IMZ4

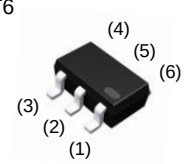
PNP/NPN 500mA 32V Complex Medium Power Transistors Datasheet

Parameter	Tr1
V_{CEO}	32V
$I_{C(MAX.)}$	500mA

Parameter	Tr2
V_{CEO}	−32V
$I_{C(MAX.)}$	−500mA

●Outline

SMT6

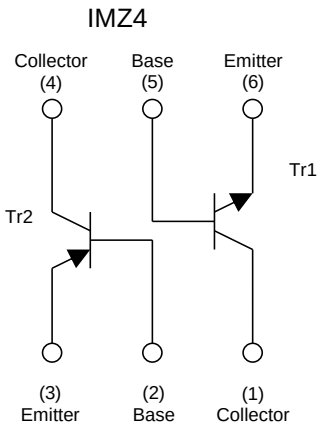


IMZ4
SOT-457 (SC-74)

●Features

1) Both a 2SA1036K chip and 2SC2411K chip in a SMT6 package.
2) Mounting possible with SMT3 automatic mounting machines.
3) Transistor elements are independent, eliminating interference.
4) Mounting cost and area can be cut in half.
5) Lead Free/RoHS Compliant.

●Inner circuit



●Application

Driver circuit

●Packaging specifications

Part No.	Package	Package size (mm)	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit (pcs)	Marking
IMZ4	SMT6	2928	T108	180	8	3,000	Z4

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

Parameter	Symbol	Values		Unit
		Tr1	Tr2	
Collector-base voltage	V_{CBO}	40	−40	V
Collector-emitter voltage	V_{CEO}	32	−32	V
Emitter-base voltage	V_{EBO}	5	−5	V
Collector current	I_C	500	−500	mA
	I_{CP} *1	1	−1	A
Collector Power dissipation	P_D *2	300 (Total) *3		mW
Junction temperature	T_j	150		°C
Range of storage temperature	T_{stg}	−55 to +150		°C

●**Electrical characteristics** (Ta = 25°C)

<Tr1>

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Collector-base breakdown voltage	BV_{CBO}	I_C= 100μA	40	-	-	V
Collector-emitter breakdown voltage	BV_{CEO}	I_C= 1mA	32	-	-	V
Emitter-base breakdown voltage	BV_{EBO}	I_E= 100μA	5	-	-	V
Collector cut-off current	I_{CBO}	V_{CB} = 20V	-	-	1.0	μA
Emitter cut-off current	I_{EBO}	V_{EB} = 4V	-	-	1.0	μA
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C / I_B= 500mA / 50mA	-	-	0.6	V
DC current gain	h_{FE}	V_{CE}= 3V, I_C= 100mA	180	-	390	-
Transition frequency	f_T	V_{CE} = 5V, I_E = −20mA, f = 100MHz	-	250	-	MHz
Output Capacitance	C_{ob}	V_{CB} = 10V, I_E = 0A, f = 1MHz	-	6.5	-	pF

<Tr2>

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Collector-base breakdown voltage	BV_{CBO}	I_C= −100μA	−40	-	-	V
Collector-emitter breakdown voltage	BV_{CEO}	I_C= −1mA	−40	-	-	V
Emitter-base breakdown voltage	BV_{EBO}	I_C= −100μA	−5	-	-	V
Collector cut-off current	I_{CBO}	V_{CB} = 20V	-	-	−1.0	μA
Emitter cut-off current	I_{EBO}	V_{EB} = 4V	-	-	−1.0	μA
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C / I_B= 500mA / 50mA	-	-	−0.6	V
DC current gain	h_{FE}	V_{CE}= 3V, I_C= 100mA	180	-	390	-
Transition frequency	f_T	V_{CE} = −5V, I_E = 20mA, f = 100MHz	-	200	-	MHz
Output Capacitance	C_{ob}	V_{CB} = −10V, I_E = 0A, f = 1MHz	-	7	-	pF

*1 P_W=10ms. Single Pulse.

*2 Each terminal mounted on a reference footprint

*3 200mW per element must not be exceeded.

