



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

2SA1770 / 2SC4614 — PNP/NPN Epitaxial Planar Silicon Transistor

High-Voltage Switching Applications

Features

- Adoption of MBIT process
- High breakdown voltage and large current capacity

()2SA1770

Specifications

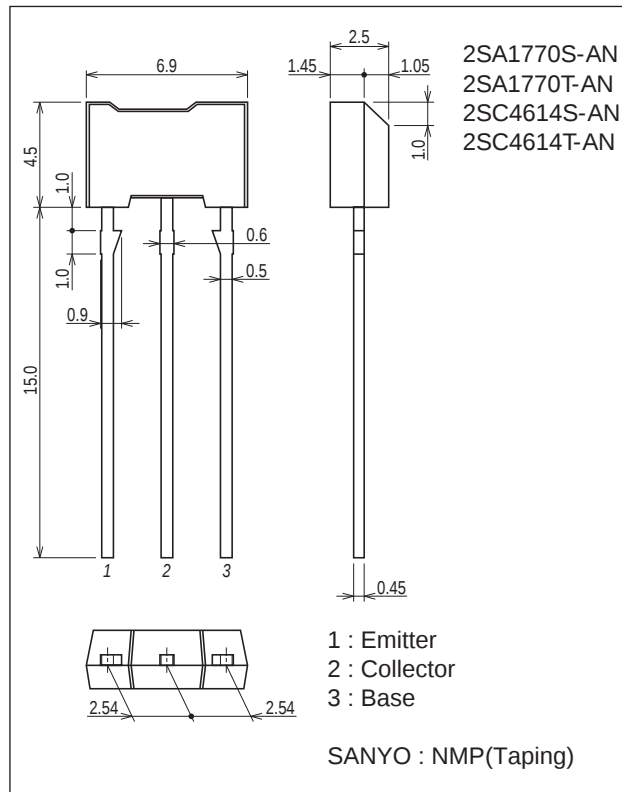
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	VCBO		(-)180	V
Collector-to-Emitter Voltage	VCEO		(-)160	V
Emitter-to-Base Voltage	VEBO		(-)6	V
Collector Current	IC		(-)1.5	A
Collector Current (Pulse)	ICP		(-)2.5	A
Collector Dissipation	PC		1	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		-55 to +150	°C

Package Dimensions

unit : mm (typ)

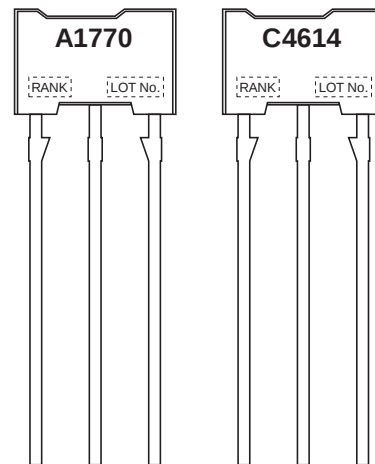
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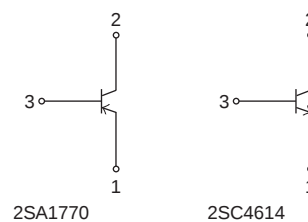
Product & Package Information

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

Marking(NMP(Taping))



Electrical Connection



SANYO Semiconductor Co., Ltd.

