



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

## 2SC6144SG — NPN Epitaxial Planar Silicon Transistor High-Current Switching Applications

### Applications

- Relay drivers, lamp drivers, motor drivers

### Features

- Adoption of MBIT process
- Low collector-to-emitter saturation voltage ( $V_{CE(sat)}=180mV(\text{typ.})$ )
- High-speed switching ( $t_f=25ns(\text{typ.})$ )
- Large current capacitance ( $I_C=10A$ )

### Specifications

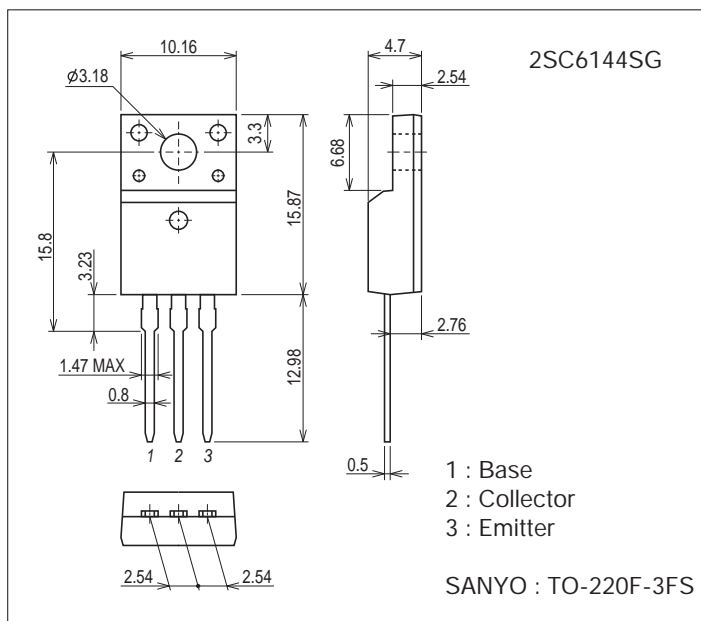
Absolute Maximum Ratings at  $T_a=25^\circ C$

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	$I_C$		10	A
Collector Current (Pulse)	$I_{CP}$		13	A
Base Current	$I_B$		2	A
Collector Dissipation	$P_C$	$T_c=25^\circ C, P_T \leq 1s$	25	W
Junction Temperature	$T_j$		150	$^\circ C$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ C$

### Package Dimensions

unit : mm (typ)

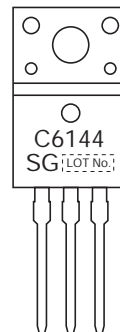
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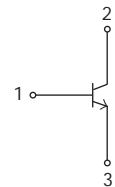
### Product & Package Information

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

### Marking



### Electrical Connection

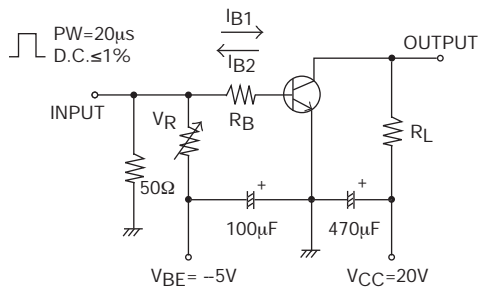


## 2SC6144SG

### 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	$h_{FE}$	$V_{CE}=2\text{V}, I_C=270\text{mA}$	200		560	
Gain-Bandwidth Product	$f_T$	$V_{CE}=10\text{V}, I_C=3\text{A}$		330		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=10\text{V}, f=1\text{MHz}$		60		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=6\text{A}, I_B=300\text{mA}$		180	360	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=6\text{A}, I_B=300\text{mA}$			1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=100\mu\text{A}, I_E=0\text{A}$	60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=1\text{mA}, R_{BE}=\infty$	50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=100\mu\text{A}, I_C=0\text{A}$	5			V
Turn-On Time	$t_{on}$	See specified Test Circuit.		62		ns
Storage Time	$t_{stg}$			350		ns
Fall Time	$t_f$			25		ns