●Electrical characteristic curves(Ta = 25°C)

<Tr1>

Fig.1 Ground Emitter Propagation Characteristics

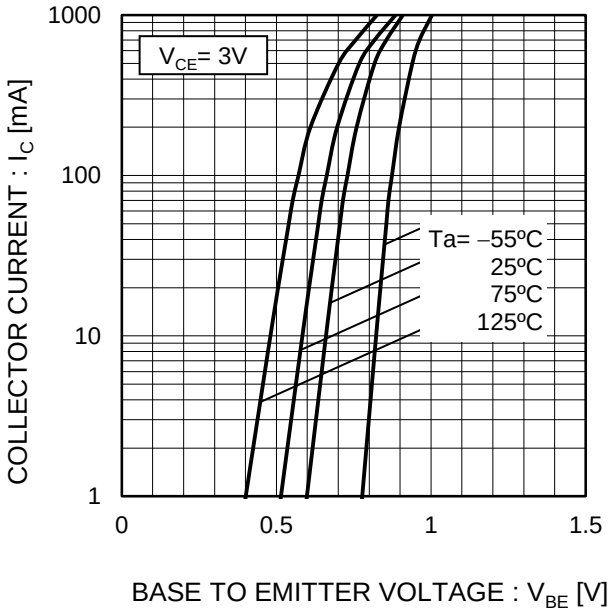


Fig.2 Typical Output Characteristics

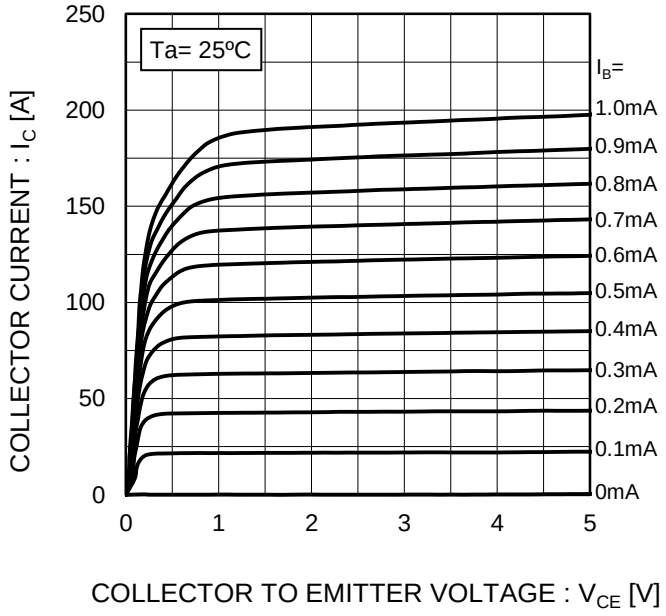


Fig.3 DC Current Gain vs. Collector Current (I)

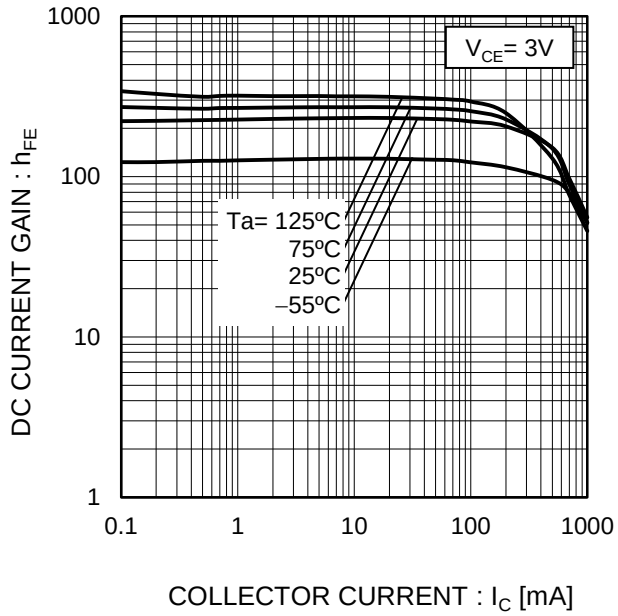
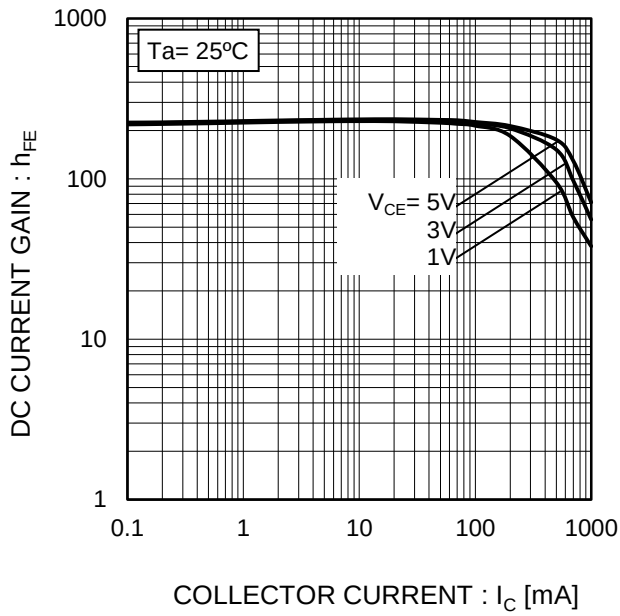


