2SC5251

Silicon NPN Triple Diffused Planar

HITACHI

Application

Character display horizontal deflection output

Features

- High breakdown voltage
  V_{CBO} = 1500 V
- High speed switching
  t_f = 0.2 µsec (typ)
- Isolated package
  TO-3P•FM

Outline

TO-3PFM

1. Base
2. Collector
3. Emitter

Hitachi semiconductor

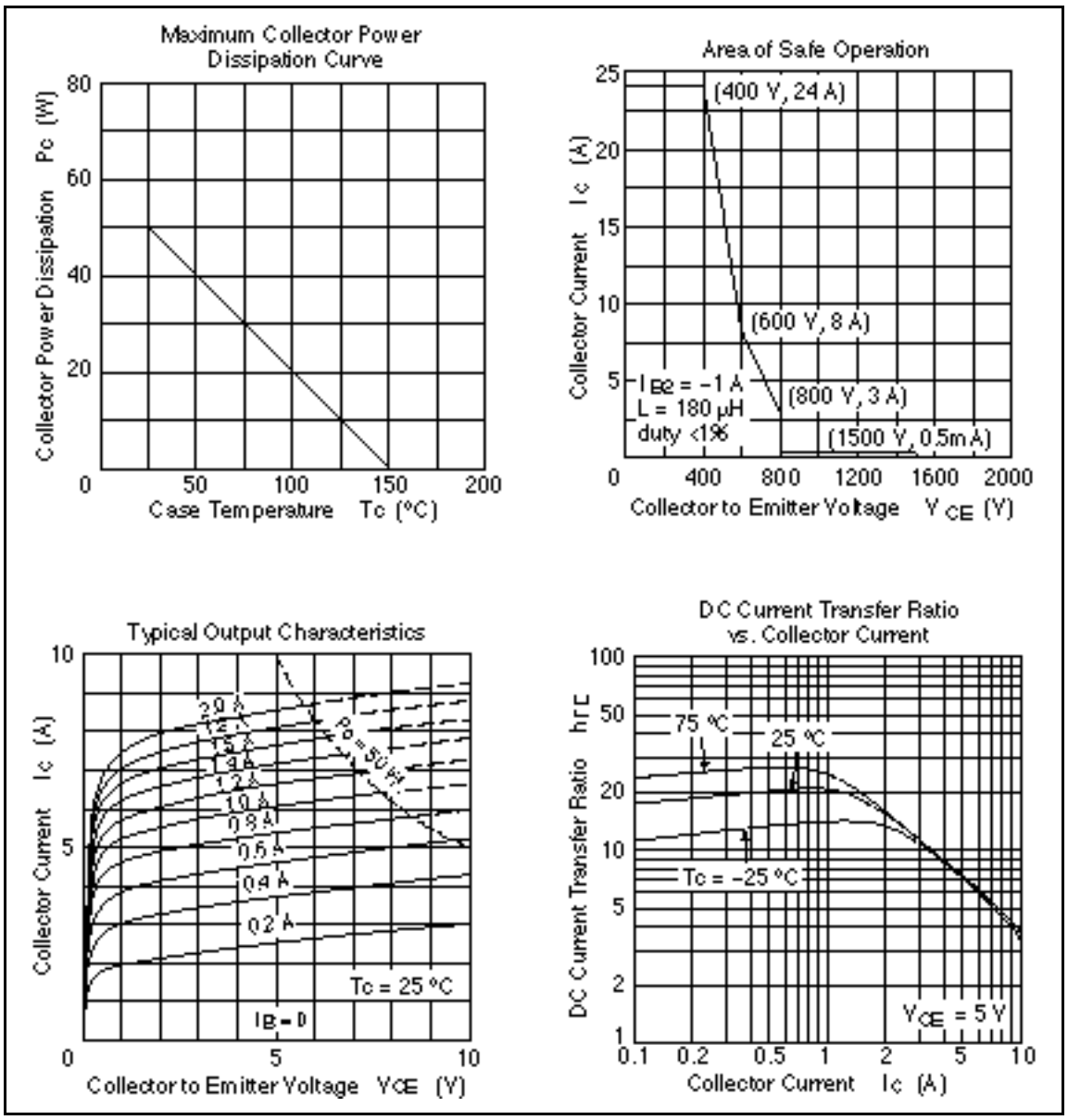
Absolute Maximum Ratings (Ta = 25°C)

