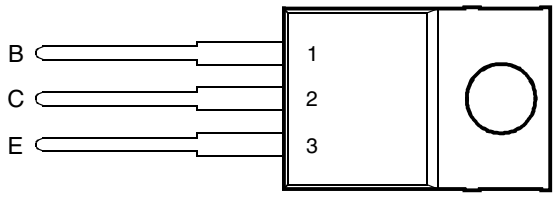
BOURNS®

- **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)



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.

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)	BDW94	-45			V
					BDW94A	-60			
					BDW94B	-80			
					BDW94C	-100			
I_{CEO}	Collector-emitter cut-off current	V_{CB} = -40 V	I_B = 0		BDW94			-1	mA
		V_{CB} = -60 V	I_B = 0		BDW94A			-1	
		V_{CB} = -80 V	I_B = 0		BDW94B			-1	
		V_{CB} = -80 V	I_B = 0		BDW94C			-1	
I_{CBO}	Collector cut-off current	V_{CB} = -45 V	I_E = 0		BDW94			-0.1	mA
		V_{CB} = -60 V	I_E = 0		BDW94A			-0.1	
		V_{CB} = -80 V	I_E = 0		BDW94B			-0.1	
		V_{CB} = -100 V	I_E = 0		BDW94C			-0.1	
		V_{CB} = -45 V	I_E = 0	T_C = 150°C	BDW94			-5	
		V_{CB} = -60 V	I_E = 0	T_C = 150°C	BDW94A			-5	
		V_{CB} = -80 V	I_E = 0	T_C = 150°C	BDW94B			-5	
		V_{CB} = -100 V	I_E = 0	T_C = 150°C	BDW94C			-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.

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

TYPICAL CHARACTERISTICS

TYPICAL DC CURRENT GAIN vs COLLECTOR CURRENT

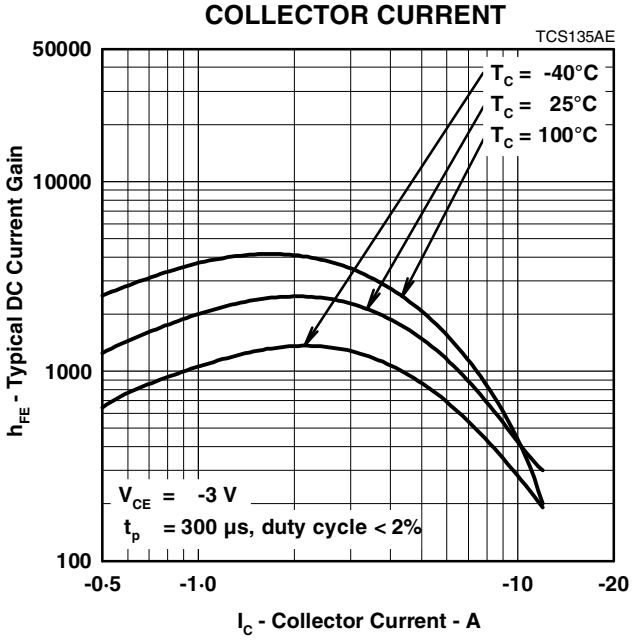


Figure 1.

COLLECTOR-EMITTER SATURATION VOLTAGE vs COLLECTOR CURRENT

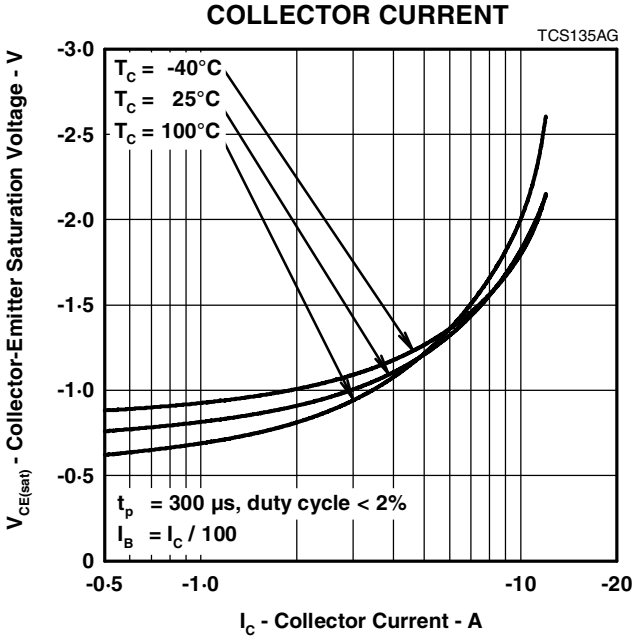


Figure 2.

BASE-EMITTER SATURATION VOLTAGE vs COLLECTOR CURRENT

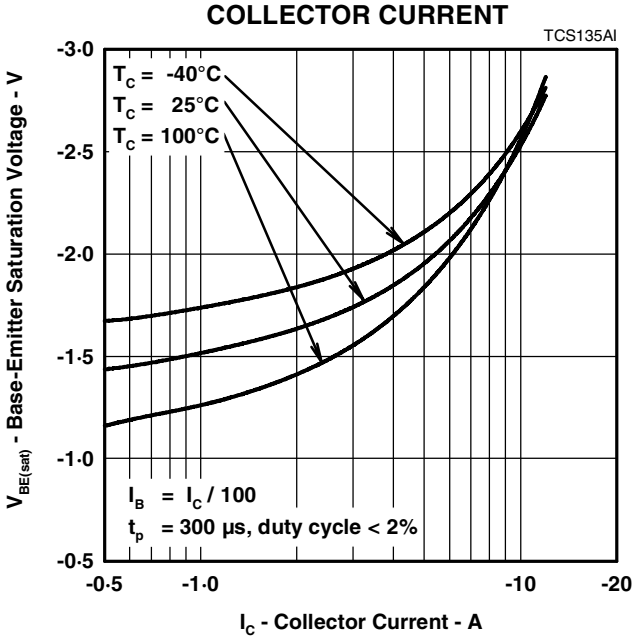


Figure 3.

THERMAL INFORMATION

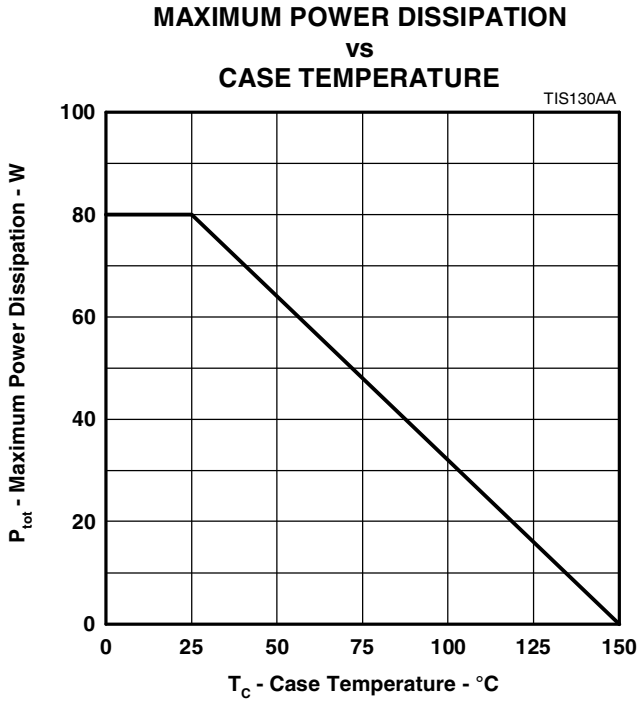


Figure 4.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Bourns:

BDW94B BDW94A BDW94C BDW94