
2SA1193(K)

Silicon PNP Epitaxial, Darlington

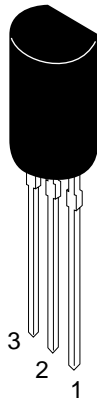
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Application

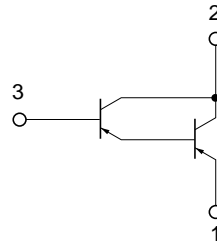
High gain amplifier

Outline

TO-92MOD



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



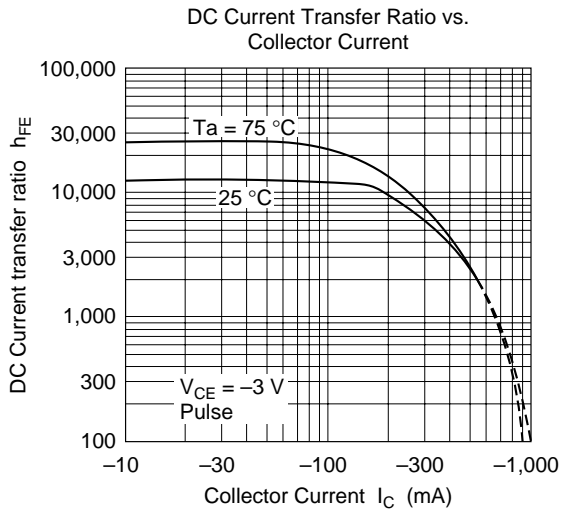
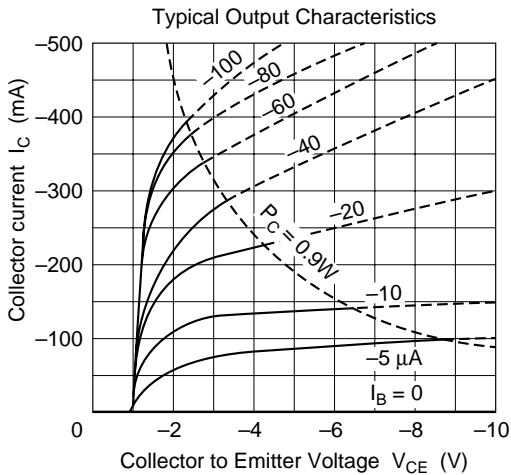
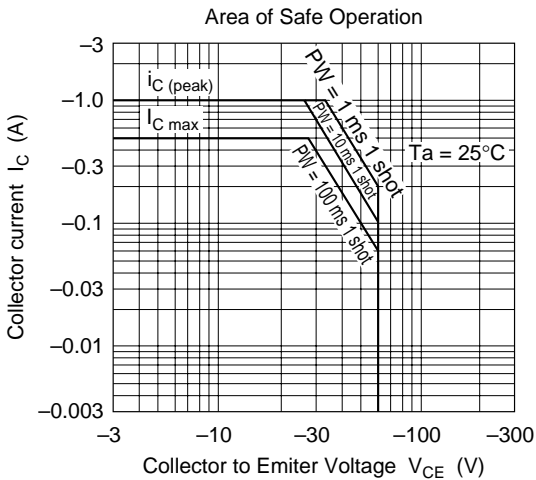
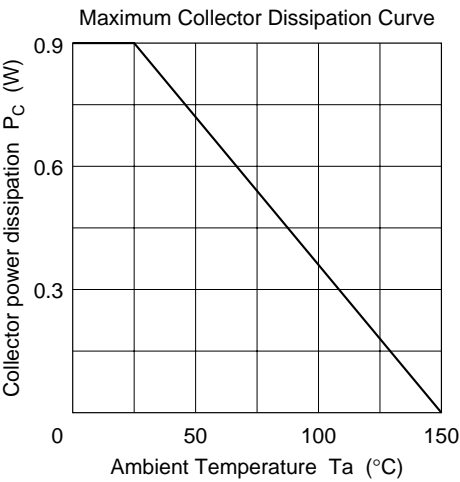
Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	-60	V
Collector to emitter voltage	V_{CEO}	-60	V
Emitter to base voltage	V_{EBO}	-7	V
Collector current	I_C	-0.5	A
Collector peak current	$i_{C(peak)}$	-1.0	A
Collector power dissipation	P_C	0.9	W
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

