



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

## 50C02SS — NPN Epitaxial Planar Silicon Transistor

### Low-Frequency General-Purpose Amplifier Applications

#### Applications

- Low-frequency Amplifier, high-speed switching small motor drive, muting circuit

#### Features

- Large current capacity
- Low collector-to-emitter saturation voltage (resistance) :  $R_{CE(sat)}$  typ=175m $\Omega$ [ $I_C=0.5A, I_B=50mA$ ]
- Ultrasmall package facilitates miniaturization in end products
- Small ON-resistance ( $R_{on}$ )

#### Specifications

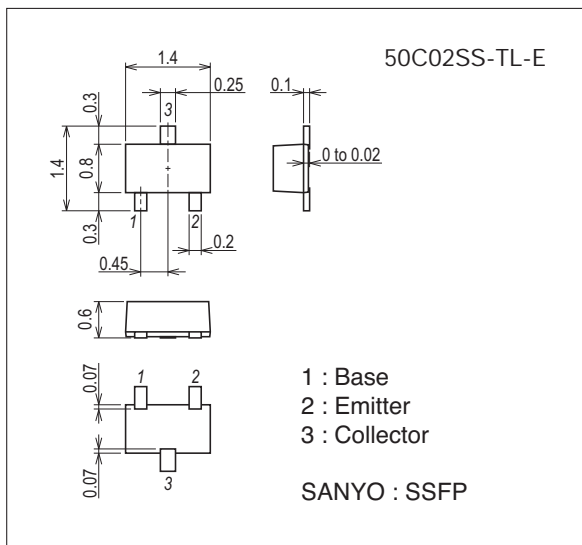
Absolute Maximum Ratings at  $T_a=25^\circ C$

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CBO}$		60	V
Collector-to-Emitter Voltage	$V_{CEO}$		50	V
Emitter-to-Base Voltage	$V_{EBO}$		5	V
Collector Current	$I_C$		400	mA
Collector Current (Pulse)	$I_{CP}$		800	mA
Collector Dissipation	$P_C$	Mounted on a glass-epoxy board (20x30x1.6mm)	200	mW
Junction Temperature	$T_j$		150	$^\circ C$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ C$

#### Package Dimensions

unit : mm (typ)

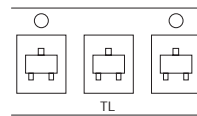
7029A-002



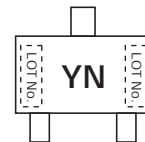
#### Product & Package Information

- Package : SSFP
- JEITA, JEDEC : SC-81
- Minimum Packing Quantity : 8,000 pcs./reel

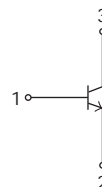
#### Packing Type: TL



#### Marking



#### Electrical Connection

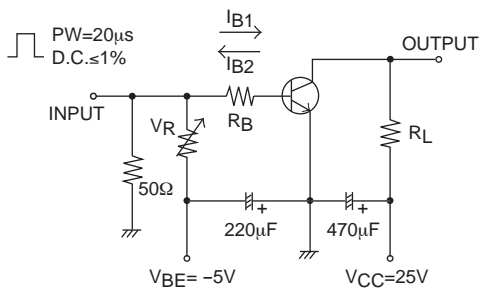


# 50C02SS

## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=40V, I_E=0A$			100	nA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=4V, I_C=0A$			100	nA
DC Current Gain	$h_{FE}$	$V_{CE}=2V, I_C=10mA$	300		800	
Gain-Bandwidth Product	$f_T$	$V_{CE}=10V, I_C=50mA$		500		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=10V, f=1MHz$		2.8		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=100mA, I_B=10mA$		50	100	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=100mA, I_B=10mA$		0.9	1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=10\mu A, I_E=0A$	60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=1mA, R_{BE}=\infty$	50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0A$	5			V
Turn-ON Time	$t_{on}$	See specified Test Circuit.		30		ns
Storage Time	$t_{stg}$			340		ns
Fall Time	$t_f$			55		ns

