# 2N6284
# 2N6287

## Complementary power Darlington transistors

## Features

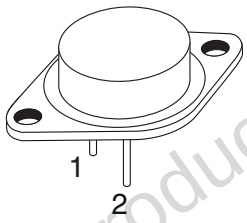
- Complementary transistors in monolithic Darlington configuration
- Integrated collector-emitter antiparallel diode

## Applications

- Audio power amplifier
- DC-AC converter
- General purpose switching applications

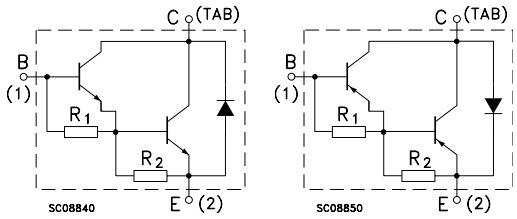
## Description

The 2N6284 is an epitaxial-base NPN power transistor in monolithic Darlington configuration mounted in TO-3 metal case. It is inteded for general purpose amplifier and low frequency switching applications.
The complementary PNP type is 2N6287.




TO-3

**Figure 1. Internal schematic diagrams**




$R_1$ typ. = 8 kΩ $R_2$ typ. = 60 kΩ

**Table 1. Device summary**

| Order code | Marking | Package | Packaging |
|---|---|---|---|
| 2N6284<br>2N6287 | 2N6284<br>2N6287 | TO-3 | Bag |

# 1 Absolute maximum ratings

**Table 2. Absolute maximum ratings**

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| | | NPN | 2N6284 | |
| | | PNP | 2N6287 | |
| $V_{CBO}$ | Collector-base voltage ($I_E$ = 0) | | 100 | V |
| $V_{CEO}$ | Collector-emitter voltage ($I_B$ = 0) | | 100 | V |
| $V_{EBO}$ | Emitter-base voltage ($I_C$ = 0) | | 5 | V |
| $I_C$ | Collector current | | 20 | A |
| $I_{CM}$ | Collector peak current ($t_P$ < 5 ms) | | 40 | A |
| $I_B$ | Base current | | 0.5 | A |
| $P_{tot}$ | Total dissipation at $T_C$ = 25 °C | | 160 | W |
| $T_{stg}$ | Storage temperature | | -65 to 200 | °C |
| $T_J$ | Max. operating junction temperature | | 200 | °C |

For PNP type voltage and current values are negative

**Table 3. Thermal data**

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| $R_{thj\text{-}case}$ | Thermal resistance junction-case | Max | 1.09 | °C/W |

# 2 Electrical characteristics

($T_{case}$ = 25 °C; unless otherwise specified)

**Table 4. Electrical characteristics**

| Symbol | Parameter | Test conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_{CEV}$ | Collector cut-off current ($V_{BE}$ = -1.5 V) | $V_{CE}$ = 100 V<br>$V_{CE}$ = 100 V $T_c$ = 150 °C | | | 0.5<br>5 | mA<br>mA |
| $I_{CEO}$ | Collector cut-off current ($I_B$ = 0) | $V_{CE}$ = 50 V | | | 1 | mA |
| $I_{EBO}$ | Emitter cut-off current ($I_C$ = 0) | $V_{EB}$ = 5 V | | | 2 | mA |
| $V_{CEO(sus)}$ (1) | Collector-emitter sustaining voltage ($I_B$ = 0) | $I_C$ = 100 mA | 100 | | | V |
| $V_{CE(sat)}$ (1) | Collector-emitter saturation voltage | $I_C$ = 10 A $I_B$ = 40 mA<br>$I_C$ = 20 A $I_B$ = 200 mA | | | 2<br>3 | V<br>V |
| $V_{BE(sat)}$ (1) | Base-emitter saturation voltage | $I_C$ = 20 A $I_B$ = 200 mA | | | 4 | V |
| $V_{BE}$ (1) | Base-emitter voltage | $I_C$ = 10 A $V_{CE}$ = 3 V | | | 2.8 | V |
| $h_{FE}$ (1) | DC current gain | $I_C$ = 10 A $V_{CE}$ = 3 V<br>$I_C$ = 20 A $V_{CE}$ = 3 V | 750<br>100 | | 18000 | |
| $h_{fe}$ | Small signal current gain | $I_C$ = 10 A $V_{CE}$ = 3 V<br>f = 1 kHz | 300 | | | |
| $C_{CBO}$ | Collector-base capacitance ($I_E$ = 0) | $V_{CB}$ = 10 V f = 100 kHz<br>for 2N6284<br>for 2N6287 | | | <br>400<br>600 | <br>pF<br>pF |

