

DESCRIPTION The 2SC3209 is designed for use in TV chroma output circuits and TV horizontal deflection output circuits.

FEATURES

- High voltage $V_{CEO} \geq 300 \text{ V}$
- High Electrostatic-Discharge-Resistant (E-B reverse bias, $C=2 \text{ } 300 \text{ pF}$) V_{ESDR} : TYP. 1 000 V

ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures

Storage Temperature -55 to $+150 \text{ } ^\circ\text{C}$

Junction Temperature $150 \text{ } ^\circ\text{C}$ Maximum

Maximum Power Dissipation ($T_a = 25 \text{ } ^\circ\text{C}$)

Total Power Dissipation 1.0 W

Maximum Voltages and Currents ($T_a = 25 \text{ } ^\circ\text{C}$)

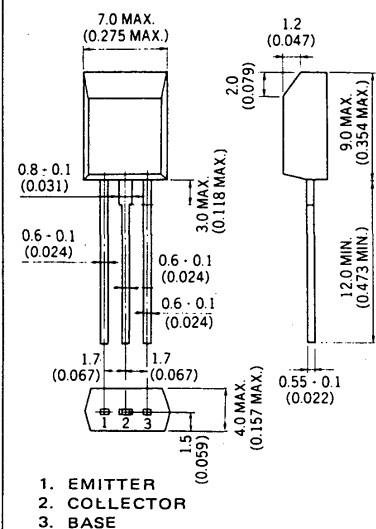
V_{CBO} Collector to Base Voltage 300 V

V_{CEO} Collector to Emitter Voltage 300 V

V_{EBO} Emitter to Base Voltage 5.0 V

I_C Collector Current 200 mA

PACKAGE DIMENSIONS in millimeters (inches)



ELECTRICAL CHARACTERISTICS ($T_a = 25 \text{ } ^\circ\text{C}$)

