Ordering number : EN7379A

SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

2SA2112 — PNP Epitaxial Planar Silicon Transistor

High Current Switching Applications

Applicaitons

- DC-DC converter, relay drivers, lamp drivers, motor drivers, strobes

Features

- Adoption of MBIT process
- Low collector-to-emitter saturation voltage
- Large current capacity
- High-speed switching

Specifications

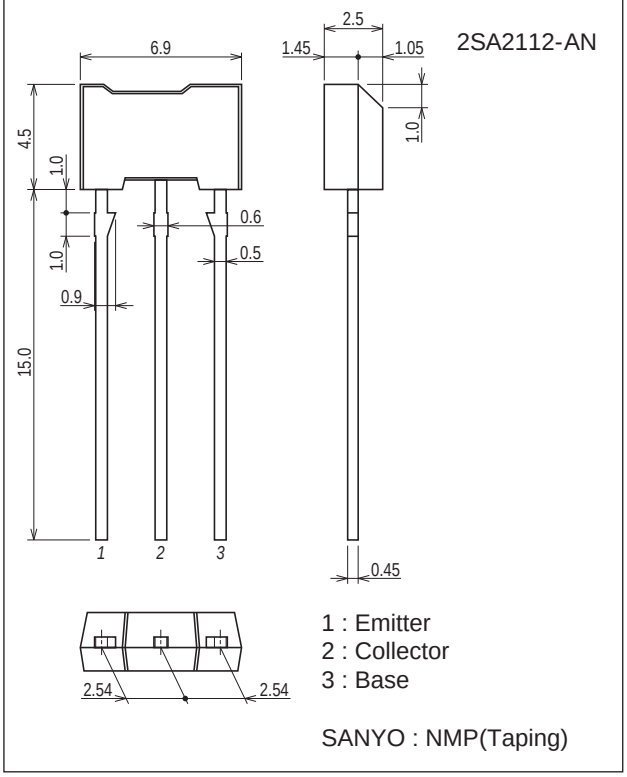
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		−50	V
Collector-to-Emitter Voltage	V_{CES}		−50	V
Collector-to-Emitter Voltage	V_{CEO}		−50	V
Emitter-to-Base Voltage	V_{EBO}		−6	V
Collector Current	I_C		−3	A
Collector Current (Pulse)	I_{CP}		−6	A
Base Current	I_B		−600	mA
Collector Dissipation	P_C		1	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		−55 to +150	°C

Package Dimensions

unit : mm (typ)

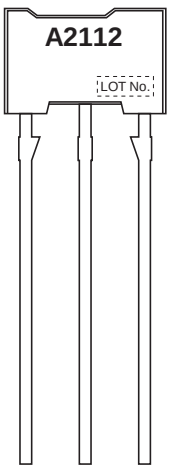
7540-001



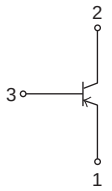
Product & Package Information

- Package : NMP(Taping)
- JEITA, JEDEC : SC-71
- Minimum Packing Quantity : 2,500 pcs./box

Marking(NMP(Taping))



