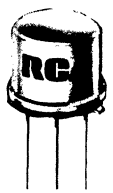
RCA
Solid State
Division

Power Transistors

RCS880



JEDEC TO-39

H-1381

High-Voltage Silicon P-N-P Transistor

For High-Speed Switching and Linear-Amplifier Applications in Industrial and Commercial Equipment

Features:

- **Maximum safe-area-of-operation curves**
- **High voltage rating:**
  $V_{CEO}(sus)$ = −150 V min.

The RCA-RCS880 is an epitaxial silicon p-n-p transistor with high breakdown voltages, high frequency response, and fast switching speeds.

Typical applications include high-voltage differential and operational amplifiers, high-voltage inverters; and high-voltage, low-current switching and series regulators.

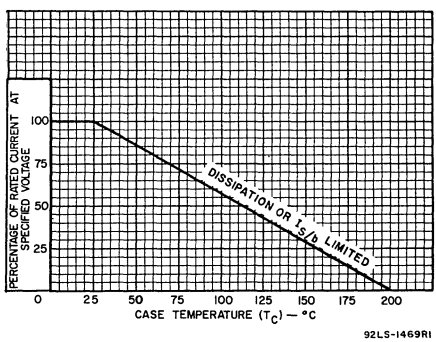


Fig. 1 — Dissipation derating curve.

MAXIMUM RATINGS, *Absolute-Maximum Values:*

COLLECTOR-TO-EMITTER SUSTAINING VOLTAGE:			
With base open	$V_{CEO}(sus)$	−150	V
COLLECTOR CURRENT	I_C	−1	A
BASE CURRENT	I_B	−0.5	A
TRANSISTOR DISSIPATION:	P_T		
At case temperatures up to 25°C		7.5	W
At case temperatures above 25°C		See Figs. 1 and 4	
At ambient temperatures up to 50°C		0.75	W
At ambient temperatures above 50°C ..... Derate linearly at		5	mW/°C
TEMPERATURE RANGE:			
Storage and Operating (Junction)		−65 to +200	°C
LEAD TEMPERATURE (During soldering):			
At distance ≥ 1/32 in. (0.8 mm) from seating plane for 10s max.		255	°C

ELECTICAL CHARACTERISTICS, *At Case Temperature (T_C) = 25°C*

CHARACTERISTIC	SYMBOL	TEST CONDITIONS				LIMITS		UNITS
		VOLTAGE V dc		CURRENT mA dc		RCS880		
		V_{CE}	V_{BE}	I_C	I_B	Min.	Max.	
Collector-Cutoff Current: With base open	I_{CEO}	−100			0	–	−50	μA
With base-emitter junction reverse-biased	I_{CEV}	−150	1.5			–	−100	μA
Emitter-Cutoff Current	I_{EBO}		4	0		–	−30	μA
DC Forward-Current Transfer Ratio	h_{FE}	−10		−50[c]		20	150	
Collector-to-Emitter Sustaining Voltage: With base open (See Figs.2 and 3)	$V_{CEO(sus)}$			−50	0	−150[a]	–	V
Base-to-Emitter Saturation Voltage	V_{BE}	−10		−50[c]		–	−2.5	V
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$			−50[c]	−5	–	−3.5	V
Forward-Bias, Second-Breakdown Collector Current: t = 0.20 s, nonrepetitive	$I_{S/b}$[b]	−75				−100	–	mA
Thermal Resistance: Junction-to-Case	$R_{\theta JC}$					–	23.3	°C/W

[a] CAUTION: The sustaining voltage V_{CEO}(sus) MUST NOT be measured on a curve tracer. The sustaining voltage should be measured by means of the test circuit shown in Fig. 2.

[b] $I_{S/b}$ is defined as the current at which second breakdown occurs at a specified collector voltage.

[c] Pulsed: Pulse duration = 300 μs; duty factor ≤ 2%.

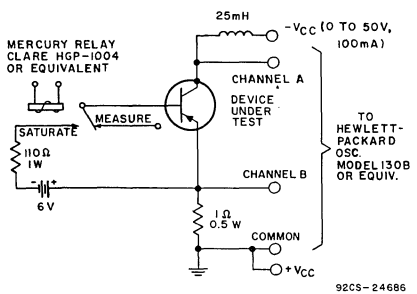


Fig. 2 – Circuit used to measure sustaining voltage $V_{CEO(sus)}$.

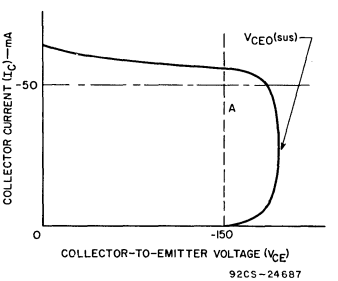


Fig. 3 – Oscilloscope display for measurement of sustaining voltages (test circuit shown in Fig. 2).

