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# 2SA1960

Silicon NPN Epitaxial

# HITACHI

ADE-208-392  
1st. Edition

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## Application

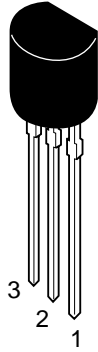
- Wide band video output amplifier for color CRT monitor.
- High frequency high voltage amplifier.
- High speed power switching.
- Complementary pair with 2SC5225.

## Features

- High voltage large current operation.  
 $V_{CEO} = -80 \text{ V}$ ,  $I_C = -300 \text{ mA}$
- High  $f_T$ .  
 $f_T = 1.3 \text{ GHz}$
- Small output capacitance.  
 $C_{ob} = 2.9 \text{ pF}$

## Outline

TO-92 (1)



1. Emitter
2. Collector
3. Base

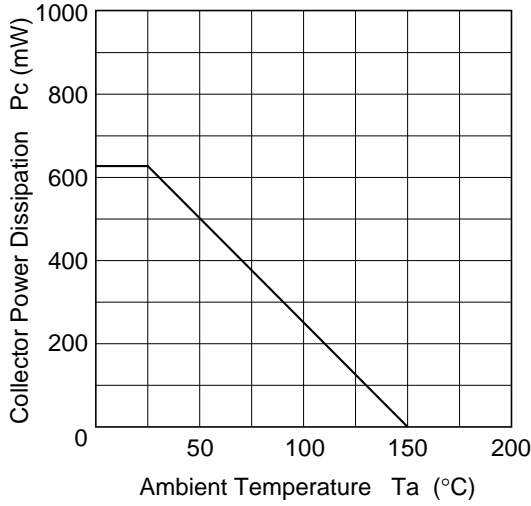
## Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

Item	Symbol	Ratings	Unit
Collector to base voltage	$V_{\text{CBO}}$	-80	V
Collector to emitter voltage	$V_{\text{CEO}}$	-80	V
Emitter to base voltage	$V_{\text{EBO}}$	-3	V
Collector current	$I_{\text{C}}$	-300	mA
Collector power dissipation	$P_{\text{C}}$	625	mW
Junction temperature	$T_{\text{j}}$	150	$^\circ\text{C}$
Storage temperature	$T_{\text{stg}}$	-55 to +150	$^\circ\text{C}$

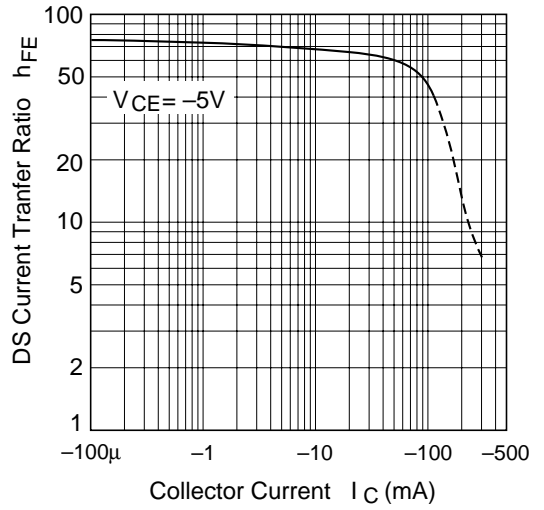
**Electrical Characteristics** (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	-80	—	—	V	$I_C = -100 \mu A$ $I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	-80	—	—	V	$I_C = -1 \text{ mA}$ $R_{BE} = \infty$
Collector to base cutoff current	$I_{CBO}$	—	—	-1.0	$\mu A$	$V_{CB} = -60 \text{ V}$ $I_E = 0$
Emitter to base cutoff current	$I_{EBO}$	—	—	-10	$\mu A$	$V_{EB} = -3 \text{ V}$ $I_C = 0$
DC current transfer ratio	$h_{FE}$	20	60	—		$V_{CE} = -5 \text{ V}$ , $I_C = -50 \text{ mA}$ Pulse test
Gain bandwidth product	$f_T$	1.1	1.3	—	GHz	$V_{CE} = -10 \text{ V}$ $I_C = -50 \text{ mA}$
Emitter input capacitance	$C_{ib}$	—	14.5	18	pF	$V_{EB} = 0$ , $I_C = 0$ $f = 1 \text{ MHz}$
Collector output capacitance	$C_{ob}$	—	2.9	4.0	pF	$V_{CB} = -10 \text{ V}$ , $I_E = 0$ $f = 1 \text{ MHz}$