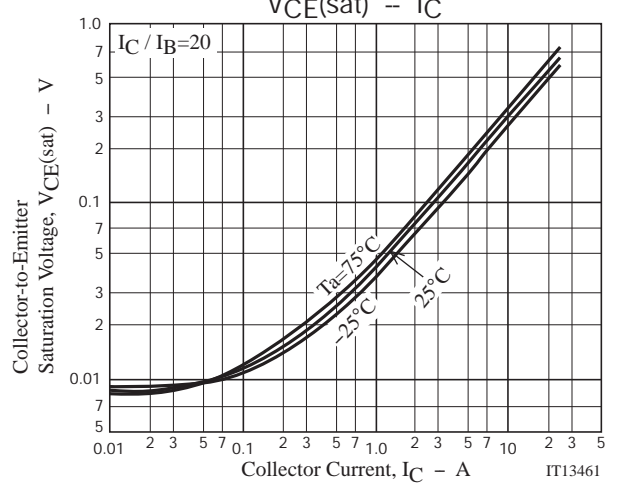
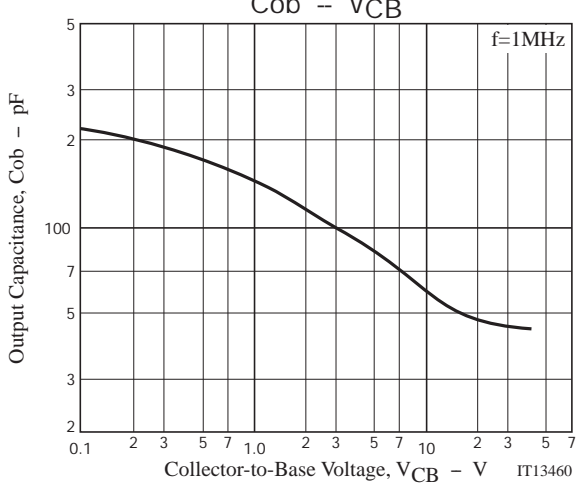
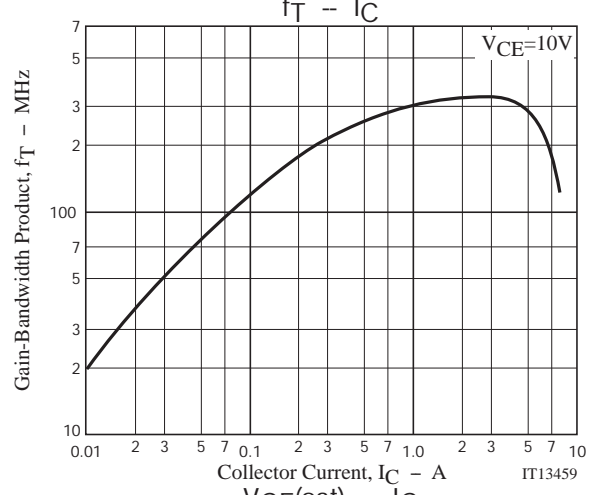
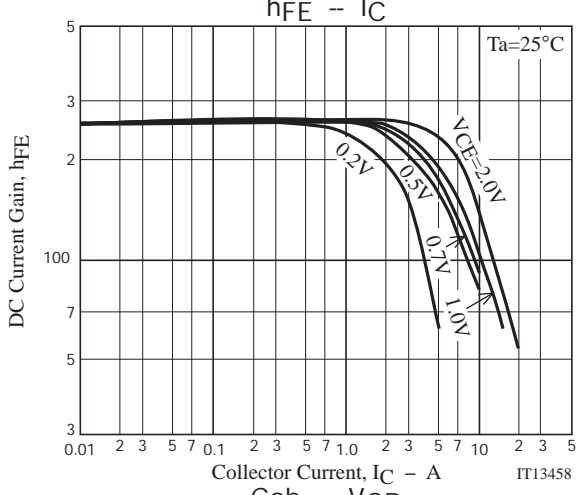
