

## COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

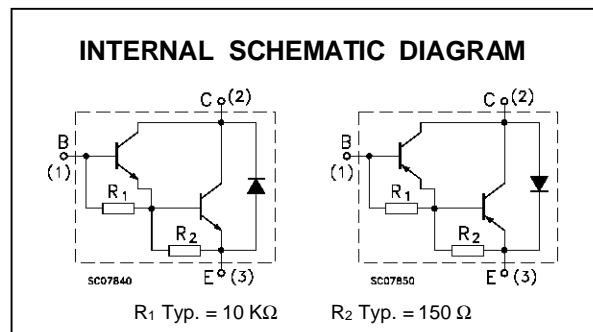
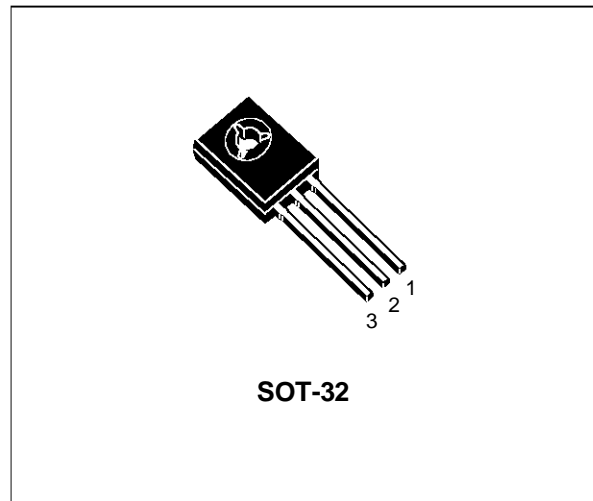
■ SGS-THOMSON PREFERRED SALESTYPES

**DESCRIPTION**

The BD677, BD677A, BD679, BD679A and BD681 are silicon epitaxial-base NPN power transistors in monolithic Darlington configuration mounted in Jedec SOT-32 plastic package.

They are intended for use in medium power linear and switching applications

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



**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value			Unit	
		NPN	BD677/A	BD679/A		BD681
		PNP	BD678/A	BD680/A		BD682
$V_{CBO}$	Collector-Base Voltage ( $I_E = 0$ )		60	80	100	V
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )		60	80	100	V
$V_{EBO}$	Emitter-Base Voltage ( $I_C = 0$ )			5		V
$I_C$	Collector Current			4		A
$I_{CM}$	Collector Peak Current			6		A
$I_B$	Base Current			0.1		A
$P_{tot}$	Total Dissipation at $T_c \leq 25^\circ C$			40		W
$T_{stg}$	Storage Temperature			-65 to 150		$^\circ C$
$T_j$	Max. Operating Junction Temperature			150		$^\circ C$

For PNP types voltage and current values are negative.

