

2SD2420, 2SD2420A

Silicon NPN triple diffusion planar type darlington

For power amplification

Complementary to 2SB1623, 2SB1623A

■ Features

- High forward current transfer ratio h_{FE}
- Dielectric breakdown voltage of the package: > 5 kV

■ Absolute Maximum Ratings $T_C = 25^\circ\text{C}$

| Parameter | Symbol | Rating | Unit |
|------------------------------------------------------------|-----------|-------------|------------------|
| Collector-base voltage (Emitter open) | V_{CBO} | 60 | V |
| | | 80 | |
| Collector-emitter voltage (Base open) | V_{CEO} | 60 | V |
| | | 80 | |
| Emitter-base voltage (Collector open) | V_{EBO} | 5 | V |
| Collector current | I_C | 4 | A |
| Peak collector current | I_{CP} | 8 | A |
| Collector power dissipation $T_a = 25^\circ\text{C}$ | P_C | 30 | W |
| | | 2.0 | |
| Junction temperature | T_j | 150 | $^\circ\text{C}$ |
| Storage temperature | T_{stg} | -55 to +150 | $^\circ\text{C}$ |

■ Electrical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|-------------------------------------------------|----------------|----------------------------------------------------------------------|------|-----|-------|---------------|
| Collector-emitter voltage (Base open) | V_{CEO} | $I_C = 30 \text{ mA}, I_B = 0$ | 60 | | | V |
| Base-emitter voltage | V_{BE} | $V_{CE} = 3 \text{ V}, I_C = 3 \text{ A}$ | | | 2.5 | V |
| Collector-base cutoff current (Emitter open) | I_{CBO} | $V_{CB} = 60 \text{ V}, I_E = 0$ | | | 200 | μA |
| | | $V_{CB} = 80 \text{ V}, I_E = 0$ | | | 200 | |
| Collector-emitter cutoff current (Base open) | I_{CEO} | $V_{CE} = 30 \text{ V}, I_B = 0$ | | | 500 | μA |
| | | $V_{CE} = 40 \text{ V}, I_B = 0$ | | | 500 | |
| Emitter-base cutoff current (Collector open) | I_{EBO} | $V_{EB} = 5 \text{ V}, I_C = 0$ | | | 2 | mA |
| Forward current transfer ratio | h_{FE1} | $V_{CE} = 3 \text{ V}, I_C = 0.5 \text{ A}$ | 1000 | | | — |
| | h_{FE2}^* | $V_{CE} = 3 \text{ V}, I_C = 3 \text{ A}$ | 2000 | | 10000 | |
| Collector-emitter saturation voltage | $V_{CE(sat)1}$ | $I_C = 3 \text{ A}, I_B = 12 \text{ mA}$ | | | 2.0 | V |
| | $V_{CE(sat)2}$ | $I_C = 5 \text{ A}, I_B = 20 \text{ mA}$ | | | 4.0 | |
| Transition frequency | f_T | $V_{CE} = 10 \text{ V}, I_C = 0.5 \text{ A}, f = 1 \text{ MHz}$ | | 20 | | MHz |
| Turn-on time | t_{on} | $I_C = 3 \text{ A}, I_{B1} = 12 \text{ mA}, I_{B2} = -12 \text{ mA}$ | | 0.5 | | μs |
| Storage time | t_{stg} | $V_{CC} = 50 \text{ V}$ | | 4.0 | | μs |
| Fall time | t_f | | | 1.0 | | μs |

Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

2. *: Rank classification

| Rank | Q | P |
|-----------|--------------|---------------|
| h_{FE2} | 2000 to 5000 | 4000 to 10000 |

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