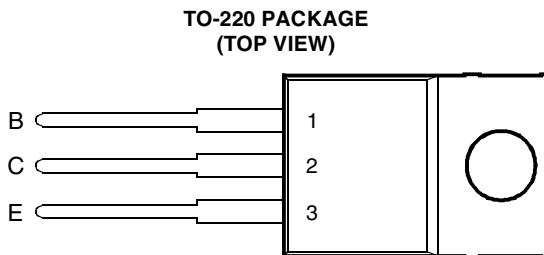


- Designed for Complementary Use with BDX34, BDX34A, BDX34B, BDX34C and BDX34D
- 70 W at 25°C Case Temperature
- 10 A Continuous Collector Current
- Minimum h_{FE} of 750 at 3V, 3 A



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	V
		60	
		80	
		100	
		120	
Collector-emitter voltage ($I_B = 0$)	V_{CEO}	45	V
		60	
		80	
		100	
		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)	BDX33 BDX33A BDX33B BDX33C BDX33D	45 60 80 100 120		V
I_{CEO} Collector-emitter cut-off current	$V_{CE} = 30 \text{ V}$ $V_{CE} = 30 \text{ V}$ $V_{CE} = 40 \text{ V}$ $V_{CE} = 50 \text{ V}$ $V_{CE} = 60 \text{ V}$ $V_{CE} = 30 \text{ V}$ $V_{CE} = 30 \text{ V}$ $V_{CE} = 40 \text{ V}$ $V_{CE} = 50 \text{ V}$ $V_{CE} = 60 \text{ V}$	$I_B = 0$ $I_B = 0$		BDX33 BDX33A BDX33B BDX33C BDX33D BDX33 BDX33A BDX33B BDX33C BDX33D		0.5 0.5 0.5 0.5 0.5 10 10 10 10 10	mA
I_{CBO} Collector cut-off current	$V_{CB} = 45 \text{ V}$ $V_{CB} = 60 \text{ V}$ $V_{CB} = 80 \text{ V}$ $V_{CB} = 100 \text{ V}$ $V_{CB} = 120 \text{ V}$ $V_{CB} = 45 \text{ V}$ $V_{CB} = 60 \text{ V}$ $V_{CB} = 80 \text{ V}$ $V_{CB} = 100 \text{ V}$ $V_{CB} = 120 \text{ V}$	$I_E = 0$ $I_E = 0$ $I_E = 0$ $I_E = 0$ $I_E = 0$ $I_E = 0$ $T_C = 100^\circ\text{C}$ $T_C = 100^\circ\text{C}$ $T_C = 100^\circ\text{C}$ $T_C = 100^\circ\text{C}$ $T_C = 100^\circ\text{C}$		BDX33 BDX33A BDX33B BDX33C BDX33D BDX33 BDX33A BDX33B BDX33C BDX33D		1 1 1 1 1 5 5 5 5 5	mA
I_{EBO} Emitter cut-off current	$V_{EB} = 5 \text{ V}$	$I_C = 0$				10	mA
h_{FE} Forward current transfer ratio	$V_{CE} = 3 \text{ V}$ $V_{CE} = 3 \text{ V}$ $V_{CE} = 3 \text{ V}$ $V_{CE} = 3 \text{ V}$ $V_{CE} = 3 \text{ V}$	$I_C = 4 \text{ A}$ $I_C = 4 \text{ A}$ $I_C = 3 \text{ A}$ $I_C = 3 \text{ A}$ $I_C = 3 \text{ A}$	(see Notes 3 and 4)	BDX33 BDX33A BDX33B BDX33C BDX33D	750 750 750 750 750		
$V_{BE(on)}$ Base-emitter voltage	$V_{CE} = 3 \text{ V}$ $V_{CE} = 3 \text{ V}$ $V_{CE} = 3 \text{ V}$ $V_{CE} = 3 \text{ V}$ $V_{CE} = 3 \text{ V}$	$I_C = 4 \text{ A}$ $I_C = 4 \text{ A}$ $I_C = 3 \text{ A}$ $I_C = 3 \text{ A}$ $I_C = 3 \text{ A}$	(see Notes 3 and 4)	BDX33 BDX33A BDX33B BDX33C BDX33D		2.5 2.5 2.5 2.5 2.5	V
$V_{CE(sat)}$ Collector-emitter saturation voltage	$I_B = 8 \text{ mA}$ $I_B = 8 \text{ mA}$ $I_B = 6 \text{ mA}$ $I_B = 6 \text{ mA}$ $I_B = 6 \text{ mA}$	$I_C = 4 \text{ A}$ $I_C = 4 \text{ A}$ $I_C = 3 \text{ A}$ $I_C = 3 \text{ A}$ $I_C = 3 \text{ A}$	(see Notes 3 and 4)	BDX33 BDX33A BDX33B BDX33C BDX33D		2.5 2.5 2.5 2.5 2.5	V
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}	$I_C = 3 \text{ A}$	$I_{B(on)} = 12 \text{ mA}$	$I_{B(off)} = -12 \text{ mA}$		1		μs
t_{off}	$V_{BE(off)} = -3.5 \text{ V}$	$R_L = 10 \Omega$	$t_p = 20 \mu\text{s, dc} \leq 2\%$		5		μs