## BD677/677A/678/678A/679/679A/680/680A/681/682

### THERMAL DATA

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

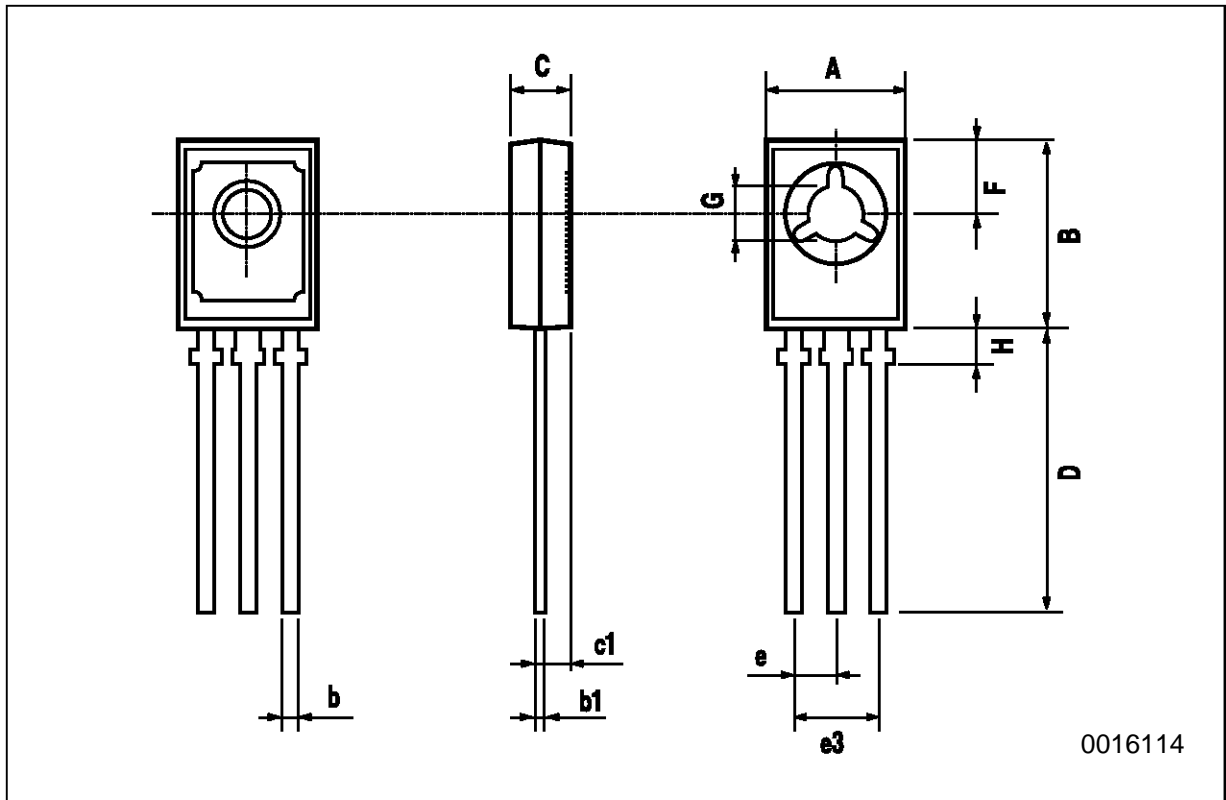
### ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I <sub>CBO</sub>	Collector Cut-off Current (I <sub>E</sub> = 0)	V <sub>CE</sub> = rated V <sub>CBO</sub> V <sub>CE</sub> = rated V <sub>CBO</sub> T <sub>C</sub> = 100 °C			0.2 2	mA mA
I <sub>CEO</sub>	Collector Cut-off Current (I <sub>B</sub> = 0)	V <sub>CE</sub> = half rated V <sub>CEO</sub>			0.5	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>	Collector-Emitter Sustaining Voltage	I <sub>C</sub> = 50 mA for <b>BD677/677A/678/678A</b> for <b>BD679/679A/680/680A</b> for <b>BD681/682</b>	60 80 100			V V V
V <sub>CE(sat)*</sub>	Collector-Emitter Saturation Voltage	for <b>BD677/678/679/680/681/682</b> I <sub>C</sub> = 1.5 A I <sub>B</sub> = 30 mA for <b>BD677A/678A/679A/680A</b> I <sub>C</sub> = 2 A I <sub>B</sub> = 40 mA			2.5 2.8	V V
V <sub>BE*</sub>	Base-Emitter Voltage	for <b>BD677/678/679/680/681/682</b> I <sub>C</sub> = 1.5 A V <sub>CE</sub> = 3 V for <b>BD677A/678A/679A/680A</b> I <sub>C</sub> = 2 A V <sub>CE</sub> = 3 V			2.5 2.5	V V
h <sub>FE*</sub>	DC Current Gain	for <b>BD677/678/679/680/681/682</b> I <sub>C</sub> = 1.5 A V <sub>CE</sub> = 3 V for <b>BD677A/678A/679A/680A</b> I <sub>C</sub> = 2 A V <sub>CE</sub> = 3 V	750 750			
h <sub>fe</sub>	Small Signal Current Gain	I <sub>C</sub> = 1.5 A V <sub>CE</sub> = 3 V f = 1MHz	1			

\* Pulsed: Pulse duration = 300 μs, duty cycle 1.5 %

**SOT-32 MECHANICAL DATA**

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	7.4		7.8	0.291		0.307
B	10.5		10.8	0.413		0.445
b	0.7		0.9	0.028		0.035
b1	0.49		0.75	0.019		0.030
C	2.4		2.7	0.04		0.106
c1		1.2			0.047	
D		15.7			0.618	
e		2.2			0.087	
e3		4.4			0.173	
F		3.8			0.150	
G	3		3.2	0.118		0.126
H			2.54			0.100



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