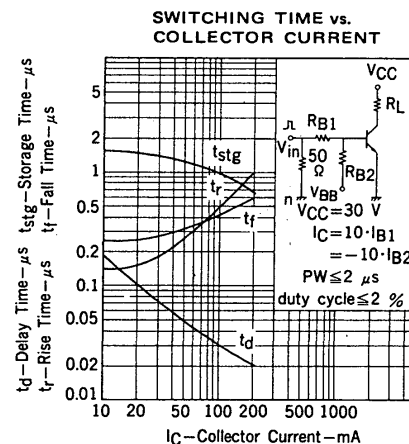
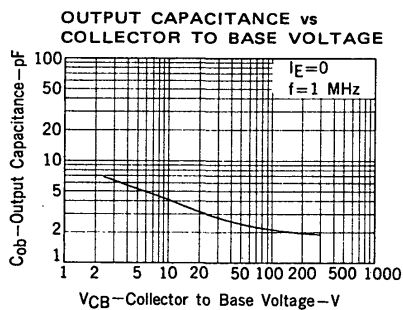
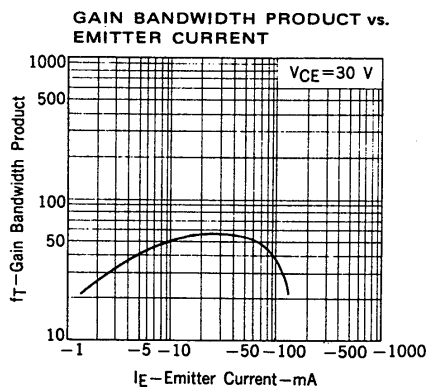
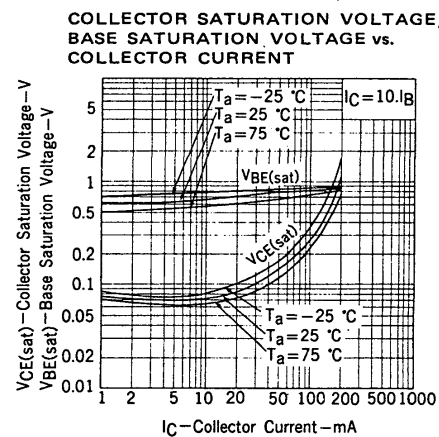
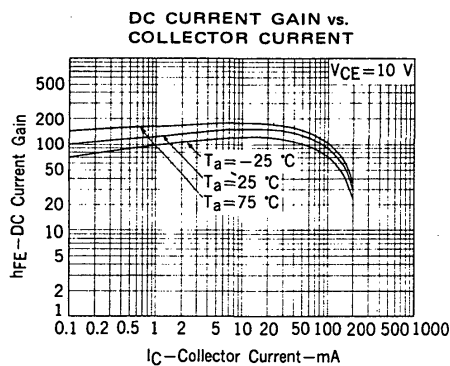
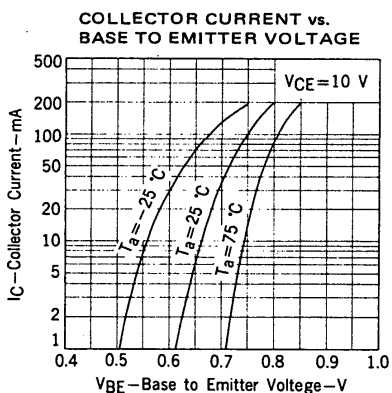
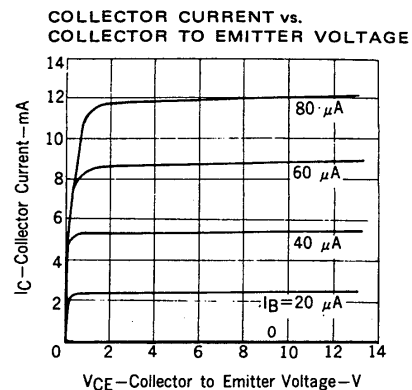
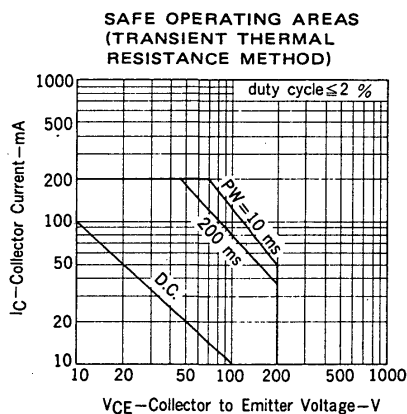
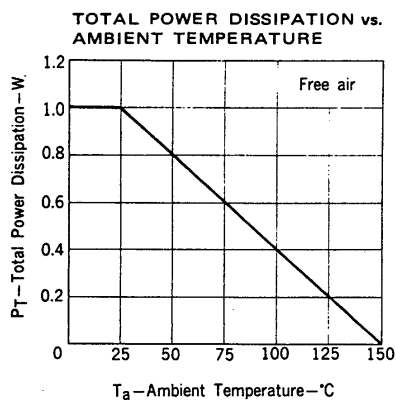
SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
h_{FE}^*	DC Current Gain	60	150	250		$V_{CE} = 10 \text{ V}, I_C = 10 \text{ mA}$
t_d	Delay Time			1.0	μs	$V_{CC} = 30 \text{ V}$ $I_C = 100 \text{ mA}$ $I_{B1} = -I_{B2} = 10 \text{ mA}$
t_r	Rise Time			1.0	μs	
t_{stg}	Storage Time			2.0	μs	
t_f	Fall Time			1.0	μs	
f_T	Gain Bandwidth Product		50		MHz	$V_{CE} = 30 \text{ V}, I_E = -10 \text{ mA}$
V_{ESDR}	Electrostatic-Discharge-Resistant		1000		V	See Test Circuit
C_{ob}	Output Capacitance		2.8	3.5	pF	$V_{CB} = 30 \text{ V}, I_E = 0, f = 1.0 \text{ MHz}$
I_{CBO}	Collector Cutoff Current			100	nA	$V_{CB} = 200 \text{ V}, I_E = 0$
I_{EBO}	Emitter Cutoff Current			100	nA	$V_{EB} = 5.0 \text{ V}, I_C = 0$
V_{BE}^*	Base to Emitter Voltage	600	670	700	mV	$V_{CE} = 10 \text{ V}, I_C = 10 \text{ mA}$
$V_{CE(sat)}^*$	Collector Saturation Voltage		0.15	1.5	V	$I_C = 50 \text{ mA}, I_B = 5.0 \text{ mA}$
$V_{BE(sat)}^*$	Base Saturation Voltage		0.80	1.5	V	$I_C = 50 \text{ mA}, I_B = 5.0 \text{ mA}$

* Pulsed $PW \leq 300 \mu\text{s}$, duty cycle $\leq 2 \%$

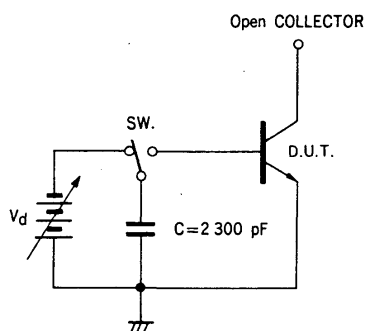
Classification of h_{FE1}

Rank	M	L	K
Range	60 - 120	100 - 200	160 - 250

Test Conditions: $V_{CE} = 10 \text{ V}, I_C = 10 \text{ mA}$

TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

ELECTROSTATIC-DISCHARGE-RESISTANT TEST CIRCUIT



TEST CONDITION

- 1) E-B reverse bias
- 2) $C = 2\ 300\ \text{pF}$
- 3) Apply one shot pulse to D.U.T. (Transistor Under the Test) by SW.

JUDGEMENT

REJECT; BV_{EBO} waveform defect

As a result if D.U.T. is not rejected, apply higher voltage to capacitor and test again.