

2ST15300

Rad-hard 300 V, 5 A NPN bipolar transistors



New efficient power switch features a high breakdown voltage as well as high stability and ruggedness for high-voltage space applications

Designed from ST's rad-hard high current density technology, this NPN power bipolar transistor provides high stability in radiation hardness and high ruggedness for switching heavy loads in harsh environments.

Housed in a hermetic SMD.5 package, the 2ST15300 offers a total ionizing dose (TID) radiation level up to 100 krad making it suitable for electric propulsion system, inductive load switches and linear amplifiers applications.

In addition to these main features, the high breakdown voltage of this efficient power switch ensures that it can withstand unclamped reverse voltage with inductive loads.

Moreover, the low drift of current gain under radiation exposure and its linear hFE behavior make it ideal for driving signal conditioning stages (see Figures 1 and 2).

KEY FEATURES & BENEFITS

- Low dose rate up to 100 krad (Si)
- Constant linear gain vs radiation and collector current
- Excellent current gain behavior when exposed to radiation
- High voltage rating
- Qualified according to ESCC 5201/020 specification

KEY APPLICATIONS

- Electrical propulsion (EP) systems
- Driving inductive loads
- Linear amplifiers

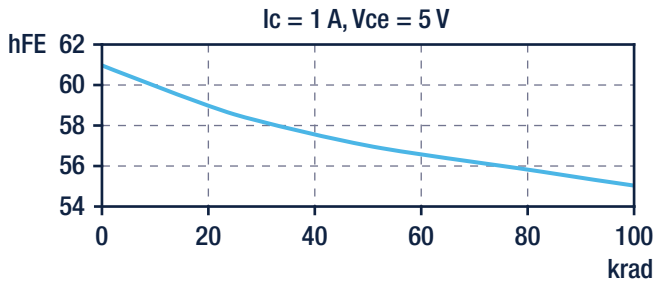


Figure 1: with a load current of 1 A

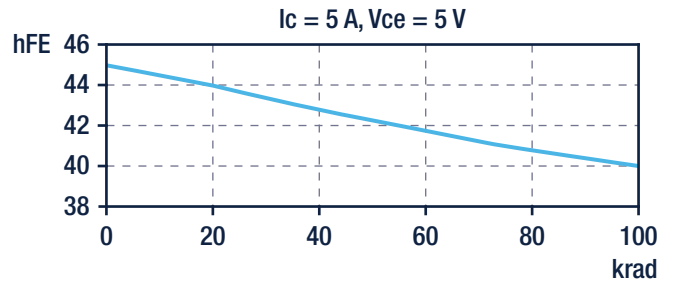


Figure 2: with a load current of 5 A

The use of electric propulsion (EP) systems in space missions is becoming more and more popular especially for the constantly increasing number of small satellites including low Earth orbit (LEO) and geostationary Earth orbit (GEO) telecommunications satellites.

EP represents a cost-effective solution compared to traditional propellant propulsion systems as it requires less propellant, therefore a lighter payload, to set satellites in their correct orbits.

Thrusters in EP systems are driven by a power processor which is designed with multiple linear outputs to drive heaters and flow regulators for cathodes, neutralizers, inner and outer magnet regulators and thermo-throttle valves.

Specifically designed for these types of space applications, the 2ST15300 offers a significant advantage in linear and high-voltage solutions thanks to its excellent current gain behavior and high voltage rating when exposed to radiation.

Ordering information

| Order codes | Screening type | Radiation level | Package | Weight | Lead finish | Marking | Packing |
|-----------------|-------------------|-----------------|---------|--------|-------------|-------------|---------------|
| 2ST15300SR1 | Engineering model | - | SMD.5 | 1 g | Gold | 2ST15300SR1 | Strip pack |
| 2ST15300RSRHRG | Flight model | 100 krad | | | | 520102001R | |
| 2ST15300RSRHRGW | | | | | Solder dip | 520102002R | |
| 2ST15300RSRHRT | | | | | | | Tape and reel |
| 2ST15300RSRHRTW | | | | | | | |

