



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

2SA1419/2SC3649 — High-Voltage Switching Applications

PNP / NPN Epitaxial Planar Silicon Transistor

Features

- Adoption of FBET, MBIT processes
- High breakdown voltage and large current capacity
- Ultrasmall size making it easy to provide high-density, small-sized hybrid IC's

Specifications () : 2SA1419

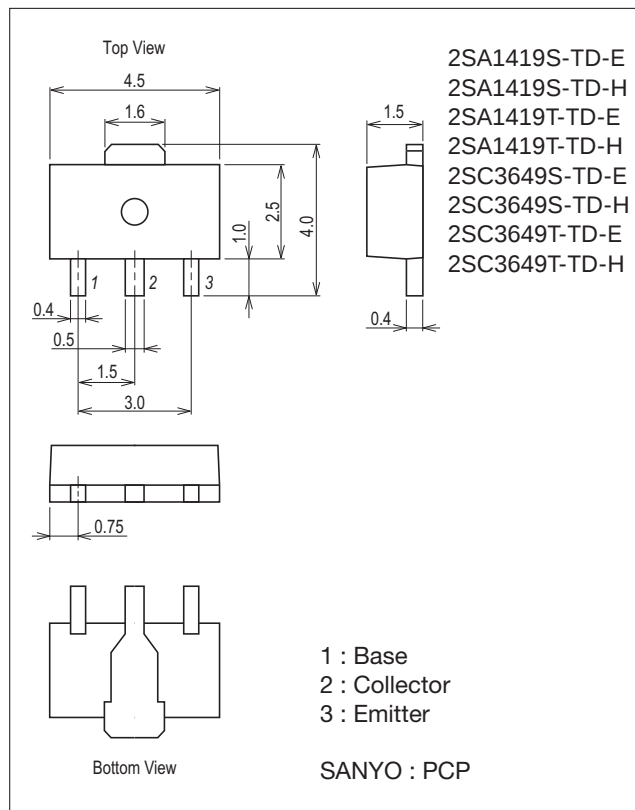
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V _{CB0}		(-)180	V
Collector-to-Emitter Voltage	V _{CE0}		(-)160	V
Emitter-to-Base Voltage	V _{EB0}		(-)6	V
Collector Current	I _C		(-)1.5	A
Collector Current (Pulse)	I _{CP}		(-)2.5	A
Collector Dissipation	P _C		500	mW
		When mounted on ceramic substrate (250mm ² ×0.8mm)	1.5	W
Junction Temperature	T _j		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C

Package Dimensions

unit : mm (typ)

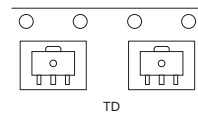
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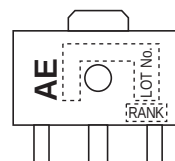
Product & Package Information

- Package : PCP
- JEITA, JEDEC : SC-62, SOT-89, TO-243
- Minimum Packing Quantity : 1,000 pcs./reel

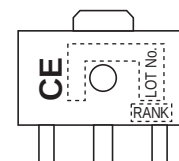
Packing Type: TD



Marking

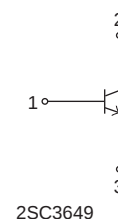
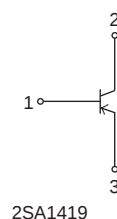


2SA1419



2SC3649

Electrical Connection



SANYO Semiconductor Co., Ltd.

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

2SA1419 / 2SC3649

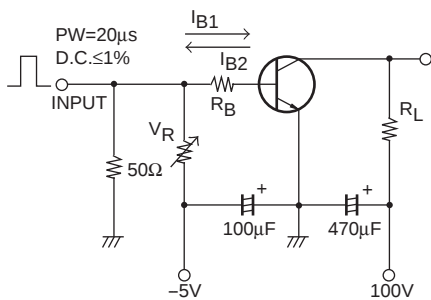
Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=(-)120V, I_E=0A$			(-)1	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=(-)4V, I_C=0A$			(-)1	μA
DC Current Gain	h_{FE1}	$V_{CE}=(-)5V, I_C=(-)100mA$	100*		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	C_{ob}	$V_{CB}=(-)10V, f=1MHz$		(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	$V_{BE(sat)}$	$I_C=(-)500mA, I_B=(-)50mA$		(-)0.85	(-)1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0A$	(-)180			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-)160			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=0A$	(-)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 2SA1419 / 2SC3649 are classified by 100mA h_{FE} as follows :

