

2SD1978

Silicon NPN Epitaxial, Darlington

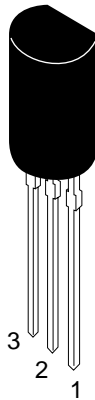
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Application

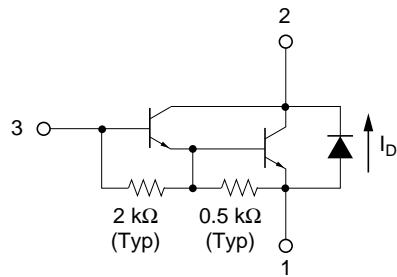
- Low frequency power amplifier
- Complementary pair with 2SB1387

Outline

TO-92MOD



1. Emitter
2. Collector
3. Base



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

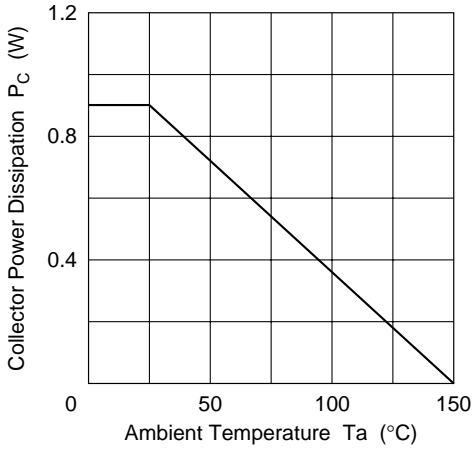
Item	Symbol	Rated	Unit
Collector to base voltage	V_{CBO}	120	V
Collector to emitter voltage	V_{CEO}	120	V
Emitter to base voltage	V_{EBO}	7	V
Collector current	I_{C}	1.5	A
Collector peak current	$i_{\text{C (peak)}}$	3.0	A
Collector power dissipation	P_{C}	0.9	W
Junction temperature	T_{j}	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$
E to C diode forward current	I_{D}	1.5	A

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

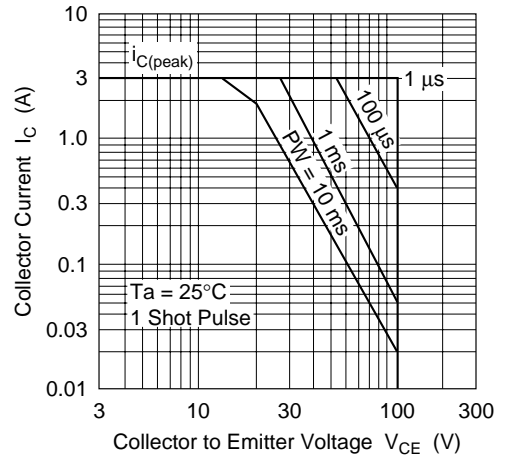
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(\text{BR})\text{CBO}}$	120	—	—	V	$I_{\text{C}} = 0.1 \text{ mA}, I_{\text{E}} = 0$
Collector to emitter breakdown voltage	$V_{(\text{BR})\text{CEO}}$	120	—	—	V	$I_{\text{C}} = 10 \text{ mA}, R_{\text{BE}} = \infty$
Emitter to base breakdown voltage	$V_{(\text{BR})\text{EBO}}$	7	—	—	V	$I_{\text{E}} = 50 \text{ mA}, I_{\text{C}} = 0$
Collector cutoff current	I_{CBO}	—	—	1.0	μA	$V_{\text{CB}} = 100 \text{ V}, I_{\text{E}} = 0$
	I_{CEO}	—	—	10	μA	$V_{\text{CE}} = 100 \text{ V}, R_{\text{BE}} = \infty$
DC current transfer ratio	h_{FE}	2000	—	30000		$V_{\text{CE}} = 3 \text{ V}, I_{\text{C}} = 1 \text{ A}^{*1}$
Collector to emitter saturation voltage	$V_{\text{CE(sat)1}}$	—	—	1.5	V	$I_{\text{C}} = 1 \text{ A}, I_{\text{B}} = 1 \text{ mA}^{*1}$
	$V_{\text{CE(sat)2}}$	—	—	2.0	V	$I_{\text{C}} = 1.5 \text{ A}, I_{\text{B}} = 1.5 \text{ mA}^{*1}$
Base to emitter saturation voltage	$V_{\text{BE(sat)1}}$	—	—	2.0	V	$I_{\text{C}} = 1 \text{ A}, I_{\text{B}} = 1 \text{ mA}^{*1}$
	$V_{\text{BE(sat)2}}$	—	—	2.5	V	$I_{\text{C}} = 1.5 \text{ A}, I_{\text{B}} = 1.5 \text{ mA}^{*1}$
E to C diode forward voltage	V_{D}	—	—	3.0	V	$I_{\text{D}} = 1.5 \text{ A}^{*1}$