<http://www.sanyosemi.com/en/network/>

Electrical Characteristics at Ta=25°C

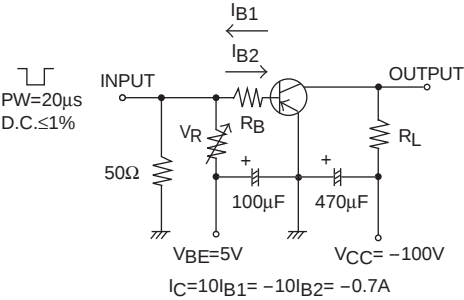
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	ICBO	V _{CB} =(-)120V, I _E =0A			(-)1	μA
Emitter Cutoff Current	IEBO	V _{EB} =(-)4V, I _C =0A			(-)1	μA
DC Current Gain	h _{FE1}	V _{CE} =(-)5V, I _C =(-)100mA	140*		400*	
	h _{FE2}	V _{CE} =(-)5V, I _C =(-)10mA	80			
Gain-Bandwidth Product	f _T	V _{CE} =(-)10V, I _C =(-)50mA		120		MHz
Output Capacitance	Cob	V _{CB} =(-)10V, f=1MHz		(22)14		pF
Collector-to-Emitter Saturation Voltage	V _{CE(sat)}	I _C =(-)500mA, I _B =(-)50mA		(-200)130	(-500)450	mV
Base-to-Emitter Saturation Voltage	V _{BE(sat)}			(-)0.85	(-)1.2	V
Collector-to-Base Breakdown Voltage	V _{(BR)CBO}	I _C =(-)10μA, I _E =0A	(-)180			V
Collector-to-Emitter Breakdown Voltage	V _{(BR)CEO}	I _C =(-)1mA, R _{BE} =∞	(-)160			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.		40(40)		ns
Storage Time	t _{stg}			(0.7)1.2		μs
Fall Time	t _f			(40)80		ns

* : The 2SA1770/2SC4614 are classified by 100mA h_{FE} as follows :

