Ordering number : ENA1800B

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

Specifications

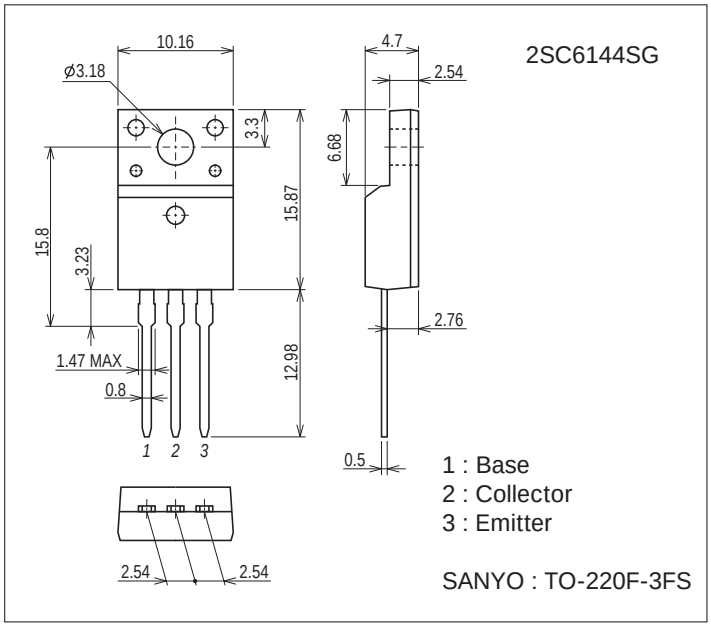
Absolute Maximum Ratings at Ta=25°C

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	Tc=25°C, P_T≤1s	25	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		−55 to +150	°C

Package Dimensions

unit : mm (typ)

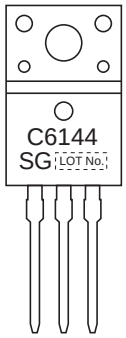
7528-003



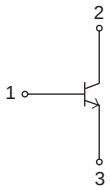
Product & Package Information

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

Marking



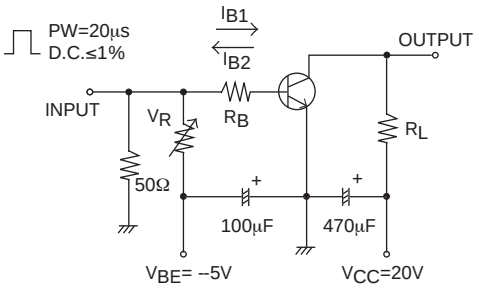
Electrical Connection



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	200		560	
Gain-Bandwidth Product	f_T	V_{CE}=10V, I_C=3A		330		MHz
Output Capacitance	Cob	V_{CB}=10V, f=1MHz		60		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C=6A, I_B=300mA		180	360	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=100μA, I_E=0A	60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=1mA, R_{BE}=∞	50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=100μA, I_C=0A	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

