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2SA2210

Bipolar Transistor -50V, -20A, Low $V_{CE(sat)}$ PNP TO-220F-3SG

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 $T_a=25^\circ\text{C}$

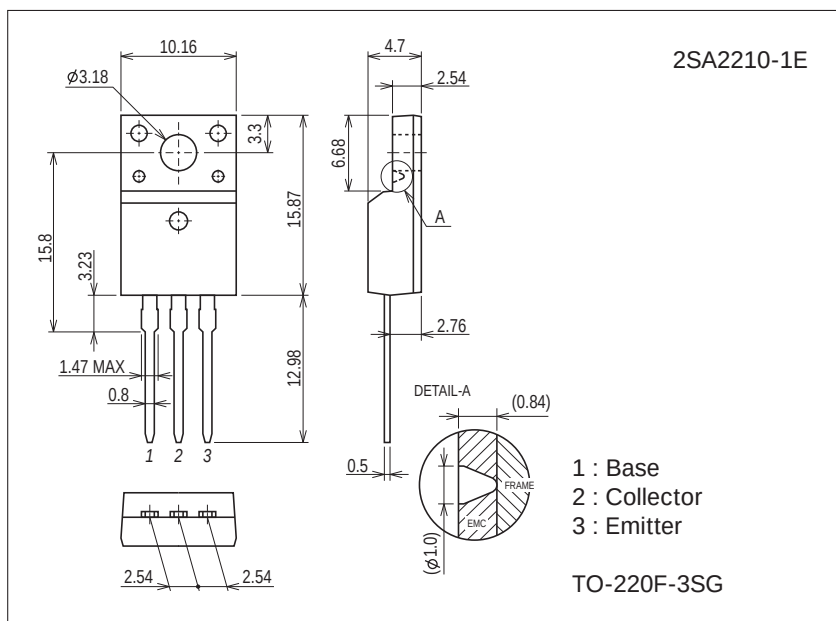
Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		-50	V
Collector-to-Emitter Voltage	V_{CEO}		-50	V
Emitter-to-Base Voltage	V_{EBO}		-6	V
Collector Current	I_C		-20	A
Collector Current (Pulse)	I_{CP}		-25	A
Base Current	I_B		-3	A
Collector Dissipation	P_C		2	W
		$T_c=25^\circ\text{C}$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

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)

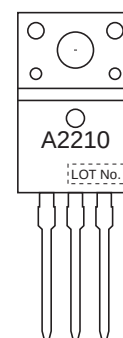
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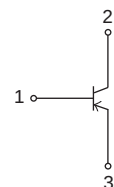
Product & Package Information