Fig.4 DC Current Gain vs. Collector Current (II)



●Electrical characteristic curves(Ta = 25°C)

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

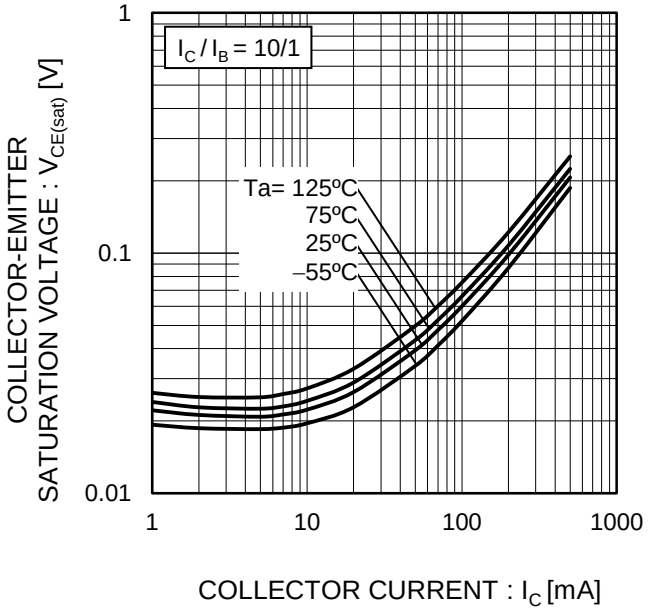


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

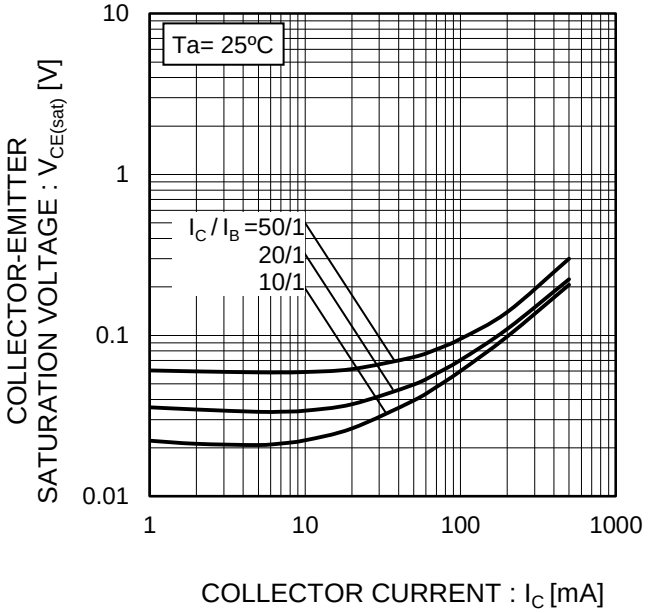


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