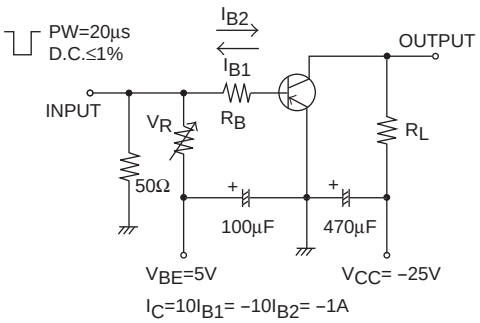
Electrical Connection



Electrical Characteristics at Ta=25°C

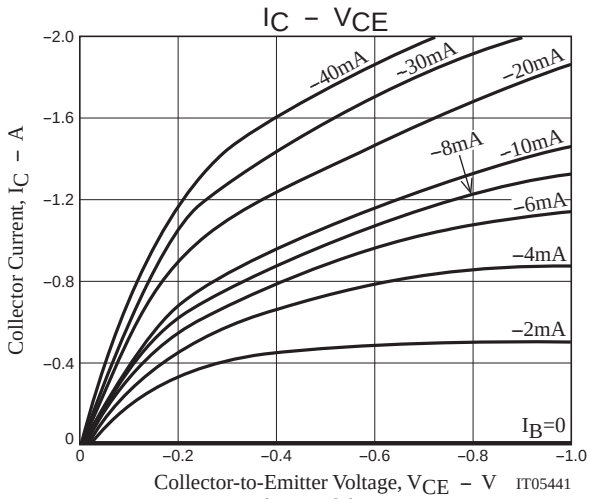
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=−40V, I_E=0A			−1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=−4V, I_C=0A			−1	μA
DC Current Gain	h_{FE}	V_{CE}=−2V, I_C=−100mA	200		560	
Gain-Bandwidth Product	f_T	V_{CE}=−10V, I_C=−500mA		390		MHz
Output Capacitance	Cob	V_{CB}=−10V, f=1MHz		24		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)1	I_C=−1A, I_B=−50mA		−135	−270	mV
	V_{CE}(sat)2	I_C=−2A, I_B=−100mA		−260	−700	mV
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=−2A, I_B=−100mA		−0.88	−1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=−10μA, I_E=0A	−50			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	I_C=−100μA, R_{BE}=0A	−50			V
	$V_{(BR)CEO}$	I_C=−1mA, R_{BE}=∞	−50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=−10μA, I_C=0A	−6			V
Turn-ON Time	t_{on}	See specified Test Circuit.		30		ns
Storage Time	t_{stg}			230		ns
Fall Time	t_f			18		ns