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

Marking



Electrical Connection

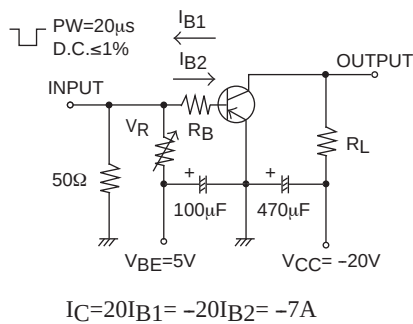


2SA2210

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

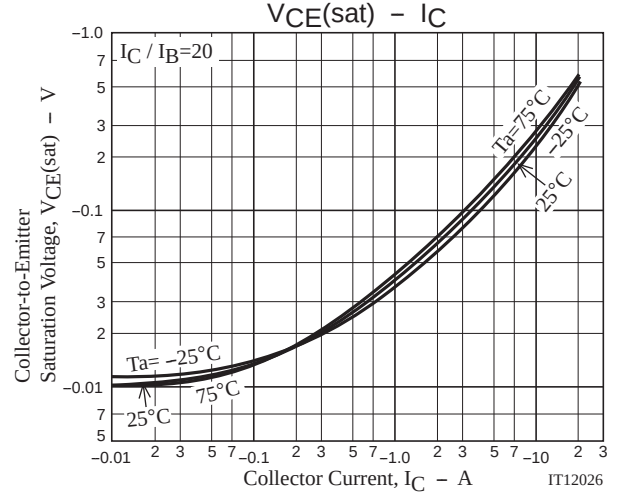
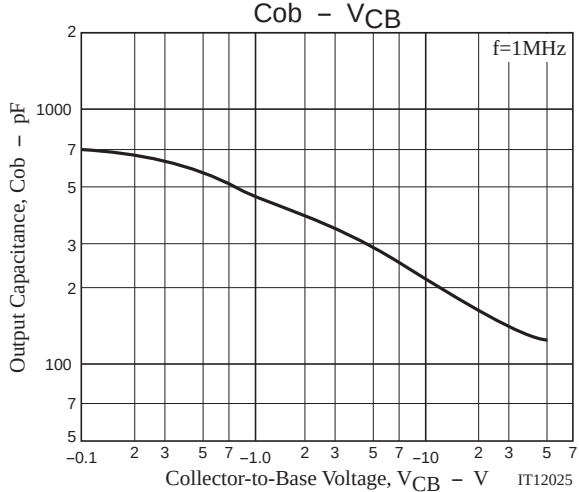
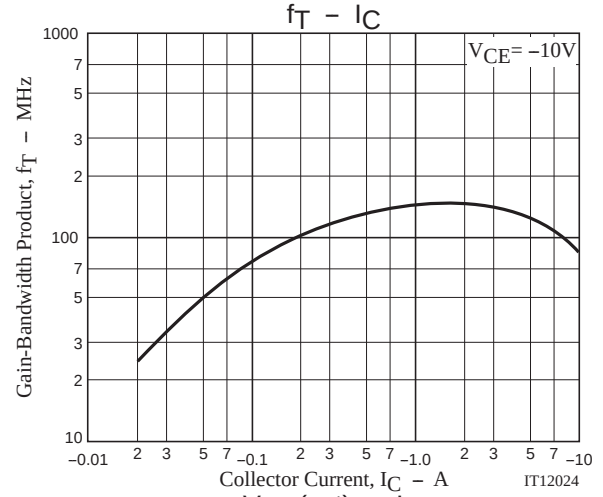
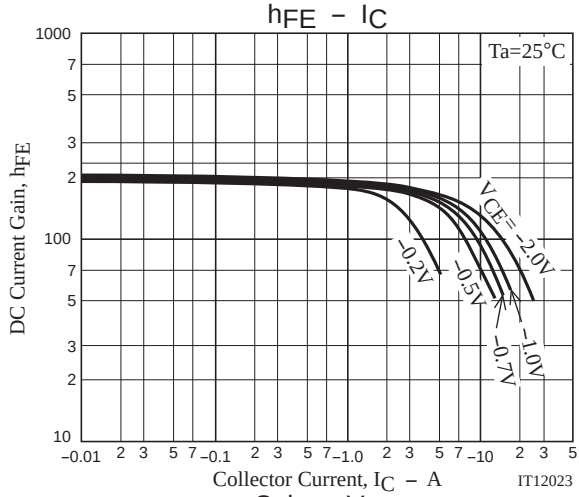
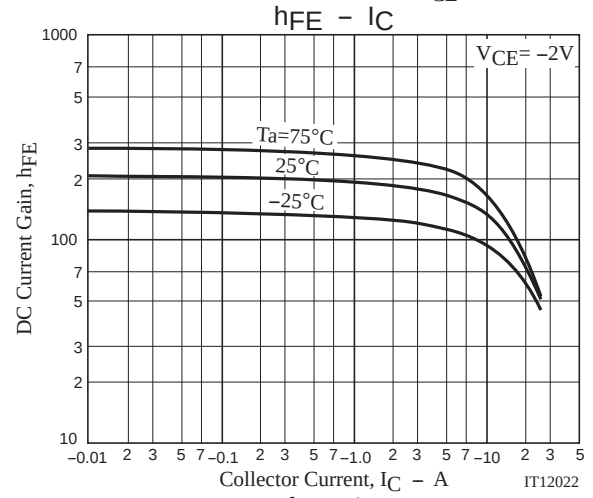
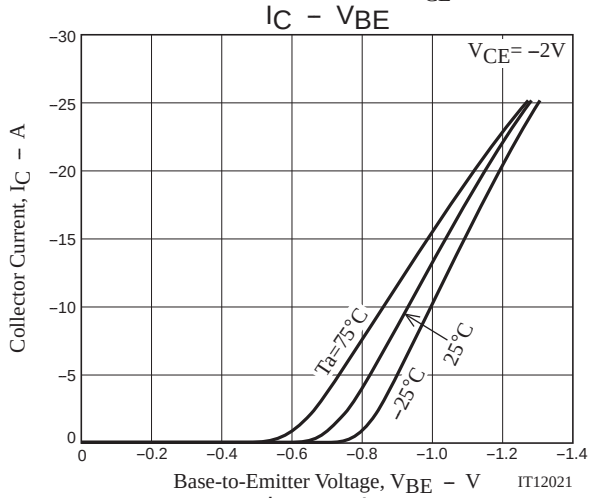
