2SD655

Silicon NPN Epitaxial

HITACHI

Application

Low frequency power amplifier, Muting

Outline

TO-92 (1)

1. Emitter
2. Collector
3. Base

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	30	V
Collector to emitter voltage	V_{CEO}	15	V
Emitter to base voltage	V_{EBO}	5	V
Collector current	I_C	0.7	A
Collector peak current	$i_{C(peak)}$	1.0	A
Collector power dissipation	P_C	500	mW
Junction temperature	Tj	150	°C
Storage temperature	Tstg	–55 to +150	°C

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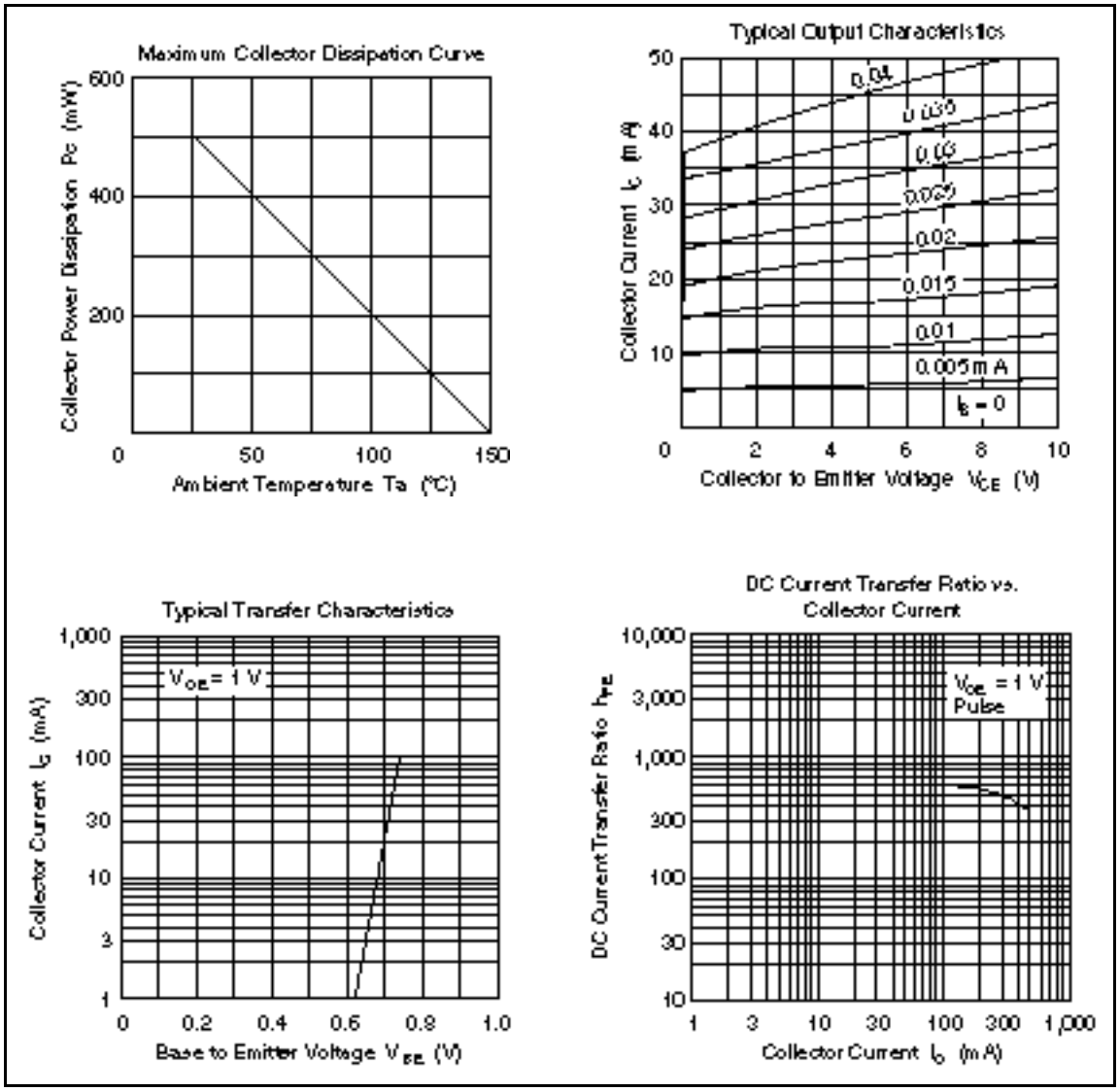
Electrical Characteristics (Ta = 25°C)

