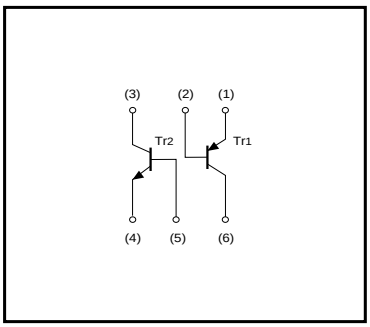
Power management (dual transistors)

EMZ8 / UMZ8N

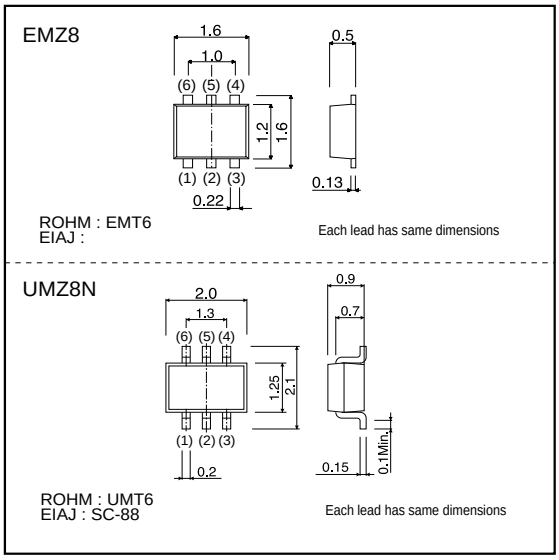
●**Feature**

1) Both a 2SA2018 chip and 2SC2412K chip in a EMT or UMT package.

●**Equivalent circuits**



●**Dimensions**(Unit : mm)



●**Absolute maximum ratings** (Ta=25°C)

Parameter	Symbol	Limits		Unit
		Tr1	Tr2	
Collector-base voltage	V_{CBO}	−15	60	V
Collector-emitter voltage	V_{CEO}	−12	50	V
Emitter-base voltage	V_{EBO}	−6	7	V
Collector current	I_C	−500	150	mA
	I_{CP}	−1	−	A
Collector power dissipation	P_C	150 (TOTAL)		mW ✻
Junction temperature	Tj	150		°C
Storage temperature	Tstg	−55 to +150		°C

✻ 120mW per element must not be exceeded.

●**Package, marking, and packaging specifications**

Part No.	EMZ8	UMZ8N
Package	EMT6	UMT6
Marking	Z8	Z8
Code	T2R	TR
Basic ordering unit (pieces)	8000	3000

●Electrical characteristics (Ta=25°C)

Tr1

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	−15	–	–	V	IC = −10μA
Collector-emitter breakdown voltage	BV_{CEO}	−12	–	–	V	IC = −1mA
Emitter-base breakdown voltage	BV_{EBO}	−6	–	–	V	IE = −10μA
Collector cutoff current	I_{CBO}	–	–	−0.1	μA	VCB = −15V
Emitter cutoff current	I_{EBO}	–	–	−0.1	μA	VEB = −6V
Collector-emitter saturation voltage	$V_{CE(sat)}$	–	−0.1	−0.25	V	IC/IB = −200mA/−10mA
DC current transfer ratio	h_{FE}	270	–	680	–	VCE = −2V , IC = −10mA
Transition frequency	f_T	–	260	–	MHz	VCE = −2V , IE = 10mA , f = 100MHz
Output capacitance	Cob	–	6.5	–	pF	VCB = −10V , IE = 0A , f = 1MHz