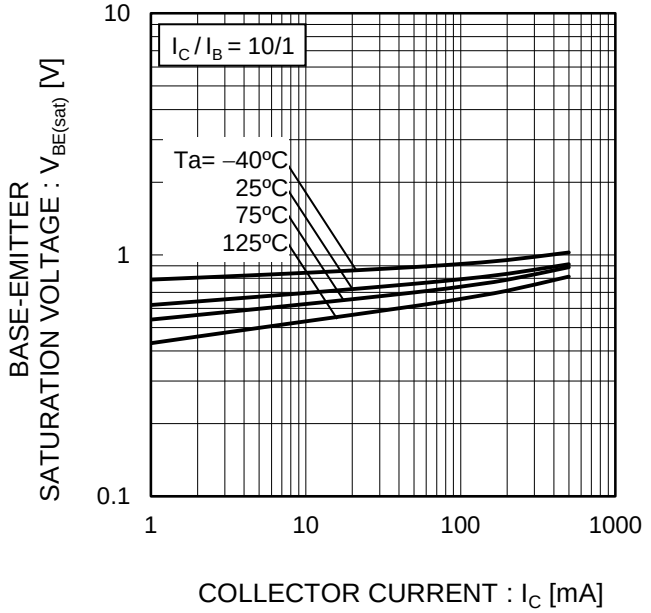
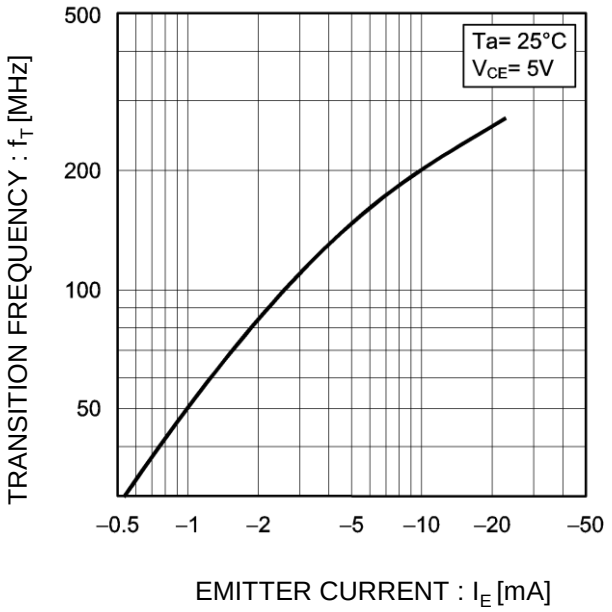


Fig.8 Gain Bandwidth Product vs. Emitter Current



●Electrical characteristic curves(Ta = 25°C)

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

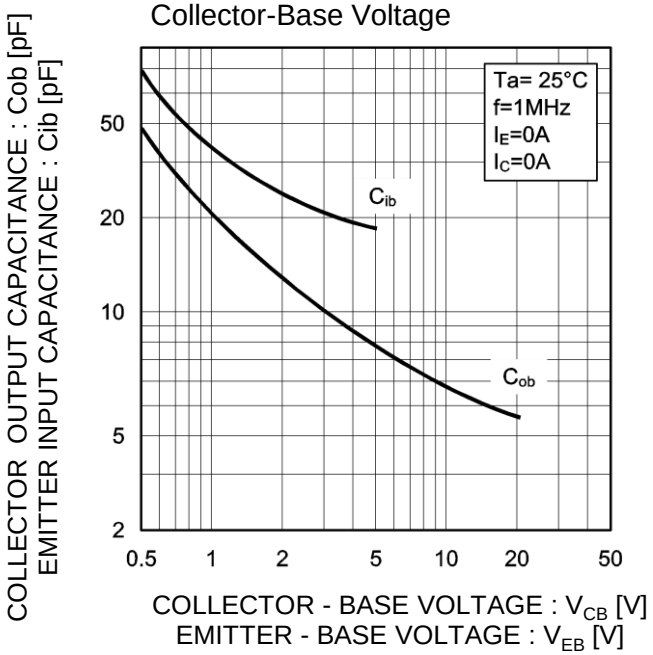
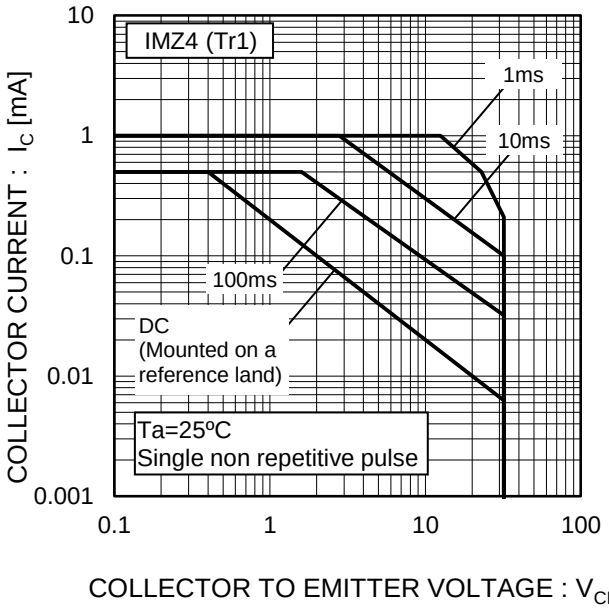


