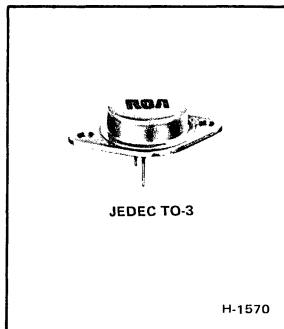




Power Transistors

41506



High-Voltage, High-Power Silicon N-P-N Power Transistor

For Switching and Linear Applications

Features:

- ▣ Maximum safe-area-of-operation curves
- ▣ Low saturation voltage: $V_{CE(sat)} = 1.5 \text{ V (max.)}$
- ▣ High voltage rating: $V_{CEO(sus)} = 200 \text{ V}$
- ▣ High dissipation rating: $P_T = 100 \text{ W}$

The RCA-41506 is an epitaxial silicon n-p-n power transistor utilizing a multiple-emitter-site structure. This device employs the popular JEDEC TO-3 package.

The 41506 features high breakdown-voltage ratings and low

saturation-voltage values and is especially suitable for use in inverters, switching regulators, high-voltage bridge amplifiers, and other high-voltage switching applications.

MAXIMUM RATINGS, Absolute-Maximum Values:

COLLECTOR-TO-BASE VOLTAGE	V_{CBO}	200	V
COLLECTOR-TO-EMITTER SUSTAINING VOLTAGE:			
With base open,	$V_{CEO(sus)}$	200	V
EMITTER-TO-BASE VOLTAGE	V_{EBO}	4	V
CONTINUOUS COLLECTOR CURRENT	I_C	3	A
PEAK COLLECTOR CURRENT	I_{CM}	5	A
CONTINUOUS BASE CURRENT	I_B	1.5	A
TRANSISTOR DISSIPATION:	P_T		
At case temperatures up to 25°C and V_{CE} up to 40 V		100	W
At case temperatures up to 25°C and V_{CE} above 40 V		See Fig.4	
At case temperatures above 25°C and V_{CE} above 40 V		See Figs. 3 and 4	
TEMPERATURE RANGE:			
Storage and Operating (Junction)		-65 to 200	°C
PIN TEMPERATURE (During Soldering):			
At distances $\geq 1/32$ in. (0.8 mm) from seating plane for 10 s max.		230	°C

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

CHARACTERISTIC	SYMBOL	TEST CONDITIONS				LIMITS		UNITS
		DC VOLTAGE V		DC CURRENT (A)				
		V _{CE}	V _{EB}	I _C	I _B	Min.	Max.	
Collector Cutoff Current: With base open	I _{CEO}	200					5	mA
Emitter-Cutoff Current	I _{EBO}		4				10	mA
DC Forward-Current Transfer Ratio	h _{FE}	3		2 ^a		8	—	
Collector-to-Emitter Sustaining Voltage: With base open (See Figs. 1 and 2)	V _{CEO(sus)}			0.2		200 ^b	—	V
Base-to-Emitter Saturation Voltage	V _{BE(sat)}			2 ^a	0.35	—	2	V
Collector-to-Emitter Saturation Voltage	V _{CE(sat)}			2 ^a	0.35	—	1.5	V
Second-Breakdown Collector Current: (With base forward-biased) Pulse duration (non-repetitive) = 1 s	I _{S/bc}	40				2.5	—	A
Thermal Resistance (Junction-to-Case)	R _{θJC}	10		5			1.75	°C/W

- a Pulsed; pulse duration ≤ 350 μs, duty factor = 2%.
- b 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.1.
- c I_{S/b} is defined as the current at which second breakdown occurs at a specified collector voltage with the emitter-base junction forward-biased for transistor operation in the active region.

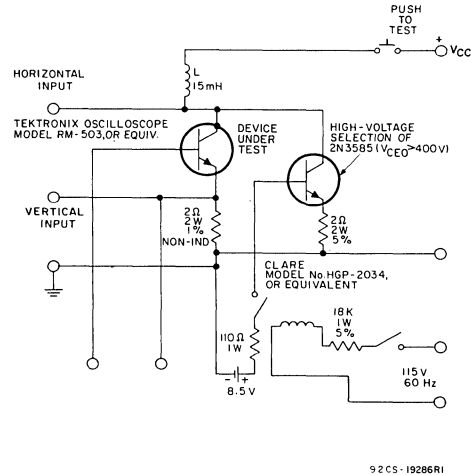


Fig.1 — Circuit used to measure sustaining voltage, V_{CEO(sus)}.

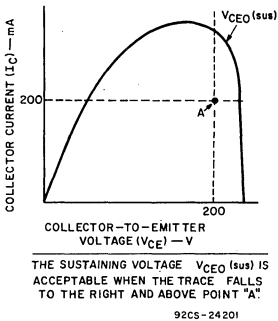


Fig.2 — Oscilloscope display for measurement of sustaining voltage (test circuit shown in Fig.1).