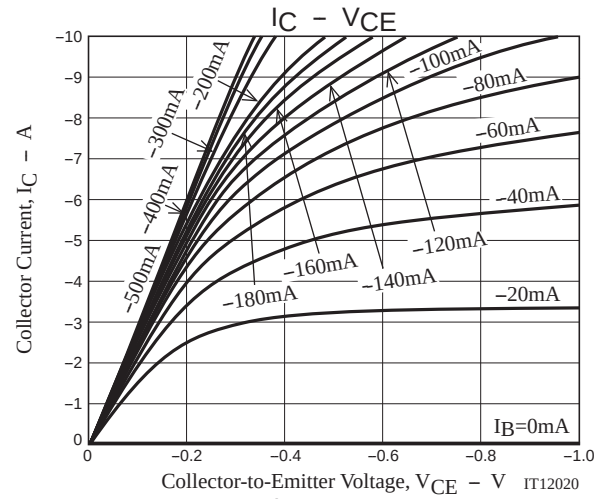
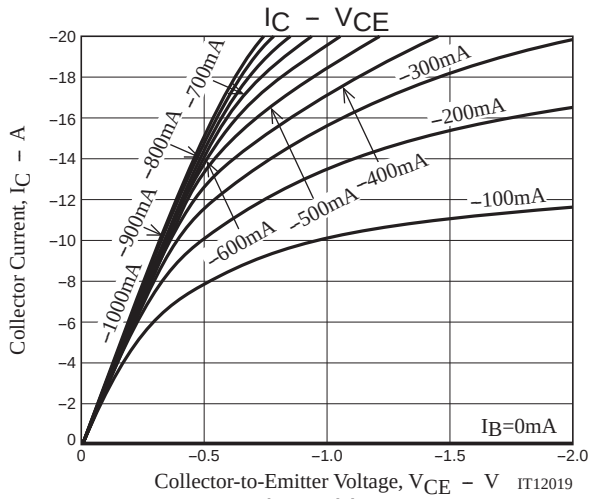
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB} = -40\text{V}, I_E = 0\text{A}$			-10	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = -4\text{V}, I_C = 0\text{A}$			-10	μA
DC Current Gain	h_{FE}	$V_{CE} = -2\text{V}, I_C = -1\text{A}$	150		450	
Gain-Bandwidth 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