Fig.10 Safe Operating Area



<Tr2>

Fig.11 Ground Emitter Propagation Characteristics

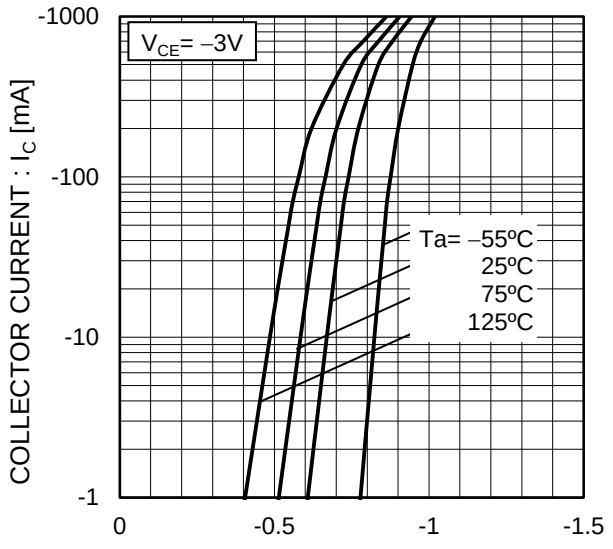
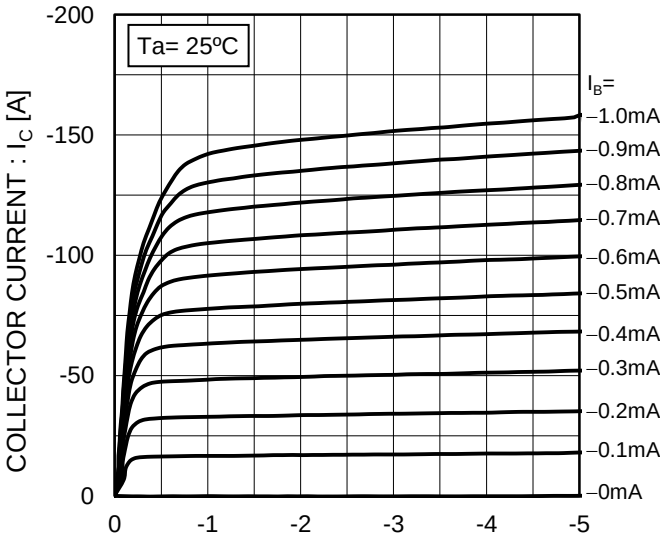


Fig.12 Typical Output Characteristics



●**Electrical characteristic curves**(Ta = 25°C)

Fig.13 DC Current Gain vs. Collector Current (I)

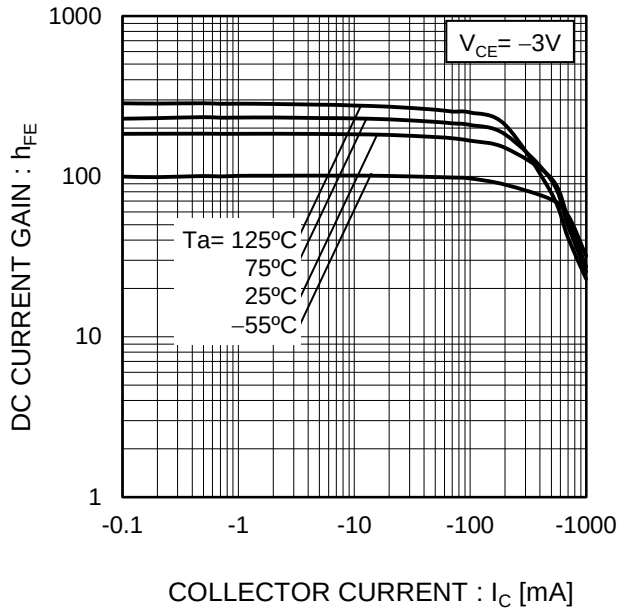


Fig.14 DC Current Gain vs. Collector Current (II)

