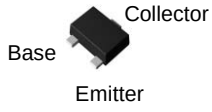
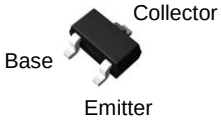
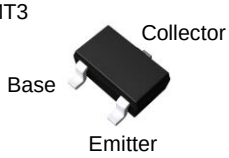
2SA2030 / 2SA2018 / 2SA2119K

PNP -500mA -12V Low Frequency Amplifier Transistors

Datasheet

Parameter	Value
V_{CEO}	−12V
I_C	−500mA

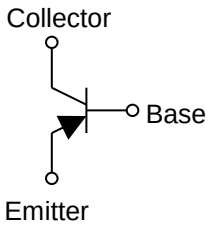
●Outline

VMT3  2SA2030 (SC-105AA)	EMT3  2SA2018 SOT-416 (SC-75A)
SMT3  2SA2119K SOT-346 (SC-59)	

●Features

1) A Collecotr current is large.General Purpose.
2) Collector saturation voltage is low.
   $V_{CE(sat)} \leq 250mV$
   At I_C= −200mA, I_B= −10mA
3) Complementary NPN Types :
   2SC5663 (VMT3) / 2SC5585 (EMT3)
4) Lead Free/RoHS Compliant.

●Inner circuit



●Applications

Switching circuit, Muting circuit

●Packaging specifications

Part No.	Package	Package size (mm)	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit (pcs)	Marking
2SA2030	VMT3	1212	T2L	180	8	8,000	BW
2SA2018	EMT3	1616	TL	180	8	3,000	BW
2SA2119K	SMT3	2928	T146	180	8	3,000	BW

●Absolute maximum ratings (Ta = 25°C)

Parameter		Symbol	Values	Unit
Collector-base voltage		V_{CBO}	−15	V
Collector-emitter voltage		V_{CEO}	−12	V
Emitter-base voltage		V_{EBO}	−6	V
Collector current		I_C	−500	mA
		I_{CP} *1	−1	A
Power dissipation	2SA2030 2SA2018	P_D *2	150	mW
	2SA2119K		200	mW
Junction temperature		T_j	150	°C
Range of storage temperature		T_{stg}	−55 to +150	°C

●Electrical characteristics(Ta = 25°C)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Collector-emitter breakdown voltage	BV_{CEO}	I_C = −1mA	−12	-	-	V
Collector-base breakdown voltage	BV_{CBO}	I_C = −10μA	−15	-	-	V
Emitter-base breakdown voltage	BV_{EBO}	I_E = −10μA	−6	-	-	V
Collector cut-off current	I_{CBO}	V_{CB} = −15V	-	-	−100	nA
Emitter cut-off current	I_{EBO}	V_{EB} = −6V	-	-	−100	nA
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = −200mA, I_B = −10mA	-	−100	−250	V
DC current gain	h_{FE}	V_{CE} = −2V, I_C = −10mA	270	-	680	-
Transition frequency	f_T	V_{CE} = −2V, I_E = 10mA f=100MHz	-	260	-	MHz
Output capacitance	C_{ob}	V_{CB} = −10V, I_E = 0mA f = 1MHz	-	6.5	-	pF

*1 P_W=10ms Single Pulse

*2 Each terminal mounted on a reference footprint

●Electrical characteristic curves(Ta = 25°C)

