

File Number 675

2N5954, 2N5955, 2N5956

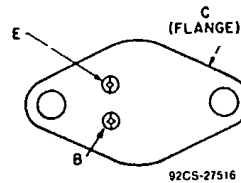
## Silicon P-N-P Medium-Power Transistors

General-Purpose Types for Switching Applications

### Features:

- Low saturation voltages
- Maximum-safe-area-of-operation curves
- High gain at high current

### TERMINAL DESIGNATIONS



JEDEC TO-213AA

RCA-2N5954, 2N5955, and 2N5956\* are multiple-epitaxial p-n-p transistors. All are supplied in the JEDEC TO-213AA package.

All these transistors are intended for a wide variety of medium-power switching and amplifier applications, such as series regulators and output stages of high-fidelity amplifiers.

\*Formerly RCA Dev. Nos. TA7264, TA7265, and TA7266, respectively.

### MAXIMUM RATINGS, Absolute-Maximum Values:

	2N5954	2N5955	2N5956	
* $V_{CE0}$ .....	-90	-70	-50	V
* $V_{CEX(SUS)}$ $V_{BE} = 1.5 V, R_{BE} = 100 \Omega$ .....	-90	-70	-50	V
$V_{CER(SUS)}$ $R_{BE} = 100 \Omega$ .....	-85	-65	-45	V
$V_{CE0(SUS)}$ .....	-80	-60	-40	V
* $V_{EBO}$ .....	-5	-5	-5	V
* $I_C$ .....	-6	-6	-6	A
* $I_B$ .....	-2	-2	-2	A
* $P_T$ At $T_C$ up to $25^\circ C$ .....	40	40	40	W
At $T_C$ above $25^\circ C$ .....	See Figs. 1 and 2			
* $T_J, T_{stg}$ .....	-65 to +200			$^\circ C$
* $T_L$ At distances $\geq 1/32$ in. (0.8 mm) from seating plane for 10 s max. ....	235			$^\circ C$

\* JEDEC types in accordance with JEDEC registration data format JS-6-RDF-2.

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ELECTRICAL CHARACTERISTICS, At Case Temperature (T<sub>c</sub>) = 25°C Unless Otherwise Specified

