

G E SOLID STATE

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High-Speed Power Transistors

2N3053, 2N3053A

File Number 960

**General-Purpose, Medium-Power
Silicon N-P-N Planar Transistors**

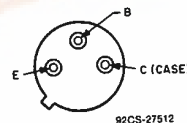
For Small-Signal Applications

Features:

- Maximum safe-area-of-operation curve
- High gain-bandwidth product
 $f_T = 100$ MHz
- Low leakage current

Applications:

- Audio amplifiers
- Controlled amplifiers
- Power supplies
- Power oscillators

TERMINAL DESIGNATIONS

JEDEC TO-205AD

The RCA-2N3053 and 2N3053A are silicon n-p-n planar transistors useful up to 20 MHz in small-signal, medium-power applications. These types are supplied in the JEDEC TO-205AD package.

MAXIMUM RATINGS, Absolute-Maximum Values:

	2N3053	2N3053A	
* V_{CBO}	60	80	V
$V_{CE}(SUS)$ $R_{BE} = 10 \Omega$	50	70	V
* $V_{CE}(SUS)$	40	60	V
$V_{CEV}(SUS)$ $V_{BE} = -1.5$ V.....	60	80	V
* V_{EBO}	5	5	V
* I_C	0.7	0.7	A
* P_T $T_C \leq 25^\circ C$	5	5	W
$T_A \leq 25^\circ C$	1	1	W
$T_C > 25^\circ C$	Derate linearly 0.0286		W/°C
* T_{stg}, T_J	-65 to +200		°C
* T_L At distance $1/16 \pm 1/32$ in. (1.58 mm $\pm$ 0.8 mm) from seating plane for 10 s max.	235		°C

* In accordance with JEDEC registration data.

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2N3053, 2N3053A

ELECTRICAL CHARACTERISTICS, at Case Temperature (T_c) = 25°C

CHARACTERISTICS	TEST CONDITIONS					LIMITS				UNITS
	VOLTAGE V dc			CURRENT mA dc		2N3053		2N3053A		
	V _{CB}	V _{CE}	V _{BE}	I _C	I _B	Min.	Max.	Min.	Max.	
I _{CEV}	30 60	— —	-1.5 -1.5	— —	— —	— —	0.25 —	— —	— 0.25	μA
I _{BEV}	—	60	-1.5	—	—	—	—	—	0.25	μA
I _{EBO}	—	—	-4	0	—	—	0.25	—	0.25	μA
h _{FE}	— —	2.5 10	— —	150 150 [■]	— —	25 50	— 250	25 50	— 250	
V _{IBRCBO}	—	—	—	0.1	—	60	—	80	—	V
V _{IBREBO} I _E = 0.1 mA	—	—	—	0	—	5	—	5	—	V
V _{CEO(SUS)}	—	—	—	0.1 [■]	0	40	—	60	—	V
V _{CER(SUS)} R _{BE} = 10 Ω	—	—	—	100 [■]	—	50	—	70	—	V
V _{BE(sat)}	—	—	—	150	15	—	1.7	0.6	1	V
V _{CE(sat)}	—	—	—	150	15	—	1.4	—	0.3	V
V _{BE}	—	2.5	—	150	—	—	1.7	—	1	V
h _{fe} f = 20 MHz	—	10	—	50	—	5	—	5	—	
C _{obo} f = 140 kHz	10	—	—	—	—	—	15	—	15	pF
C _{ib} f = 140 kHz	—	—	-0.5	0	—	—	80	—	80	pF
R _{θJC}	—	—	—	—	—	—	35	—	35	°C/W
R _{θJA}	—	—	—	—	—	—	175	—	175	°C/W

* In accordance with JEDEC registration data.

■ Pulsed; pulse duration = 300 μs, duty factory < 2%.

