RCA
Solid State
Division

Power Transistors

41502

JEDEC TO-39 H-1381

Medium-Power Silicon N-P-N Planar Transistor

For Small-Signal Applications
In Industrial and Commercial Equipment

Features:

- **For operation at junction temperature up to 200°C**
- **Planar construction for low noise and low leakage**
- **Low output capacitance**

RCA-41502 is a silicon n-p-n planar transistor intended for a wide variety of small-signal and medium-power applications in commercial and industrial equipment. The device features exceptionally low noise, low leakage, high switching speed, and high pulsed beta.

It is suitable for low-power, low-cost industrial and audio uses, and may be employed as the n-p-n complement to RCA p-n-p type 41503. (Data for the 41503 are supplied in bulletin File No. 774.)

MAXIMUM RATINGS, *Absolute-Maximum Values:*

COLLECTOR-TO-EMITTER SUSTAINING VOLTAGE:			
With base open	$V_{CEO(sus)}$	30	V
EMITTER-TO-BASE VOLTAGE	V_{EBO}	4	V
COLLECTOR CURRENT	I_C	1	A
TRANSISTOR DISSIPATION:	P_T		
At case temperatures up to 25°C		3	W
At ambient temperatures up to 25°C		0.8	W
At temperatures above 25°C		See Fig. 1	
TEMPERATURE RANGE:			
Storage and Operating (Junction)		−65 to +200	°C
LEAD TEMPERATURE (During soldering):			
At distance ≥ 1/16 in. (1.58 mm) from seating plane for 10 s max.		300	°C

ELECTRICAL CHARACTERISTICS, *At Case Temperature (T_C) = 25°C Unless Otherwise Specified*

CHARACTERISTIC	SYMBOL	TEST CONDITIONS						LIMITS		UNITS
		VOLTAGE V dc			CURRENT mA dc			41502		
		V_{CB}	V_{CE}	V_{EB}	I_E	I_B	I_C	Min.	Max.	
Collector Cutoff Current: With emitter open	I_{CBO}	15			0			–	2	μA
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$				0.1		0	4	–	V
Collector-to-Emitter Sustaining Voltage: With base open	$V_{CEO(sus)}$					0	30[a]	30	–	V
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$					15	150[a]	–	1.5	V
Base-to-Emitter Voltage	V_{BE}		10				150[a]	–	2.5	V
DC Forward-Current Transfer Ratio:	h_{FE}		10				150[a]	20	–	
Output Capacitance	C_{ob}	10			0			–	25	pF
Input Capacitance	C_{ib}			0.5			0	–	80	pF
Thermal Resistance: Junction-to-case	$R_{\theta JC}$							–	58.3	°C/W
Junction-to-ambient	$R_{\theta JA}$							–	219	

[a] Pulsed. Pulse duration = 300 μsec; duty factor ⩽ 2%.

TERMINAL CONNECTIONS

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

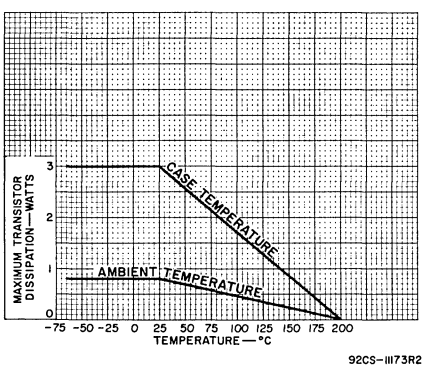

Fig. 1 – Rating chart.

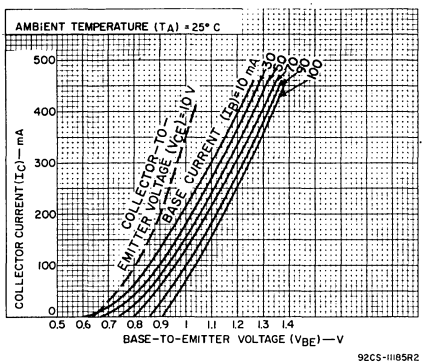

Fig. 2 — Typical transfer characteristics.

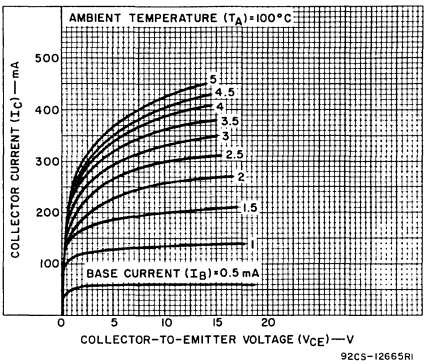

Fig. 3 — Typical output characteristics.

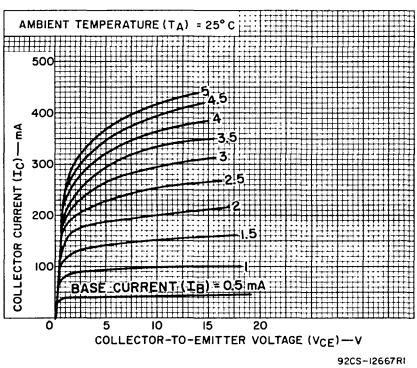

Fig. 4 — Typical output characteristics.

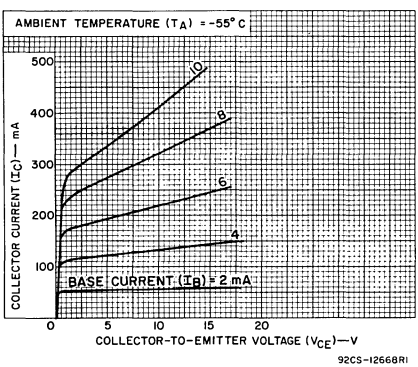

Fig. 5 — Typical output characteristics.

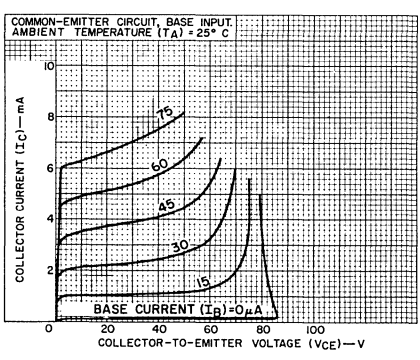

Fig. 6 — Typical output characteristics.

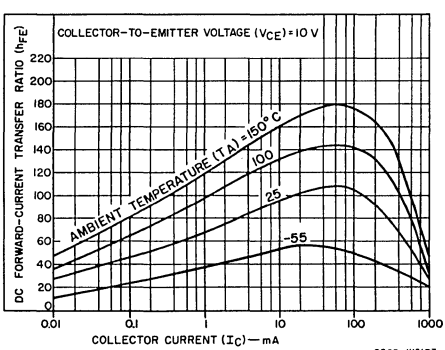

Fig. 7 — Typical dc beta characteristics.