EMZ51

General Purpose Transister (dual transistors) Datasheet

<For Tr1(NPN)>

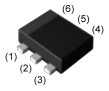
Parameter	Value
V_{CEO}	20V
I_C	200mA

<For Tr2(PNP)>

Parameter	Value
V_{CEO}	-20V
I_C	-200mA

●Outline

EMT6

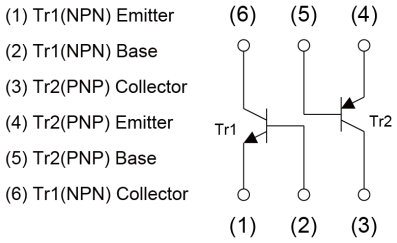


EMZ51
(SC-107C)

●Features

1) General Purpose.
2) 2SAR522 and 2SCR522 chips in one package.
3) Transister elements are independent, eliminating interface.
4) Mounting cost and area can be cut in half.
5) Lead Free/RoHS Compliant.

●Inner circuit



●Application

Switching, LED driver

●Packaging specifications

Part No.	Package	Package size	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit.(pcs)	Marking
EMZ51	EMT6	1616	T2R	180	8	8000	Z51

●Absolute maximum ratings (T_a = 25°C)

Parameter	Symbol	Tr1(NPN)	Tr2(PNP)	Unit
Collector-base voltage	V_{CBO}	20	-20	V
Collector-emitter voltage	V_{CEO}	20	-20	V
Emitter-base voltage	V_{EBO}	5	-5	V
Collector current	I_C	200	-200	mA
	I_{CP} *1	400	-400	mA
Power dissipation	P_D *2 *3	150(Total)		mW
Junction temperature	T_j	150		℃
Range of storage temperature	T_{stg}	-55 to +150		℃

●Electrical characteristics (T_a = 25°C) <For Tr1(NPN)>

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Collector-base breakdown voltage	BV_{CBO}	I_C = 50μA	20	-	-	V
Collector-emitter breakdown voltage	BV_{CEO}	I_C = 1mA	20	-	-	V
Emitter-base breakdown voltage	BV_{EBO}	I_E = 50μA	5	-	-	V
Collector cut-off current	I_{CBO}	V_{CB} = 20V	-	-	0.1	μA
Emitter cut-off current	I_{EBO}	V_{EB} = 5V	-	-	0.1	μA
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = 100mA, I_B = 10mA	-	0.12	0.30	V
DC current gain	h_{FE}	V_{CE} = 6V, I_C = 1mA	120	-	560	-
Transition frequency	f_T	V_{CE} = 10V, I_E = -10mA, f = 100MHz	-	400	-	MHz
Output capacitance	C_{ob}	V_{CB} = 10V, I_E = 0A, f = 1MHz	-	1.6	-	pF

●Electrical characteristics (T_a = 25°C) <For Tr2(PNP)>

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Collector-base breakdown voltage	BV_{CBO}	I_C = -50μA	-20	-	-	V
Collector-emitter breakdown voltage	BV_{CEO}	I_C = -1mA	-20	-	-	V
Emitter-base breakdown voltage	BV_{EBO}	I_E = -50μA	-5	-	-	V
Collector cut-off current	I_{CBO}	V_{CB} = -20V	-	-	-0.1	μA
Emitter cut-off current	I_{EBO}	V_{EB} = -5V	-	-	-0.1	μA
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = -100mA, I_B = -10mA	-	-0.12	-0.30	V
DC current gain	h_{FE}	V_{CE} = -6V, I_C = -1mA	120	-	560	-
Transition frequency	f_T	V_{CE} = -10V, I_E = 10mA, f = 100MHz	-	350	-	MHz
Output capacitance	C_{ob}	V_{CB} = -10V, I_E = 0A, f = 1MHz	-	2	-	pF

*1 Pw=1ms Single Pulse

*2 Each terminal mounted on a reference footprint

*3 120mW per element must not be exceeded.

