



2SA2222SG

Bipolar Transistor -50V, -10A, Low $V_{CE(sat)}$ PNP TO-220F-3FS

ON Semiconductor®

<http://onsemi.com>

Applications

- Relay drivers, lamp drivers, motor drivers

Features

- Adoption of MBIT process
- Low collector-to-emitter saturation voltage ($V_{CE(sat)} = -250\text{mV (typ.)}$)
- High-speed switching ($t_f = 22\text{ns (typ.)}$)
- Large current capacity ($I_C = -10\text{A}$)

Specifications

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

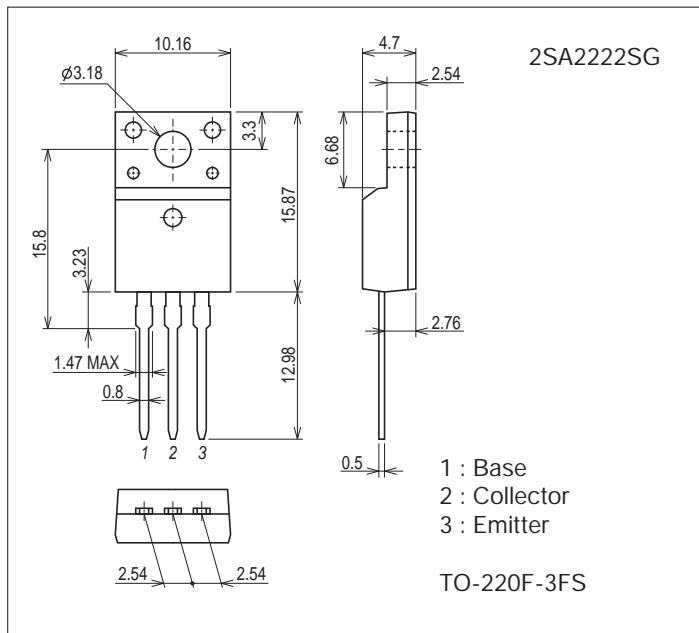
| Parameter | Symbol | Conditions | Ratings | Unit |
|------------------------------|-----------|--|-------------|------------------|
| Collector-to-Base Voltage | V_{CBO} | | -50 | V |
| Collector-to-Emitter Voltage | V_{CEO} | | -50 | V |
| Emitter-to-Base Voltage | V_{EBO} | | -6 | V |
| Collector Current | I_C | | -10 | A |
| Collector Current (Pulse) | I_{CP} | | -13 | A |
| Base Current | I_B | | -2 | A |
| Collector Dissipation | P_C | $T_c = 25^\circ\text{C}, P_T \leq 1\text{s}$ | 25 | 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)

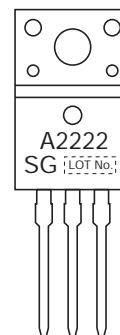
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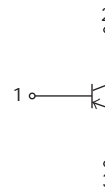
Product & Package Information

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

Marking



Electrical Connection

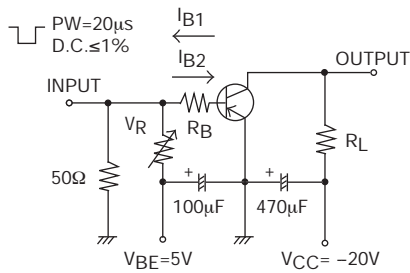


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Electrical Characteristics at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---------------|-----------------------------|---------|------|------|---------|
| | | | min | typ | max | |
| Collector Cutoff Current | I_{CBO} | $V_{CB}=-40V, I_E=0A$ | | | -10 | μA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB}=-4V, I_C=0A$ | | | -10 | μA |
| DC Current Gain | h_{FE} | $V_{CE}=-2V, I_C=-270mA$ | 150 | | 450 | |
| Gain-Bandwidth Product | f_T | $V_{CE}=-10V, I_C=-1A$ | | 230 | | MHz |
| Output Capacitance | C_{ob} | $V_{CB}=-10V, f=1MHz$ | | 115 | | pF |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=-6A, I_B=-300mA$ | | -250 | -500 | mV |
| Base-to-Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C=-6A, I_B=-300mA$ | | | -1.2 | V |
| Collector-to-Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C=-100\mu A, I_E=0A$ | -50 | | | V |
| Collector-to-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C=-1mA, R_{BE}=\infty$ | -50 | | | V |
| Emitter-to-Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E=-100\mu A, I_C=0A$ | -6 | | | V |
| Turn-On Time | t_{on} | See specified Test Circuit. | | 40 | | ns |
| Storage Time | t_{stg} | | | 240 | | ns |
| Fall Time | t_f | | | 22 | | ns |