Fig.1 Ground Emitter Propagation Characteristics

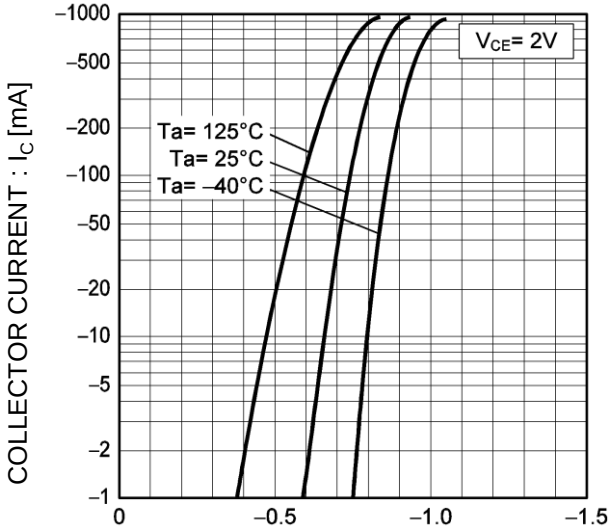


Fig.2 Typical Output Characteristics

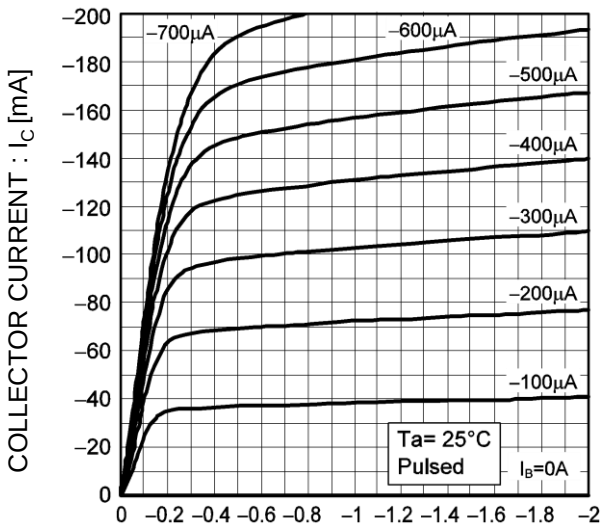


Fig.3 DC Current Gain vs. Collector Current(I)

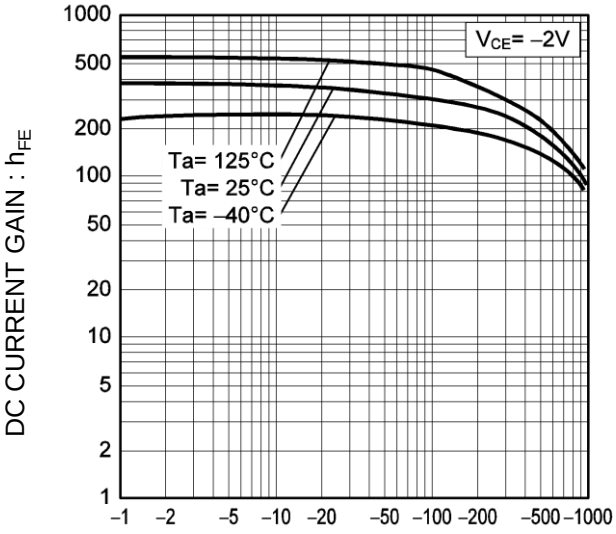
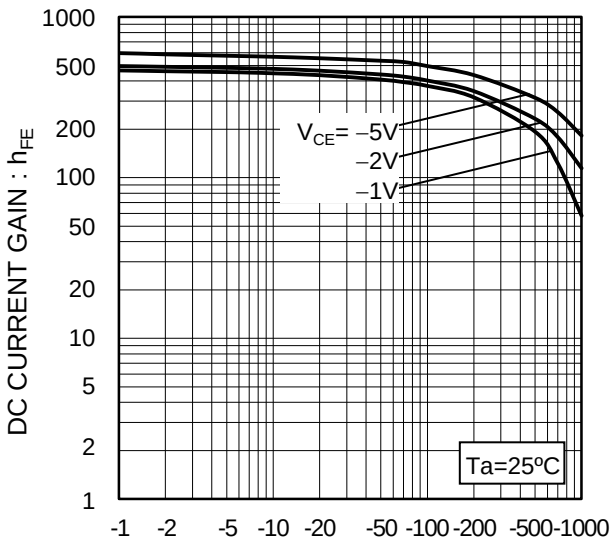


Fig.4 DC Current Gain vs. Collector Current(II)