Rank	R	S	T
h_{FE}	100 to 200	140 to 280	200 to 400

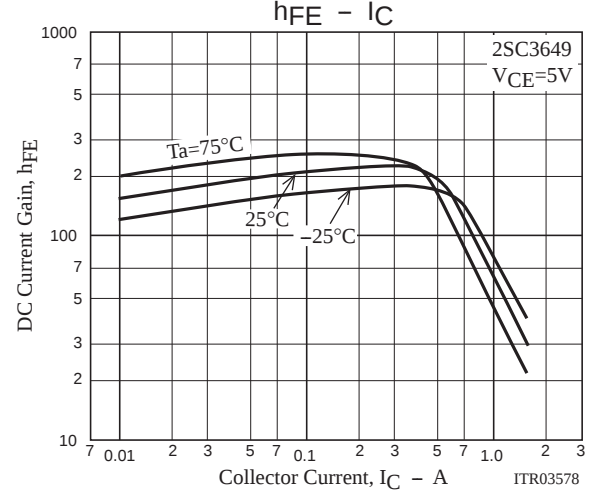
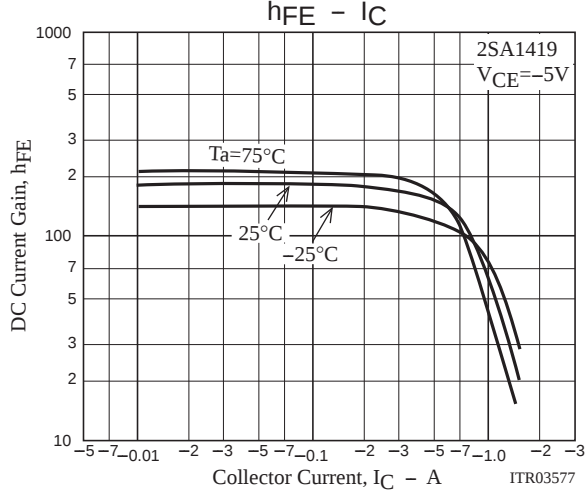
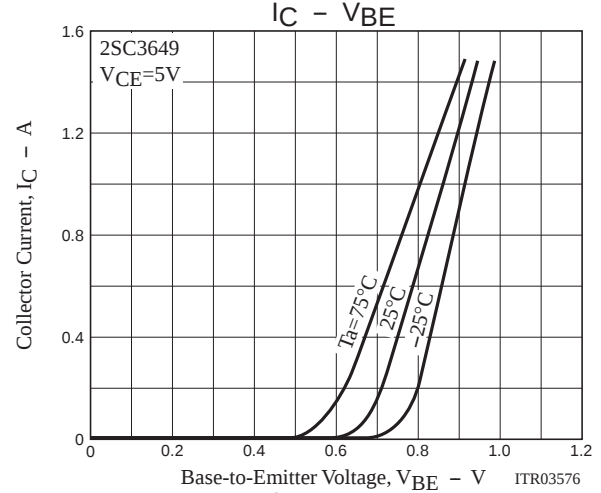
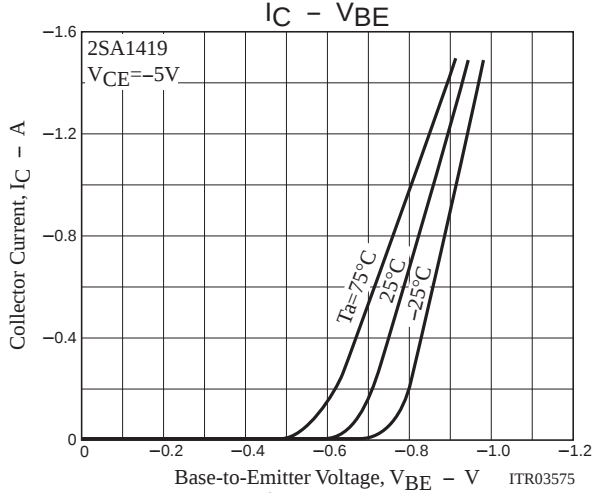
