Ordering number : EN1334E

SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

2SC3332 — NPN Epitaxial Planar Silicon Transistor

High-Voltage Switching Applications

Features

- Hgih breakdown voltage
- Excellent h_{FE} linearity
- Wide ASO and highly resistant to breakdown
- Adoption of MBIT process

Specifications

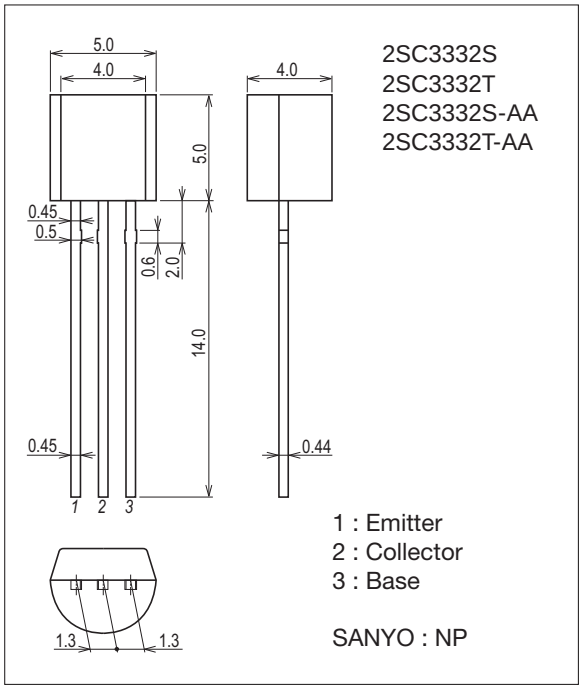
Absolute Maximum Ratings at Ta=25°C

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		0.7	A
Collector Current (Pulse)	I_{CP}		1.5	A
Collector Dissipation	P_C		700	mW
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		−55 to +150	°C

Package Dimensions

unit : mm (typ)

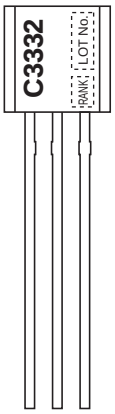
7522-002



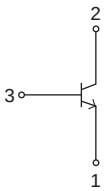
Product & Package Information

- Package : NP
- JEITA, JEDEC : SC-34A, TO-92, TO-226AA, SOT-54
- Minimum Packing Quantity : 1,500 pcs./box, 500pcs./bag

Marking



Electrical Connection



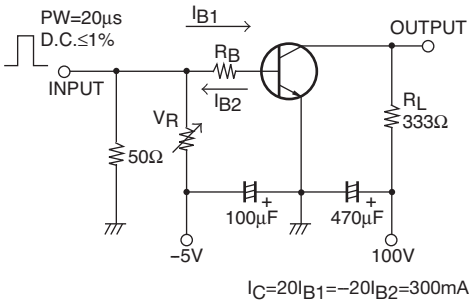
Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=120V, I_E=0A			0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=4V, I_C=0A			0.1	μA
DC Current Gain	$h_{FE}1$	V_{CE}=5V, I_C=100mA	100*		400*	
	$h_{FE}2$	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		8		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C=250mA, I_B=25mA		0.12	0.4	V
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=250mA, I_B=25mA		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.		50		ns
Storage Time	t_{stg}			1000		ns
Fall Time	t_f			60		ns

* : The 2SC3332 is classified by 100mA h_{FE} as follows :

