



Power Transistors

41503

Medium-Power Silicon P-N-P Planar Transistor

General-Purpose Medium-Power Type for Industrial and Commercial Applications

Features:

- Maximum safe-area-of-operation curves specified for dc operation
- Planar construction for low noise and low leakage

JEDEC TO-39

H-1381

RCA-41503 is an epitaxial-planar silicon p-n-p transistor intended for a wide variety of small-signal, medium-power applications. It is suitable for low-power, low-cost industrial and

audio uses, and may be employed as the p-n-p complement to RCA n-p-n type 41502. (Data for the 41502 are supplied in bulletin File No. 773).

MAXIMUM RATINGS, Absolute-Maximum Values:

COLLECTOR-TO-EMITTER SUSTAINING VOLTAGE:

With base open	$V_{CE(sus)}$	-30	V
EMITTER-TO-BASE VOLTAGE	V_{EB0}	-4	V
COLLECTOR CURRENT	I_C	-1	A
BASE CURRENT	I_B	-0.5	A

TRANSISTOR DISSIPATION:

At case temperatures up to 25°C	7	W
At ambient temperatures up to 25°C	1	W
At temperatures above 25°C	See Figs. 1 and 5	

TEMPERATURE RANGE:

Storage and operating (Junction)	-65 to +200	°C
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LEAD TEMPERATURE (During soldering):

At distances $\geq 1/16$ in. (1.58 mm) from seating plane for 10s max.	230	°C
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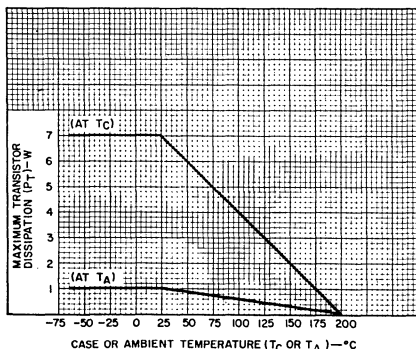


Fig. 1 - Dissipation derating curve.

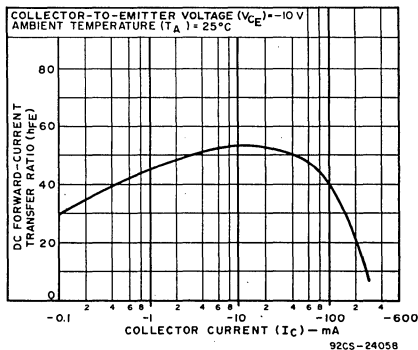


Fig. 2 - Typical dc beta characteristics.

ELECTRICAL CHARACTERISTICS, at Case Temperature (T_C) = 25°C

CHARACTERISTIC	SYMBOL	TEST CONDITIONS						LIMITS		UNITS
		VOLTAGE V dc			CURRENT mA dc			41503		
		V _{CB}	V _{CE}	V _{EB}	I _C	I _E	I _B	Min.	Max.	
Collector Cutoff Current: With emitter open	I _{CBO}	−15						−	−2	μA
Emitter-to-Base Breakdown Voltage	V _{(BR)EBO}				0	−0.1		−4	−	V
Collector-to-Emitter Sustaining Voltage: (See Figs. 3 and 4) With base open	V _{CEO(sus)}				−30 ^a		0	−30	−	V
Collector-to-Emitter Saturation Voltage	V _{CE(sat)}				−150		−15	−	−1.5	V
Base-to-Emitter Voltage	V _{BE}		−10		−150 ^b			−	−2.5	V
DC Forward-Current Transfer Ratio	h _{FE}		−10		−150 ^b			20	−	
Collector-Base Capacitance (at f = 1 MHz)	C _{ob}	−10				0		−	30	pF
Input Capacitance	C _{ib}			−0.5	0			−	90	pF
Thermal Resistance: Junction-to-Case	R _{θJC}							−	25	°C/W
Junction-to-Ambient	R _{θJA}							−	165	

^aCAUTION: The sustaining voltage $V_{CEO(sus)}$ MUST NOT be measured on a curve tracer. This sustaining voltage should be measured by means of the test circuit shown in Fig. 3.

^bPulsed; pulse duration = 300 μs , duty factor $\leq 2\%$.