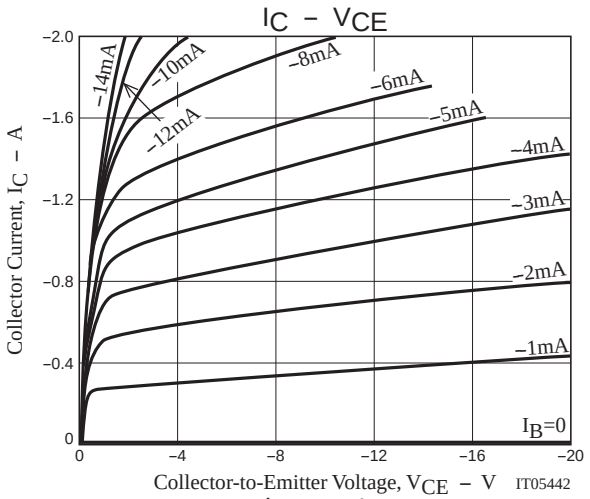
Switching Time Test Circuit

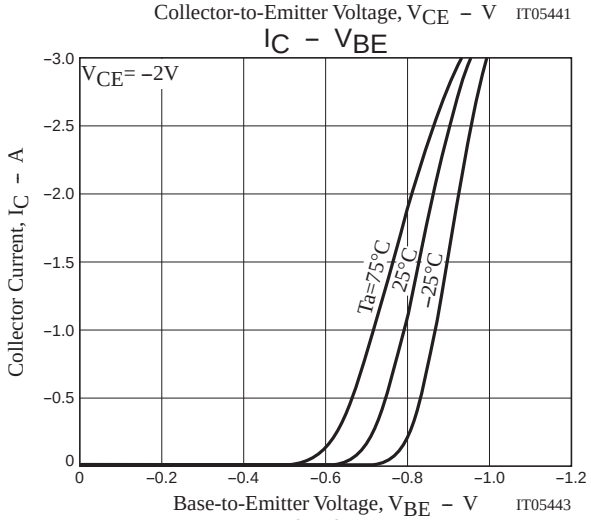


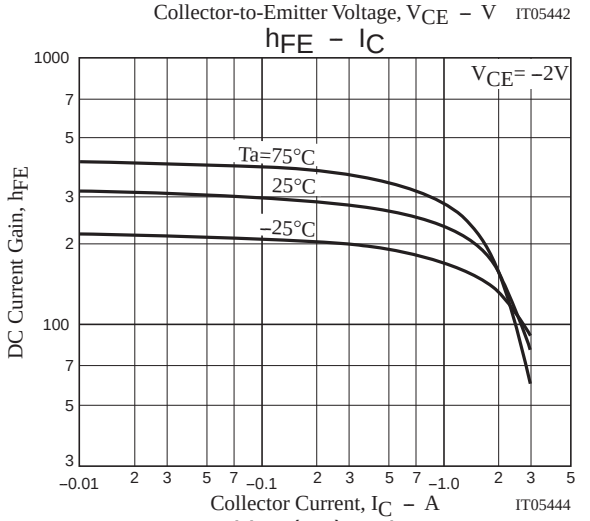
Ordering Information

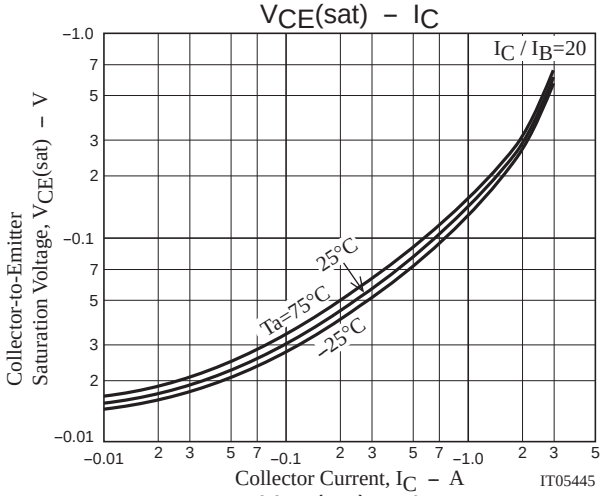
Device	Package	Shipping	memo
2SA2112-AN	NMP(Taping)	2,500pcs./box	Pb Free

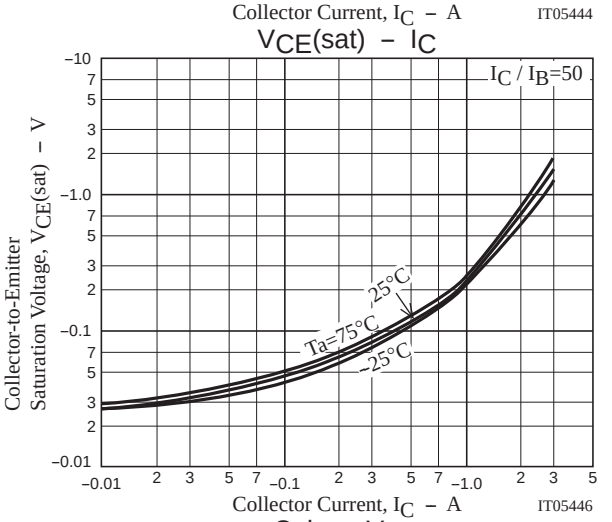

IC – VCE
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT05441
–40mA
–30mA
–20mA
–10mA
–8mA
–6mA
–4mA
–2mA
IB=0

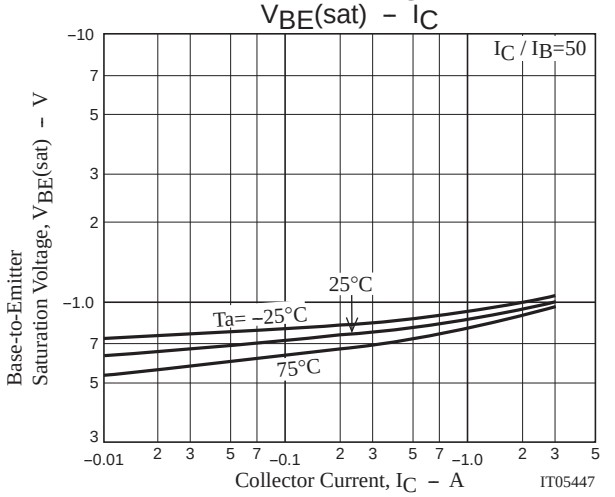

IC – VCE
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT05442
–14mA
–12mA
–10mA
–8mA
–6mA
–5mA
–4mA
–3mA
–2mA
–1mA
IB=0