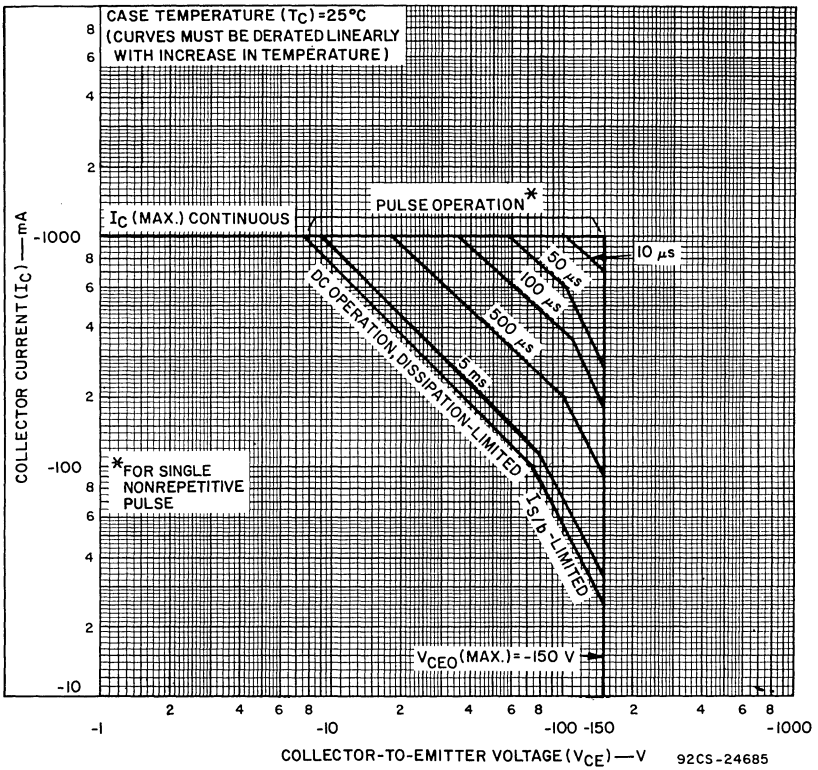


Fig. 4 — Maximum safe operating areas.

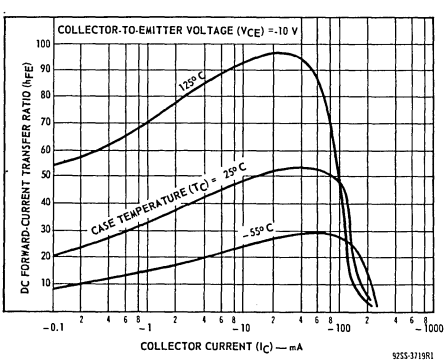


Fig. 5 — Typical dc beta characteristics.

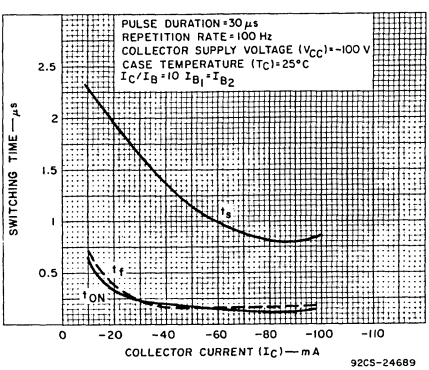


Fig. 6 — Typical switching-time characteristics.

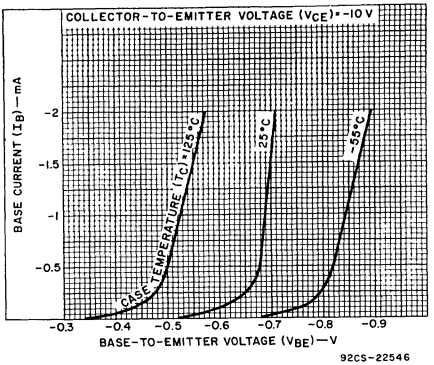


Fig. 7 — Typical input characteristics.

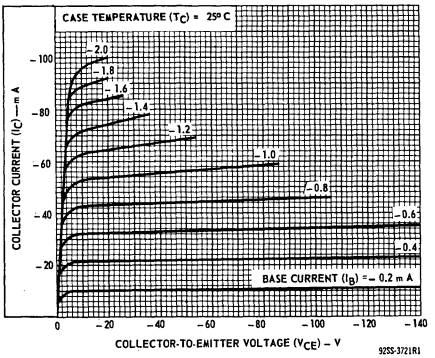


Fig. 8 — Typical output characteristics.

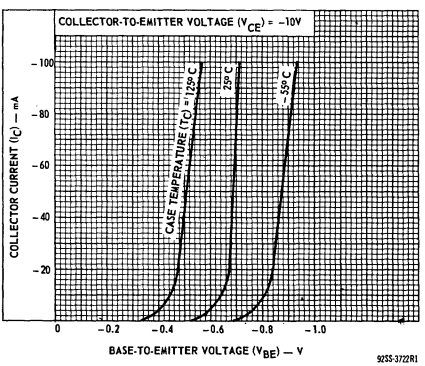


Fig. 9 — Typical transfer characteristics.

TERMINAL CONNECTIONS

Lead 1 — Emitter
Lead 2 — Base
Lead 3 — Collector, Case