



SANYO Semiconductors

## DATA SHEET

An ON Semiconductor Company

PNP Epitaxial Planar Silicon Transistor

# 2SA2210 — High-Current Switching Applications

## Applications

- Relay drivers, lamp drivers, motor drivers.

## Features

- Adoption of MBIT processes
- Low collector-to-emitter saturation voltage
- Large current capacitance
- High-speed switching

## Specifications

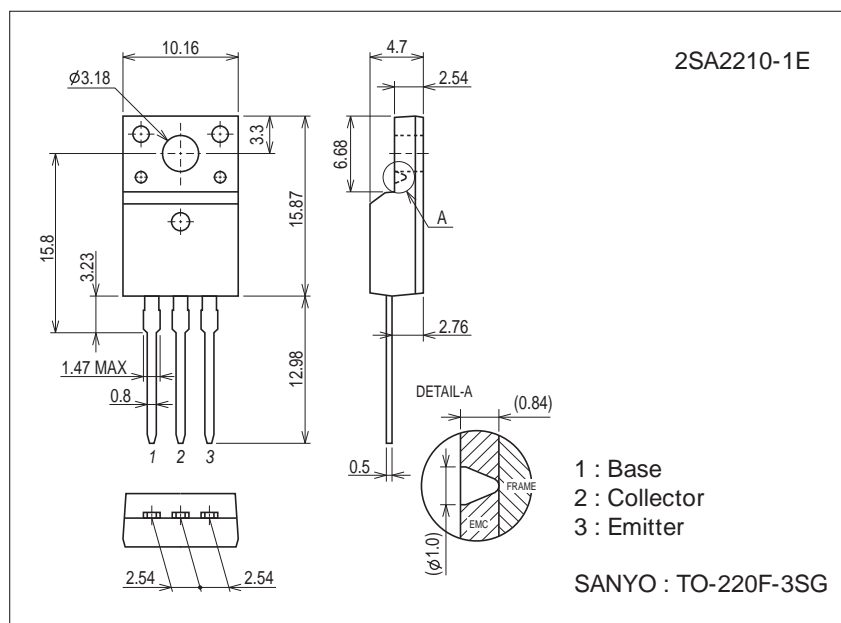
Absolute Maximum Ratings at  $T_a=25^\circ\text{C}$ 

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CB0}$		-50	V
Collector-to-Emitter Voltage	$V_{CE0}$		-50	V
Emitter-to-Base Voltage	$V_{EB0}$		-6	V
Collector Current	$I_C$		-20	A
Collector Current (Pulse)	$I_{CP}$		-25	A
Base Current	$I_B$		-3	A
Collector Dissipation	$P_C$		2	W
		$T_c=25^\circ\text{C}$	30	W
Junction Temperature	$T_j$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

## Package Dimensions

unit : mm (typ)

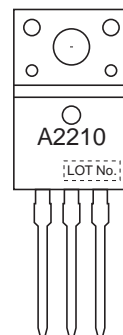
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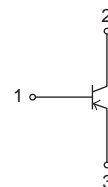
## Product & Package Information

- Package : TO-220F-3SG
- JEITA, JEDEC : SC-67
- Minimum Packing Quantity : 50 pcs./magazine

