

●Packaging specifications

	Packaging type	Taping	
	Code	TR	T108
Part No.	Basic ordering unit (pieces)	3000	3000
UMZ1N		○	—
IMZ1A		—	○

●Electrical characteristic curves

Tr1 (NPN)

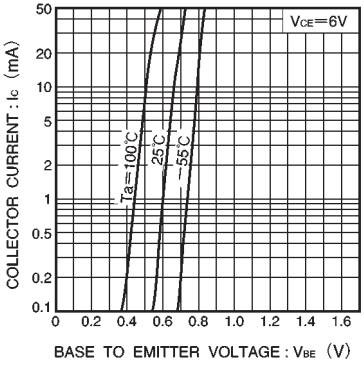


Fig.1 Grounded emitter propagation characteristics

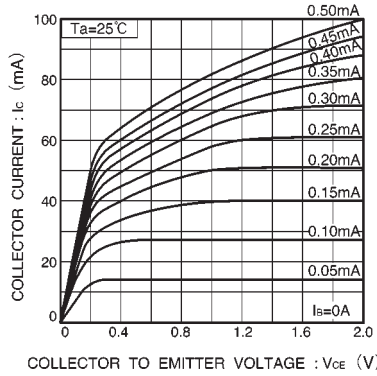


Fig.2 Grounded emitter output characteristics (Ⅰ)

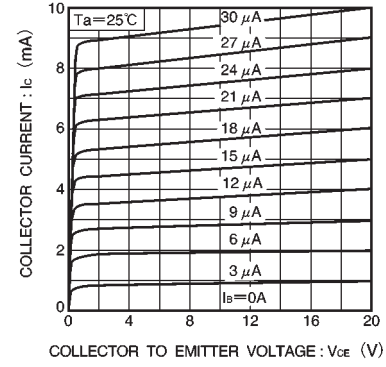


Fig.3 Grounded emitter output characteristics (Ⅱ)

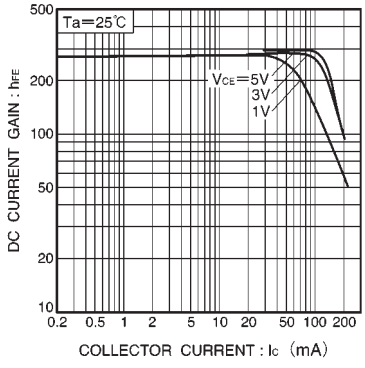


Fig.4 DC current gain vs. collector current (Ⅰ)

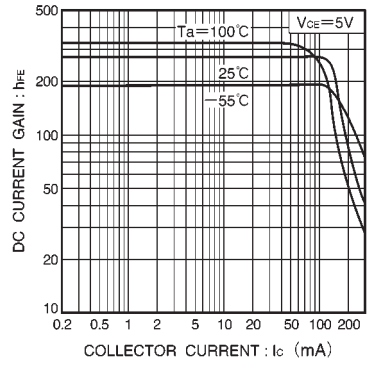


Fig.5 DC current gain vs. collector current (Ⅱ)

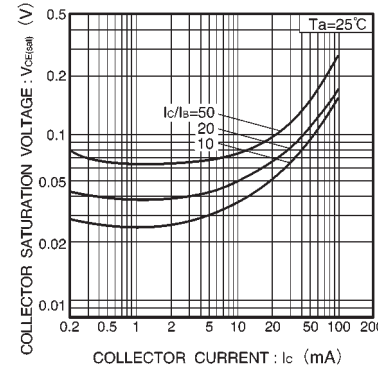


Fig.6 Collector-emitter saturation voltage vs. collector current (Ⅰ)