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

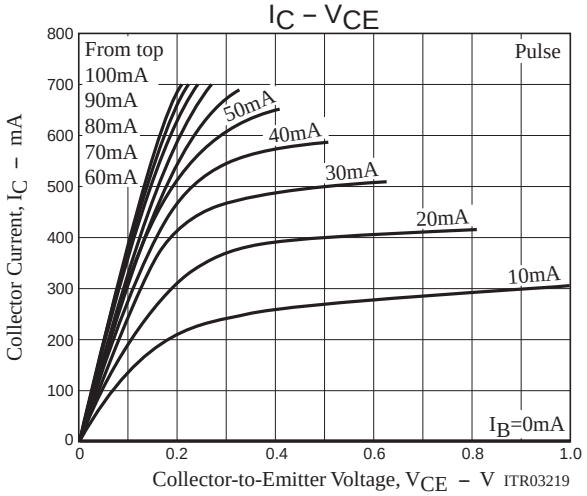
Switching Time Test Circuit

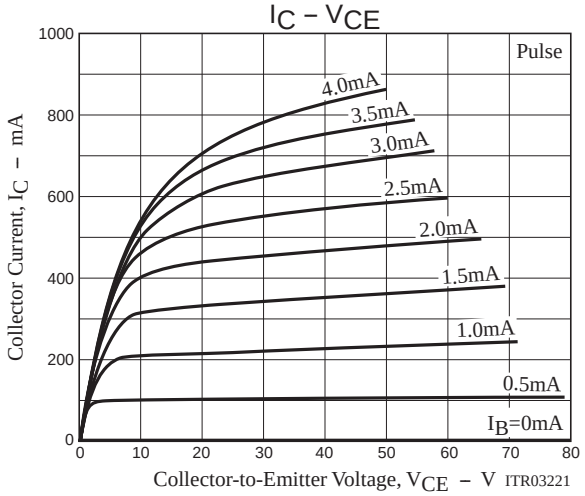


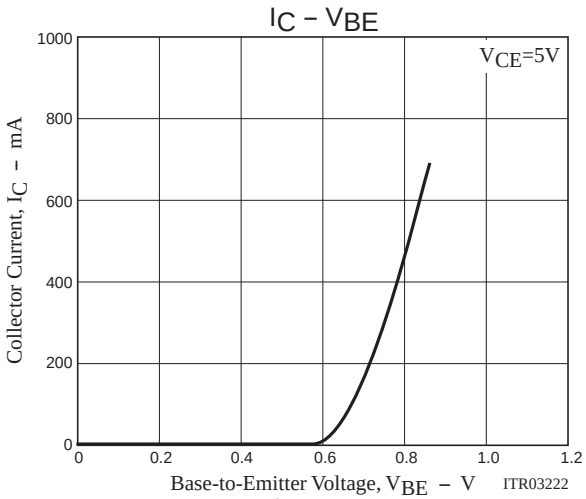
I_C=20I_{B1}=–20I_{B2}=300mA

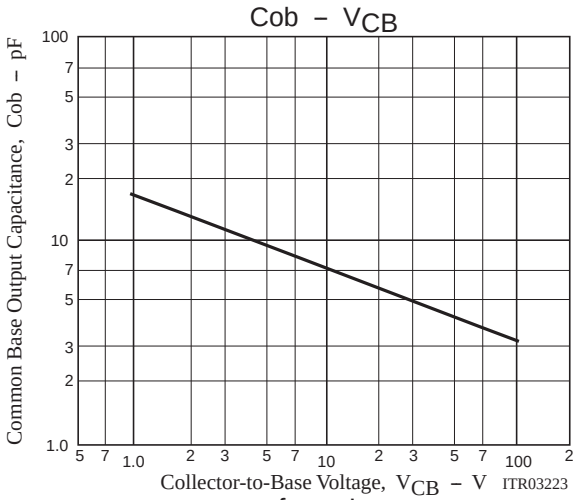
Ordering Information

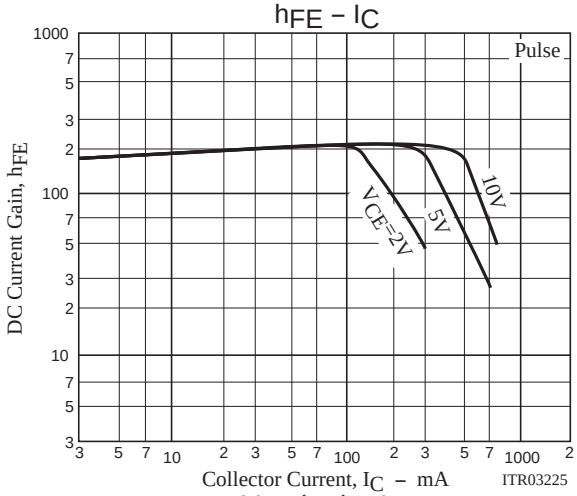
Device	Package	Shipping	memo
2SC3332S	NP	500pcs./bag	Pb Free
2SC3332T	NP	500pcs./bag	
2SC3332S-AA	NP	1,500pcs./box	
2SC3332T-AA	NP	1,500pcs./box	