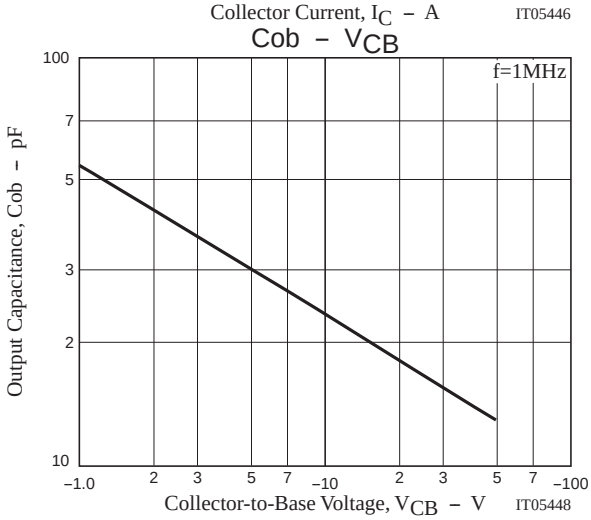

IC – VBE
VCE= –2V
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
IT05443
Ta=75°C
25°C
–25°C

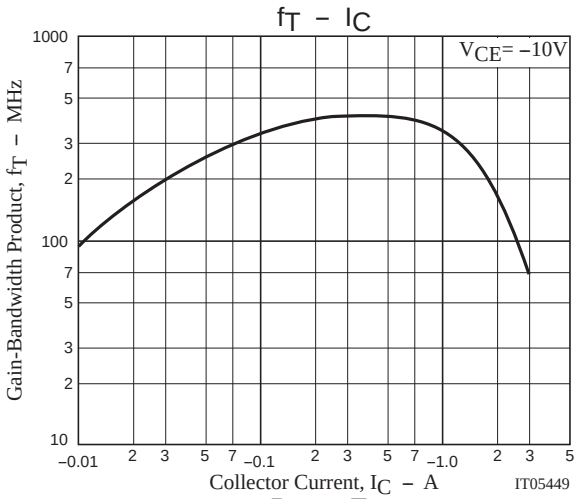

hFE – IC
VCE= –2V
DC Current Gain, hFE
Collector Current, IC – A
IT05444
Ta=75°C
25°C
–25°C

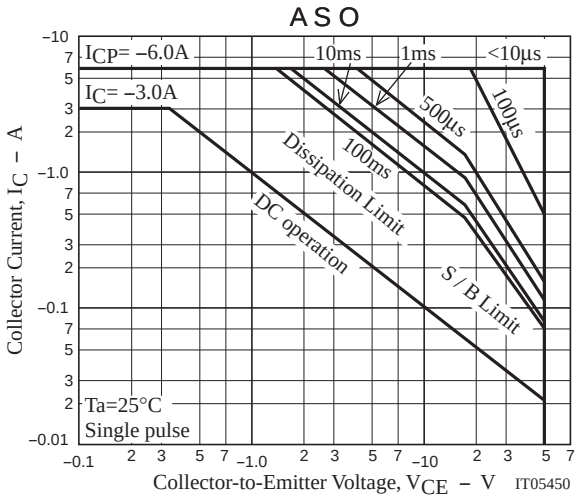

VCE(sat) – IC
IC / IB=20
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT05445
25°C
Ta=75°C
–25°C

