2SD2128

Silicon NPN Triple Diffused

HITACHI

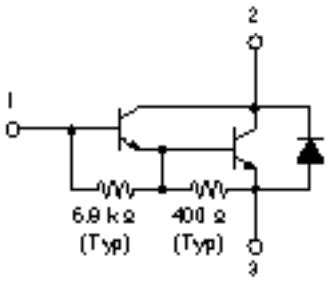
Application

Low frequency power amplifier

Outline

TO-220FM

1. Base
2. Collector
3. Emitter



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Absolute Maximum Ratings (Ta = 25°C)

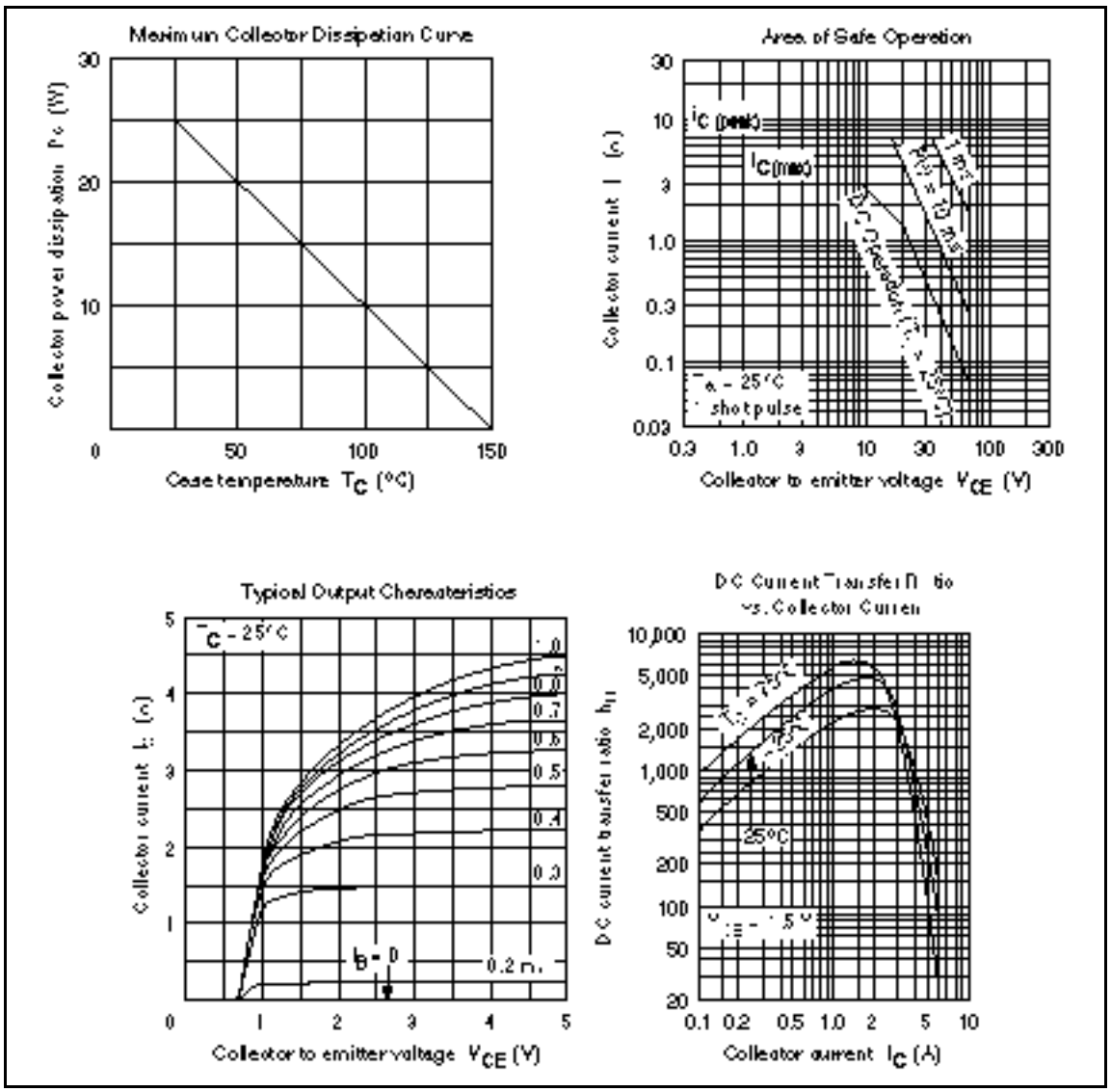
Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	60	V
Collector to emitter voltage	V_{CEO}	60	V
Emitter to base voltage	V_{EBO}	7	V
Collector current	I_C	3	A
Collector peak current	$I_{C(peak)}$	6	A
Collector power dissipation	P_C	2	W
	P_C*[1]	25	
Junction temperature	Tj	150	°C
Storage temperature	Tstg	–55 to +150	°C