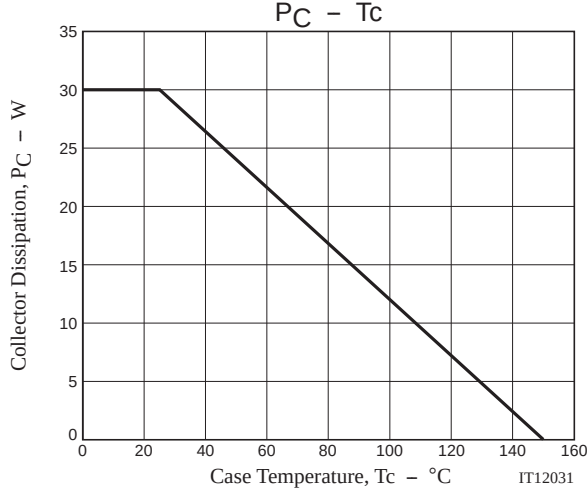
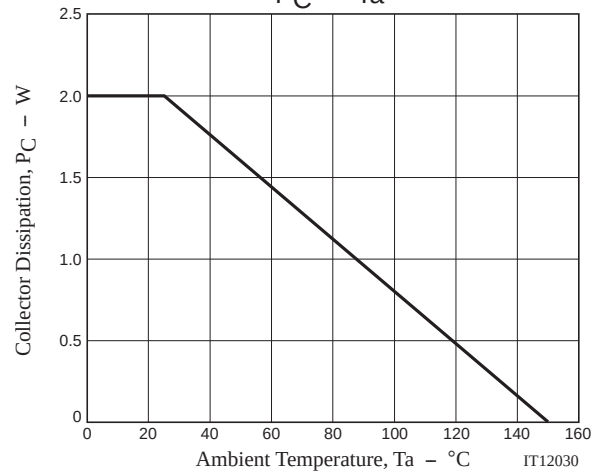
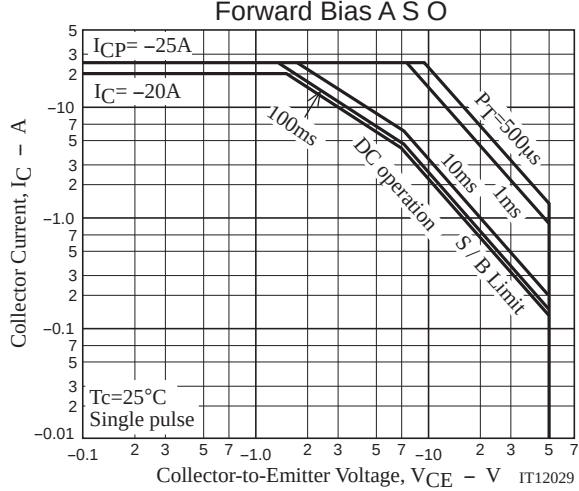
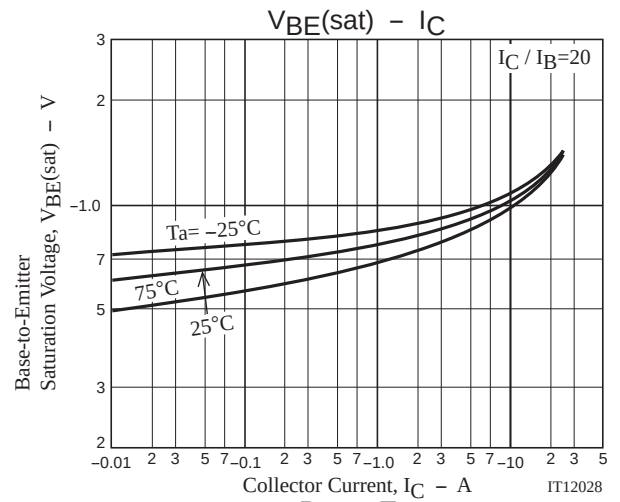
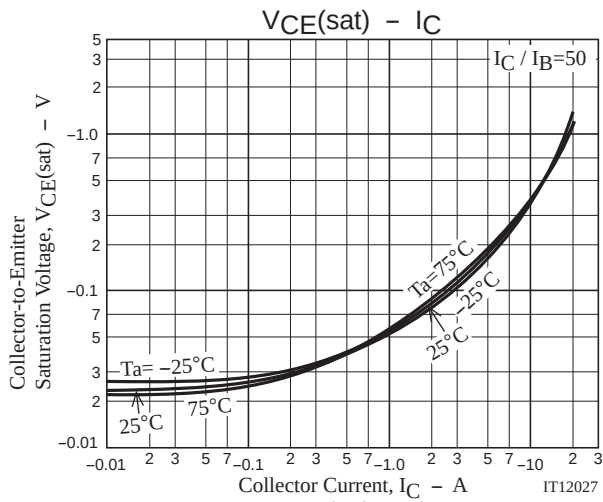
Switching Time Test Circuit