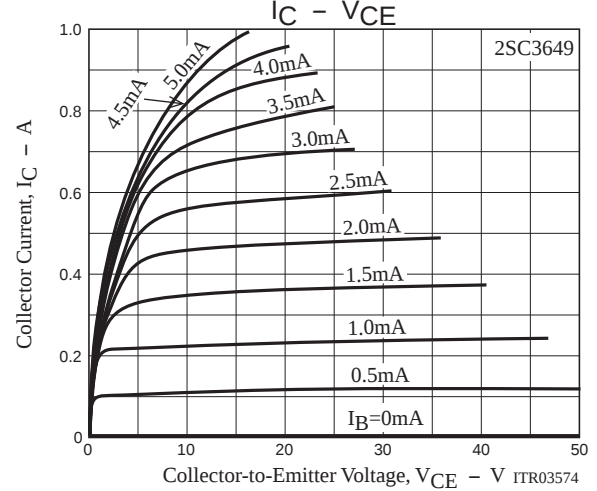
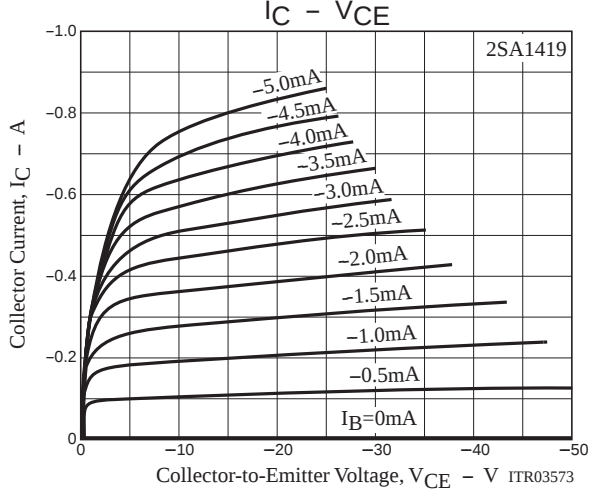
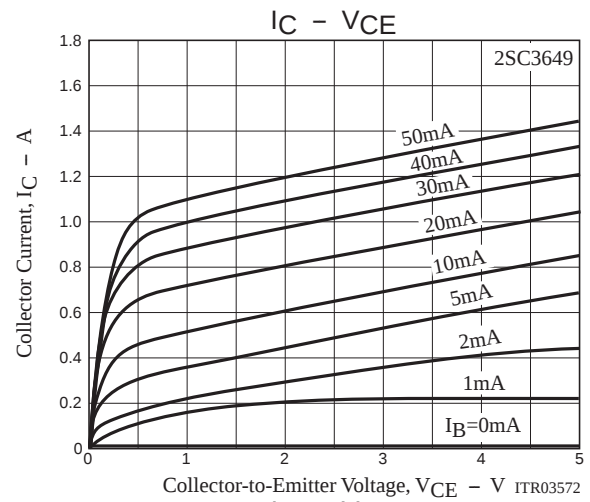
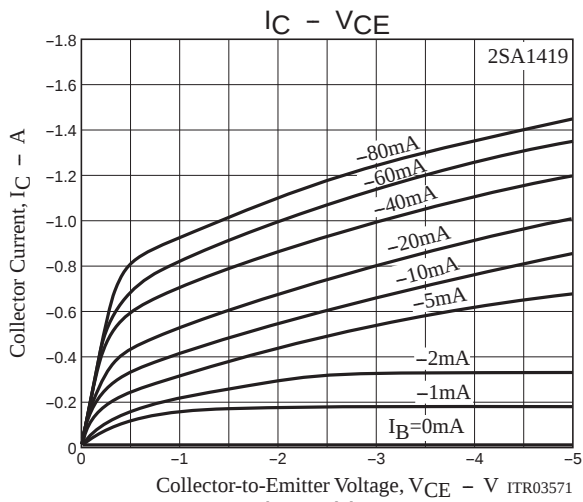
Switching Time Test Circuit

