



ON Semiconductor®

<http://onsemi.com>

2SC3332

Bipolar Transistor 180V, 160A, Low $V_{CE(sat)}$ NPN Single NP

Features

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

Specifications

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

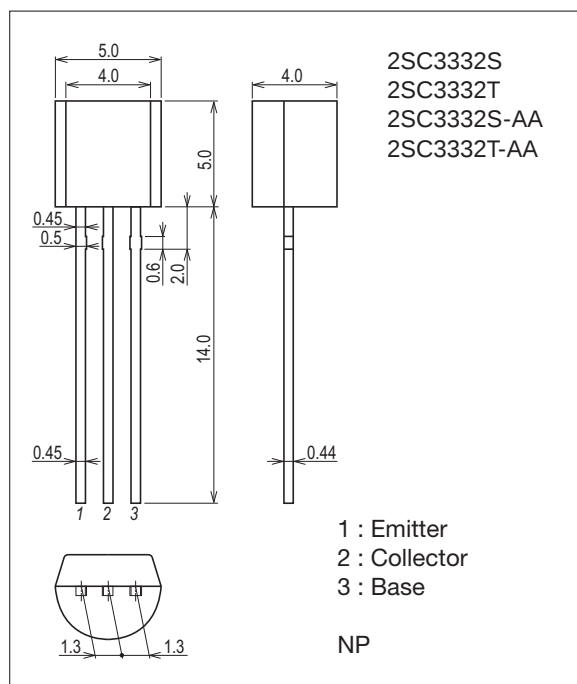
Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		180	V
Collector-to-Emitter Voltage	V_{CEO}		160	V
Emitter-to-Base Voltage	V_{EBO}		6	V
Collector Current	I_C		0.7	A
Collector Current (Pulse)	I_{CP}		1.5	A
Collector Dissipation	P_C		700	mW
Junction Temperature	T_j		150	$^{\circ}\text{C}$
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)

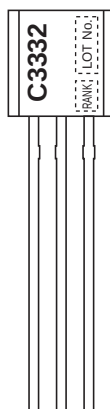
7522-002



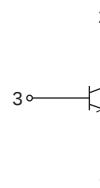
Product & Package Information

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

Marking



Electrical Connection



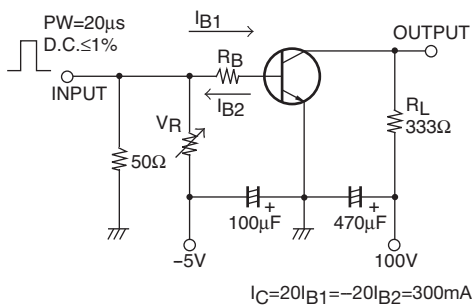
Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	ICBO	V _{CB} =120V, I _E =0A			0.1	μA
Emitter Cutoff Current	IEBO	V _{EB} =4V, I _C =0A			0.1	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	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 :

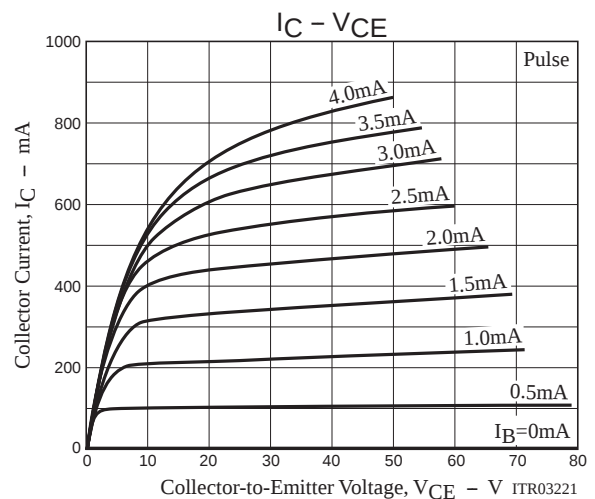
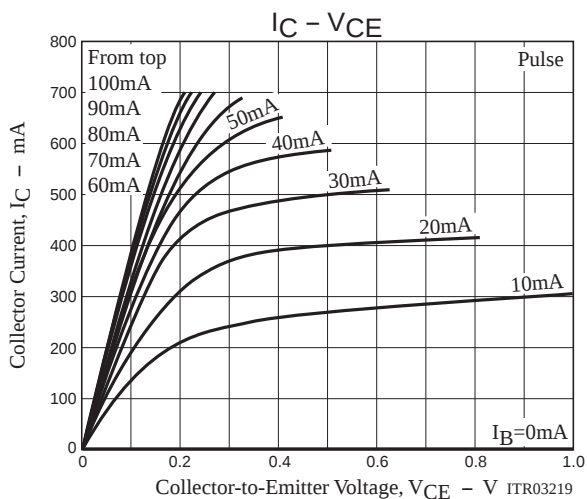
Rank	R	S	T
h _{FE}	100 to 200	140 to 280	200 to 400