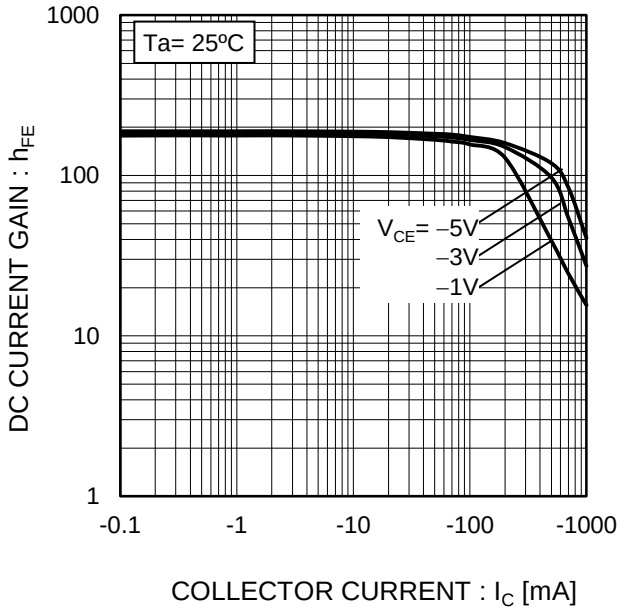


Fig.15 Collector-Emitter Saturation Voltage vs. Collector Current (I)

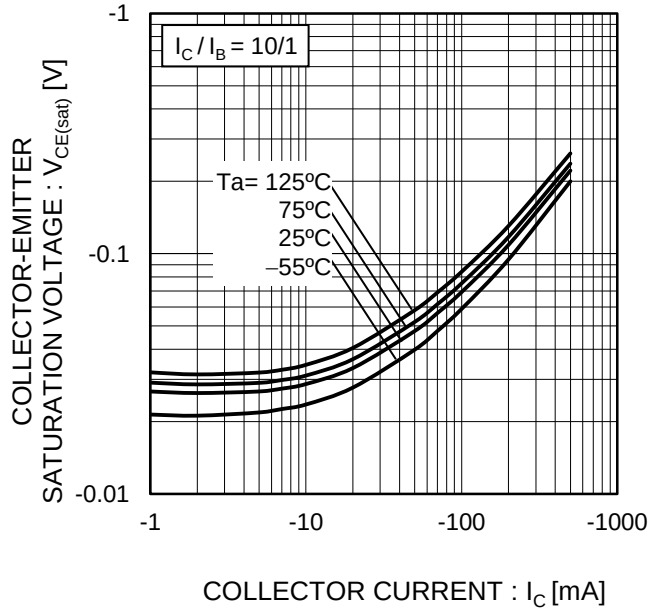
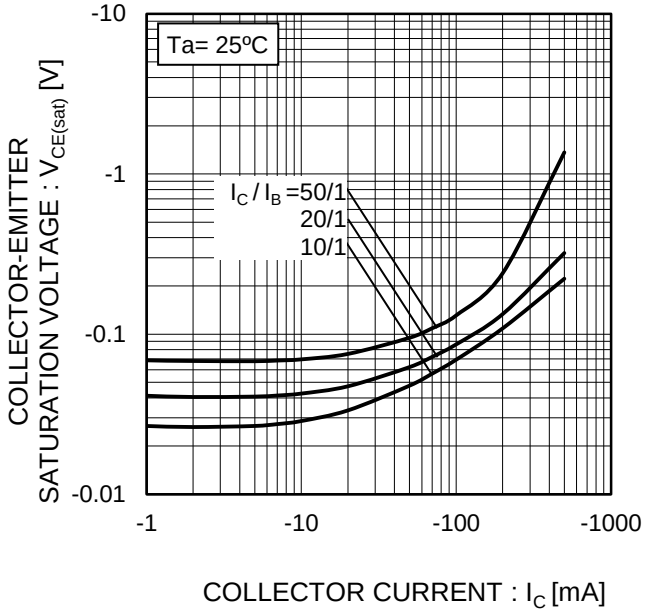


Fig.16 Collector-Emitter Saturation Voltage vs. Collector Current (II)



●Electrical characteristic curves(Ta = 25°C)

