

Hometaxial-Base Silicon N-P-N VERSAWATT Transistor

Designed for Medium-Power
Linear and Switching Applications

Features:

- ▣ Low saturation voltages
- ▣ High dissipation ratings

RCA-41504 is a silicon n-p-n transistor intended for a wide variety of medium-power applications. The hometaxial-base construction of this device renders it highly resistant to second breakdown over a wide range of operating conditions. The 41504 is supplied in the JEDEC TO-220AB straight-lead version of the VERSAWATT package.

Applications:

- ▣ Series and shunt regulators
- ▣ High-fidelity amplifiers
- ▣ Power-switching circuits
- ▣ Solenoid drivers

TERMINAL CONNECTIONS JEDEC TO-220AB

Terminal No. 1 — Base
Terminal No. 2 — Collector
Terminal No. 3 — Emitter
Terminal No. 4 — Collector

MAXIMUM RATINGS, Absolute-Maximum Values:

COLLECTOR-TO-EMITTER SUSTAINING VOLTAGE:

With external base-to-emitter resistance (R_{BE}) = 100 Ω

$V_{CER(sus)}$

35

V

EMITTER-TO-BASE VOLTAGE

V_{EBO}

4

V

CONTINUOUS COLLECTOR CURRENT

I_C

4

A

CONTINUOUS BASE CURRENT

I_B

2

A

TRANSISTOR DISSIPATION:

P_T

36

W

At case temperatures up to 25°C

At case temperatures above 25°C

See Fig. 1

TEMPERATURE RANGE:

Storage and Operating (Junction)

-65 to +150

°C

PIN TEMPERATURE (During Soldering):

At distances $\geq 1/32$ in. (0.8 mm) from seating plane for 10 s max.

235

°C

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

CHARACTERISTIC	SYMBOL	TEST CONDITIONS				LIMITS		UNITS
		VOLTAGE V dc		CURRENT A dc				
		V _{CE}	V _{EB}	I _C	I _B	MIN.	MAX.	
Collector-Cutoff Current: With external base-to-emitter resistance (R _{BE}) = 100 Ω	I _{CER}	20				—	5	mA
Emitter-Cutoff Current	I _{EBO}		4	0		—	1	mA
Collector-to-Emitter Sustaining Voltage: With external base-to-emitter resistance (R _{BE}) = 100 Ω	V _{CER(sus)}			0.1 ^a		35	—	V
DC Forward-Current Transfer Ratio	h _{FE}	4		1 ^a		25	—	
Collector-to-Emitter Saturation Voltage	V _{CE(sat)}			1 ^a	0.05	—	1	V
Base-to-Emitter Voltage	V _{BE}	4		1 ^a		—	1.5	V
Magnitude of Common-Emitter, Small-Signal Short-Circuit Forward Current Transfer Ratio (f = 0.4 MHz)	h _{fe}	4		0.2		2	—	
Thermal Resistance: Junction-to-Case	R _{θJC}					—	3.5	°C/W
Junction-to-Ambient	R _{θJA}					—	70	

^a Pulsed: Pulse duration = 300 μs, duty factor ≤ 2%.

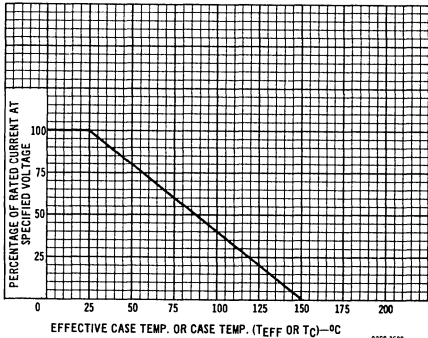


Fig. 1 — Current derating curve.

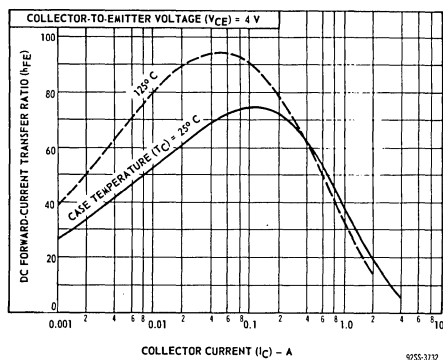


Fig. 2 — Typical dc beta characteristics.

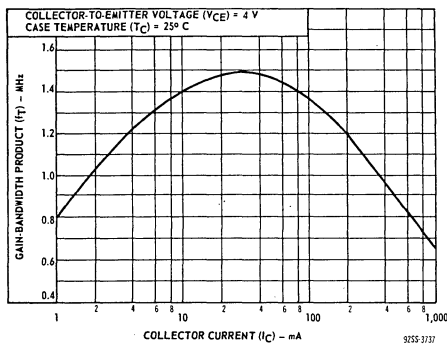


Fig. 3 — Typical gain-bandwidth product.

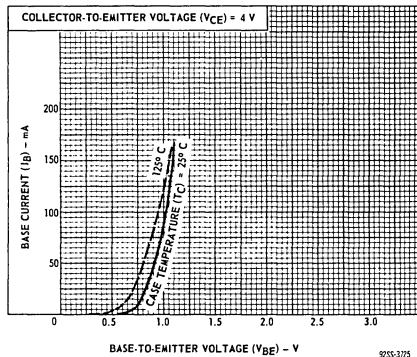


Fig. 4 — Typical input characteristics.

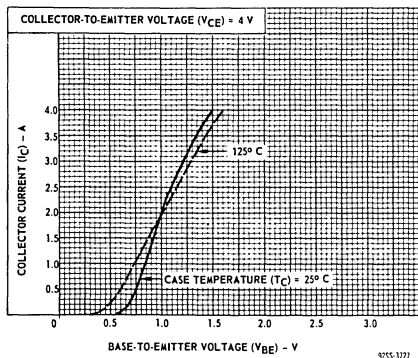


Fig. 5 — Typical transfer characteristics.

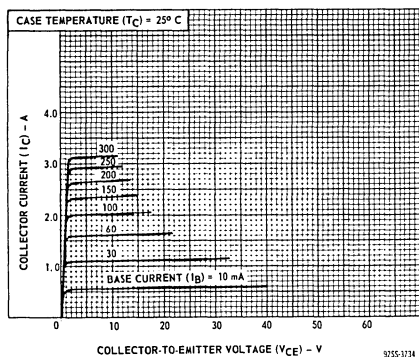


Fig. 6 — Typical output characteristics.