

3875081 G E SOLID STATE
High-Speed Power Transistors

2N3053, 2N3053A

File Number 960

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

For Small-Signal Applications

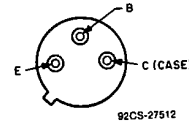
Features:

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

* In accordance with JEDEC registration data.

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 | — | -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 [▲] | — | 50 | 250 | 50 | 250 | |
| V _{IBR/CBO} | — | — | — | 0.1 | — | 60 | — | 80 | — | V |
| V _{IBR/EBO} 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%.

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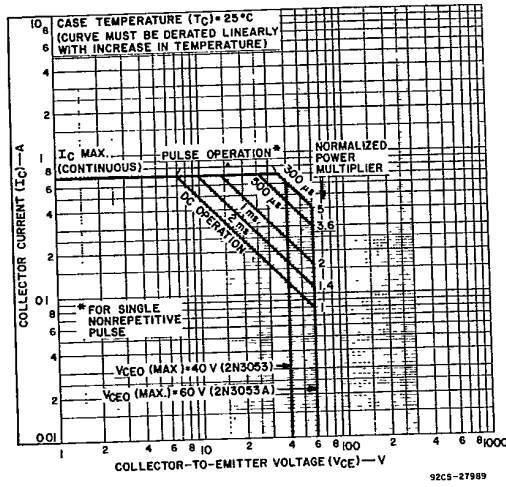


Fig. 1 - Maximum operating areas for 2N3053, 2N3053A.

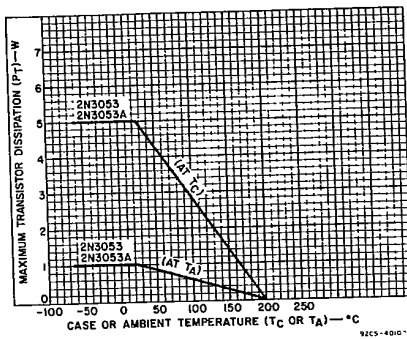


Fig. 2 - Dissipation derating curves for all types.

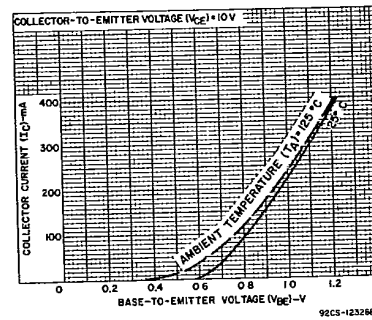


Fig. 3 - Typical transfer characteristics for all types.

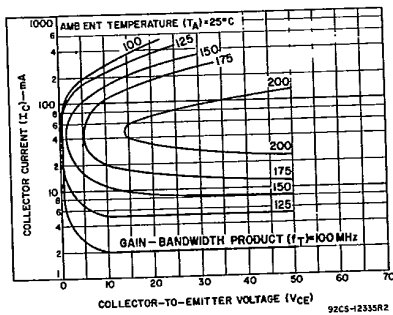


Fig. 4 - Typical dc beta characteristics for all types.

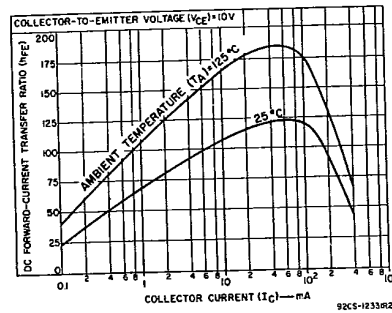


Fig. 5 - Typical variation of gain-bandwidth product with Ic and Vce for all types.

2N3053, 2N3053A

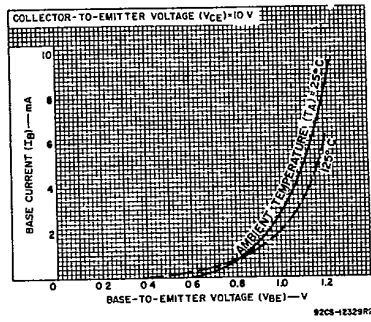


Fig. 6 - Typical Input characteristics for all types.

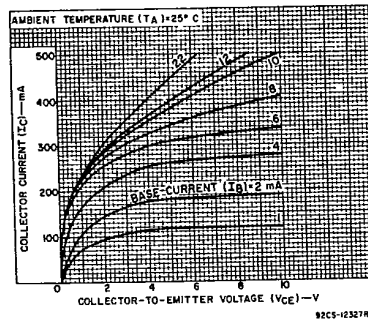


Fig. 7 - Typical output characteristics for all types.