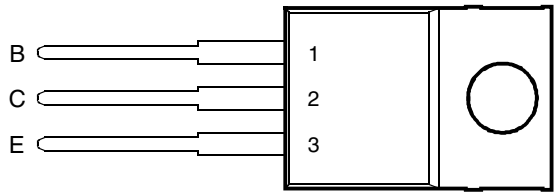
BOURNS®

- **Designed for Complementary Use with BDW94, BDW94A, BDW94B and BDW94C**
- **80 W at 25°C Case Temperature**
- **12 A Continuous Collector Current**
- **Minimum h_{FE} of 750 at 3V, 5 A**

TO-220 PACKAGE
(TOP VIEW)



Pin 2 is in electrical contact with the mounting base.

MDTRACA

This series is obsolete and not recommended for new designs.

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

RATING		SYMBOL	VALUE	UNIT
Collector-base voltage (I_E = 0)	BDW93	V_{CBO}	45	V
	BDW93A		60	
	BDW93B		80	
	BDW93C		100	
Collector-emitter voltage (I_B = 0)	BDW93	V_{CEO}	45	V
	BDW93A		60	
	BDW93B		80	
	BDW93C		100	
Emitter-base voltage		V_{EBO}	5	V
Continuous collector current		I_C	12	A
Continuous base current		I_B	0.3	A
Continuous device dissipation at (or below) 25°C case temperature (see Note 1)		P_{tot}	80	W
Continuous device dissipation at (or below) 25°C free air temperature (see Note 2)		P_{tot}	2	W
Operating junction temperature range		T_j	-65 to +150	°C
Storage temperature range		T_{stg}	-65 to +150	°C
Operating free-air temperature range		T_A	-65 to +150	°C

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NOTES: 1. Derate linearly to 150°C case temperature at the rate of 0.64 W/°C.
2. Derate linearly to 150°C free air temperature at the rate of 16 mW/°C.

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

PARAMETER		TEST CONDITIONS				MIN	TYP	MAX	UNIT
$V_{(BR)CEO}$	Collector-emitter breakdown voltage	I_C = 100 mA	I_B = 0	(see Note 3)	BDW93	45			V
					BDW93A	60			
					BDW93B	80			
					BDW93C	100			
I_{CEO}	Collector-emitter cut-off current	V_{CB} = 40 V	I_B = 0		BDW93			1	mA
		V_{CB} = 60 V	I_B = 0		BDW93A			1	
		V_{CB} = 80 V	I_B = 0		BDW93B			1	
		V_{CB} = 80 V	I_B = 0		BDW93C			1	
I_{CBO}	Collector cut-off current	V_{CB} = 45 V	I_E = 0		BDW93			0.1	mA
		V_{CB} = 60 V	I_E = 0		BDW93A			0.1	
		V_{CB} = 80 V	I_E = 0		BDW93B			0.1	
		V_{CB} = 100 V	I_E = 0		BDW93C			0.1	
		V_{CB} = 45 V	I_E = 0	T_C = 150°C	BDW93			5	
		V_{CB} = 60 V	I_E = 0	T_C = 150°C	BDW93A			5	
		V_{CB} = 80 V	I_E = 0	T_C = 150°C	BDW93B			5	
		V_{CB} = 100 V	I_E = 0	T_C = 150°C	BDW93C			5	
I_{EBO}	Emitter cut-off current	V_{EB} = 5 V	I_C = 0					2	mA
h_{FE}	Forward current transfer ratio	V_{CE} = 3 V	I_C = 3 A	(see Notes 3 and 4)		1000			
		V_{CE} = 3 V	I_C = 10 A			100			
		V_{CE} = 3 V	I_C = 5 A			750		20000	
$V_{CE(sat)}$	Collector-emitter saturation voltage	I_B = 20 mA	I_C = 5 A	(see Notes 3 and 4)				2	V
		I_B = 100 mA	I_C = 10 A					3	
$V_{BE(sat)}$	Base-emitter saturation voltage	I_B = 20 mA	I_C = 5 A	(see Notes 3 and 4)				2.5	V
		I_B = 100 mA	I_C = 10 A					4	
V_{EC}	Parallel diode forward voltage	I_E = 5 A	I_B = 0					2	V
		I_E = 10 A	I_B = 0					4	

NOTES: 3. These parameters must be measured using pulse techniques, t_p = 300 µs, duty cycle ≤ 2%.
4. These parameters must be measured using voltage-sensing contacts, separate from the current carrying contacts.

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thermal characteristics

PARAMETER		MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction to case thermal resistance			1.56	°C/W
$R_{\theta JA}$	Junction to free air thermal resistance			62.5	°C/W

