

DATA SHEET

LTE21009R

NPN microwave power transistor

Product specification
Supersedes data of November 1994

1997 Feb 19

NPN microwave power transistor

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FEATURES

- Diffused emitter ballasting resistors
- Self-aligned process entirely ion implanted and gold sandwich metallization
- optimum temperature profile
- excellent performance and reliability
- Input matching cell improves input impedance and facilitates the design of wideband circuits.

APPLICATIONS

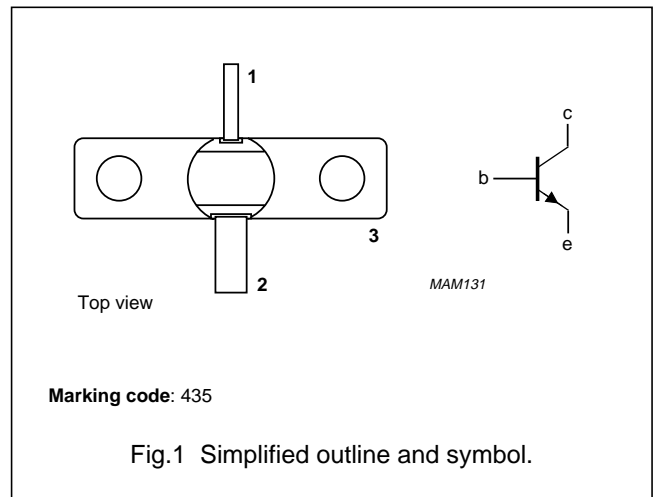
- Common emitter class-A linear power amplifiers up to 4.2 GHz.

DESCRIPTION

NPN silicon planar epitaxial microwave power transistor in a SOT440A metal ceramic flange package with the emitter connected to the flange.

PINNING - SOT440A

| PIN | DESCRIPTION |
|-----|-----------------------------|
| 1 | collector |
| 2 | base |
| 3 | emitter connected to flange |



QUICK REFERENCE DATA

Microwave performance up to $T_{mb} = 25\text{ °C}$ in a common emitter class-A amplifier.

| MODE OF OPERATION | f (GHz) | V _{CE} (V) | I _C (mA) | P _{L1} (W) | G _{po} (dB) |
|-------------------|---------|---------------------|---------------------|---------------------|----------------------|
| Class-A | 2.1 | 16 | 150 | ≥0.6 | ≥10 |

WARNING

Product and environmental safety - toxic materials

This product contains beryllium oxide. The product is entirely safe provided that the BeO slab is not damaged. All persons who handle, use or dispose of this product should be aware of its nature and of the necessary safety precautions. After use, dispose of as chemical or special waste according to the regulations applying at the location of the user. It must never be thrown out with the general or domestic waste.

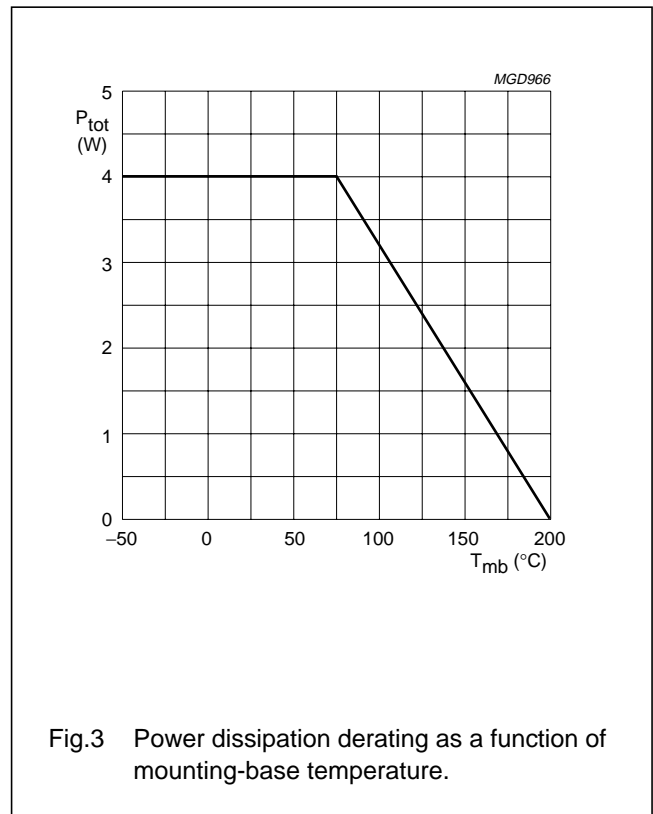
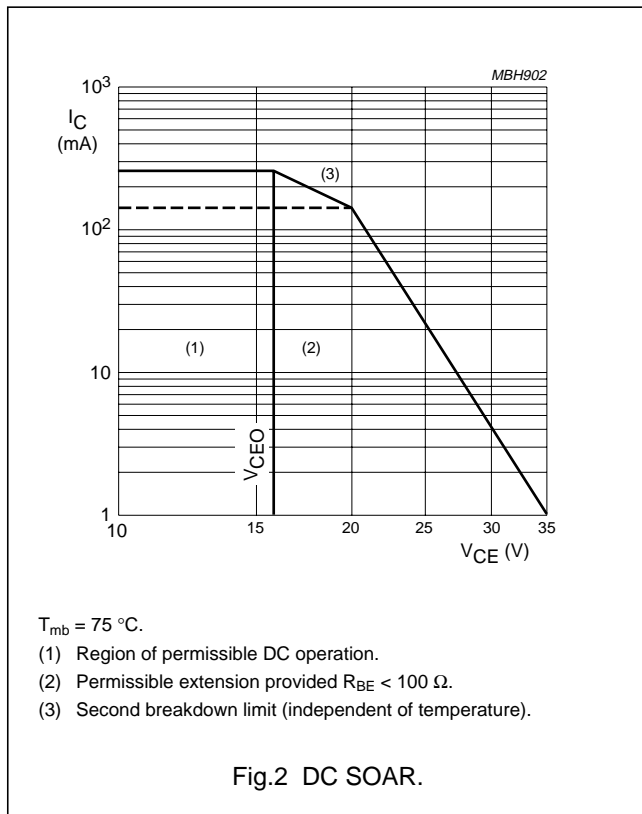
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LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|-----------|--------------------------------|--|------|------|------------------|
| V_{CBO} | collector-base voltage | open emitter | – | 40 | V |
| V_{CER} | collector-emitter voltage | $R_{BE} = 100 \Omega$ | – | 35 | V |
| V_{CEO} | collector-emitter voltage | open base | – | 16 | V |
| V_{EBO} | emitter-base voltage | open collector | – | 3 | V |
| I_C | DC collector current (DC) | | – | 250 | mA |
| P_{tot} | total power dissipation | $T_{mb} \leq 75 \text{ }^\circ\text{C}$ | – | 4 | W |
| T_{stg} | storage temperature | | –65 | +200 | $^\circ\text{C}$ |
| T_j | operating junction temperature | | – | 200 | $^\circ\text{C}$ |
| T_{sld} | soldering temperature | up to 0.3 mm from case; $t \leq 10 \text{ s}$ | – | 235 | $^\circ\text{C}$ |