## Switching Time Test Circuit

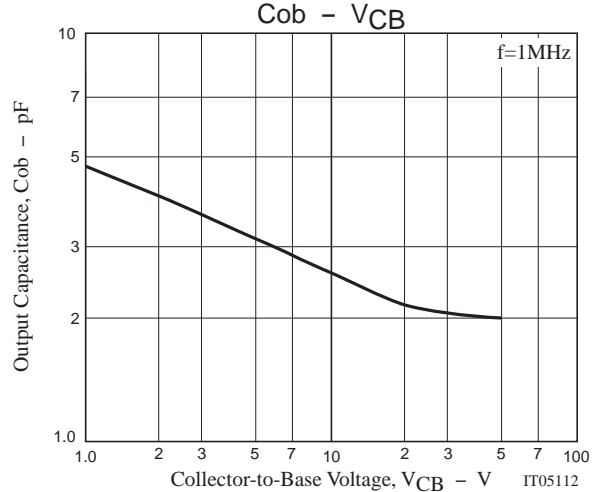
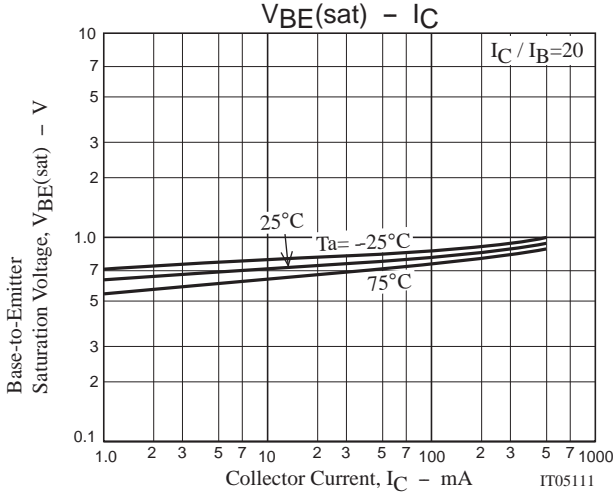
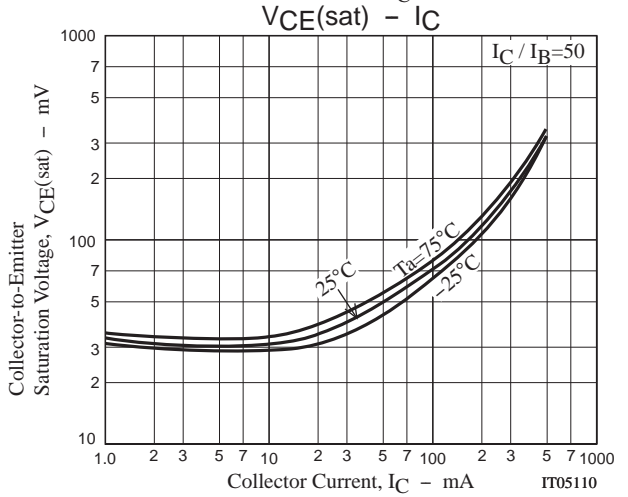
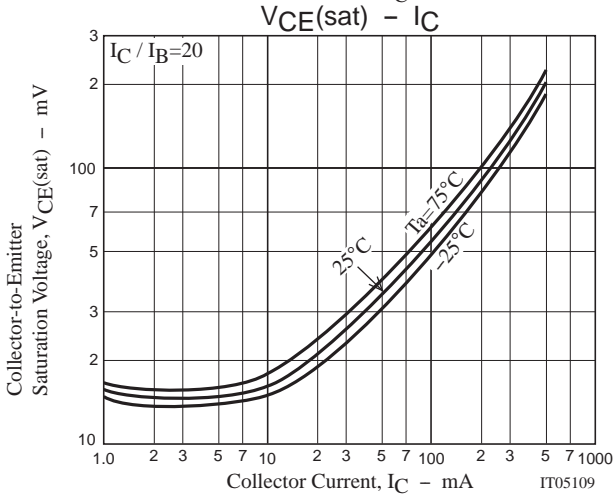