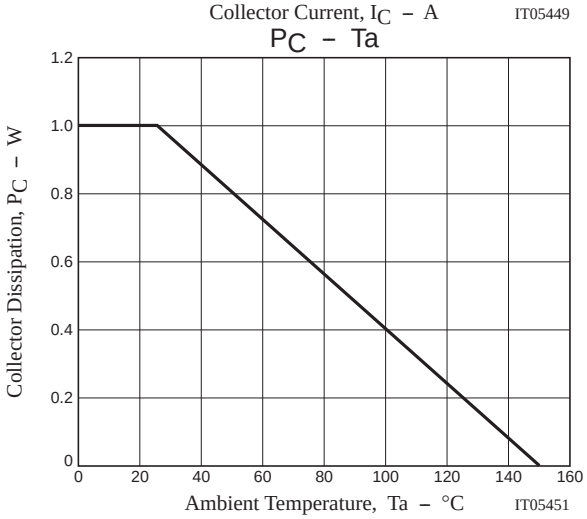

VCE(sat) – IC
IC / IB=50
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT05446
25°C
Ta=75°C
–25°C


VBE(sat) – IC
IC / IB=50
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
IT05447
25°C
Ta= –25°C
75°C


Cob – VCB
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT05448


fT – IC
VCE= –10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT05449


ASO
ICP= –6.0A
IC= –3.0A
10ms
1ms
<10µs
500µs
100µs
100ms
Dissipation Limit
DC operation
S / B Limit
Ta=25°C
Single pulse
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT05450


PC – Ta
Collector Dissipation, PC – W
Ambient Temperature, Ta – °C
IT05451

Bag Packing Specification

2SA2112-AN

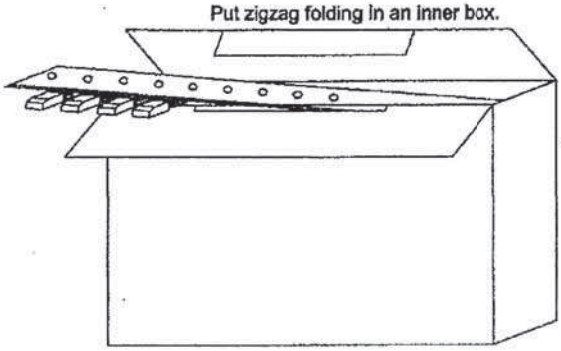
NMP (Zigzag folding)

Storage package Outline name	Package type	Maximum Number of devices contained (pcs.)		Packing format	
		Inner box No.	Storage quantity	Outer box (C—6)	Outer box (C—8)
NMP	AN/AZ	C—3 Inner box Dimensions :mm(external) 330×45×125	2,500	8 inner boxes contained(20,000pcs.) Outer box Dimensions:mm(external) 585×345×195	4 inner boxes contained(10,000pcs.) Outer box Dimensions:mm(external) 345×300×195

1. Packing format

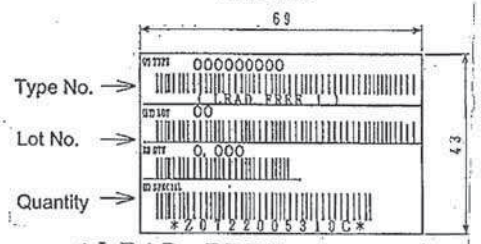
Packing method

Put zigzag folding in an inner box.