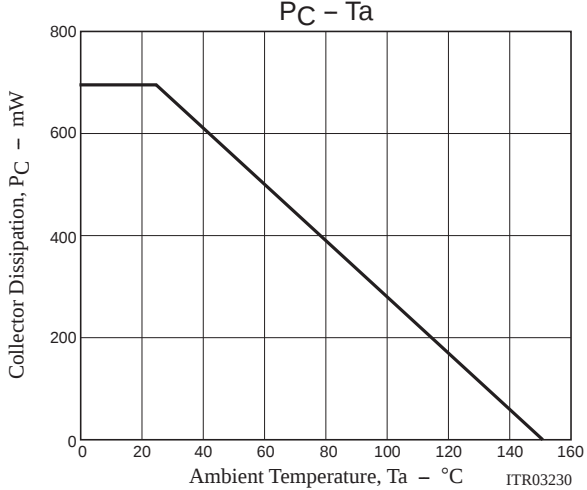
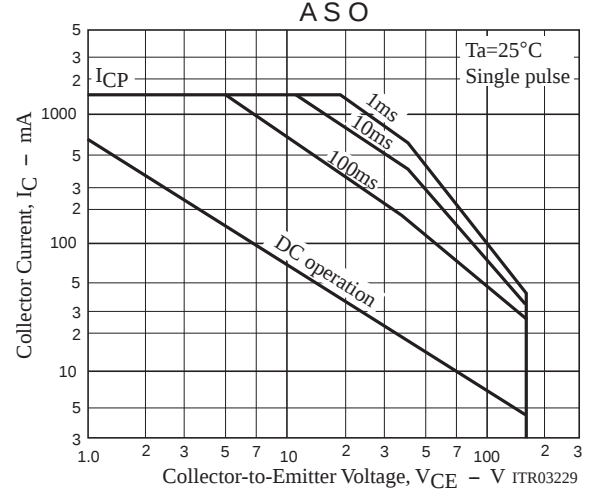
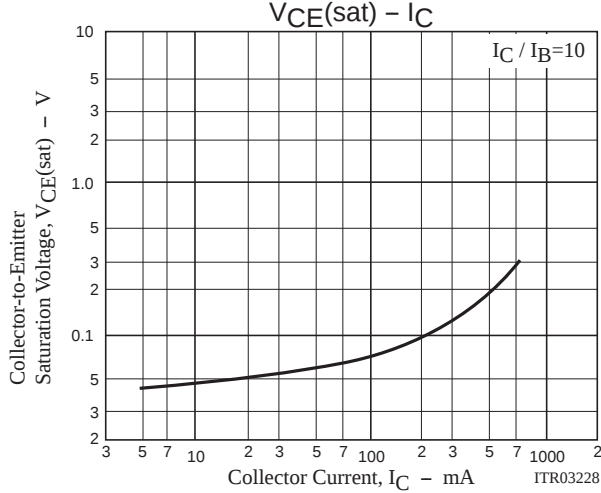
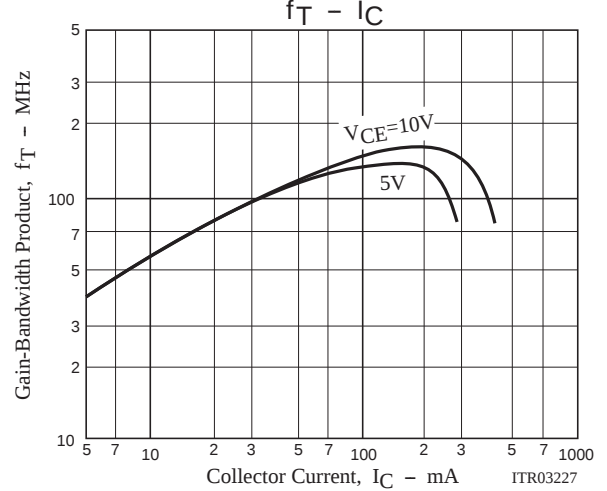