CHARACTERISTIC	TEST CONDITIONS				LIMITS						UNITS
	VOLTAGE V dc		CURRENT A dc		2N5956		2N5955		2N5954		
	V <sub>CE</sub>	V <sub>BE</sub>	I <sub>C</sub>	I <sub>B</sub>	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
I <sub>CEB</sub> R <sub>BE</sub> = 100 Ω	-35	—	—	—	—	-100	—	—	—	—	μA
	-55	—	—	—	—	—	—	-100	—	—	
	-75	—	—	—	—	—	—	—	—	-100	
I <sub>CEX</sub> R <sub>BE</sub> = 100 Ω	-45	1.5	—	—	—	-100	—	—	—	—	μA
	-65	1.5	—	—	—	—	—	-100	—	—	
	-85	1.5	—	—	—	—	—	—	—	-100	
R <sub>BE</sub> = 100 Ω, T <sub>c</sub> = 150°C	-45	1.5	—	—	—	-2	—	—	—	—	mA
	-65	1.5	—	—	—	—	—	-2	—	—	
	-85	1.5	—	—	—	—	—	—	—	-2	
I <sub>CEO</sub>	-25	—	—	—	—	-1	—	—	—	—	mA
	-45	—	—	—	—	—	—	-1	—	—	
	-65	—	—	—	—	—	—	—	—	-1	
I <sub>EBO</sub>	—	5	—	—	—	-0.1	—	-0.1	—	-0.1	mA
h <sub>FE</sub>	-4	—	-3 <sup>a</sup>	—	20	100	—	—	—	—	I
	-4	—	-2.5 <sup>a</sup>	—	—	—	20	100	—	—	
	-4	—	-2 <sup>a</sup>	—	—	—	—	—	20	100	
	-4	—	-6 <sup>a</sup>	—	5	—	5	—	5	—	
V <sub>CEO(sus)</sub>	—	—	-0.1 <sup>a</sup>	—	-40 <sup>b</sup>	—	-60 <sup>b</sup>	—	-80 <sup>b</sup>	—	V
V <sub>CEB(sus)</sub> R <sub>BE</sub> = 100 Ω	—	—	-0.1 <sup>a</sup>	—	-45 <sup>b</sup>	—	-65 <sup>b</sup>	—	-85 <sup>b</sup>	—	
V <sub>CEX(sus)</sub> R <sub>BE</sub> = 100 Ω	—	1.5	-0.1 <sup>a</sup>	—	-50 <sup>b</sup>	—	-70 <sup>b</sup>	—	-90 <sup>b</sup>	—	
V <sub>BE</sub>	-4	—	-3 <sup>a</sup>	—	—	-2	—	—	—	—	V
	-4	—	-2.5 <sup>a</sup>	—	—	—	—	-2	—	—	
	-4	—	-2 <sup>a</sup>	—	—	—	—	—	—	-2	
V <sub>CE(sat)</sub>	—	—	-3 <sup>a</sup>	-0.3	—	-1	—	—	—	—	V
	—	—	-2.5 <sup>a</sup>	-0.25	—	—	—	-1	—	—	
	—	—	-2 <sup>a</sup>	-0.2	—	—	—	—	—	-1	
h <sub>ie</sub>   f = 1 MHz	-4	—	-1	—	5	—	5	—	5	—	
h <sub>ie</sub> f = 1 kHz	-4	—	-0.5	—	25	—	25	—	25	—	
R <sub>θJC</sub>	—	—	—	—	—	4.3	—	4.3	—	4.3	°C/W

\* In accordance with JEDEC registration data format JS-6-RDF-2.

<sup>a</sup>Pulsed, pulse duration = 300 μs, duty factor = 1.8%.

<sup>b</sup>CAUTION: Sustaining voltage V<sub>CEO(sus)</sub>, V<sub>CEB(sus)</sub>, and V<sub>CEX(sus)</sub> MUST NOT be measured on a curve tracer.

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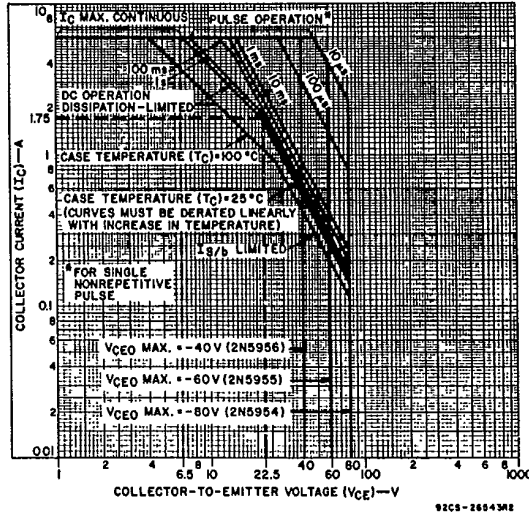


Fig. 1 - Maximum operating areas for all types.

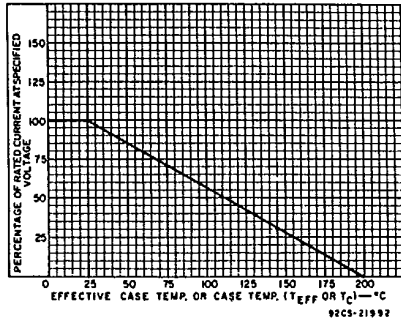


Fig. 2 - Current derating chart for all types.