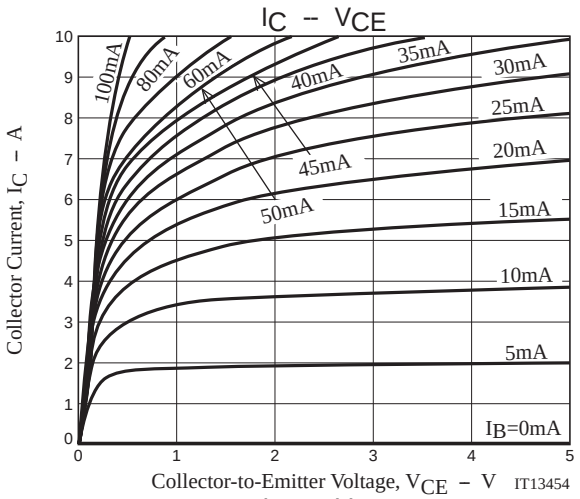
Switching Time Test Circuit

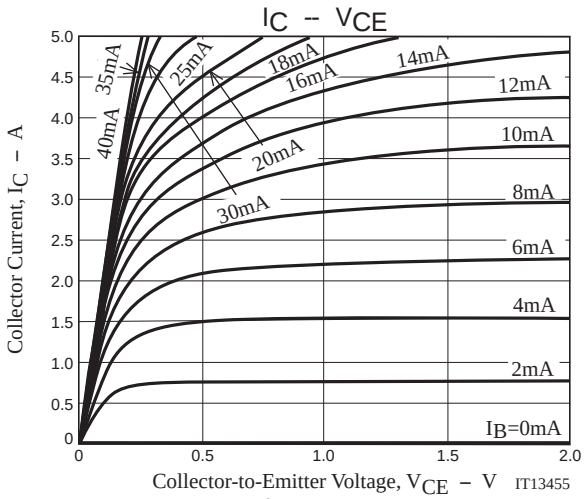


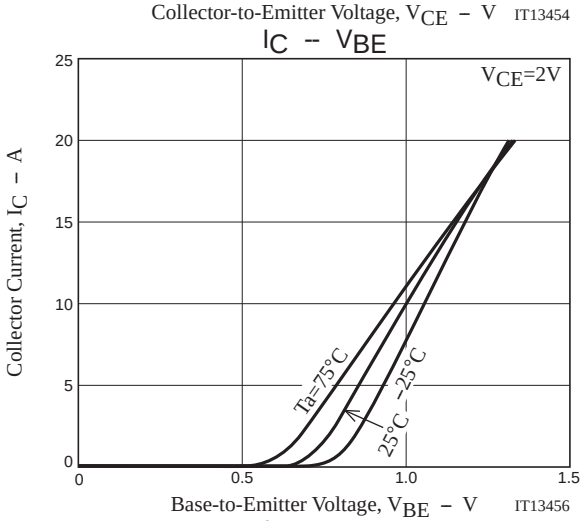
I_C=20I_{B1}= –20I_{B2}=5A

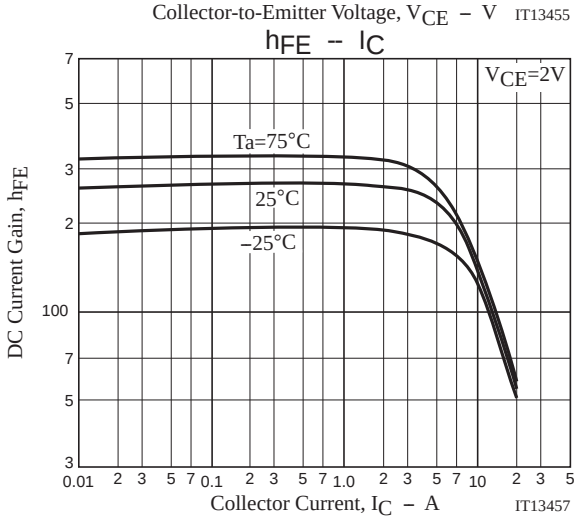
Ordering Information

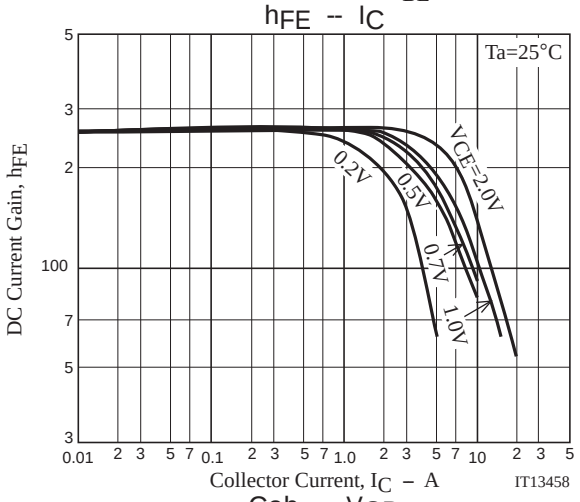
Device	Package	Shipping	memo
2SC6144SG	TO-220F-3FS	50pcs./magazine	Pb Free

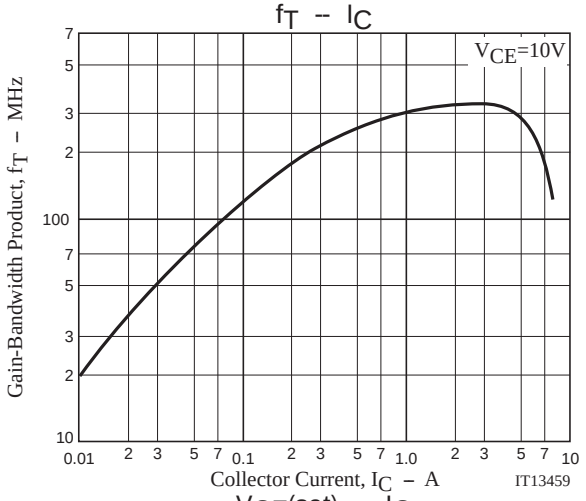

IC – VCE
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT13454
100mA
80mA
60mA
40mA
35mA
30mA
25mA
20mA
15mA
10mA
5mA
45mA
50mA
IB=0mA

