

SILICON HIGH SPEED POWER TRANSISTOR

2SA 1072 2SA 1073

September 1979

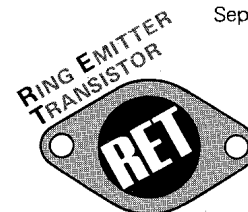
SILICON PNP RING EMITTER TRANSISTOR (RET)

The 2SA 1072/2SA 1073 are silicon PNP general purpose, high power switching transistors fabricated with Fujitsu's unique Ring Emitter Transistor (RET) technology. RET devices are constructed with multiple emitters connected through diffused ballast resistors which provide uniform current density. This structure permits the design of high power transistors with exceptional switching characteristics and frequency response in high current applications.

The 2SA 1072/2SA 1073 are especially well-suited for High frequency power amplifiers, Audio power amplifiers, Switching regulators and DC-DC Converters.

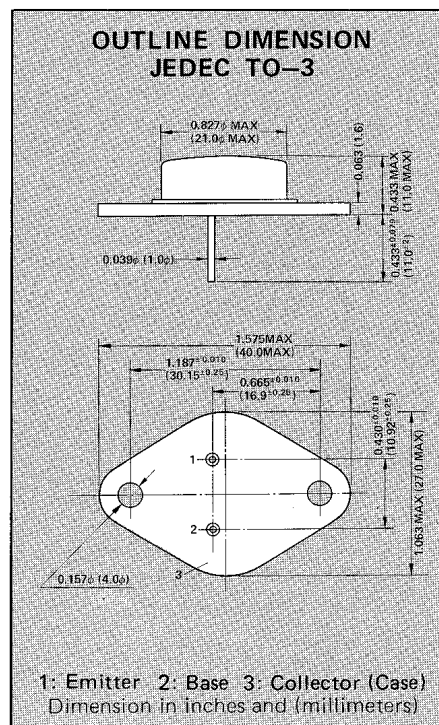
NPN complements, 2SC 2522/2SC 2523, are available.

- High $f_T = 60$ MHz (typ)
- Ultra fast switching speed
- Excellent Safe Operating Area
- Improved reverse Second-Breakdown Capability



ABSOLUTE MAXIMUM RATINGS

| Rating | Symbol | Value | | Unit |
|--|-----------|------------|----------|------------------|
| | | 2SA 1072 | 2SA 1073 | |
| Collector to Base Voltage | V_{CB0} | 120 | 160 | V |
| Emitter to Base Voltage | V_{EBO} | 7 | 7 | V |
| Collector to Emitter Voltage | V_{CEO} | 120 | 160 | V |
| Collector Current | I_C | 12 | 12 | A |
| Collector Power Dissipation ($T_C = 25^\circ\text{C}$) | P_C | 120 | 120 | W |
| Junction Temperature | T_j | +150 | | $^\circ\text{C}$ |
| Storage Temperature Range | T_{stg} | -65 ~ +150 | | $^\circ\text{C}$ |



ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

| Parameter | Symbol | Test Conditions | Limits | | | | | | Unit |
|---|---------------|---|----------|------|------|----------|------|------|---------------|
| | | | 2SA 1072 | | | 2SA 1073 | | | |
| | | | Min. | Typ. | Max. | Min. | Typ. | Max. | |
| Collector Cutoff Current | I_{CB0} | $V_{CB} = 120\text{V}/160\text{V}, I_E = 0$ | - | - | 50/- | - | - | -/50 | μA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB} = 7\text{V}, I_C = 0$ | - | - | 50 | - | - | 50 | μA |
| Collector Cutoff Current | I_{CEO} | $V_{CE} = 120\text{V}/160\text{V}, R_{BE} = \infty$ | - | - | 1/- | - | - | -/1 | mA |
| Collector to Base Breakdown Voltage | $V_{(BR)CB0}$ | $I_C = 50\mu\text{A}, I_E = 0$ | 120 | - | - | 160 | - | - | V |
| Emitter to Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E = 50\mu\text{A}, I_C = 0$ | 7 | - | - | 7 | - | - | V |
| Collector to Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C = 1\text{mA}, R_{BE} = \infty$ | 120 | - | - | 160 | - | - | V |
| DC Current Gain | h_{FE1} | $V_{CE} = 5\text{V}, I_C = 1\text{A}$ | 60 | - | 200 | 60 | - | 200 | |
| DC Current Gain | h_{FE2} | $V_{CE} = 5\text{V}, I_C = 7\text{A}$ | 40 | - | - | 40 | - | - | |
| Collector to Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 5\text{A}, I_B = 0.5\text{A}$ | - | 0.9 | 1.8 | - | 0.9 | 1.8 | V |
| Base to Emitter Voltage | V_{BE} | $V_{CE} = 5\text{V}, I_C = 5\text{A}$ | - | 1.25 | 1.7 | - | 1.25 | 1.7 | V |
| Gain-Bandwidth Product | f_T | $V_{CE} = 10\text{V}, I_C = 1\text{A}, f = 10\text{MHz}$ | 45 | 60 | - | 45 | 60 | - | MHz |
| Output Capacitance | C_{ob} | $V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$ | - | 300 | 470 | - | 300 | 470 | pF |
| Rise Time | t_r | $I_C = 7.5\text{A}, R_L = 4\Omega$ $I_{B1} = -I_{B2} = 0.75\text{A}$ | - | 0.15 | - | - | 0.15 | - | μs |
| Storage Time | t_{stg} | | - | 0.5 | - | - | 0.5 | - | μs |
| Fall Time | t_f | | - | 0.11 | - | - | 0.11 | - | μs |

* Pulsed: Pulse Width $\leq 300\mu\text{s}$
Duty Cycle $\leq 6\%$