

TOSHIBA Transistor Silicon PNP Triple Diffused Type

# 2SA1939

## Power Amplifier Applications

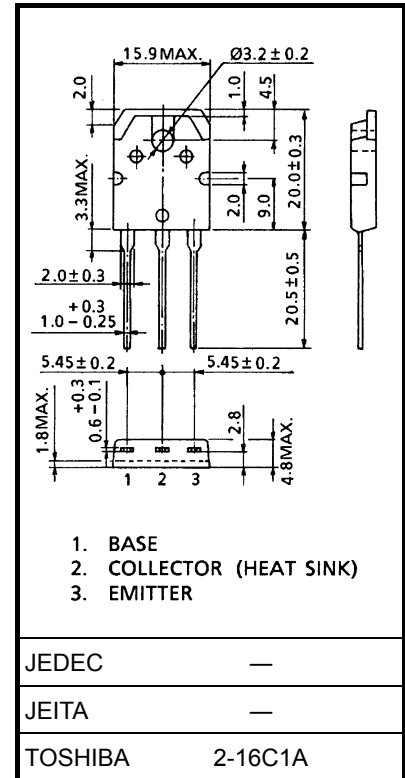
- Complementary to 2SC5196
- Recommend for 40-W high-fidelity audio frequency amplifier output stage.

### Absolute Maximum Ratings (Tc = 25°C)

Characteristics	Symbol	Rating	Unit
Collector-base voltage	V <sub>CBO</sub>	-80	V
Collector-emitter voltage	V <sub>CEO</sub>	-80	V
Emitter-base voltage	V <sub>EBO</sub>	-5	V
Collector current	I <sub>C</sub>	-6	A
Base current	I <sub>B</sub>	-0.6	A
Collector power dissipation (T <sub>c</sub> = 25°C)	P <sub>C</sub>	60	W
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature range	T <sub>stg</sub>	-55 to 150	°C

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings. Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Unit: mm



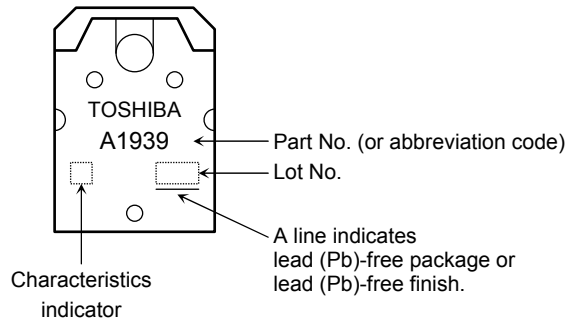
Weight: 4.7 g (typ.)