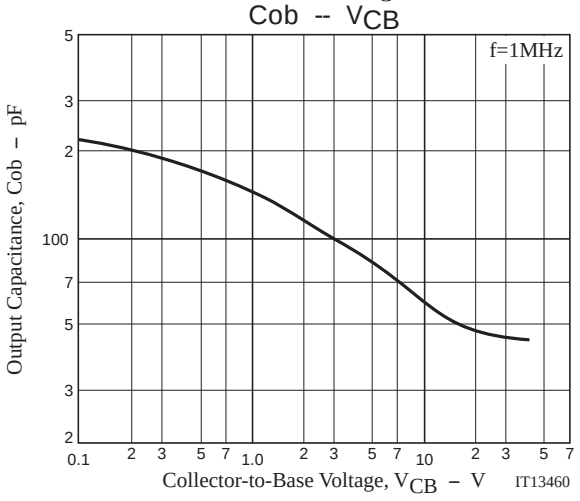

IC – VCE
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT13455
35mA
40mA
25mA
18mA
16mA
14mA
12mA
10mA
8mA
6mA
4mA
2mA
20mA
30mA
IB=0mA

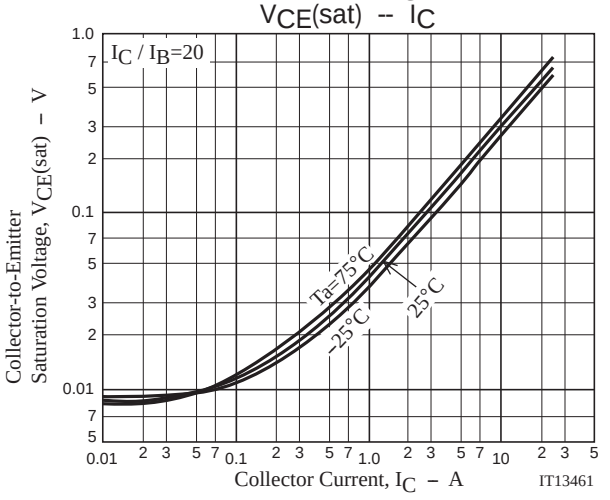

IC – VBE
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
IT13456
VCE=2V
Ta=75°C
25°C
–25°C

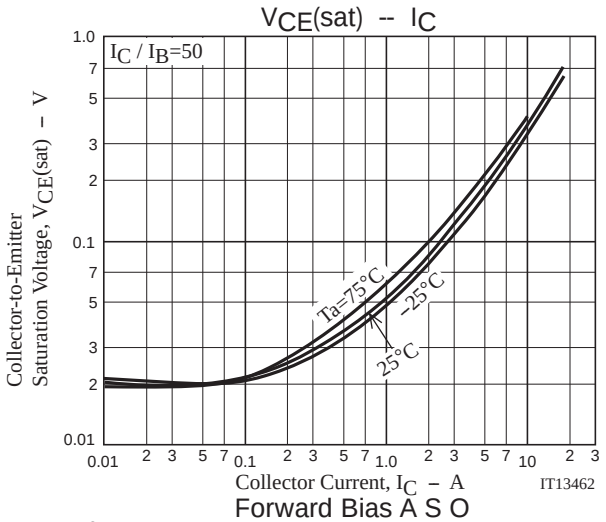

hFE – IC
DC Current Gain, hFE
Collector Current, IC – A
IT13457
VCE=2V
Ta=75°C
25°C
–25°C

