2N3053, 2N3053A

File Number **960**

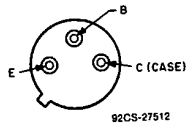
General-Purpose, Medium-Power Silicon N-P-N Planar Transistors

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
$V_{CER(sus)}$ R_{BE} = 10 Ω	50	70	V
* $V_{CEO(sus)}$	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			
$T_C \leq 25°C$	5	5	W
$T_A \leq 25°C$	1	1	W
$T_C > 25°C$	Derate linearly 0.0286		W/°C
* T_{stg}, T_J	-65 to +200		°C
* T_L At distance 1/16 ± 1/32 in. (1.58 mm ± 0.8 mm) from seating plane for 10 s max.	235		°C

* In accordance with JEDEC registration data.

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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}	IC	IB	Min.	Max.	Min.	Max.	
I_{CEV}	30	—	-1.5	—	—	—	0.25	—	—	μA
	60	—	-1.5	—	—	—	—	—	0.25	
I_{BEV}	—	60	-1.5	—	—	—	—	—	0.25	μA
I_{EBO}	—	—	-4	0	—	—	0.25	—	0.25	μA
h_{FE}	—	2.5	—	150	—	25	—	25	—	
	—	10	—	150[a]	—	50	250	50	250	
$V_{(BR)CBO}$	—	—	—	0.1	—	60	—	80	—	V
$V_{(BR)EBO}$ I_E = 0.1 mA	—	—	—	0	—	5	—	5	—	V
$V_{CEO(SUS)}$	—	—	—	0.1[a]	0	40	—	60	—	V
$V_{CER(SUS)}$ R_{BE} = 10 Ω	—	—	—	100[a]	—	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
hfe 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
$R\theta_{JC}$	—	—	—	—	—	—	35	—	35	°C/W
$R\theta_{JA}$	—	—	—	—	—	—	175	—	175	°C/W

* In accordance with JEDEC registration data.

[a] Pulsed; pulse duration = 300 μs, duty factory < 2%.

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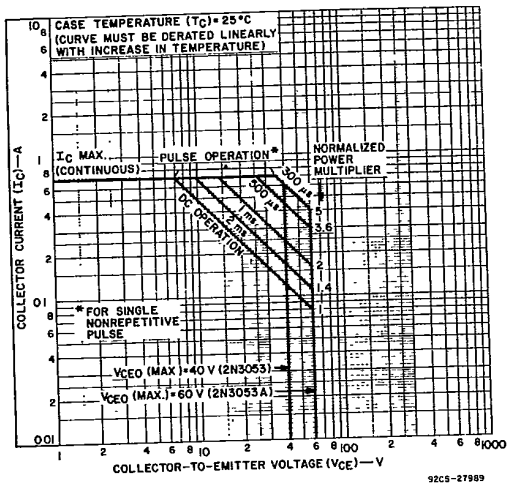

Fig. 1 - Maximum operating areas for 2N3053, 2N3053A.

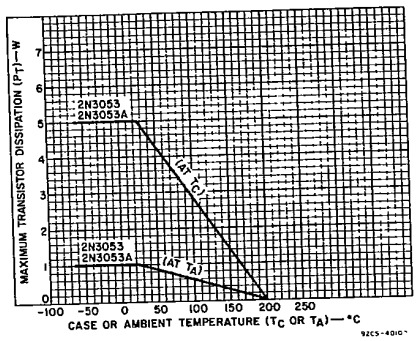

Fig. 2 - Dissipation derating curves for all types.

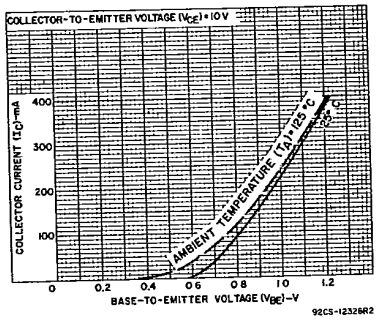

Fig. 3 - Typical transfer characteristics for all types.

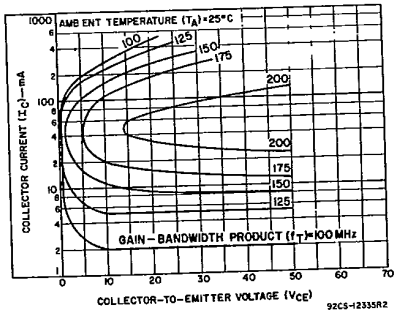

Fig. 4 - Typical dc beta characteristics for all types.

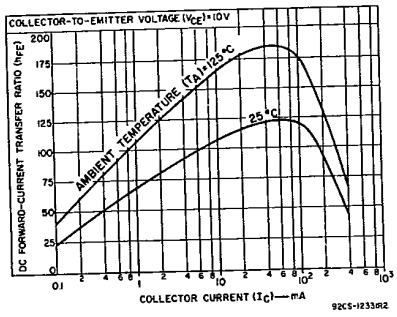

Fig. 5 - Typical variation of gain-bandwidth product with Ic and VCE for all types.

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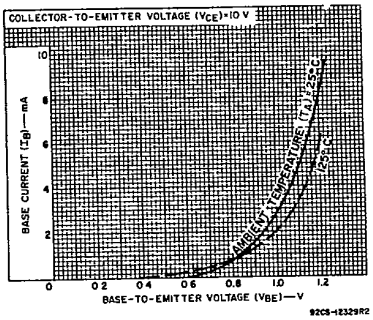

Fig. 6 - Typical input characteristics for all types.

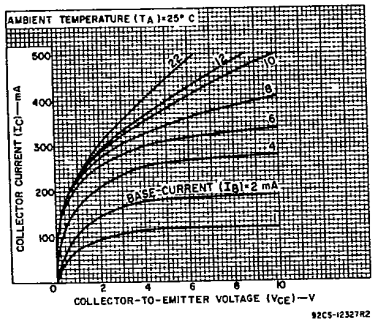

Fig. 7 - Typical output characteristics for all types.