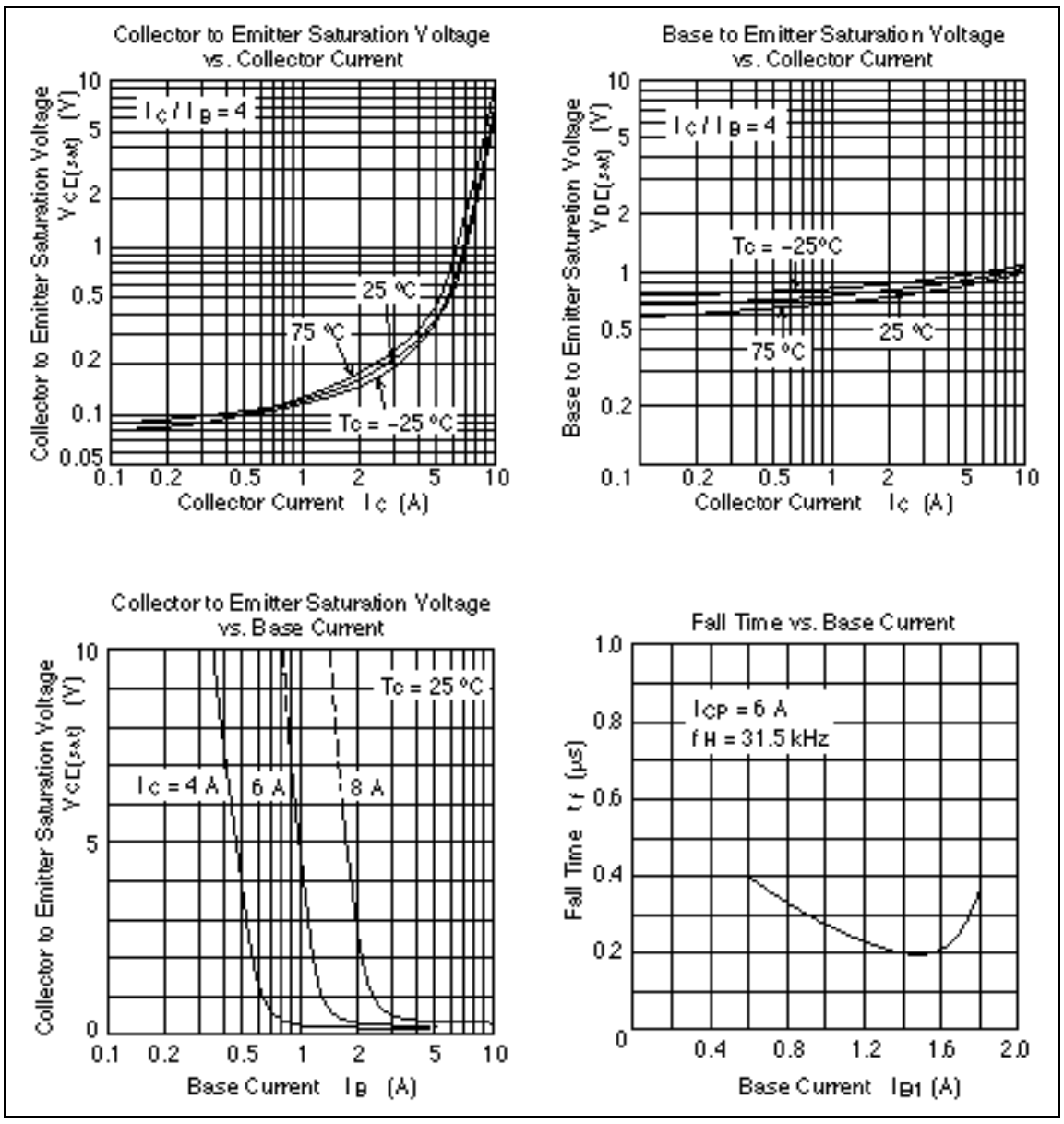
Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	1500	V
Collector to emitter voltage	V_{CEO}	800	V
Emitter to base voltage	V_{EBO}	6	V
Collector current	I_C	12	A
Collector peak current	$I_{C(peak)}$	24	A
Collector power dissipation	P_C*[1]	50	W
Junction temperature	Tj	150	°C
Storage temperature	Tstg	–55 to +150	°C

