RCA6340, RCA6341

File Number **1205**

25-A Silicon N-P-N Power Transistors

N-P-N Types for Power Supplies and Other High Voltage Switching Applications

Features:

- *Fast switching speed*
- *Low $V_{CE}(sat)$*
- *Steel hermetic TO-204AA package*

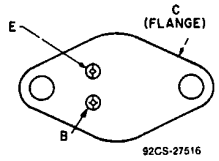
RCA6340 and RCA6341 silicon n-p-n power transistors which feature fast switching speeds, low saturation voltage, and high safe-operating-area (SOA) ratings. They are specially designed for converters, inverters, pusle-width-modulated regulators and a variety of power switching circuits.

These high-current, high-speed transistors are 100-percent tested for parameters that are essential to the design of high-power switching circuits.

The RCA6340 and RCA6341 transistors are supplied in steel JEDEC TO-204AA hermetic packages.

These types are similar to the 2N6340 and 2N6341 except for the C_{obo}, h_{FE} measured at I_C of 0.5A, and I_{B1}, I_{B2} conditions for switching times.

TERMINAL DESIGNATIONS



JEDEC TO-204AA

MAXIMUM RATINGS, *Absolute Maximum Values:*

	RCA6340	RCA6341	
V_{CBO}	160	180	V
V_{CEO}	140	150	V
V_{EBO}	3		V
I_C	25		A
I_{CM}	50		A
I_B	10		A
P_T			
T_C up to 25°C	200		W
T_C above 25°C, derate linearly	1.143		W/°C
T_{stg}, T_J	-65 to 200		°C
T_L			
At distance ≥ 1/16 in. (1.58 mm) from seating plane for 10 s max.	235		°C

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ELECTRICAL CHARACTERISTICS, at Case Temperature Tc = 25°C Unless Otherwise Specified

CHARACTERISTIC	TEST CONDITIONS				LIMITS				UNITS
	VOLTAGE V dc		CURRENT A dc		RCA6340		RCA6341		
	V_{CE}	V_{BE}	I_C	I_B	Min.	Max.	Min.	Max.	
I_{CEV}	150	-1.5	—	—	—	10	—	—	μA
	150	-1.5	—	—	—	—	—	10	
T_C = 150°C	140	-1.5	—	—	—	1	—	—	mA
	150	-1.5	—	—	—	—	—	1	
I_{CBO}	160[c]	—	—	—	—	10	—	—	μA
	180[c]	—	—	—	—	—	—	10	
I_{EBO}	—	-6	0	—	—	100	—	100	
$V_{CEO(sus)}$[b]	—	—	0.05[a]	0	140	—	150	—	V
h_{FE}	2	—	0.5[a]	—	30	—	30	—	
	2	—	10[a]	—	30	120	30	120	
	2	—	25[a]	—	12	—	12	—	
V_{BE}	2	—	10[a]	—	—	1.8	—	1.8	V
$V_{BE(sat)}$	—	—	10[a]	1	—	1.8	—	1.8	
	—	—	25[a]	2.5	—	2.5	—	2.5	
$V_{CE(sat)}$	—	—	10[a]	1	—	1	—	1	
	—	—	25[a]	2.5	—	1.8	—	1.8	
$I_{s/b}$	18	—	11.1	—	1	—	1	—	s
h_{fe} f = 5 MHz	10	—	1	—	8	—	8	—	
f_T	10	—	1	—	40	—	40	—	MHz
C_{obo} f = 0.1 MHz	10[c]	—	—	—	—	600	—	600	pF
t_r[d]	—	-6	10	0.5	—	0.3	—	0.3	μs
t_s[d]	—	-6	10	0.5[e]	—	2.0	—	2.0	
t_f[d]	—	-6	10	0.5[e]	—	0.25	—	0.25	
$R_{\theta JC}$	10	—	5	—	—	0.875	—	0.875	°C/W

[a] Pulsed; pulse duration = 300 μs, duty factory ≤ 2%.

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

[c] V_{CB} value.