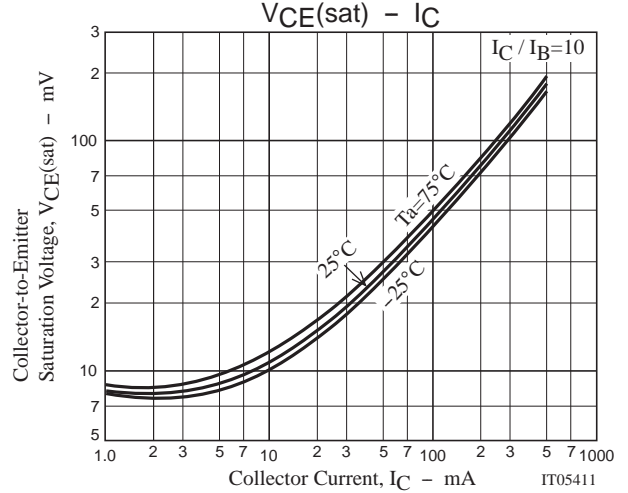
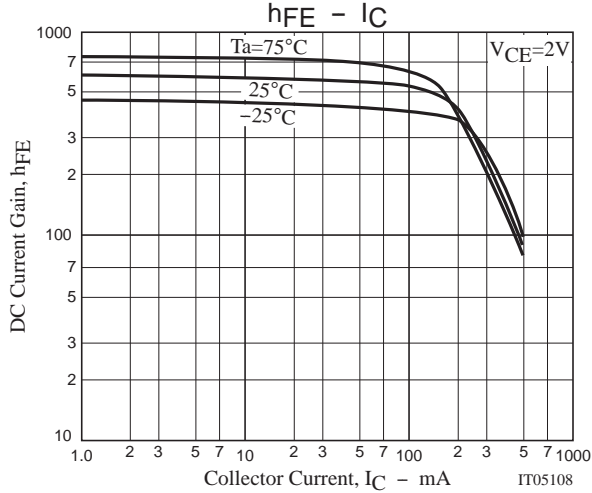
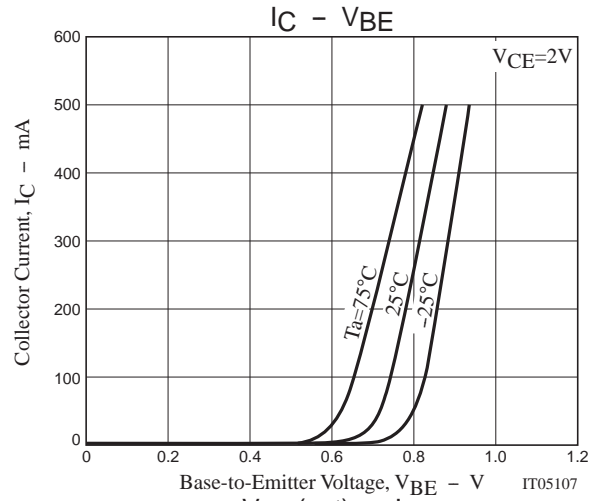
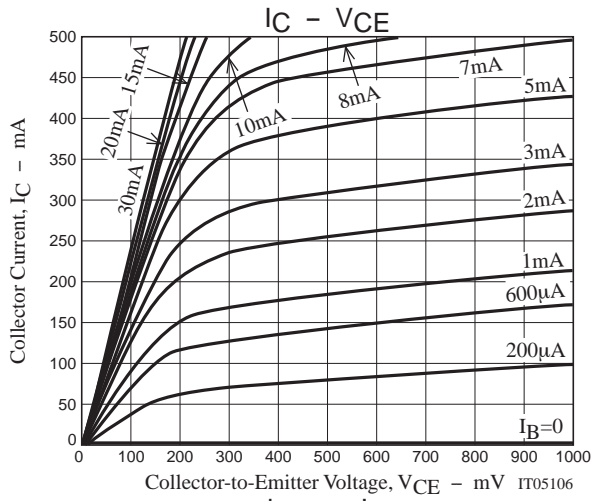