Tr2

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

●Electrical characteristic curves

<Tr1>

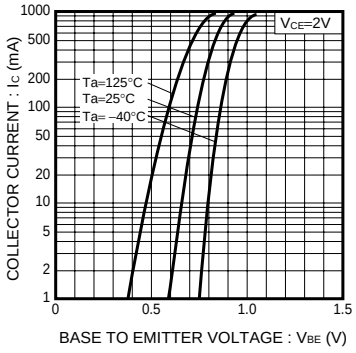


Fig.1 Grounded Emitter Propagation Characteristics

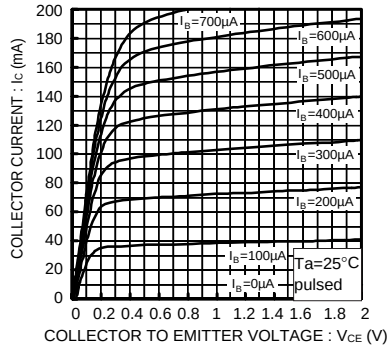


Fig.2 Typical Output Characteristics

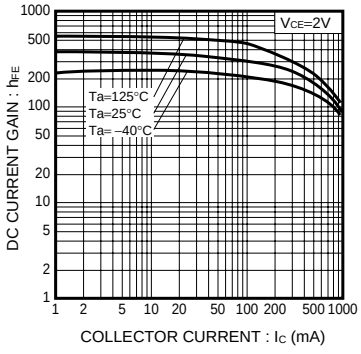


Fig.3 DC Current Gain vs. Collector Current

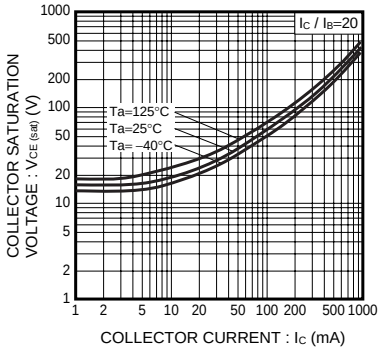


Fig.4 Collector-Emitter Saturation Voltage vs. Collector Current (I)

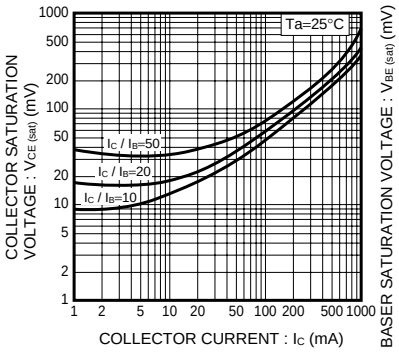


Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (II)

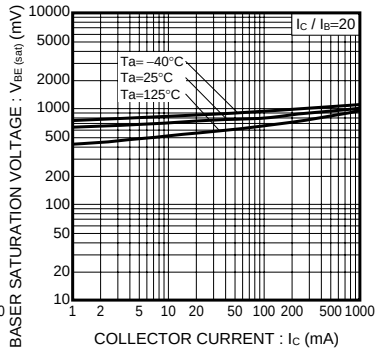


Fig.6 Base-Emitter Saturation Voltage vs.Collecter Current

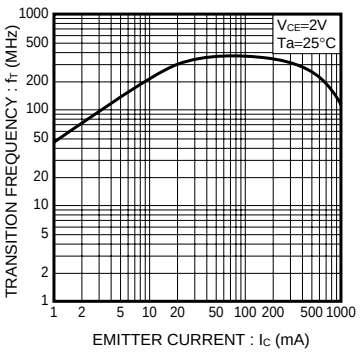


Fig.7 Gain Bandwidth Product vs. Emitter Current

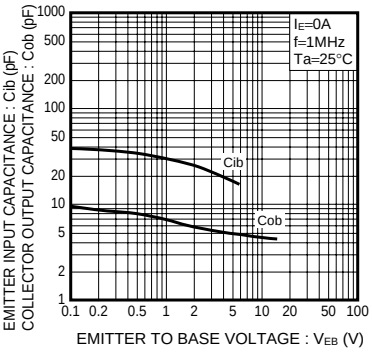


Fig.8 Collector Output Capacitance vs. Collector-Base Voltage
Emitter Input Capacitance vs. Emitter-Base Voltage

<Tr2>

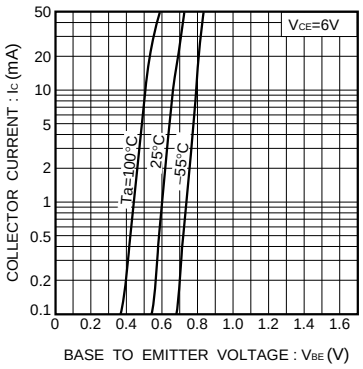


Fig.1 Grounded emitter propagation characteristics

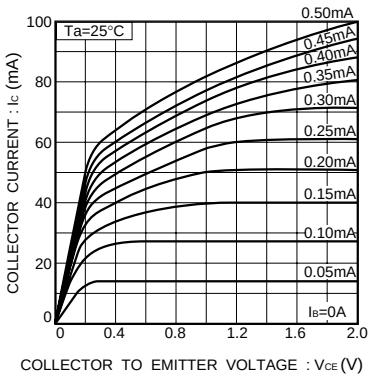


Fig.2 Grounded emitter output characteristics (I)

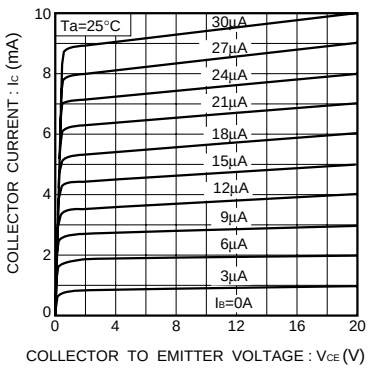


Fig.3 Grounded emitter output characteristics (II)