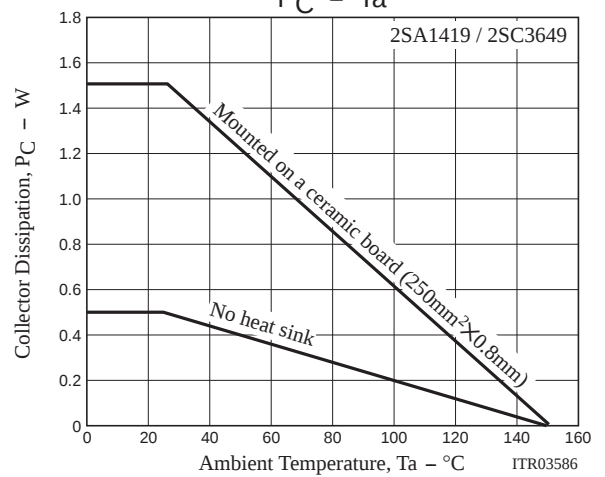
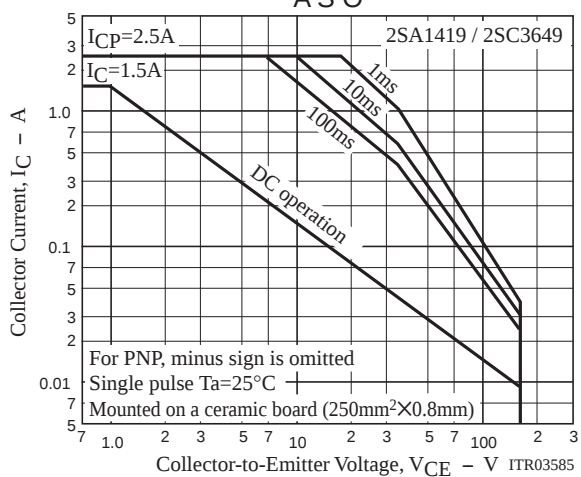
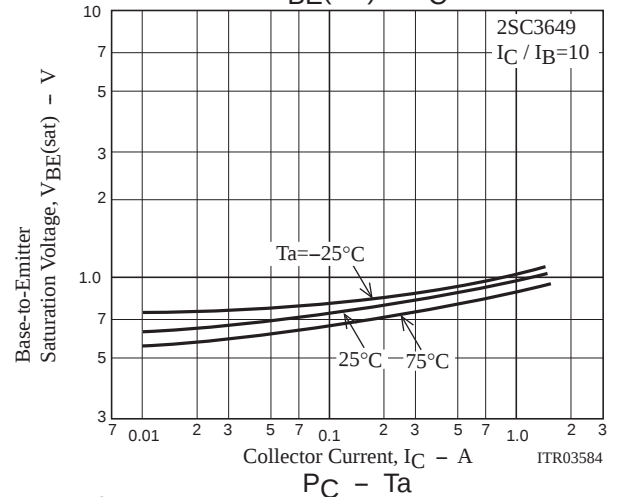
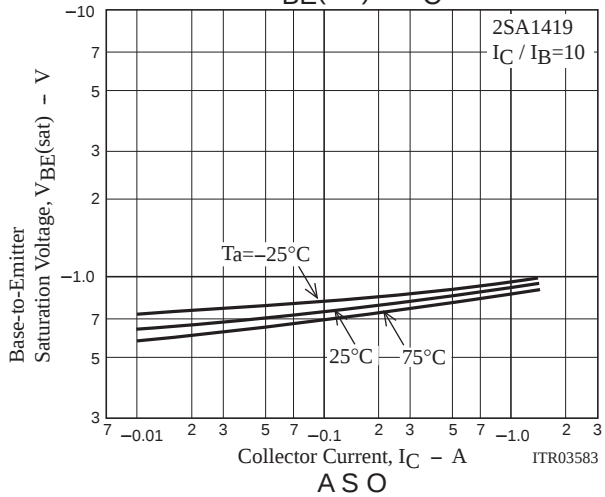
