

3875081 G E SOLID STATE

01E 17586 D T-33-11

Pro Electron Power Transistors

File Number 1199

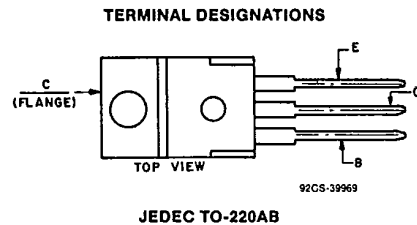
BUW64A, BUW64B, BUW64C

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



RCA-BUW64A, BUW64B, and BUW64C are 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 BUW64A, BUW64B, and BUW64C transistors are supplied in the JEDEC TO-220AB (RCA VERSAWATT) plastic packages.

MAXIMUM RATINGS, Absolute-Maximum Values:

	BUW64A	BUW64B	BUW64C	
V_{CEV}				
$V_{BE} = -1.5 \text{ V}$	140	160	180	V
V_{CEO}	90	110	130	V
V_{ESD}		7		V
$I_{C(sat)}$	5	5	4	A
I_C		7		A
I_{CM}		10		A
I_B		5		A
P_T				
T_C up to 25° C		50		W
T_C above 25° C		0.4		W/°C
T_{stg}, T_J		-65 to 150		°C
T_L				
At distance $\geq 1/8$ in. (3.16 mm) from seating plane for 10 s max. ...		235		°C

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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		BUW64A		BUW64B		BUW64C		
	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°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 5 ^a	0.4 0.5	- -	- 1.5	- -	- 1.5	- -	1.4 -	V
V _{CE} (sat)			4 ^a	0.4	-	-	-	-	-	0.7	
			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 5	0.4 0.5	- -	- 0.1	- -	- 0.1	- -	0.1 -	μs
t _r ^d		-4	4 5	0.4 0.5	- -	- 0.25	- -	- 0.25	- -	0.25 -	
t _s ^d		-4	4 5	0.4 ^e 0.5 ^e	- -	- 1	- -	- 1	- -	1 -	
t _f ^d		-4	4 5	0.4 ^e 0.5 ^e	- -	- 0.5	- -	- 0.5	- -	0.5 -	
R _{θJC}	4		5		-	2.5	-	2.5	-	2.5	°C/W

^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 $V_{CC} = 70\text{ V}$, $t_p = 20\text{ }\mu\text{s}$ ^e $I_{B1} = -I_{B2}$.

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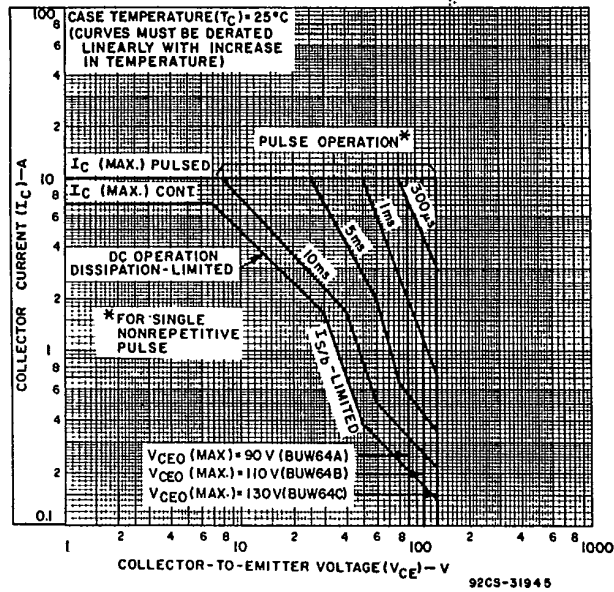


Fig. 1 — Maximum operating areas for all types
($T_C = 25^\circ\text{C}$).

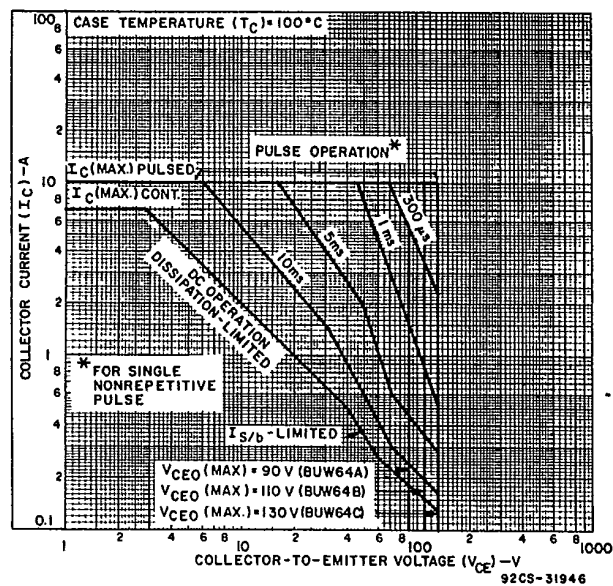


Fig. 2 — Maximum operating areas for all types
($T_C = 100^\circ\text{C}$).

