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# 2SD1470

Silicon NPN Epitaxial, Darlington

# HITACHI

ADE-208-1153 (Z)  
1st. Edition  
Mar. 2001

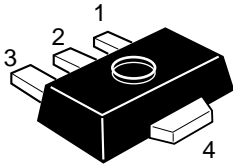
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## Application

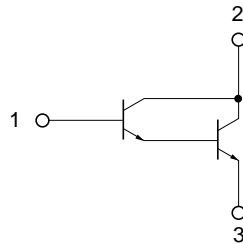
Low frequency power amplifier

## Outline

UPAK



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



**Absolute Maximum Ratings** ( $T_a = 25^\circ\text{C}$ )

Item	Symbol	Ratings	Unit
Collector to base voltage	$V_{\text{CBO}}$	60	V
Collector to emitter voltage	$V_{\text{CEO}}$	60	V
Emitter to base voltage	$V_{\text{EBO}}$	7	V
Collector current	$I_{\text{C}}$	1	A
Collector peak current	$i_{\text{C(peak)}}^{*1}$	2	A
Collector power dissipation	$P_{\text{C}}^{*2}$	1	W
Junction temperature	$T_{\text{j}}$	150	$^\circ\text{C}$
Storage temperature	$T_{\text{stg}}$	-55 to +150	$^\circ\text{C}$

Notes: 1.  $PW \leq 10$  ms, Duty cycle  $\leq 20\%$

2. Value on the alumina ceramic board (12.5 x 30 x 0.7 mm)

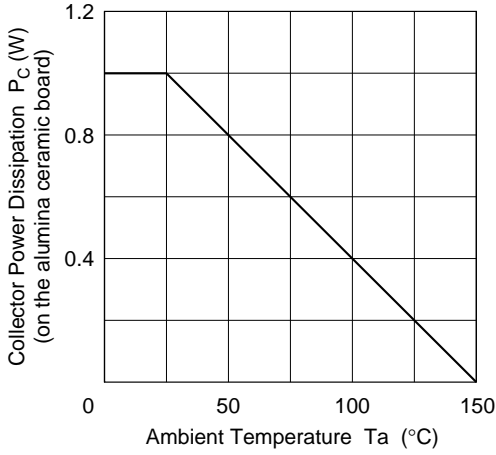
**Electrical Characteristics** ( $T_a = 25^\circ\text{C}$ )

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(\text{BR})\text{CBO}}$	60	—	—	V	$I_{\text{C}} = 10 \mu\text{A}$ , $I_{\text{E}} = 0$
Collector to emitter breakdown voltage	$V_{(\text{BR})\text{CEO}}$	60	—	—	V	$I_{\text{C}} = 1 \text{ mA}$ , $R_{\text{BE}} = \infty$
Emitter to base breakdown voltage	$V_{(\text{BR})\text{EBO}}$	7	—	—	V	$I_{\text{E}} = 10 \mu\text{A}$ , $I_{\text{C}} = 0$
Collector cutoff current	$I_{\text{CBO}}$	—	—	10	$\mu\text{A}$	$V_{\text{CB}} = 60 \text{ V}$ , $I_{\text{E}} = 0$
Emitter cutoff current	$I_{\text{EBO}}$	—	—	10	$\mu\text{A}$	$V_{\text{EB}} = 7 \text{ V}$ , $I_{\text{C}} = 0$
DC current transfer ratio	$h_{\text{FE}}$	2000	—	100000		$V_{\text{CE}} = 3 \text{ V}$ , $I_{\text{C}} = 0.5 \text{ A}^{*1}$
Collector to emitter saturation voltage	$V_{\text{CE(sat)}}$	—	—	1.5	V	$I_{\text{C}} = 500 \text{ mA}$ , $I_{\text{B}} = 0.5 \text{ mA}^{*1}$
Base to emitter saturation voltage	$V_{\text{BE(sat)}}$	—	—	2.0	V	$I_{\text{C}} = 500 \text{ mA}$ , $I_{\text{B}} = 0.5 \text{ mA}^{*1}$