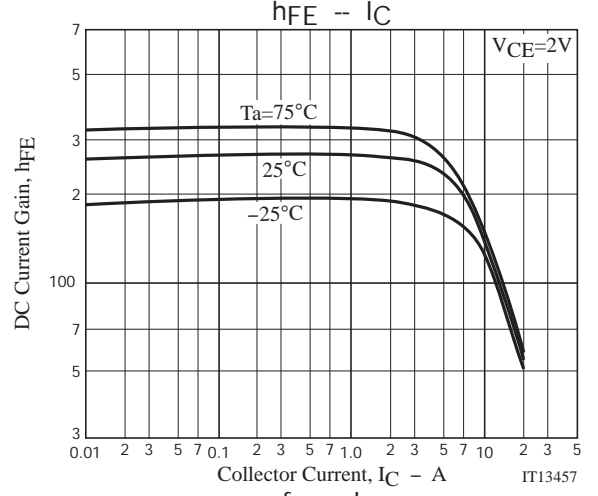
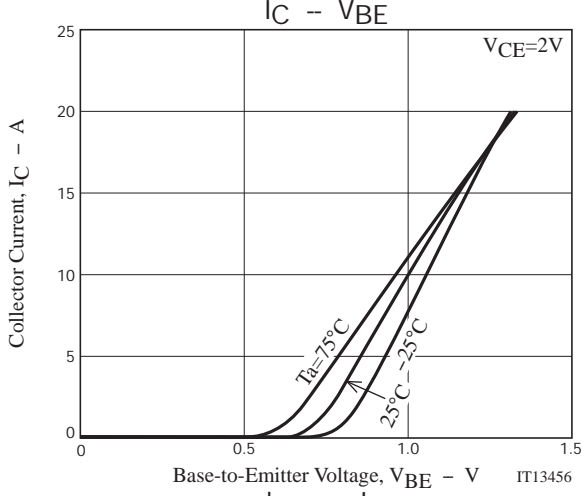
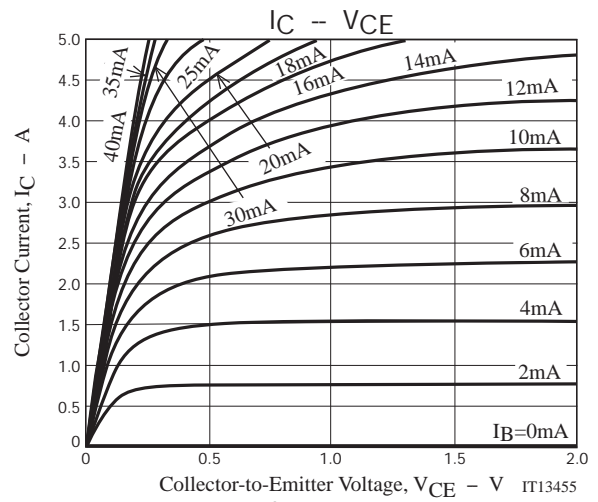
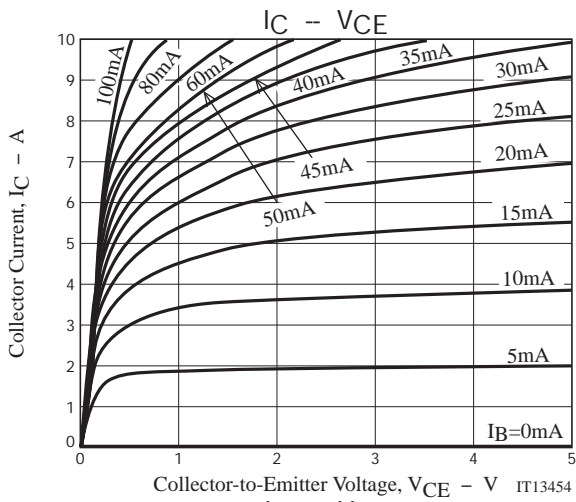
### Switching Time Test Circuit