●Electrical characteristic curves(Ta=25℃) <For Tr1(NPN)>

Fig.1 Grounded Emitter Propagation Characteristics

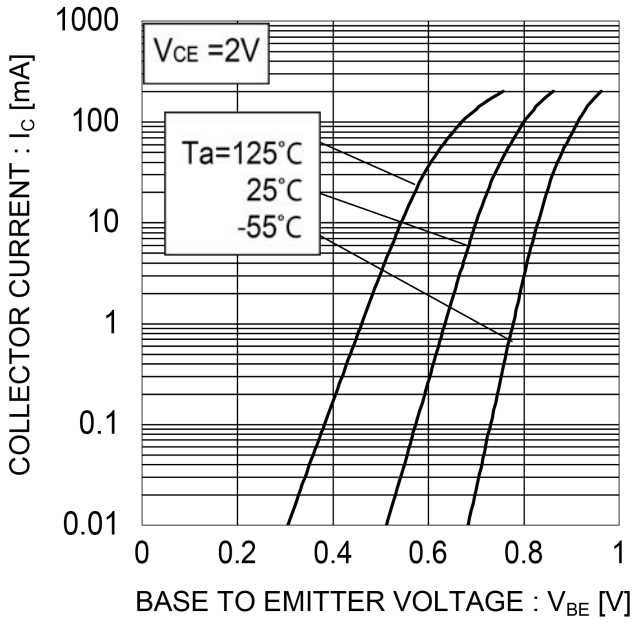


Fig.2 Typical Output Characteristics

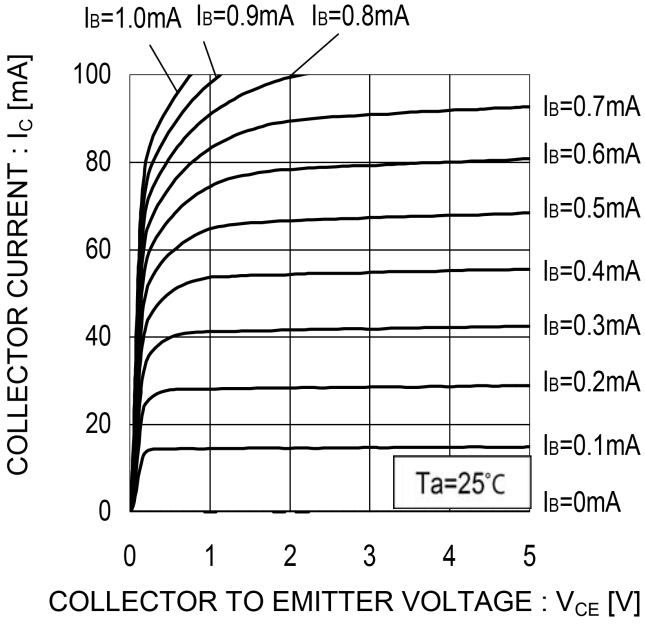


Fig.3 DC Current Gain vs. Collector Current(I)

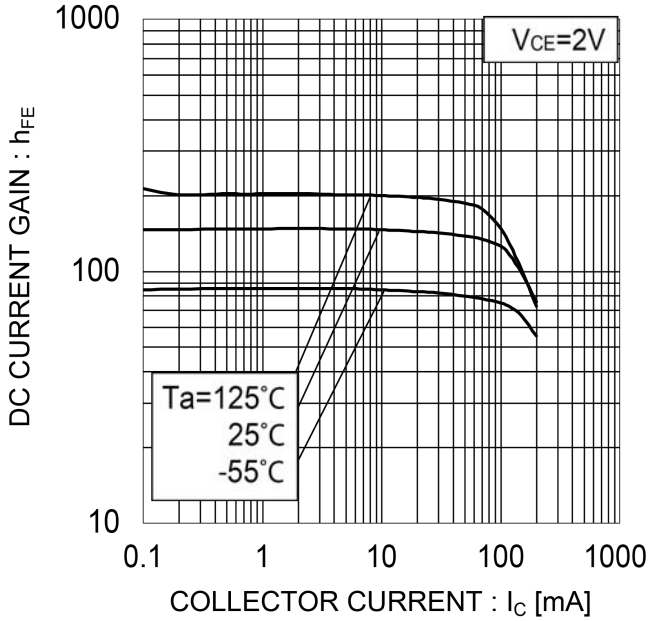
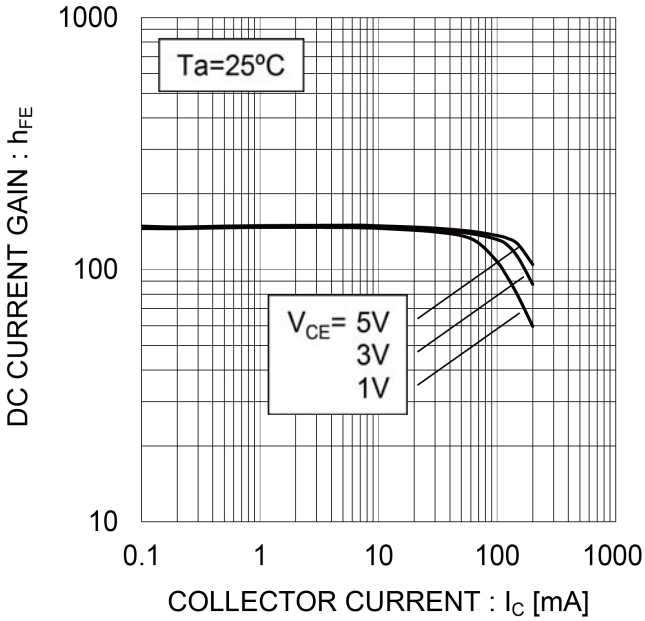


