2SD1421

Silicon NPN Epitaxial

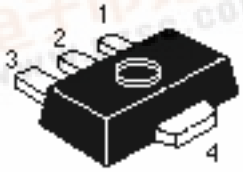
HITACHI

Application

Low frequency power amplifier

Outline

UPAK



1. Base
2. Collector
3. Emitter
4. Collector (Flange)

2SD1421

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	180	V
Collector to emitter voltage	V_{CEO}	160	V
Emitter to base voltage	V_{EBO}	5	V
Collector current	I_C	1.5	A
Collector peak current	$i_{C(peak)}$*[1]	3	A
Collector power dissipation	P_C*[2]	1	W
Junction temperature	Tj	150	°C
Storage temperature	Tstg	–55 to +150	°C

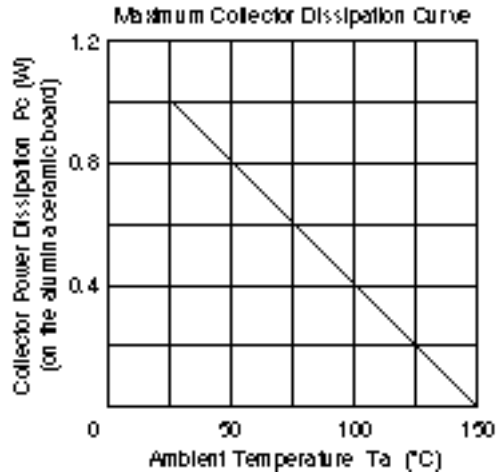
Notes: 1. PW ≤ 10 ms, Duty cycle ≤ 20%
2. Value on the alumina ceramic board (12.5 x 20 x 0.7 mm)

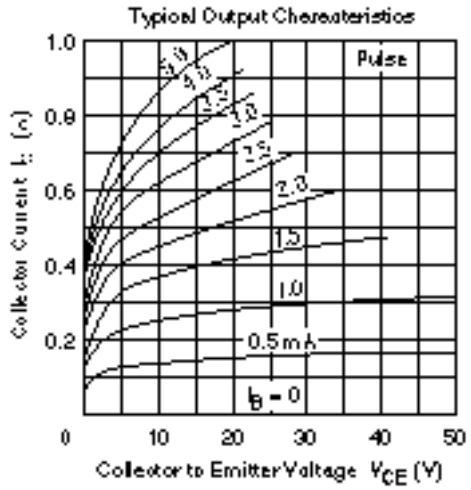
Electrical Characteristics (Ta = 25°C)

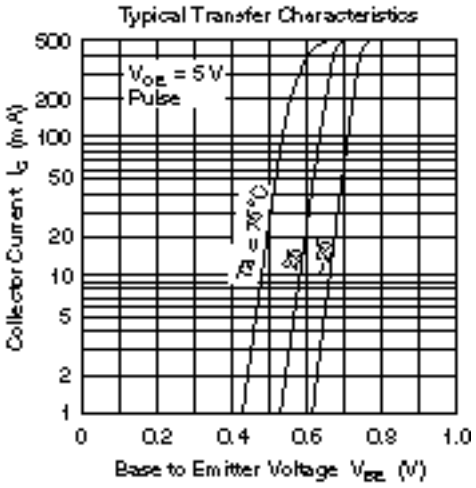
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	180	—	—	V	I_C = 1 mA, I_E = 0
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	160	—	—	V	I_C = 10 mA, R_{BE} = ∞
Emitter to base breakdown voltage	$V_{(BR)EBO}$	5	—	—	V	I_E = 1 mA, I_C = 0
Collector cutoff current	I_{CBO}	—	—	10	µA	V_{CB} = 160 V, I_E = 0
DC current transfer ratio	h_{FE1}*[1]	60	—	200		V_{CE} = 5 V, I_C = 0.15 A
	h_{FE2}	30	—	—		V_{CE} = 5 V, I_C = 0.5 A
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	1.0	V	I_C = 0.5 A, I_B = 50 mA, Pulse
Base to emitter voltage	V_{BE}	—	—	0.9	V	V_{CE} = 5 V, I_C = 0.15 A, Pulse