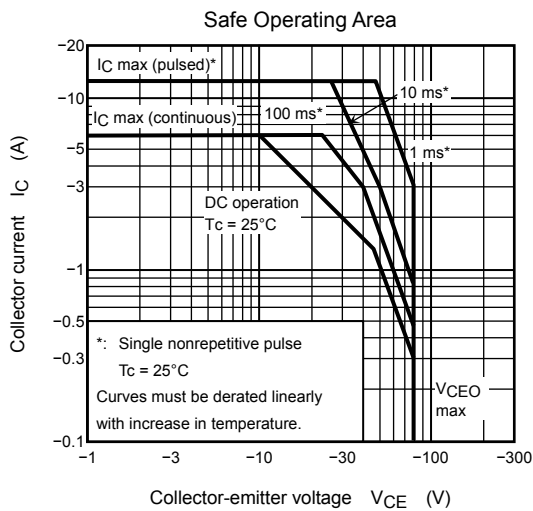
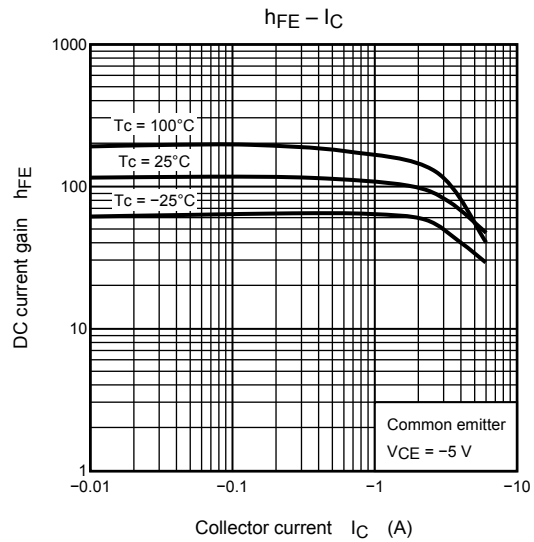
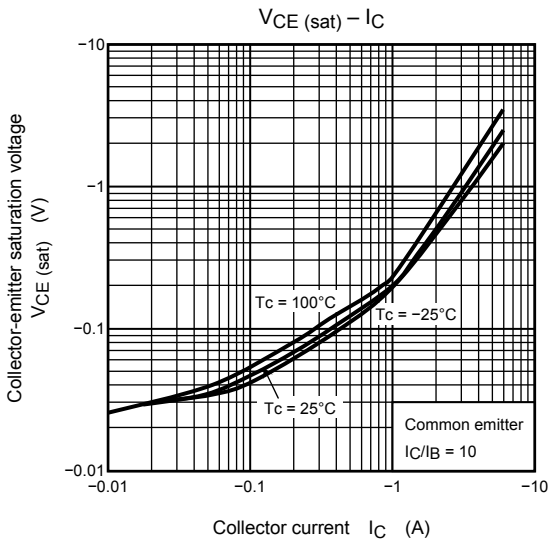
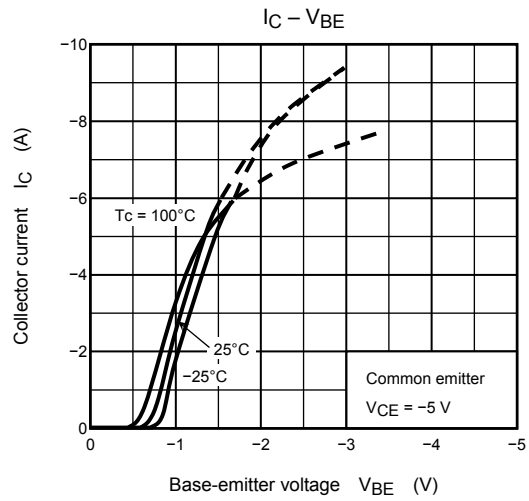
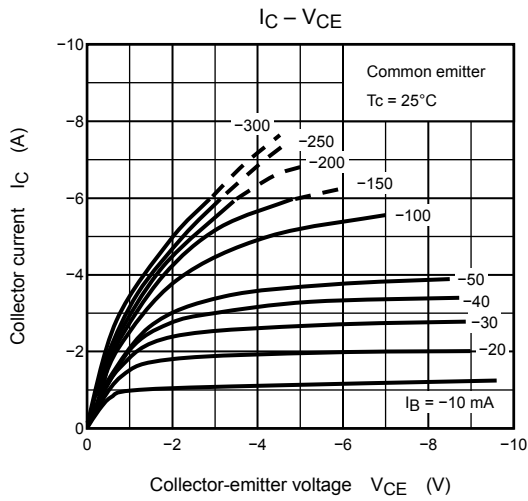
## Electrical Characteristics (Tc = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	$I_{CBO}$	$V_{CB} = -80\text{ V}, I_E = 0$	—	—	-5.0	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB} = -5\text{ V}, I_C = 0$	—	—	-5.0	$\mu\text{A}$
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = -50\text{ mA}, I_B = 0$	-80	—	—	V
DC current gain	$h_{FE(1)}$ (Note)	$V_{CE} = -5\text{ V}, I_C = -1\text{ A}$	55	—	160	
	$h_{FE(2)}$	$V_{CE} = -5\text{ V}, I_C = -3\text{ A}$	35	80	—	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -5\text{ A}, I_B = -0.5\text{ A}$	—	-1.0	-2.0	V
Base-emitter voltage	$V_{BE}$	$V_{CE} = -5\text{ V}, I_C = -3\text{ A}$	—	-0.95	-1.5	V
Transition frequency	$f_T$	$V_{CE} = -5\text{ V}, I_C = -1\text{ A}$	—	30	—	MHz
Collector output capacitance	$C_{ob}$	$V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	180	—	pF

Note:  $h_{FE(1)}$  classification R: 55 to 110, O: 80 to 160

## Marking





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