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

PRODUCT INFORMATION

TYPICAL CHARACTERISTICS

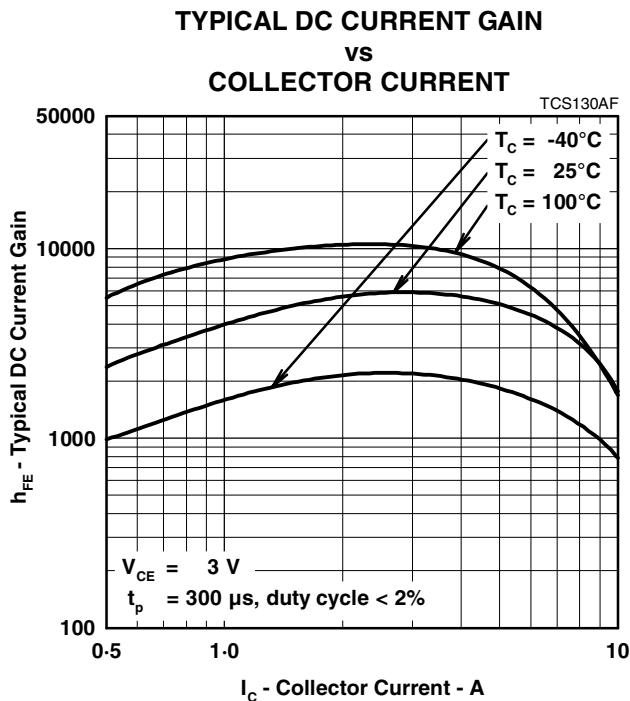


Figure 1.

