

# 2SD2019

Silicon NPN Epitaxial

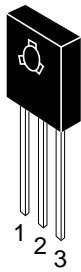
# HITACHI

## Application

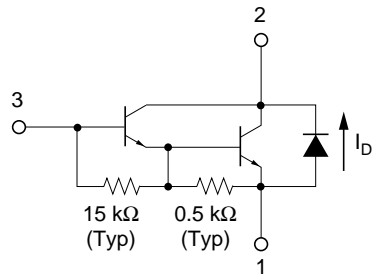
Low frequency power amplifier

## Outline

TO-126 MOD



- 1. Emitter
- 2. Collector
- 3. Base



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

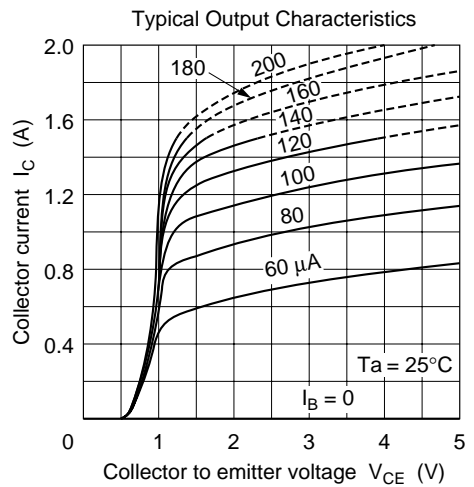
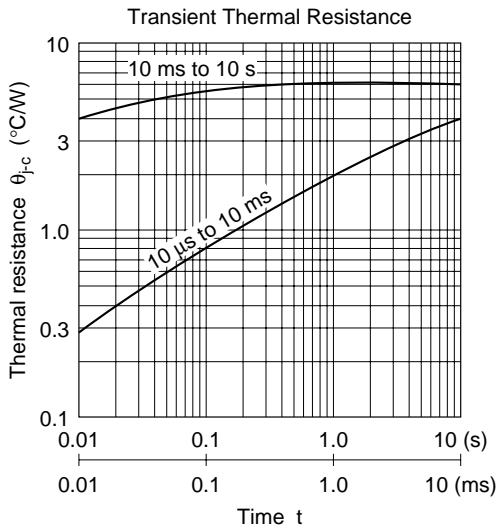
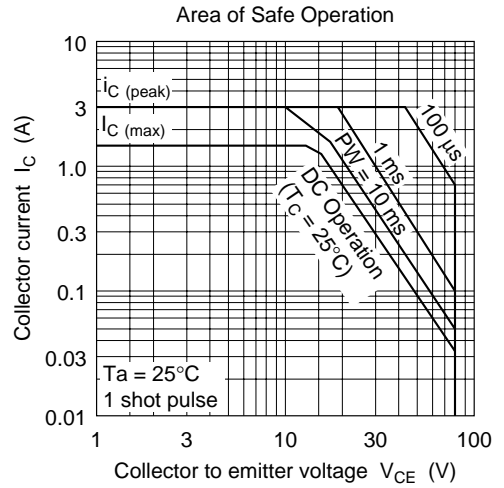
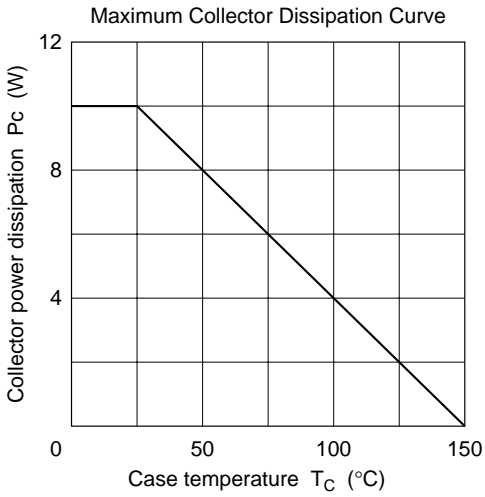
Item	Symbol	Ratings	Unit
Collector to base voltage	$V_{\text{CBO}}$	150	V
Collector to emitter voltage	$V_{\text{CEO}}$	80	V
Emitter to base voltage	$V_{\text{EBO}}$	8	V
Collector current	$I_{\text{C}}$	1.5	A
Collector peak current	$I_{\text{C(peak)}}$	3	A
Collector power dissipation	$P_{\text{C}}^{*1}$	10	W
Junction temperature	$T_{\text{j}}$	150	$^\circ\text{C}$
Storage temperature	$T_{\text{stg}}$	-55 to +150	$^\circ\text{C}$
C to E diode forward current	$I_{\text{D}}^{*1}$	1.5	A

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

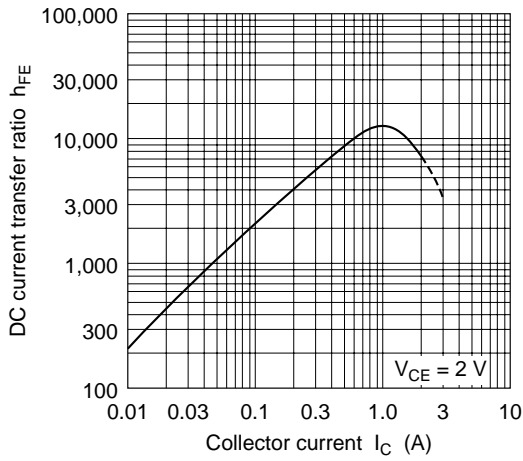
**Electrical Characteristics** ( $T_a = 25^\circ\text{C}$ )

