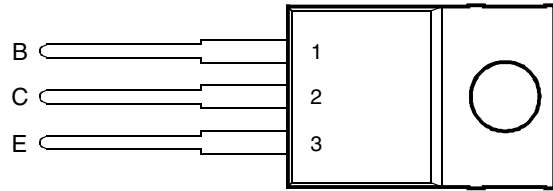




- Designed for Complementary Use with BDW23, BDW23A, BDW23B and BDW23C
- 50 W at 25°C Case Temperature
- 6 A Continuous Collector Current
- Minimum h_{FE} of 750 at 2 A, 3 V

TO-220 PACKAGE
(TOP VIEW)



This series is currently available, but 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 ($I_E = 0$)	BDW24	V_{CBO}	-45	V
	BDW24A		-60	
	BDW24B		-80	
	BDW24C		-100	
Collector-emitter voltage ($I_B = 0$)	BDW24	V_{CEO}	-45	V
	BDW24A		-60	
	BDW24B		-80	
	BDW24C		-100	
Emitter-base voltage		V_{EBO}	-5	V
Continuous collector current		I_C	-6	A
Continuous base current		I_B	-0.2	A
Continuous device dissipation at (or below) 25°C case temperature (see Note 1)		P_{tot}	50	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 0.4 W/°C.
2. Derate linearly to 150°C free air temperature at the rate of 16 mW/°C.

PRODUCT INFORMATION

MAY 1989 - REVISED SEPTEMBER 2002
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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	$I_C = -100 \text{ mA}$ $I_B = 0$ (see Note 3) BDW24 BDW24A BDW24B BDW24C	-45 -60 -80 -100			V
I_{CEO} Collector-emitter cut-off current	$V_{CE} = -30 \text{ V}$ $I_B = 0$ $V_{CE} = -30 \text{ V}$ $I_B = 0$ $V_{CE} = -40 \text{ V}$ $I_B = 0$ $V_{CE} = -50 \text{ V}$ $I_B = 0$ BDW24 BDW24A BDW24B BDW24C			-0.5 -0.5 -0.5 -0.5	mA
I_{CBO} Collector cut-off current	$V_{CB} = -45 \text{ V}$ $I_E = 0$ $V_{CB} = -60 \text{ V}$ $I_E = 0$ $V_{CB} = -80 \text{ V}$ $I_E = 0$ $V_{CB} = -100 \text{ V}$ $I_E = 0$ BDW24 BDW24A BDW24B BDW24C			-0.2 -0.2 -0.2 -0.2	mA
I_{EBO} Emitter cut-off current	$V_{EB} = -5 \text{ V}$ $I_C = 0$			-2	mA
h_{FE} Forward current transfer ratio	$V_{CE} = -3 \text{ V}$ $I_C = -1 \text{ A}$ $V_{CE} = -3 \text{ V}$ $I_C = -2 \text{ A}$ (see Notes 3 and 4) $V_{CE} = -3 \text{ V}$ $I_C = -6 \text{ A}$	1000 750 100		20000	
$V_{CE(sat)}$ Collector-emitter saturation voltage	$I_B = -8 \text{ mA}$ $I_C = -2 \text{ A}$ (see Notes 3 and 4) $I_B = -60 \text{ mA}$ $I_C = -6 \text{ A}$			-2 -3	V
$V_{BE(sat)}$ Base-emitter saturation voltage	$I_B = -8 \text{ mA}$ $I_C = -2 \text{ A}$ (see Notes 3 and 4)			-2.5	V
$V_{BE(on)}$ Base-emitter voltage	$V_{CE} = -3 \text{ V}$ $I_C = -1 \text{ A}$ (see Notes 3 and 4) $V_{CE} = -3 \text{ V}$ $I_C = -6 \text{ A}$			-2.5 -3	V
V_{EC} Parallel diode forward voltage	$I_E = -2 \text{ A}$ $I_B = 0$			-1.8	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			2.5	°C/W
$R_{\theta JA}$ Junction to free air thermal resistance			62.5	°C/W