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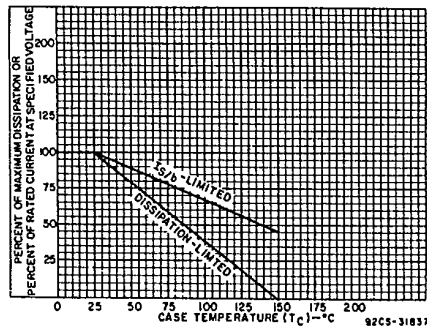


Fig. 3 - Dissipation and $I_{S/b}$ derating curves for all types.

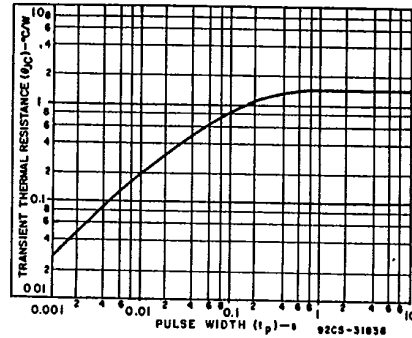


Fig. 4 - Typical thermal-response characteristic for all types.

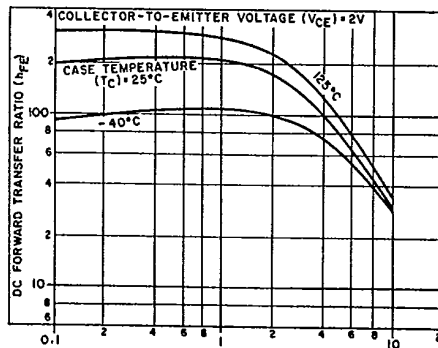


Fig. 5 - Typical dc beta characteristics for all types.

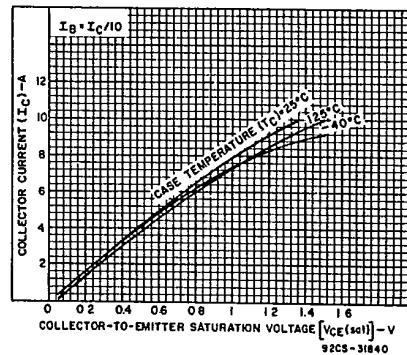


Fig. 6 - Typical collector-to-emitter saturation voltage characteristics for all types.

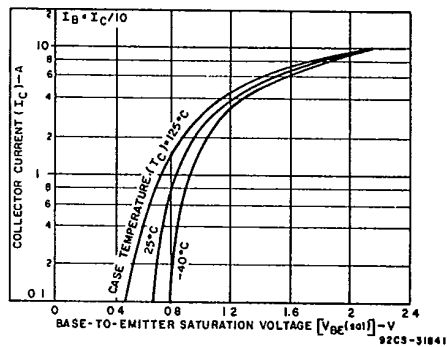


Fig. 7 - Typical base-to-emitter saturation voltage characteristic for all types.

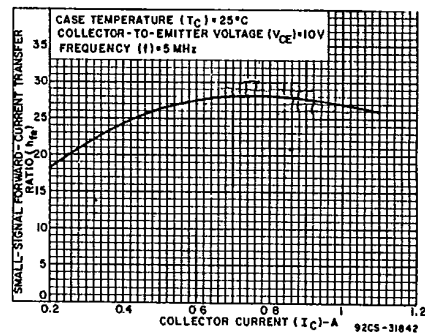


Fig. 8 - Typical small-signal forward-current transfer ratio characteristic for all types ($f = 5$ MHz).

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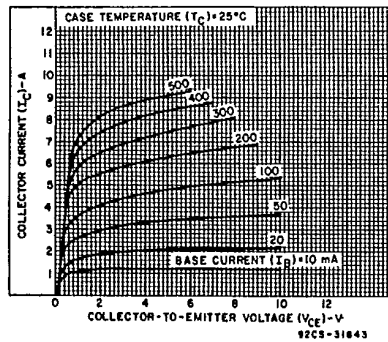


Fig. 9 - Typical output characteristics for all types.