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

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

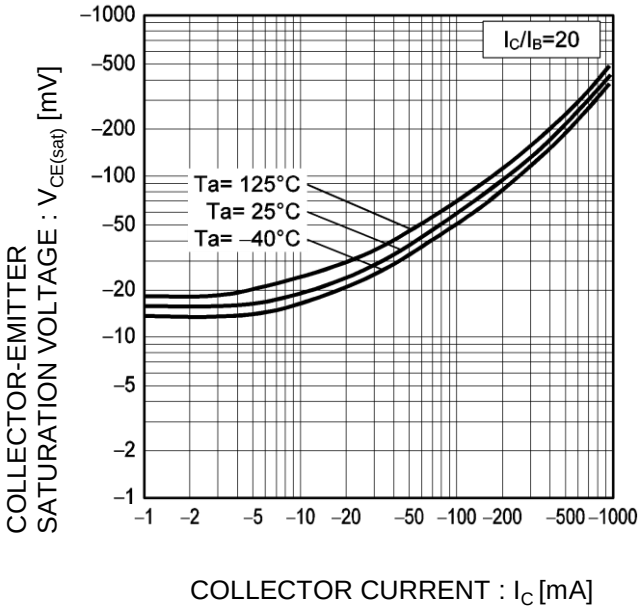


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

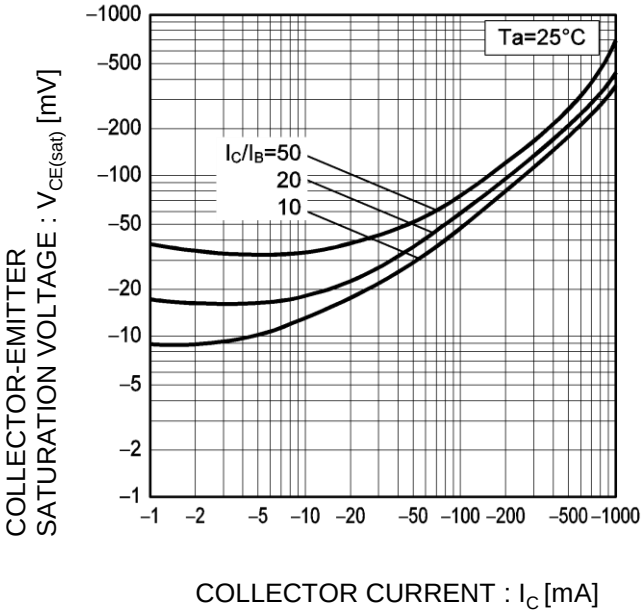


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

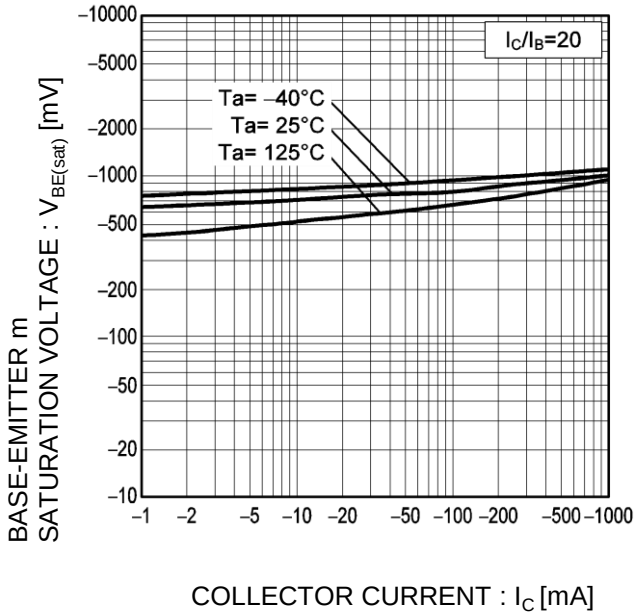
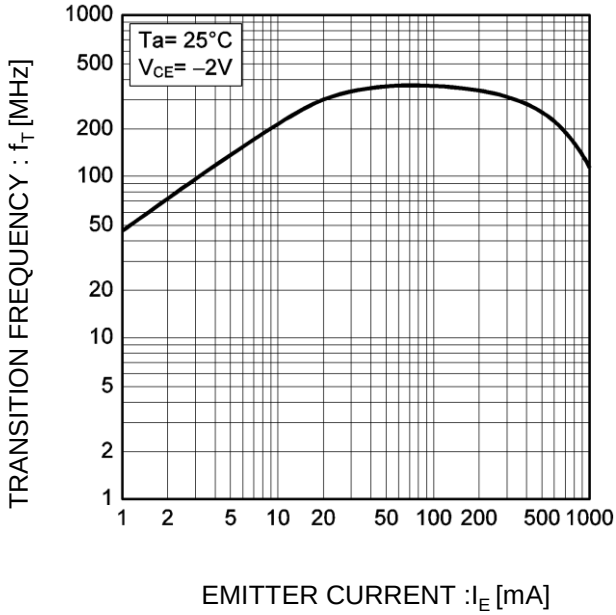