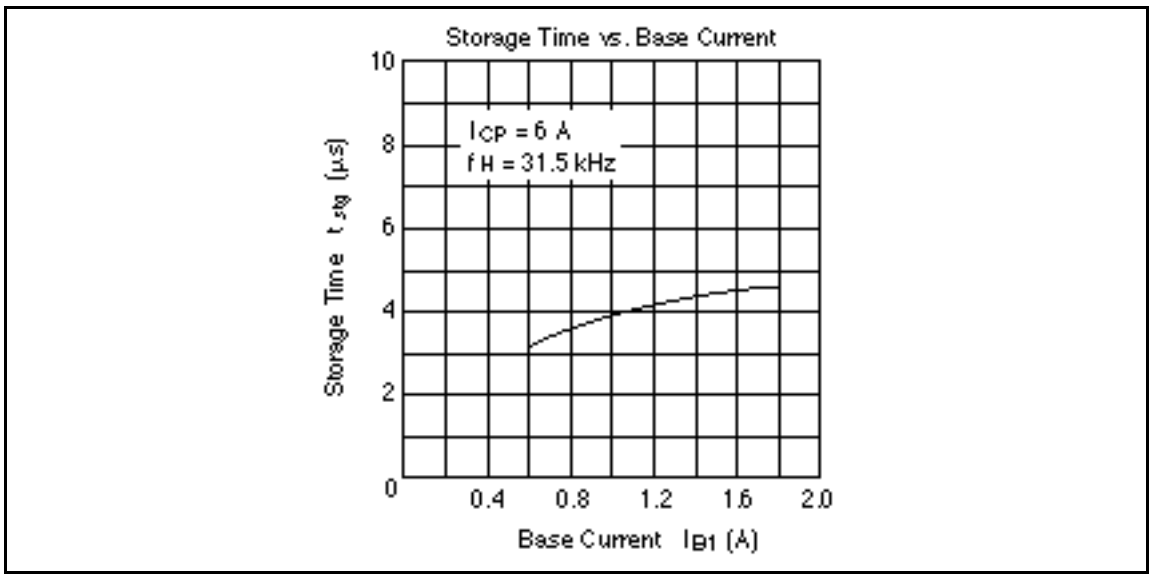
Note: 1. Value at T_C = 25°C

Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	800	—	—	V	I_C = 10 mA, R_{BE} = ∞
Emitter to base breakdown voltage	$V_{(BR)EBO}$	6	—	—	V	I_E = 10 mA, I_C = 0
Collector cutoff current	I_{CES}	—	—	500	µA	V_{CE} = 1500 V, R_{BE} = 0
DC current transfer ratio	h_{FE1}	8	—	35		V_{CE} = 5 V, I_C = 1 A
DC current transfer ratio	h_{FE2}	5	—	9		V_{CE} = 5 V, I_C = 5 A
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	5	V	I_C = 7 A, I_B = 1.8 A
Base to emitter saturation voltage	$V_{BE(sat)}$	—	—	1.5	V	I_C = 7 A, I_B = 1.8 A
Fall time	t_f	—	0.2	0.4	µsec	I_{CP} = 6 A, I_{B1} = 1.5 A, f_H = 31.5 kHz


Maximum Collector Power Dissipation Curve
Collector Power Dissipation Pc (W)
80
60
40
20
0
50
100
150
200
Case Temperature Tc (°C)
Area of Safe Operation
Collector Current Ic (A)
25
20
15
10
5
0
400
800
1200
1600
2000
Collector to Emitter Voltage VCE (V)
(400 V, 24 A)
(600 V, 8 A)
(800 V, 3 A)
(1500 V, 0.5mA)
IBe = −1 A
L = 180 µH
duty <1%
Typical Output Characteristics
Collector Current Ic (A)
10
5
0
5
10
Collector to Emitter Voltage VCE (Y)
2.0 A
1.5 A
1.0 A
0.8 A
0.6 A
0.4 A
0.2 A
PC = 50 W
Tc = 25 °C
IB = 0
DC Current Transfer Ratio vs. Collector Current
DC Current Transfer Ratio hFE
100
50
20
10
5
2
1
0.1
0.2
0.5
1
2
5
10
Collector Current Ic (A)
75 °C
25 °C
Tc = −25 °C
VCE = 5 V


Collector to Emitter Saturation Voltage vs. Collector Current
Collector to Emitter Saturation Voltage VCE(sat) (V)
Ic / IB = 4
25 °C
75 °C
Tc = –25 °C
Collector Current Ic (A)
Base to Emitter Saturation Voltage vs. Collector Current
Base to Emitter Saturation Voltage VBE(sat) (V)
Ic / IB = 4
Tc = –25°C
25 °C
75 °C
Collector Current Ic (A)
Collector to Emitter Saturation Voltage vs. Base Current
Collector to Emitter Saturation Voltage VCE(sat) (V)
Tc = 25 °C
Ic = 4 A
6 A
8 A
Base Current IB (A)
Fall Time vs. Base Current
Fall Time tf (µs)
ICP = 6 A
fH = 31.5 kHz
Base Current IB1 (A)


Storage Time vs. Base Current
I_{CP} = 6 A
f_H = 31.5 kHz
Storage Time t_{stg} (µs)
Base Current I_{B1} (A)
0
2
4
6
8
10
0.4
0.8
1.2
1.6
2.0

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