Fig.4 DC Current Gain vs. Collector Current(II)



● **Electrical characteristic curves** (T_a=25°C) <For Tr1(NPN)>

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

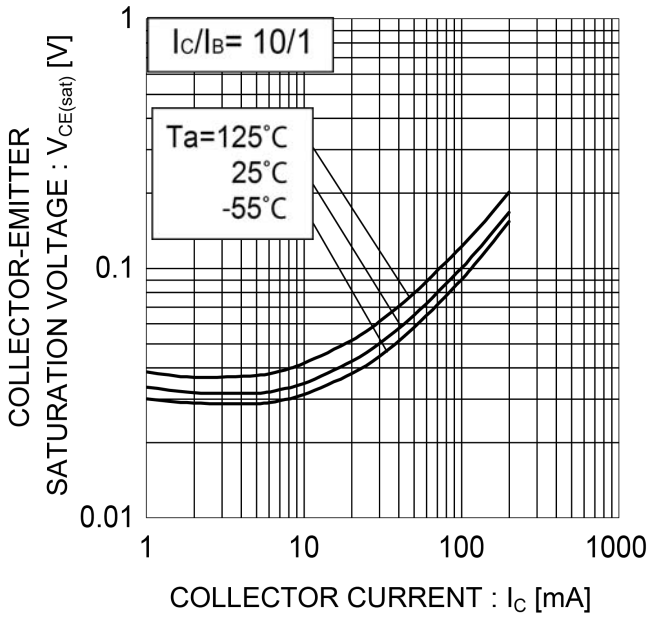


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current(II)

