



**SANYO Semiconductors**  
**DATA SHEET**

**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 (IC=10A)
- Low collector-to-emitter saturation voltage (VCE(sat)=180mV(typ.))
- High-speed switching (tf=25ns(typ.))

**Specifications**

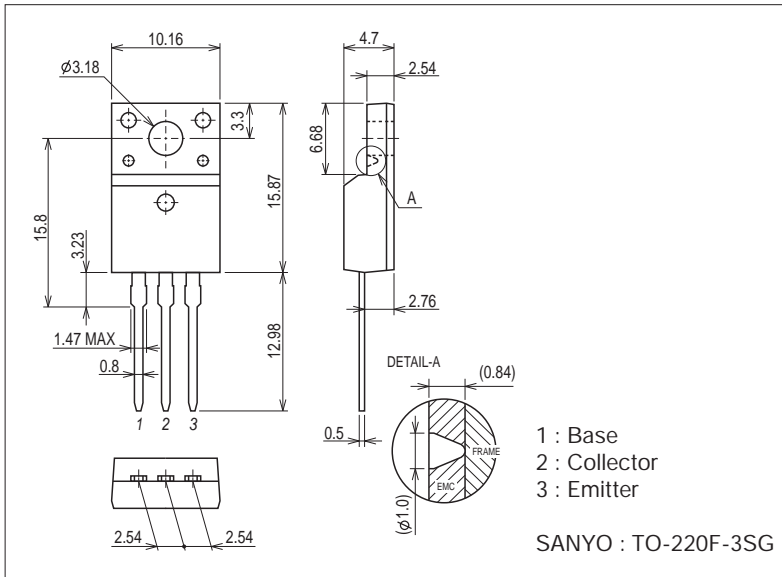
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V <sub>CB0</sub>		60	V
Collector-to-Emitter Voltage	V <sub>CEO</sub>		50	V
Emitter-to-Base Voltage	V <sub>EB0</sub>		5	V
Collector Current	I <sub>C</sub>		10	A
Collector Current (Pulse)	I <sub>CP</sub>		13	A
Base Current	I <sub>B</sub>		2	A
Collector Dissipation	P <sub>C</sub>	T <sub>c</sub> =25°C, P <sub>T</sub> ≤1s	25	W
Junction Temperature	T <sub>J</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

**Package Dimensions**

unit : mm (typ)

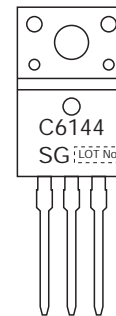
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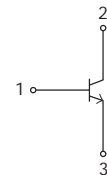
**Product & Package Information**

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

**Marking**



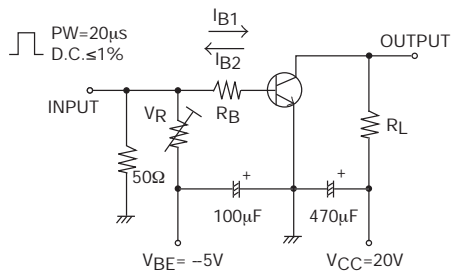
**Electrical Connection**



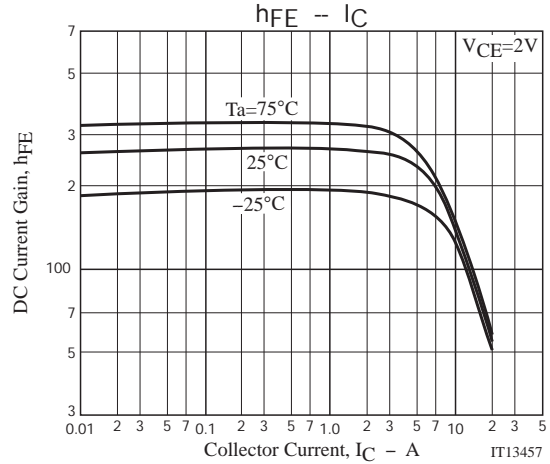
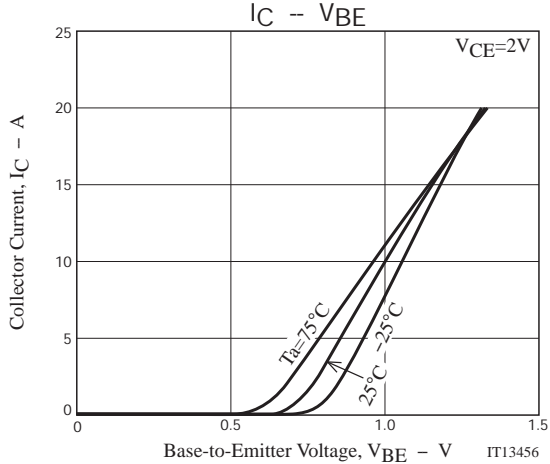
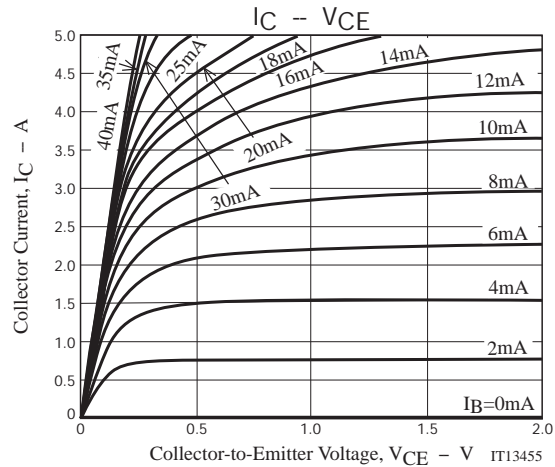
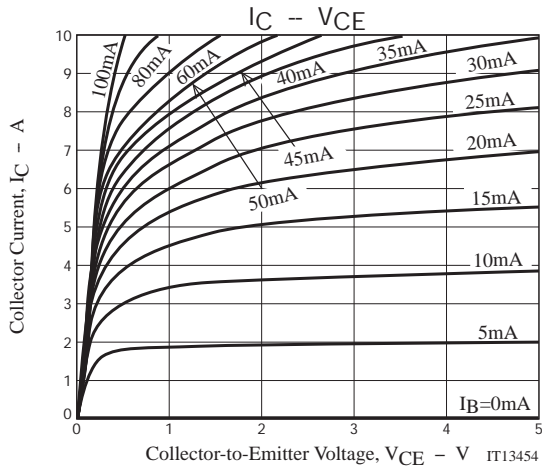
Electrical Characteristics at Ta=25°C

