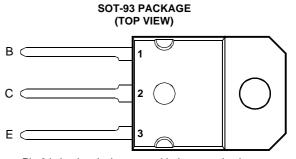
BDW83, BDW83A, BDW83B, BDW83C, BDW83D NPN SILICON POWER DARLINGTONS

- Designed for Complementary Use with BDW84, BDW84A, BDW84B, BDW84C and BDW84D
- 125 W at 25°C Case Temperature

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- 15 A Continuous Collector Current
- Minimum h_{FE} of 750 at 3 V, 6 A



Pin 2 is in electrical contact with the mounting base.

absolute maximum ratings at 25°C case temperature (unless otherwise noted)

RATING	SYMBOL	VALUE	UNIT	
	BDW83		45	
	BDW83A		60	
Collector-base voltage (I _E = 0)	BDW83B	VCBO	80	V
	BDW83C		100	
	BDW83D		120	
	BDW83		45	
Collector-emitter voltage ($I_B = 0$) (see Note 1)	BDW83A		60	
	BDW83B	V _{CEO}	80	V
	BDW83C		100	
	BDW83D		120	
Emitter-base voltage		V _{EBO}	5	V
Continuous collector current		۱ _C	15	А
Continuous base current		Ι _Β	0.5	А
Continuous device dissipation at (or below) 25°C case temperature (see Note 2)	P _{tot}	125	W	
Continuous device dissipation at (or below) 25°C free air temperature (see Note	3)	P _{tot}	3.5	W
Unclamped inductive load energy (see Note 4)		½LI _C ²	100	mJ
Operating junction temperature range		Тj	-65 to +150	°C
Operating temperature range		T _{stg}	-65 to +150	°C
Operating free-air temperature range		T _A	-65 to +150	°C

NOTES: 1. These values apply when the base-emitter diode is open circuited.

2. Derate linearly to 150°C case temperature at the rate of 1 W/°C.

3. Derate linearly to 150°C free air temperature at the rate of 28 mW/°C.

4. This rating is based on the capability of the transistor to operate safely in a circuit of: L = 20 mH, $I_{B(on)}$ = 5 mA, R_{BE} = 100 Ω , $V_{BE(off)}$ = 0, R_S = 0.1 Ω , V_{CC} = 20 V.

PRODUCT INFORMATION

BDW83, BDW83A, BDW83B, BDW83C, BDW83D NPN SILICON POWER DARLINGTONS



	PARAMETER	TEST CONDITIONS				MIN	TYP	MAX	UNIT
					BDW83	45			
V _{(BR)CEO}	Collector-emitter breakdown voltage				BDW83A	60			
		I _C = 30 mA	$I_{B} = 0$	(see Note 5)	BDW83B	80			V
	g-				BDW83C	100			
					BDW83D	120			
	Collector-emitter	V _{CE} = 30 V	$I_{B} = 0$		BDW83			1	
		V _{CE} = 30 V	$I_B = 0$		BDW83A			1	
I _{CEO}	cut-off current	$V_{CE} = 40 V$	$I_B = 0$		BDW83B			1	mA
	out on ourient	$V_{CE} = 50 V$	$I_B = 0$		BDW83C			1	
		V _{CE} = 60 V	$I_B = 0$		BDW83D			1	
		V _{CB} = 45 V	$I_E = 0$		BDW83			0.5	
		V _{CB} = 60 V	$I_E = 0$		BDW83A			0.5	
	Collector cut-off current	V _{CB} = 80 V	$I_E = 0$		BDW83B			0.5	
		V _{CB} = 100 V	$I_E = 0$		BDW83C			0.5	
		V _{CB} = 120 V	$I_E = 0$		BDW83D			0.5	mA
I _{CBO}		V _{CB} = 45 V	$I_E = 0$	T _C = 150°C	BDW83			5	ША
		V _{CB} = 60 V	$I_E = 0$	T _C = 150°C	BDW83A			5	
		V _{CB} = 80 V	$I_E = 0$	T _C = 150°C	BDW83B			5	
		V _{CB} = 100 V	$I_E = 0$	T _C = 150°C	BDW83C			5	
		V _{CB} = 120 V	$I_E = 0$	T _C = 150°C	BDW83D			5	
1	Emitter cut-off	V _{EB} = 5 V	I _C = 0					2	mA
I _{EBO}	current	$v_{\text{EB}} = 5 v$	I _C = 0					2	IIIA
۲.	Forward current	V _{CE} = 3 V	I _C = 6 A	(see Notes 5 and 6)	750		20000	
h _{FE}	transfer ratio	V _{CE} = 3 V	l _C = 15 A	isee Notes 5 and 0)	100			
$V_{\text{BE(on)}}$	Base-emitter	$V_{CE} = 3 V$	$J_{\rm C} = 6 \rm A$	(see Notes 5 and 6)			2.5	V
	voltage	V _{CE} = 3V	$I_{\rm C} = 0$ A	(see notes 5 and 6)			2.5	v
V	Collector-emitter	1 _B = 12 mA	I _C = 6 A	(see Notes 5 and 6)			2.5	V
V _{CE(sat)}	saturation voltage	I _B = 150 mA	I _C = 15 A	(see notes 5 and 6)			4	v
V	Parallel diode	L = 15 A	1 - 0					3.5	V
V_{EC}	forward voltage	I _E = 15 A	$I_B = 0$					5.5	v

electrical characteristics at 25°C case temperature (unless otherwise noted)

NOTES: 5. These parameters must be measured using pulse techniques, $t_p = 300 \ \mu$ s, duty cycle $\leq 2\%$.

