



**SGS-THOMSON**  
MICROELECTRONICS

BD675/75A/77/77A/79/79A/81  
BD676/76A/78/78A/80/80A/82

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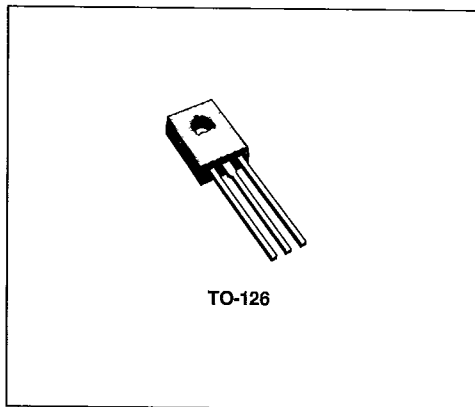
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**MEDIUM POWER DARLINGTONS**

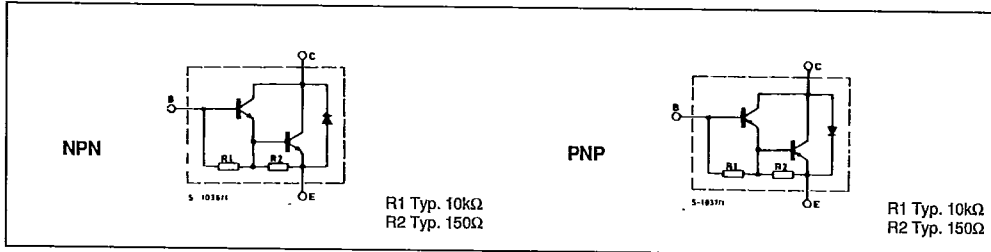
**DESCRIPTION**

The BD675, BD675A, BD677, BD677A, BD679, BD679A and BD681 are silicon epitaxial-base NPN power transistors in monolithic Darlington configuration and are mounted in Jédec TO-126 plastic package. They are intended for use in medium power linear and switching applications.

The complementary PNP types are the BD676, BD676A, BD678, BD678A, BD680, BD680A and BD682 respectively.



**INTERNAL SCHEMATIC DIAGRAMS**



**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	NPN PNP*	Value				Unit
			BD675/A BD676A	BD677/A BD677A	BD679/A BD680A	BD681 BD682	
V <sub>CBO</sub>	Collector-emitter Voltage (I <sub>E</sub> = 0)		45	60	80	100	V
V <sub>CEO</sub>	Collector-emitter Voltage (I <sub>B</sub> = 0)		45	60	80	100	V
V <sub>EBO</sub>	Emitter-base Voltage (I <sub>C</sub> = 0)		5				V
I <sub>C</sub>	Collector Current		4				A
I <sub>CM</sub>	Collector Peak Current (repetitive)		6				A
I <sub>B</sub>	Base Current		100				mA
P <sub>tot</sub>	Total Power Dissipation at T <sub>case</sub> ≤ 25°C		40				W
T <sub>stg</sub>	Storage Temperature		- 65 to 150				°C
T <sub>J</sub>	Junction Temperature		150				°C

For PNP types voltage and current values are negative.

**THERMAL DATA**

R <sub>th j-case</sub>	Thermal Resistance Junction-case	Max	3.12	°C/W
R <sub>th j-amb</sub>	Thermal Resistance Junction-ambient	Max	100	°C/W

**ELECTRICAL CHARACTERISTICS** (T<sub>case</sub> = 25°C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I <sub>CBO</sub>	Collector Cutoff Current (I <sub>E</sub> = 0)	V <sub>CB</sub> = rated V <sub>CB0</sub>			200	μA
		V <sub>CB</sub> = rated V <sub>CB0</sub> T <sub>case</sub> = 100°C			2	mA
I <sub>CEO</sub>	Collector Cutoff Current (I <sub>B</sub> = 0)	V <sub>CE</sub> = half rated V <sub>CEO</sub>			500	μA
I <sub>EBO</sub>	Emitter Cutoff Current (I <sub>C</sub> = 0)	V <sub>EB</sub> = 5V			2	mA
V <sub>CEO(sus)*</sub>	Collector-emitter Sustaining Voltage (I <sub>B</sub> = 0)	I <sub>C</sub> = 50mA for <b>BD675/75A/76/76A</b> for <b>BD677/77A/78/78A</b> for <b>BD679/79A/80/80A</b> for <b>BD681/82</b>	45 60 80 100			V V V V
V <sub>CE(sat)*</sub>	Collector-emitter Saturation Voltage	for <b>BD675/76/77/78/79/80/81/82</b> I <sub>C</sub> = 1.5A I <sub>B</sub> = 30mA			2.5	V
		for <b>BD675A/76A/77A/78A/79A/80A</b> I <sub>C</sub> = 2A I <sub>B</sub> = 40mA			2.8	V
V <sub>BE*</sub>	Base-emitter Voltage	for <b>675/76/77/78/79/80/81/82</b> I <sub>C</sub> = 1.5A V <sub>CE</sub> = 3V			2.5	V
		for <b>675A/76A/77A/78A/79A/80A</b> I <sub>C</sub> = 2A V <sub>CE</sub> = 3V			2.5	V
h <sub>FE*</sub>	DC current Gain	for <b>675/76/77/78/79/80/81/82</b> I <sub>C</sub> = 1.5A V <sub>CE</sub> = 3V	750			
		for <b>675A/76A/77A/78A/79A/80A</b> I <sub>C</sub> = 2A V <sub>CE</sub> = 3V	750			
h <sub>fe</sub>	Small Signal Current Gain	I <sub>C</sub> = 1.5A V <sub>CE</sub> = 3V f = 1MHz	1			

