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# 2SC3513

Silicon NPN Epitaxial

# HITACHI

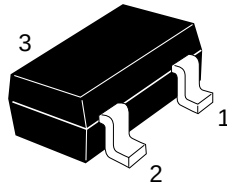
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## Application

UHF / VHF wide band amplifier

## Outline

MPAK



- 1. Emitter
- 2. Base
- 3. Collector

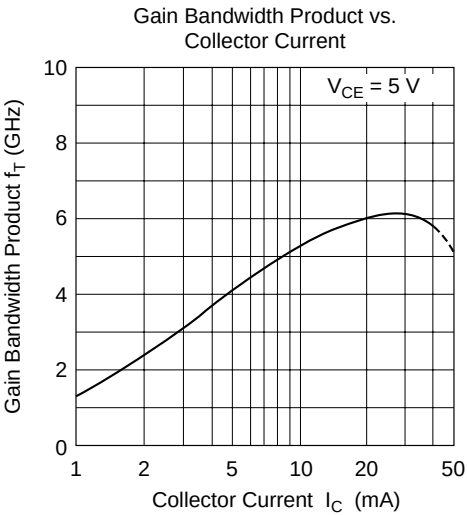
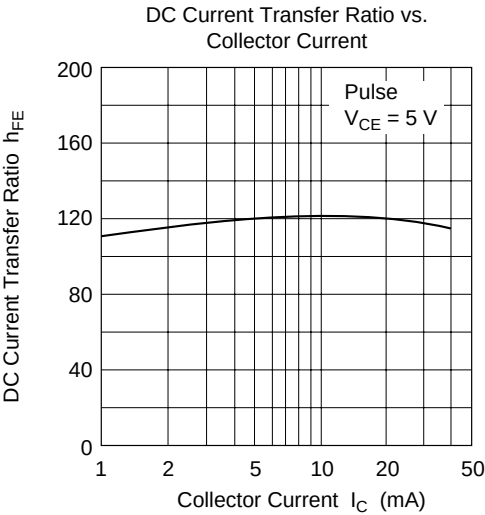
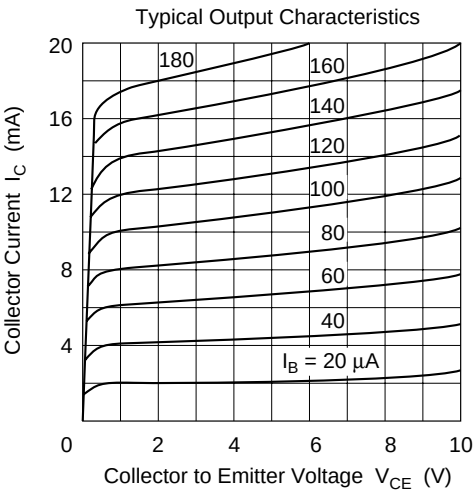
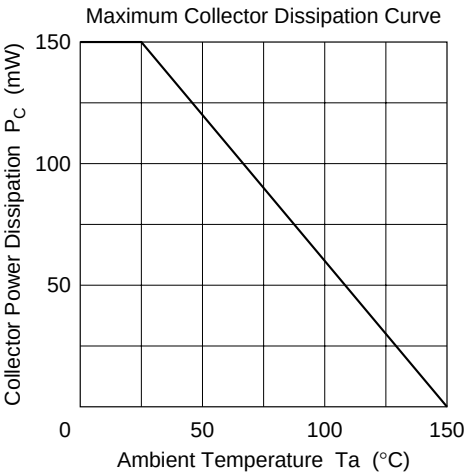
Absolute Maximum Ratings (Ta = 25°C)