$$I_C=20I_{B1} = -20I_{B2}=200mA$$

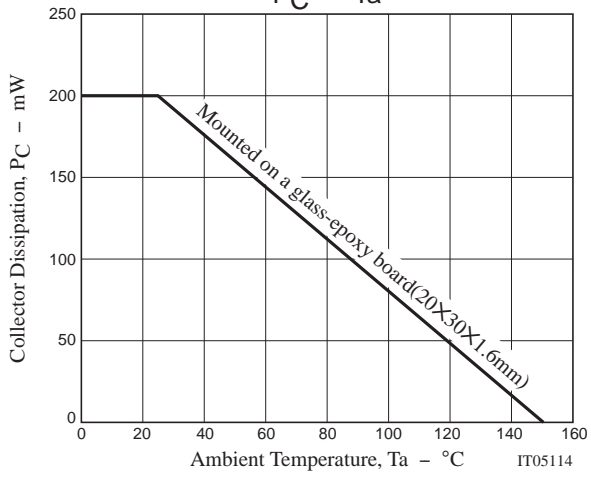
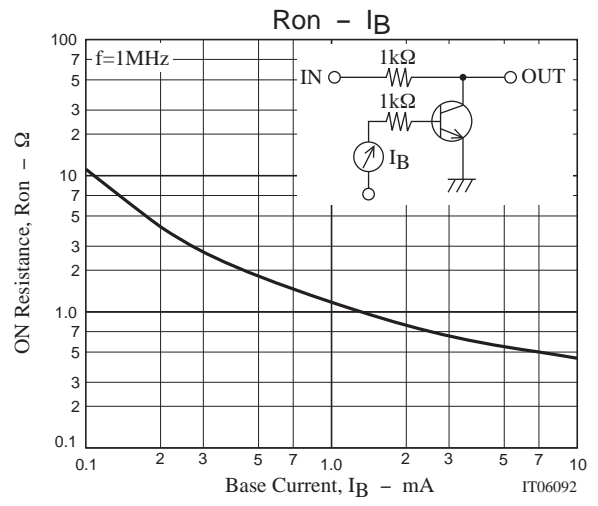
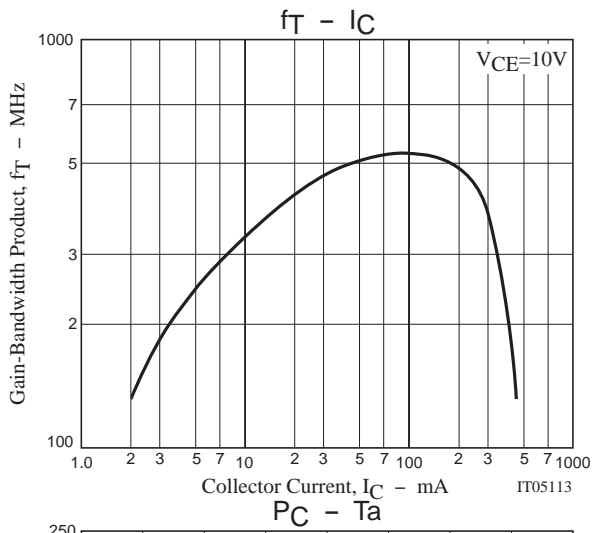
## Ordering Information

Device	Package	Shipping	memo
50C02SS-TL-E	SSFP	8,000pcs./reel	Pb Free

# 50C02SS



# 50C02SS



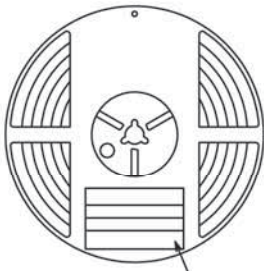
Embossed Taping Specification

50C02SS-TL-E

1. Packing Format

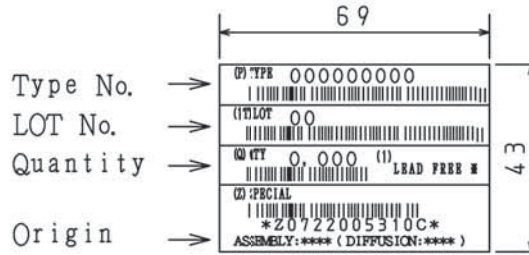
Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX (C-1)	Outer BOX (A-7)
SSFP	SSFP	8,000	40,000	240,000	5 reels contained Dimensions:mm (external) 183×72×185	6 inner boxes contained Dimension::mm (external) 440×195×210

