

## 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.

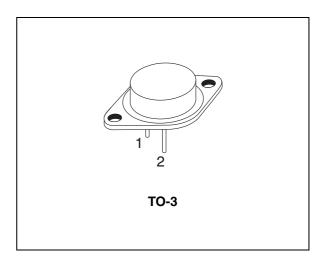


Figure 1. Internal schematic diagrams

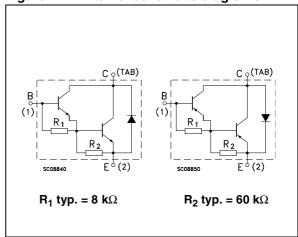


Table 1. Device summary

Order code	Marking	Package	Packaging
2N6284	2N6284	TO-3	Pog
2N6287	2N6287	10-3	Bag

# 1 Absolute maximum ratings

Table 2. Absolute maximum ratings

			Value	
Symbol	Parameter	2N6284	Unit	
		PNP	2N6287	
V <sub>CBO</sub>	Collector-base voltage (I <sub>E</sub> = 0)		100	V
V <sub>CEO</sub>	Collector-emitter voltage (I <sub>B</sub> = 0)	100	V	
V <sub>EBO</sub>	Emitter-base voltage $(I_C = 0)$	5	V	
I <sub>C</sub>	Collector current	20	Α	
I <sub>CM</sub>	Collector peak current (t <sub>P</sub> < 5 ms)	40	Α	
I <sub>B</sub>	Base current	0.5	Α	
P <sub>tot</sub>	Total dissipation at T <sub>C</sub> = 25 °C	160	W	
T <sub>stg</sub>	Storage temperature	-65 to 200	°C	
T <sub>J</sub>	Max. operating junction temperature	200	°C	

For PNP type voltage and current values are negative

Table 3. Thermal data

Symbol	Parameter	Value	Unit	
R <sub>thj-case</sub>	Thermal resistance junction-case	Max	1.09	°C/W

## 2 Electrical characteristics

 $(T_{case} = 25 \, ^{\circ}C; \text{ unless otherwise specified})$ 

Table 4. Electrical characteristics

Symbol	Parameter	Test conditions		Min.	Тур.	Max.	Unit
I <sub>CEV</sub>	Collector cut-off current (V <sub>BE</sub> = -1.5 V)	V <sub>CE</sub> = 100 V V <sub>CE</sub> = 100 V	T <sub>c</sub> = 150 °C			0.5 5	mA mA
I <sub>CEO</sub>	Collector cut-off current (I <sub>B</sub> = 0)	V <sub>CE</sub> = 50 V				1	mA
I <sub>EBO</sub>	Emitter cut-off current (I <sub>C</sub> = 0)	V <sub>EB</sub> = 5 V				2	mA
V <sub>CEO(sus)</sub> <sup>(1)</sup>	Collector-emitter sustaining voltage (I <sub>B</sub> = 0)	I <sub>C</sub> = 100 mA		100			V
V <sub>CE(sat)</sub> <sup>(1)</sup>	Collector-emitter saturation voltage	I <sub>C</sub> = 10 A I <sub>C</sub> = 20 A	$I_B = 40 \text{ mA}$ $I_B = 200 \text{ mA}$			2	V V
V <sub>BE(sat)</sub> <sup>(1)</sup>	Base-emitter saturation voltage	I <sub>C</sub> = 20 A	I <sub>B</sub> = 200 mA			4	V
V <sub>BE</sub> <sup>(1)</sup>	Base-emitter voltage	I <sub>C</sub> = 10 A	V <sub>CE</sub> = 3 V			2.8	V
h <sub>FE</sub> <sup>(1)</sup>	DC current gain	I <sub>C</sub> = 10 A I <sub>C</sub> = 20 A	$V_{CE} = 3 V$ $V_{CE} = 3 V$	750 100		18000	
h <sub>fe</sub>	Small signal current gain	I <sub>C</sub> = 10 A f = 1 kHz	V <sub>CE</sub> = 3 V	300			
C <sub>CBO</sub>	Collector-base capacitance (I <sub>E</sub> = 0)	V <sub>CB</sub> = 10 V for 2N6284 for 2N6287	f = 100 kHz			400 600	pF pF