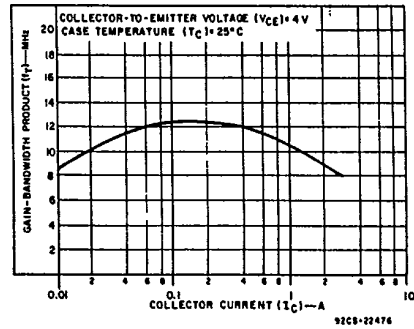


Fig. 3 - Typical gain-bandwidth product for all types.

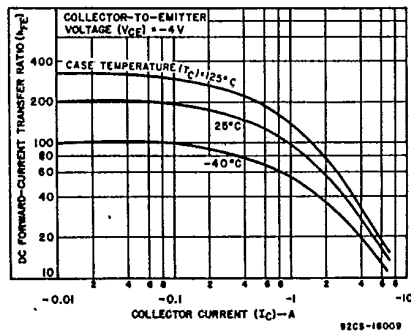


Fig. 4 - Typical dc beta characteristics for 2N5954-2N5956.

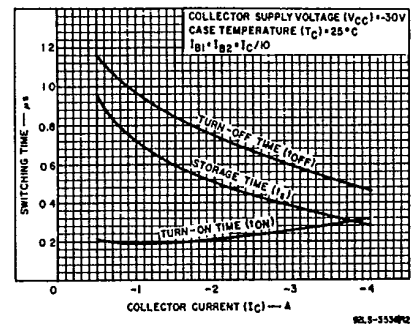


Fig. 5 - Typical saturated switching characteristics for 2N5954-2N5956.

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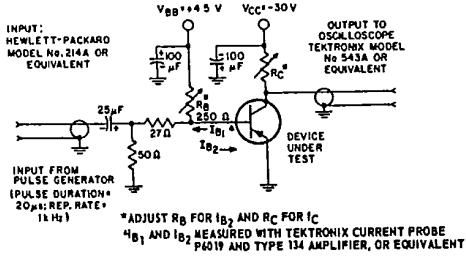


Fig. 6 - Circuit used to measure saturated switching times for 2N5954-2N5956.

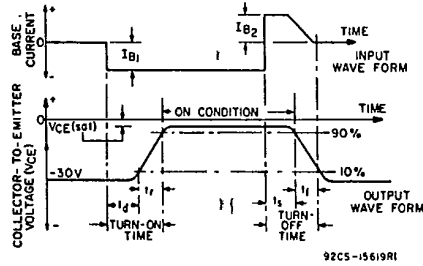


Fig. 7 - Oscilloscope display for measurement of switching times for 2N5954-2N5956.

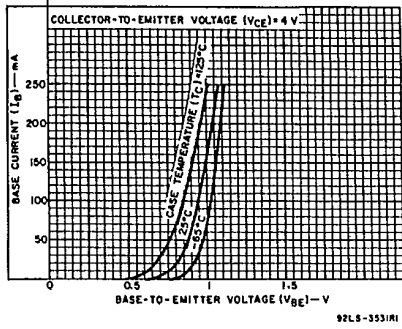


Fig. 8 - Typical input characteristics for all types.

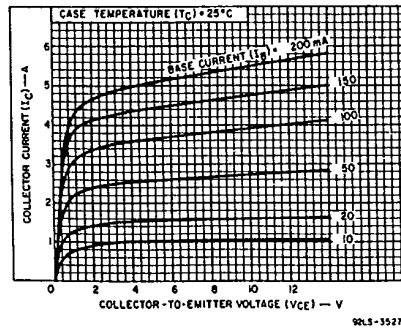


Fig. 9 - Typical output characteristics for all types.

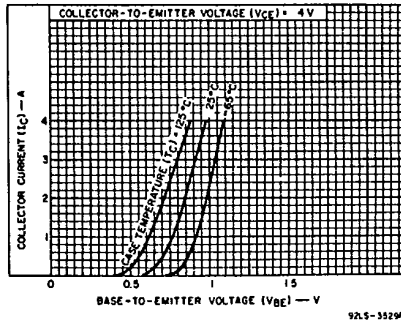


Fig. 10 - Typical transfer characteristics for all types.