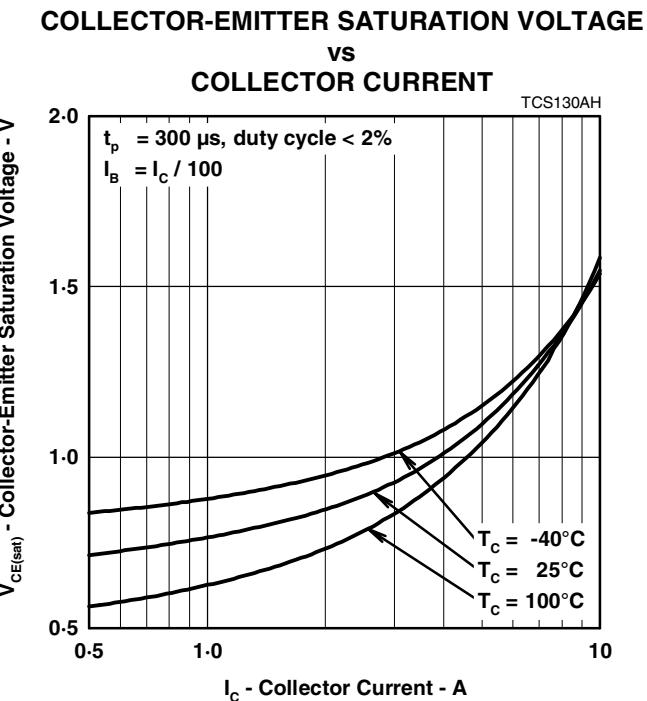


Figure 2.

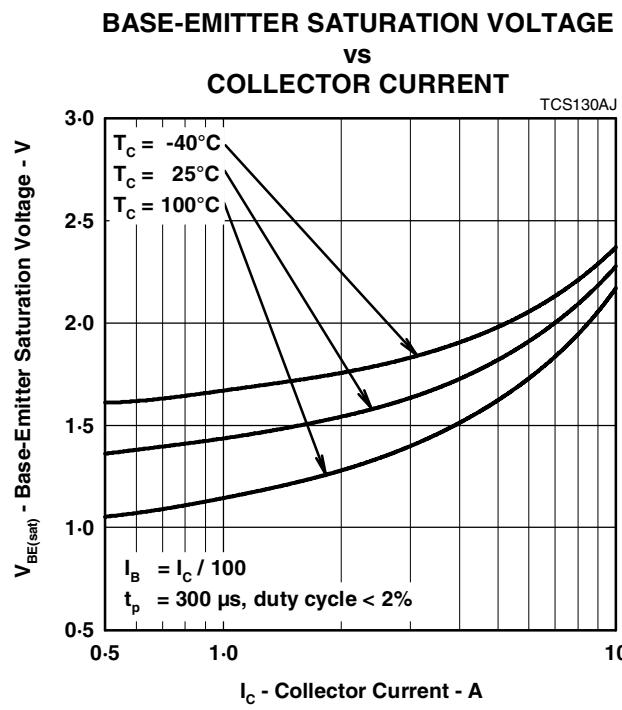
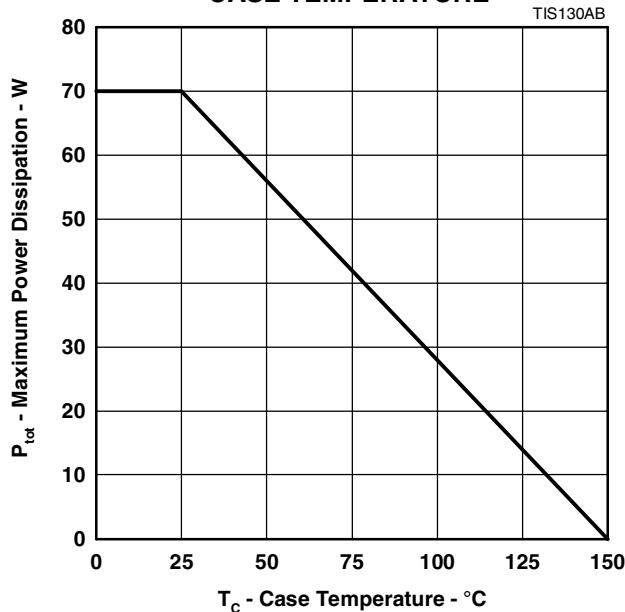


Figure 3.