<sup>1.</sup> Pulsed duration = 300  $\mu$ s, duty cycle  $\leq$ 1.5 %

For PNP type voltage and current values are negative

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Electrical characteristics 2N6284 - 2N6287

## 2.1 Electrical characteristics (curves)

Figure 2. DC current gain (NPN type)

Figure 3. DC current gain (PNP type)

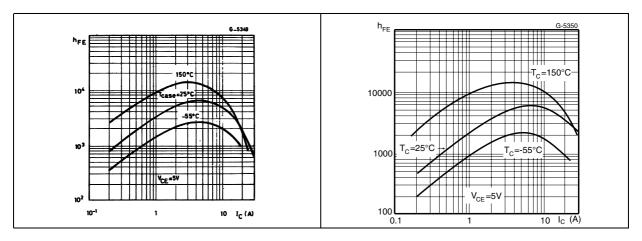


Figure 4. DC current gain (NPN type)

Figure 5. DC current gain (PNP type)

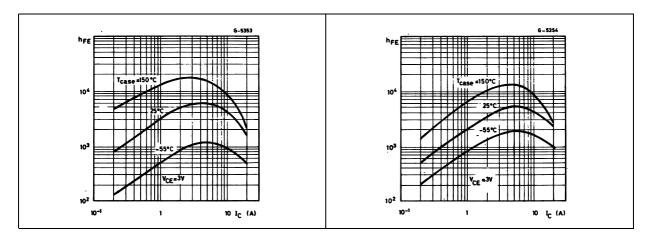
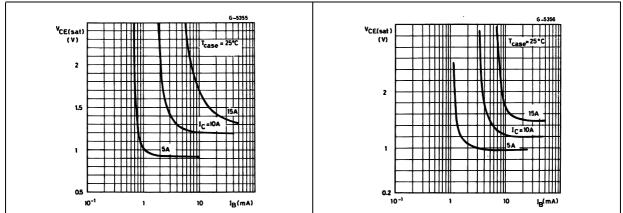


Figure 6. Collector-emitter saturation voltage Figure 7. Collector-emitter saturation voltage (NPN type) (PNP type)



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# 3 Package mechanical data

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Revision history 2N6284 - 2N6287

# 4 Revision history

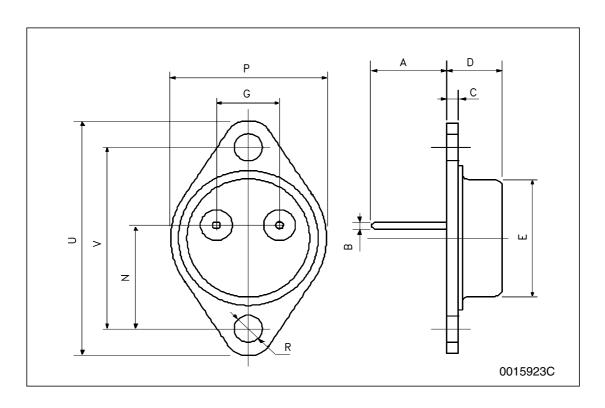
Table 5. Document revision history

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

2N6284 - 2N6287 Revision history

#### TO-3 mechanical data

DIM.	mm.				
DIW.	min.	typ	max.		
А	11.00		13.10		
В	0.97		1.15		
С	1.50		1.65		
D	8.32		8.92		
E	19.00		20.00		
G	10.70		11.10		
N	16.50		17.20		
Р	25.00		26.00		
R	4.00		4.09		
U	38.50		39.30		
V	30.00		30.30		



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