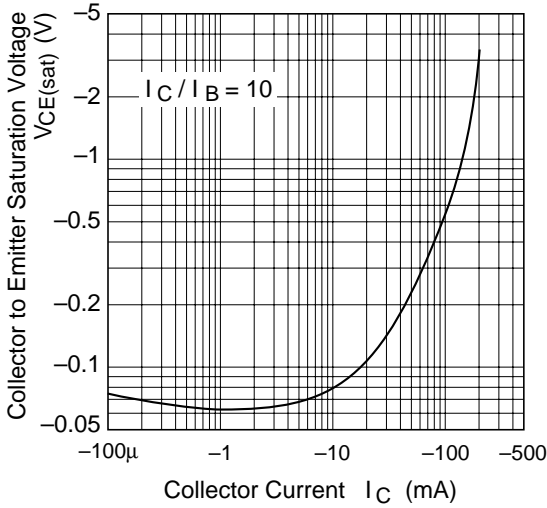
Collector Power Dissipation Curve



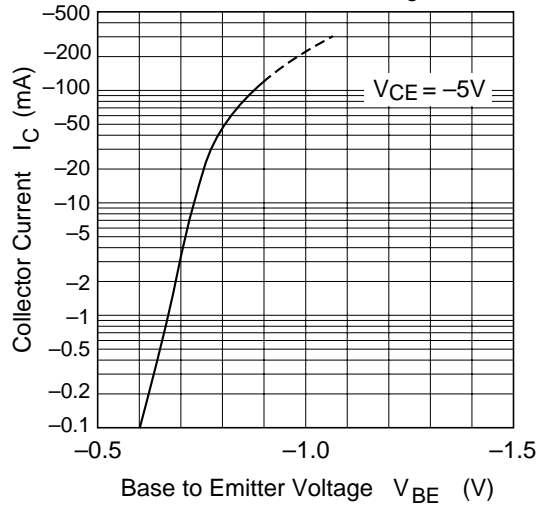
DC Current Transfer Ratio vs. Collector Current



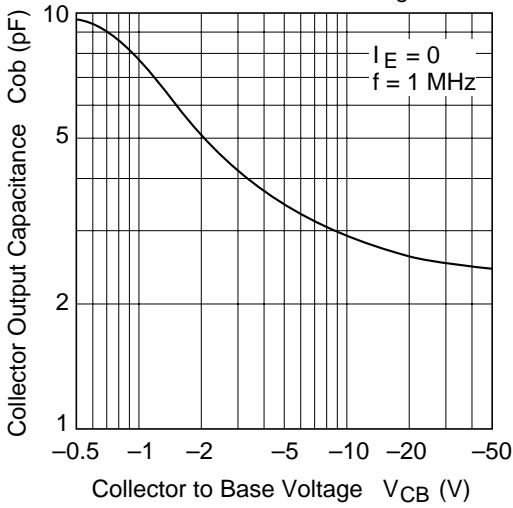
Collector to Emitter Saturation Voltage vs. Collector Current



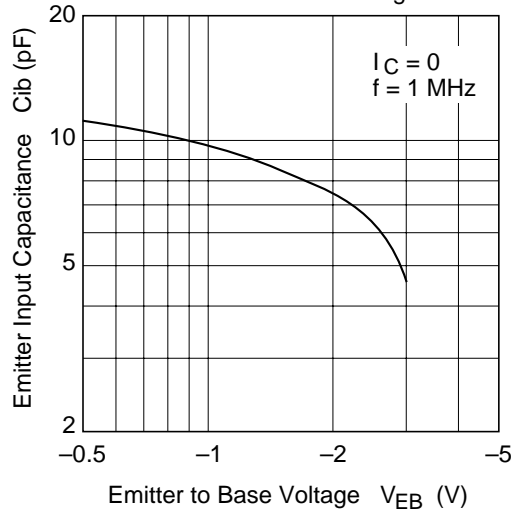
Collector Current vs. Base to Emitter Voltage



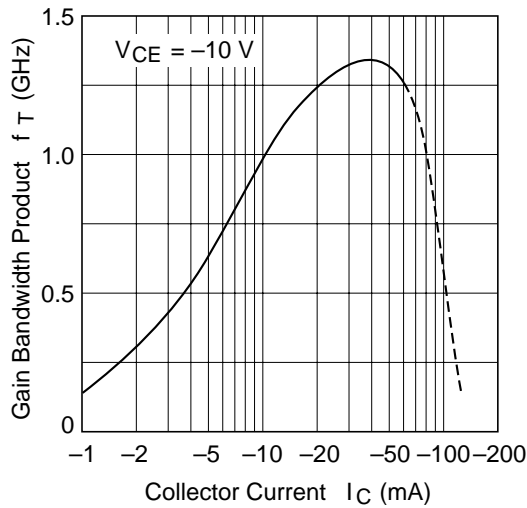
Collector Output Capacitance vs. Collector to Base Voltage

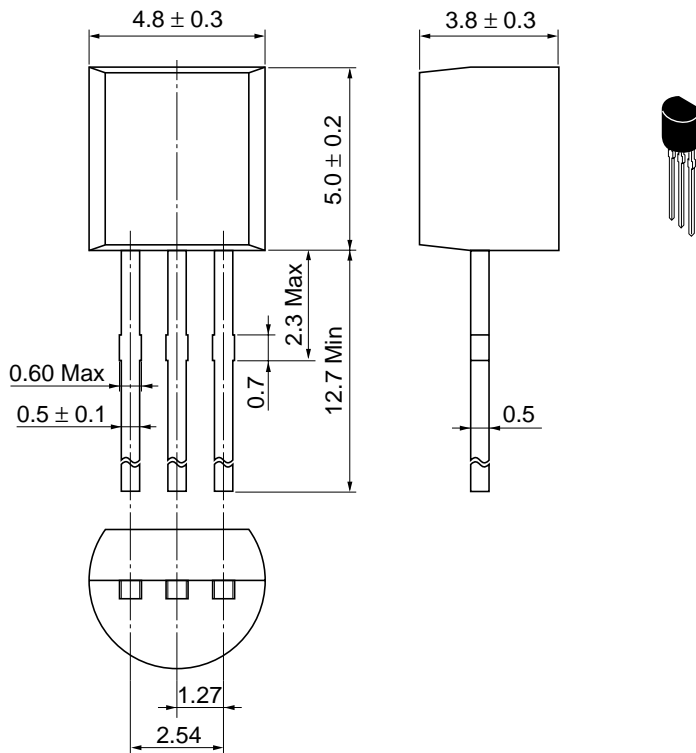


Emitter Input Capacitance vs. Emitter to Base Voltage



Gain Bandwidth Product vs. Collector Current





Hitachi Code	TO-92 (1)
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	0.25 g

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