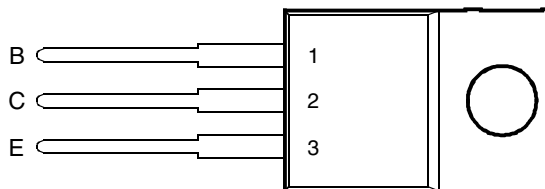




- Designed for Complementary Use with BDX33, BDX33A, BDX33B, BDX33C and BDX33D
- 70 W at 25°C Case Temperature
- 10 A Continuous Collector Current
- Minimum h_{FE} of 750 at 3V, 3 A

TO-220 PACKAGE
(TOP VIEW)



Pin 2 is in electrical contact with the mounting base.

MDTRACA



This series is currently available, but not recommended for new designs.

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

RATING		SYMBOL	VALUE	UNIT
Collector-base voltage ($I_E = 0$)	BDX34	V_{CBO}	-45	V
	BDX34A		-60	
	BDX34B		-80	
	BDX34C		-100	
	BDX34D		-120	
Collector-emitter voltage ($I_B = 0$)	BDX34	V_{CEO}	-45	V
	BDX34A		-60	
	BDX34B		-80	
	BDX34C		-100	
	BDX34D		-120	
Emitter-base voltage		V_{EBO}	-5	V
Continuous collector current		I_C	-10	A
Continuous base current		I_B	-0.3	A
Continuous device dissipation at (or below) 25°C case temperature (see Note 1)		P_{tot}	70	W
Continuous device dissipation at (or below) 25°C free air temperature (see Note 2)		P_{tot}	2	W
Operating free air 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 0.56 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)	BDX34	-45			V	
			BDX34A	-60				
			BDX34B	-80				
			BDX34C	-100				
			BDX34D	-120				
I_{CEO} Collector-emitter cut-off current	$V_{CE} = -30 \text{ V}$	$I_B = 0$	BDX34			-0.5	mA	
			BDX34A			-0.5		
			BDX34B			-0.5		
			BDX34C			-0.5		
			BDX34D			-0.5		
			BDX34	$T_C = 100^\circ\text{C}$				-10
			BDX34A	$T_C = 100^\circ\text{C}$				-10
			BDX34B	$T_C = 100^\circ\text{C}$				-10
			BDX34C	$T_C = 100^\circ\text{C}$				-10
			BDX34D	$T_C = 100^\circ\text{C}$				-10
I_{CBO} Collector cut-off current	$V_{CB} = -45 \text{ V}$	$I_E = 0$	BDX34			-1	mA	
			BDX34A			-1		
			BDX34B			-1		
			BDX34C			-1		
			BDX34D			-1		
			BDX34	$T_C = 100^\circ\text{C}$				-5
			BDX34A	$T_C = 100^\circ\text{C}$				-5
			BDX34B	$T_C = 100^\circ\text{C}$				-5
			BDX34C	$T_C = 100^\circ\text{C}$				-5
			BDX34D	$T_C = 100^\circ\text{C}$				-5
I_{EBO} Emitter cut-off current	$V_{EB} = -5 \text{ V}$	$I_C = 0$			-10	mA		
h_{FE} Forward current transfer ratio	$V_{CE} = -3 \text{ V}$	$I_C = -4 \text{ A}$	BDX34	750				
			BDX34A	750				
			BDX34B	750				
			BDX34C	750				
			BDX34D	750				
$V_{BE(on)}$ Base-emitter voltage	$V_{CE} = -3 \text{ V}$	$I_C = -4 \text{ A}$	BDX34			-2.5	V	
			BDX34A			-2.5		
			BDX34B	(see Notes 3 and 4)				-2.5
			BDX34C			-2.5		
			BDX34D			-2.5		
$V_{CE(sat)}$ Collector-emitter saturation voltage	$I_B = -8 \text{ mA}$	$I_C = -4 \text{ A}$	BDX34			-2.5	V	
			BDX34A			-2.5		
			BDX34B	(see Notes 3 and 4)				-2.5
			BDX34C			-2.5		
			BDX34D			-2.5		
V_{EC} Parallel diode forward voltage	$I_E = -8 \text{ A}$	$I_B = 0$			-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.

PRODUCT INFORMATION



thermal characteristics

PARAMETER		MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction to case thermal resistance			1.78	°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	$I_C = -3$ A	$I_{B(on)} = -12$ mA	$I_{B(off)} = 12$ mA		1		μs
t_{off} Turn-off time	$V_{BE(off)} = 3.5$ V	$R_L = 10$ Ω	$t_p = 20$ μs, dc ≤ 2%		5		μs