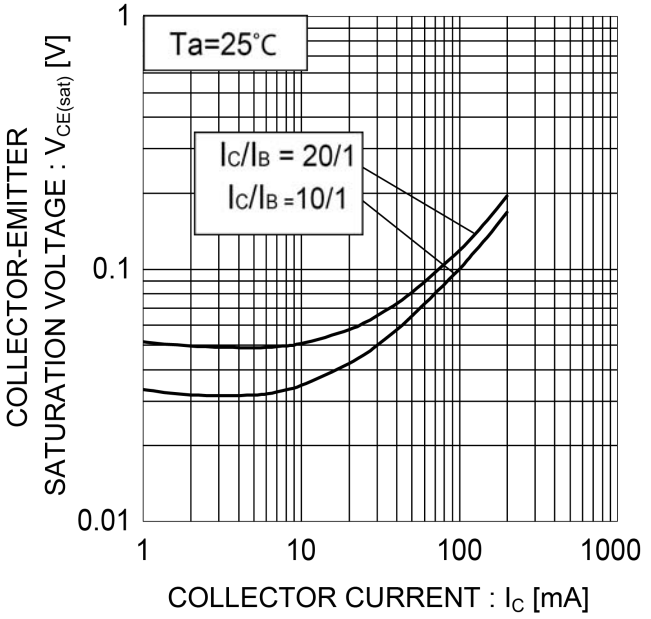


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

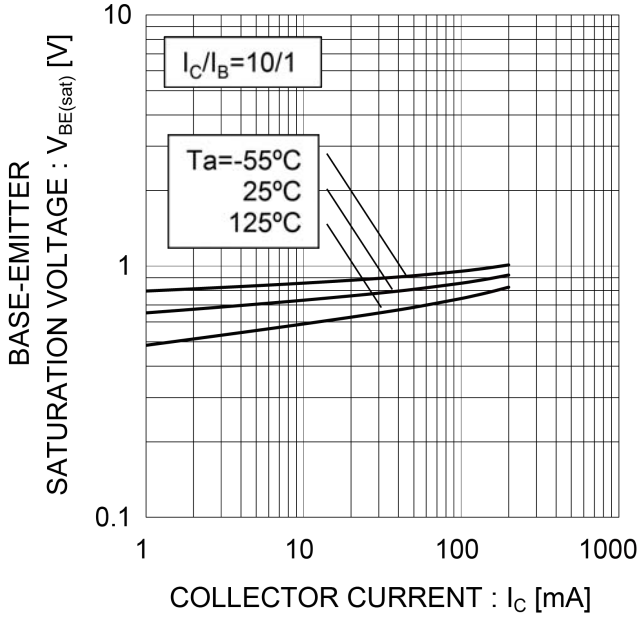
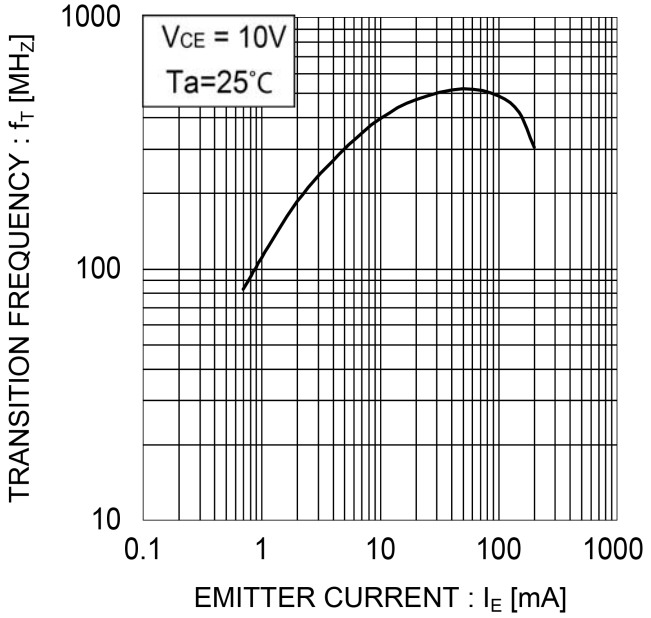


Fig.8 Gain Bandwidth Product vs. Emitter Current



● **Electrical characteristic curves** (T_a =25°C) <For Tr1(NPN)>

Fig.9 Emitter input capacitance vs. Emitter-Base Voltage Collector output capacitance vs. Collector-

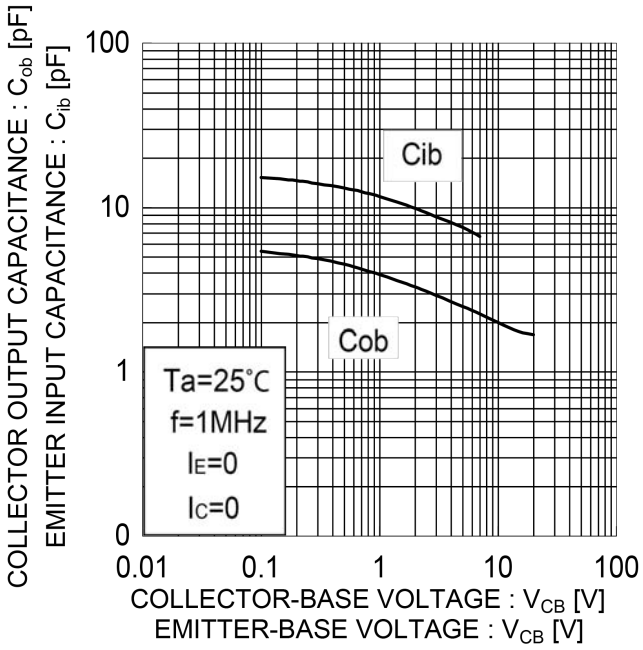
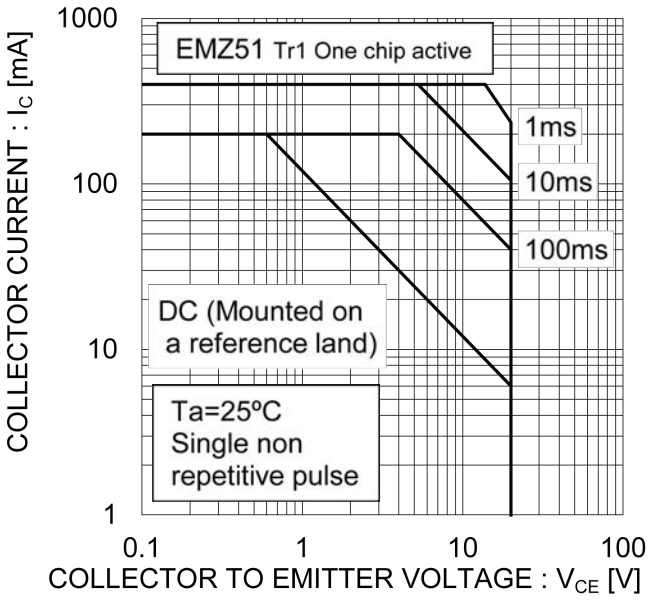


