RCA
Solid State
Division

Power Transistors

RCA1A01—RCA1A11
RCA1A15—RCA1A19

JEDEC TO-39 H-1381

Silicon Transistors for Audio-Frequency Linear-Amplifier Applications

N-P-N TYPES		P-N-P TYPES	
RCA1A01	RCA1A11	RCA1A02	RCA1A10
RCA1A03	RCA1A15	RCA1A04	RCA1A16
RCA1A06	RCA1A17	RCA1A05	RCA1A19
RCA1A07	RCA1A18	RCA1A08	
RCA1A09			

"RCA1A-Series" n-p-n and p-n-p silicon transistors are especially characterized for audio-amplifier applications. They are particularly useful as input devices, V_{BE} multipliers for biasing, current sources, load-line-limiting (protection) circuits, predrivers, and in some instances as complementary drivers. Other applications for these devices include audio power amplifiers, linear modulators, servo amplifiers, and operational amplifiers. The units are supplied in the JEDEC TO-39 package.

TERMINAL CONNECTIONS

Lead 1 – Emitter
Lead 2 – Base
Lead 3 – Collector, Case

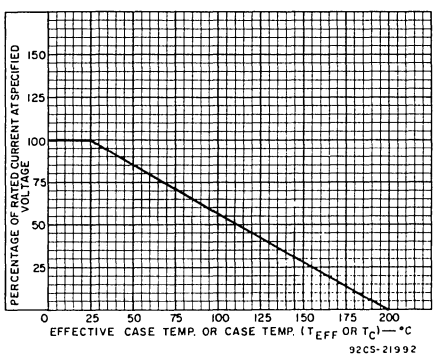

Fig. 1– Derating curve for all types.

MAXIMUM RATINGS, *Absolute-Maximum Values:*		RCA1A01	RCA1A02	RCA1A03	RCA1A04	RCA1A05	RCA1A06	RCA1A07	RCA1A08	
COLLECTOR-TO-BASE VOLTAGE	V_{CBO}	–	–	95	–95	–75	75	50	–50	V
COLLECTOR-TO-EMITTER VOLTAGE:										
With base open	V_{CEO}	70	–50	–	–	–	–	40	–40	V
With external base-to-emitter resistance (R_{BE}) = 100 Ω	V_{CER}	–	–	95	–95	–75	75	50[•]	–50[▲]	V
EMITTER-TO-BASE VOLTAGE	V_{EBO}	4	–4	4	–4	–4	4	3	–5	V
COLLECTOR CURRENT	I_C	1	–1	2	–2	–1	1	1	–1	A
BASE CURRENT	I_B	0.5	–0.5	1	–1	–0.5	0.5	0.05	–0.05	A
TRANSISTOR DISSIPATION:	P_T									
At case temperatures up to 25°C		5	7	10	10	5	5	5	7	W
At case temperatures above 25°C		← See Fig. 1 →								
TEMPERATURE RANGE:										
Storage & Operating (Junction)		← –65 to +200 →								°C
PIN TEMPERATURE (During Soldering):										
At distances ≥ 1/32 in. (0.8 mm) from case for 10 s max.		← 230 →								°C

[•] R_{BE} = 10 Ω

[▲] R_{BE} = 300 Ω

MAXIMUM RATINGS, *Absolute-Maximum Values:*		RCA1A09	RCA1A10	RCA1A11	RCA1A15	RCA1A16	RCA1A17	RCA1A18	RCA1A19	
COLLECTOR-TO-EMITTER VOLTAGE:										
With base open	V_{CEO}	175	–175	175	100	–100	90	10	–10	V
EMITTER-TO-BASE VOLTAGE	V_{EBO}	6	–6	6	5	–5	4	4	–4	V
COLLECTOR CURRENT	I_C	1	–1	1	1	–1	1	1	–1	A
BASE CURRENT	I_B	0.5	–0.5	0.5	0.5	–0.1	0.5	0.5	–0.5	A
TRANSISTOR DISSIPATION:	P_T									
At case temperatures up to 25°C		10	10	10	10	10	5	7	7	W
At case temperatures above 25°C		← See Fig. 1 →								
TEMPERATURE RANGE:										
Storage & Operating (Junction)		← –65 to +200 →								°C
PIN TEMPERATURE (During Soldering):										
At distances ≥ 1/32 in. (0.8 mm) from case for 10 s max.		← 230 →								°C