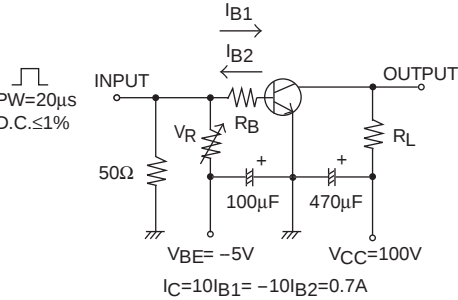
Rank	S	T
h _{FE}	140 to 280	200 to 400

Switching Time Test Circuit

2SA1770

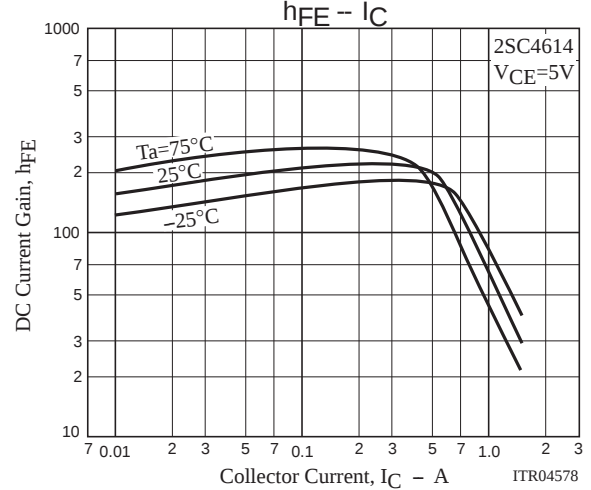
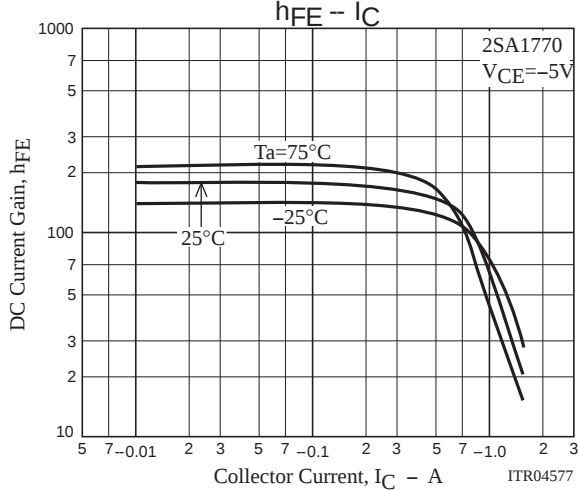
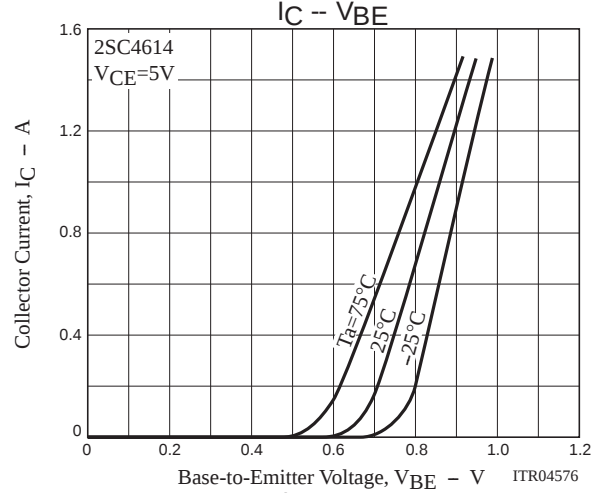
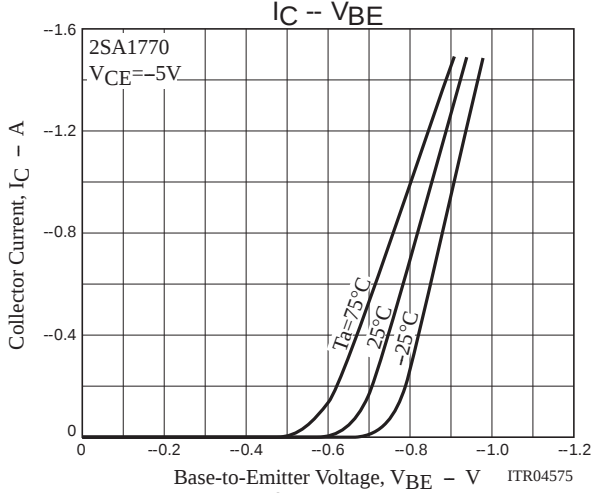
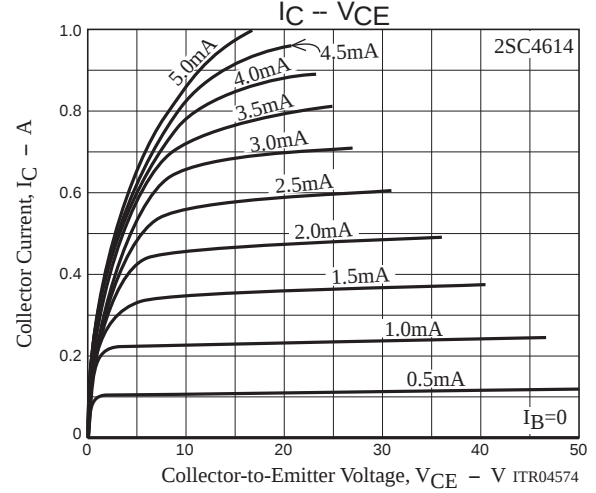
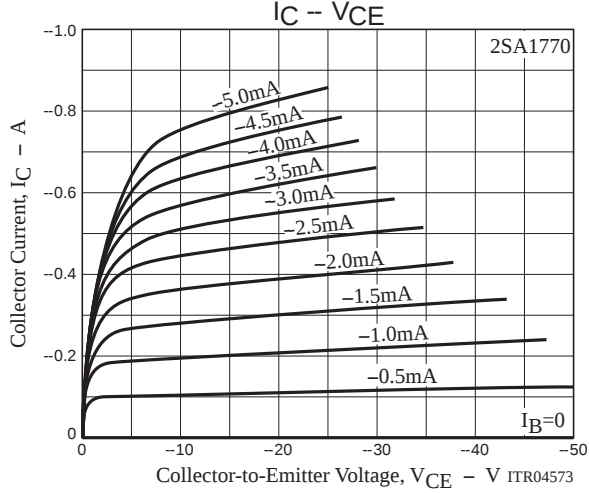
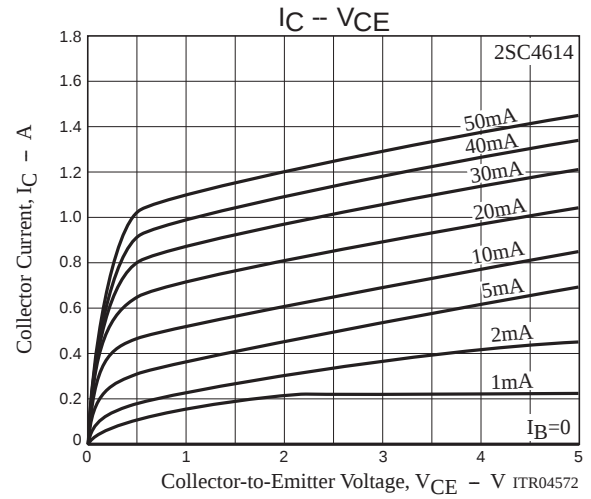
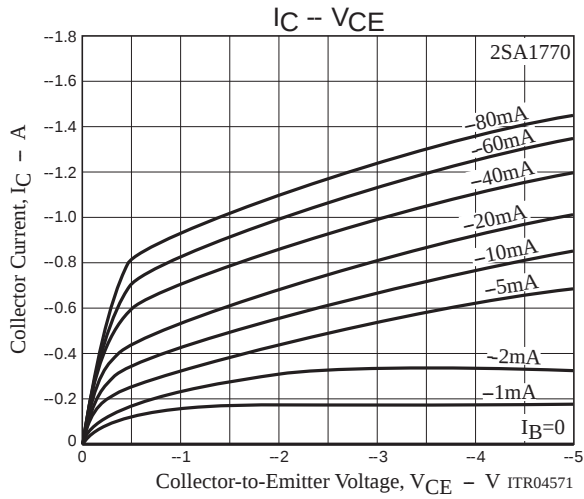


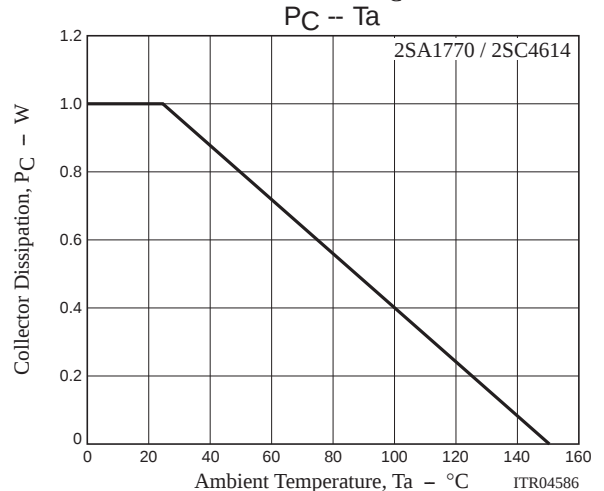
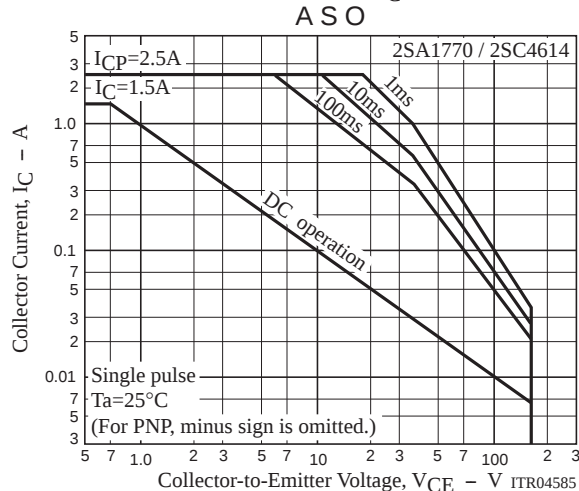
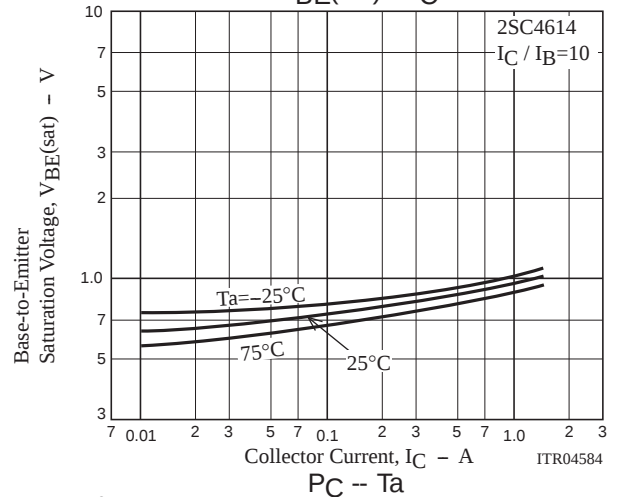
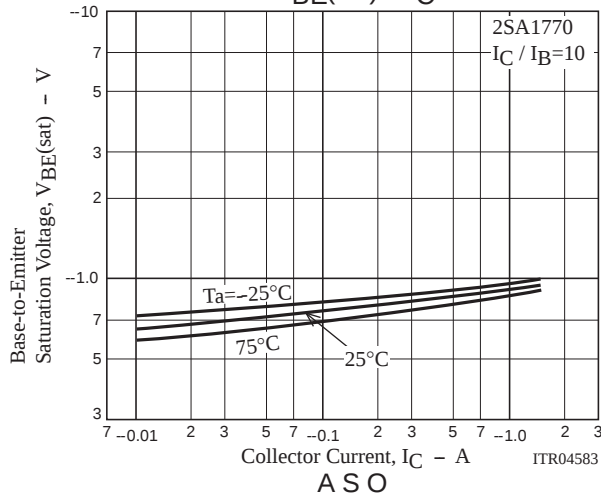
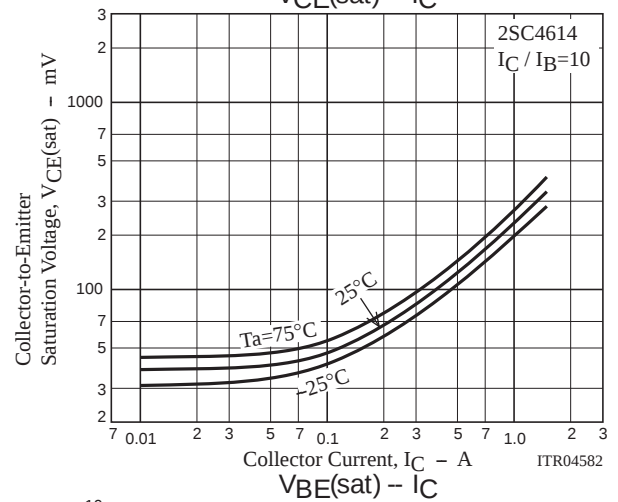
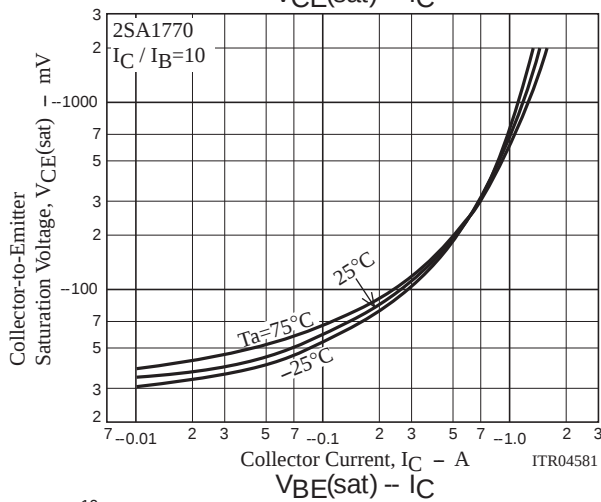
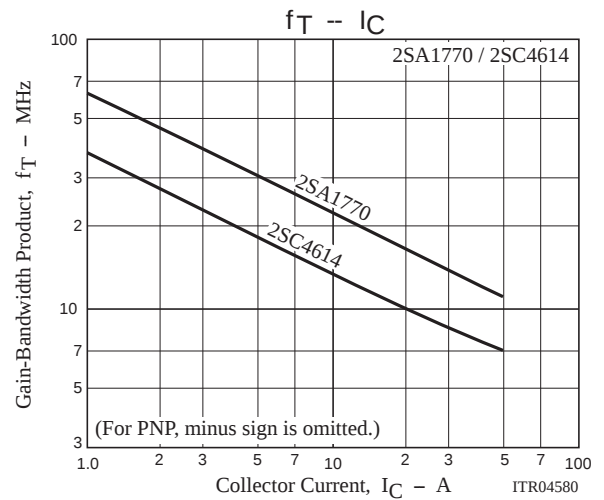
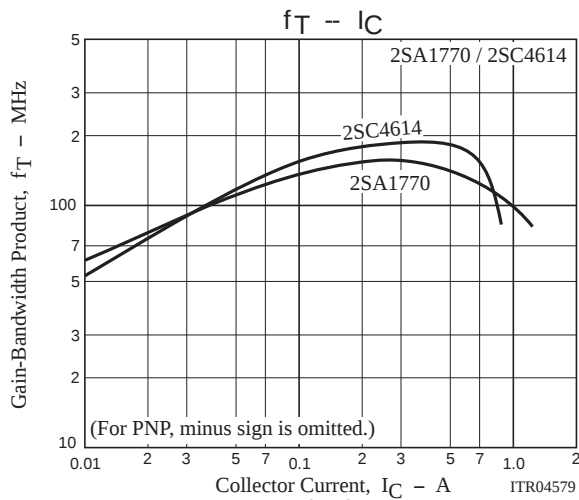
2SC4614



Ordering Information

Device	Package	Shipping	memo
2SA1770S-AN	NMP(Taping)	2,500pcs./box	Pb Free
2SA1770T-AN	NMP(Taping)	2,500pcs./box	
2SC4614S-AN	NMP(Taping)	2,500pcs./box	
2SC4614T-AN	NMP(Taping)	2,500pcs./box	





Bag Packing Specification

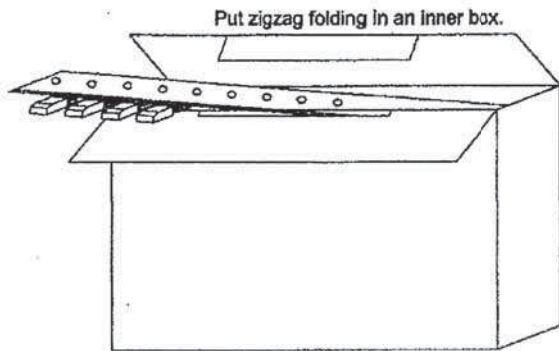
2SA1770S-AN, 2SA1770T-AN, 2SC4614S-AN, 2SC4614T-AN

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

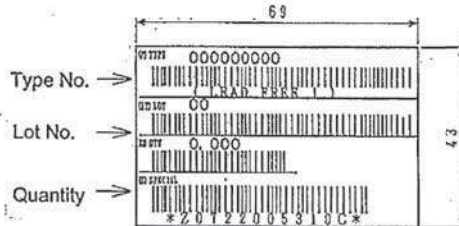
1. Packing format

Packing method



2. Bar code label

(Unit : mm)

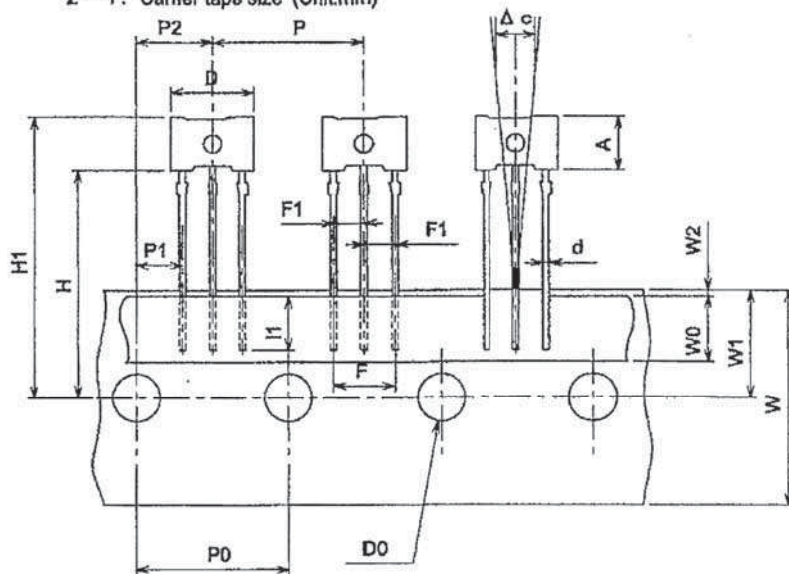


*LEAD FREE 1:

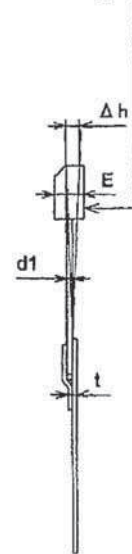
Lead-free External terminal surface treatment product.