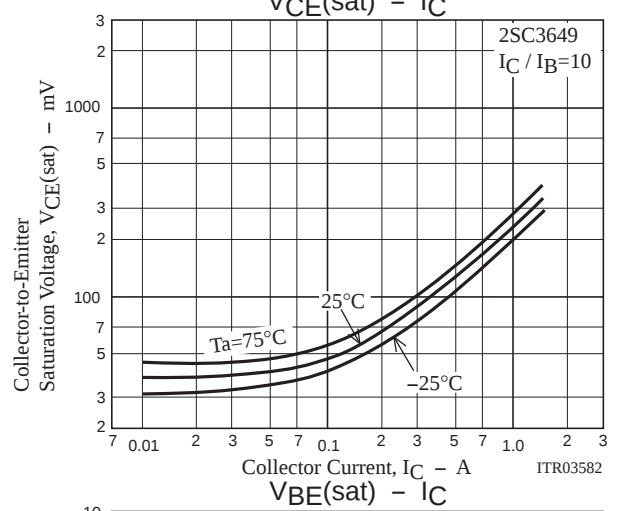
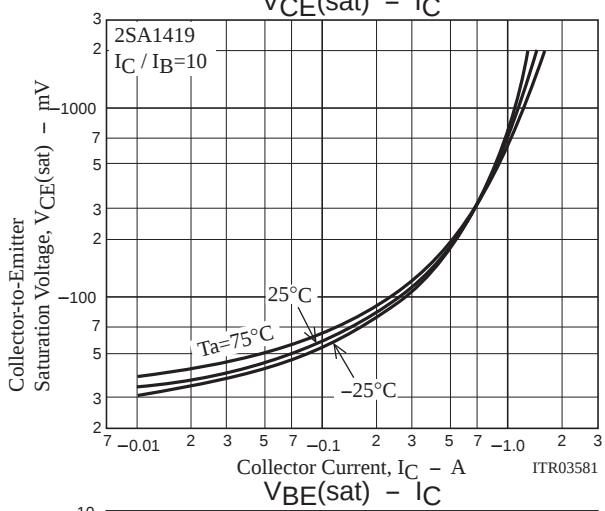
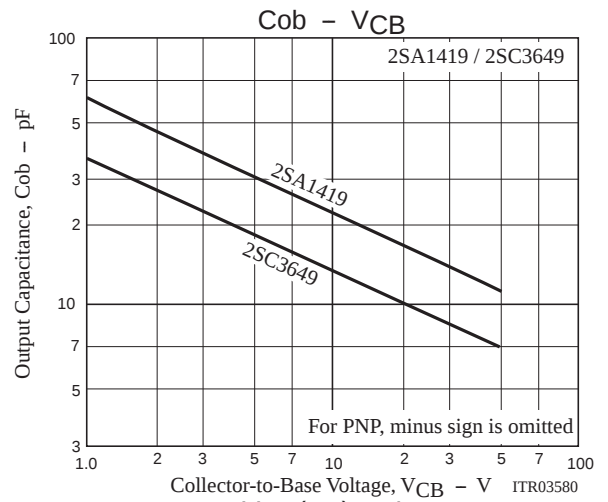
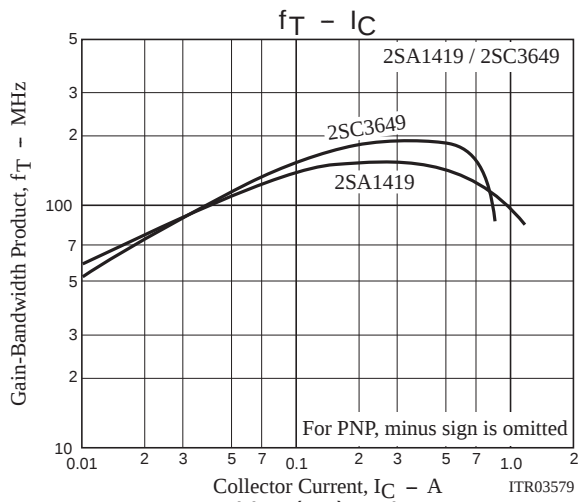