Fig.8 Gain Bandwidth Product vs. Emitter Current



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

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

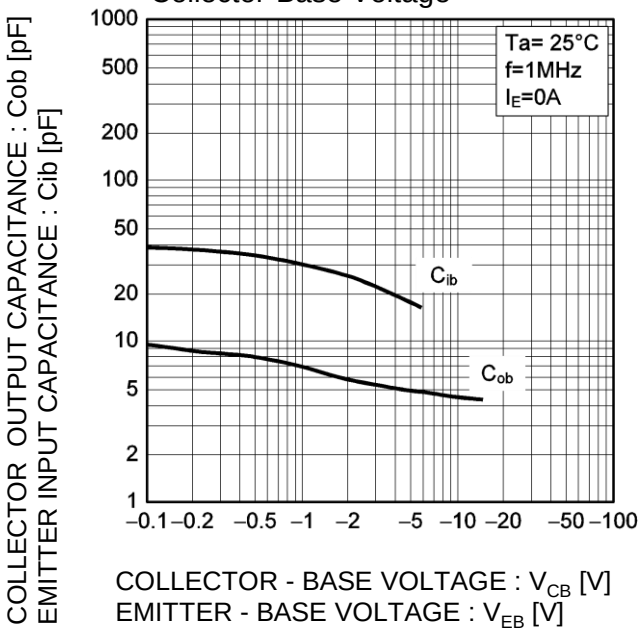


