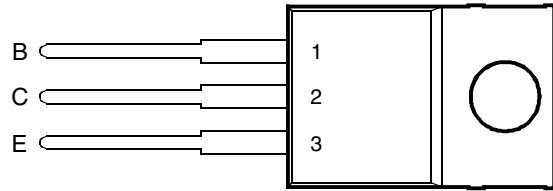


- Designed for Complementary Use with BDW93, BDW93A, BDW93B and BDW93C
- 80 W at 25°C Case Temperature
- 12 A Continuous Collector Current
- Minimum h_{FE} of 750 at 3V, 5 A

TO-220 PACKAGE
(TOP VIEW)



This series is obsolete and not recommended for new designs.

Pin 2 is in electrical contact with the mounting base.

MDTRACA

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

RATING		SYMBOL	VALUE	UNIT
Collector-base voltage ($I_E = 0$)	BDW94	V_{CBO}	-45	V
	BDW94A		-60	
	BDW94B		-80	
	BDW94C		-100	
Collector-emitter voltage ($I_B = 0$)	BDW94	V_{CEO}	-45	V
	BDW94A		-60	
	BDW94B		-80	
	BDW94C		-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

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.

PRODUCT INFORMATION

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

PARAMETER	TEST CONDITIONS			MIN	TYP	MAX	UNIT
$V_{(BR)CEO}$ Collector-emitter breakdown voltage	$I_C = -100 \text{ mA}$	$I_B = 0$	(see Note 3)	BDW94 BDW94A BDW94B BDW94C	-45 -60 -80 -100		V
I_{CEO} Collector-emitter cut-off current	$V_{CB} = -40 \text{ V}$ $V_{CB} = -60 \text{ V}$ $V_{CB} = -80 \text{ V}$ $V_{CB} = -80 \text{ V}$	$I_B = 0$ $I_B = 0$ $I_B = 0$ $I_B = 0$		BDW94 BDW94A BDW94B BDW94C		-1 -1 -1 -1	mA
I_{CBO} Collector cut-off current	$V_{CB} = -45 \text{ V}$ $V_{CB} = -60 \text{ V}$ $V_{CB} = -80 \text{ V}$ $V_{CB} = -100 \text{ V}$ $V_{CB} = -45 \text{ V}$ $V_{CB} = -60 \text{ V}$ $V_{CB} = -80 \text{ V}$ $V_{CB} = -100 \text{ V}$	$I_E = 0$ $I_E = 0$ $I_E = 0$ $I_E = 0$ $I_E = 0$ $I_E = 0$ $I_E = 0$ $I_E = 0$	$T_C = 150^\circ\text{C}$ $T_C = 150^\circ\text{C}$ $T_C = 150^\circ\text{C}$ $T_C = 150^\circ\text{C}$	BDW94 BDW94A BDW94B BDW94C BDW94 BDW94A BDW94B BDW94C		-0.1 -0.1 -0.1 -0.1 -5 -5 -5 -5	mA
I_{EBO} Emitter cut-off current	$V_{EB} = -5 \text{ V}$	$I_C = 0$				-2	mA
h_{FE} Forward current transfer ratio	$V_{CE} = -3 \text{ V}$ $V_{CE} = -3 \text{ V}$ $V_{CE} = -3 \text{ V}$	$I_C = -3 \text{ A}$ $I_C = -10 \text{ A}$ $I_C = -5 \text{ A}$	(see Notes 3 and 4)		1000 100 750	20000	
$V_{CE(sat)}$ Collector-emitter saturation voltage	$I_B = -20 \text{ mA}$ $I_B = -100 \text{ mA}$	$I_C = -5 \text{ A}$ $I_C = -10 \text{ A}$	(see Notes 3 and 4)			-2 -3	V
$V_{BE(sat)}$ Base-emitter saturation voltage	$I_B = -20 \text{ mA}$ $I_B = -100 \text{ mA}$	$I_C = -5 \text{ A}$ $I_C = -10 \text{ A}$	(see Notes 3 and 4)			-2.5 -4	V
V_{EC} Parallel diode forward voltage	$I_E = -5 \text{ A}$ $I_E = -10 \text{ A}$	$I_B = 0$ $I_B = 0$				-2 -4	V

NOTES: 3. These parameters must be measured using pulse techniques, $t_p = 300 \mu\text{s}$, duty cycle $\leq 2\%$.

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

thermal characteristics

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

PRODUCT INFORMATION

SEPTEMBER 1993 - REVISED SEPTEMBER 2002
 Specifications are subject to change without notice.