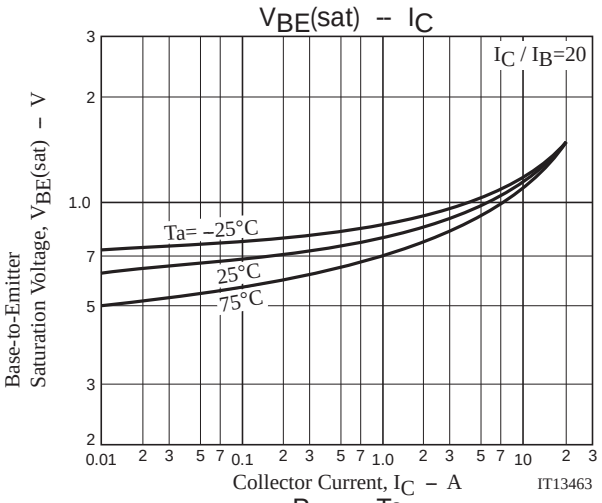

hFE – IC
DC Current Gain, hFE
Collector Current, IC – A
IT13458
Ta=25°C
VCE=2.0V
0.2V
0.5V
0.7V
1.0V

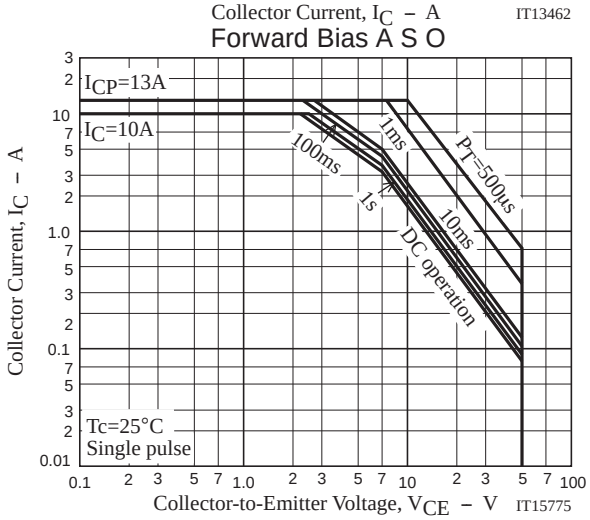

fT – IC
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT13459
VCE=10V

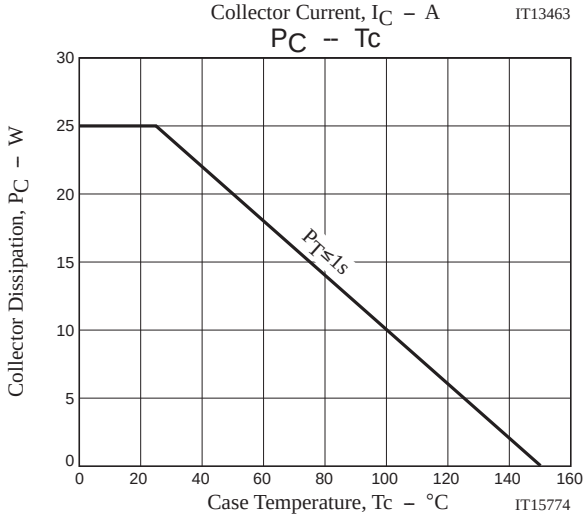

Cob – VCB
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT13460
f=1MHz


VCE(sat) – IC
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT13461
IC / IB=20
Ta=75°C
25°C
–25°C


VCE(sat) -- IC
IC / IB=50
Ta=75°C
–25°C
25°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT13462


VBE(sat) -- IC
IC / IB=20
Ta= –25°C
25°C
75°C
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
IT13463


Forward Bias A S O
ICP=13A
IC=10A
100ms
1ms
1s
10ms
DC operation
PT=500µs
Tc=25°C
Single pulse
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT15775