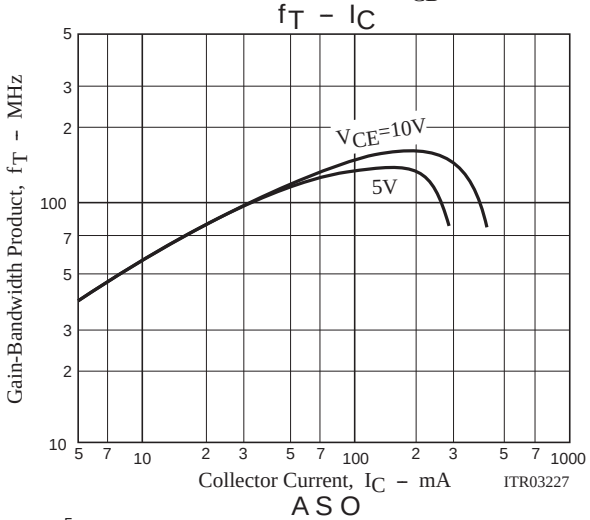


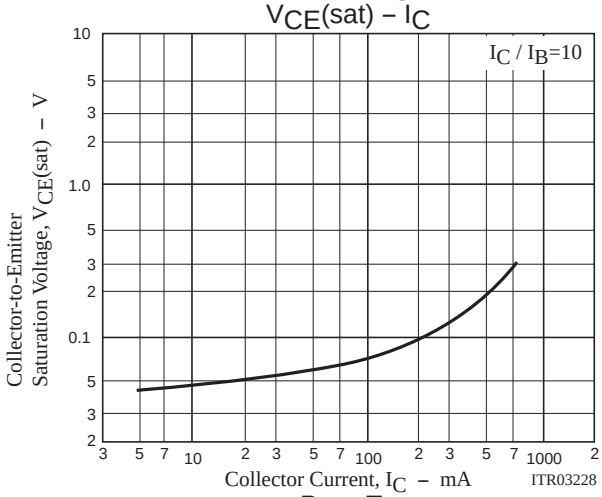


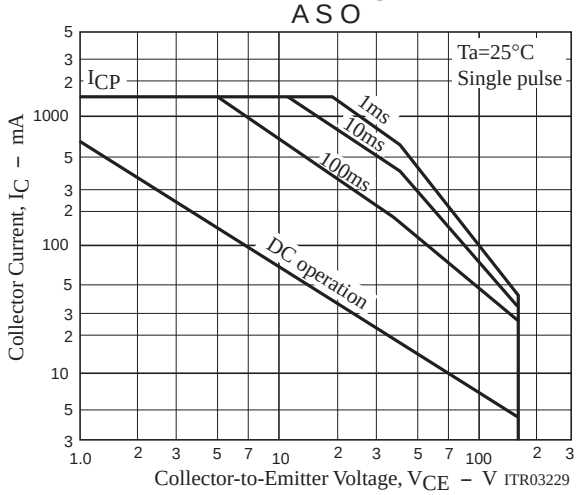

IC – VBE
VCE=5V
Collector Current, IC – mA
Base-to-Emitter Voltage, VBE – V
ITR03222

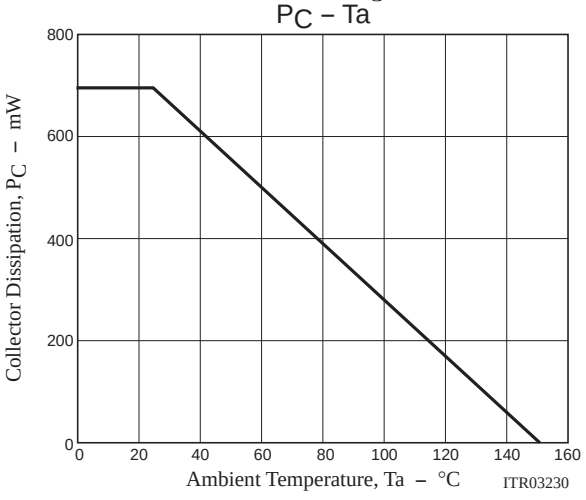

Cob – VCB
Common Base Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
ITR03223


hFE – IC
Pulse
VCE=2V
5V
10V
DC Current Gain, hFE
Collector Current, IC – mA
ITR03225


fT – IC
VCE=10V
5V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – mA
ITR03227