Type RCA1A01
Package: JEDEC TO-39
Construction: Silicon n-p-n, planar

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

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	LIMITS		UNITS
			MIN.	MAX.	
Collector Cutoff Current: With base open	I_{CEO}	V_{CE} = 60 V, I_B = 0	–	1	μA
Emitter Cutoff Current: With collector open	I_{EBO}	V_{EB} = 4 V, I_C = 0	–	1	mA
Collector-to-Emitter Voltage: With base open	V_{CEO}	I_C = 100 mA	70	–	V
Gain Bandwidth Product	f_T	V_{CE} = 4 V, I_C = 50 mA	120	–	MHz
DC Forward-Current Transfer Ratio	h_{FE}	I_C = 10 mA, V_{CE} = 4 V	40	200	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 150 mA, I_B = 15 mA	–	1.4	V
Base-to-Emitter Voltage	V_{BE}	I_C = 10 mA, V_{CE} = 4 V	–	1	V

For characteristics curves and test conditions, refer to published data for prototype 2N2102 (File 106).

Type RCA1A02
Package: JEDEC TO-39
Construction: Silicon p-n-p, epitaxial planar

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

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	LIMITS		UNITS
			MIN.	MAX.	
Collector Cutoff Current: With base open	I_{CEO}	V_{CE} = −40 V, I_B = 0	–	−1	μA
Emitter Cutoff Current: With collector open	I_{EBO}	V_{EB} = −4 V, I_C = 0	–	−1	mA
Collector-to-Emitter Voltage: With base open	V_{CEO}	I_C = −0.1 A	−50	–	V
Gain Bandwidth Product	f_T	V_{CE} = −4 V, I_C = −50 mA	60	–	MHz
DC Forward-Current Transfer Ratio	h_{FE}	I_C = −0.1 mA, V_{CE} = −10 V	30	200	
Base-to-Emitter Voltage	V_{BE}	I_C = −0.1 mA, V_{CE} = −10 V	–	−0.8	V

For characteristics curves and test conditions, refer to published data for prototype 2N4036 (File 216).

Type RCA1A03
Package: JEDEC TO-39
Construction: Silicon n-p-n, planar

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

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	LIMITS		UNITS
			MIN.	MAX.	
Collector Cutoff Current: With external base-to-emitter resistance (R_{BE})	I_{CER}	V_{CE} = 85 V, R_{BE} = 100Ω	–	10	μA
Emitter Cutoff Current: With collector open	I_{EBO}	V_{EB} = 4 V, I_C = 0	–	0.1	mA
Collector-to-Emitter Voltage: With external base-to-emitter resistance (R_{BE})	V_{CER}	I_C = 0.1 A, R_{BE} = 100Ω	95	–	V
Gain Bandwidth Product	f_T	I_C = 0.1 A, V_{CE} = 4 V	50	–	MHz
DC Forward-Current Transfer Ratio	h_{FE}	I_C = 300 mA, V_{CE} = 4 V	70	300	
Collector-to-Emitter Saturation Voltage	$V_{CE}(sat)$	I_C = 300 mA, I_B = 30 mA	–	0.8	V
Base-to-Emitter Voltage	V_{BE}	I_C = 300 mA, V_{CE} = 4 V	–	1.4	V
Second-Breakdown Collector Current: With base forward biased	$I_{S/b}$	V_{CE} = 50 V, t = 0.4 s	0.2	–	A

For characteristics curves and test conditions, refer to published data for prototype 2N5320 (File 325).