## Marking



## Electrical Connection

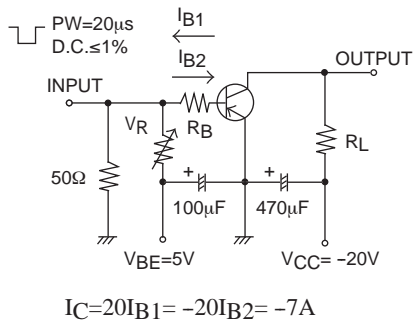


## 2SA2210

### Electrical Characteristics at $T_a=25^{\circ}\text{C}$

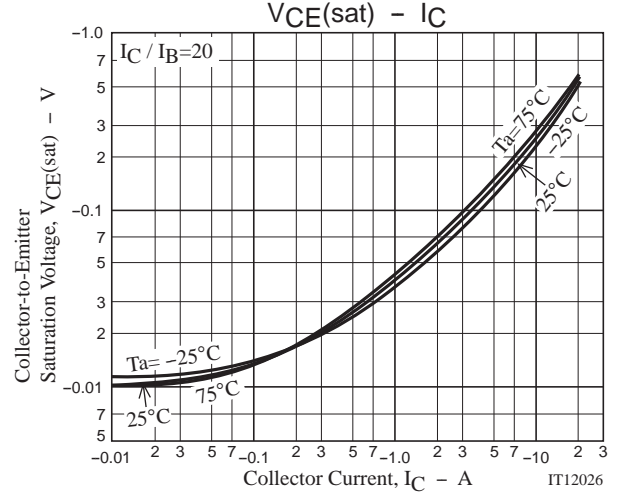
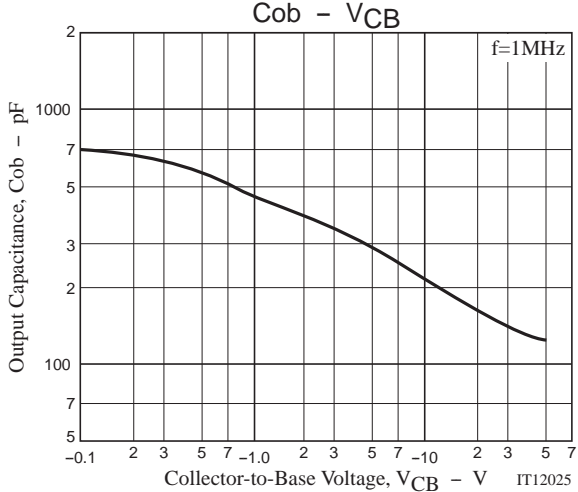
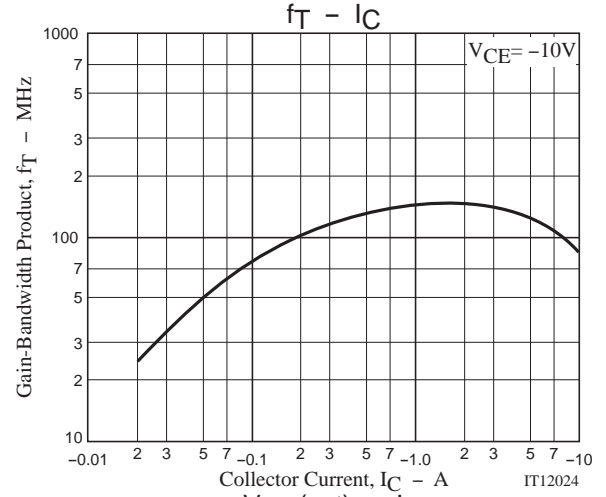
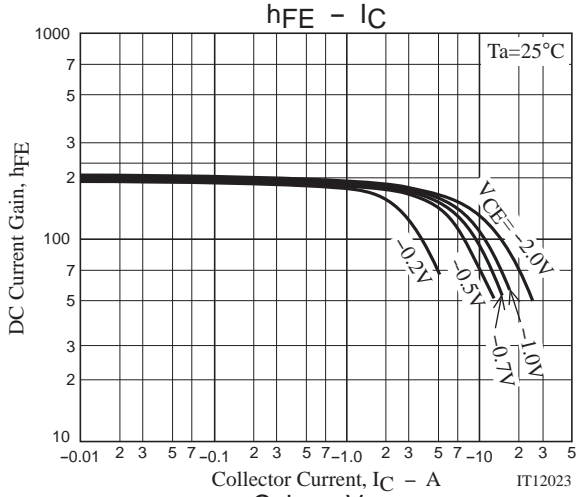
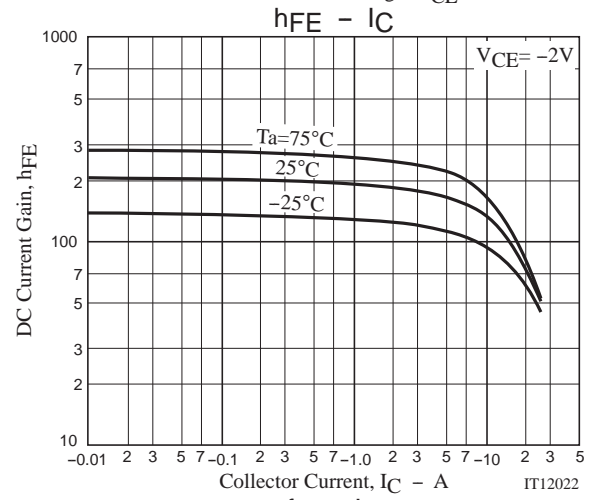
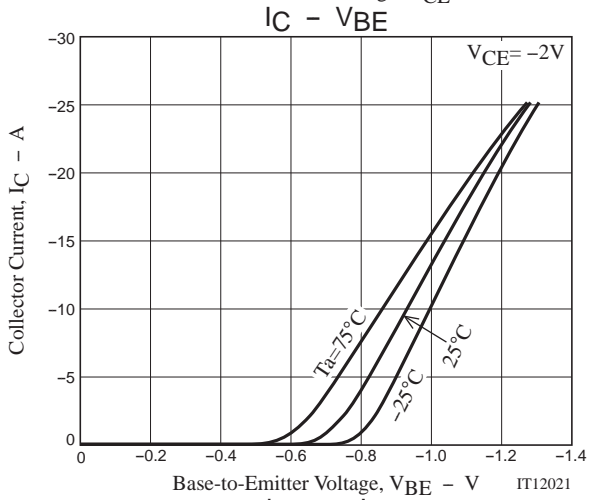
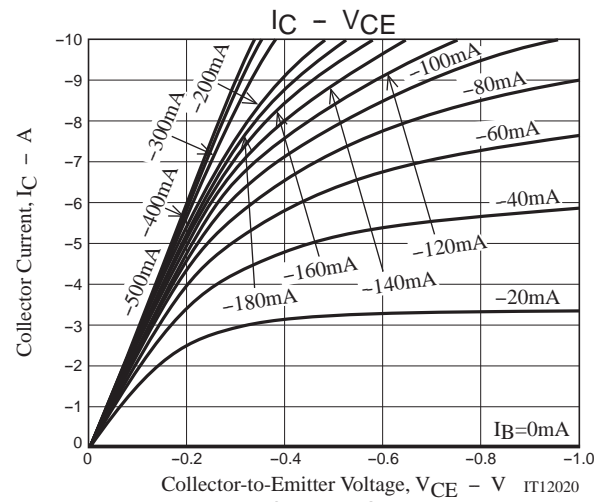
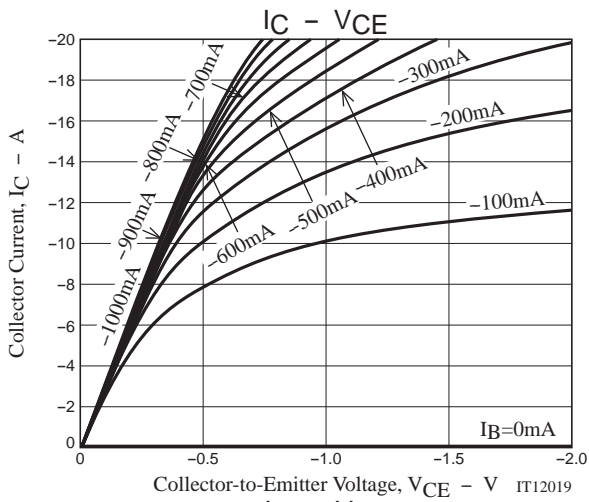
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = -40\text{V}, I_E = 0\text{A}$			-10	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = -4\text{V}, I_C = 0\text{A}$			-10	$\mu\text{A}$
DC Current Gain	$h_{FE}$	$V_{CE} = -2\text{V}, I_C = -1\text{A}$	150		450	
Gain-Bandwidth Product	$f_T$	$V_{CE} = -10\text{V}, I_C = -1\text{A}$		140		MHz
Output Capacitance	$C_{ob}$	$V_{CB} = -10\text{V}, f = 1\text{MHz}$		215		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = -7\text{A}, I_B = -350\text{mA}$		-200	-500	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = -7\text{A}, I_B = -350\text{mA}$			-1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = -100\mu\text{A}, I_E = 0\text{A}$	-50			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = -1\text{mA}, R_{BE} = \infty$	-50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = -100\mu\text{A}, I_C = 0\text{A}$	-6			V
Turn-On Time	$t_{on}$	See specified Test Circuit		60		ns
Storage Time	$t_{stg}$			270		ns
Fall Time	$t_f$			20		ns

