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|  | No.2847 | <h1 style="margin: 0;">2SC4424</h1> <p style="margin: 0;">NPN Triple Diffused Planar Silicon Transistor</p> <p style="margin: 0;">Switching Regulator Applications</p> |
|---|---------|--|

Features

- High breakdown voltage, high reliability
- Fast switching speed (t_f : 0.1 μ s typ)
- Wide ASO
- Adoption of MBIT process
- Micaless package facilitating easy mounting

Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

| | | | unit |
|------------------------------|-----------|--------------------------|------------------|
| Collector-to-Base Voltage | V_{CB0} | 500 | V |
| Collector-to-Emitter Voltage | V_{CE0} | 400 | V |
| Emitter-to-Base Voltage | V_{EB0} | 7 | V |
| Collector Current | I_C | 16 | A |
| Peak Collector Current | i_{cp} | 32 | A |
| Base Current | I_B | 6 | A |
| Collector Dissipation | P_C | 3 | W |
| | | $T_C = 25^\circ\text{C}$ | |
| Junction Temperature | T_j | 60 | W |
| Storage Temperature | T_{stg} | 150 | $^\circ\text{C}$ |
| | | -55 to +150 | $^\circ\text{C}$ |

Electrical Characteristics at $T_a = 25^\circ\text{C}$

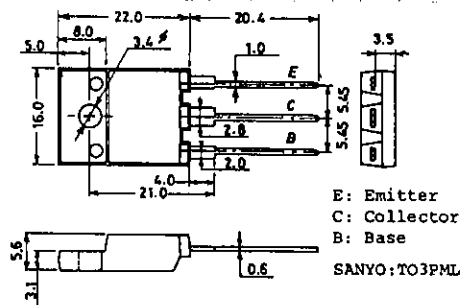
| | | | min | typ | max | unit |
|--------------------------|----------------|---|-----|-----|-----|---------------|
| Collector Cutoff Current | I_{CBO} | $V_{CB} = 400\text{V}, I_E = 0$ | | | 10 | μA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB} = 5\text{V}, I_C = 0$ | | | 10 | μA |
| DC Current Gain | $h_{FE(1)*}$ | $V_{CE} = 5\text{V}, I_C = 2\text{A}$ | 15 | | 50 | |
| | $h_{FE(2)}$ | $V_{CE} = 5\text{V}, I_C = 10\text{A}$ | 10 | | | |
| | $h_{FE(3)}$ | $V_{CE} = 5\text{V}, I_C = 10\text{mA}$ | 10 | | | |
| C-E Saturation Voltage | $V_{CE(sat)}$ | $I_C = 10\text{A}, I_B = 2\text{A}$ | | | 0.8 | V |
| B-E Saturation Voltage | $V_{BE(sat)}$ | $I_C = 10\text{A}, I_B = 2\text{A}$ | | | 1.5 | V |
| Gain-Bandwidth Product | f_T | $V_{CE} = 10\text{V}, I_C = 2\text{A}$ | | 20 | | MHz |
| Output Capacitance | c_{ob} | $V_{CB} = 10\text{V}, f = 1\text{MHz}$ | | 230 | | pF |
| C-B Breakdown Voltage | $V_{(BR)CBO}$ | $I_C = 1\text{mA}, I_E = 0$ | 500 | | | V |
| C-E Breakdown Voltage | $V_{(BR)CEO}$ | $I_C = 10\text{mA}, R_{BE} = \infty$ | 400 | | | V |
| E-B Breakdown Voltage | $V_{(BR)EBO}$ | $I_E = 1\text{mA}, I_C = 0$ | 7 | | | V |
| C-E Sustain Voltage | $V_{CEX(sus)}$ | $I_C = 8\text{A}, I_{B1} = 0.8\text{A}$ | 400 | | | V |
| | | $I_{B2} = -3.2\text{A}, L = 200\mu\text{H}, \text{clamped}$ | | | | |

Continued on next page.

*: The $h_{FE(1)}$ of the 2SC4424 is classified as follows. When specifying the $h_{FE(1)}$ rank, specify two ranks or more in principle.

| | | | | | | | | |
|----|---|----|----|---|----|----|---|----|
| 15 | L | 30 | 20 | M | 40 | 30 | N | 50 |
|----|---|----|----|---|----|----|---|----|

Package Dimensions 2039
(unit: mm)



2SC4424

Continued from preceding page.

