

Silicon N-P-N Epitaxial-Base High-Power Transistor

RCA9166B

Features:

- High dissipation capability
- Maximum safe-area-of-operation curves
- High voltage
- High gain at high current

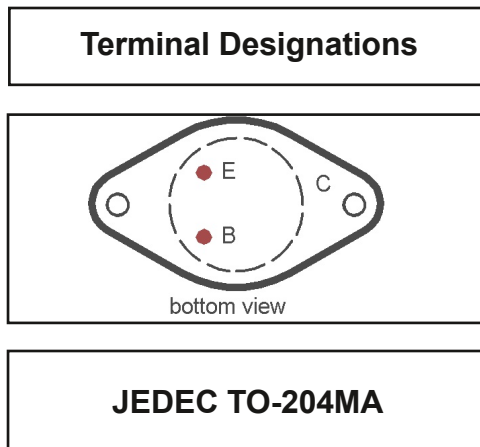
Applications:

- High-fidelity amplifiers
- Series and shunt regulators
- Linear power amplifiers

The RCA9166 Series are ballasted epitaxial-base silicon n-p-n transistors featuring high gain at high current and high voltage. They differ from each other in voltage ratings, safe-operating area (SOA) ratings and the currents at which the parameters are controlled.

The RCA9166 Series are supplied in the JEDEC TO-204MA hermetic steel package.

Formerly Types are the TA9166 Series.



MAXIMUM RATINGS, Absolute-Maximum Values:

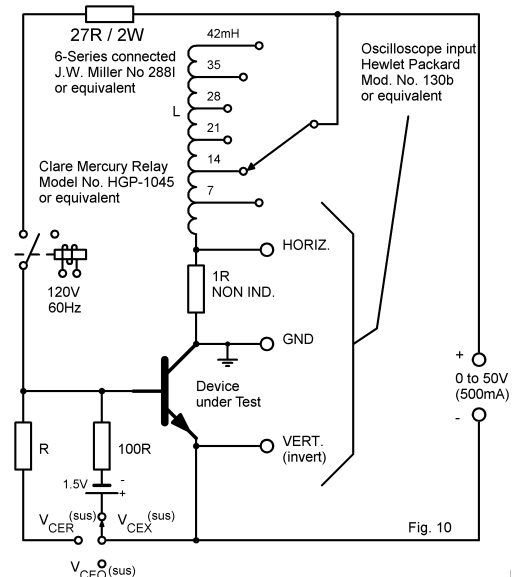
V_{CBO}	-	V
$U_{CER}^{(SUS)}$ $R_{BE} = 100\Omega$	225	V
$V_{CEO}^{(SUS)}$	200	V
V_{EBO}	5	V
I_C	16	A
I_{CM}	30	A
I_B	5	A
P_T $T_C \leq 25^\circ C$	250	W
P_T $T_C > 25^\circ C$ Derate linearly	1.43	W/°C
$T_{stg} T_J$	-65 to +200	°C
T_L At distance $\geq 1/32$ in. (0.8mm) from seating plane for 10s max.	230	°C

Electrical Characteristics, at Case Temperature (T_C) = 25°C
 Unless Otherwise Specified

RCA9166B

CHARACTERISTIC	TEST CONDITIONS		LIMITS		UNITS
	VOLTAGE V	CURRENT A	RCA9166B		
	dc	dc	Min.	Max.	
I_{CEO}	V_{CE}	I_C	-	1	mA
I_{CER} $R_{BE} = 100\Omega$, $T_C = 150^\circ C$	150		-	4	
h_{FE}	4	3 ^c	30	-	
	4	5 ^c	20	-	
	4	8 ^c	-	-	
	4	16 ^c	3.2	-	
$V_{CEO}^{(sus) b}$		0.1	200	-	V
$V_{CER}^{(sus) b}$ $R_{BE} = 100\Omega$		0.1	225	-	
V_{EBO} $I_E = 1mA$			5		
U_{BE}	4	3 ^c	-	2	
$U_{CE}^{(sat)}$ $I_B =$	0.3A	3 ^c	-	1	
	0.8A		-	-	
	3.2A		-	-	
$I_{S/b}$ $t_p = 0.5s$ nonrep.	80		3	-	A
$ h_{fe} $ $f = 1MHz$	10	1	4	20	
f_T	10	1	4	20	MHz
C_{OB}	10 ^a		-	500	pF
$R_{\theta JC}$	10	10	-	0.7	°C/W

- Note a: V_{CB}
 Note b: **CAUTION** Sustaining voltages $V_{CER}^{(sus)}$ and $V_{CEO}^{(sus)}$ **MUST NOT** be measured on a curve tracer, see Fig. 10
 Note c: Pulse duration = 300 μs , duty factor = 1.8%



I_C	- continuous collector current
I_{CM}	- peak collector current
I_{CER}	- collector-cutoff current with specified resistance between base and emitter
I_{CEX}	- collector-cutoff current with specified circuit between base and emitter
I_B	- continuous base current
I_{EBO}	- emitter-cutoff current, collector open
$I_{S/b}$	- forward-bias, second break-down collector current
V_{CBO}	- collector-to-base voltage, emitter open
V_{CEO}	- collector-to-emitter voltage, base open
$V_{CEO}^{(sus)}$	- collector-to-emitter sustaining voltage, base open
$V_{CER}^{(sus)}$	- collector-to-emitter sustaining voltage with specified resistance between base and emitter
V_{EBO}	- emitter-to-base voltage, collector open
V_{BE}	- base-to-emitter voltage
V_{CE}^{sat}	- collector-to-emitter saturation voltage
C_{OB}	- common-base output capacitance
fT	- gain-bandwidth product (unity-gain frequency for devices in which gain roll-off has a -1 slope)
h_{FE}	- dc forward-current transfer ratio
$ h_{fe} $	- magnitude of common-emitter, small-signal, short-circuit, forward-current transfer ratio
R_{BE}	- external base-to-emitter resistance
$R_{\theta JC}$	- thermal resistance, junction-to-case
P_T	- transistor dissipation at specified temperature
T_C	- case temperature
T_{stg}	- storage temperature
T_J	- operating (junction) temperature
T_L	- lead temperature during soldering
θ	- conduction angle