Note: 1. Pulse test

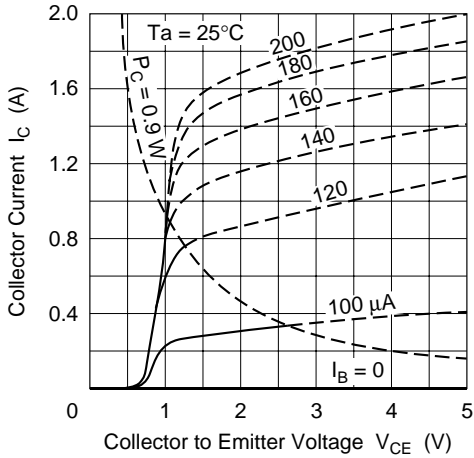
Maximum Collector Dissipation Curve



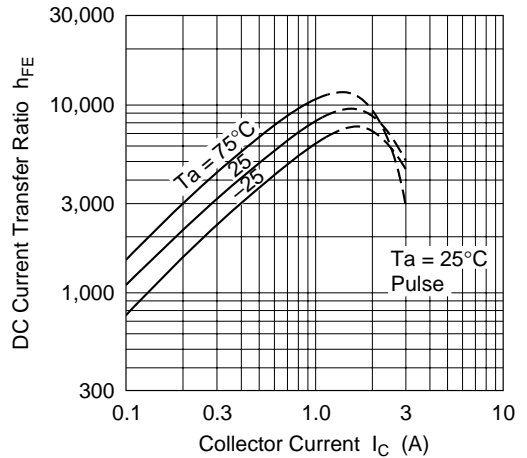
Area of Safe Operation

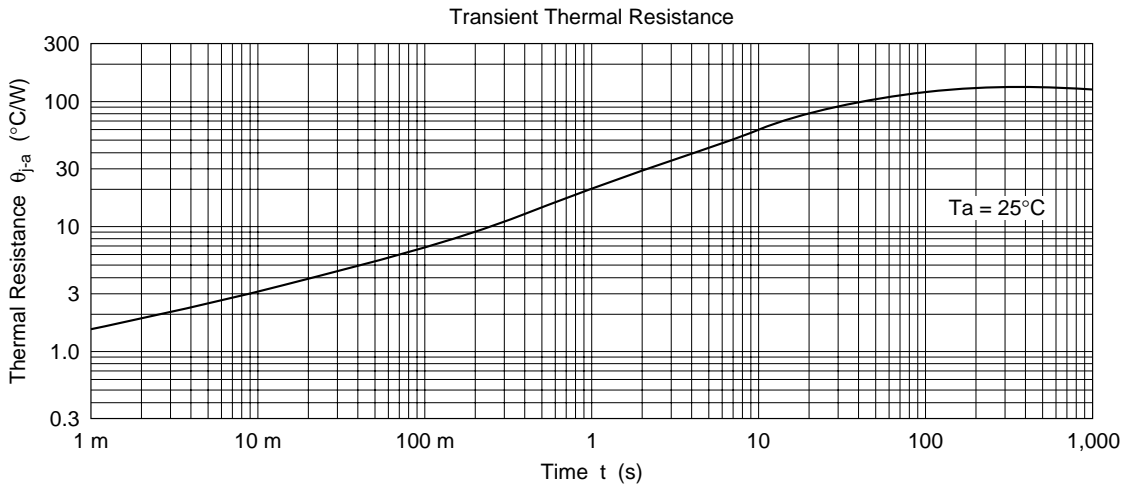
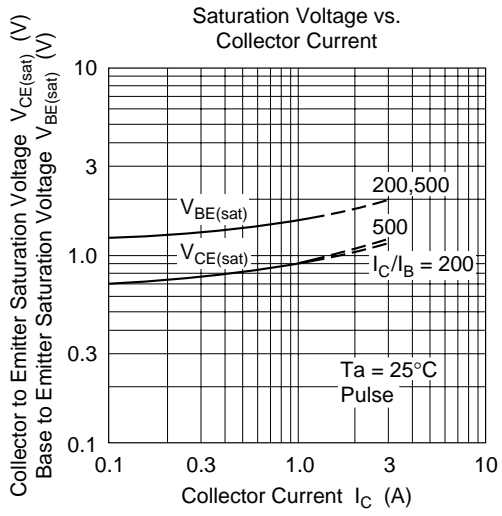


Typical Output Characteristics



DC Current Transfer Ratio vs. Collector Current







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

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