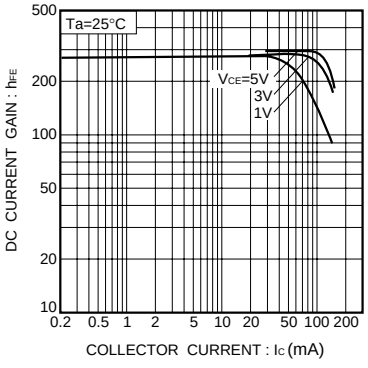


Fig.4 DC current gain vs. collector current (I)

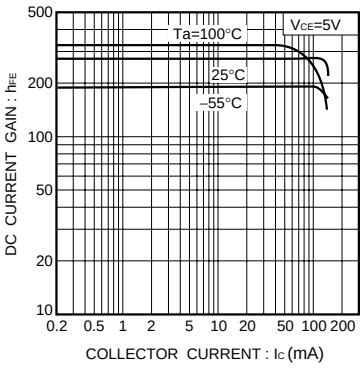


Fig.5 DC current gain vs. collector current (II)

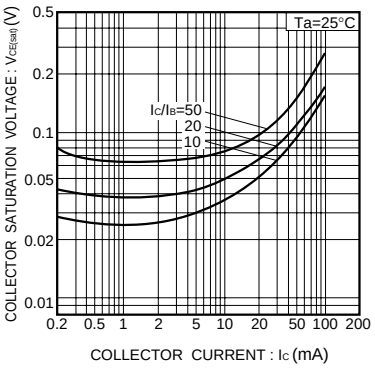


Fig. 6 Collector-emitter saturation voltage vs. collector current

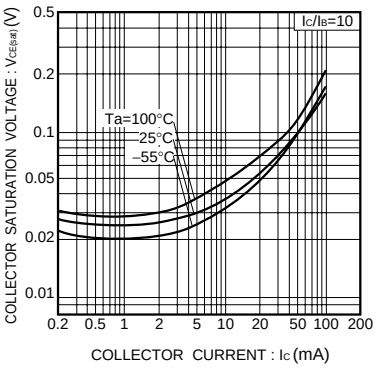


Fig.7 Collector-emitter saturation voltage vs. collector current (I)

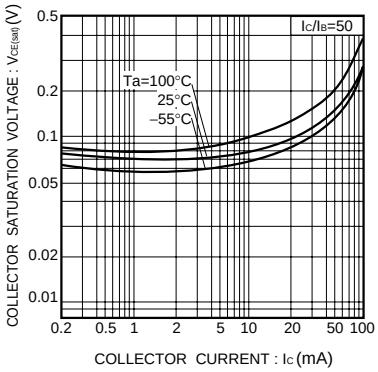


Fig.8 Collector-emitter saturation voltage vs. collector current (II)

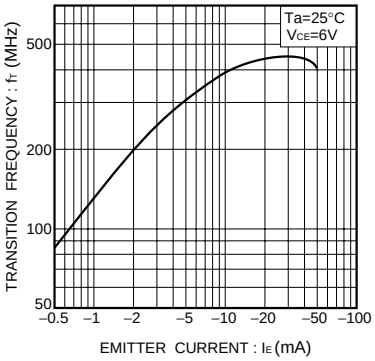


Fig.9 Gain bandwidth product vs. emitter current

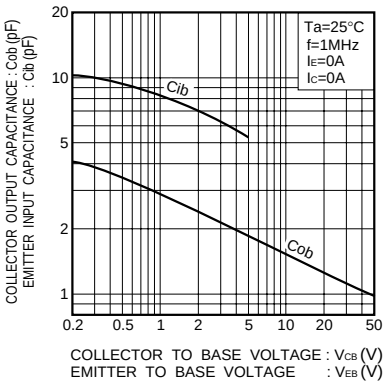


Fig.10 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

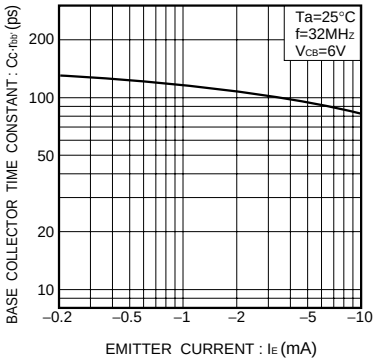


Fig.11 Base-collector time constant vs. emitter current

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