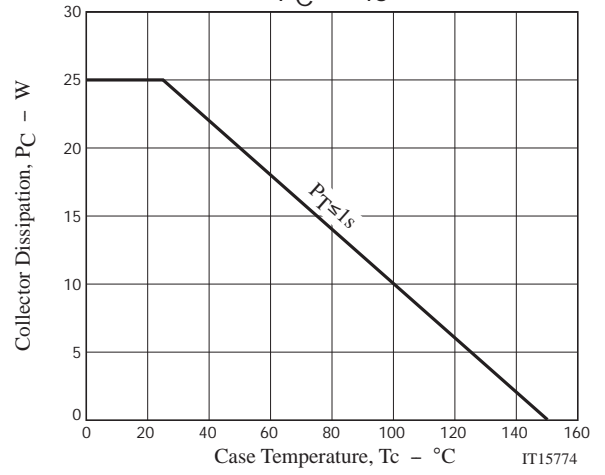
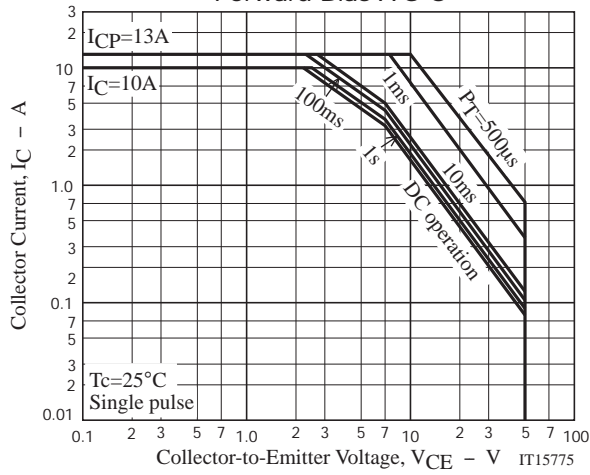
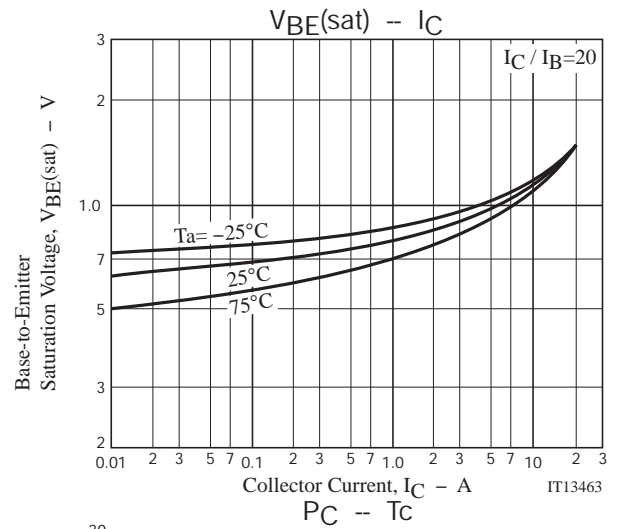
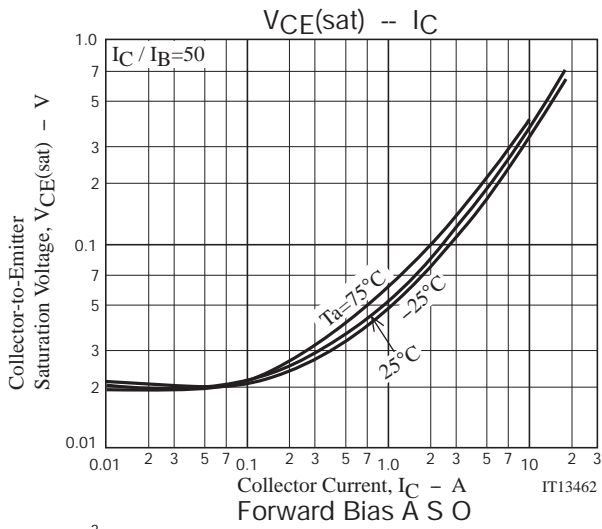