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

PARAMETER	TEST CONDITIONS †	MIN	TYP	MAX	UNIT
t_{on} Turn-on time	$I_C = -3 \text{ A}$ $I_{B(on)} = -12 \text{ mA}$ $I_{B(off)} = 12 \text{ mA}$		1		μs
t_{off} Turn-off time	$V_{BE(off)} = 4.5 \text{ V}$ $R_L = 10 \Omega$ $t_p = 20 \mu\text{s}$, dc $\leq 2\%$		5		μs

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

TYPICAL CHARACTERISTICS

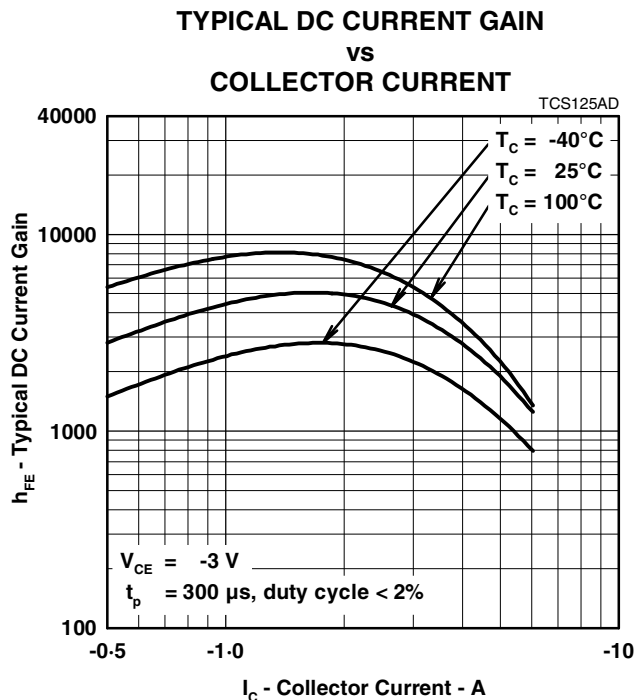


Figure 1.

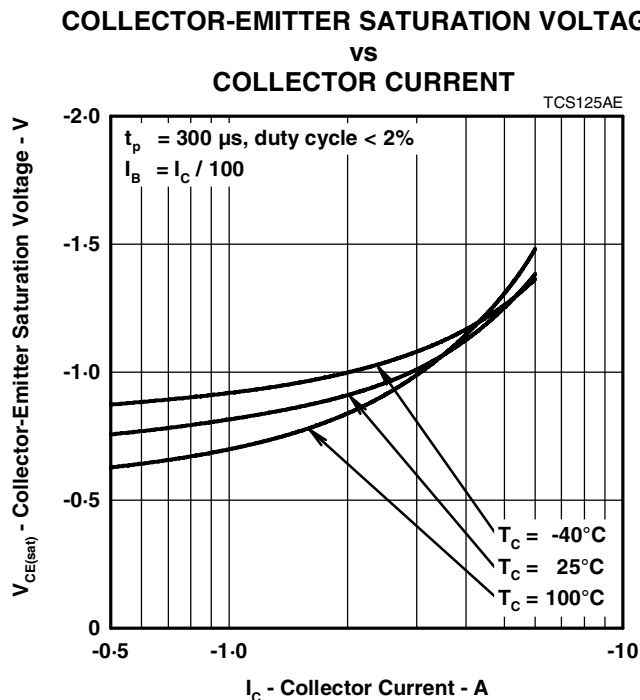


Figure 2.