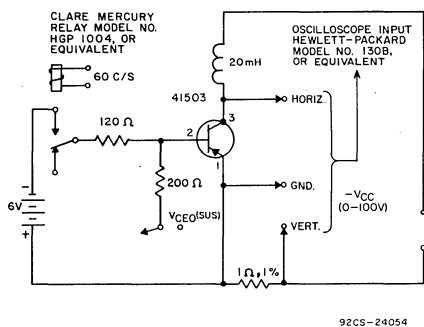
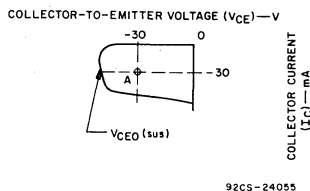


Fig. 3 — Circuit used to measure sustaining voltage, $V_{CEO(sus)}$.

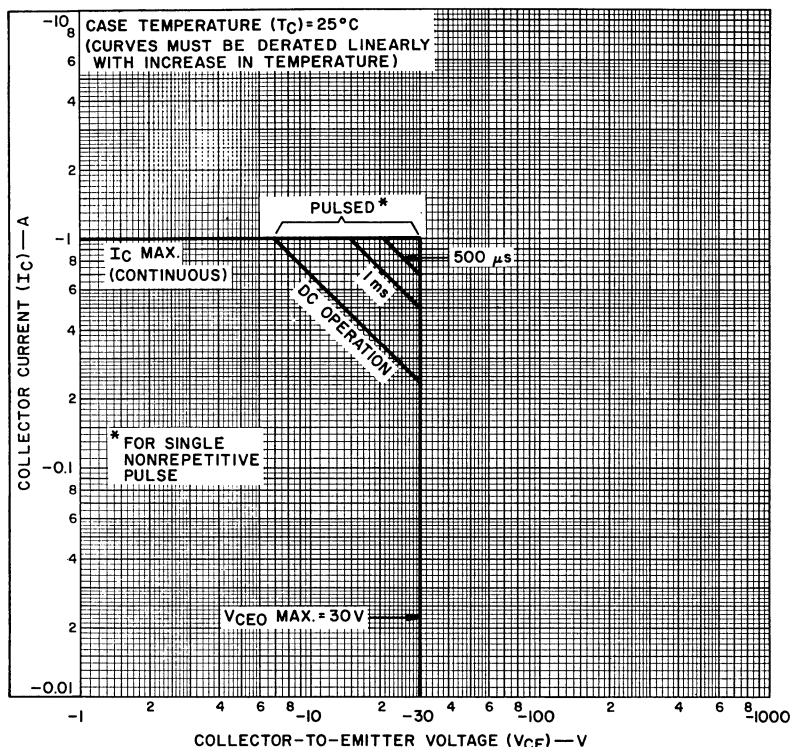
TERMINAL CONNECTIONS

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



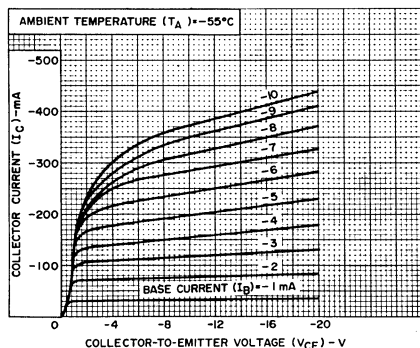
NOTE: The sustaining voltage $V_{CEO(sus)}$ is acceptable when the traces fall to the left and below point "A".

Fig. 4 — Oscilloscope display for measurement of sustaining voltage (test circuit shown in Fig. 1).



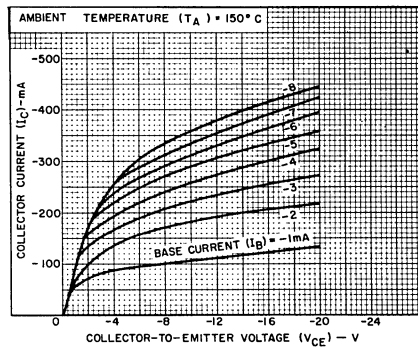
92CS-24056

Fig. 5 — Maximum operating areas.



92LS-1282R1

Fig. 6 — Typical output characteristics.



92LS-1289R1

Fig. 7 — Typical output characteristics.