$$I_C = 20I_{B1} = -20I_{B2} = 5\text{A}$$

### Ordering Information

Device	Package	Shipping	memo
2SC6144SG	TO-220F-3FS	50pcs./magazine	Pb Free





Magazine Specification

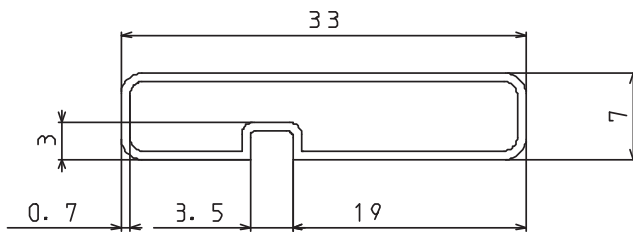
2SC6144SG

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

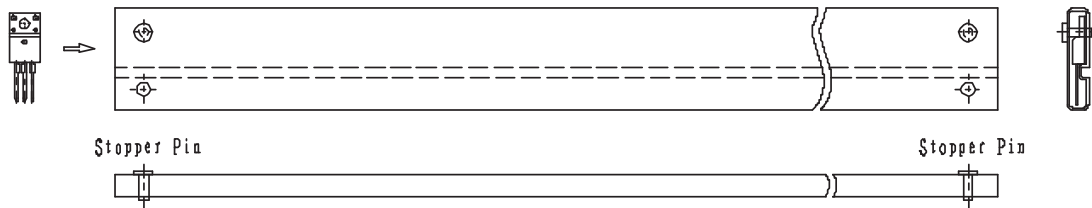
2. Magazine dimensions

(unit:mm)

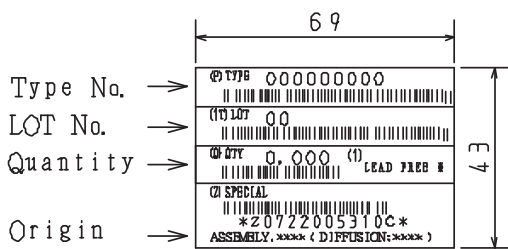


Tolerance=±0.3mm  
 Thickness=0.7±0.2mm  
 Length =532.5±2mm  
 Material =PVC (Antistatic treatment)

3. Storage method to magazine

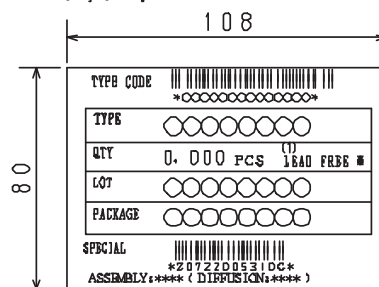


4. Inner box label (unit:mm)



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)

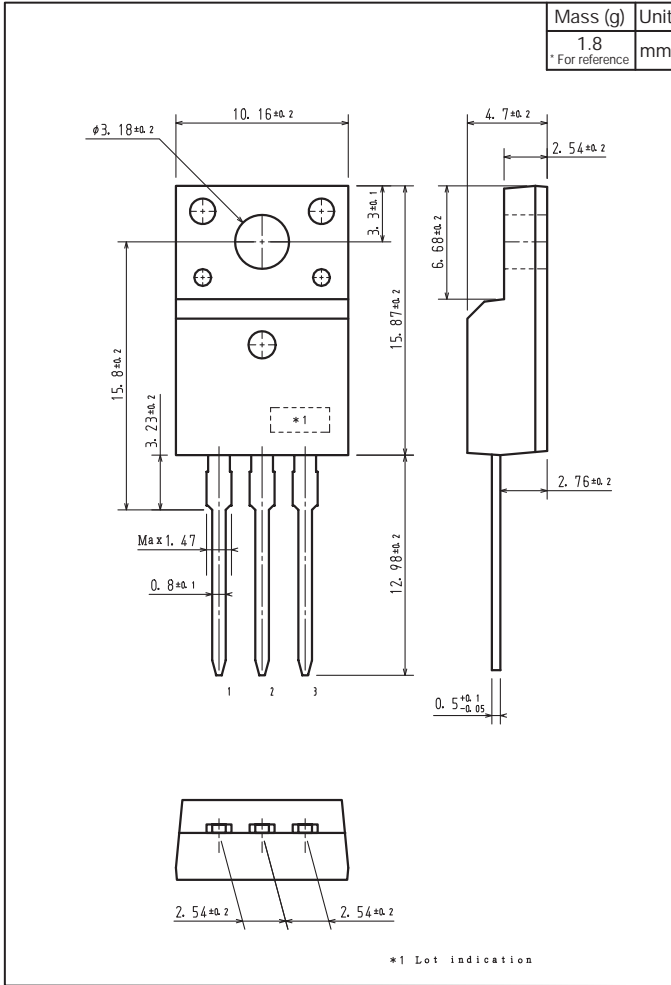
The LEAD FREE \* description shows that the surface treatment of the terminal is lead free.

Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A

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## Outline Drawing

2SC6144SG



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- Техническая поддержка проекта;
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