Fig.17 Base-Emitter Saturation Voltage vs. Collector Current

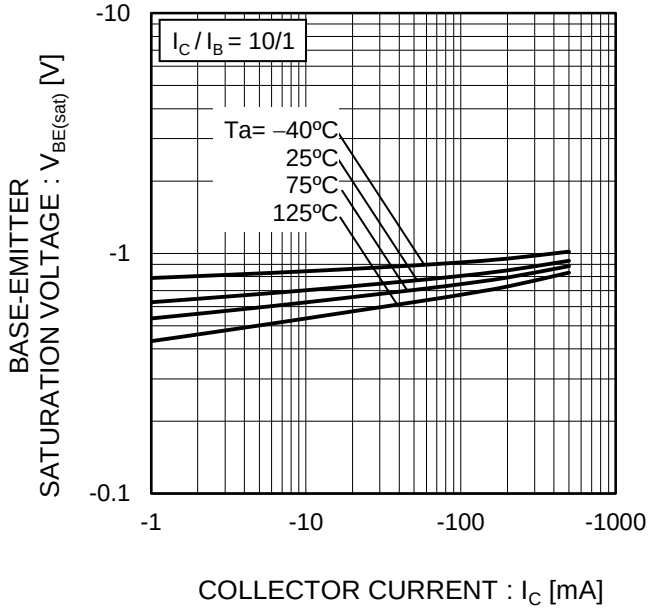


Fig.18 Gain Bandwidth Product vs. Emitter Current

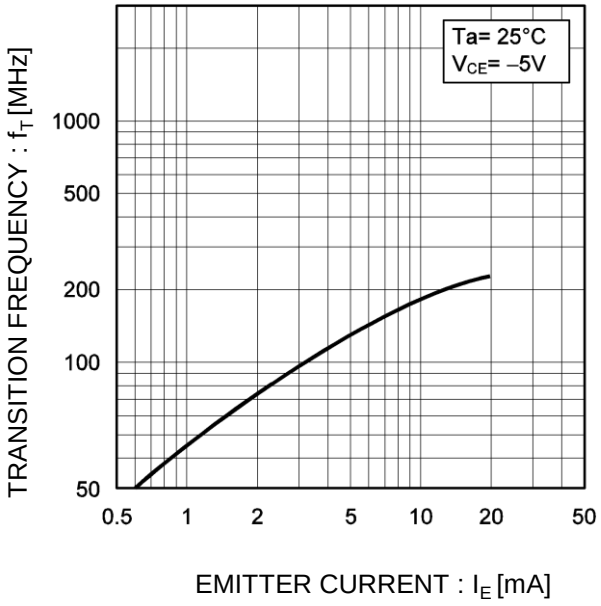


Fig.19 Emitter input capacitance vs. Emitter-Base Voltage
Collector output capacitance vs. Collector-Base Voltage