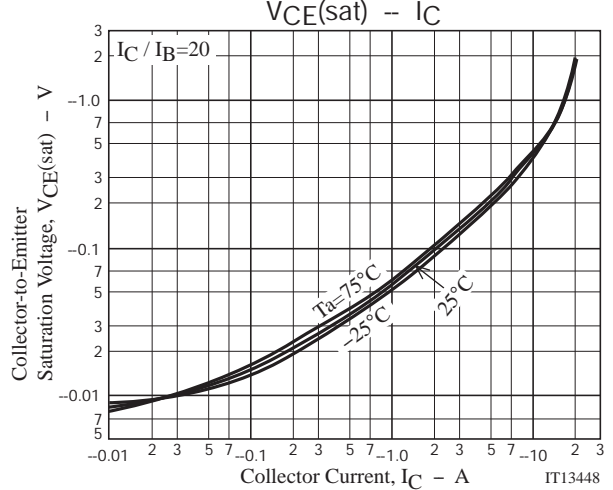
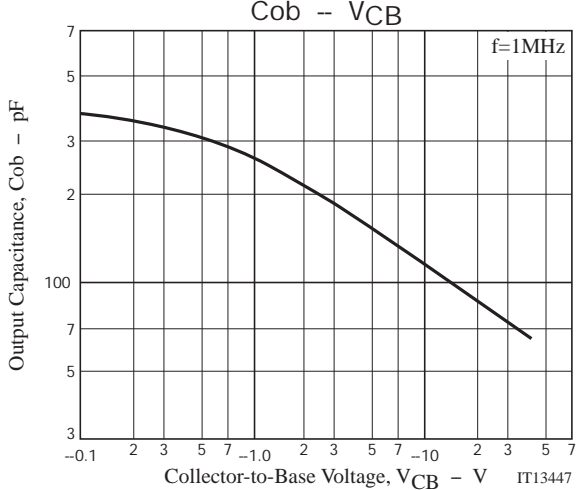
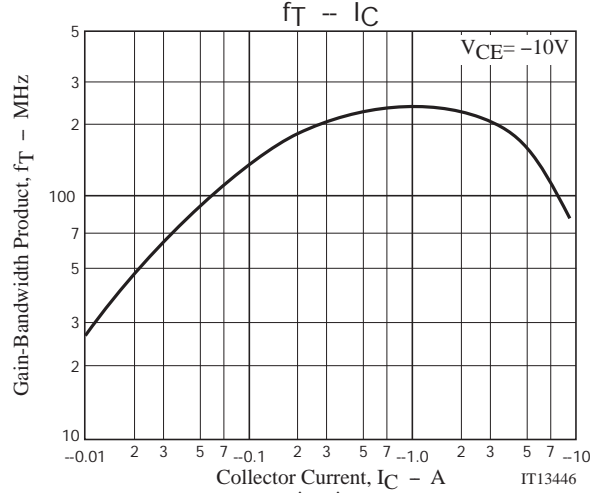
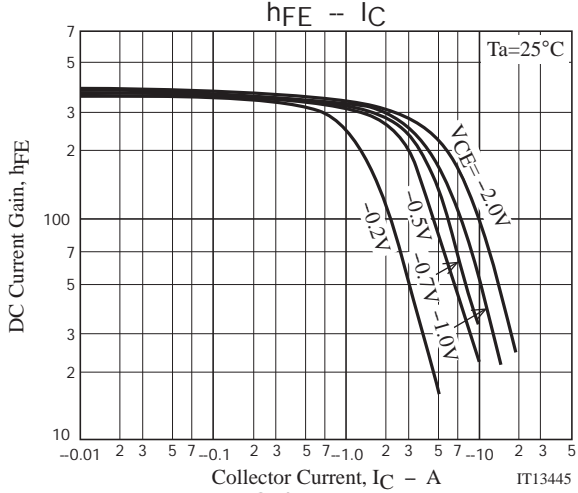