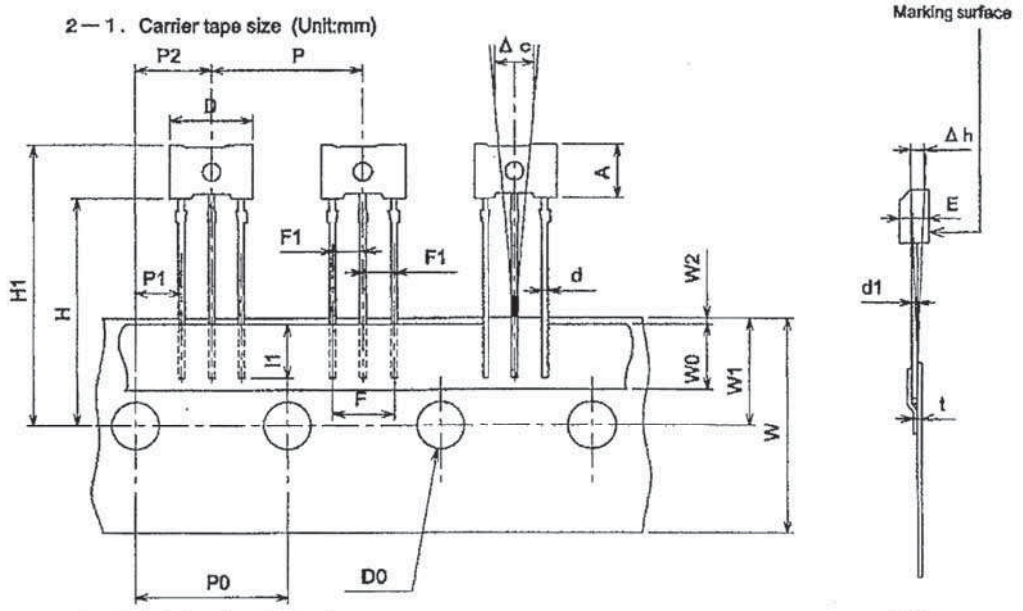
2. Bar code label

(Unit : mm)



2. Taping specifications

2—1. Carrier tape size (Unit:mm)



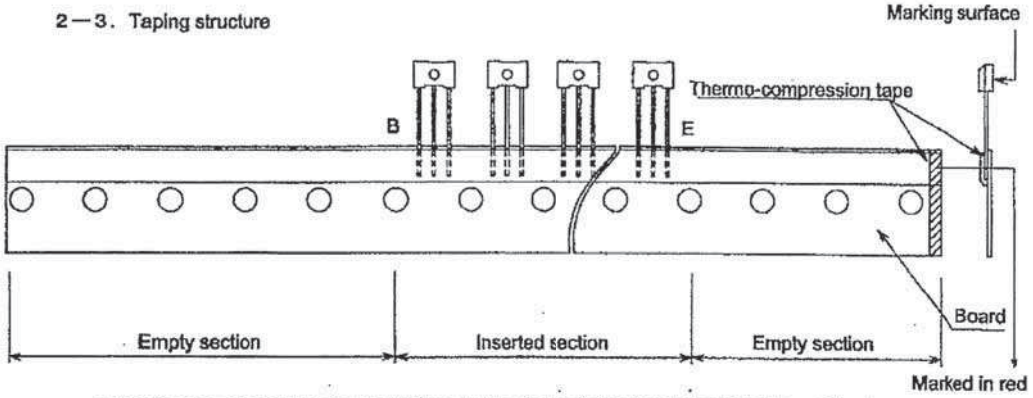
2—2. Taping size standard

Item	Symbol	Standard	Tolerance
Work piece outside diameter	D	6.9	±0.2
	E	2.5	±0.2
Work piece height	A	4.5	±0.2
Lead wire diameter	d	0.5	±0.1
Lead wire thickness	d1	0.45	±0.1
Bonded lead wire	I1	3.0MIN	
Pitch between products	P	12.7	±0.5
Pitch between perforations	P0	12.7	±0.2
Total pitch for 21 perforations	P0×20	254.0	±1.0
Distance between lead wire	F	5.0	+0.8 -0.2
Lead wire pitch distance	F1	2.54	+0.4 -0.1
Displacement of perforations	P1	3.81	±0.3
	P2	6.35	±0.3
Displacement of tape	W2	0～0.5	

Unit:mm

Item	Symbol	Standard	Tolerance
Tape width	W	18.0	±0.5
Adhesive tape	W0	6.0	±0.5
Displacement of perforations	W1	9.0	±0.5
Work piece bottom surface position	H	19.0	+1.0 -0.5
Work piece upper limit position	H1	23.5	±1.0
Perforations diameter	D0	φ4.0	±0.2
Tape thickness (total thickness)	t	0.6	±0.2
Product inclination	Δc	0	±0.7
Product inclination	Δh	0	±1.0

2—3. Taping structure



- Provide an empty section for about three to five pieces in leading and end portions of the tape.
- Provide an empty section in the fold-back portion.
- Provide marking in red to the E-side end of the board.

Outline Drawing

2SA2112-AN