SGS-THOMSON MICROELECTRONICS

BDW51C
BDW52C

SILICON NPN SWITCHING TRANSISTORS

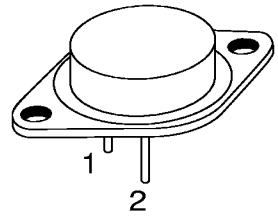
- SGS-THOMSON PREFERRED SALESTYPES
- COMPLEMENTARY PNP - NPN DEVICES
- HIGH CURRENT CAPABILITY
- FAST SWITCHING SPEED
- HIGH DC CURRENT GAIN

APPLICATIONS

- LINEAR AND SWITCHING INDUSTRIAL EQUIPMENT

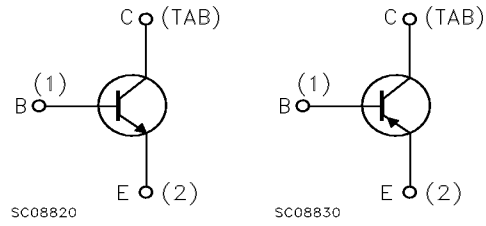
DESCRIPTION

The BDW51C is a silicon epitaxial-base NPN transistor in Jedec TO-3 metal case. It is intended for use in power linear and switching applications. The complementary PNP is the BDW52C.



TO-3

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value	Unit
		NPN	BDW51C	
		PNP	BDW52C	
V_{CBO}	Collector-Base Voltage (I_E = 0)		100	V
V_{CES}	Collector-Emitter Voltage (V_{BE} = 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		15	A
I_{CM}	Collector Peak Current (repetitive)		20	A
I_B	Base Current		7	A
P_{tot}	Total Dissipation at T_c = 25 °C		125	W
T_{stg}	Storage Temperature		-65 to 200	°C
T_j	Max. Operating Junction Temperature		200	°C

For PNP types voltage and current values are negative.

THERMAL DATA

$R_{thj\text{-}case}$	Thermal Resistance Junction-case Max	1.4	°C/W

ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current (I_E = 0)	V_{CB} = 100 V V_{CB} = 100 V T_{case} = 150 °C			500 5	µA 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
$V_{CEO(sus)}$*	Collector-Emitter Sustaining Voltage	I_C = 100 mA	100			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = 5 A I_B = 0.5 A I_C = 10 A I_B = 2.5 A			1 3	V
$V_{BE(sat)}$*	Base-Emitter Saturation Voltage	I_C = 10 A I_B = 2.5 A			2.5	V V
V_{BE}*	Base-Emitter Voltage	I_C = 5 A V_{CE} = 4 V			1.5	V
h_{FE}*	DC Current Gain	I_C = 5 A V_{CE} = 4 V I_C = 10 A V_{CE} = 4 V	20 5		150	
f_T	Transition frequency	I_C = 1 A V_{CE} = 4 V	3			MHz

* Pulsed: Pulse duration = 300 µs, duty cycle 1.5 %
For PNP types voltage and current values are negative.

TO-3 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	11.00		13.10	0.433		0.516
B	0.97		1.15	0.038		0.045
C	1.50		1.65	0.059		0.065
D	8.32		8.92	0.327		0.351
E	19.00		20.00	0.748		0.787
G	10.70		11.10	0.421		0.437
N	16.50		17.20	0.649		0.677
P	25.00		26.00	0.984		1.023
R	4.00		4.09	0.157		0.161
U	38.50		39.30	1.515		1.547
V	30.00		30.30	1.187		1.193