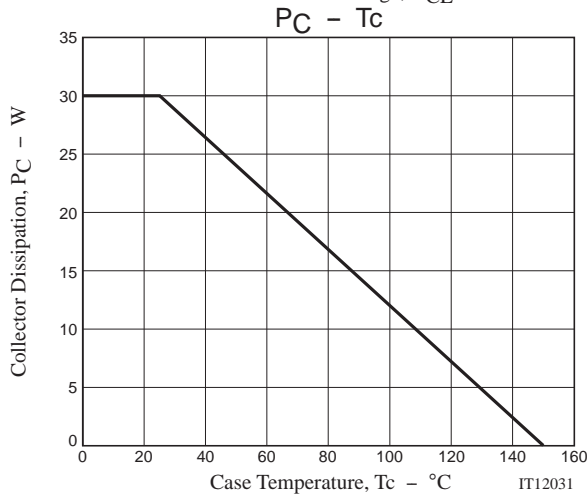
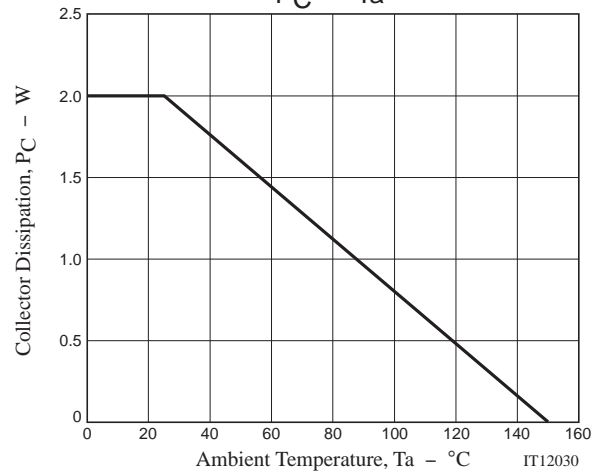
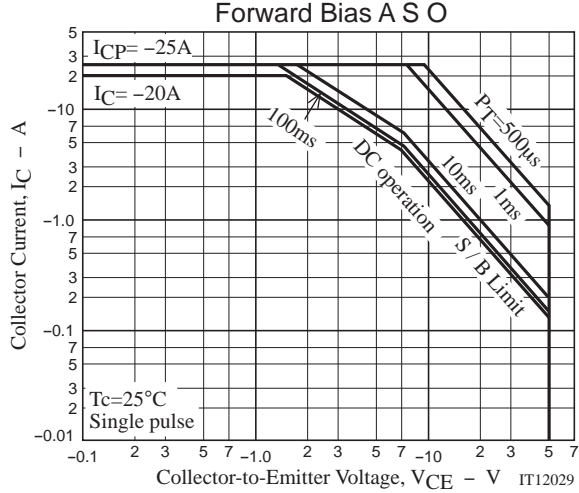
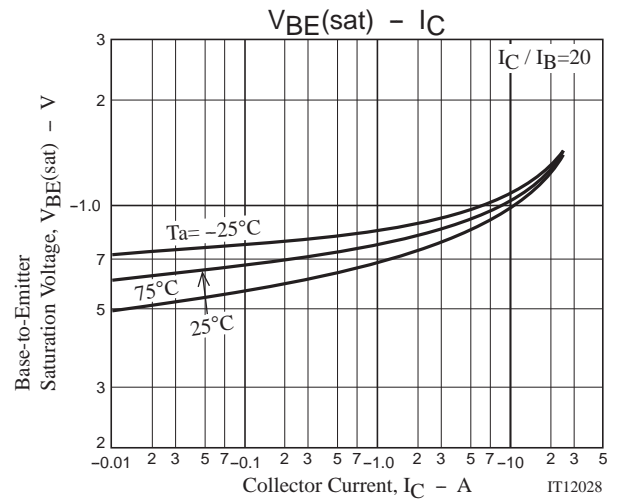
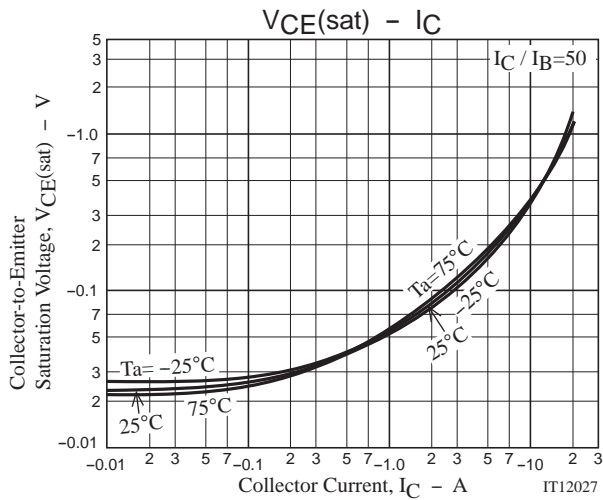
### Switching Time Test Circuit