\* Pulsed : pulse duration = 300

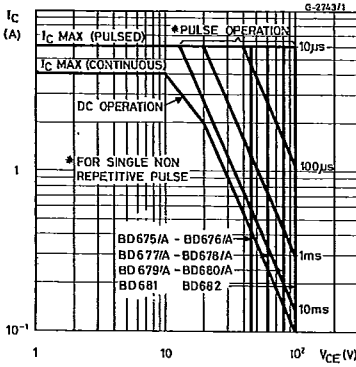
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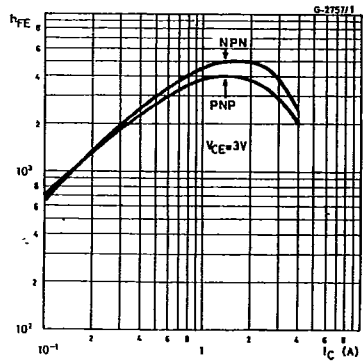
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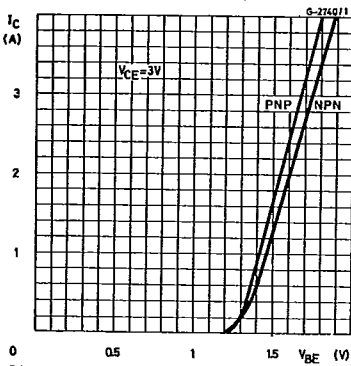
Safe Operating Areas.



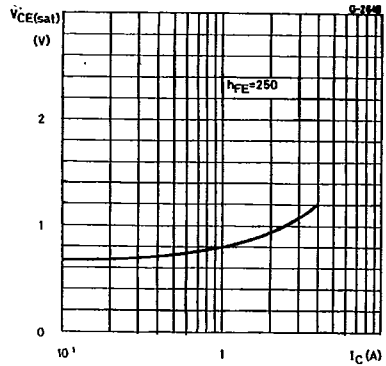
DC Current Gain.



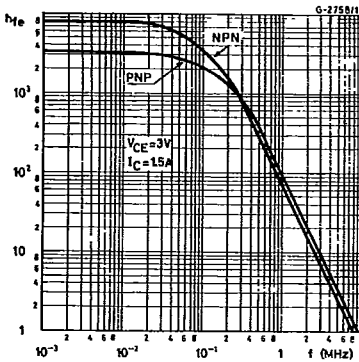
DC Transconductance.



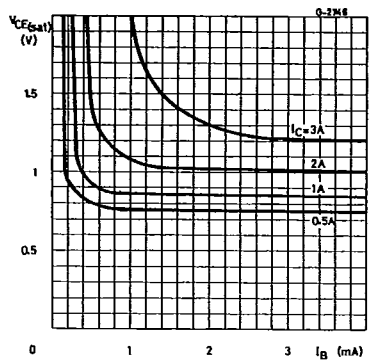
Collector-emitter Saturation Voltage.



Small Signal Current gain.



Collector-emitter Saturation Voltage (NPN types).



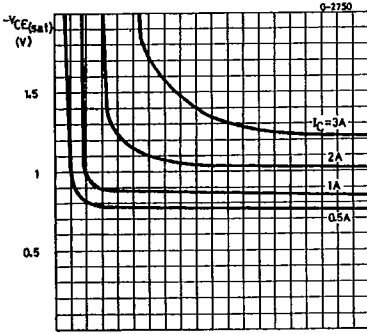
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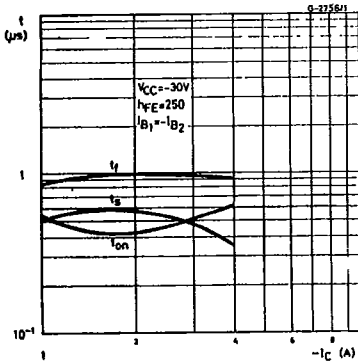
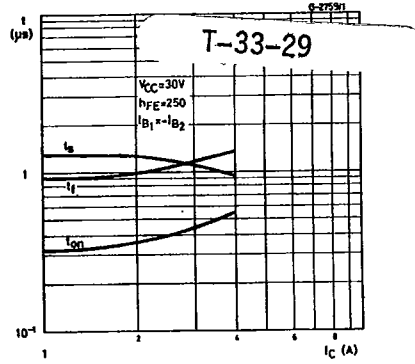
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Collector-emitter Saturation Voltage (PNP).

Saturated Switching Characteristics (NPN).



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