Type RCA1A04
Package: JEDEC TO-39
Construction: Silicon p-n-p, epitaxial-planar

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

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	LIMITS		UNITS
			MIN.	MAX.	
Collector Cutoff Current: With external base-to-emitter resistance (R_{BE})	I_{CER}	V_{CE} = –85 V, R_{BE} = 100Ω	–	–10	μA
Emitter Cutoff Current: With collector open	I_{EBO}	V_{EB} = 4 V, I_C = 0	–	–0.1	mA
Collector-to-Emitter Voltage: With external base-to-emitter resistance (R_{BE})	V_{CER}	I_C = –0.1 A, R_{BE} = 100Ω	–95	–	V
Gain Bandwidth Product	f_T	I_C = –0.1 A, V_{CE} = –4 V	50	–	MHz
DC Forward-Current Transfer Ratio	h_{FE}	I_C = –300 mA, V_{CE} = –4 V	70	300	
Collector-to-Emitter Saturation Voltage	$V_{CE}(sat)$	I_C = –300 mA, I_B = –30 mA	–	–0.8	V
Base-to-Emitter Voltage	V_{BE}	I_C = –300 mA, V_{CE} = –4 V	–	–1.4	V
Second-Breakdown Collector Current: With base forward biased	$I_{S/b}$	V_{CE} = –35 V, t = 0.4 s	–0.285	–	A

For characteristics curves and test conditions, refer to published data for prototype 2N5322 (File 325).

Type RCA1A05
Package: JEDEC TO-39
Construction: Silicon p-n-p epitaxial planar

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

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	LIMITS		UNITS
			MIN.	MAX.	
Collector Cutoff Current: With external base-to-emitter resistance (R_{BE})	I_{CER}	V_{CE} = −65 V, R_{BE} = 100Ω	–	−10	μA
Emitter Cutoff Current: With collector open	I_{EBO}	V_{EB} = −4 V, I_C = 0	–	−0.1	mA
Collector-to-Emitter Voltage: With external base-to-emitter resistance (R_{BE})	V_{CER}	I_C = −0.1 A, R_{BE} = 100Ω	−75	–	V
Gain Bandwidth Product	f_T	I_C = −50 mA, V_{CE} = −4 V	60		MHz
DC Forward-Current Transfer Ratio	h_{FE}	I_C = −150 mA, V_{CE} = −4 V	50	250	
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C = −150 mA, I_B = −15 mA	–	−0.8	V
Base-to-Emitter Voltage	V_{BE}	I_C = −150 mA, V_{CE} = −4 V	–	−1.4	V
Second-Breakdown Collector Current: With base forward biased	$I_{S/b}$	V_{CE} = −65 V, t = 0.4 s	−0.1	–	A

For characteristics curves and test conditions, refer to published data for prototype 2N4036 (File 216).

Type RCA1A06
Package: JEDEC TO-39
Construction: Silicon n-p-n, planar

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

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	LIMITS		UNITS
			MIN.	MAX.	
Collector Cutoff Current: With external base-to-emitter resistance (R_{BE})	I_{CER}	V_{CE} = 65V, R_{BE} = 100Ω	–	10	μA
Emitter Cutoff Current: With collector open	I_{EBO}	V_{EB} = 4V, I_C = 0	–	0.1	mA
Collector-to-Emitter Voltage: With external base-to-emitter resistance (R_{BE})	V_{CER}	I_C = 100 mA, R_{BE} = 100Ω	75	–	V
Gain Bandwidth Product	f_T	I_C = 50 mA, V_{CE} = 4 V	120	–	MHz
DC Forward-Current Transfer Ratio	h_{FE}	I_C = 150 mA, V_{CE} = 4V	50	250	
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C = 150 mA, I_B = 15 mA	–	0.8	V
Base-to-Emitter Voltage	V_{BE}	I_C = 150 mA, V_{CE} = 4V	–	1.4	V
Second-Breakdown Collector Current: With base forward biased	$I_{S/b}$	V_{CE} = 65V, t = 0.4 s	0.077	–	A

For characteristics curves and test conditions, refer to published data for prototype 2N2102 (File 106).