Fig.10 Safe Operating Area



●Electrical characteristic curves (T_a =25°C) <For Tr2(PNP)>

Fig.1 Grounded Emitter Propagation Characteristics

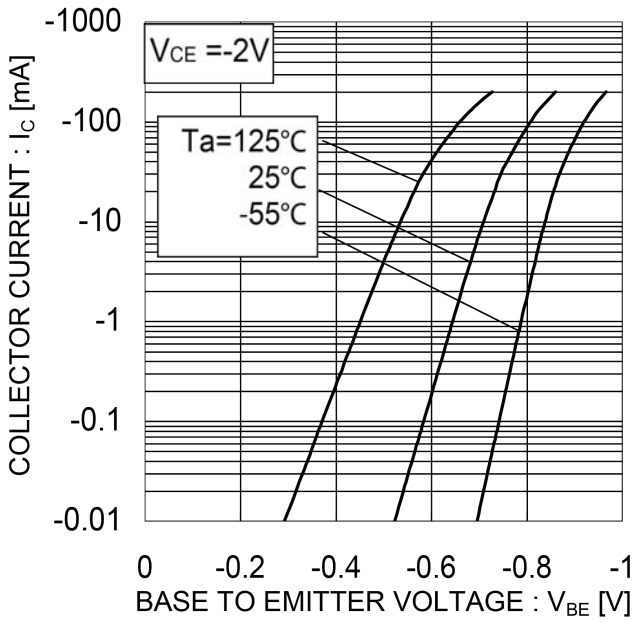


Fig.2 Typical Output Characteristics

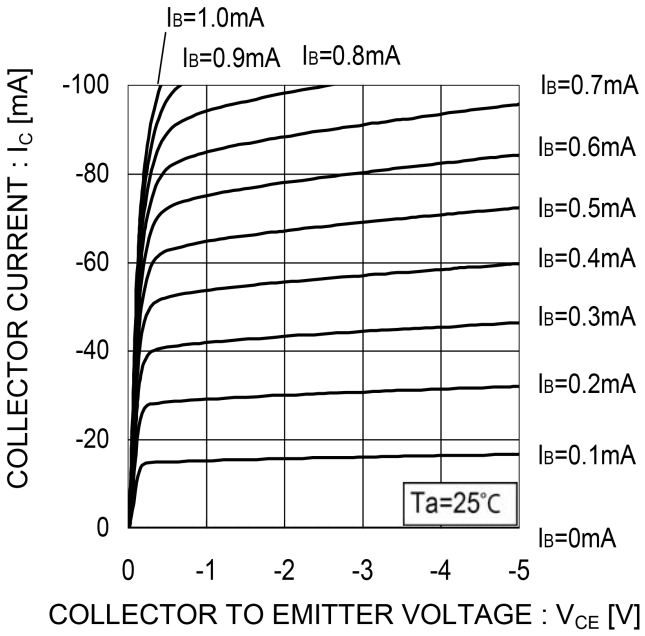


Fig.3 DC Current Gain vs. Collector Current(I)

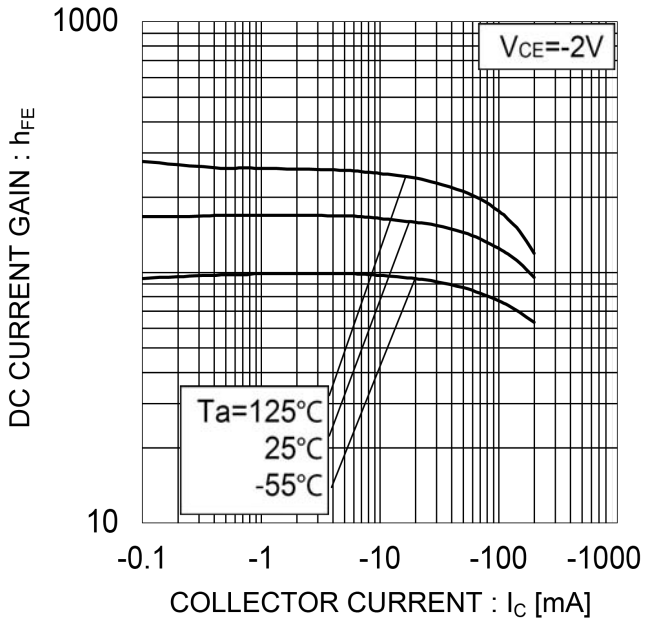
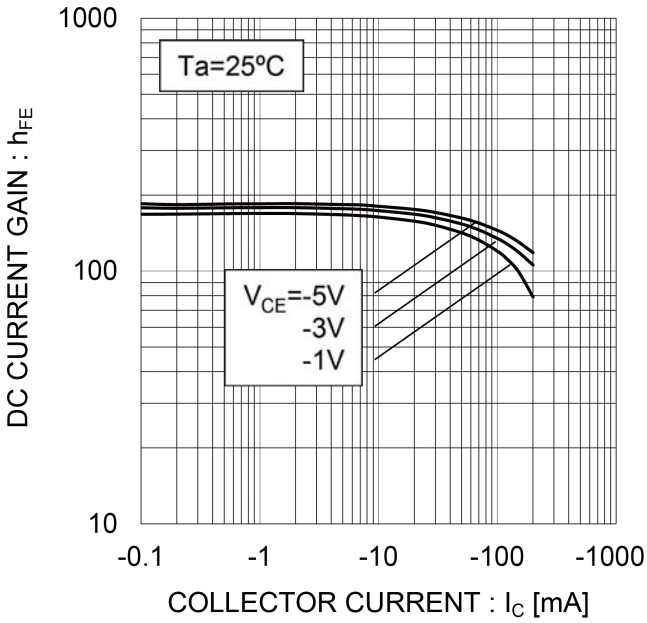