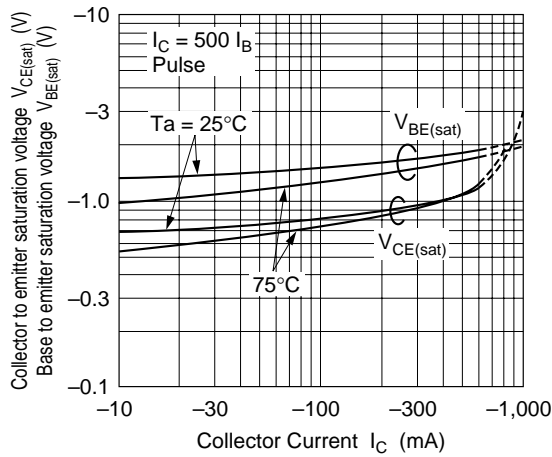
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	-60	—	—	V	$I_C = -1\text{ mA}$, $R_{BE} = \infty$
Collector cutoff current	I_{CBO}	—	—	-1.0	μA	$V_{CB} = -60\text{ V}$, $I_E = 0$
Emitter cutoff current	I_{EBO}	—	—	-1.0	μA	$V_{EB} = -7\text{ V}$, $I_C = 0$
DC current transfer ratio	h_{FE}	2000	—	—		$V_{CE} = -3\text{ V}$, $I_C = -250\text{ mA}^{*1}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	-1.5	V	$I_C = -250\text{ mA}$, $I_B = -0.5\text{ mA}^{*1}$
Base to emitter saturation voltage	$V_{BE(sat)}$	—	—	-2.0	V	
Turn on time	t_{on}	—	0.3	—	μs	$I_C = -250\text{ mA}$
Turn off time	t_{off}	—	0.9	—	μs	$I_{B1} = -I_{B2} = -0.5\text{ mA}$

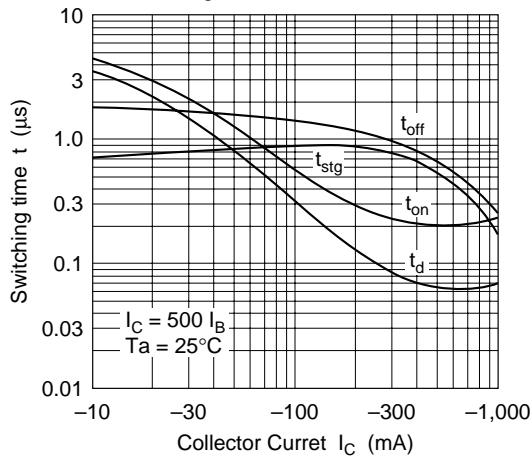
Note: 1. Pulse test



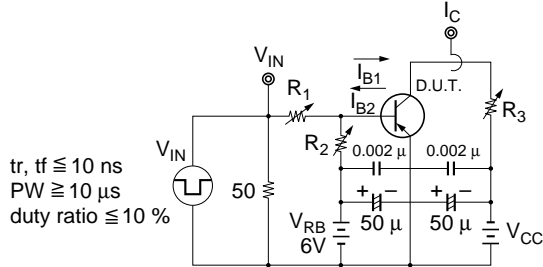
Saturation Voltage vs.
Collector Current



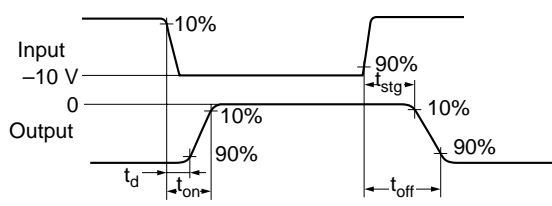
Switching Time vs. Collector Current

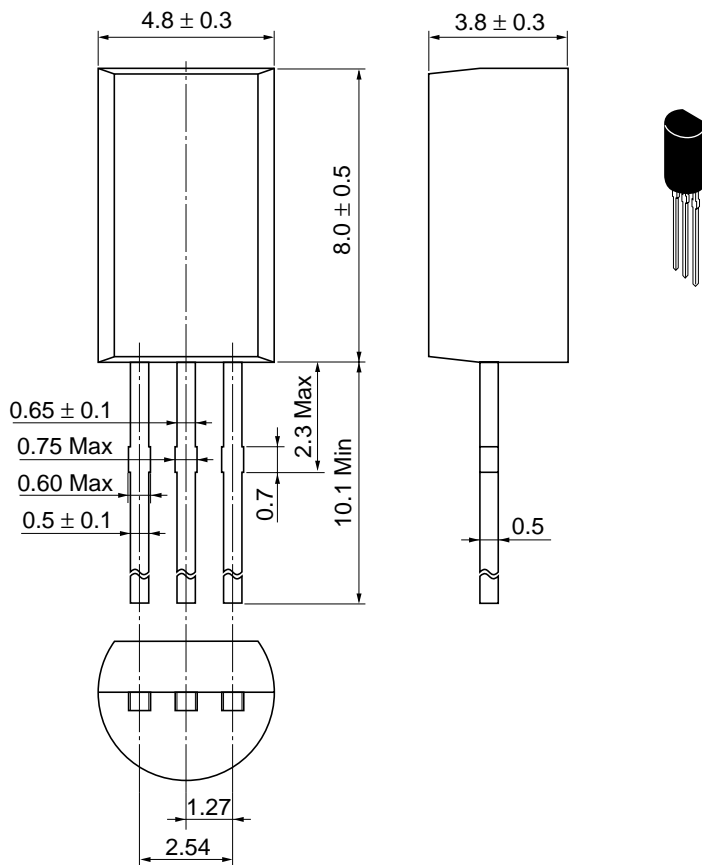


Switching Time Test Circuit



Response Waveform





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

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