Type RCA1A07
Package: JEDEC TO-39
Construction: Silicon n-p-n, planar

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

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	LIMITS		UNITS
			MIN.	MAX.	
Collector Cutoff Current: With base open	I_{CEO}	V_{CE} = 40 V	–	10	μA
Emitter Cutoff Current: With collector open	I_{EBO}	V_{EB} = 3 V, I_C = 0	–	0.1	mA
Collector-to-Emitter Voltage: With base open	V_{CEO}	I_C = 100 mA	40	–	V
Collector-to-Emitter Voltage: With external base-to-emitter resistance (R_{BE})	V_{CER}	I_C = 100 mA, R_{BE} = 10Ω	50	–	V
Gain Bandwidth Product	f_T	V_{CE} = 10 V, I_C = 50 mA	120	–	MHz
DC Forward-Current Transfer Ratio	h_{FE}	I_C = 3 mA, V_{CE} = 10 V	50	250	
Collector-to-Emitter Saturation Voltage	$V_{CE}(sat)$	I_C = 20 mA, I_B = 1 mA	–	1	V
Base-to-Emitter Saturation Voltage	$V_{BE}(sat)$	I_C = 20 mA, I_B = 1 mA	–	1.3	V

For characteristics curves and test conditions, refer to published data for prototype 2N2102 (File 106).

Type RCA1A08
Package: JEDEC TO-39
Construction: Silicon p-n-p, epitaxial planar

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

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	LIMITS		UNITS
			MIN.	MAX.	
Collector Cutoff Current: With external base-to-emitter-resistance	I_{CER}	V_{CE} = –40 V, R_{BE} = 330Ω	–	–10	μA
Emitter Cutoff Current: With collector open	I_{EBO}	V_{EB} = –5 V	–	–0.1	mA
Collector-to-Emitter Voltage: With base open	V_{CEO}	I_C = –100 mA, I_B = 0	–40	–	V
Collector-to-Emitter Voltage: With external base-to-emitter resistance (R_{BE})	V_{CER}	I_C = –100 mA, R_{BE} = 330Ω	–50	–	V
Gain Bandwidth Product	f_T	V_{CE} = –10 V, I_C = –50 mA	60	–	MHz
DC Forward-Current Transfer Ratio	h_{FE}	I_C = –50 mA, V_{CE} = –1.5 V	70	250	
Collector-to-Emitter Saturation Voltage	$V_{CE}(sat)$	I_C = –100 mA, I_B = –5 mA	–	–1.4	V
Base-to-Emitter Saturation Voltage	$V_{BE}(sat)$	I_C = –100 mA, I_B = –5 mA	–	–1.4	V
Second-Breakdown Collector Current: With base forward biased	$I_{S/b}$	V_{CE} = –35 V, t = 0.05 s	–0.12	–	A

For characteristics curves and test conditions, refer to published data for prototype 2N4036 (File 216).

Type RCA1A09
Package: JEDEC TO-39
Construction: Silicon n-p-n, epitaxial

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

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	LIMITS		UNITS
			MIN.	MAX.	
Collector Cutoff Current: With base open	I_{CEO}	V_{CE} = 90 V, I_B = 0	–	10	μA
Emitter Cutoff Current: With collector open	I_{EBO}	V_{EB} = 6 V, I_C = 0	–	100	μA
Collector-to-Emitter Voltage: With base open	V_{CEO}	I_C = 10 mA, I_B = 0	175	–	V
Gain Bandwidth Product	f_T	I_C = 10 mA, V_{CE} = 10 V	15	–	MHz
DC Forward-Current Transfer Ratio	h_{FE}	I_C = 10 mA, V_{CE} = 10 V	20	100	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 50 mA, I_B = 4 mA	–	0.5	V
Base-to-Emitter Voltage	V_{BE}	I_C = 10 mA, V_{CE} = 10 V	–	0.9	V
Second-Breakdown Collector Current: With base forward biased	$I_{S/b}$	V_{CE} = 150 V, t = 1 s	0.065	–	A

For characteristics curves and test conditions, refer to published data for prototype 2N3439 (File 64).

