
2SD1138

Silicon NPN Triple Diffused

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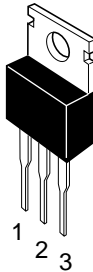
ADE-208-908 (Z)
1st. Edition
Sep. 2000

Application

Low frequency high voltage power amplifier TV vertical deflection output complementary pair with 2SB861

Outline

TO-220AB



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

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

Item	Symbol	Rating	Unit
Collector to base voltage	V_{CBO}	200	V
Collector to emitter voltage	V_{CEO}	150	V
Emitter to base voltage	V_{EBO}	6	V
Collector current	I_{C}	2	A
Collector peak current	$I_{\text{C (peak)}}$	5	A
Collector power dissipation	P_{C}	1.8	W
	P_{C}^{*1}	30	W
Junction temperature	T_{j}	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-45 to +150	$^\circ\text{C}$

Note: 1. Value at $T_{\text{C}} = 25^\circ\text{C}$.

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

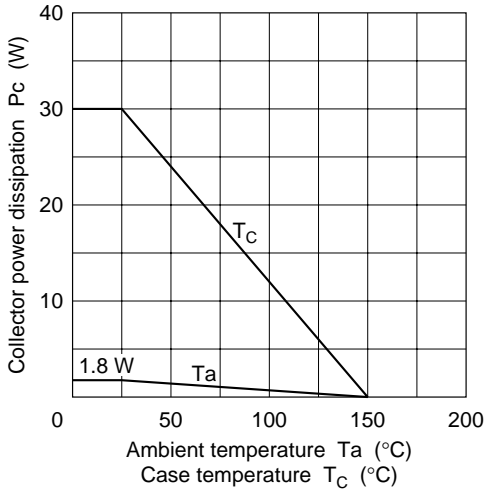
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to emitter breakdown voltage	$V_{(\text{BR})\text{CEO}}$	150	—	—	V	$I_{\text{C}} = 50 \text{ mA}$, $R_{\text{BE}} = \infty$
Emitter to base breakdown voltage	$V_{(\text{BR})\text{EBO}}$	6	—	—	V	$I_{\text{E}} = 5 \text{ mA}$, $I_{\text{C}} = 0$
Collector cutoff current	I_{CBO}	—	—	1	μA	$V_{\text{CB}} = 120 \text{ V}$, $I_{\text{E}} = 0$
DC current transfer ratio	h_{FE1}^{*1}	60	—	320		$V_{\text{CE}} = 4 \text{ V}$, $I_{\text{C}} = 50 \text{ mA}$
	h_{FE2}	60	—	—		$V_{\text{CE}} = 10 \text{ V}$, $I_{\text{C}} = 500 \text{ mA}^{*2}$
Collector to emitter saturation voltage	$V_{\text{CE (sat)}}$	—	—	3.0	V	$I_{\text{C}} = 500 \text{ mA}$, $I_{\text{B}} = 50 \text{ mA}^{*2}$
Base to emitter voltage	V_{BE}	—	—	1.0	V	$V_{\text{CB}} = 4 \text{ V}$, $I_{\text{C}} = 50 \text{ mA}$
Collector output capacitance	C_{ob}	—	20	—	pF	$V_{\text{CB}} = 100 \text{ V}$, $I_{\text{E}} = 0$, $f = 1 \text{ MHz}$

Note: 1. The 2SD1138 is grouped by h_{FE1} as follows.

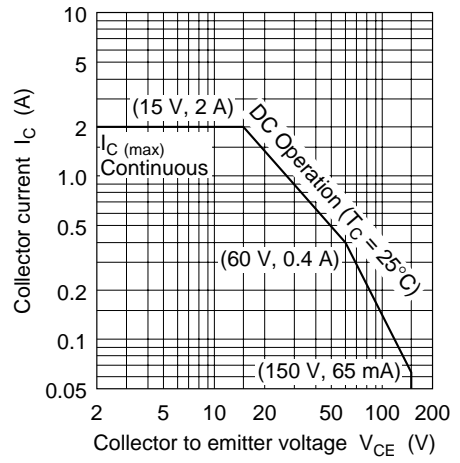
2. Pulse test.