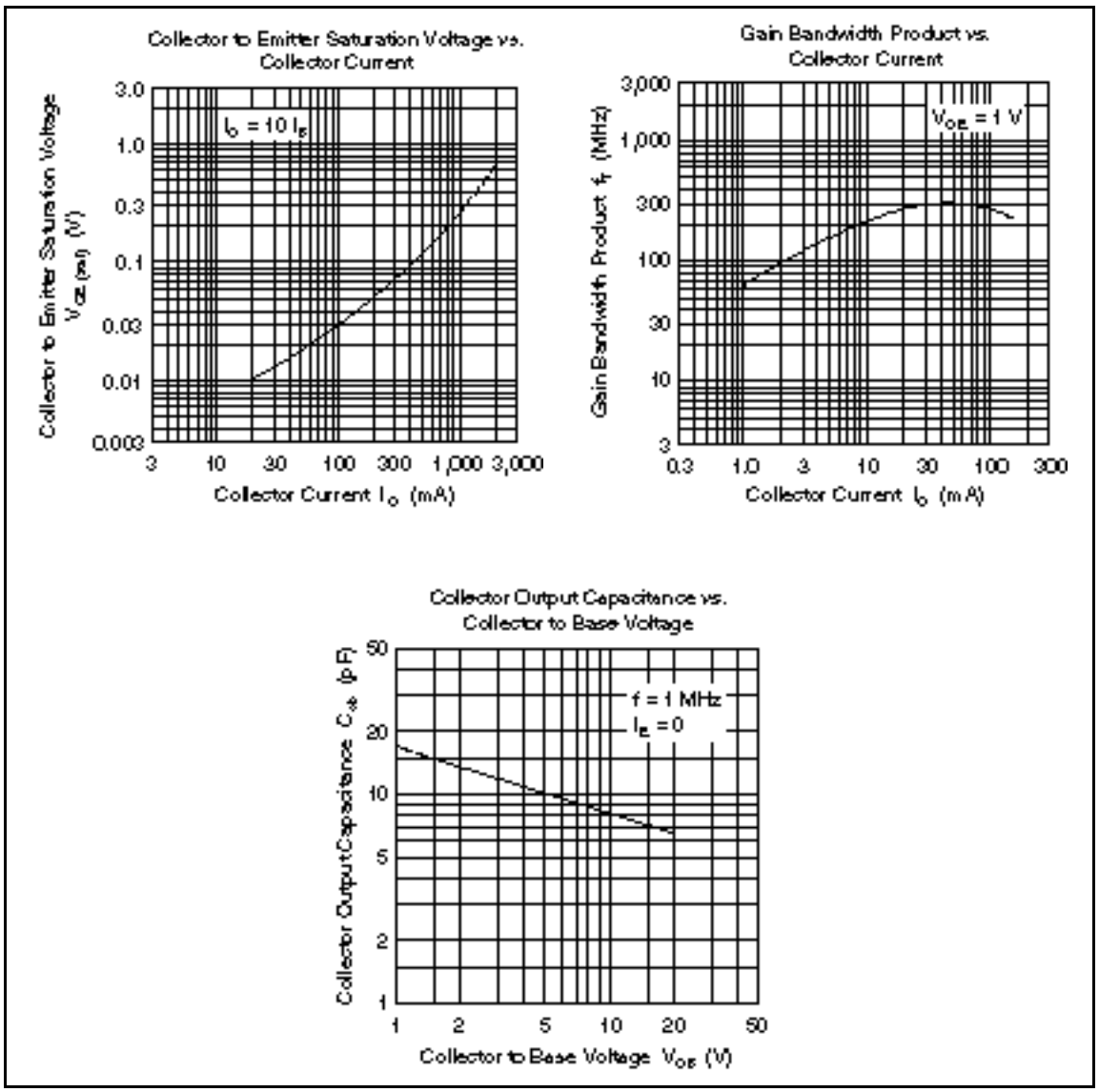
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	30	—	—	V	I_C = 10 µA, I_E = 0
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	15	—	—	V	I_C = 1 mA, R_{BE} = ∞
Emitter to base breakdown voltage	$V_{(BR)EBO}$	5	—	—	V	I_E = 10 µA, I_C = 0
Collector cutoff current	I_{CBO}	—	—	1.0	µA	V_{CB} = 20 V, I_E = 0
Base to emitter voltage	V_{BE}	—	—	1.0	V	V_{CE} = 1 V, I_C = 150 mA
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	0.15	0.5	V	I_C = 500 mA, I_B = 50 mA*[2]
DC current transfer ratio	h_{FE}*[1]	250	—	1200		V_{CE} = 1 V, I_C = 150 mA*[2]
Gain bandwidth product	f_T	—	250	—	MHz	V_{CE} = 1 V, I_C = 150 mA

Notes: 1. The 2SD655 is grouped by h_{FE} as follows.

2. Pulse test

D	E	F
250 to 500	400 to 800	600 to 1200


Maximum Collector Dissipation Curve
Collector Power Dissipation Pc (mW)
600
400
200
0
50
100
150
Ambient Temperature Ta (°C)
Typical Output Characteristics
Collector Current Ic (mA)
50
40
30
20
10
0
2
4
6
8
10
Collector to Emitter Voltage VCE (V)
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005 mA
IB = 0
Typical Transfer Characteristics
Collector Current Ic (mA)
1,000
300
100
30
10
3
1
VCE = 1 V
0
0.2
0.4
0.6
0.8
1.0
Base to Emitter Voltage VBE (V)
DC Current Transfer Ratio vs.
Collector Current
DC Current Transfer Ratio hFE
10,000
3,000
1,000
300
100
30
10
VCE = 1 V
Pulse
1
3
10
30
100
300
1,000
Collector Current Ic (mA)


Collector to Emitter Saturation Voltage vs. Collector Current
Collector to Emitter Saturation Voltage $V_{CE(sat)}$ (V)
$I_C = 10 I_B$
3.0
1.0
0.3
0.1
0.03
0.01
0.003
3
10
30
100
300
1,000
3,000
Collector Current I_C (mA)
Gain Bandwidth Product vs. Collector Current
Gain Bandwidth Product f_T (MHz)
V_{CE} = 1 V
3,000
1,000
300
100
30
10
3
0.3
1.0
3
10
30
100
300
Collector Current I_C (mA)
Collector Output Capacitance vs. Collector to Base Voltage
Collector Output Capacitance C_{ob} (pF)
f = 1 MHz
I_E = 0
50
20
10
5
2
1
1
2
5
10
20
50
Collector to Base Voltage V_{CB} (V)

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