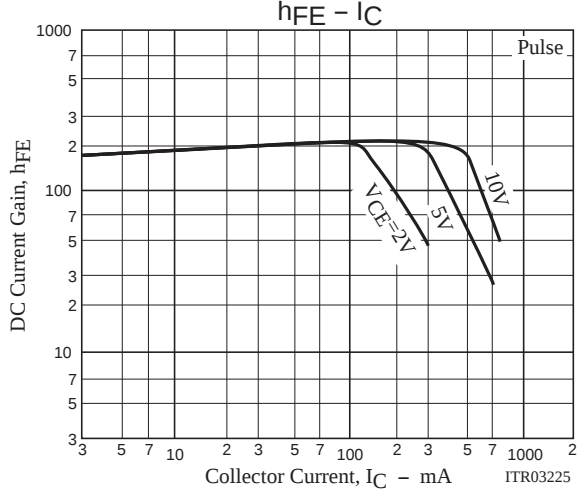
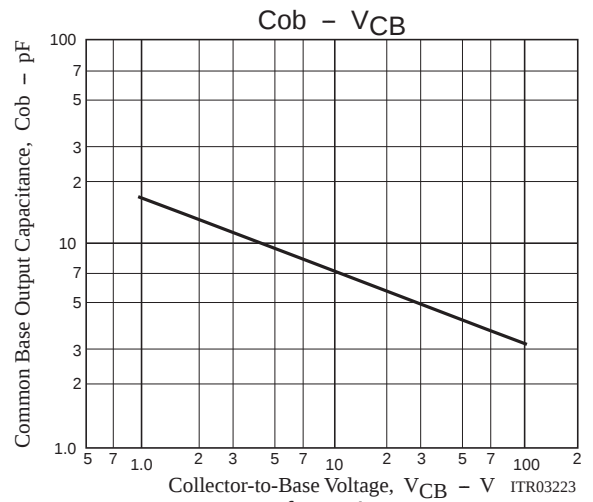
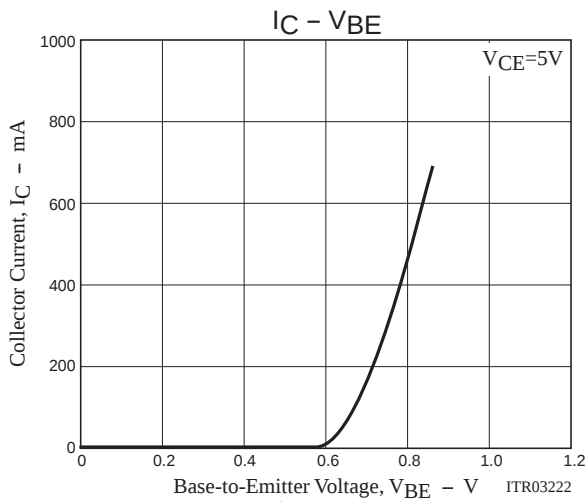
Switching Time Test Circuit