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(\text{BR})\text{CBO}}$	150	—	—	V	$I_{\text{C}} = 1 \text{ mA}, I_{\text{E}} = 0$
Collector to emitter breakdown voltage	$V_{(\text{BR})\text{CEO}}$	80	—	—	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	$I_{\text{CBO}}$	—	—	5	$\mu\text{A}$	$V_{\text{CB}} = 120 \text{ V}, I_{\text{E}} = 0$
	$I_{\text{CEO}}$	—	—	5	$\mu\text{A}$	$V_{\text{CE}} = 65 \text{ V}, R_{\text{BE}} = \infty$
DC current transfer ratio	$h_{\text{FE}}$	2000	—	—		$V_{\text{CE}} = 2 \text{ V}, I_{\text{C}} = 0.15 \text{ A}^{*1}$
	$h_{\text{FE}}$	5000	—	30000		$V_{\text{CE}} = 2 \text{ V}, I_{\text{C}} = 1 \text{ A}^{*1}$
	$h_{\text{FE}}$	1000	—	—		$V_{\text{CE}} = 2 \text{ V}, I_{\text{C}} = 1.5 \text{ A}^{*1}$
Collector to emitter saturation voltage	$V_{\text{CE(sat)}}$	—	—	1.5	V	$I_{\text{C}} = 1 \text{ A}, I_{\text{B}} = 1 \text{ mA}^{*1}$
Base to emitter saturation voltage	$V_{\text{BE(sat)}}$	—	—	2.0	V	$I_{\text{C}} = 1 \text{ A}, I_{\text{B}} = 1 \text{ mA}^{*1}$
C to E diode forward voltage	$V_{\text{D}}$	—	—	3.0	V	$I_{\text{D}} = 1.5 \text{ A}^{*1}$

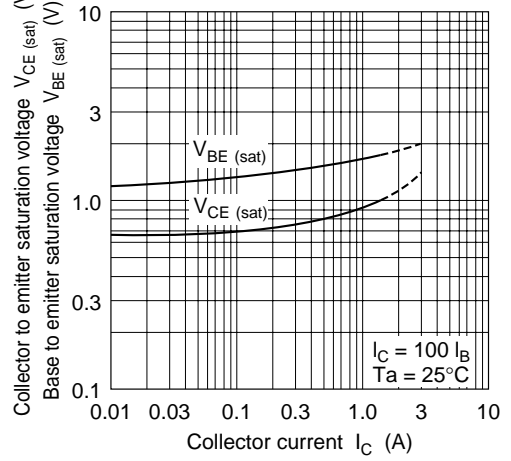
Note: 1. Pulse test.



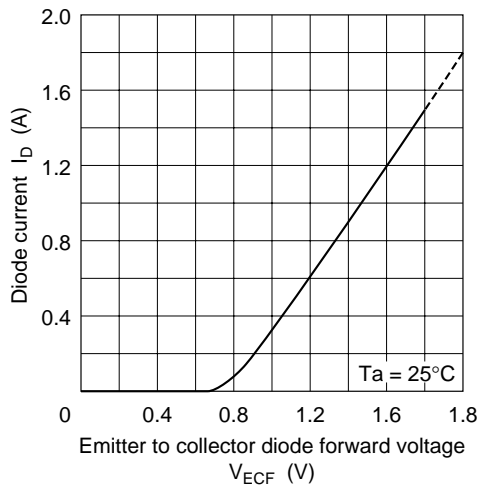
DC Current Transfer Ratio vs. Collector Current

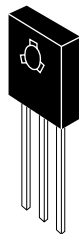
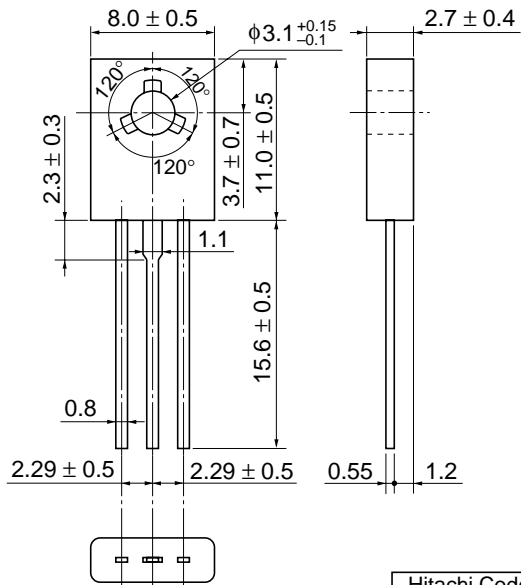


Saturation Voltage vs. Collector Current



Typical Characteristics of Emitter to Collector Diode





Hitachi Code	TO-126 Mod
JEDEC	—
EIAJ	—
Weight (reference value)	0.67 g

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