Fig.10 Safe Operating Area

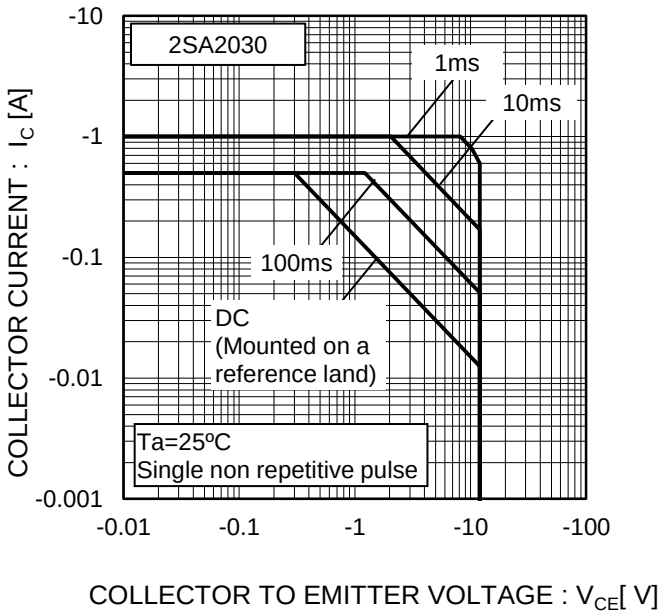


Fig.11 Safe Operating Area

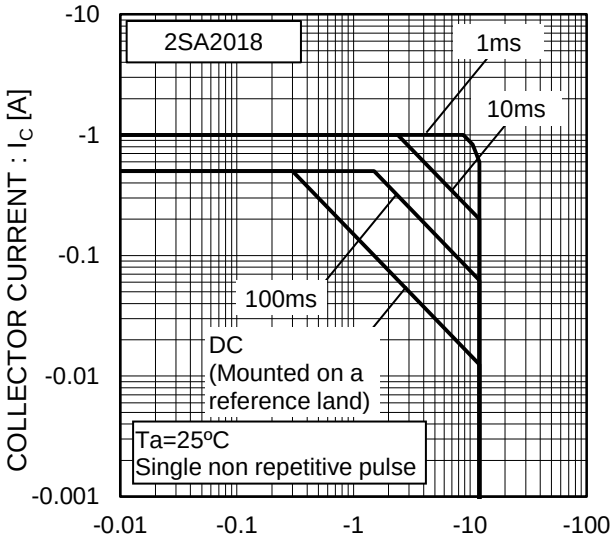
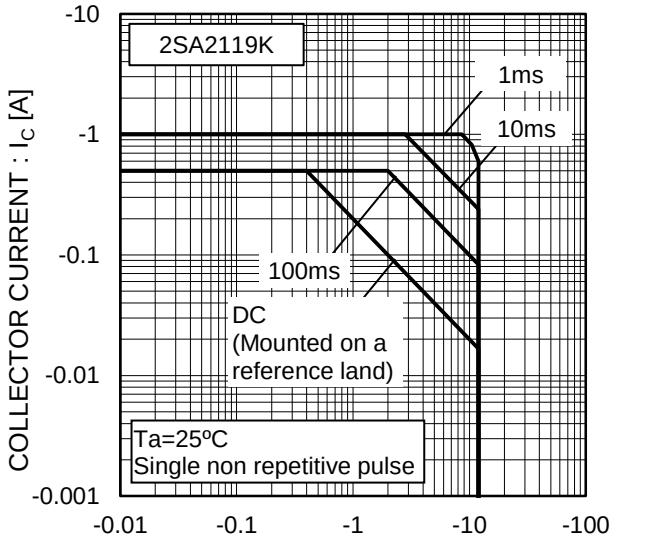
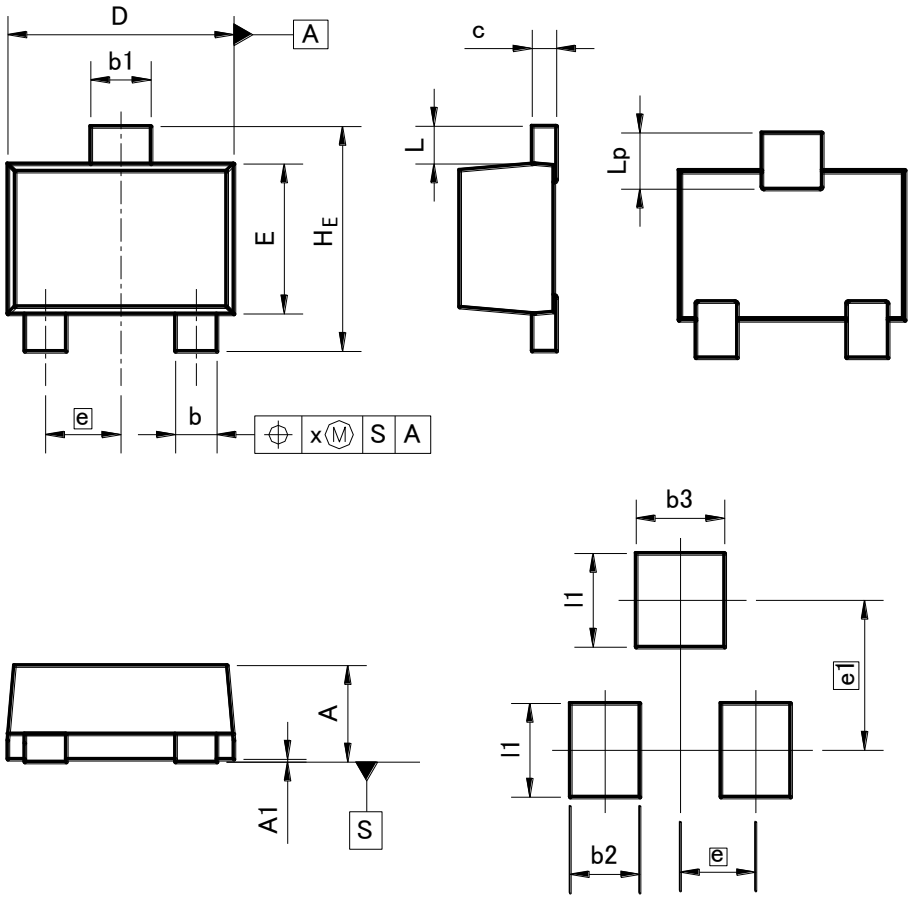