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	





Taping Specification

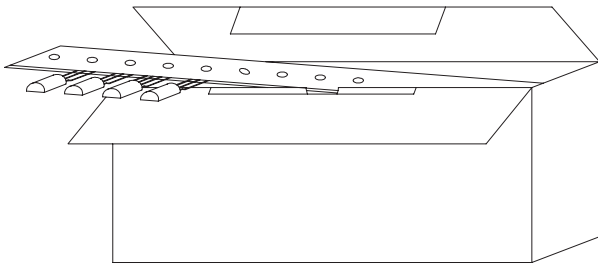
2SC3332S-AA, 2SC3332T-AA

1. Packing Format

Package Name	Packing Type	Maximum Number of devices contained (pcs)		Packing format
		Inner BOX (C-2)	number of contained	
N P	A A	Dimensions:mm (external) 330×45×145	1,500	Outer BOX (C-6) 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)

Type No. →

LOT No. →

Quantity →

Origin →

69		43
(P) TYPE	0000000000	
(1) LOT	00	
(Q) QTY	0,000 (1) LEAD FREE *	
(Z) SPECIAL	*Z0722005310C*	
ASSEMBLY:**** (DIFFUSION:****)		

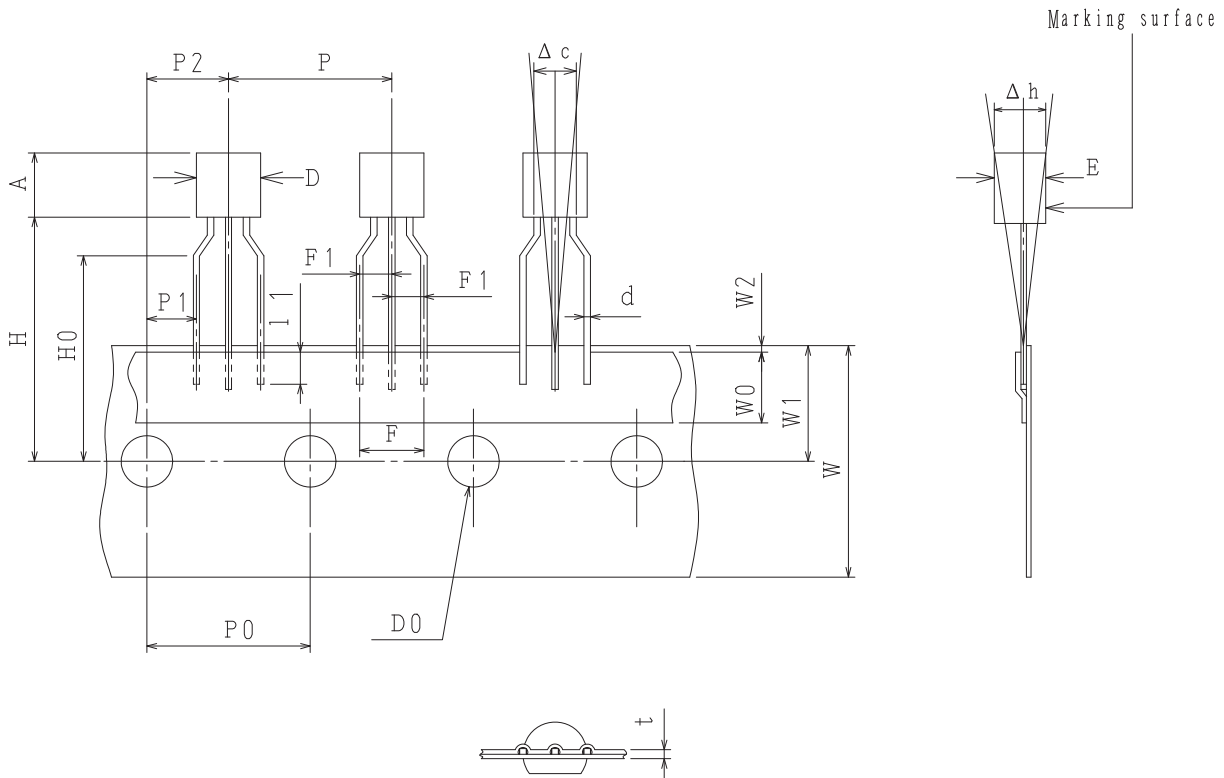
NOTE (1)

