2SD2213

Silicon NPN Epitaxial, Darlington

HITACHI

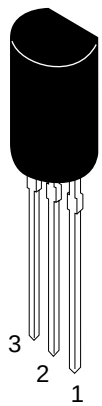
ADE-208-1165 (Z)
1st. Edition
Mar. 2001

Application

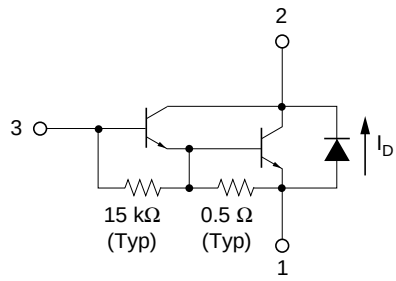
Low frequency power amplifier

Outline

TO-92MOD



1. Emitter
2. Collector
3. Base



Hitachi semiconductor

Absolute Maximum Ratings (Ta = 25°C)

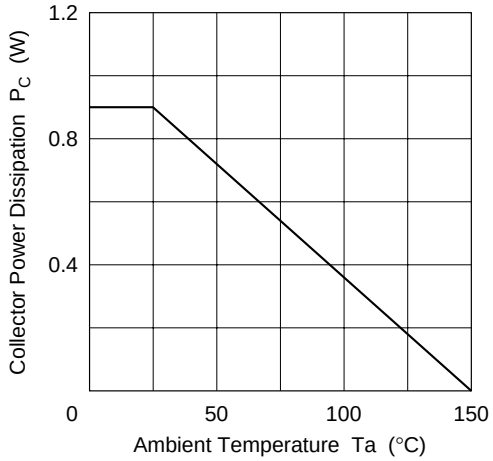
Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	150	V
Collector to emitter voltage	V_{CEO}	80	V
Emitter to base voltage	V_{EBO}	8	V
Collector current	I_C	1.5	A
Collector peak current	$ic_{(peak)}$	3	A
Collector power dissipation	P_C	0.9	W
Junction temperature	Tj	150	°C
Storage temperature	Tstg	–55 to +150	°C
E to C diode forward current	I_D	1.5	A

Electrical Characteristics (Ta = 25°C)

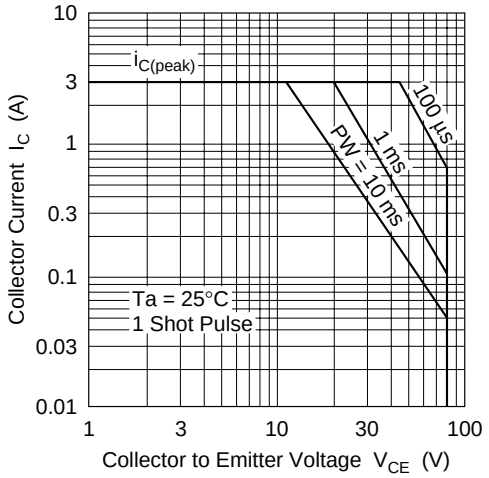
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	150	—	—	V	I_C = 1 mA, I_E = 0
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	80	—	—	V	I_C = 10 mA, R_{BE} = ∞
Emitter to base breakdown voltage	$V_{(BR)EBO}$	8	—	—	V	I_E = 50 mA, I_C = 0
Collector cutoff current	I_{CBO}	—	—	5.0	µA	V_{CB} = 120 V, I_E = 0
	I_{CEO}	—	—	5.0	µA	V_{CE} = 65 V, I_E = ∞
DC current transfer ratio	h_{FE}	2000	—	—		V_{CE} = 2 V, I_C = 0.15 A*[1]
	h_{FE}	5000	—	30000		V_{CE} = 2 V, I_C = 1 A*[1]
	h_{FE}	1000	—	—		V_{CE} = 2 V, I_C = 1.5 A*[1]
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	1.5	V	I_C = 1 A*[1], I_B = 1 mA
Base to emitter saturation voltage	$V_{BE(sat)}$	—	—	2.0	V	I_C = 1 A*[1], I_B = 1 mA
E to C diode forward voltage	V_D	—	—	3.0	V	I_D = 1.5 A*[1]

