

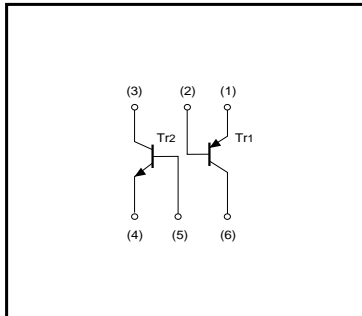
# Power management (dual transistors)

## EMZ8 / UMZ8N

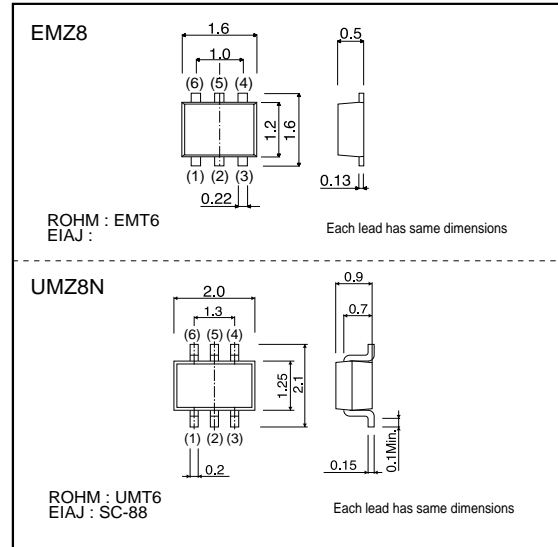
### ●Feature

- 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 <sub>CB0</sub>	-15	60	V
Collector-emitter voltage	V <sub>CE0</sub>	-12	50	V
Emitter-base voltage	V <sub>EB0</sub>	-6	7	V
Collector current	I <sub>c</sub>	-500	150	mA
	I <sub>CP</sub>	-1	-	A
Collector power dissipation	P <sub>c</sub>	150 (TOTAL)		mW *
Junction temperature	T <sub>j</sub>	150		°C
Storage temperature	T <sub>stg</sub>	-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

Transistors

●Electrical characteristics (Ta=25°C)

Tr1

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV <sub>CBO</sub>	-15	-	-	V	I <sub>C</sub> = -10μA
Collector-emitter breakdown voltage	BV <sub>CEO</sub>	-12	-	-	V	I <sub>C</sub> = -1mA
Emitter-base breakdown voltage	BV <sub>EBO</sub>	-6	-	-	V	I <sub>E</sub> = -10μA
Collector cutoff current	I <sub>CBO</sub>	-	-	-0.1	μA	V <sub>CB</sub> = -15V
Emitter cutoff current	I <sub>EBO</sub>	-	-	-0.1	μA	V <sub>EB</sub> = -6V
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	-	-0.1	-0.25	V	I <sub>C</sub> /I <sub>B</sub> = -200mA/-10mA
DC current transfer ratio	h <sub>FE</sub>	270	-	680	-	V <sub>CE</sub> = -2V, I <sub>C</sub> = -10mA
Transition frequency	f <sub>r</sub>	-	260	-	MHz	V <sub>CE</sub> = -2V, I <sub>E</sub> = 10mA, f = 100MHz
Output capacitance	C <sub>ob</sub>	-	6.5	-	pF	V <sub>CB</sub> = -10V, I <sub>E</sub> = 0A, f = 1MHz

Tr2

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV <sub>CBO</sub>	60	-	-	V	I <sub>C</sub> = 50μA
Collector-emitter breakdown voltage	BV <sub>CEO</sub>	50	-	-	V	I <sub>C</sub> = 1mA
Emitter-base breakdown voltage	BV <sub>EBO</sub>	7	-	-	V	I <sub>E</sub> = 50μA
Collector cutoff current	I <sub>CBO</sub>	-	-	0.1	μA	V <sub>CB</sub> = 60V
Emitter cutoff current	I <sub>EBO</sub>	-	-	0.1	μA	V <sub>EB</sub> = 7V
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	-	-	0.4	V	I <sub>C</sub> /I <sub>B</sub> = 50mA/5mA
DC current transfer ratio	h <sub>FE</sub>	120	-	560	-	V <sub>CE</sub> = 6V, I <sub>C</sub> = 1mA
Transition frequency	f <sub>r</sub>	-	180	-	MHz	V <sub>CE</sub> = 12V, I <sub>E</sub> = -2mA, f = 100MHz
Output capacitance	C <sub>ob</sub>	-	2	3.5	pF	V <sub>CB</sub> = 12V, I <sub>E</sub> = 0A, f = 1MHz