VCE(sat) – IC
IC / IB=10
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – mA
ITR03228


A S O
ICP
Ta=25°C
Single pulse
1ms
10ms
100ms
DC operation
Collector Current, IC – mA
Collector-to-Emitter Voltage, VCE – V
ITR03229


PC – Ta
Collector Dissipation, PC – mW
Ambient Temperature, Ta – °C
ITR03230

Taping Specification

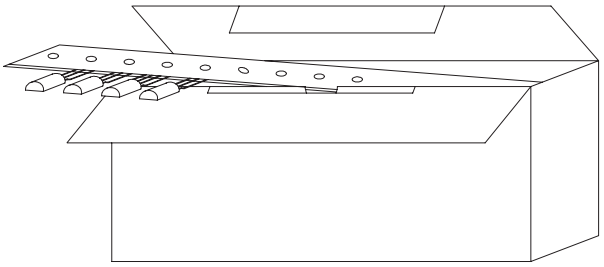
2SC3332S-AA, 2SC3332T-AA

1. Packing Format

Package Name	Packing Type	Maximum Number of devices contained (pcs)		Packing format
		Inner BOX (C-2)	number of contained	Outer BOX (C-6)
NP	AA	Dimensions:mm (external) 330×45×145	1,500	16 inner boxes contained (24,000pcs) Dimensions:mm (external) 585×345×200

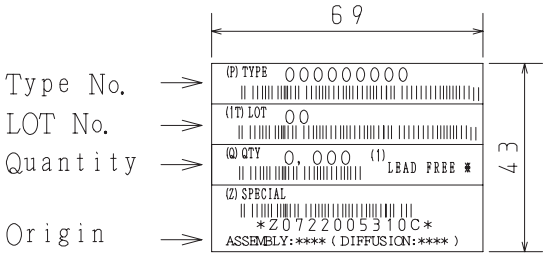
Packing method

Put zigzag folding in an inner box.



Inner box label

(unit:mm)



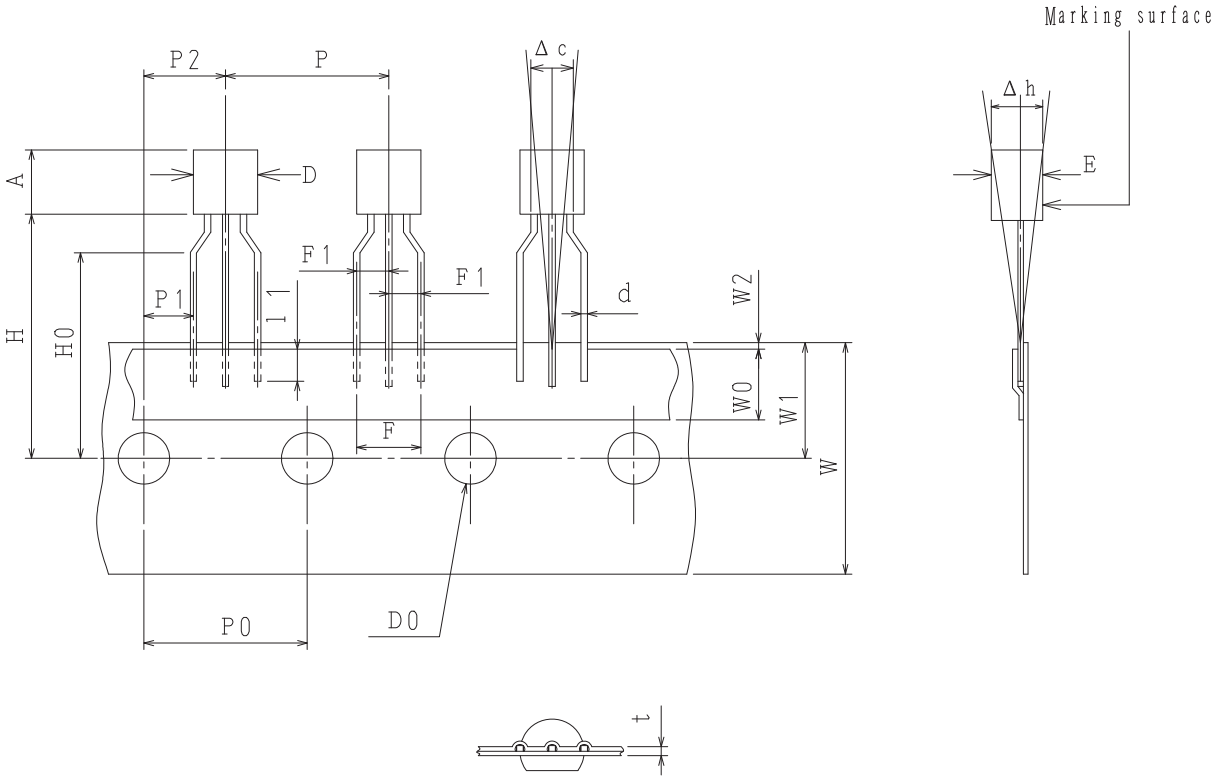
NOTE (1)