1. Pulsed duration = 300 µs, duty cycle ≤1.5 %

For PNP type voltage and current values are negative

## 2.1 Electrical characteristics (curves)

**Figure 2. DC current gain (NPN type)**

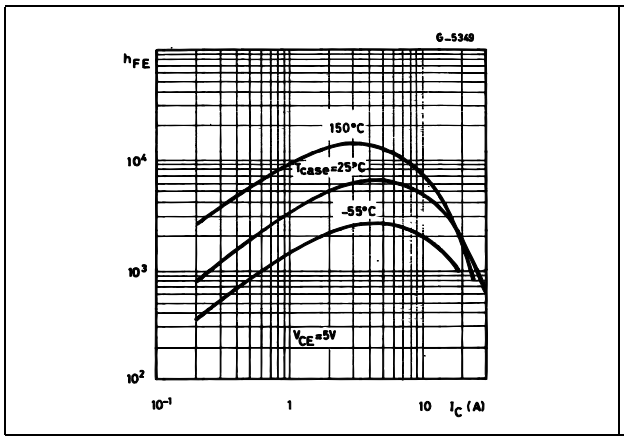



**Figure 3. DC current gain (PNP type)**

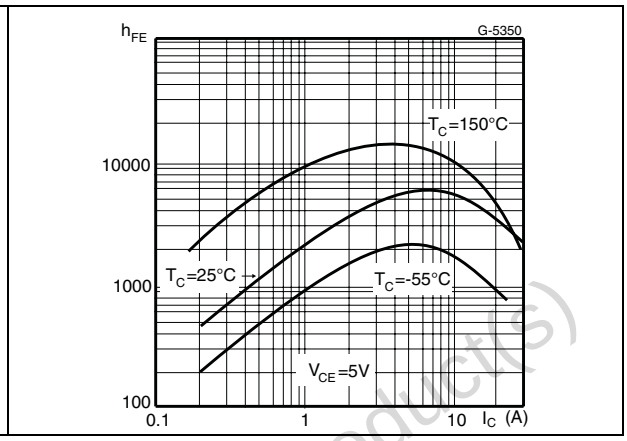



**Figure 4. DC current gain (NPN type)**

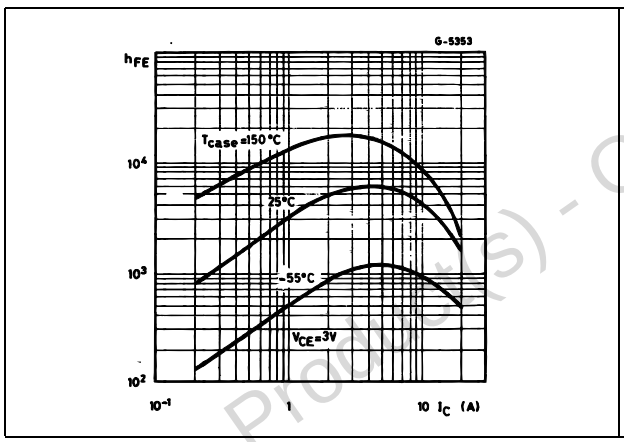



**Figure 5. DC current gain (PNP type)**

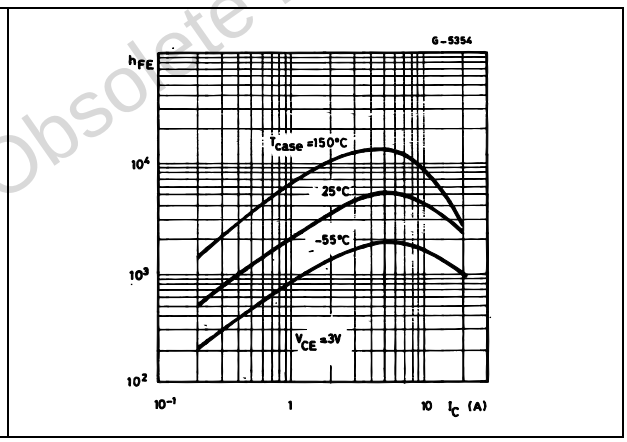



**Figure 6. Collector-emitter saturation voltage (NPN type)**

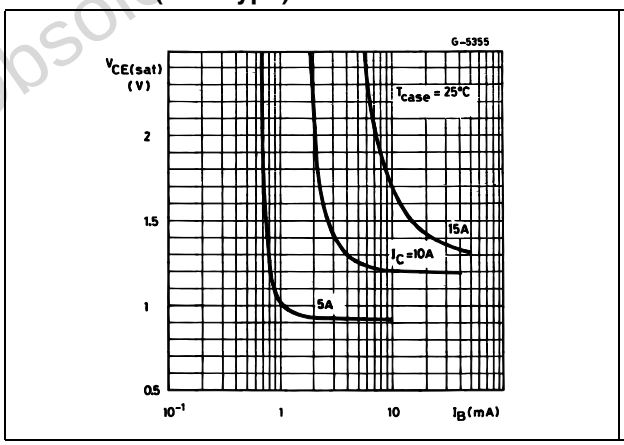
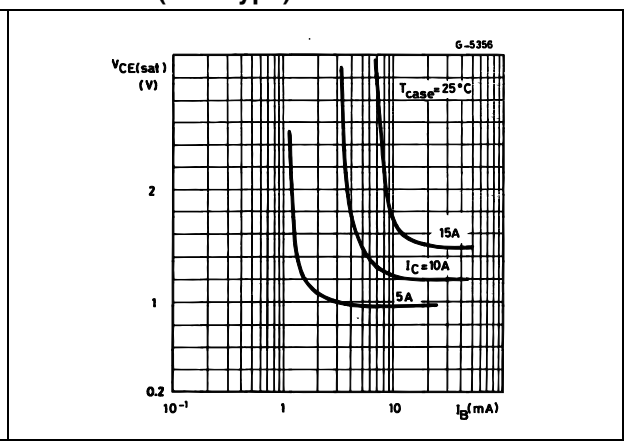