Fig.4 DC Current Gain vs. Collector Current(II)



● **Electrical characteristic curves** (T_a = 25°C) <For Tr2(PNP)>

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

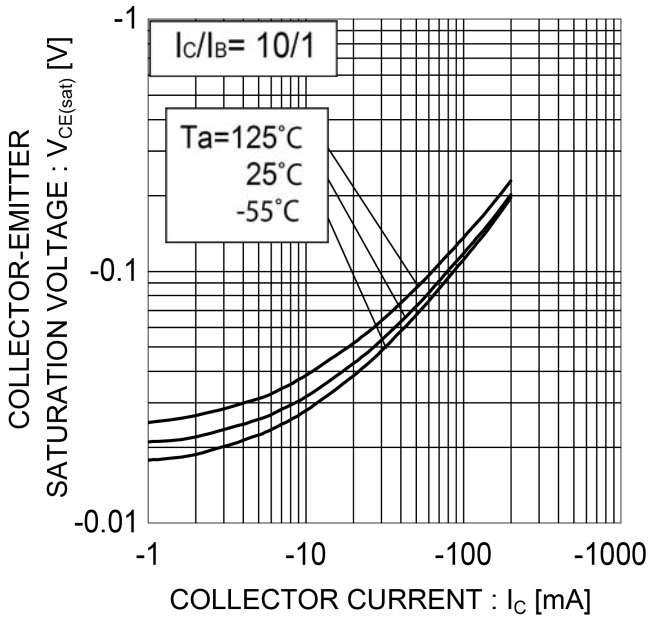


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current(II)