$I_C=10I_{B1}=-10I_{B2}=0.7A$
(For PNP, the polarity is reversed)

Ordering Information

Device	Package	Shipping	memo
2SA1419S-TD-E	PCP	1,000pcs./reel	Pb Free
2SA1419S-TD-H	PCP	1,000pcs./reel	Pb Free and Halogen Free
2SA1419T-TD-E	PCP	1,000pcs./reel	Pb Free
2SA1419T-TD-H	PCP	1,000pcs./reel	Pb Free and Halogen Free
2SC3649S-TD-E	PCP	1,000pcs./reel	Pb Free
2SC3649S-TD-H	PCP	1,000pcs./reel	Pb Free and Halogen Free
2SC3649T-TD-E	PCP	1,000pcs./reel	Pb Free
2SC3649T-TD-H	PCP	1,000pcs./reel	Pb Free and Halogen Free





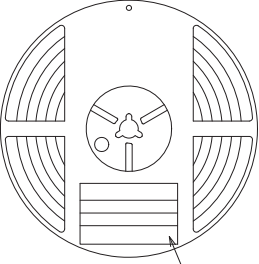
Bag Packing Specification

2SA1419S-TD-E, 2SA1419S-TD-H, 2SA1419T-TD-E, 2SA1419T-TD-H, 2SC3649S-TD-E, 2SC3649S-TD-H, 2SC3649T-TD-E, 2SC3649T-TD-H

1. Packing Format

Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX (C-1)	Outer BOX (A-7)
PCP	PCP	1,000	4,000	24,000	4 reels contained Dimensions:mm (external) 183×72×185	6 inner boxes contained Dimensions:mm (external) 440×195×210

Packing method



Reel label

Reel label, Inner box label
(unit:mm)

Type No.	→	(P) TYPE 000000000
LOT No.	→	(1) LOT 00
Quantity	→	(Q) QTY 0,000 (1) LEAD FREE *
Origin	→	(2) SPECIAL *Z0722005310C* ASSEMBLY:*** (DIFFUSION:***)

Outer box label

It is a label at the time of factory shipments.
The form of a label may change in physical distribution process.

TYPE CODE	TYPE
QTY 0,000 PCS (1) LEAD FREE *	LOT
PACKAGE	SPECIAL
Z0722005310C ASSEMBLY:*** (DIFFUSION:***)	

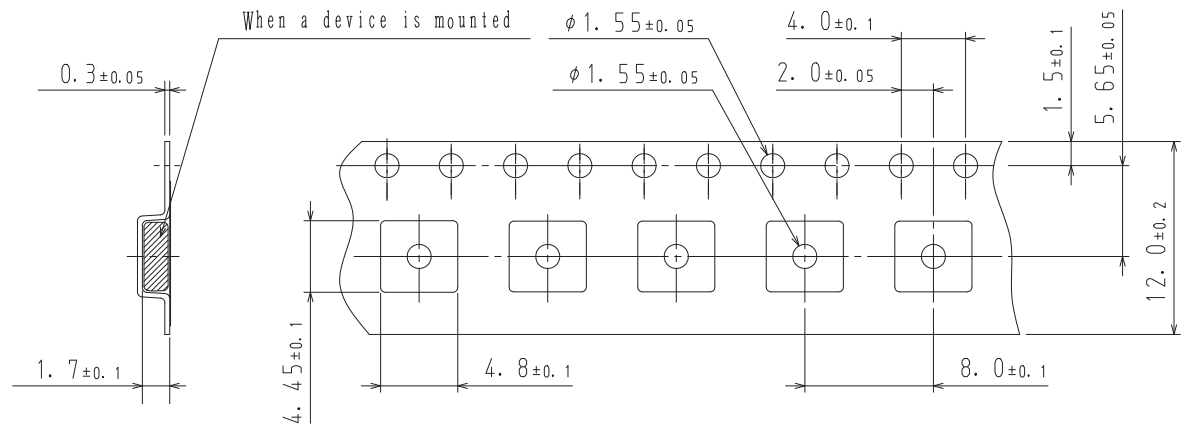
NOTE (1)

The LEAD FREE * description shows that the surface treatment of the terminal is lead free.