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 specifications

2-1. Carrier tape size



2-2. Taping size standard

unit:mm

Item	Symbol	Standard	Tolerance	Item	Symbol	Standard	Tolerance
Work piece outside diameter	D	5.0	±0.2	Tape width	W	18.0	+1.0 −0.5
	E	4.0	±0.2	Adhesive tape	W0	6.0	±1.5
Work piece height	A	5.0	±0.2	Displacement of perforations	W1	9.0	±0.5
Lead wire diameter	d	0.45×0.44t	±0.1	Work piece bottom surface position	H	19.0	±1.0
Bonded lead wire	l1	2.0MIN		Insert stopper position	H0	16.0	±0.5
Pitch between products	P	12.7	±0.5	Work piece upper limit position	H1	24.5	±1.5
Pitch between perforations	P0	12.7	±0.2	Perforations diameter	D0	φ4.0	±0.2
Distance between lead wire	F	5.0	+0.8 −0.2	Tape thickness	t	0.6	±0.2
Lead wire pitch distance	F1	2.5	+0.2 −0.1	Product inclination	△c	0	±1.0
Product inclination	△h	0	±2.0				
Displacement of perforations	P1	3.85	±0.3	Measurement position is the bottom of the clinch			
	P2	6.35	±0.3				
Displacement of tape	W2	0.5MAX		Not to be displaced to the outside of the board			

Bag Packing Specification

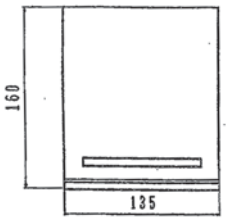
2SC3332S, 2SC3332T

1 . Packing condition

Storange package outline name	Maximum number of devices contained (pcs.)			Packing condition	
	Bags	Inner box	Devices contained	Outer box (A−1)	Outer box (A−2)
NP	500	B−1 Inner box dimensions : mm (external) 445×225×55	10,000	5 inner boxes contained 50,000 Outer box dimensions : mm (external) 470 × 250 × 300	3 inner boxes contained 30,000 Outer box dimensions : mm (external) 470 × 250 × 190

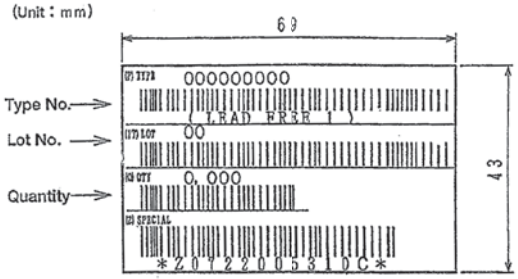
2. Bag dimensions

(Unit : mm)



3. Bar code label

(Unit : mm)



*LEAD FREE 1:
Lead-free External terminal surface treatment product.

Outline Drawing

2SC3332S, 2SC3332T