### Ordering Information

Device	Package	Shipping	memo
2SA2210-1E	TO-220F-3SG	50pcs./magazine	Pb Free





## Magazine Specification

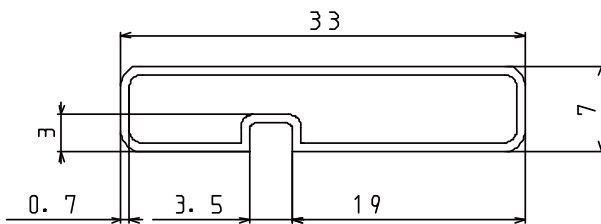
2SA2210-1E

## 1. Packing Format

Package Name	Magazine Name	Maximum Number of devices contained (pcs)			Packing format	
		Magazine	Inner box	Outer box	Inner BOX	Outer BOX
TO-220F-3SG	TO-220F	50	1,000	4,000	SPD-0V0001 20 magazines contained Dimensions:mm {external} 568×150×55	SPT-081029 4 inner boxes contained Dimensions:mm {external} 590×225×178

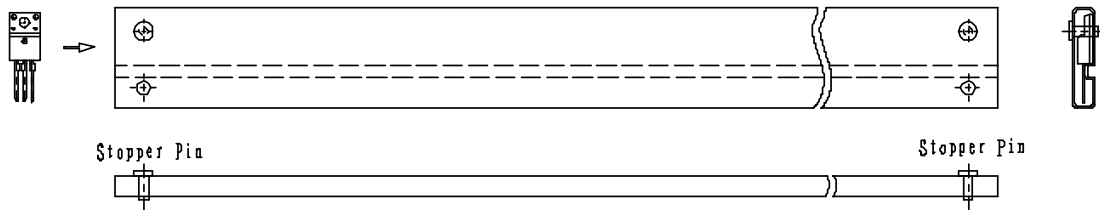
## 2. Magazine dimensions

(unit:mm)