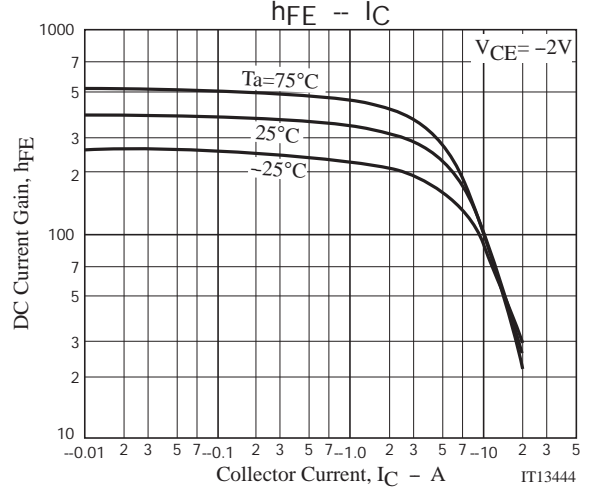
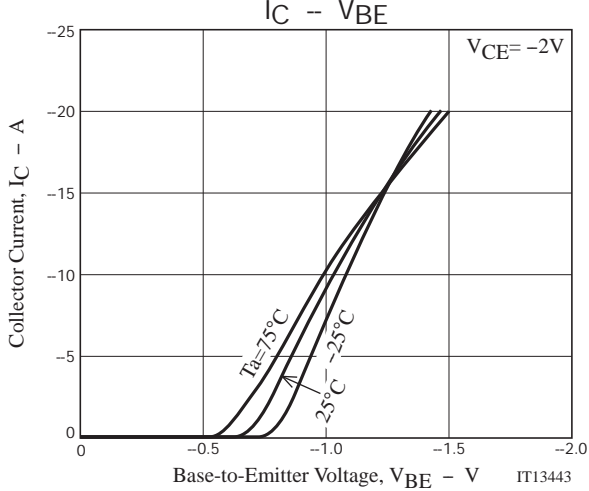
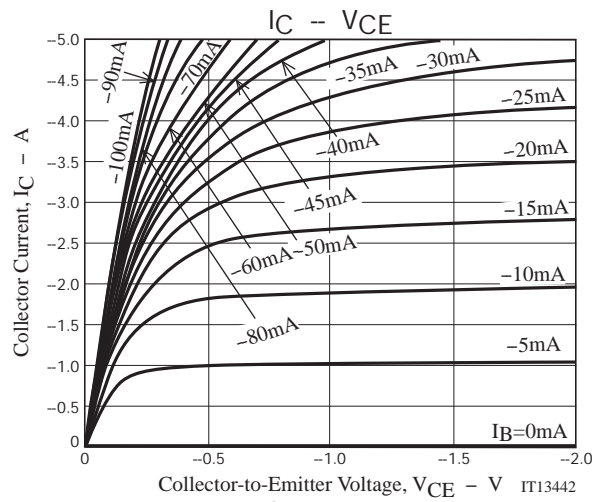
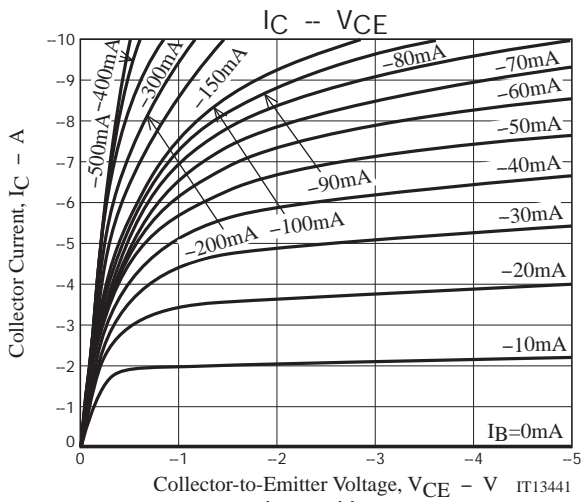
Switching Time Test Circuit