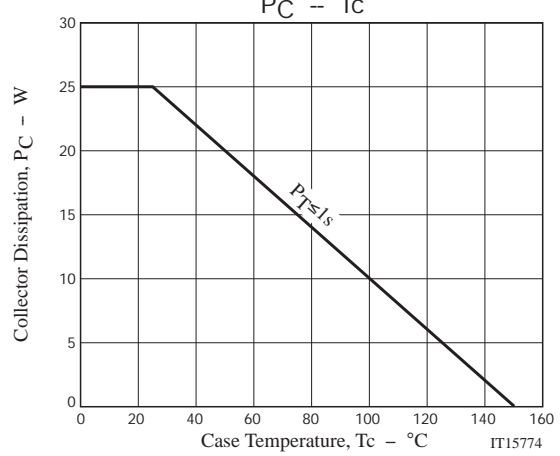
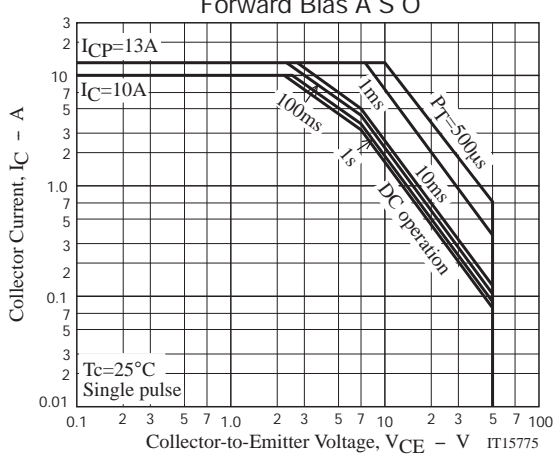
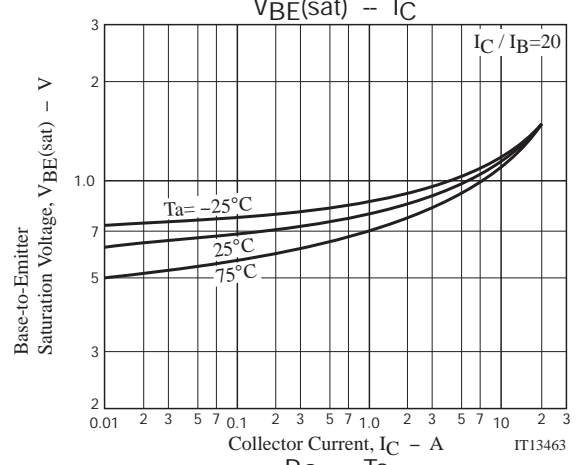
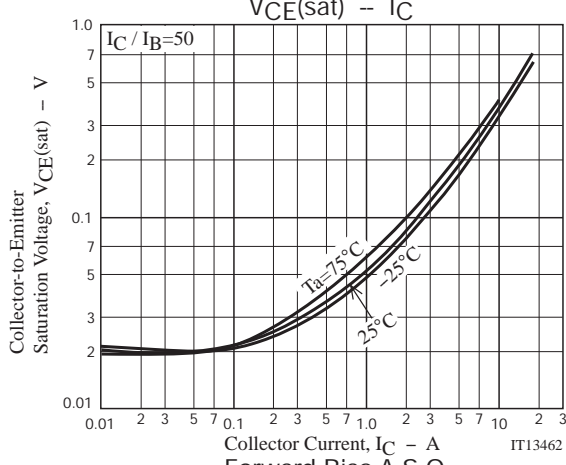
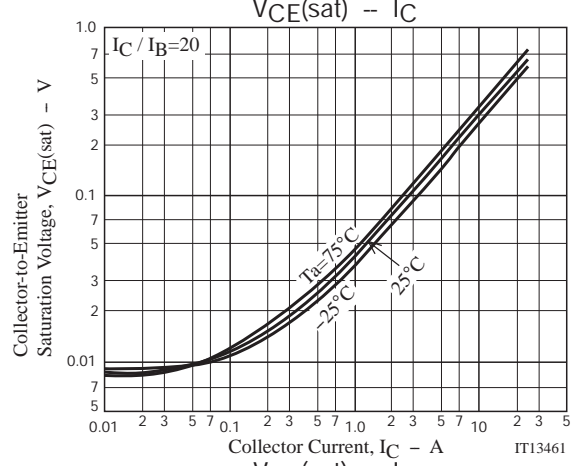
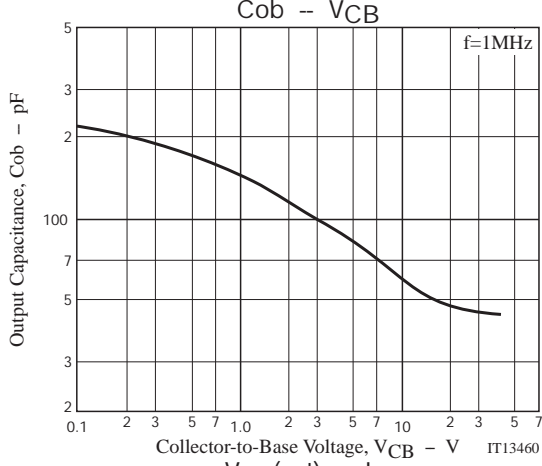
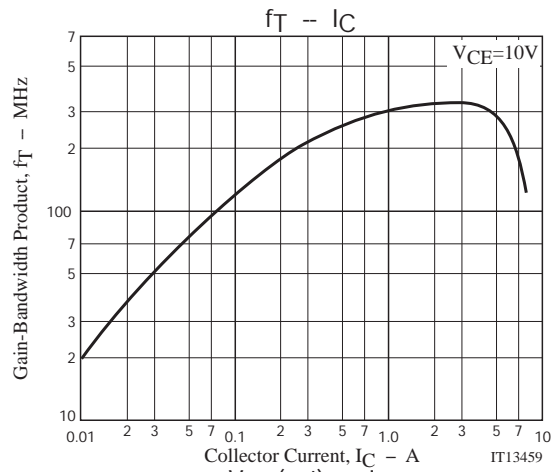
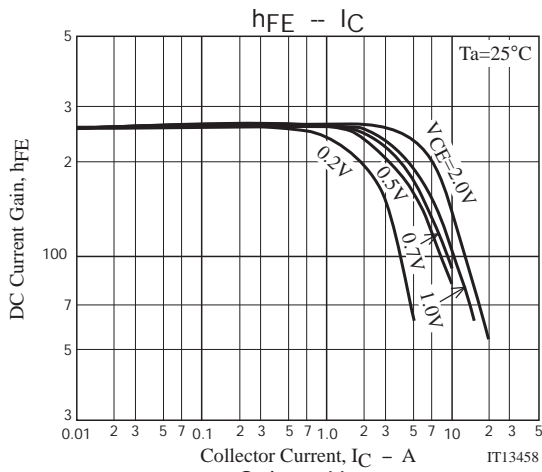
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	ICBO	V <sub>CB</sub> =40V, I <sub>E</sub> =0A			10	μA
Emitter Cutoff Current	IEBO	V <sub>EB</sub> =4V, I <sub>C</sub> =0A			10	μA
DC Current Gain	h <sub>FE</sub>	V <sub>CE</sub> =2V, I <sub>C</sub> =270mA	200		560	
Gain-Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> =3A		330		MHz
Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> =10V, f=1MHz		60		pF
Collector-to-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =6A, I <sub>B</sub> =300mA		180	360	mV
Base-to-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =6A, I <sub>B</sub> =300mA			1.2	V
Collector-to-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> =100μA, I <sub>E</sub> =0A	60			V
Collector-to-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> =1mA, R <sub>BE</sub> =∞	50			V
Emitter-to-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> =100μA, I <sub>C</sub> =0A	5			V
Turn-On Time	t <sub>on</sub>	See specified Test Circuit.		62		ns
Storage Time	t <sub>stg</sub>	See specified Test Circuit.		350		ns
Fall Time	t <sub>f</sub>	See specified Test Circuit.		25		ns

Switching Time Test Circuit



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





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