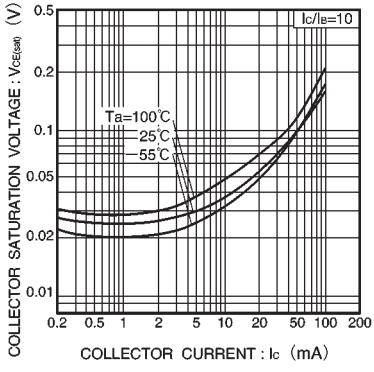


Fig.7 Collector-emitter saturation voltage vs. collector current (Ⅱ)

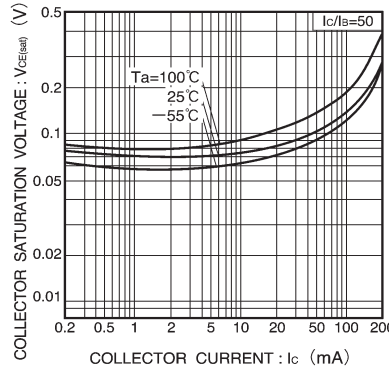


Fig.8 Collector-emitter saturation voltage vs. collector current (Ⅲ)

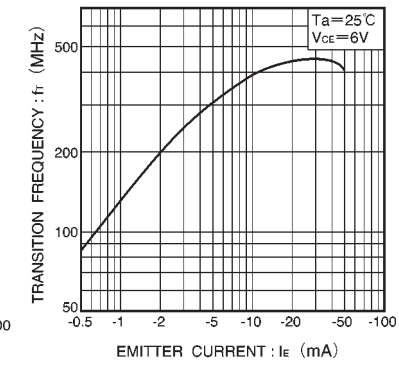


Fig.9 Gain bandwidth product vs. emitter current

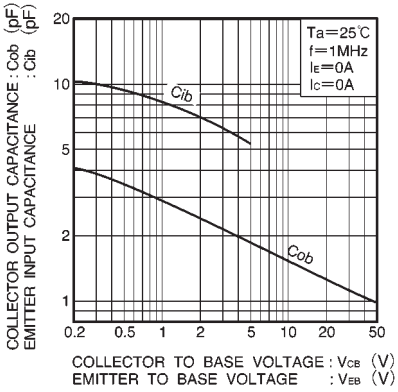


Fig.10 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

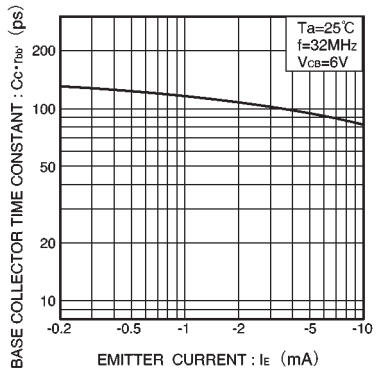


Fig.11 Base-collector time constant vs. emitter current

●Electrical characteristic curves

Tr_2 (PNP)

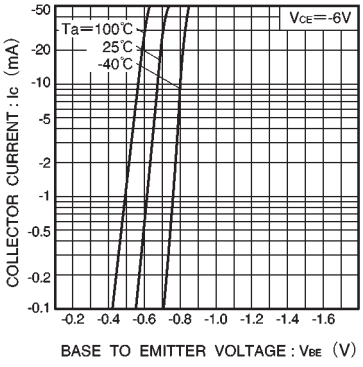


Fig.12 Grounded emitter propagation characteristics

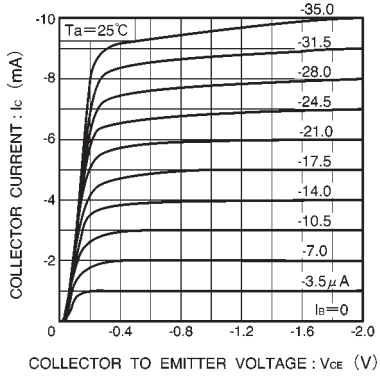


Fig.13 Grounded emitter output characteristics (Ⅰ)