2N3053, 2N3053A

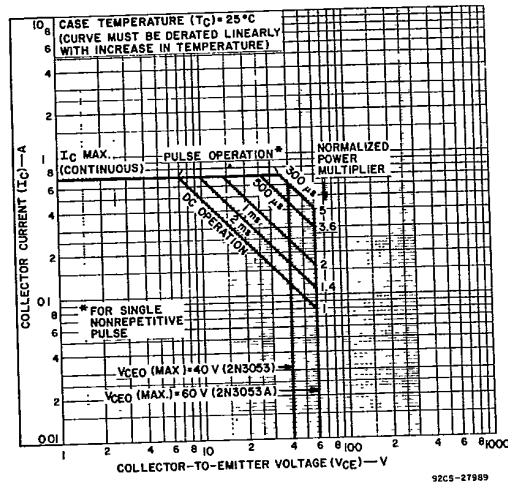


Fig. 1 - Maximum operating areas for 2N3053, 2N3053A.

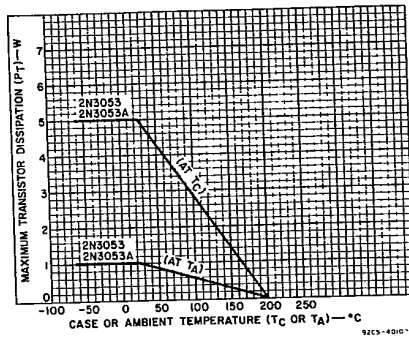


Fig. 2 - Dissipation derating curves for all types.

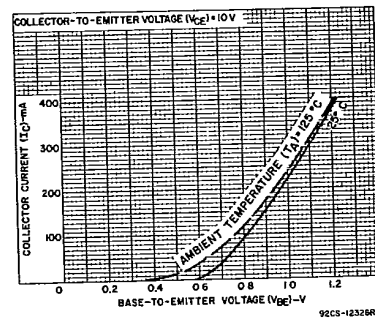


Fig. 3 - Typical transfer characteristics for all types.

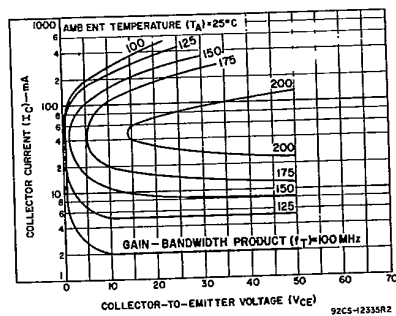


Fig. 4 - Typical dc beta characteristics for all types.

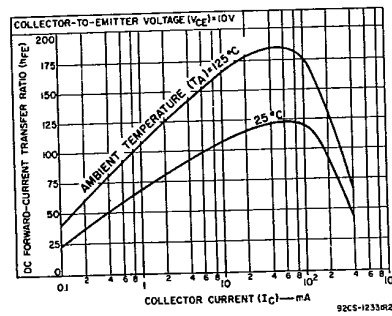


Fig. 5 - Typical variation of gain-bandwidth product with Ic and Vce for all types.

2N3053, 2N3053A

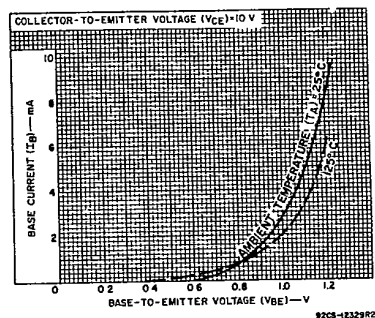


Fig. 6 - Typical input characteristics for all types.

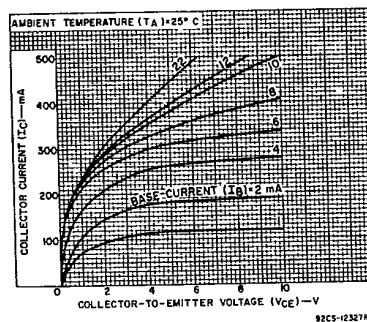


Fig. 7 - Typical output characteristics for all types.