**Figure 7. Collector-emitter saturation voltage (PNP type)**



# 3 Package mechanical data

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: www.st.com. ECOPACK® is an ST trademark.

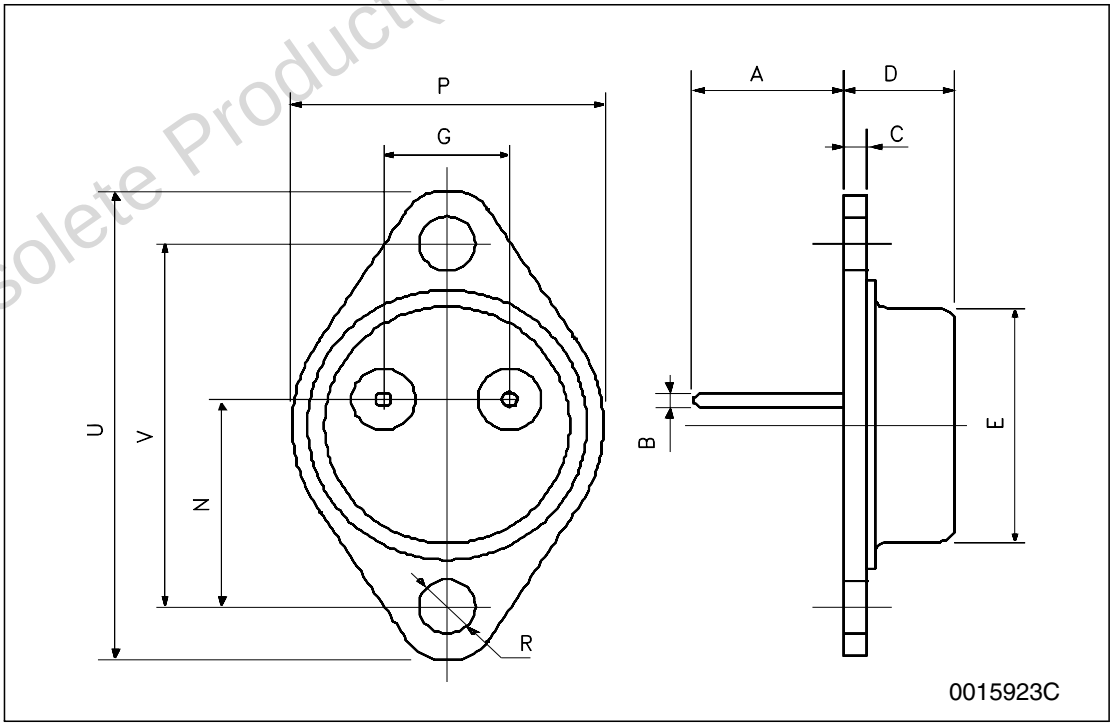
# 4 Revision history

**Table 5. Document revision history**

| Date | Revision | Changes |
|---|---|---|
| 02-Mar-2000 | 2 | |
| 26-Jan-2009 | 3 | Added paragraph *2.1* |

## TO-3 mechanical data

| DIM. | mm. | | |
|---|---|---|---|
| | min. | typ | max. |
| A | 11.00 | | 13.10 |
| B | 0.97 | | 1.15 |
| C | 1.50 | | 1.65 |
| D | 8.32 | | 8.92 |
| E | 19.00 | | 20.00 |
| G | 10.70 | | 11.10 |
| N | 16.50 | | 17.20 |
| P | 25.00 | | 26.00 |
| R | 4.00 | | 4.09 |
| U | 38.50 | | 39.30 |
| V | 30.00 | | 30.30 |



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