Type RCA1A10
Package: JEDEC TO-39
Construction: Silicon p-n-p

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

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	LIMITS		UNITS
			MIN.	MAX.	
Collector Cutoff Current: With base open	I_{CEO}	V_{CE} = −120 V, I_B = 0	–	−10	μA
Emitter Cutoff Current: With collector open	I_{EBO}	V_{EB} = −6 V, I_C = 0	–	−100	μA
Collector-to-Emitter Voltage: With base open	V_{CEO}	I_C = −10 mA, I_B = 0	−175	–	V
Gain Bandwidth Product	f_T	I_C = −10 mA, V_{CE} = −10 V	15	–	MHz
DC Forward-Current Transfer Ratio	h_{FE}	I_C = −10 mA, V_{CE} = −10 V	40	250	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = −10 mA, I_B = −1 mA	–	−2	V
Base-to-Emitter Voltage	V_{BE}	I_C = −10 mA, V_{CE} = −10 V	–	−0.8	V
Second-Breakdown Collector Current: With base forward biased	$I_{S/b}$	V_{CE} = −150 V, t = 1 s	−0.04	–	A

For characteristics curves and test conditions, refer to published data for prototype 2N5415 (File 336).

Type RCA1A11
Package: JEDEC TO-39
Construction: Silicon n-p-n, epitaxial

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

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	LIMITS		UNITS
			MIN.	MAX.	
Collector Cutoff Current: With base open	I_{CEO}	V_{CE} = 90 V, I_B = 0	–	10	μA
Emitter Cutoff Current: With collector open	I_{EBO}	V_{EB} = 6 V, I_C = 0	–	100	μA
Collector-to-Emitter Voltage: With base open	V_{CEO}	I_C = 10 mA, I_B = 0	175	–	V
Gain Bandwidth Product	f_T	I_C = 10 mA, V_{CE} = 10 V	15	–	MHz
DC Forward-Current Transfer Ratio	h_{FE}	I_C = 1 mA, V_{CE} = 10 V	40	250	
Base-to-Emitter Voltage	V_{BE}	I_C = 1 mA, V_{CE} = 10 V	0.5	0.7	V

For characteristics curves and test conditions, refer to published data for prototype 2N3439 (File 64).

Type RCA1A15
Package: JEDEC TO-39
Construction: Silicon n-p-n, epitaxial

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

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	LIMITS		UNITS
			MIN.	MAX.	
Collector Cutoff Current: With base open	I_{CEO}	V_{CE} = 90 V	–	10	μA
Emitter Cutoff Current: With collector open	I_{EBO}	V_{EB} = 5 V, I_C = 0	–	1	mA
Collector-to-Emitter Voltage: With base open	V_{CEO}	I_C = 10 mA, I_B = 0	100	–	V
Gain Bandwidth Product	f_T	V_{CE} = 10 V, I_C = 10 mA	15	–	MHz
DC Forward-Current Transfer Ratio	h_{FE}	I_C = 10 mA, V_{CE} = 10 V	20	100	
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C = 10 mA, I_B = 1 mA	–	1	V
Base-to-Emitter Voltage	V_{BE}	I_C = 10 mA, V_{CE} = 10 V	–	1	V
Second-Breakdown Collector Current: With base forward biased	$I_{S/b}$	V_{CE} = 50 V, t = 0.4 s	0.2	–	A

For characteristics curves and test conditions, refer to published data for prototype 2N3440 (File 64).