[d] V_{CC} = 80 V, t_p = 10 μs.

[e] $I_{B1} = -I_{B2}$.

RCA6340, RCA6341

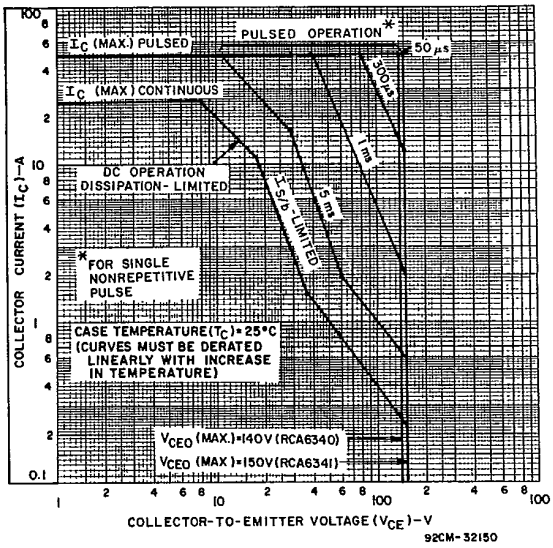

Fig. 1 - Maximum operating areas for both types.

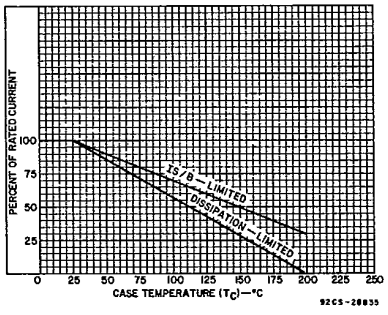

Fig. 2 - Dissipation and $I_{S/b}$ derating curves for both types.

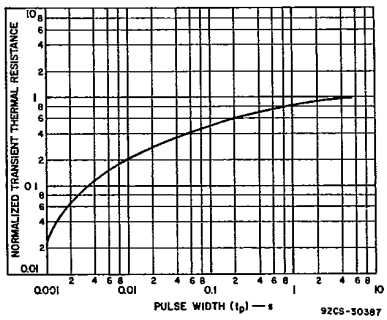

Fig. 3 - Typical thermal-response characteristic for both types.

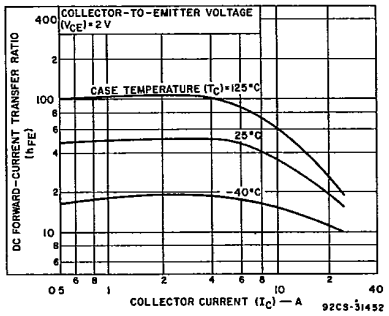

Fig. 4 - Typical dc beta characteristics for both types.

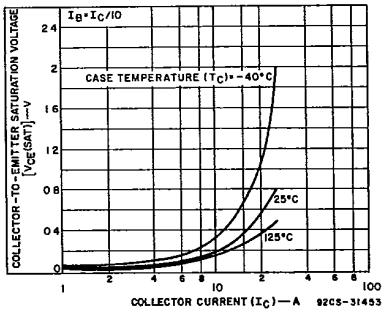

Fig. 5 - Typical collector-to-emitter saturation voltage characteristics for both types.

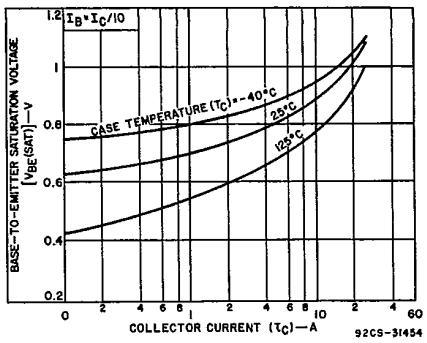

Fig. 6 - Typical base-to-emitter saturation voltage characteristic for both types.