Turn-on Time

t_{on}

$I_C = 12A, I_{B1} = 2.4A$
 $I_{B2} = -4.8A, R_L = 16.6\Omega$
 $V_{CC} = 200V$

min typ max unit
 0.5 μs

Storage Time

t_{stg}

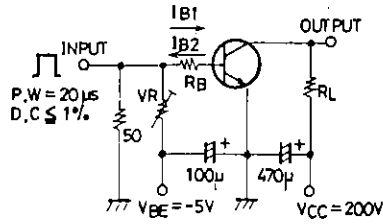
2.5 μs

Fall Time

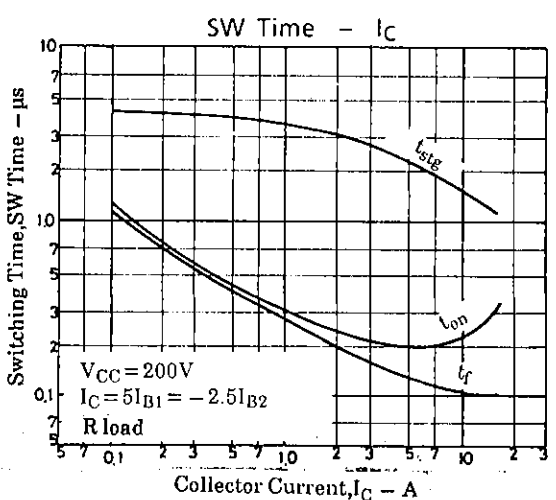
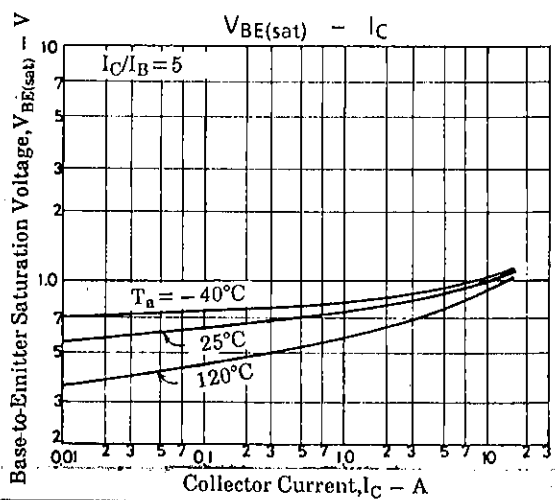
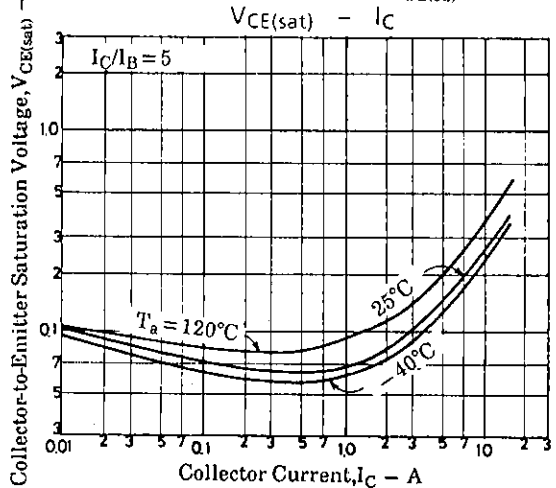
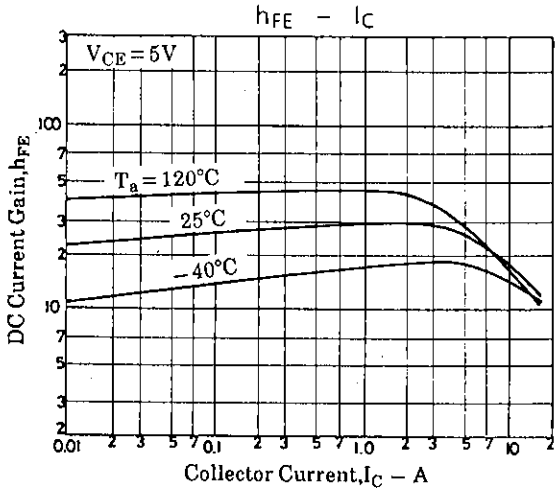
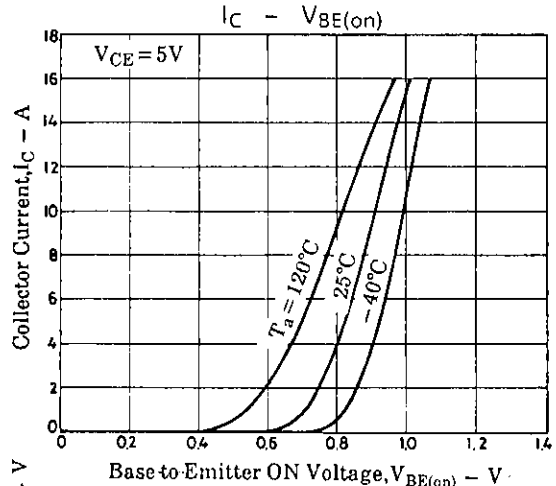
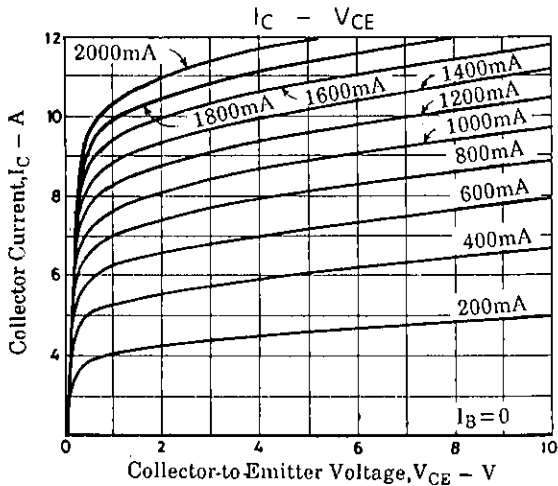
t_f