●Electrical characteristic curves

<Tr1>

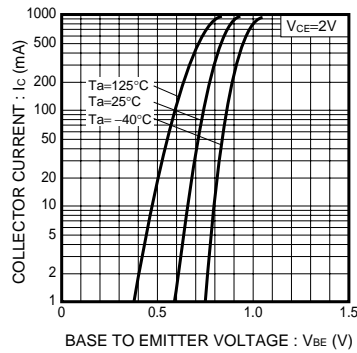


Fig.1 Grounded Emitter Propagation Characteristics

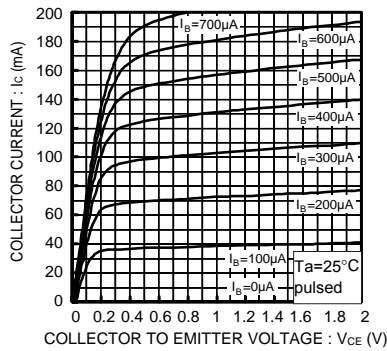


Fig.2 Typical Output Characteristics

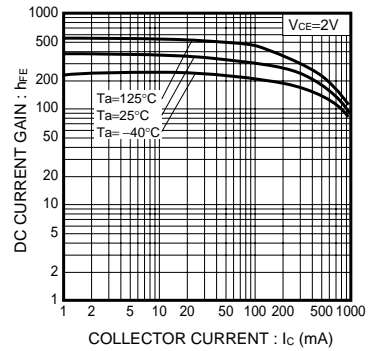


Fig.3 DC Current Gain vs. Collector Current

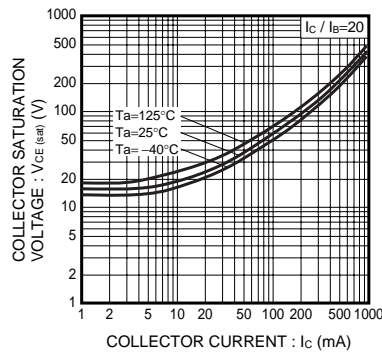


Fig.4 Collector-Emitter Saturation Voltage vs. Collector Current (I)

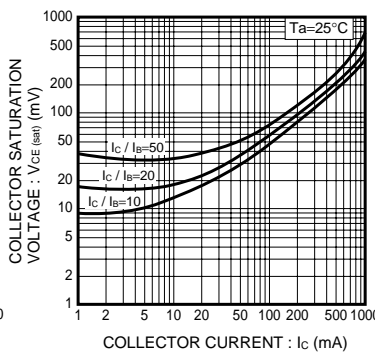


Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (II)

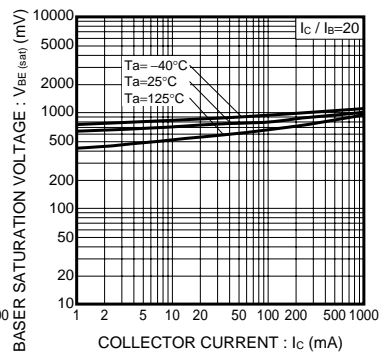


Fig.6 Base-Emitter Saturation Voltage vs. Collector Current

Transistors

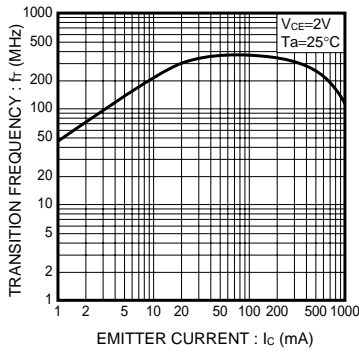


Fig.7 Gain Bandwidth Product vs. Emitter Current

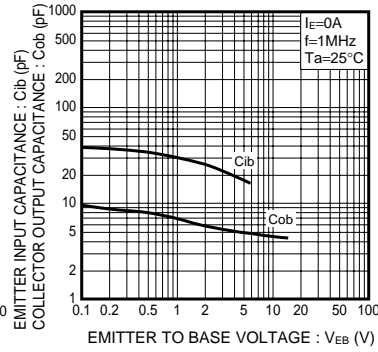


Fig.8 Collector Output Capacitance vs. Collector-Base Voltage  
Emitter Input Capacitance vs. Emitter-Base Voltage

<Tr2>

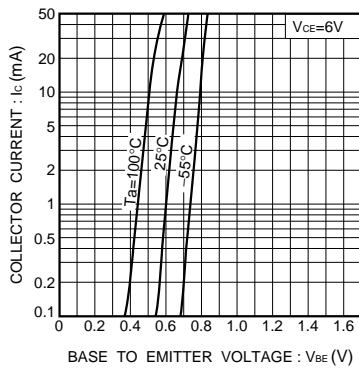


Fig.1 Grounded emitter propagation characteristics

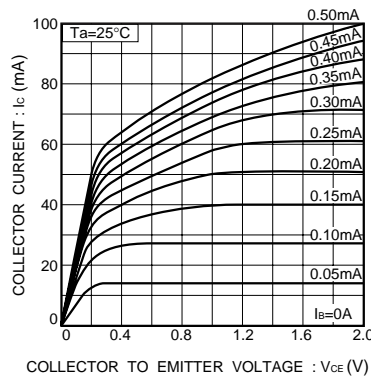


Fig.2 Grounded emitter output characteristics ( I )