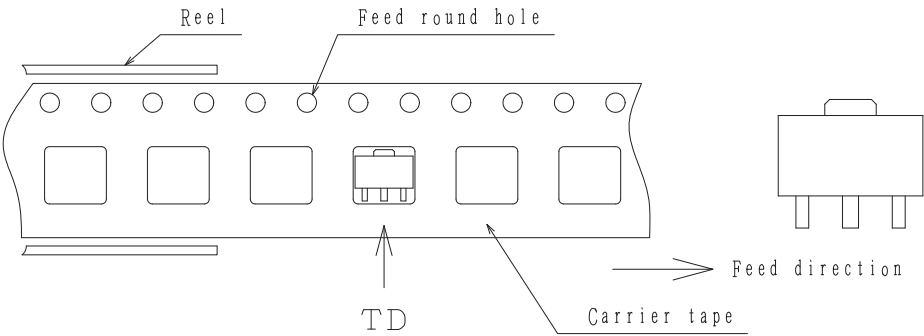
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

2-1. Carrier tape size (unit:mm)



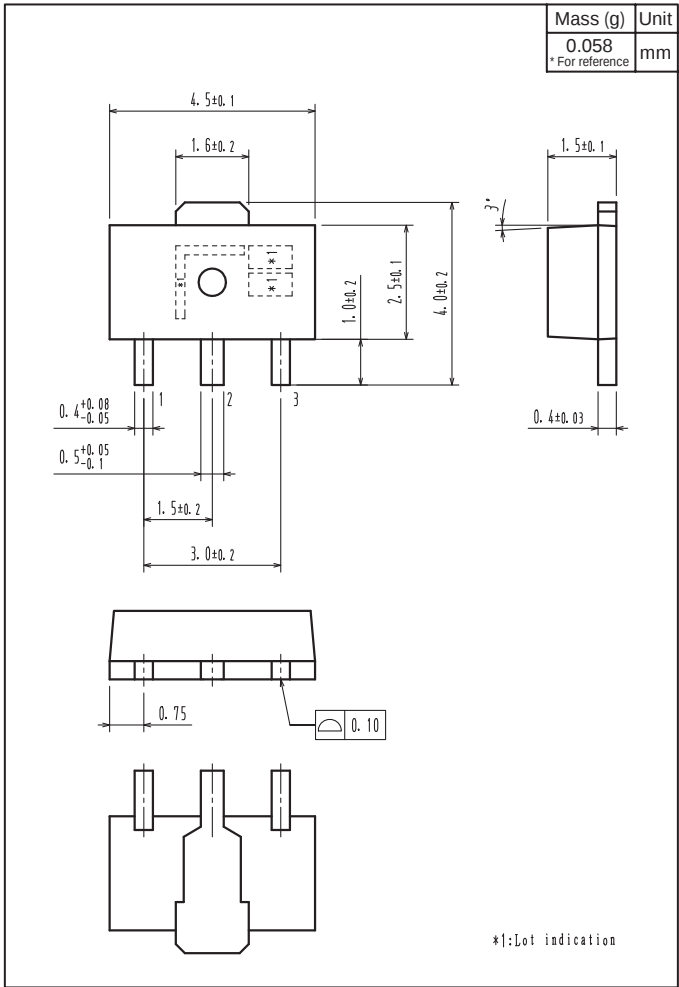
2-2. Device placement direction



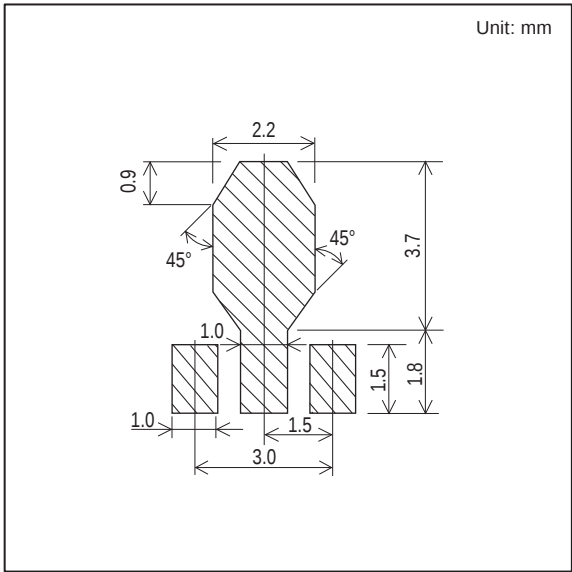
Those with pin 1 index on the feed hole side.....TD

Outline Drawing

2SA1419S-TD-E, 2SA1419S-TD-H, 2SA1419T-TD-E, 2SA1419T-TD-H, 2SC3649S-TD-E, 2SC3649S-TD-H, 2SC3649T-TD-E, 2SC3649T-TD-H



Land Pattern Example



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