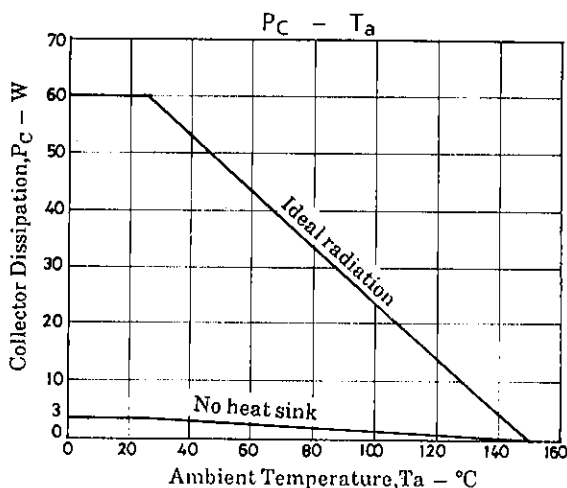
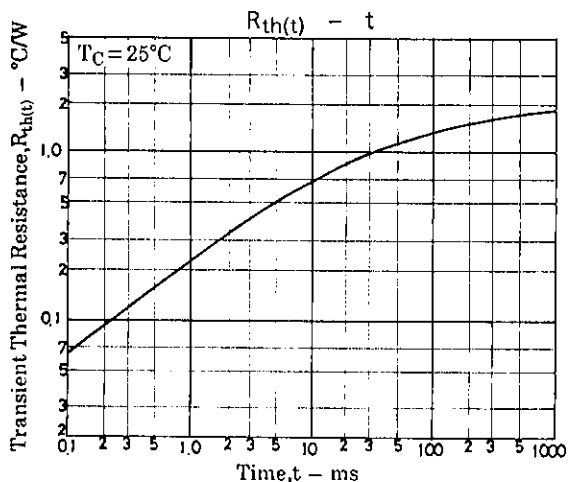
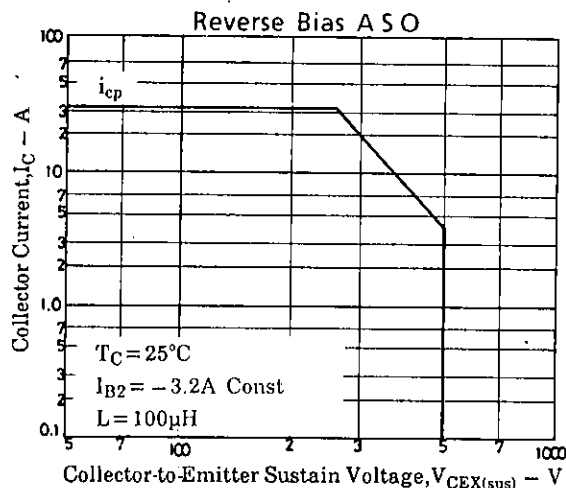
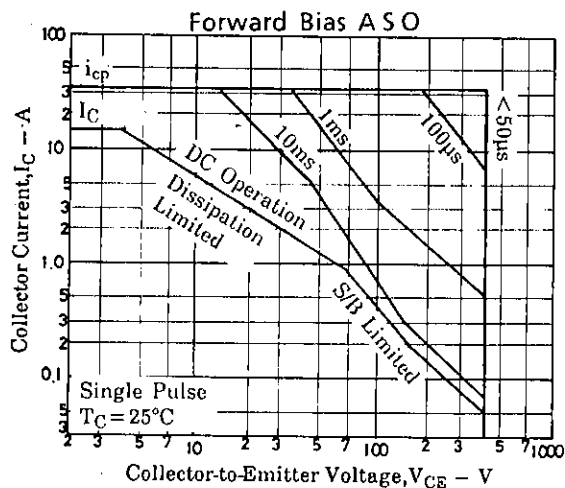
0.3 μs

Switching Time Test Circuit



Unit (resistance: Ω , capacitance: F)





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