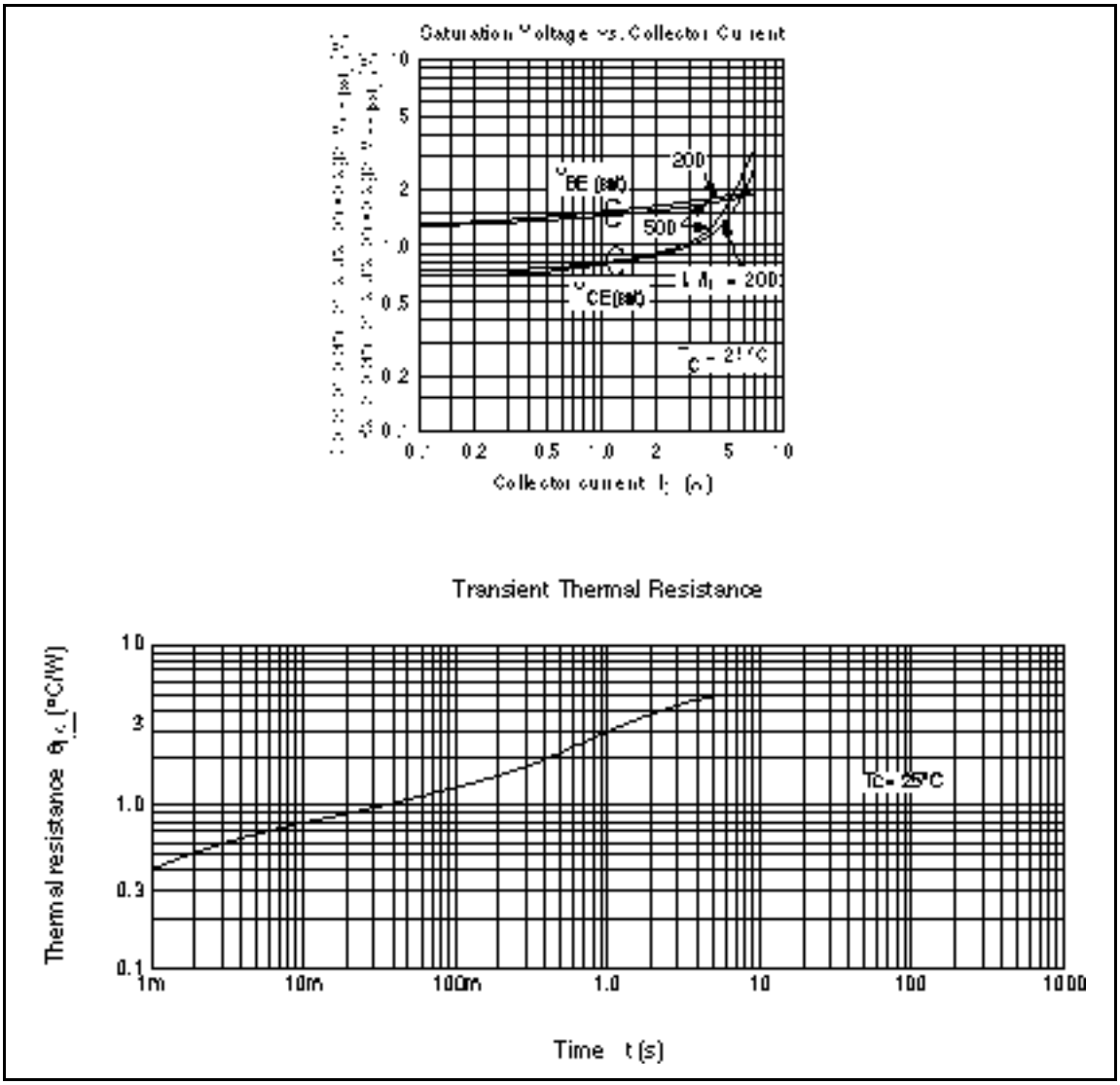
Note: 1. Value at T_C = 25°C.

Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	60	—	—	V	I_C = 0.1 mA, I_E = 0
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	60	—	—	V	I_C = 25 mA, R_{BE} = ∞
Emitter to base breakdown voltage	$V_{(BR)EBO}$	7	—	—	V	I_E = 50 mA, I_C = 0
Collector cutoff current	I_{CBO}	—	—	10	µA	V_{CB} = 50 V, I_E = 0
	I_{CEO}	—	—	10		V_{CE} = 50 V, R_{BE} = ∞
DC current transfer ratio	h_{FE}	1000	—	20000		V_{CE} = 3 V, I_C = 1.5 A*[1]
Collector to emitter saturation voltage	$V_{CE(sat)1}$	—	—	1.2	V	I_C = 1.5 A, I_B = 3 mA*[1]
	$V_{CE(sat)2}$	—	—	2.5		I_C = 3 A, I_B = 30 mA*[1]
Base to emitter saturation voltage	$V_{BE(sat)1}$	—	—	2.0	V	I_C = 1.5 A, I_B = 3 mA*[1]
	$V_{BE(sat)2}$	—	—	3.5		I_C = 3 A, I_B = 30 mA*[1]

Note: 1. Pulse test.


Maximum Collector Dissipation Curve
Collector power dissipation Pc (W)
30
20
10
0
50
100
150
Case temperature T_C (°C)
Area of Safe Operation
Collector current I (A)
$I_{C(peak)}$
$I_{C(max)}$
1 ms
PW = 10 ms
DC Operation
T_C = 25°C
1 shot pulse
30
10
3
1.0
0.3
0.1
0.03
0.3
1.0
3
10
30
100
300
Collector to emitter voltage V_{CE} (V)
Typical Output Characteristics
T_C = 25°C
Collector current I_C (A)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
I_B = 0
0.2 mA
5
4
3
2
1
0
1
2
3
4
5
Collector to emitter voltage V_{CE} (V)
DC Current Transfer Ratio
vs. Collector Current
DC current transfer ratio h_{FE}
10,000
5,000
2,000
1,000
500
200
100
50
20
25°C
0.1
0.2
0.5
1.0
2
5
10
Collector current I_C (A)


Collector current I_C (A)
200
500
I_B1 = 200
T_C = 25°C
Transient Thermal Resistance
Thermal resistance θj-c (°C/W)
T_C = 25°C
Time t (s)
1m
10m
100m
1.0
10
100
1000
0.1
0.3
1.0
3
10

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