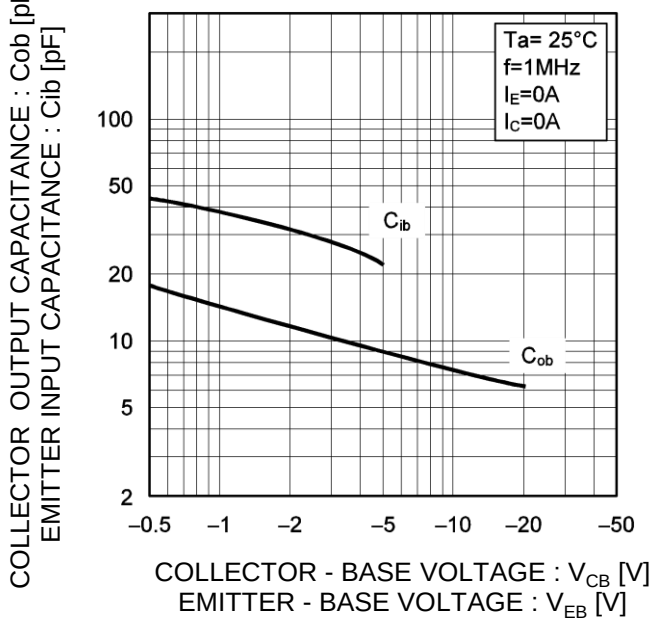
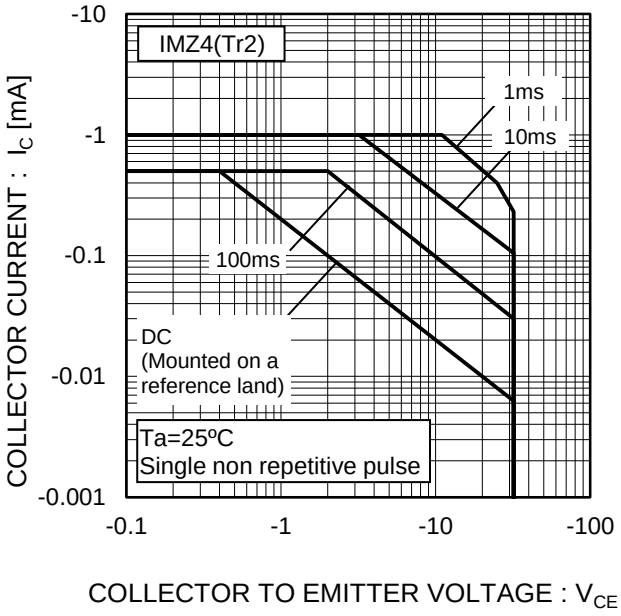
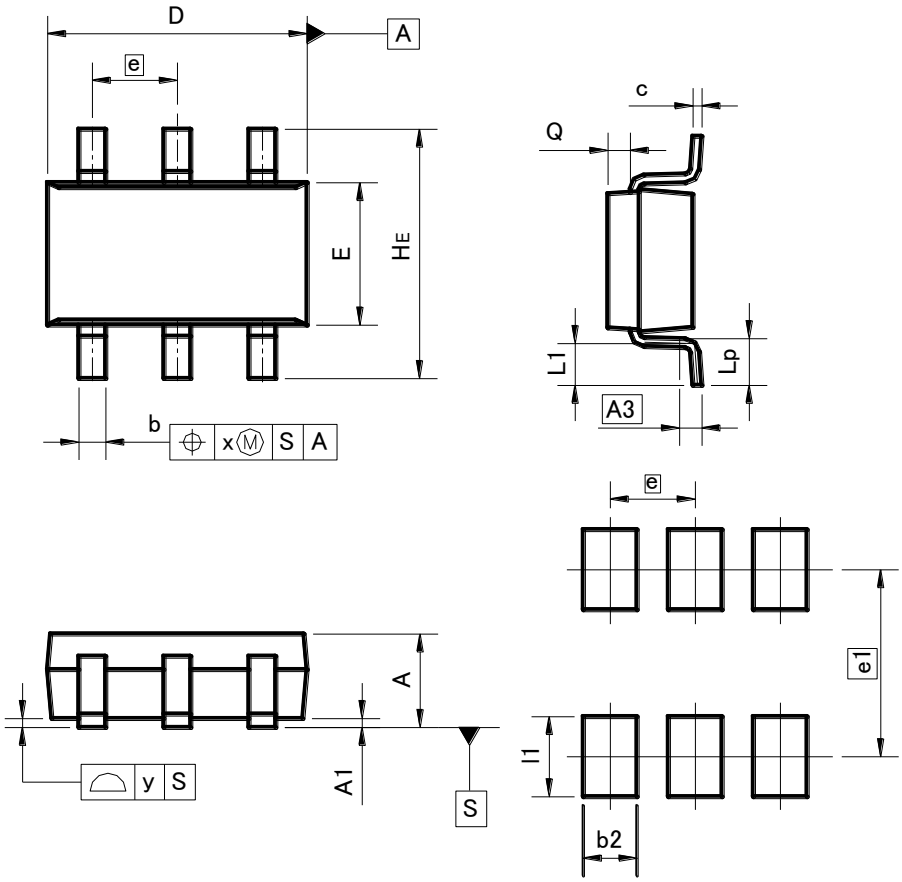


Fig.20 Safe Operating Area



●**Dimensions** (Unit : mm)

SMT6



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

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.00	1.30	0.039	0.051
A1	0.00	0.10	0.000	0.004
A3	0.25		0.010	
b	0.25	0.40	0.010	0.016
c	0.09	0.25	0.004	0.010
D	2.80	3.00	0.110	0.118
E	1.50	1.80	0.059	0.071
e	0.95		0.037	
HE	2.60	3.00	0.102	0.118
L1	0.30	0.60	0.012	0.024
Lp	0.40	0.70	0.016	0.028
Q	0.20	0.30	0.008	0.012
x	−	0.20	−	0.008
y	−	0.10	−	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2		0.60	−	0.024
e1	2.10		0.083	
l1	−	0.90	−	0.035

Dimension in mm / inches

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