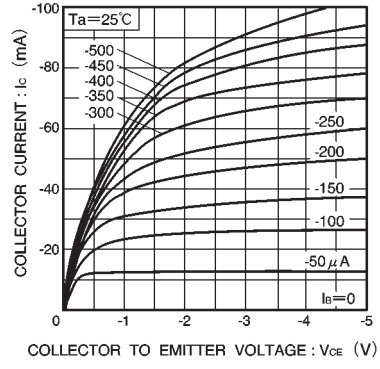


Fig.14 Grounded emitter output characteristics (Ⅱ)

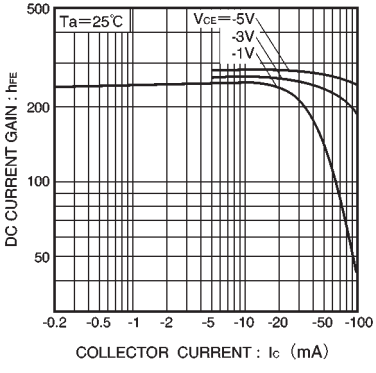


Fig.15 DC current gain vs. collector current (Ⅰ)

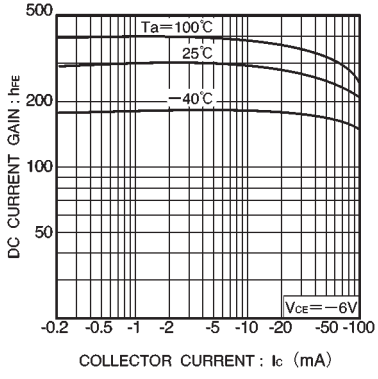


Fig.16 DC current gain vs. collector current (Ⅱ)

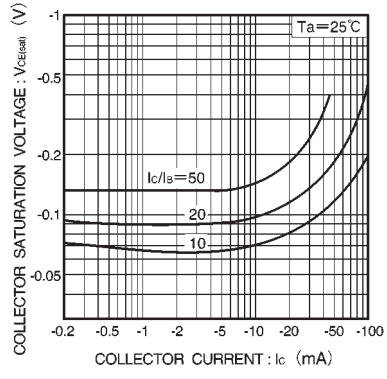


Fig.17 Collector-emitter saturation voltage vs. collector current (Ⅰ)

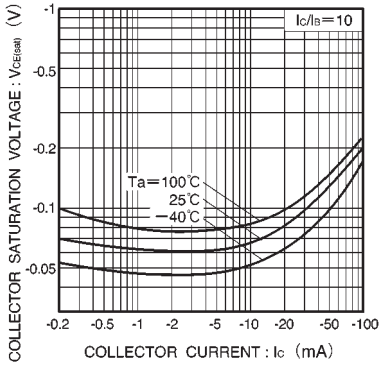


Fig.18 Collector-emitter saturation voltage vs. collector current (Ⅱ)

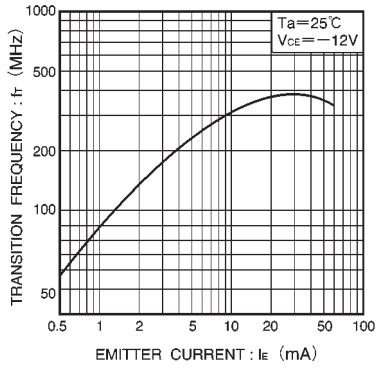


Fig.19 Gain bandwidth product vs. emitter current

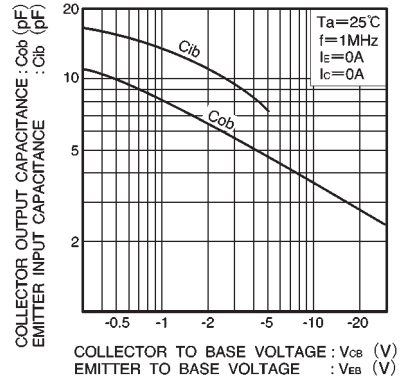


Fig.20 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage