



2SA1770/2SC4614

Bipolar Transistor

(-)160V, (-)1.5A, Low $V_{CE(sat)}$, (PNP)NPN Single NMP

ON Semiconductor®

<http://onsemi.com>

Features

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

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Specifications

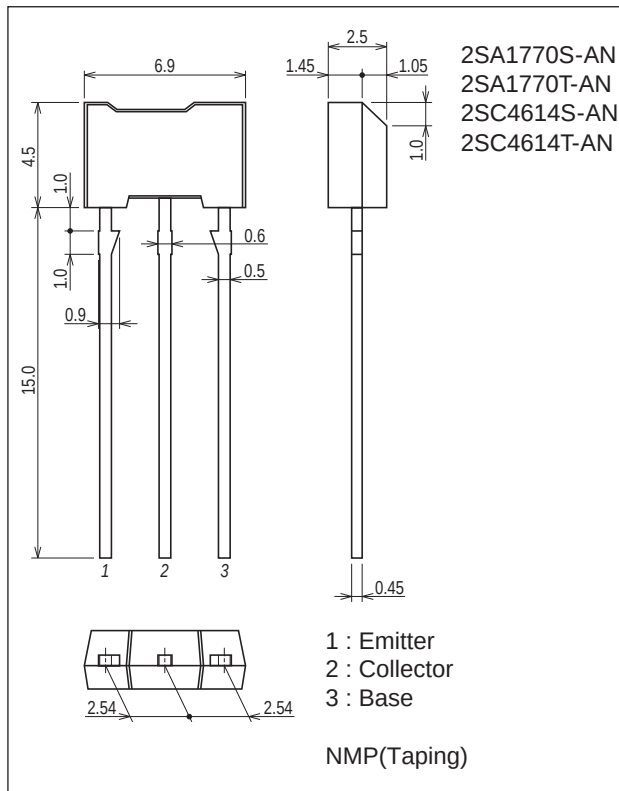
Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(-)180	V
Collector-to-Emitter Voltage	V_{CEO}		(-)160	V
Emitter-to-Base Voltage	V_{EBO}		(-)6	V
Collector Current	I_C		(-)1.5	A
Collector Current (Pulse)	I_{CP}		(-)2.5	A
Collector Dissipation	P_C		1	W
Junction Temperature	T_j		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Package Dimensions

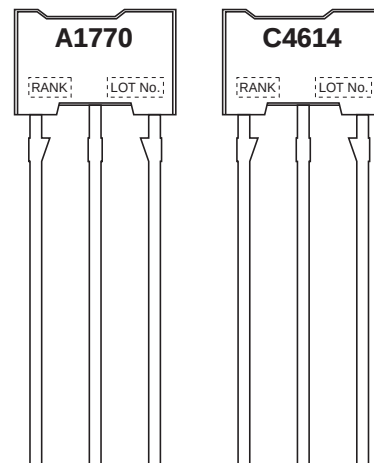
unit : mm (typ)
7540-001



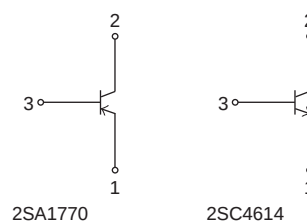
Product & Package Information

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

Marking(NMP(Taping))



Electrical Connection



2SA1770 / 2SC4614

Electrical Characteristics at Ta=25°C

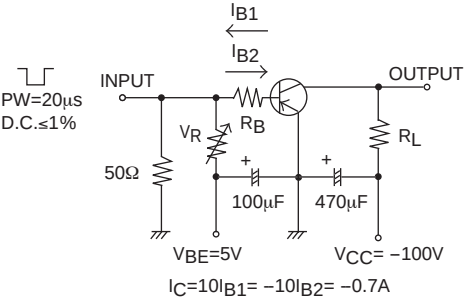
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	ICBO	VCE=(-)120V, IE=0A			(-)1	μA
Emitter Cutoff Current	IEBO	VEB=(-)4V, IC=0A			(-)1	μA
DC Current Gain	hFE1	VCE=(-)5V, IC=(-)100mA	140*		400*	
	hFE2	VCE=(-)5V, IC=(-)10mA	80			
Gain-Bandwidth Product	fT	VCE=(-)10V, IC=(-)50mA		120		MHz
Output Capacitance	Cob	VCE=(-)10V, f=1MHz		(22)14		pF
Collector-to-Emitter Saturation Voltage	VCE(sat)	IC=(-)500mA, IB=(-)50mA		(-200)130	(-500)450	mV
Base-to-Emitter Saturation Voltage	VBE(sat)			(-)0.85	(-)1.2	V
Collector-to-Base Breakdown Voltage	V(BR)CBO	IC=(-)10μA, IE=0A	(-)180			V
Collector-to-Emitter Breakdown Voltage	V(BR)CEO	IC=(-)1mA, RBE=∞	(-)160			V
Emitter-to-Base Breakdown Voltage	V(BR)EBO	IE=(-)10μA, IC=0A	(-)6			V
Turn-On Time	ton	See specified Test Circuit.		40(40)		ns
Storage Time	tstg			(0.7)1.2		μs
Fall Time	tf			(40)80		ns

* : The 2SA1770/2SC4614 are classified by 100mA hFE as follows :

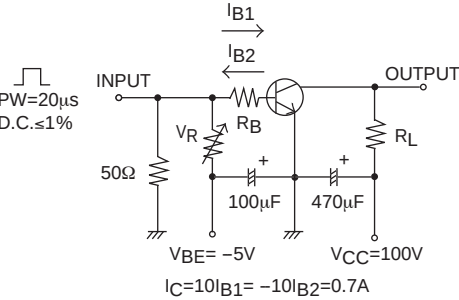
Rank	S	T
hFE	140 to 280	200 to 400

Switching Time Test Circuit

2SA1770

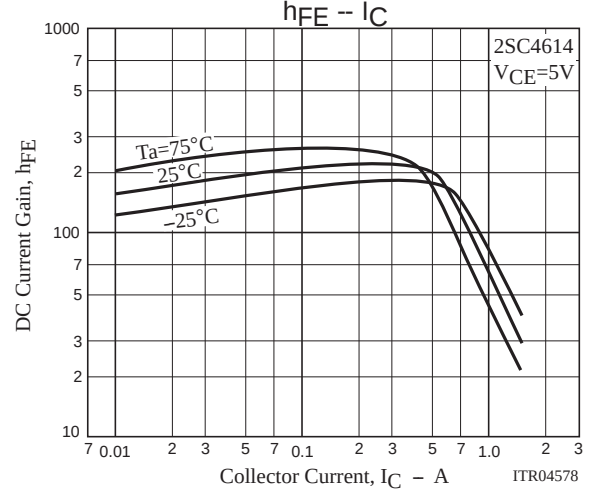
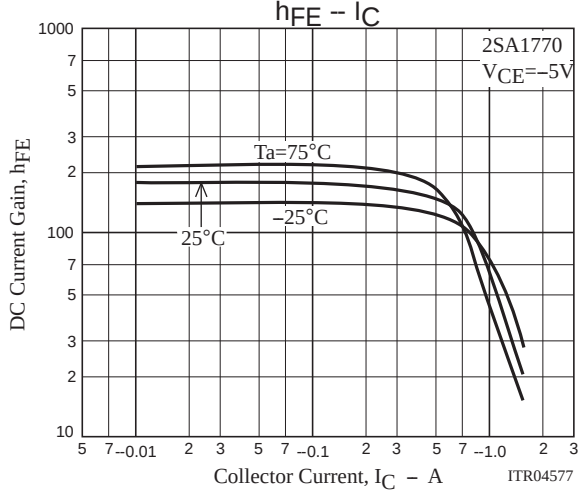
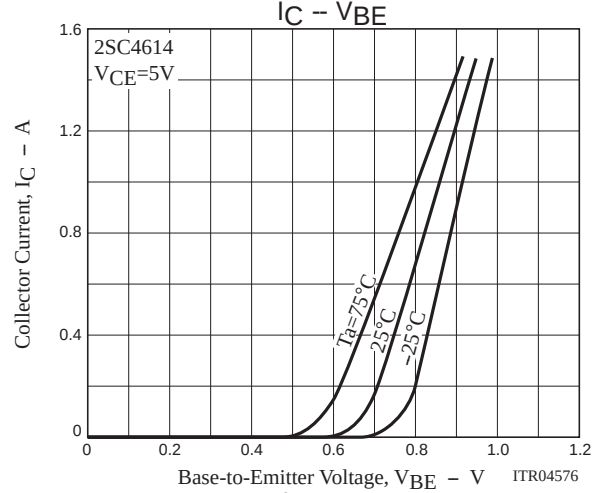
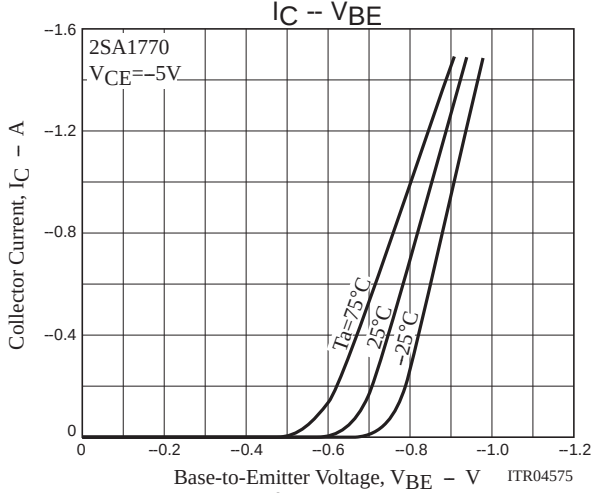
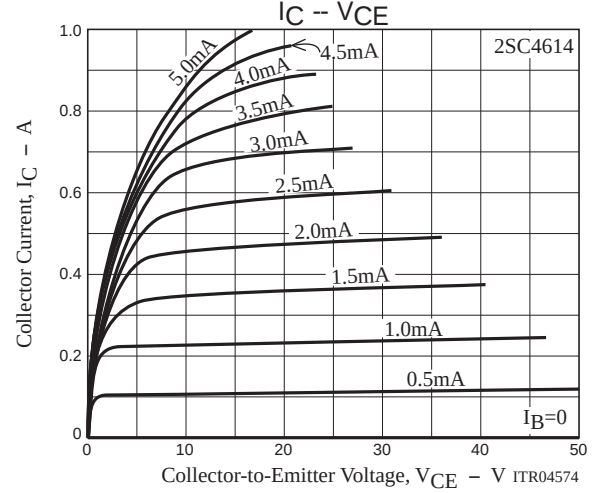
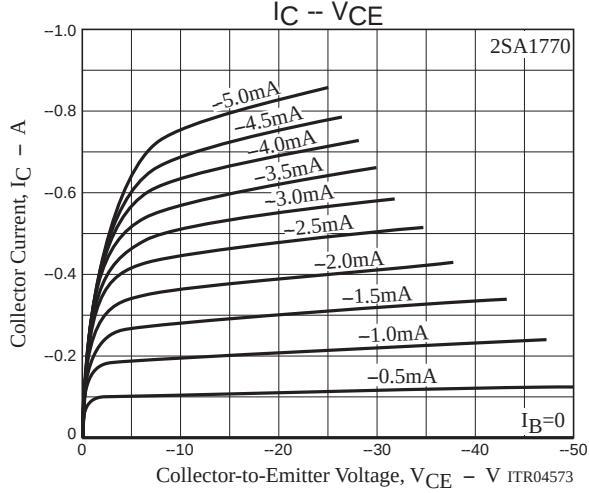
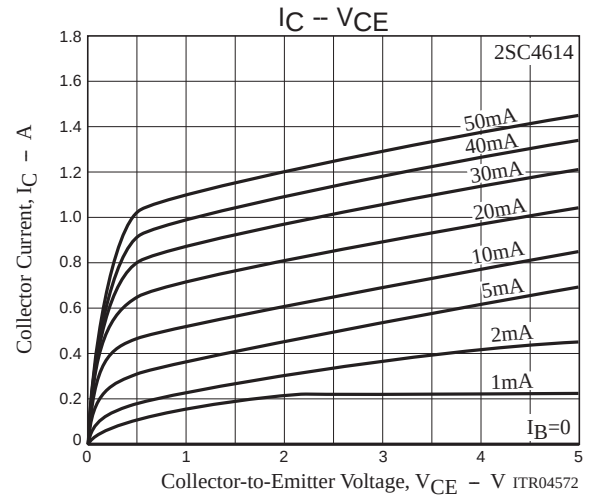
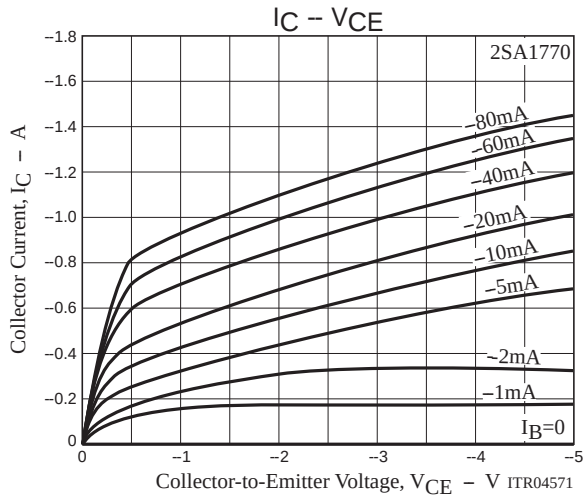


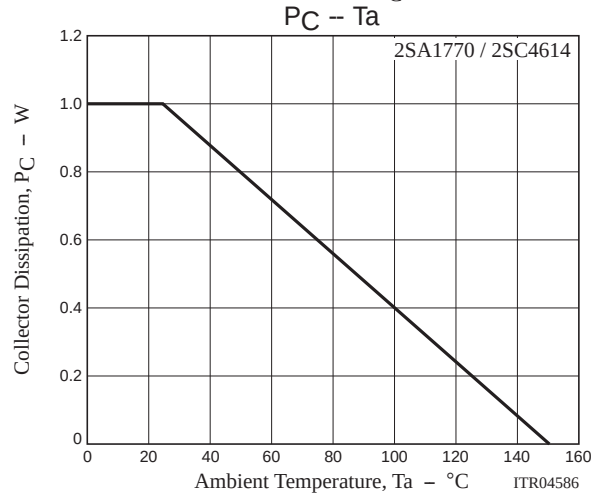
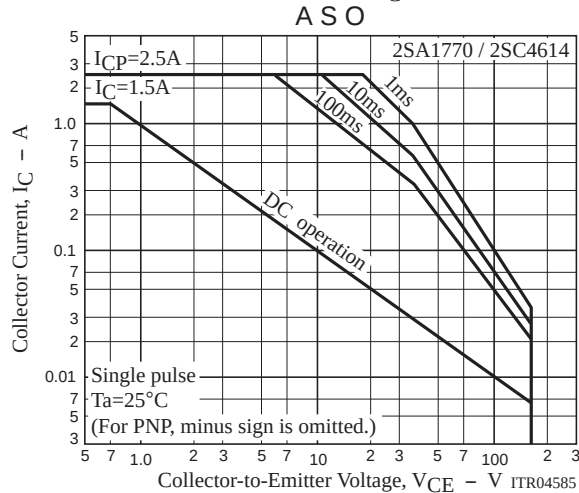
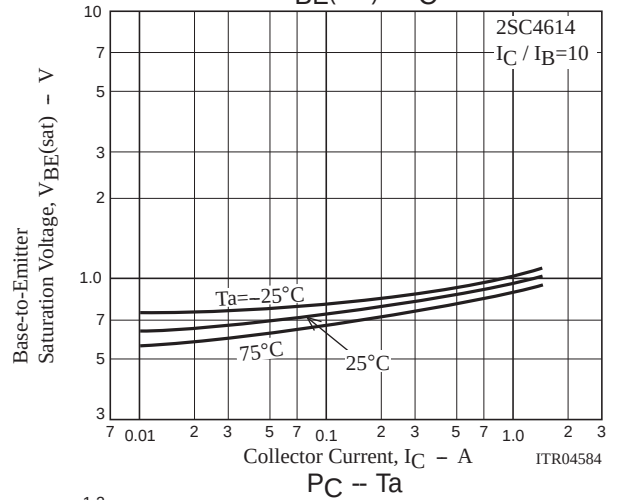
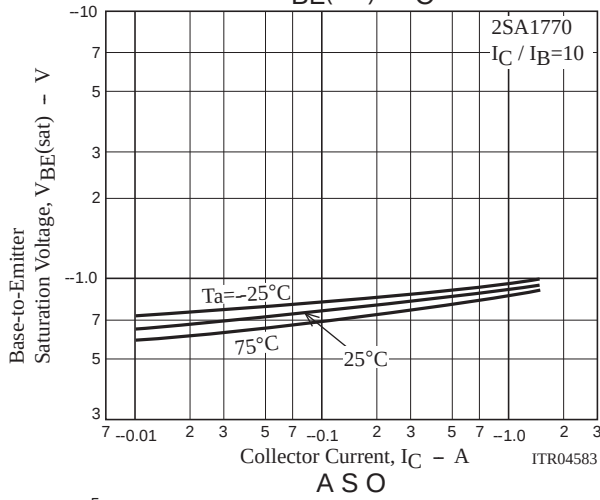
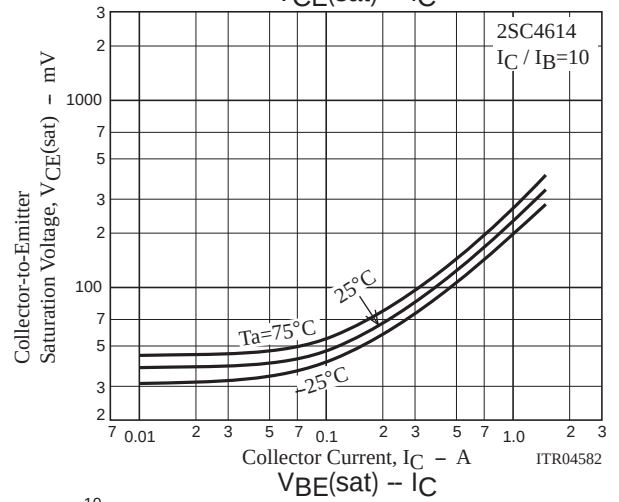
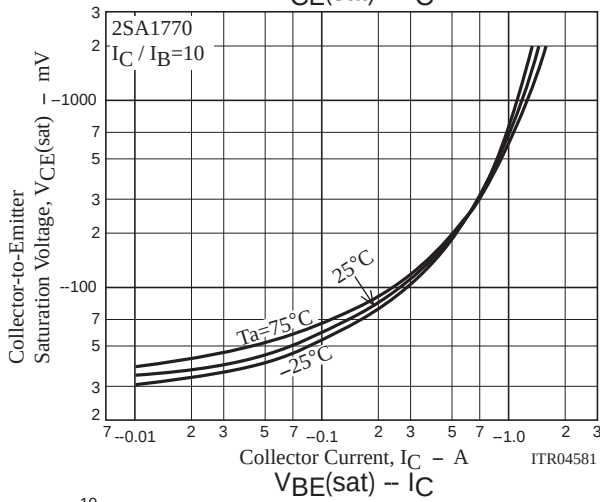
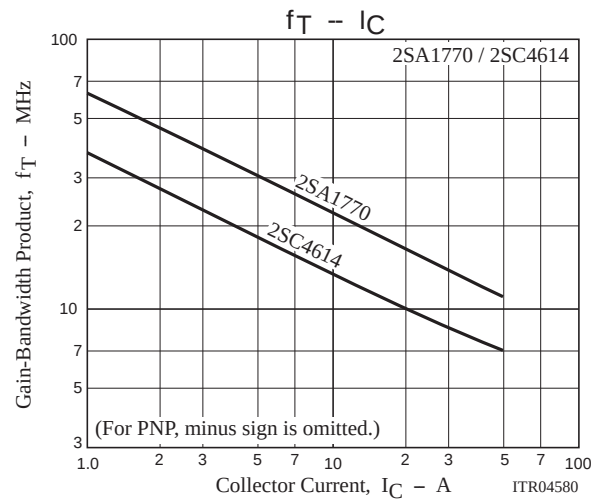
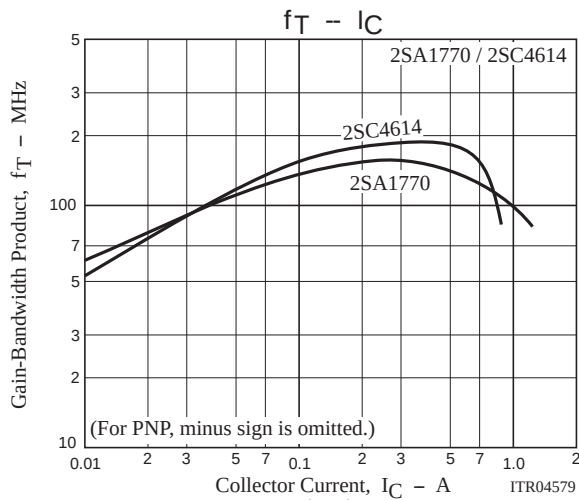
2SC4614



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

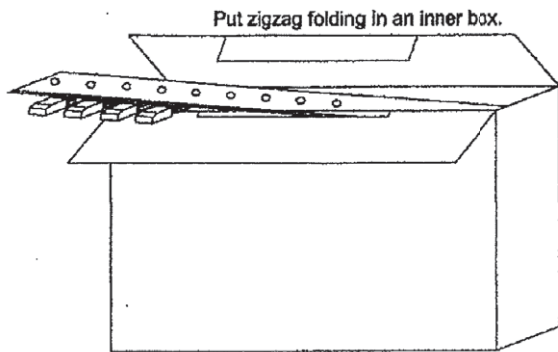
2SA1770S-AN, 2SA1770T-AN, 2SC4614S-AN, 2SC4614T-AN

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

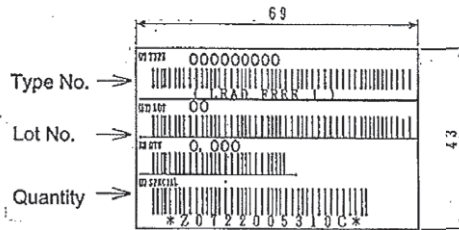
1. Packing format

Packing method



2. Bar code label

(Unit : mm)

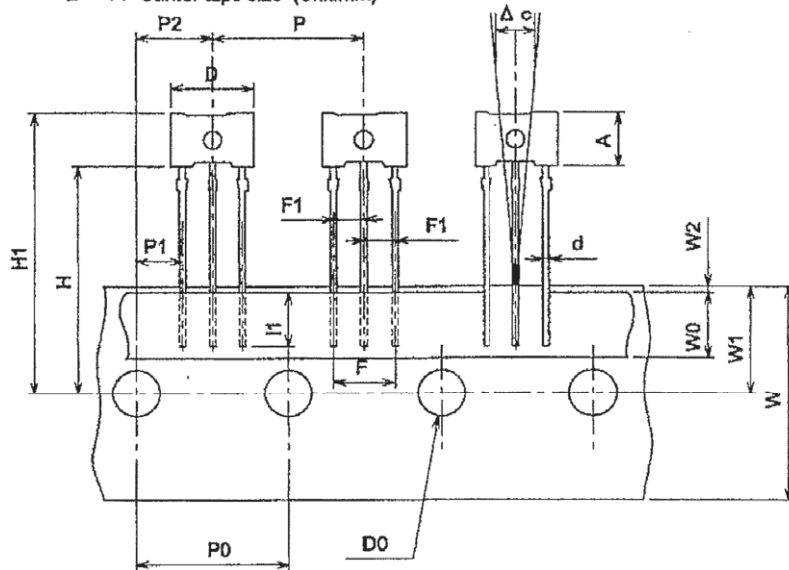


*LEAD FREE 1:

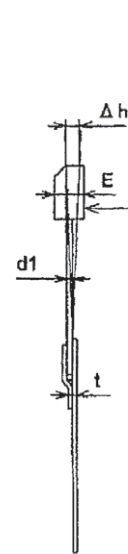
Lead-free External terminal surface treatment product.

2. Taping specifications

2—1. Carrier tape size (Unit:mm)



Marking surface

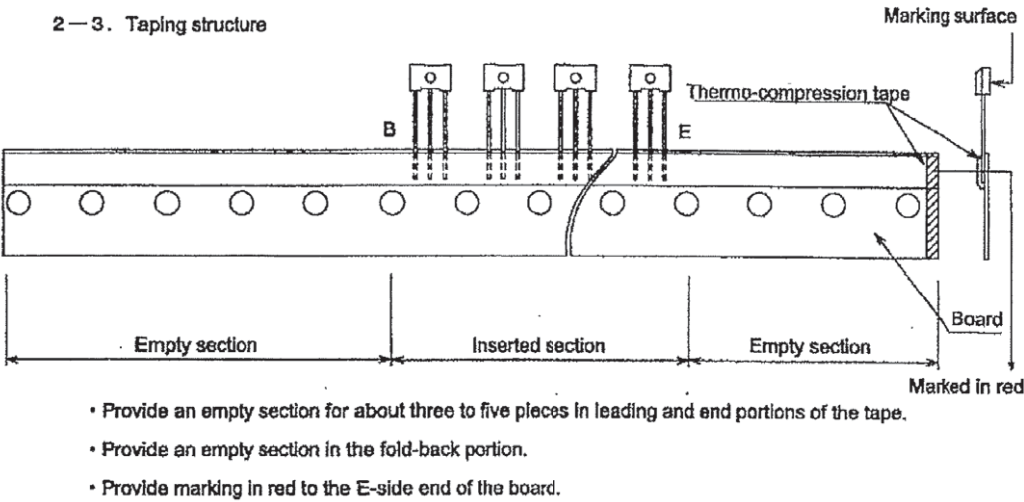


2—2. Taping size standard

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	

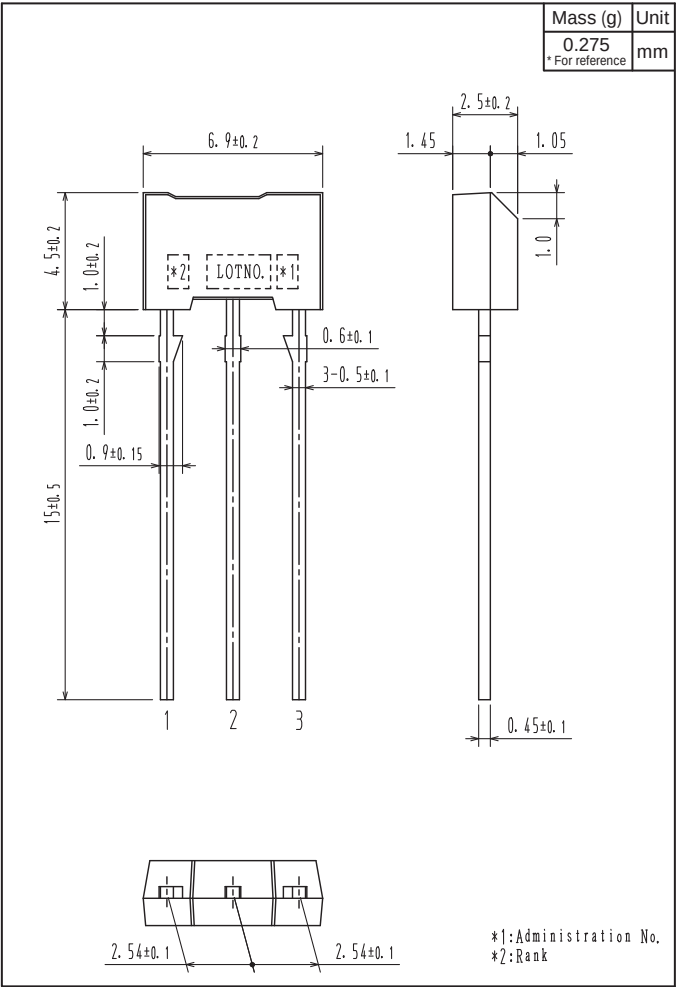
Unit:mm

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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