Note: 1. Pulse test

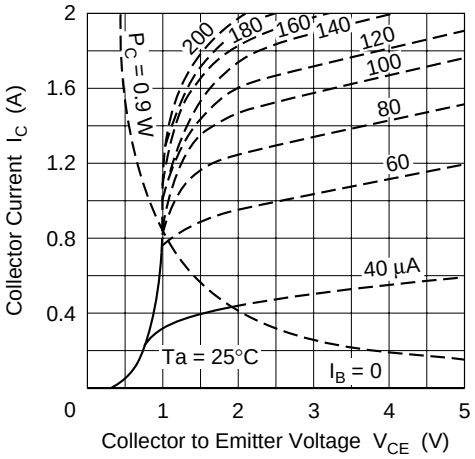
Maximum Collector Dissipation Curve



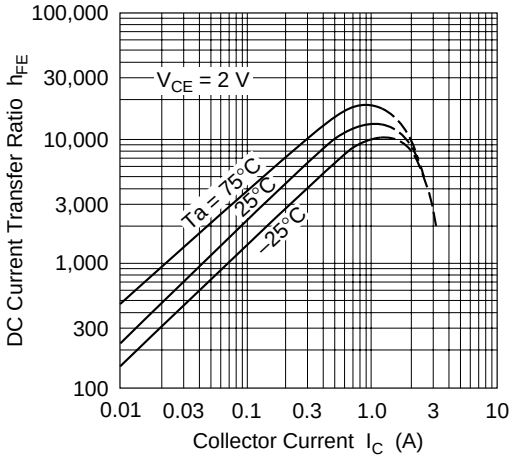
Area of Safe Operation

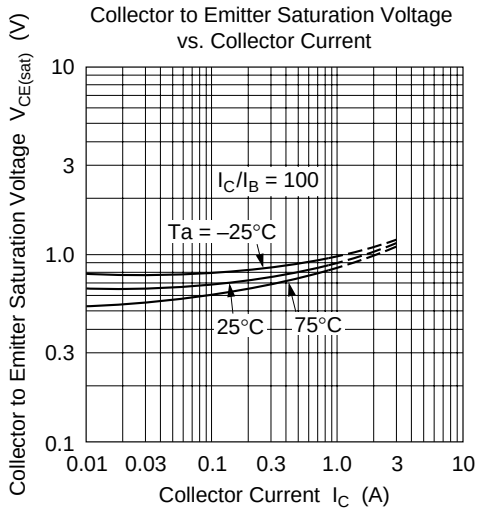


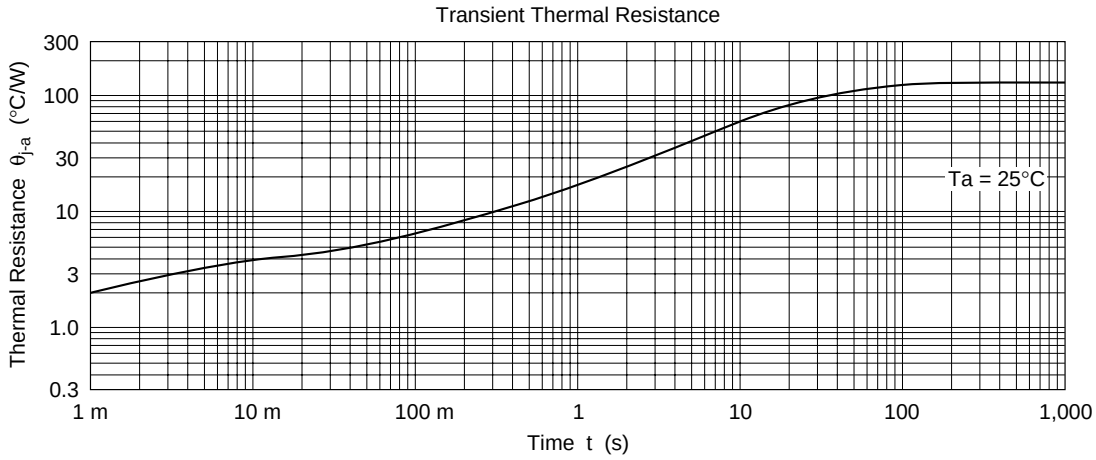
Typical Output Characteristics



DC Current Transfer Ratio vs. Collector Current



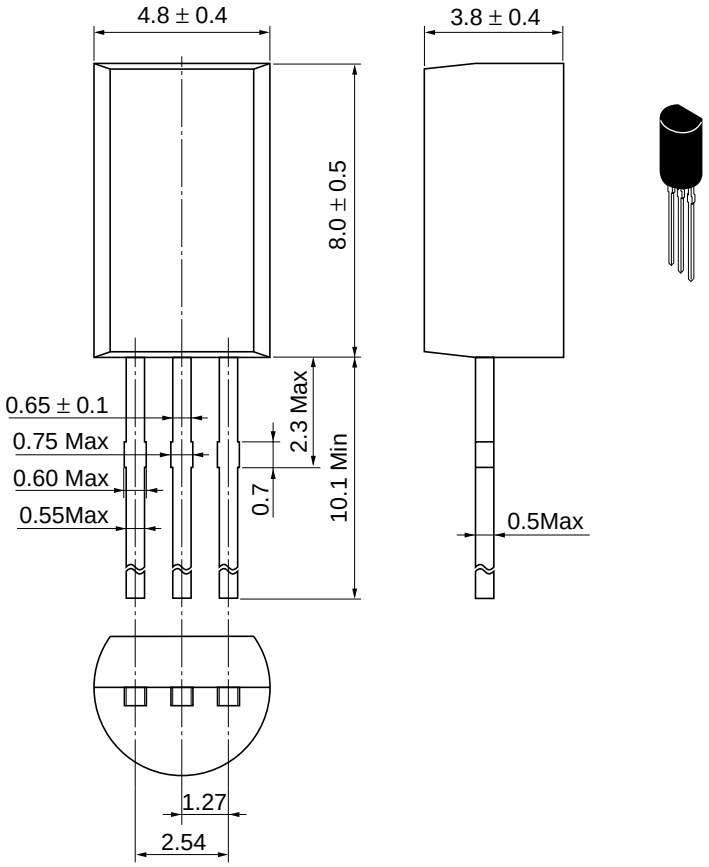

Collector to Emitter Saturation Voltage
vs. Collector Current
Collector to Emitter Saturation Voltage $V_{CE(sat)}$ (V)
10
3
1.0
0.3
0.1
I_C/I_B = 100
Ta = –25°C
25°C
75°C
0.01
0.03
0.1
0.3
1.0
3
10
Collector Current I_C (A)


Transient Thermal Resistance
Thermal Resistance θ_{j-a} (°C/W)
300
100
30
10
3
1.0
0.3
Ta = 25°C
1 m
10 m
100 m
1
10
100
1,000
Time t (s)

Package Dimensions

As of January, 2001

Unit: mm



Hitachi Code	TO-92 Mod
JEDEC	—
EIAJ	Conforms
Mass (reference value)	0.35 g

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