

**Inchange Semiconductor**

**Product Specification**

**Silicon NPN Power Transistors**

**BDW83/83A/83B/83C/83D**

**DESCRIPTION**

- With TO-3PN package
- Complement to type BDW84/84A/84B/84C/84D
- DARLINGTON
- High DC current gain

**APPLICATIONS**

- For use in power linear and switching applications.

**PINNING**

PIN	DESCRIPTION
1	Base
2	Collector;connected to mounting base
3	Emitter

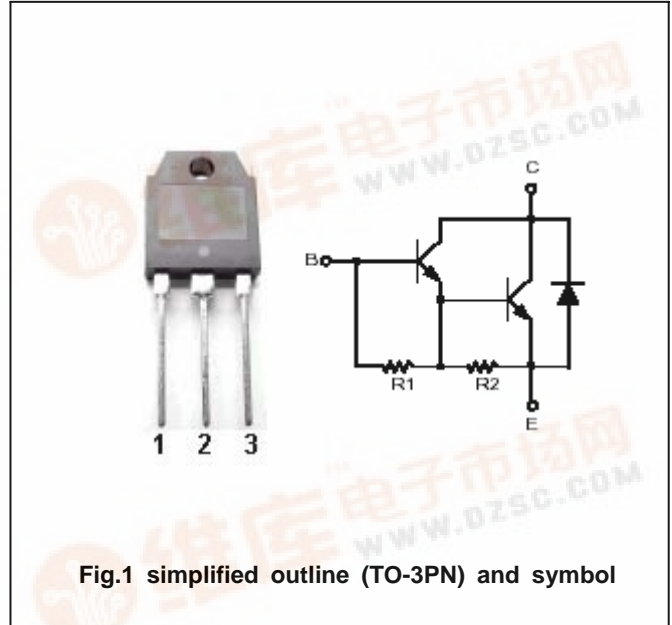


Fig.1 simplified outline (TO-3PN) and symbol

**Absolute maximum ratings(Tc=25 )**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
V <sub>CBO</sub>	Collector-base voltage	BDW83	45	V
		BDW83A	60	
		BDW83B	80	
		BDW83C	100	
		BDW83D	120	
V <sub>CEO</sub>	Collector-emitter voltage	BDW83	45	V
		BDW83A	60	
		BDW83B	80	
		BDW83C	100	
		BDW83D	120	
V <sub>EBO</sub>	Emitter-base voltage	Open collector	5	V
I <sub>C</sub>	Collector current		15	A
I <sub>B</sub>	Base current		0.5	A
P <sub>C</sub>	Collector power dissipation	T <sub>C</sub> =25	150	W
		T <sub>a</sub> =25	3.5	
T <sub>j</sub>	Junction temperature		150	
T <sub>stg</sub>	Storage temperature		-65~150	

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## CHARACTERISTICS

T<sub>j</sub>=25 unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
V <sub>(BR)CEO</sub>	Collector-emitter breakdown voltage	BDW83	I <sub>C</sub> =30mA, I <sub>B</sub> =0			V
		BDW83A				
		BDW83B				
		BDW83C				
		BDW83D				
V <sub>CEsat-1</sub>	Collector-emitter saturation voltage	I <sub>C</sub> =6A, I <sub>B</sub> =12mA			2.5	V
V <sub>CEsat-2</sub>	Collector-emitter saturation voltage	I <sub>C</sub> =15A, I <sub>B</sub> =150mA			4.0	V
V <sub>BE</sub>	Base-emitter on voltage	I <sub>C</sub> =6A; V <sub>CE</sub> =3V			2.5	V
I <sub>CBO</sub>	Collector cut-off current	BDW83	V <sub>CB</sub> =45V, I <sub>E</sub> =0 T <sub>C</sub> =150			mA
		BDW83A	V <sub>CB</sub> =60V, I <sub>E</sub> =0 T <sub>C</sub> =150			
		BDW83B	V <sub>CB</sub> =80V, I <sub>E</sub> =0 T <sub>C</sub> =150			
		BDW83C	V <sub>CB</sub> =100V, I <sub>E</sub> =0 T <sub>C</sub> =150			
		BDW83D	V <sub>CB</sub> =120V, I <sub>E</sub> =0 T <sub>C</sub> =150			
I <sub>CEO</sub>	Collector cut-off current	BDW83	V <sub>CE</sub> =30V, I <sub>B</sub> =0			1
		BDW83A	V <sub>CE</sub> =30V, I <sub>B</sub> =0			
		BDW83B	V <sub>CE</sub> =40V, I <sub>B</sub> =0			
		BDW83C	V <sub>CE</sub> =50V, I <sub>B</sub> =0			
		BDW83D	V <sub>CE</sub> =60V, I <sub>B</sub> =0			
I <sub>EBO</sub>	Emitter cut-off current	V <sub>EB</sub> =5V; I <sub>C</sub> =0			2	mA
h <sub>FE-1</sub>	DC current gain	I <sub>C</sub> =6A; V <sub>CE</sub> =3V	750		20000	
h <sub>FE-2</sub>	DC current gain	I <sub>C</sub> =15A; V <sub>CE</sub> =3V	100			
V <sub>EC</sub>	Diode forward voltage	I <sub>E</sub> =15A			3.5	V
t <sub>on</sub>	Turn-on time	I <sub>C</sub> = 10 A, I <sub>B1</sub> = -I <sub>B2</sub> = 40 mA R <sub>L</sub> = 3 Ω; V <sub>BE(off)</sub> = -4.2V		0.9		μs
t <sub>off</sub>	Turn-off time	Duty Cycle 2%		7.0		μs

## THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	MAX	UNIT
R <sub>th j-c</sub>	Thermal resistance junction to case	0.83	/W

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PACKAGE OUTLINE