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TYPICAL CHARACTERISTICS

TYPICAL DC CURRENT GAIN vs COLLECTOR CURRENT

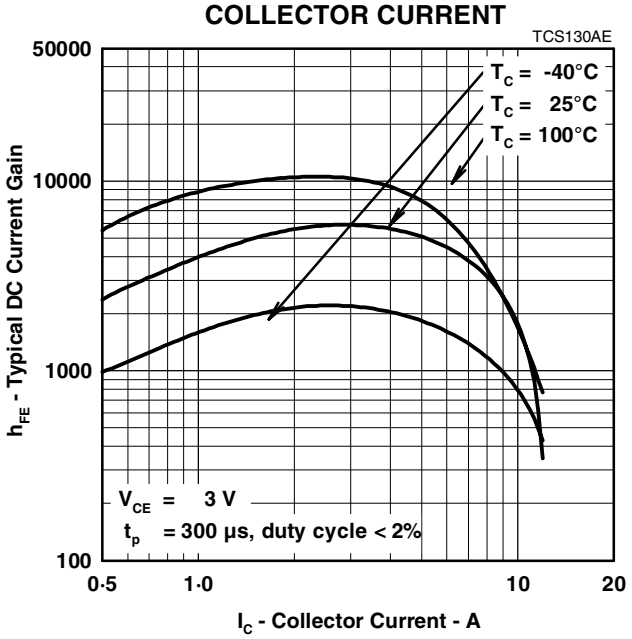

Figure 1.

COLLECTOR-EMITTER SATURATION VOLTAGE vs COLLECTOR CURRENT

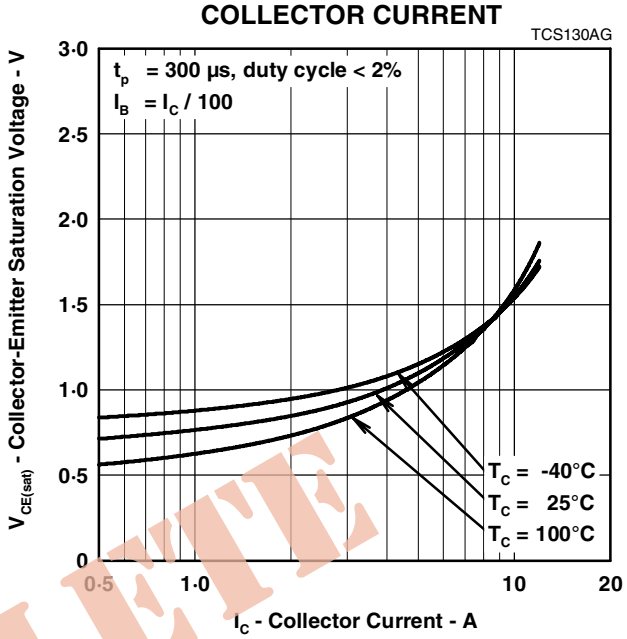

Figure 2.

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BASE-EMITTER SATURATION VOLTAGE vs COLLECTOR CURRENT

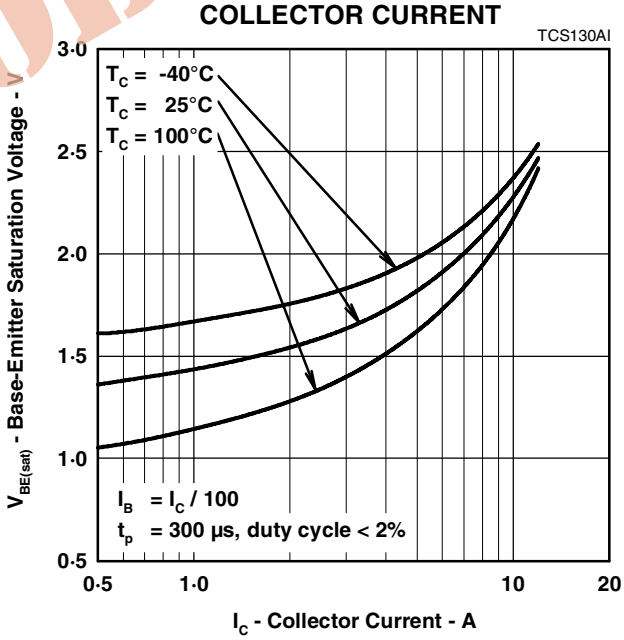

Figure 3.

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THERMAL INFORMATION

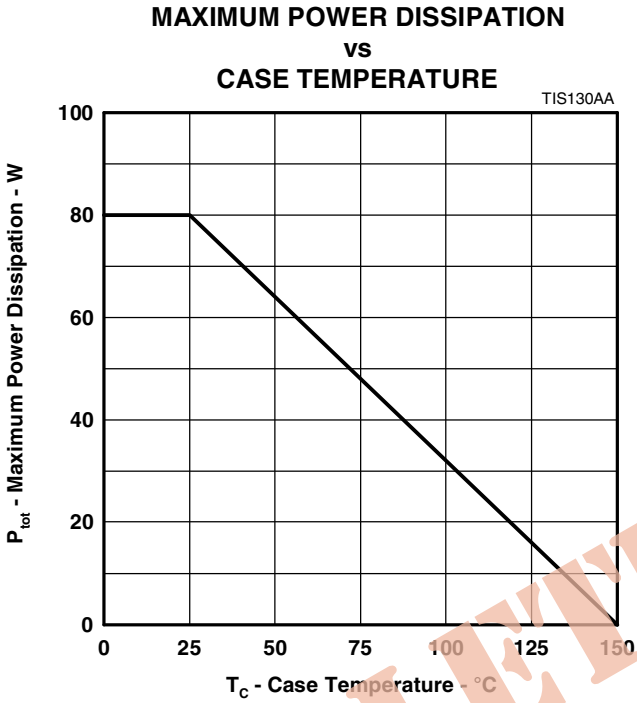

Figure 4.

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