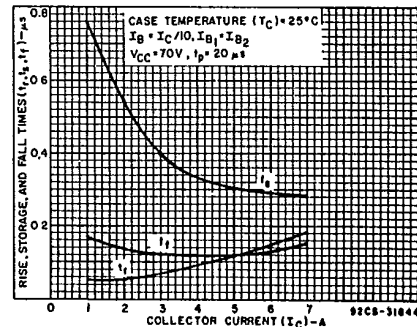
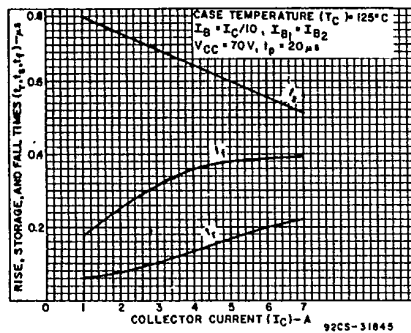
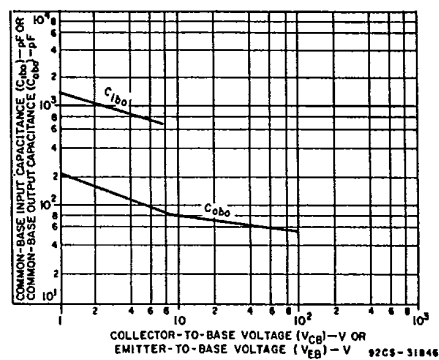
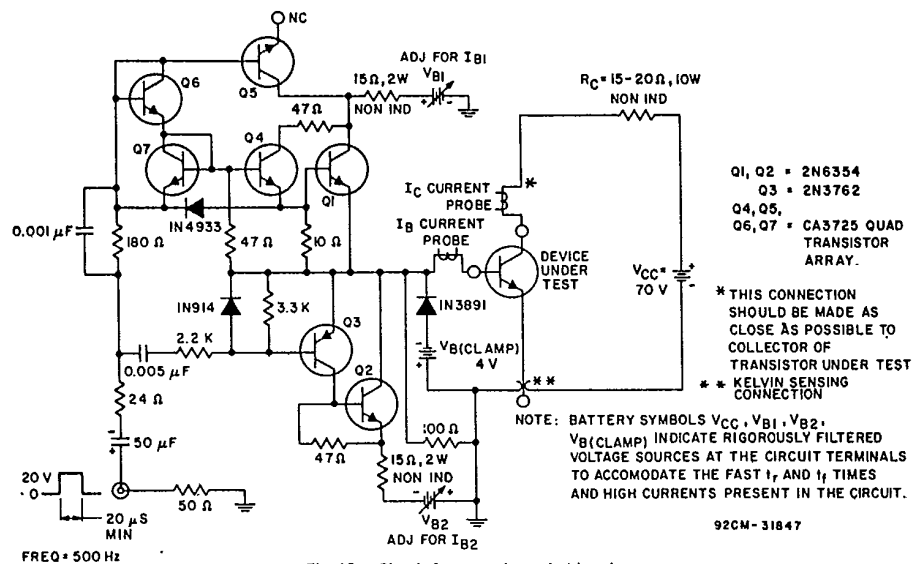
Fig. 10 - Typical saturated-switching-time characteristics as a function of collector current for all types ($T_C = 25^\circ\text{C}$).Fig. 11 - Typical saturated-switching-time characteristics as a function of collector current for all types ($T_C = 125^\circ\text{C}$).Fig. 12 - Typical common-base input (C_{ibo}) or output (C_{obo}) capacitance characteristic for all types.

Fig. 13 - Circuit for measuring switching times.

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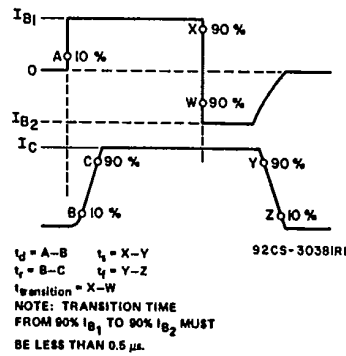


Fig. 14 — Phase relationship between input and output currents showing reference points for specification of switching times.