Fig.12 Safe Operating Area



●**Dimensions** (Unit : mm)

VMT3



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

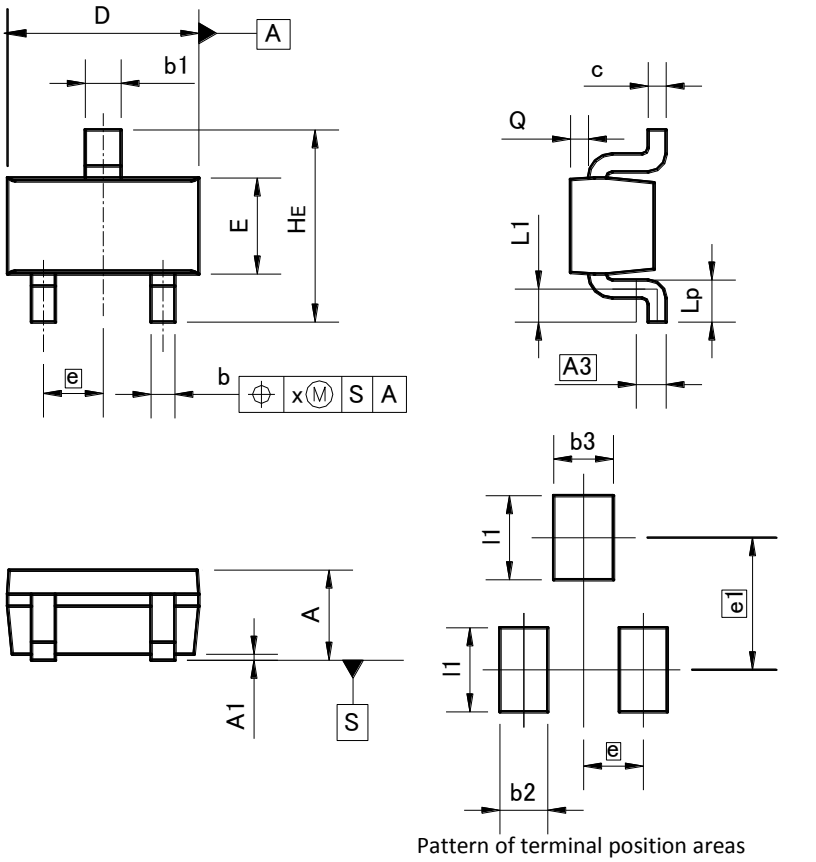
DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.45	0.55	0.018	0.022
A1	0.00	0.10	0.000	0.004
b	0.17	0.27	0.007	0.011
b1	0.27	0.37	0.011	0.015
c	0.08	0.18	0.003	0.007
D	1.10	1.30	0.043	0.051
E	0.70	0.90	0.028	0.035
e	0.40		0.02	
HE	1.10	1.30	0.043	0.051
L	0.10	0.30	0.004	0.012
Lp	0.20	0.40	0.008	0.016
x	−	0.10	−	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2	−	0.37	−	0.015
b3	−	0.47	−	0.019
e1	0.80		0.031	
l1	−	0.50	−	0.020