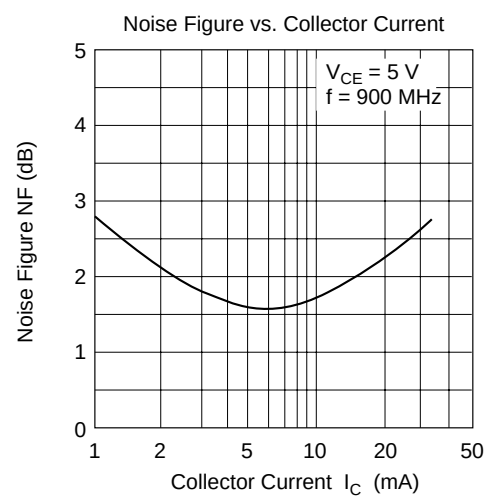
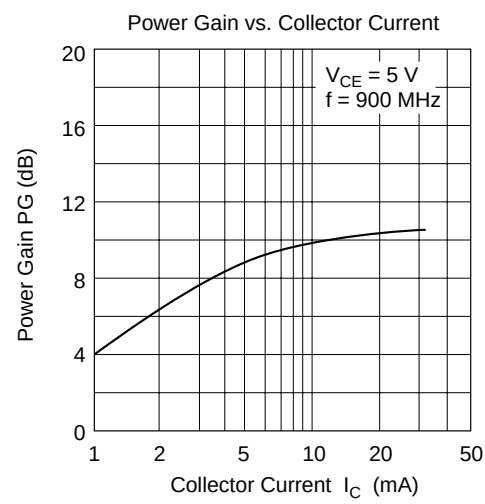
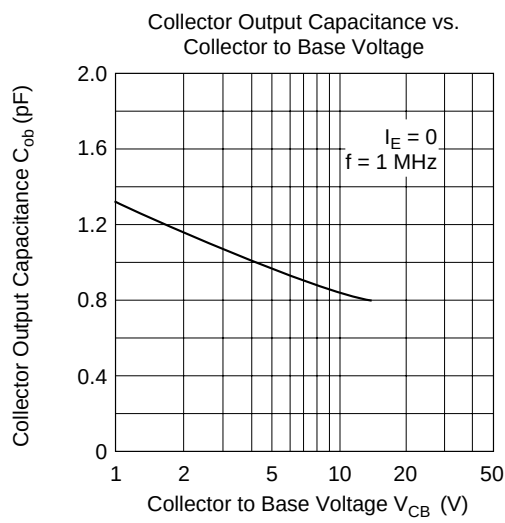
| Item                         | Symbol    | Ratings     | Unit |
|------------------------------|-----------|-------------|------|
| Collector to base voltage    | $V_{CBO}$ | 15          | V    |
| Collector to emitter voltage | $V_{CEO}$ | 11          | V    |
| Emitter to base voltage      | $V_{EBO}$ | 2           | V    |
| Collector current            | $I_C$     | 50          | mA   |
| Collector power dissipation  | $P_C$     | 150         | mW   |
| Junction temperature         | $T_j$     | 150         | °C   |
| Storage temperature          | $T_{stg}$ | -55 to +150 | °C   |

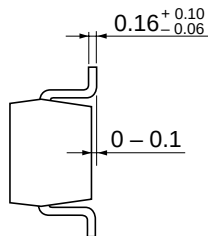
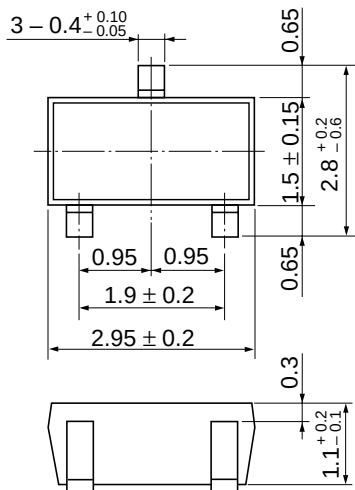
Electrical Characteristics (Ta = 25°C)

| Item                                | Symbol        | Min | Typ | Max | Unit          | Test conditions                                                        |
|-------------------------------------|---------------|-----|-----|-----|---------------|------------------------------------------------------------------------|
| Collector to base breakdown voltage | $V_{(BR)CBO}$ | 15  | —   | —   | V             | $I_C = 10\text{ }\mu\text{A}$ , $I_E = 0$                              |
| Collector cutoff current            | $I_{CEO}$     | —   | —   | 1   | $\mu\text{A}$ | $V_{CE} = 10\text{ V}$ , $R_{BE} = \infty$                             |
| Emitter cutoff current              | $I_{EBO}$     | —   | —   | 1   | $\mu\text{A}$ | $V_{EB} = 1\text{ V}$ , $I_C = 0$                                      |
| Collector cutoff current            | $I_{CBO}$     | —   | —   | 1   | $\mu\text{A}$ | $V_{CB} = 12\text{ V}$ , $I_E = 0$                                     |
| DC current transfer ratio           | $h_{FE}$      | 50  | 120 | 250 |               | $V_{CE} = 5\text{ V}$ , $I_C = 20\text{ mA}$                           |
| Collector output capacitance        | $C_{ob}$      | —   | 1.0 | 1.5 | pF            | $V_{CB} = 5\text{ V}$ , $I_E = 0$ , $f = 1\text{ MHz}$                 |
| Gain bandwidth product              | $f_T$         | —   | 6.0 | —   | GHz           | $V_{CE} = 5\text{ V}$ , $I_C = 20\text{ mA}$                           |
| Power gain                          | PG            | —   | 10  | —   | dB            | $V_{CE} = 5\text{ V}$ , $I_C = 20\text{ mA}$ ,<br>$f = 900\text{ MHz}$ |
| Noise figure                        | NF            | —   | 1.6 | —   | dB            | $V_{CE} = 5\text{ V}$ , $I_C = 5\text{ mA}$ ,<br>$f = 900\text{ MHz}$  |

Note: Marking is “IS—”.







|                          |          |
|--------------------------|----------|
| Hitachi Code             | MPAK     |
| JEDEC                    | —        |
| EIAJ                     | Conforms |
| Weight (reference value) | 0.011 g  |

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