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 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	0.45x0.44t	± 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	$\phi 4.0$	± 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	Δc	0	± 1.0
Product inclination	Δh	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

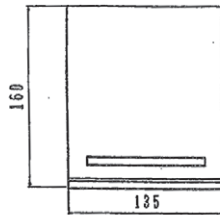
Storage package outline name	Maximum number of devices contained (pcs.)		Packing condition	
	Bags	Inner box	Outer box (A-1)	Outer box (A-2)
NP	500	B-1 Inner box dimensions : mm (external) 445×225×55	Devices contained 10,000 5 inner boxes contained 50,000 Outer box dimensions : mm (external) 470 × 250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

3. Bar code label

(Unit : mm)

2. Bag dimensions

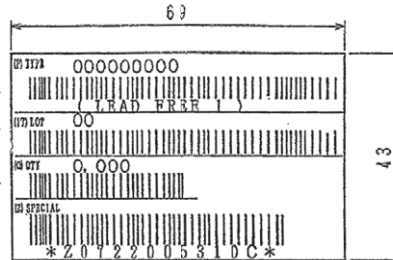
(Unit : mm)



Type No. →

Lot No. →

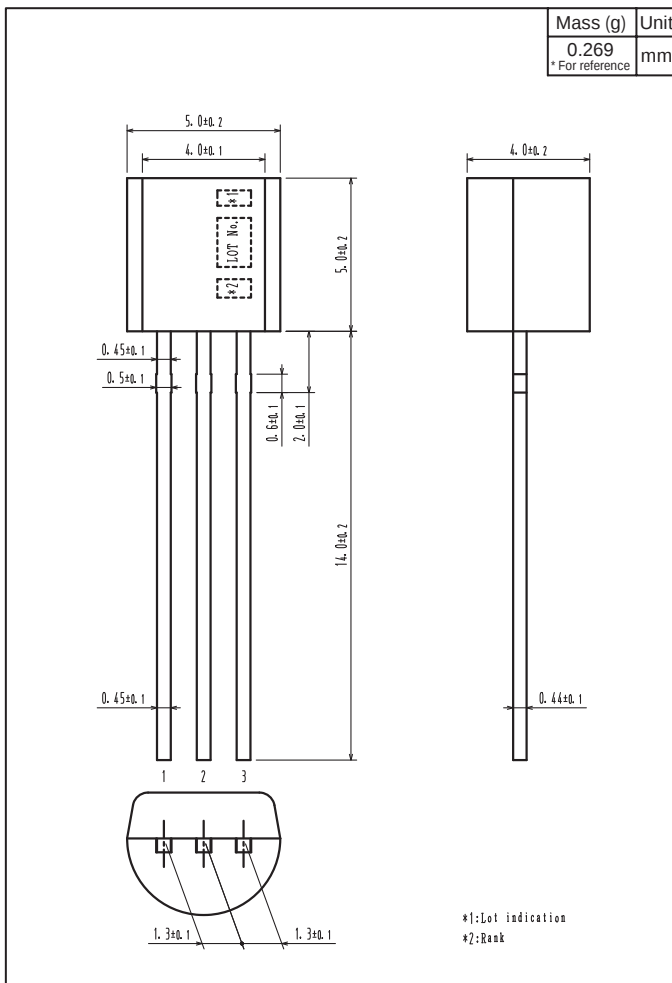
Quantity →



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

Outline Drawing

2SC3332S, 2SC3332T



ON Semiconductor and the ON logo are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of SCILLC's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.