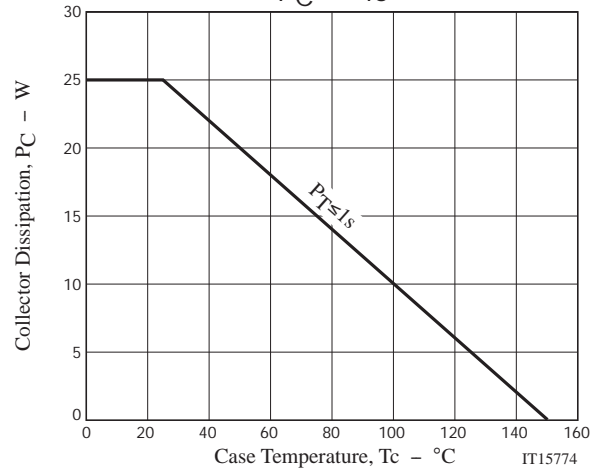
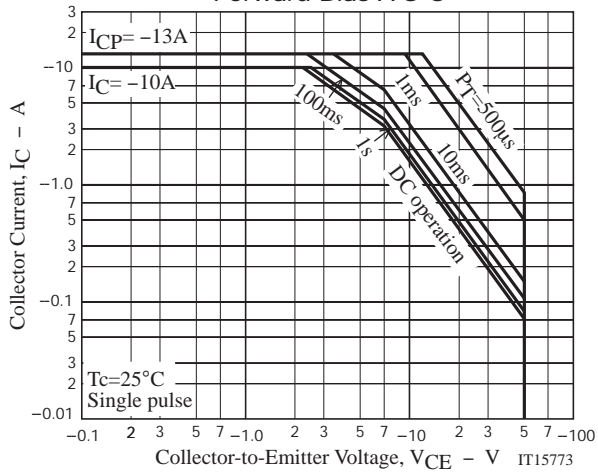
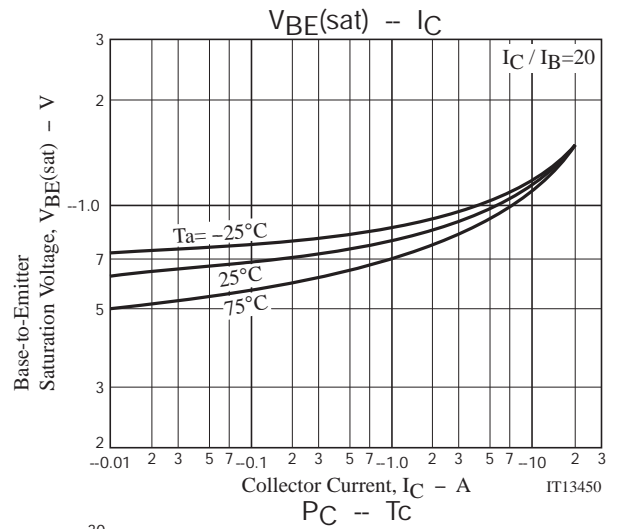
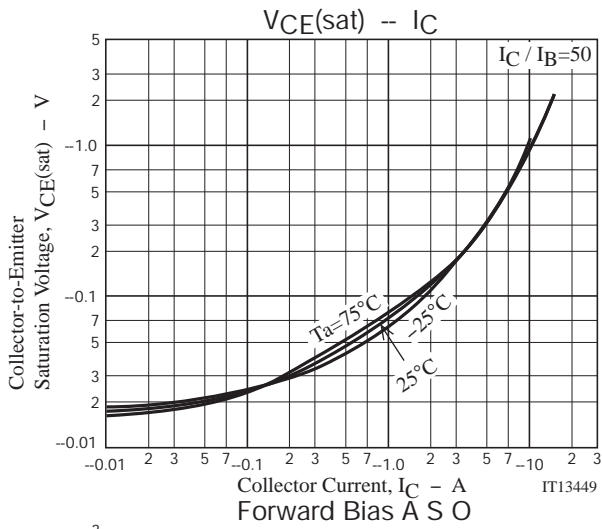