Packing method

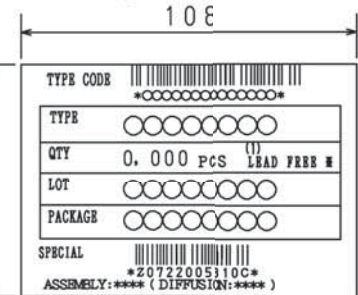


Reel label

Reel label, Inner box label  
(unit:mm)



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



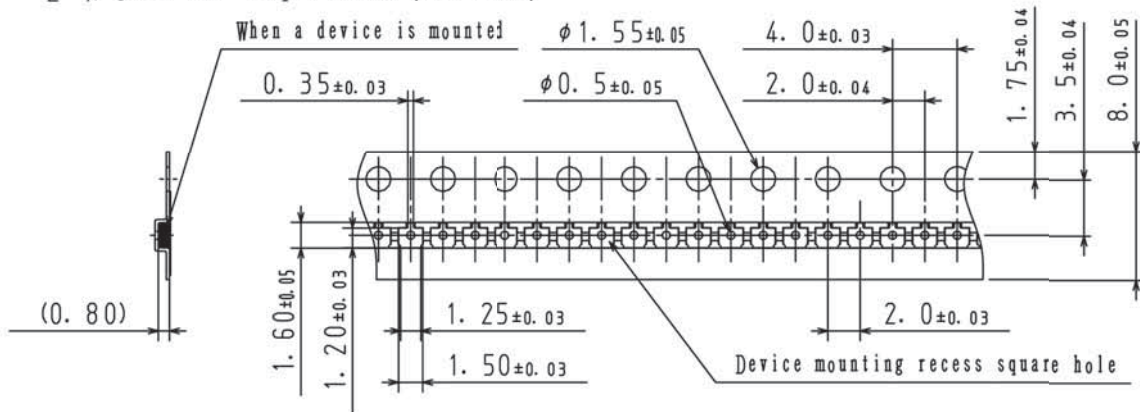
NOTE (1)

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

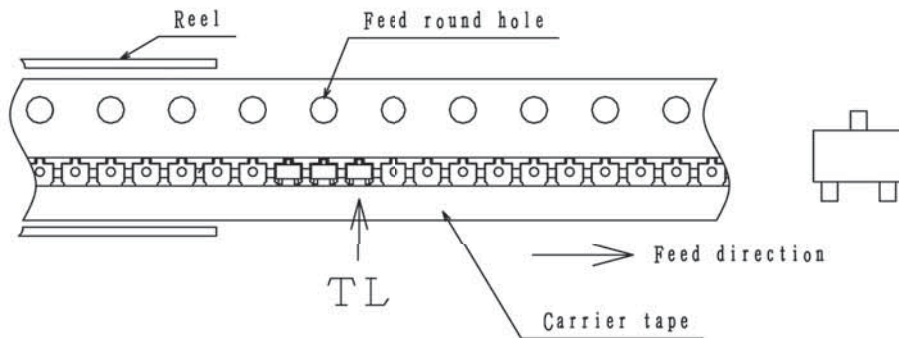
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



2-2. Device placement direction



# 50C02SS

## Outline Drawing

50C02SS-TL-E



## Land Pattern Example



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### Наши контакты:

**Телефон:** +7 812 627 14 35

**Электронная почта:** [sales@st-electron.ru](mailto:sales@st-electron.ru)

**Адрес:** 198099, Санкт-Петербург,  
Промышленная ул, дом № 19, литера Н,  
помещение 100-Н Офис 331