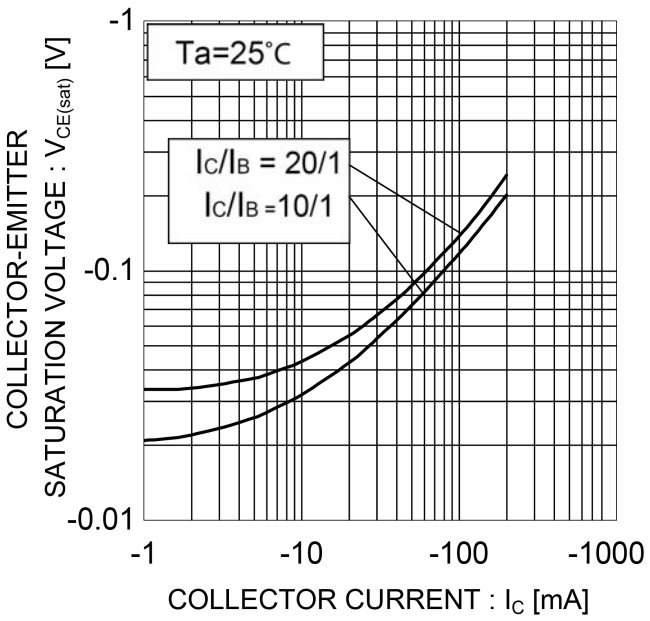


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

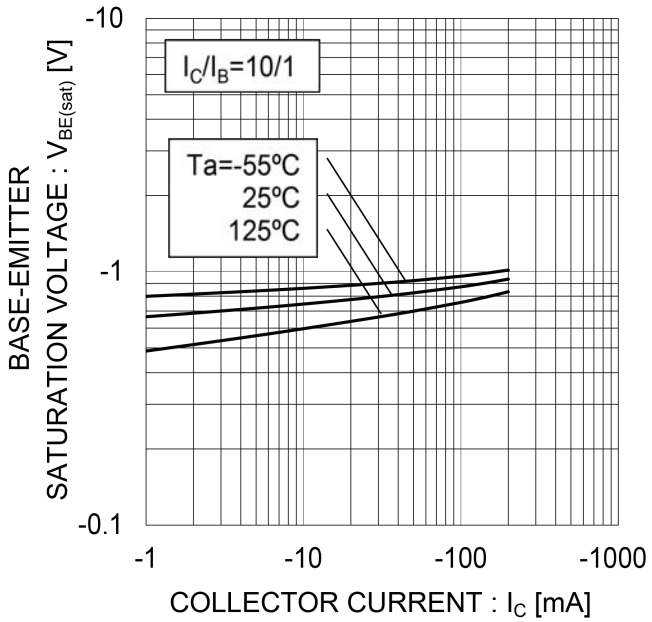
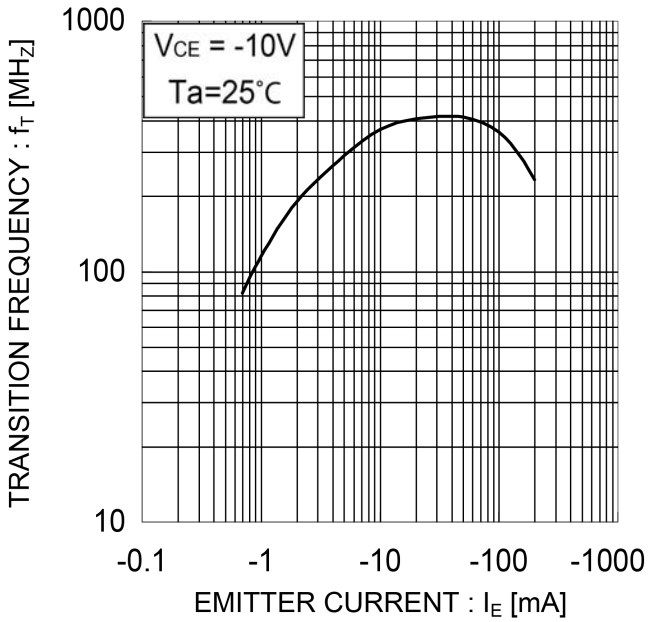


Fig.8 Gain Bandwidth Product vs. Emitter Current



● **Electrical characteristic curves** (T_a = 25°C) <For Tr2(PNP)>

Fig.9 Emitter input capacitance vs. Emitter-Base Voltage Collector output capacitance vs. Collector-