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

PRODUCT INFORMATION

TYPICAL CHARACTERISTICS

TYPICAL DC CURRENT GAIN
VS
COLLECTOR CURRENT

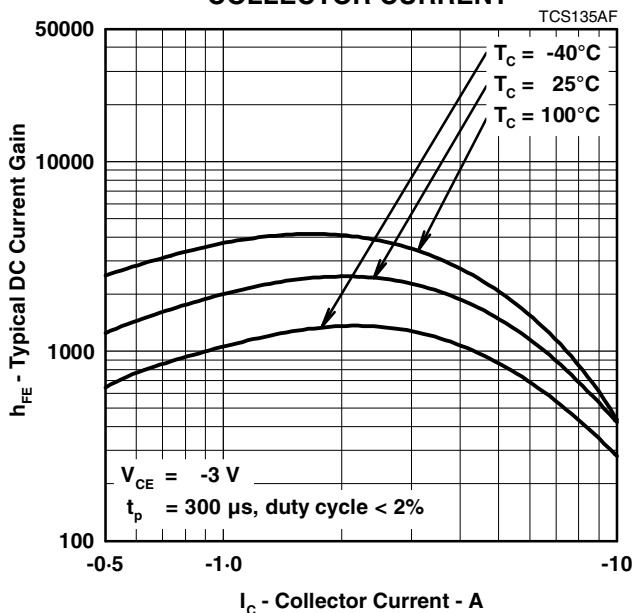


Figure 1.

COLLECTOR-EMITTER SATURATION VOLTAGE
VS
COLLECTOR CURRENT

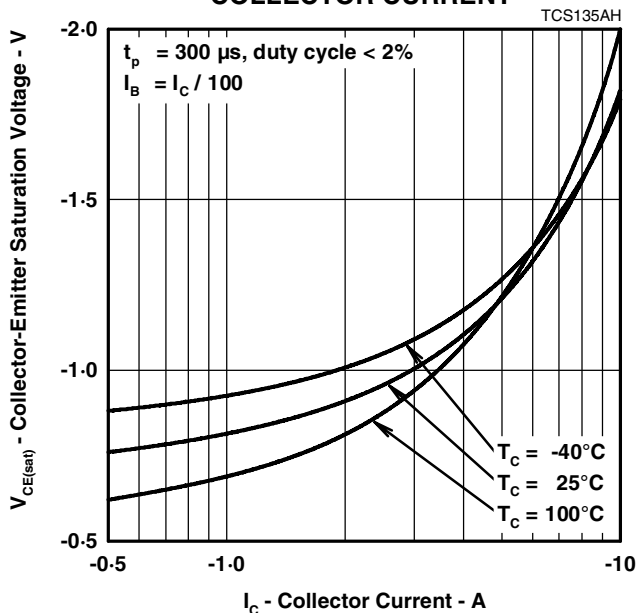


Figure 2.

BASE-EMITTER SATURATION VOLTAGE
VS
COLLECTOR CURRENT

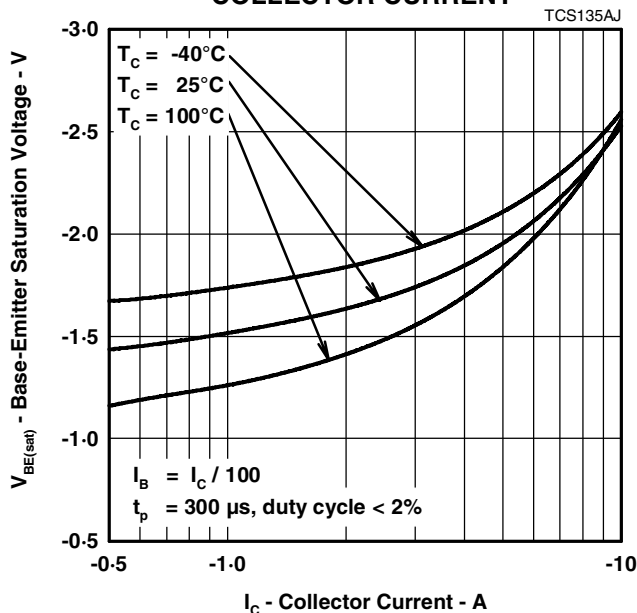


Figure 3.

PRODUCT INFORMATION

THERMAL INFORMATION

**MAXIMUM POWER DISSIPATION
vs
CASE TEMPERATURE**

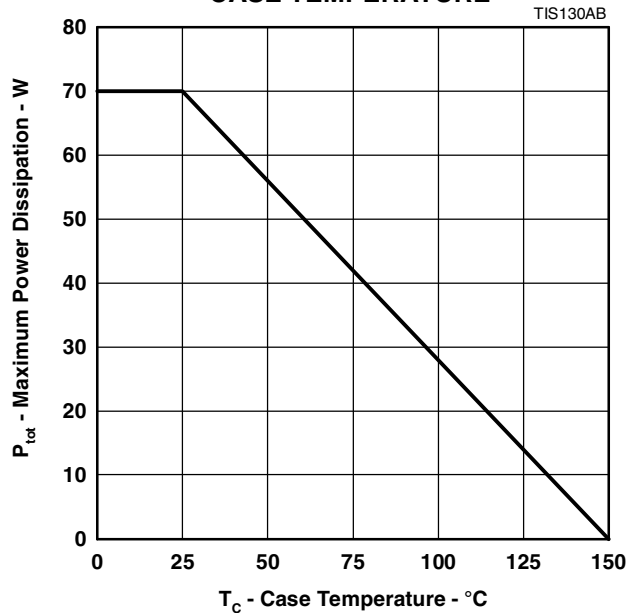


Figure 4.

PRODUCT INFORMATION