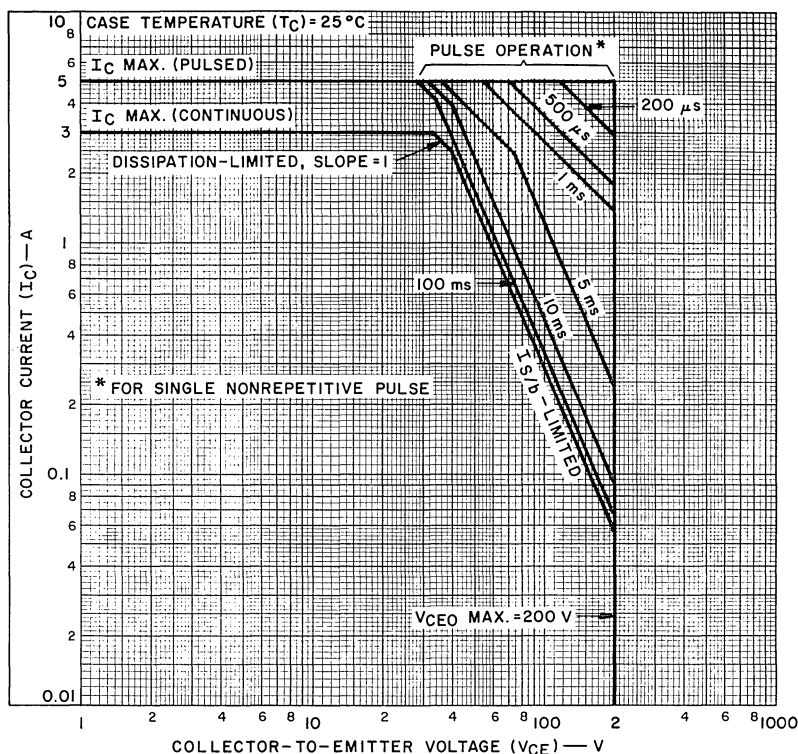


Fig.3 — Maximum operating areas.

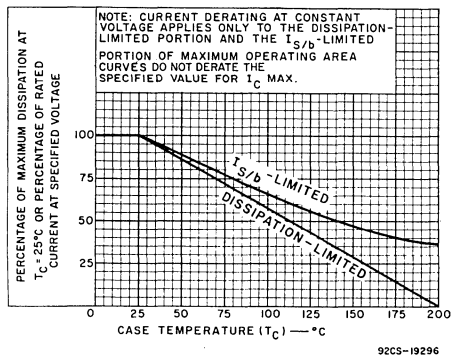


Fig.4 — Dissipation and current derating curves.

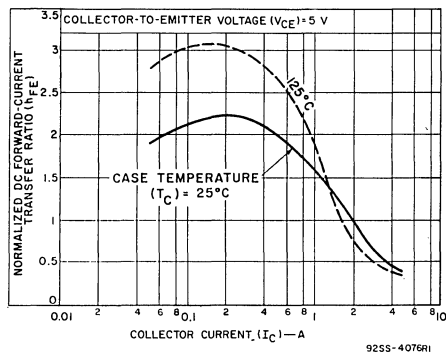


Fig.5 — Typical normalized dc beta characteristics.

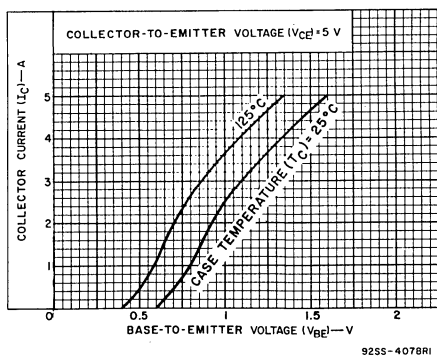


Fig. 6 — Typical transfer characteristics.

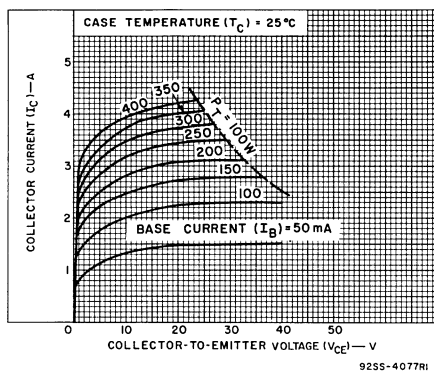


Fig. 7 — Typical output characteristics.

TERMINAL CONNECTIONS

Pin 1 — Base
 Pin 2 — Emitter
 Mounting Flange, Case — Collector