Ordering Information

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





Magazine Specification

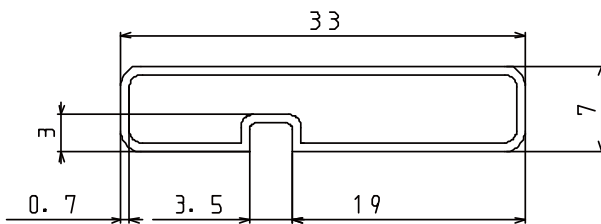
2SA2210-1E

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

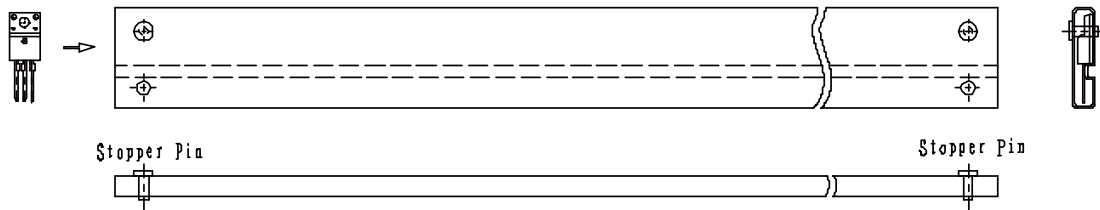
2. Magazine dimensions

(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)

Type No.	→	TYPE 0000000000
LOT No.	→	LOT 00
Quantity	→	QTY 0,000 (1) LEAD FREE #
Origin	→	SPECIAL *20722005310C* ASSEMBLY:**** (DIFFUSION:****)

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.

TYPE CODE	TYPE CODE
TYPE	TYPE
QTY	QTY 0,000 PCS (1) LEAD FREE #
LOT	LOT
PACKAGE	PACKAGE
SPECIAL	SPECIAL *20722005310C* ASSEMBLY:**** (DIFFUSION:****)

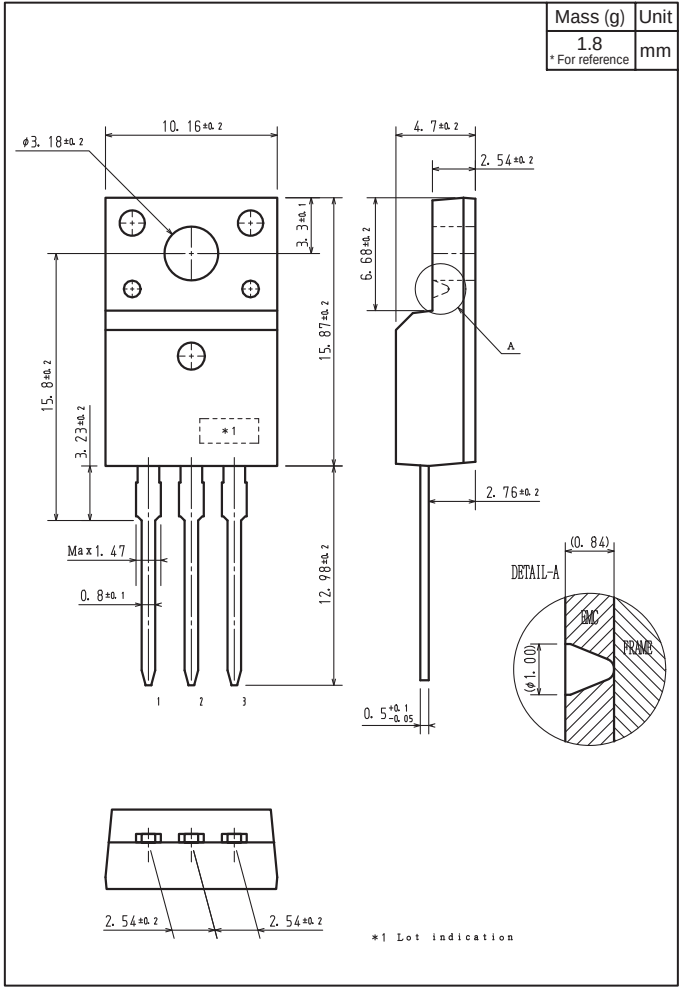
NOTE (1)

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

Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A

Outline Drawing

2SA2210-1E



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