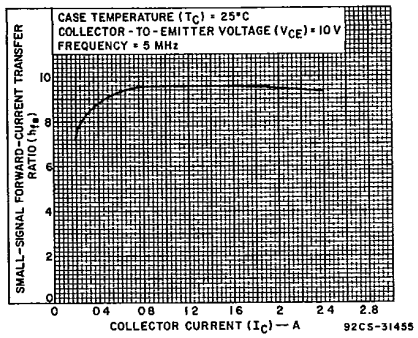

Fig. 7 - Typical small-signal forward-current transfer ratio characteristic for both types (f = 5 MHz).

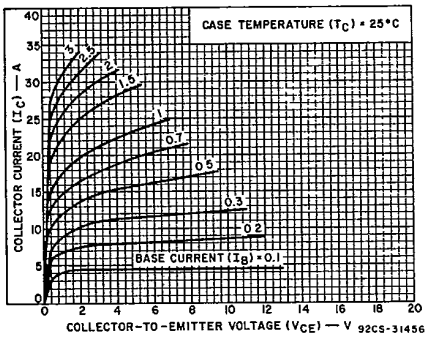

Fig. 8 - Typical output characteristics for both types.

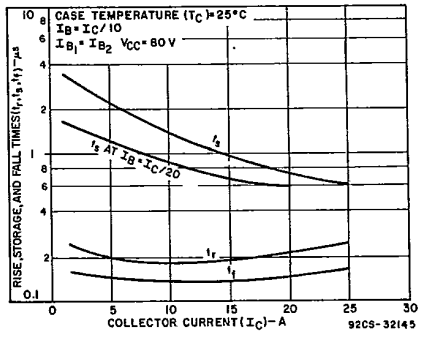

Fig. 9 - Typical saturated-switching-time characteristics as a function of collector current for both types.

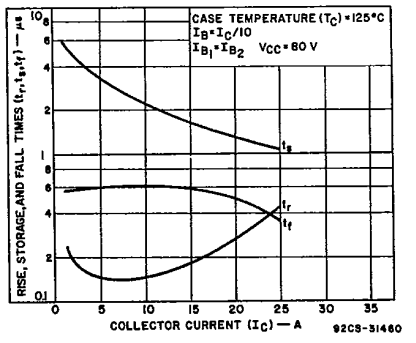

Fig. 10 - Typical saturated-switching-time characteristics at T_C = 125° C as a function of collector current for both types.

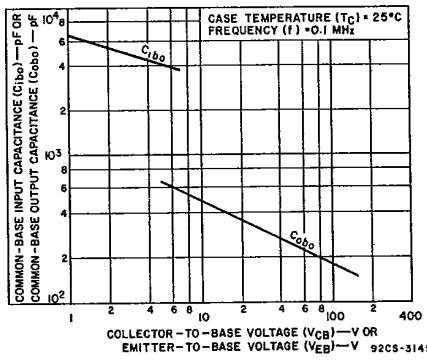

Fig. 11 - Typical common-base input (C_{ibo}) or output (C_{obo}) capacitance characteristic for both types.

RCA6340, RCA6341

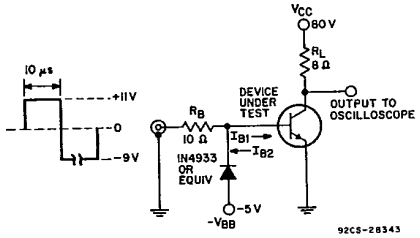

Fig. 12 - Switching-time test circuit.

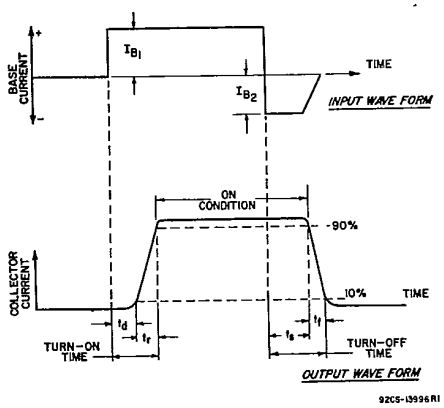

Fig. 13 - Phase relationship between input current and output current showing reference points for specification of switching times.