TYPICAL CHARACTERISTICS

**TYPICAL DC CURRENT GAIN
vs
COLLECTOR CURRENT**

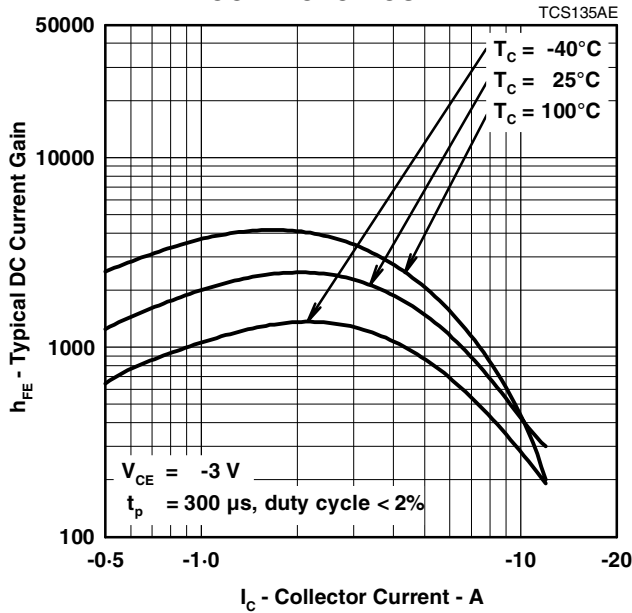


Figure 1.

**COLLECTOR-EMITTER SATURATION VOLTAGE
vs
COLLECTOR CURRENT**

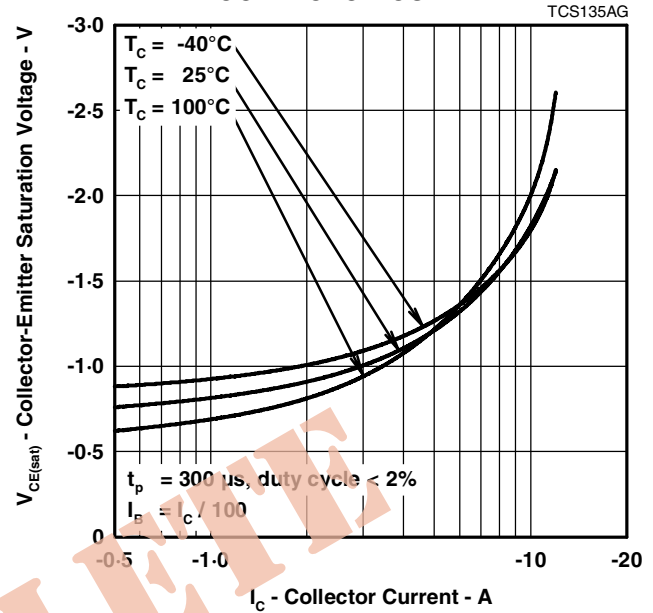


Figure 2.

**BASE-EMITTER SATURATION VOLTAGE
vs
COLLECTOR CURRENT**

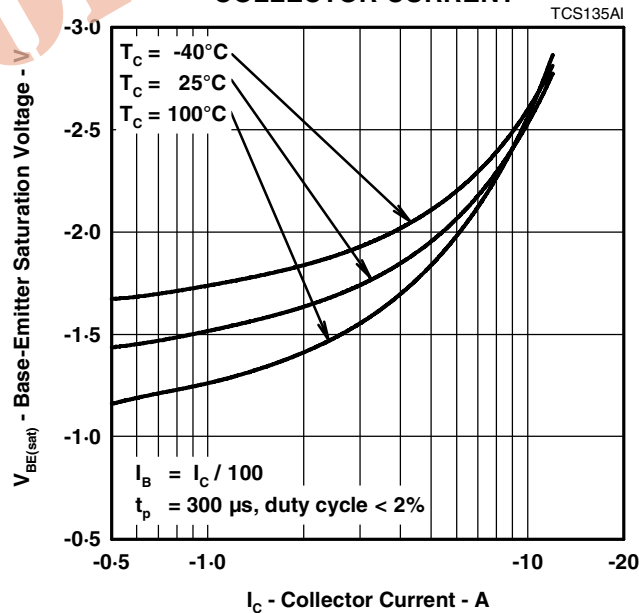


Figure 3.

PRODUCT INFORMATION

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THERMAL INFORMATION

**MAXIMUM POWER DISSIPATION
vs
CASE TEMPERATURE**

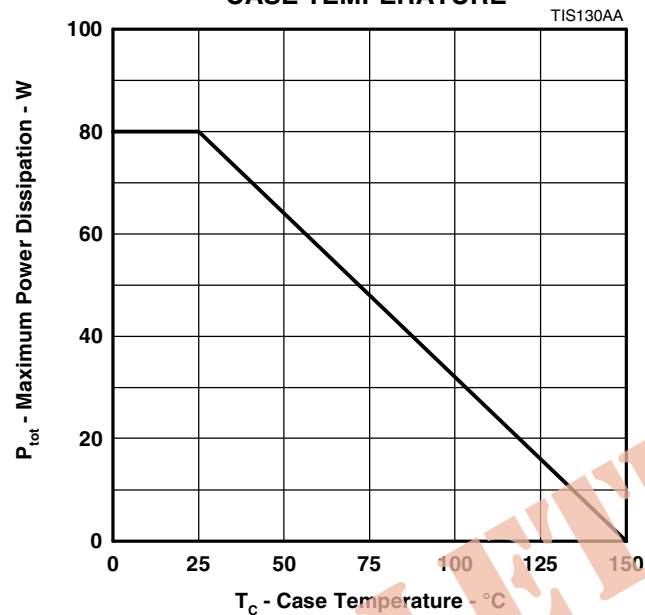


Figure 4.

PRODUCT INFORMATION

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