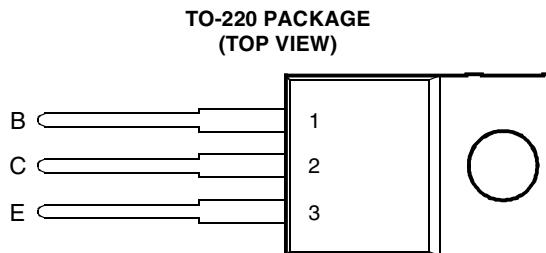


- Designed for Complementary Use with BDW23, BDW23A, BDW23B and BDW23C
- 50 W at 25°C Case Temperature
- 6 A Continuous Collector Current
- Minimum  $h_{FE}$  of 750 at 2 A, 3 V



**!** 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 ( $I_E = 0$ )	$V_{CBO}$	-45 -60 -80 -100	V
Collector-emitter voltage ( $I_B = 0$ )	$V_{CEO}$	-45 -60 -80 -100	V
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

**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	$V_{CE} = -30 \text{ V}$	$I_B = 0$		BDW24		-0.5		
	$V_{CE} = -30 \text{ V}$	$I_B = 0$		BDW24A		-0.5	mA	
	$V_{CE} = -40 \text{ V}$	$I_B = 0$		BDW24B		-0.5		
	$V_{CE} = -50 \text{ V}$	$I_B = 0$		BDW24C		-0.5		
$I_{CBO}$ Collector cut-off current	$V_{CB} = -45 \text{ V}$	$I_E = 0$		BDW24		-0.2		
	$V_{CB} = -60 \text{ V}$	$I_E = 0$		BDW24A		-0.2	mA	
	$V_{CB} = -80 \text{ V}$	$I_E = 0$		BDW24B		-0.2		
	$V_{CB} = -100 \text{ V}$	$I_E = 0$		BDW24C		-0.2		
$I_{EBO}$ Emitter cut-off current	$V_{EB} = -5 \text{ V}$	$I_C = 0$				-2	mA	
$h_{FE}$ Forward current transfer ratio	$V_{CE} = -3 \text{ V}$	$I_C = -1 \text{ A}$		1000				
	$V_{CE} = -3 \text{ V}$	$I_C = -2 \text{ A}$	(see Notes 3 and 4)	750		20000		
	$V_{CE} = -3 \text{ V}$	$I_C = -6 \text{ A}$		100				
$V_{CE(sat)}$ Collector-emitter saturation voltage	$I_B = -8 \text{ mA}$	$I_C = -2 \text{ A}$	(see Notes 3 and 4)			-2	V	
	$I_B = -60 \text{ mA}$	$I_C = -6 \text{ A}$				-3		
$V_{BE(sat)}$ 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)			-2.5	V	
	$V_{CE} = -3 \text{ V}$	$I_C = -6 \text{ A}$				-3		
$V_{EC}$ 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**

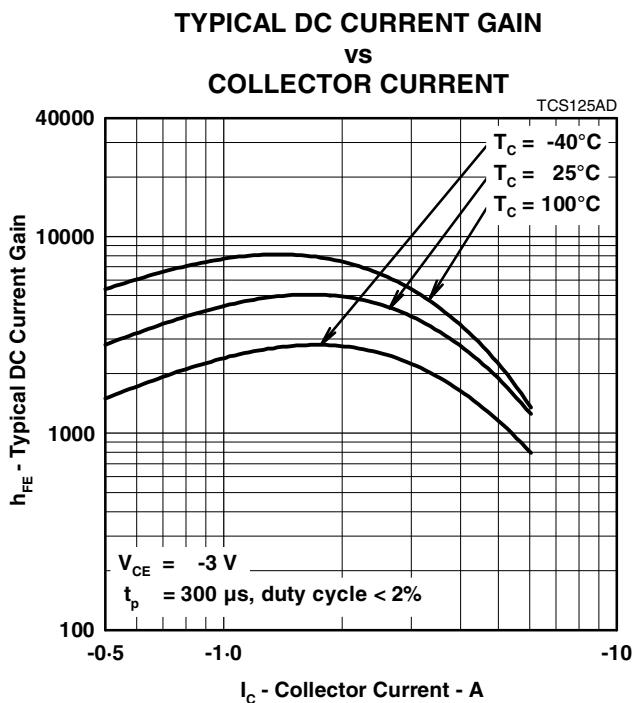
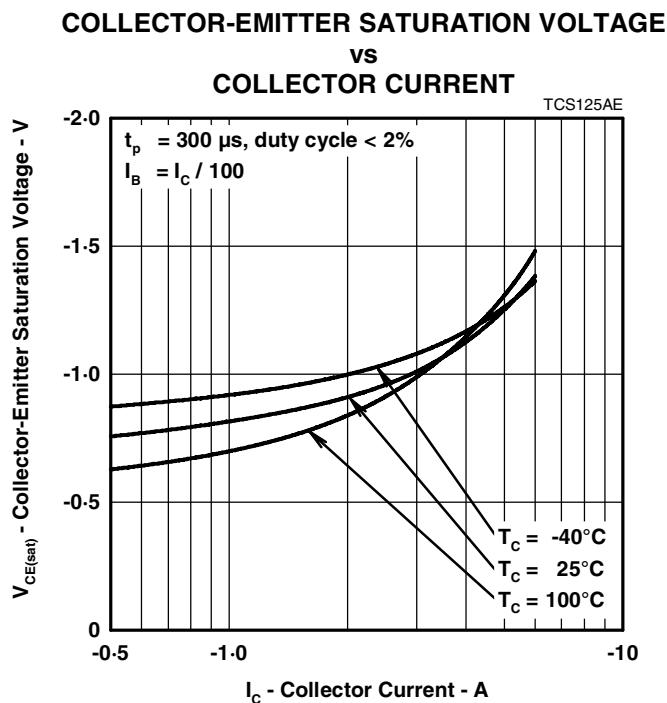
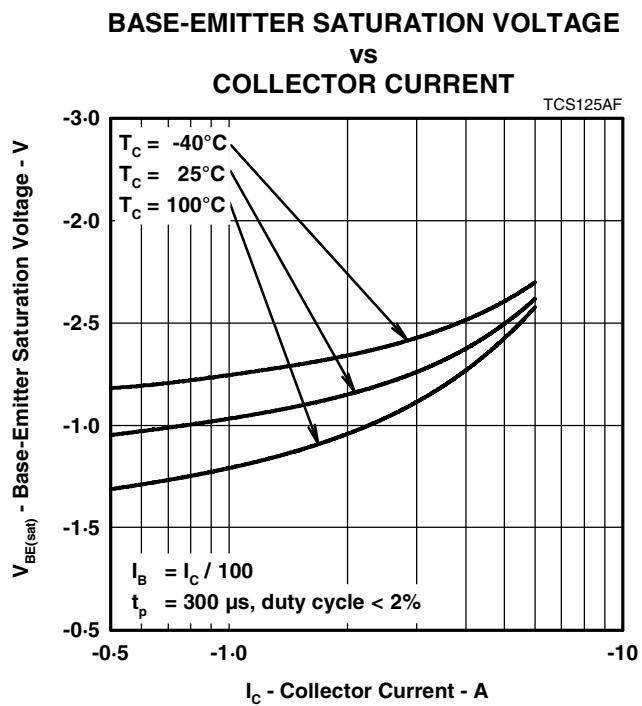
PARAMETER	MIN	TYP	MAX	UNIT
$R_{\theta JC}$ Junction to case thermal resistance			2.5	°C/W
$R_{\theta JA}$ Junction to free air thermal resistance			62.5	°C/W