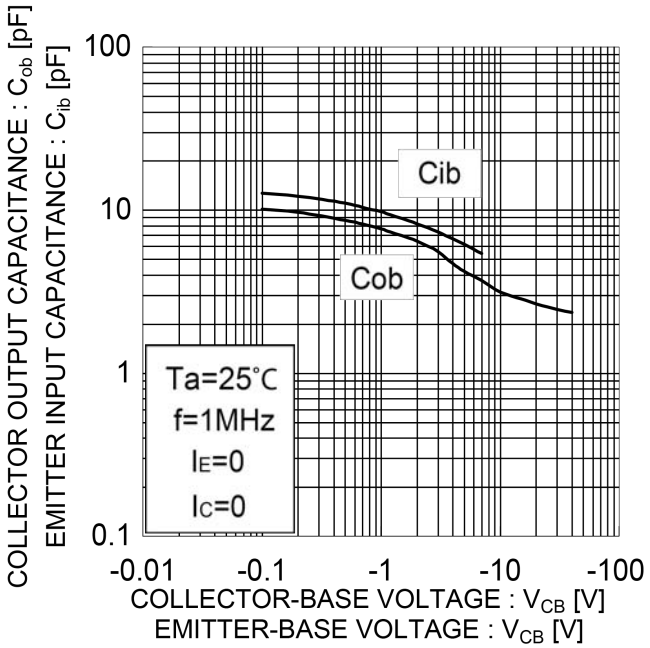
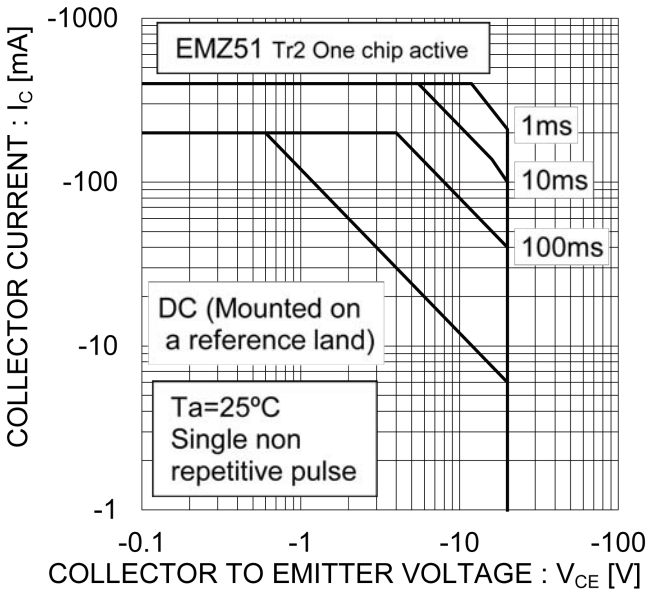
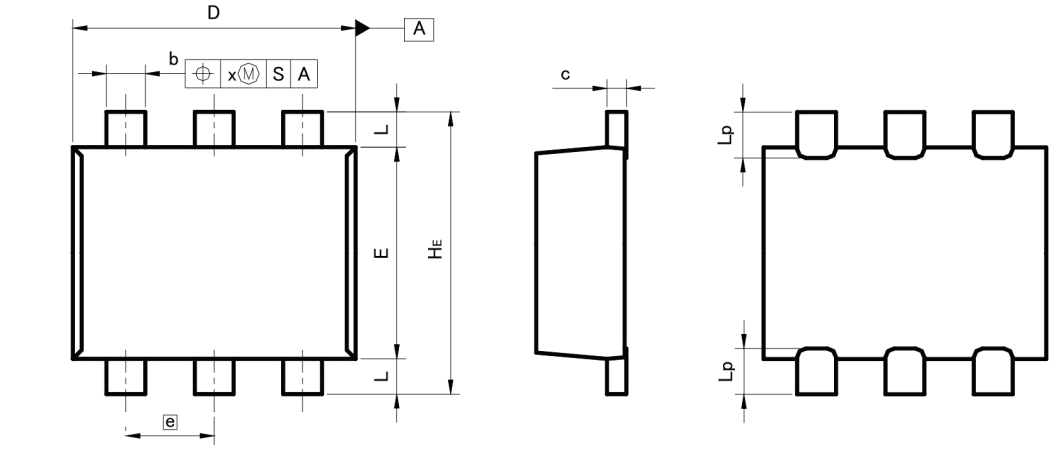


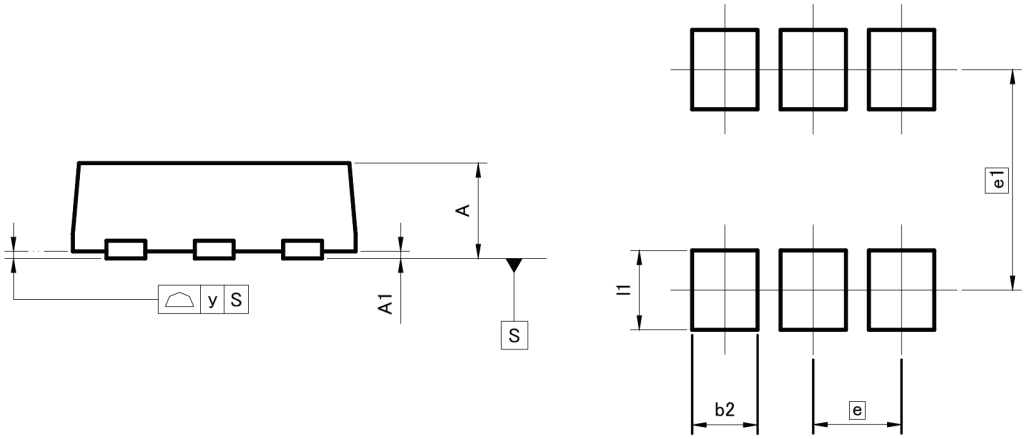
Fig.10 Safe Operating Area



●Dimensions

EMT6





Pattern of terminal position areas
[Not a recommended pattern of soldering pads]

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.45	0.55	0.018	0.022
A1	0.00	0.10	0.000	0.004
b	0.17	0.27	0.007	0.011
c	0.08	0.18	0.003	0.007
D	1.50	1.70	0.059	0.067
E	1.10	1.30	0.043	0.051
e	0.50		0.020	
HE	1.50	1.70	0.059	0.067
L	0.10	0.30	0.004	0.012
Lp	–	0.35	–	0.014
x	–	0.10	–	0.004
y	–	0.10	–	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2	–	0.37	–	0.015
e1	1.25		0.049	
l1	–	0.45	–	0.018

Dimension in mm/inches

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