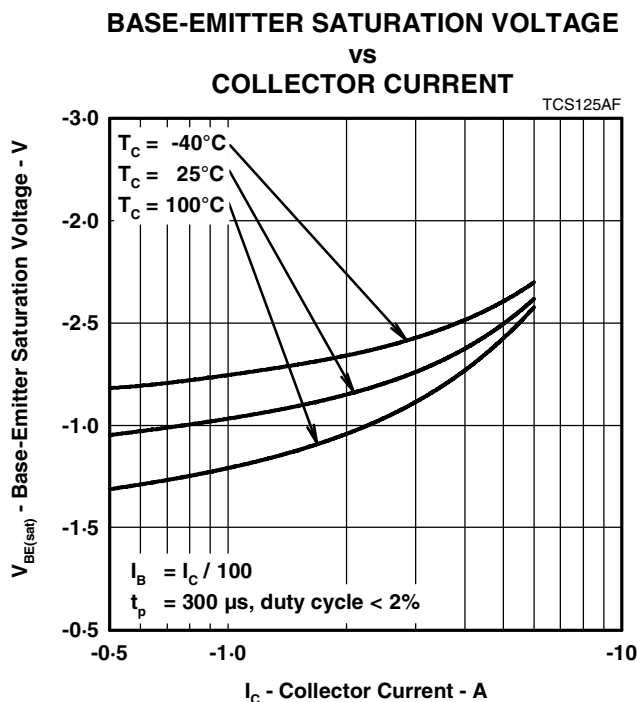


Figure 3.

PRODUCT INFORMATION

MAXIMUM SAFE OPERATING REGIONS

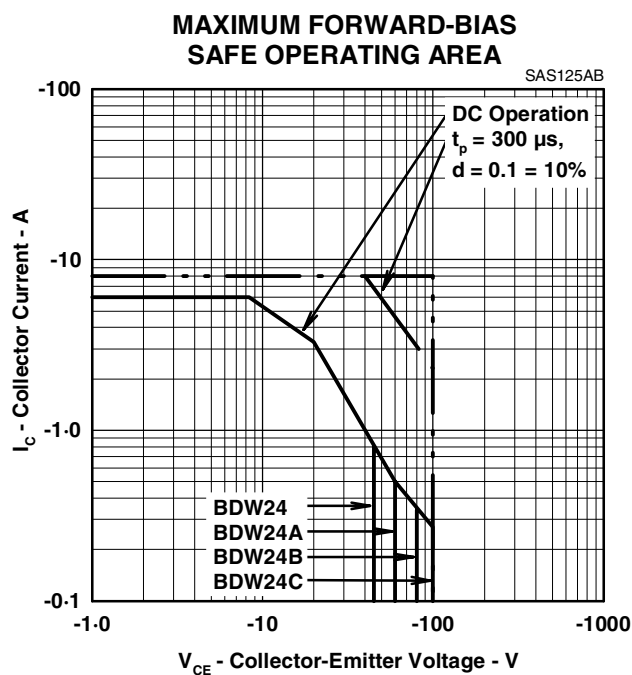


Figure 4.

THERMAL INFORMATION

MAXIMUM POWER DISSIPATION vs CASE TEMPERATURE

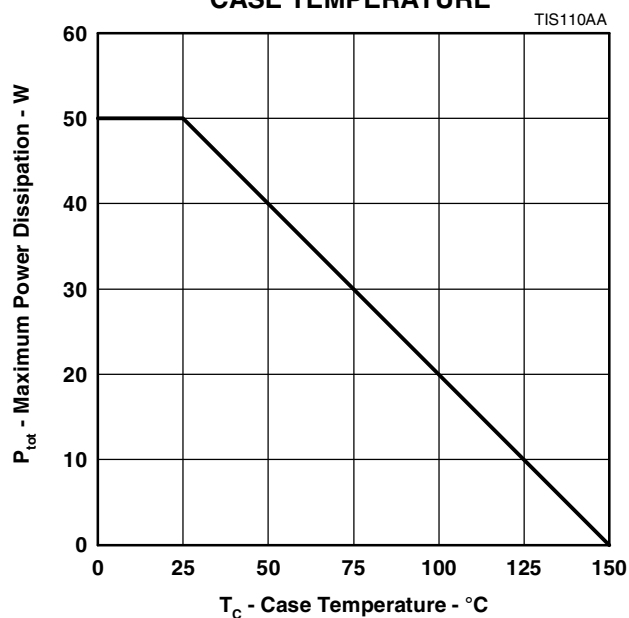


Figure 5.

PRODUCT INFORMATION

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