6. These parameters must be measured using voltage-sensing contacts, separate from the current carrying contacts.

thermal characteristics

PARAMETER			ТҮР	MAX	UNIT
$R_{\theta JC}$	Junction to case thermal resistance			1	°C/W
R_{\thetaJA}	Junction to free air thermal resistance			35.7	°C/W

resistive-load-switching characteristics at 25°C case temperature

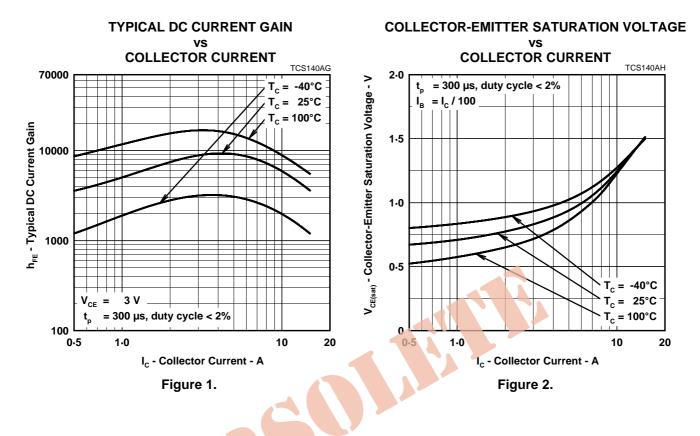
	PARAMETER	TEST CONDITIONS [†]			MIN	ТҮР	MAX	UNIT
t _{on}	Turn-on time	I _C = 10 A	I _{B(on)} = 40 mA	$I_{B(off)} = -40 \text{ mA}$		0.9		μs
t _{off}	Turn-off time	$V_{BE(off)}$ = -4.2 V	$R_L = 3 \Omega$	t_p = 20 μ s, dc \leq 2%		7		μs

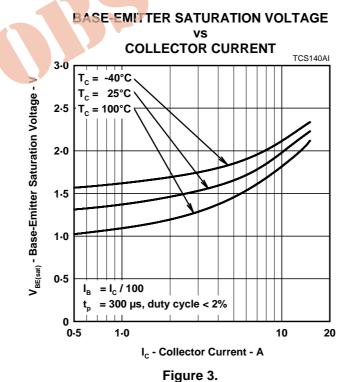
[†] Voltage and current values shown are nominal; exact values vary slightly with transistor parameters.

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TYPICAL CHARACTERISTICS



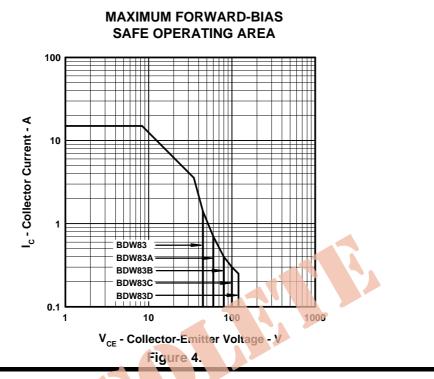


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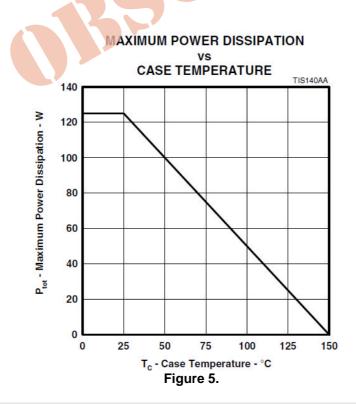
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MAXIMUM SAFE OPERATING REGIONS



THERMAL INFORMATION



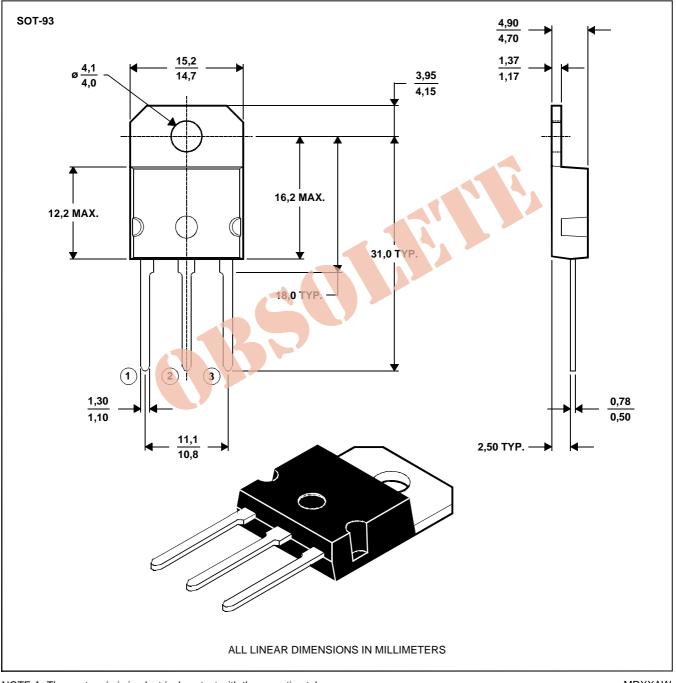
PRODUCT INFORMATION

MECHANICAL DATA

SOT-93

3-pin plastic flange-mount package

This single-in-line package consists of a circuit mounted on a lead frame and encapsulated within a plastic compound. The compound will withstand soldering temperature with no deformation, and circuit performance characteristics will remain stable when operated in high humidity conditions. Leads require no additional cleaning or processing when used in soldered assembly.



NOTE A: The centre pin is in electrical contact with the mounting tab.

MDXXAW

PRODUCT INFORMATION

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