PC – Tc
PT≤1s
Collector Dissipation, PC – W
Case Temperature, Tc – °C
IT15774

Magazine Specification

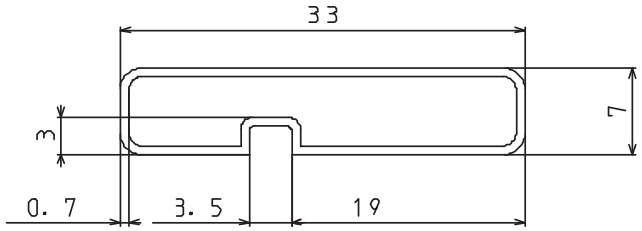
2SC6144SG

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

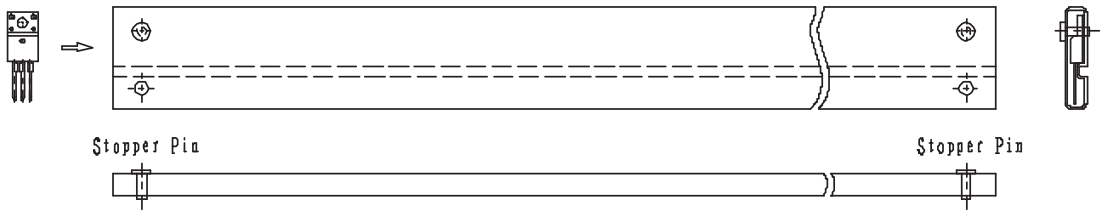
2. Magazine dimensions

(unit:mm)

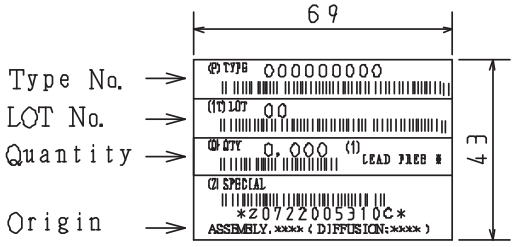


Tolerance=±0.3mm
Thickness=0.7±0.2mm
Length =532.5±2mm
Material =PVC (Antistatic treatment)

3. Storage method to magazine

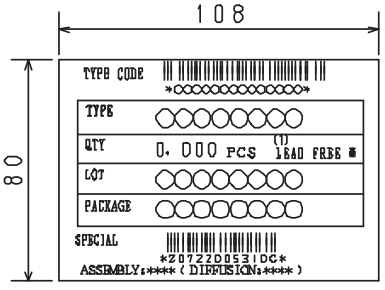


4. Inner box label (unit:mm)



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.

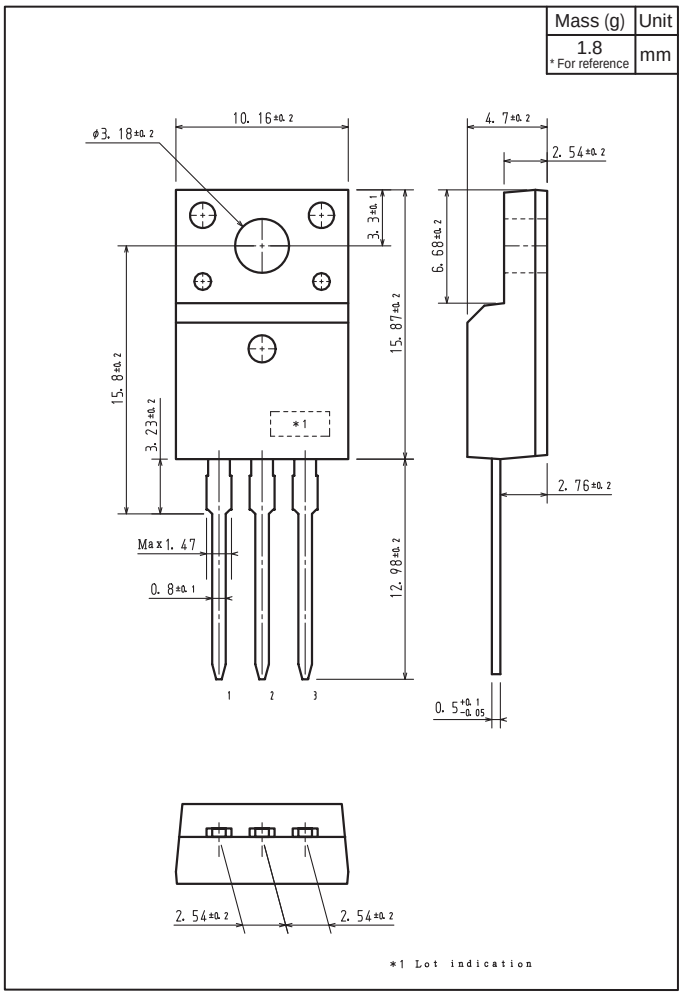


NOTE (1)
The LEAD FREE ※ description shows that the surface treatment of the terminal is lead free.

Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A

Outline Drawing

2SC6144SG



This catalog provides information as of December, 2012. Specifications and information herein are subject to change without notice.