

High-Current, Silicon N-P-N VERSAWATT Transistors

Switching Applications

Features:

- Fast switching speed at temperatures up to 125°C
- Low $V_{ce}(sat)$
- **VERSAWATT** plastic package

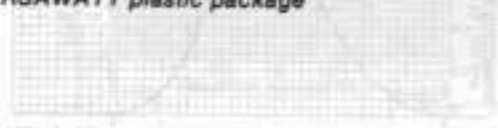


Fig. 1. Typical characteristics of the transistor.

The 2N6702, 2N6703 and 2N6704* epitaxial-base silicon n-p-n power transistors which feature fast switching speeds, low saturation voltages, and high safe-operating-area (SOA) ratings. They are specially designed for converters, inverters, pulse-width-modulated regulators and a variety of power switching circuits.

The 2N6702, 2N6703, and 2N6704 transistors are supplied in the JEDEC TO-220AB (RCA VERSAWATT) plastic packages.

*Formerly RCA Dev. Type Nos. TA9164A, TA9164B, TA9164C, respectively.

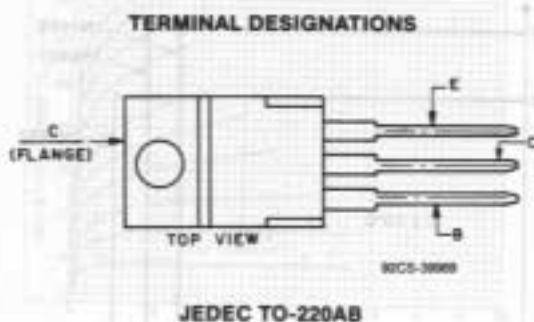


Fig. 2. Terminal designations for the JEDEC TO-220AB package.

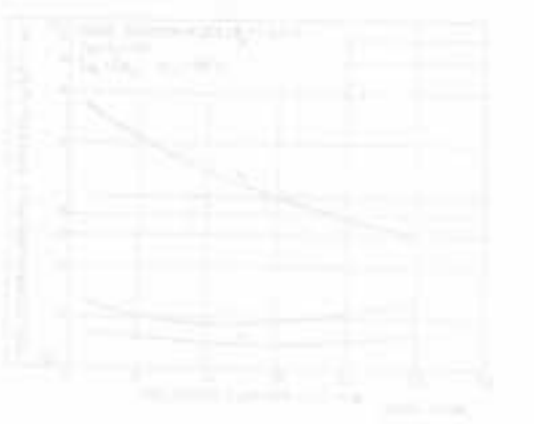


Fig. 3. Typical characteristics of the transistor.

MAXIMUM RATINGS, Absolute-Maximum Values:

- V_{ce}
 $V_{es} = -1.5$ V
- V_{ceo}
- V_{ese}
- $I_c(sat)$
- I_c
- I_{cm}
- I_b
- P_T
 T_c up to 25°C
- T_{ep}, T_d
- T_L
At distance $\geq 1/8$ in. (3.16 mm) from seating plane for 10 s max. ...

	2N6702	2N6703	2N6704	
	140	160	180	V
	90	110	130	V
		7		V
	5	5	4	A
		7		A
		10		A
		5		A
		50		W
		0.4		W/°C
		-65 to 150		°C
		235		°C

*In accordance with JEDEC registration data.

2N6702, 2N6703, 2N6704

ELECTRICAL CHARACTERISTICS, at Case Temperature $T_C = 25^\circ\text{C}$ Unless Otherwise Specified

CHARACTERISTIC	TEST CONDITIONS				LIMITS						UNITS	
	VOLTAGE V dc		CURRENT A dc		2N6702		2N6703		2N6704			
	V_{CE}	V_{BE}	I_C	I_B	Min.	Max.	Min.	Max.	Min.	Max.		
* I_{CEV}	140	-1.5			-	100	-	-	-	-	μA	
	160	-1.5			-	-	-	100	-	-		
	180	-1.5			-	-	-	-	-	100		
	$T_C = 125^\circ\text{C}$	140	-1.5			-	1	-	-	-	-	mA
		160	-1.5			-	-	-	1	-	-	
		180	-1.5			-	-	-	-	-	1	
* I_{EBO}		-7	0		-	100	-	100	-	100	μA	
* $V_{CEO}^{(sus)b}$			0.01 ^a	0	90	-	110	-	130	-	V	
* h_{FE}	2		0.2 ^a		30	-	30	-	30	-		
	2		4 ^a		-	-	-	-	20	-		
	2		5 ^a		20	-	20	-	-	-		
* $V_{BE(sat)}$			4 ^a	0.4	-	-	-	-	-	1.4	V	
			5 ^a	0.5	-	1.5	-	1.5	-	-		
			4 ^a	0.4	-	-	-	-	-	0.7		
* $V_{CE(sat)}$			5 ^a	0.5	-	0.8	-	0.8	-	-		
			7 ^a	0.7	-	1.5	-	1.5	-	1.5		
I_S/b	20		2.5		1	-	1	-	1	-	s	
* $ h_{fe} $ f = 5 MHz	10		0.5		10	40	10	40	10	40		
f_T	10		0.5		50	200	50	200	50	200	MHz	
* C_{obo} f = 0.1 MHz	10 ^c				50	150	50	150	50	150	pF	
* t_d^d		-4	4	0.4	-	-	-	-	-	0.1	μs	
			5	0.5	-	0.1	-	0.1	-	-		
* t_r^d		-4	4	0.4	-	-	-	-	-	0.25		
			5	0.5	-	0.25	-	0.25	-	-		
* t_s^d		-4	4	0.4 ^e	-	-	-	-	-	1		
			5	0.5 ^e	-	1	-	1	-	-		
* t_f^d		-4	4	0.4 ^e	-	-	-	-	-	0.5		
			5	0.5 ^e	-	0.5	-	0.5	-	-		
* $R_{\theta JC}$	4		5		-	2.5	-	2.5	-	2.5	$^\circ\text{C/W}$	

* In accordance with JEDEC registration data.

^a Pulsed: pulse duration = 300 μs , duty factor $\leq 2\%$.

^b CAUTION: The sustaining voltage $V_{CEO}^{(sus)}$ MUST NOT be measured on a curve tracer.

^c V_{CB} value.

^d $V_{CC} = 70\text{ V}$, $t_p = 20\ \mu\text{s}$

^e $I_{B1} = -I_{B2}$.