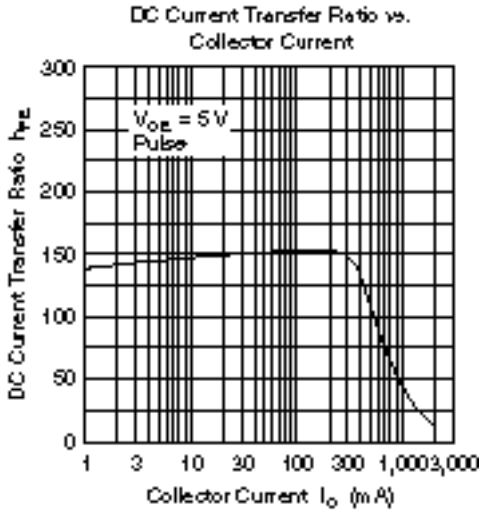
Note: 1. The 2SD1421 is grouped by h_{FE1} as follows.

Mark	ED	EE
h_{FE1}	60 to 120	100 to 200

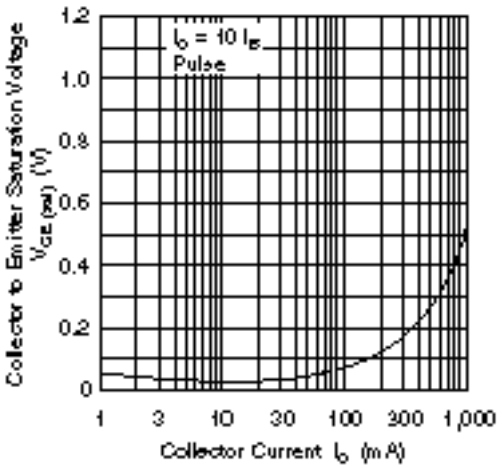

Maximum Collector Dissipation Curve
Collector Power Dissipation Pc (W)
(on the alumina ceramic board)
1.2
0.8
0.4
0
50
100
150
Ambient Temperature Ta (°C)


Typical Output Characteristics
Pulse
Collector Current Ic (A)
1.0
0.9
0.6
0.4
0.2
2.5
2.0
1.5
1.0
0.5 mA
IB = 0
0
10
20
30
40
50
Collector to Emitter Voltage VCE (V)

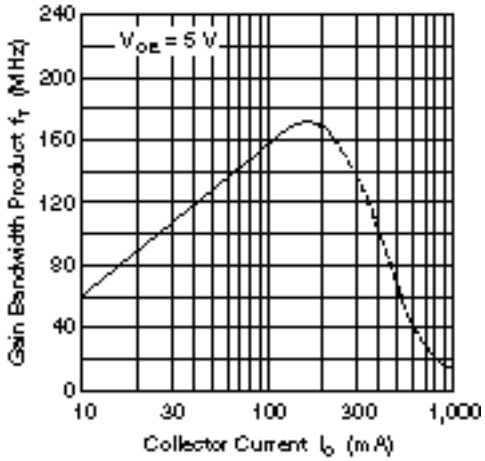

Typical Transfer Characteristics
VCE = 5 V
Pulse
Collector Current Ic (mA)
500
200
100
50
20
10
5
2
1
Ta = 75°C
25
−25
0
0.2
0.4
0.6
0.8
1.0
Base to Emitter Voltage VBE (V)


DC Current Transfer Ratio vs.
Collector Current
VCE = 5 V
Pulse
DC Current Transfer Ratio hFE
300
250
200
150
100
50
0
1
3
10
30
100
300
1,000
3,000
Collector Current Io (mA)

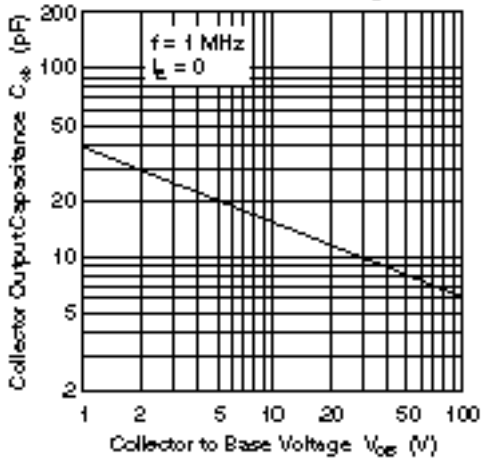
Collector to Emitter Saturation Voltage vs. Collector Current



Gain Bandwidth Product vs. Collector Current



Collector Output Capacitance vs. Collector to Base Voltage



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