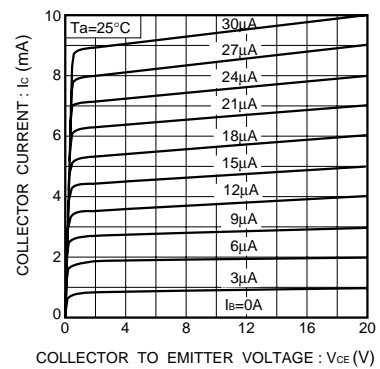


Fig.3 Grounded emitter output characteristics ( II )

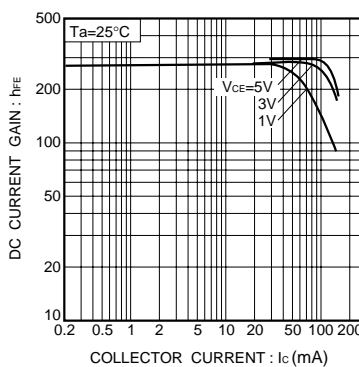


Fig.4 DC current gain vs. collector current ( I )

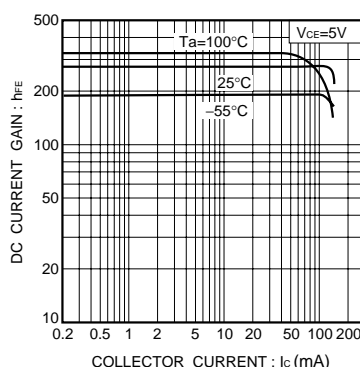


Fig.5 DC current gain vs. collector current ( II )

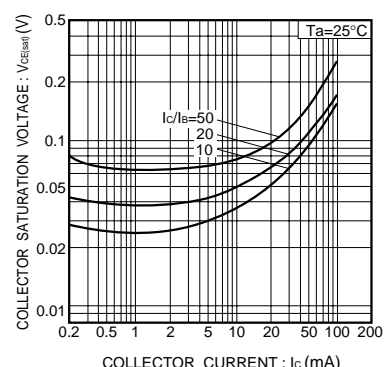


Fig.6 Collector-emitter saturation voltage vs. collector current

Transistors

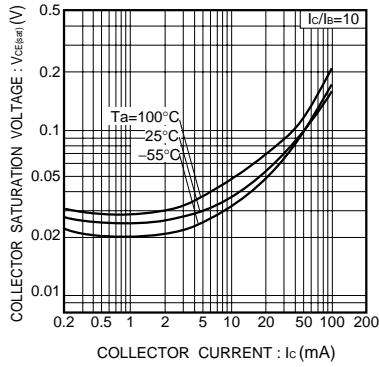


Fig.7 Collector-emitter saturation voltage vs. collector current ( I )

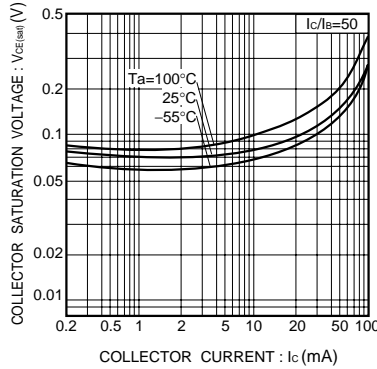


Fig.8 Collector-emitter saturation voltage vs. collector current (II)

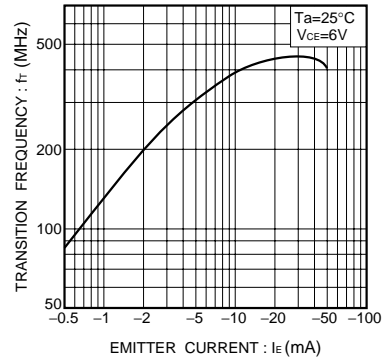


Fig.9 Gain bandwidth product vs. emitter current

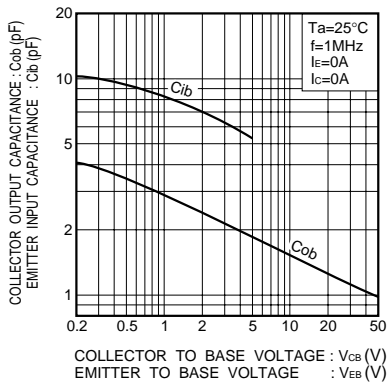


Fig.10 Collector output capacitance vs. collector-base voltage  
Emitter input capacitance vs. emitter-base voltage

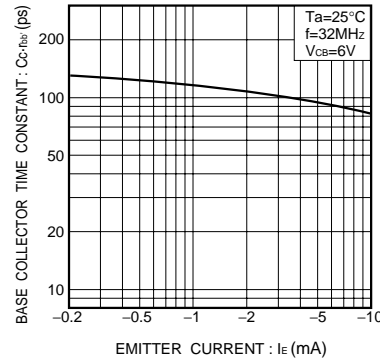


Fig.11 Base-collector time constant vs. emitter current

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