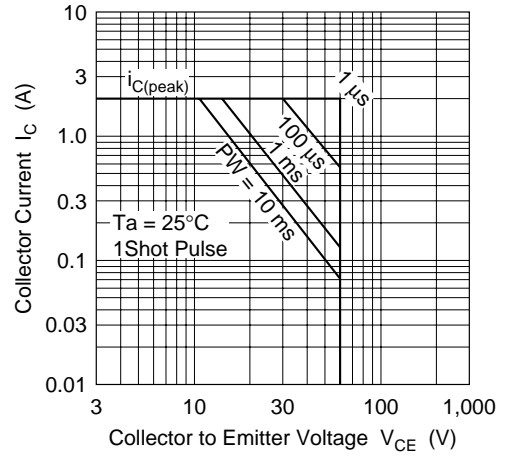
Notes: 1. Pulse test

2. Marking is "AT".

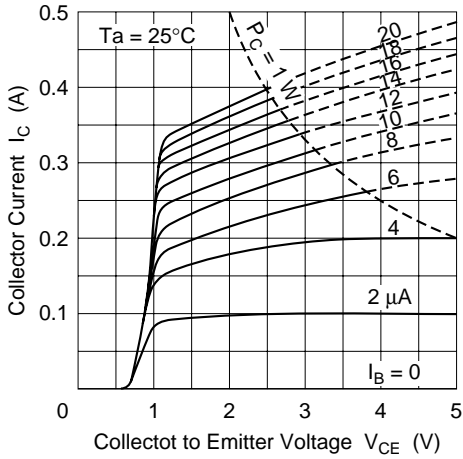
Maximum Collector Dissipation Curve



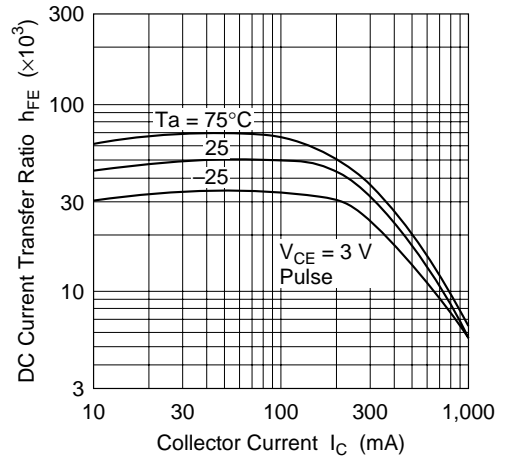
Area of Safe Operation



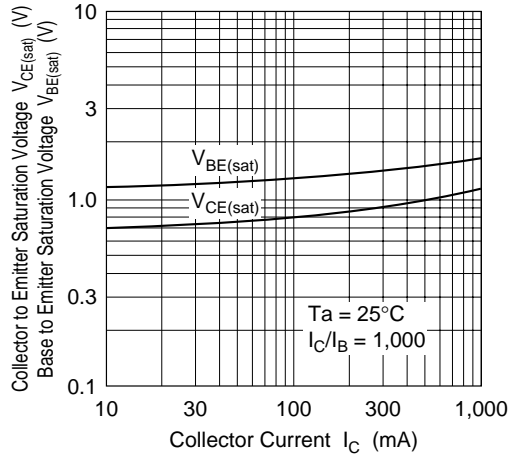
Typical Output Characteristics



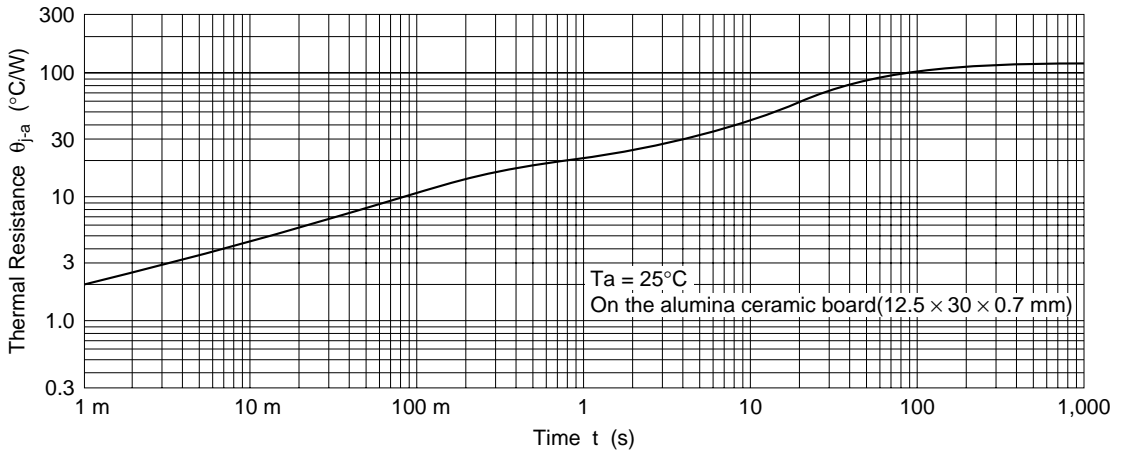
DC Current Transfer Ratio vs. Collector Current



Saturation Voltage vs. Collector Current

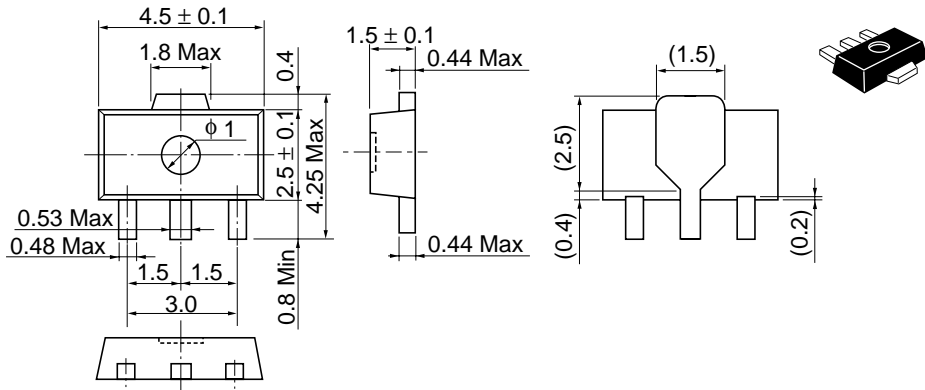


Transient Thermal Resistance



Package Dimensions

As of January, 2001  
Unit: mm



Hitachi Code	UPAK
JEDEC	—
EIAJ	Conforms
Mass (reference value)	0.050 g

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