Type RCA1A16
Package: JEDEC TO-39
Construction: Silicon p-n-p, epitaxial

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

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	LIMITS		UNITS
			MIN.	MAX.	
Collector Cutoff Current: With base open	I_{CEO}	$V_{CE} = -90$ V	–	−10	μA
Emitter Cutoff Current: With collector open	I_{EBO}	$V_{EB} = -5$ V, $I_C = 0$	–	−1	mA
Collector-to-Emitter Voltage: With base open	V_{CEO}	$I_C = -10$ mA, $I_B = 0$	−100	–	V
Gain Bandwidth Product	f_T	$V_{CE} = -10$ V, $I_C = -10$ mA	15	–	MHz
DC Forward-Current Transfer Ratio	h_{FE}	$I_C = -10$ mA, $V_{CE} = -10$ V	40	250	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = -10$ mA, $I_B = -1$ mA	–	−1	V
Base-to-Emitter Voltage	V_{BE}	$I_C = -10$ mA, $V_{CE} = -10$ V	–	−1	V
Second-Breakdown Collector Current: With base forward biased	$I_{S/b}$	$V_{CE} = -50$ V, t = 0.4 s	−0.2	–	A

For characteristics curves and test conditions, refer to published data for prototype 2N5416 (File 336).

Type RCA1A17
Package: JEDEC TO-39
Construction: Silicon n-p-n, planar

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

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	LIMITS		UNITS
			MIN.	MAX.	
Collector Cutoff Current: With base open	I_{CEO}	$V_{CE} = 80$ V, $I_B = 0$	–	1	μA
Emitter Cutoff Current: With collector open	I_{EBO}	$V_{EB} = 4$ V, $I_C = 0$	–	1	mA
Collector-to-Emitter Voltage: With base open	V_{CEO}	$I_C = 100$ mA, $I_B = 0$	90	–	V
Gain Bandwidth Product	f_T	$V_{CE} = 4$ V, $I_C = 50$ mA	120	–	MHz
DC Forward-Current Transfer Ratio	h_{FE}	$I_C = 10$ mA, $V_{CE} = 4$V	40	200	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 150$ mA, $I_B = 15$ mA	–	1.4	V
Base-to-Emitter Voltage	V_{BE}	$I_C = 10$ mA, $V_{CE} = 4$ V	–	1	V

For characteristics curves and test conditions, refer to published data for prototype 2N2102 (File 106).

Type RCA1A18
Package: JEDEC TO-39
Construction: Silicon n-p-n, planar

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

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	LIMITS		UNITS
			MIN.	MAX.	
Collector Cutoff Current: With base open	I_{CEO}	V_{CE} = 5 V, I_B = 0	–	10	μA
Emitter Cutoff Current: With collector open	I_{EBO}	V_{EB} = 4 V, I_C = 0	–	1	mA
Collector-to-Emitter Voltage: With base open	V_{CEO}	I_C = 10 mA, I_B = 0	10	–	V
Gain Bandwidth Product	f_T	I_C = 50 mA, V_{CE} = 4 V	120	–	MHz
DC Forward-Current Transfer Ratio	hFE	I_C = 10 mA, V_{CE} = 4 V	40	250	
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C = 10 mA, I_B = 0.5 mA	–	1	V
Base-to-Emitter Voltage	V_{BE}	I_C = 10 mA, V_{CE} = 4 V	–	0.78	V

For characteristics curves and test conditions, refer to published data for prototype 2N2102 (File 106).

Type RCA1A19
Package: JEDEC TO-39
Construction: Silicon p-n-p, epitaxial planar

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

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	LIMITS		UNITS
			MIN.	MAX.	
Collector Cutoff Current: With base open	I_{CEO}	V_{CE} = −5 V, I_B = 0	–	−10	μA
Emitter Cutoff Current: With collector open	I_{EBO}	V_{EB} = −4 V, I_C = 0	–	−1	mA
Collector-to-Emitter Voltage With base open	V_{CEO}	I_C = −10 mA, I_B = 0	−10	–	V
Gain Bandwidth Product	f_T	I_C = −50 mA, V_{CE} = −4 V	60	–	MHz
DC Forward-Current Transfer Ratio	h_{FE}	I_C = −10 mA, V_{CE} = −4 V	40	250	
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C = −10 mA, I_B = −0.5 mA	–	−1	V
Base-to-Emitter Voltage	V_{BE}	I_C = −10 mA, V_{CE} = −4 V	–	−0.78	V

For characteristics curves and test conditions, refer to published data for prototype 2N4036 (File 216).