Dimension in mm / inches

●**Dimensions** (Unit : mm)

EMT3



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

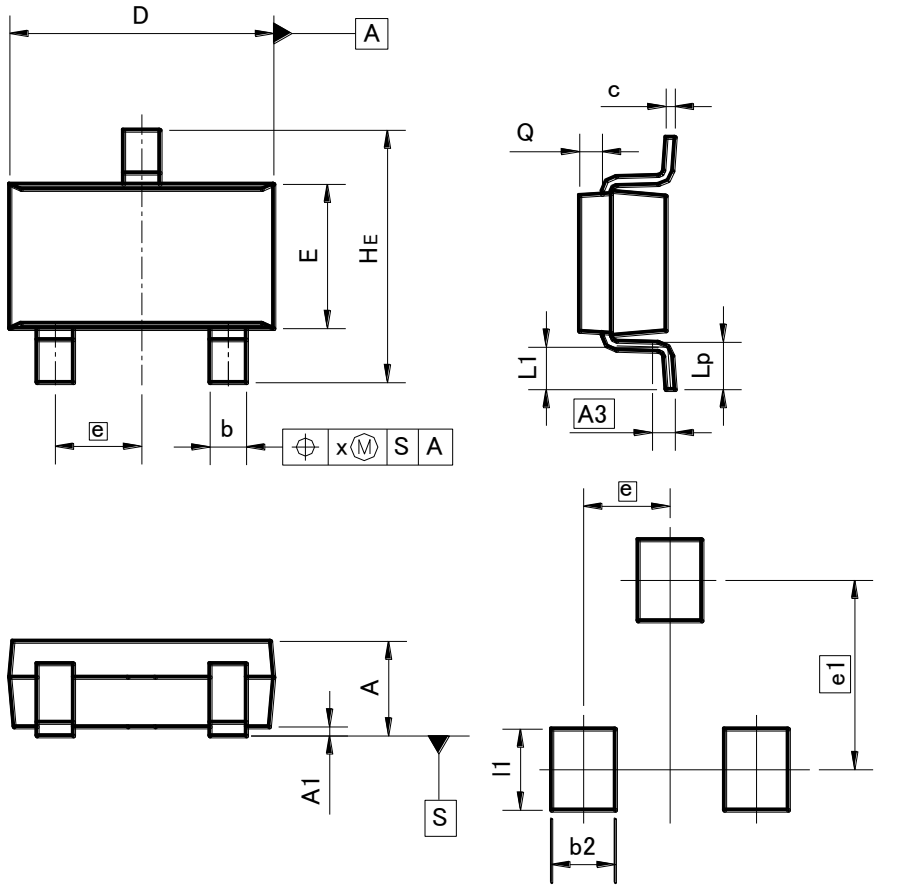
DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.60	0.80	0.024	0.031
A1	0.00	0.10	0.000	0.004
A3	0.25		0.010	
b	0.15	0.30	0.006	0.012
b1	0.25	0.40	0.010	0.016
c	0.10	0.20	0.004	0.008
D	1.50	1.70	0.059	0.067
E	0.70	0.90	0.028	0.035
e	0.50		0.020	
HE	1.40	1.80	0.055	0.071
L1	0.10	–	0.004	–
Lp	0.15	–	0.006	–
Q	0.05	0.25	0.002	0.010
x	–	0.10	–	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2	–	0.40	–	0.016
b3	–	0.50	–	0.020
e1	1.10		0.043	
l1	–	0.70	–	0.028

Dimension in mm / inches

●**Dimensions** (Unit : mm)

SMT3



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	0.35	0.50	0.014	0.020
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	−	0.10	−	0.004
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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