2. Taping specifications

2—1. Carrier tape size (Unit:mm)



Marking surface

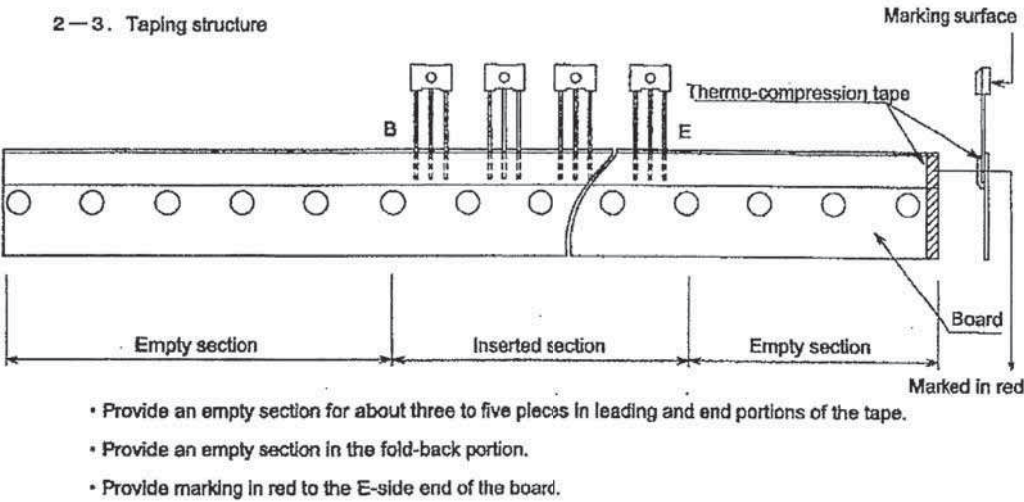


2—2. Taping size standard

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	

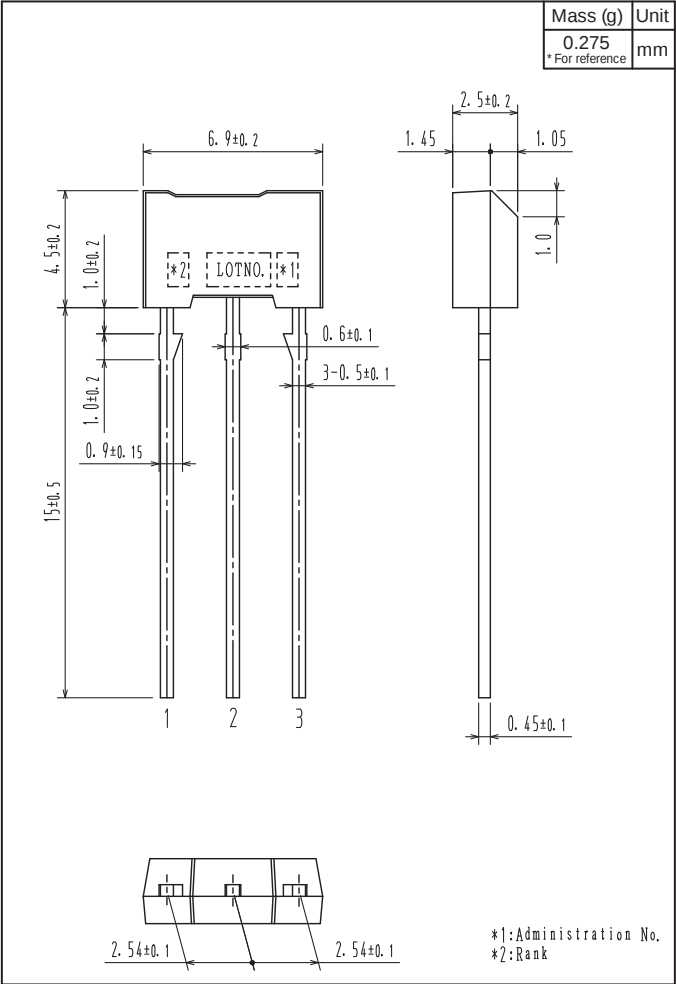
Unit:mm

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



Outline Drawing

2SA1770S-AN, 2SA1770T-AN, 2SC4614S-AN, 2SC4614T-AN



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