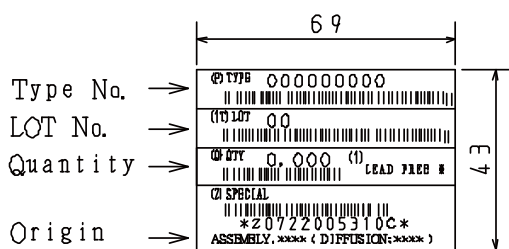


Tolerance=±0.3mm  
 Thickness=0.7±0.2mm  
 Length =532.5±2mm  
 Material =PVC (Antistatic treatment)

## 3. Storage method to magazine

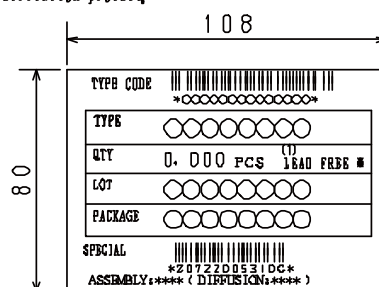


## 4. Inner box label (unit:mm)



## 5. Outer box label (unit:mm)

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

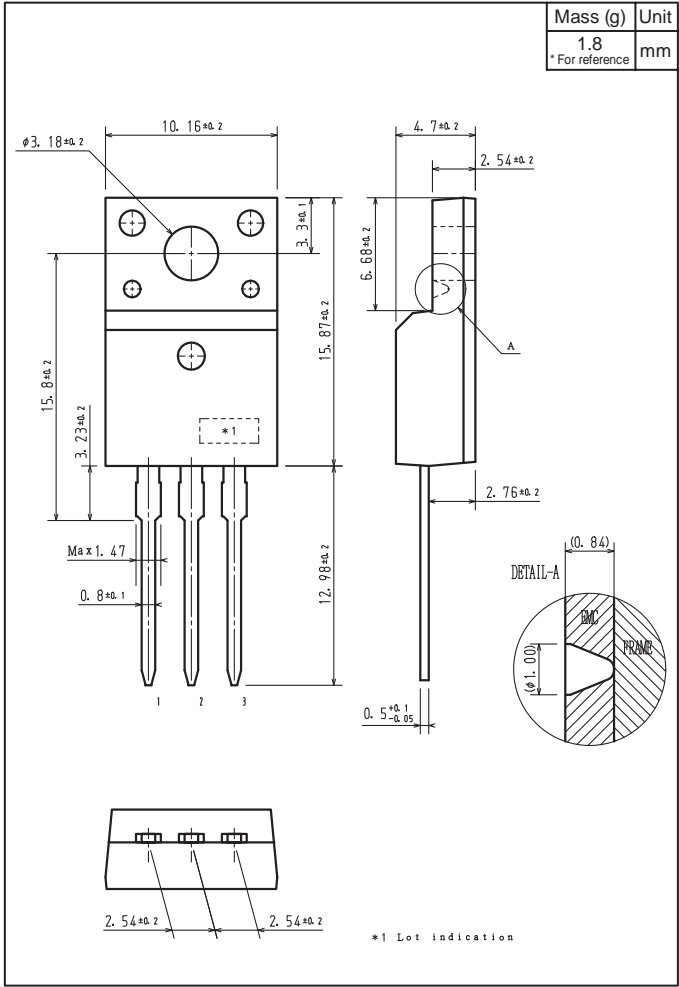


## NOTE (1)

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

Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A

Outline Drawing  
2SA2210-1E



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