B	C	D
60 to 120	100 to 200	160 to 320

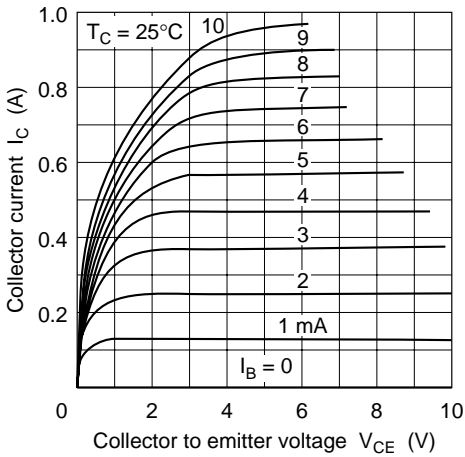
Maximum Collector Dissipation Curve



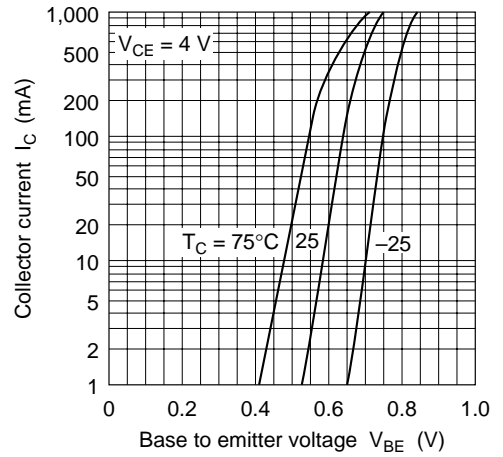
Area of Safe Operation



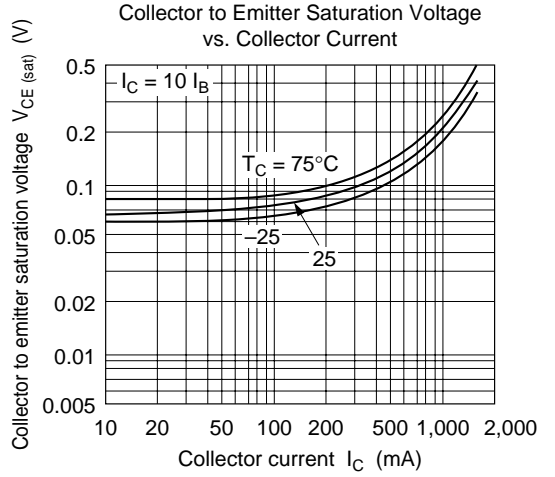
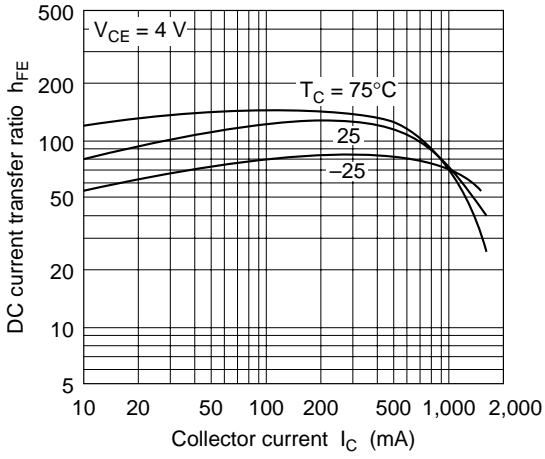
Typical Output Characteristics



Typical Transfer Characteristics

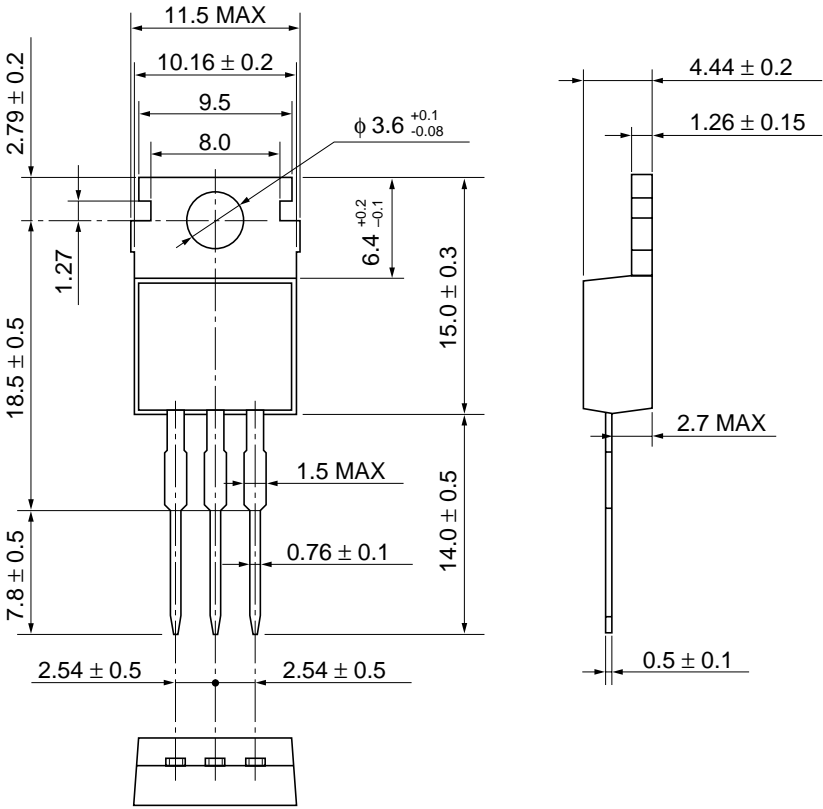


DC Current Transfer Ratio vs. Collector Current



Package Dimensions

Unit: mm



Hitachi Code	TO-220AB
JEDEC	Conforms
EIAJ	Conforms
Mass (reference value)	1.8 g

Cautions

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