$$I_C = 20I_{B1} = -20I_{B2} = -5A$$

Ordering Information

| Device | Package | Shipping | memo |
|-----------|-------------|-----------------|---------|
| 2SA2222SG | TO-220F-3FS | 50pcs./magazine | Pb Free |





Magazine Specification

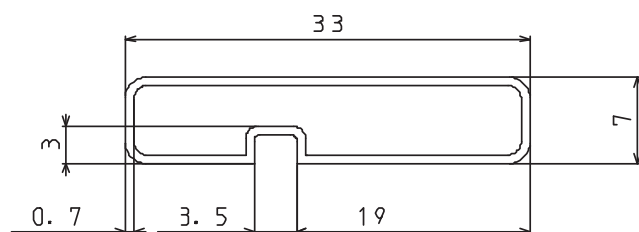
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1. Packing Format

| Package Name | Magazine Name | Maximum Number of devices contained (pcs) | | | Packing format | |
|--------------|---------------|---|-----------|-----------|--|--|
| | | Magazine | Inner box | Outer box | Inner BOX | Outer BOX |
| TO-220F-3FS | 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 |

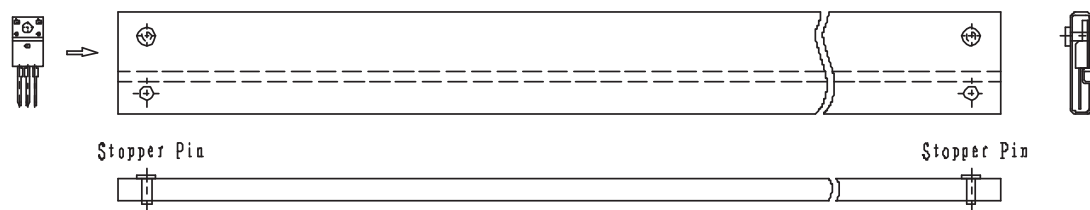
2. Magazine dimensions

(unit:mm)

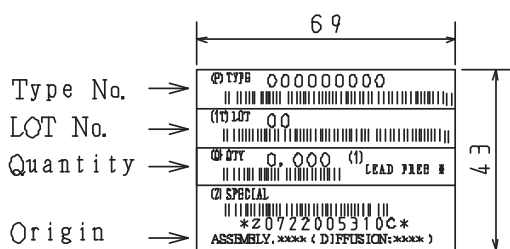


Tolerance=±0.3mm
 Thickness=0.7±0.2mm
 Length =532.5±2mm
 Material =PVC (Antistatic treatment)

3. Storage method to magazine

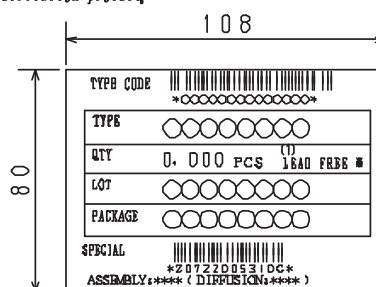


4. Inner box label (unit:mm)



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.



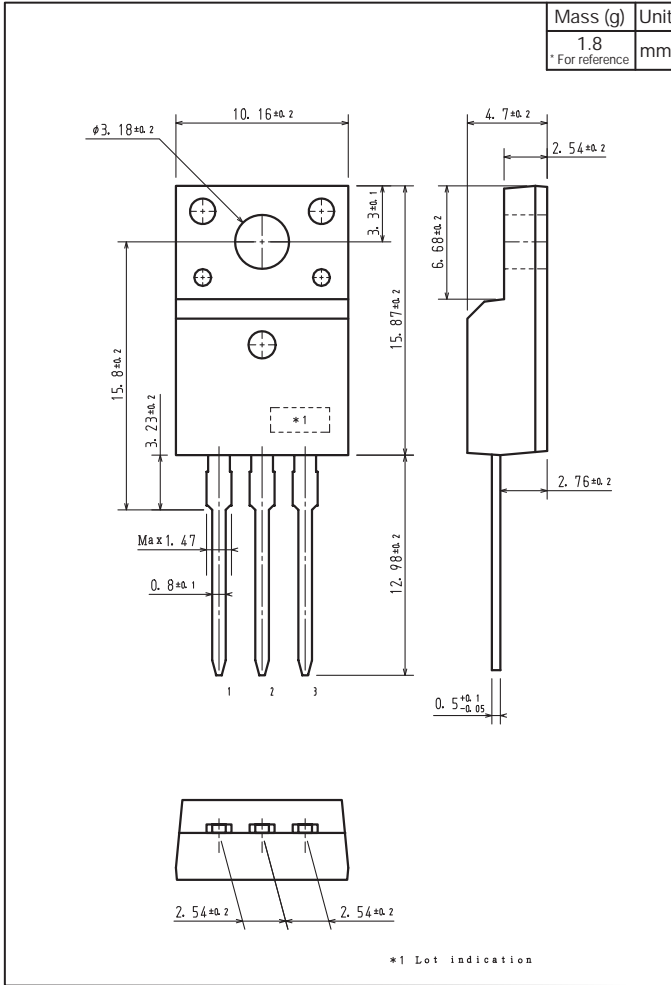
NOTE (1)

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

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