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THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | MAX. | UNIT |
|----------------|---|-------------------------|------|------|
| $R_{th\ j-mb}$ | thermal resistance from junction to mounting base | $T_{mb} = 25\text{ °C}$ | 36 | K/W |
| $R_{th\ mb-h}$ | thermal resistance from mounting base to heatsink | note 1 | 0.7 | K/W |

Note

1. See "Mounting recommendations in the General part of handbook SC19a".

CHARACTERISTICS

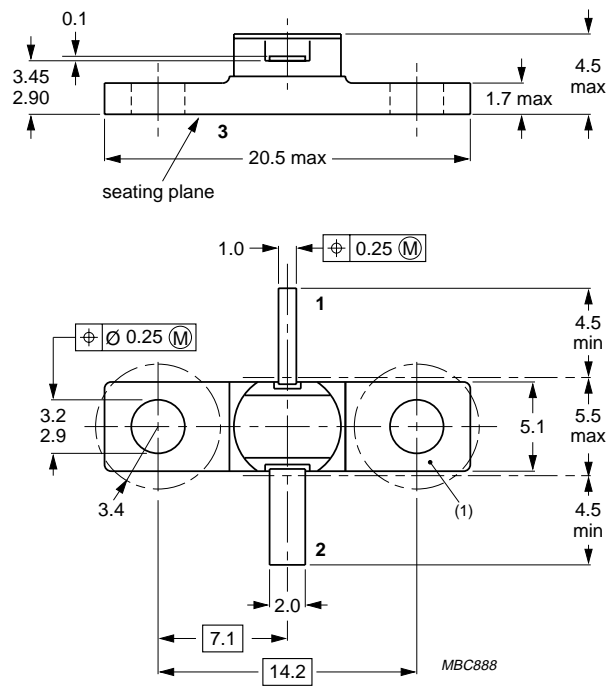
$T_{mb} = 25\text{ °C}$ unless otherwise specified.

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|-----------|---------------------------|--|------|------|---------------|
| I_{CBO} | collector cut-off current | $V_{CB} = 20\text{ V}; I_E = 0$ | – | 50 | μA |
| | | $V_{CB} = 40\text{ V}; I_E = 0$ | – | 0.4 | mA |
| I_{EBO} | emitter cut-off current | $V_{EB} = 1.5\text{ V}; I_C = 0$ | – | 200 | nA |
| h_{FE} | DC current gain | $V_{CE} = 5\text{ V}; I_C = 150\text{ mA}$ | 15 | 150 | |

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PACKAGE OUTLINE



Dimensions in mm.
Torque on screw: Max. 0.4 Nm
Recommended screw: M2.5

Fig.4 SOT440A.

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DEFINITIONS

| Data Sheet Status | |
|---|---|
| Objective specification | This data sheet contains target or goal specifications for product development. |
| Preliminary specification | This data sheet contains preliminary data; supplementary data may be published later. |
| Product specification | This data sheet contains final product specifications. |
| Limiting values | |
| Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability. | |
| Application information | |
| Where application information is given, it is advisory and does not form part of the specification. | |

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