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

PARAMETER	TEST CONDITIONS <sup>†</sup>			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

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

**PRODUCT INFORMATION**

**TYPICAL CHARACTERISTICS**

**Figure 1.**

**Figure 2.**

**Figure 3.**
**PRODUCT INFORMATION**

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Specifications are subject to change without notice.

### MAXIMUM SAFE OPERATING REGIONS

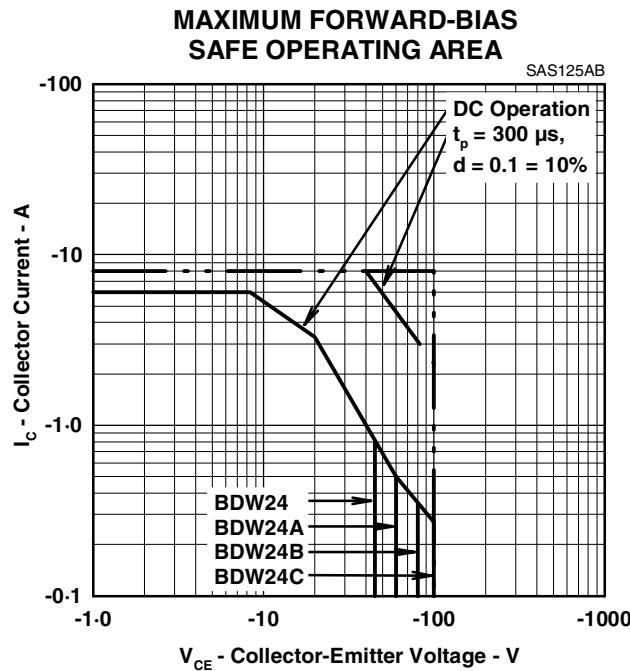


Figure 4.

### THERMAL INFORMATION

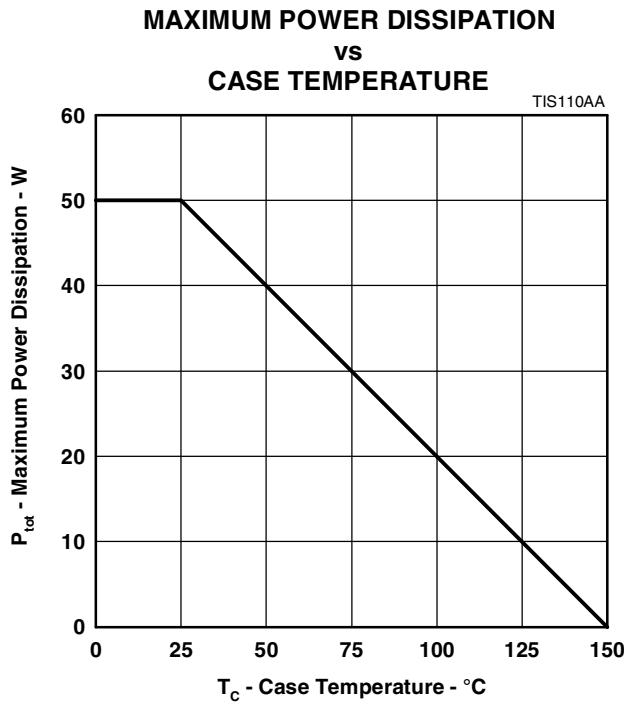


Figure 5.

### PRODUCT INFORMATION