PRODUCT INFORMATION

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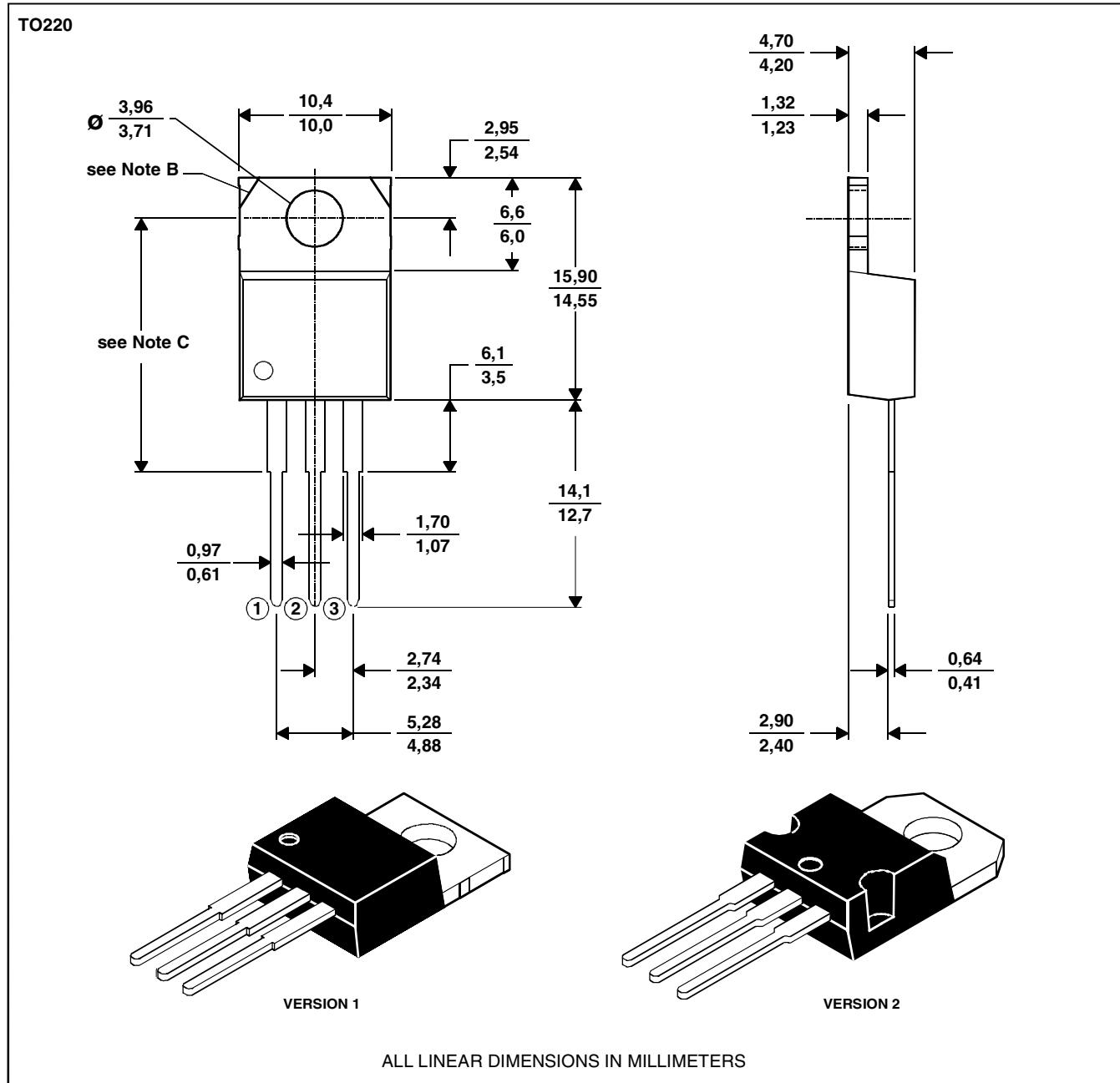
THERMAL INFORMATION**MAXIMUM POWER DISSIPATION
VS
CASE TEMPERATURE****Figure 4.****PRODUCT INFORMATION**

MECHANICAL DATA

TO-220

3-pin plastic flange-mount package

This single-in-line package consists of a circuit mounted on a lead frame and encapsulated within a plastic compound. The compound will withstand soldering temperature with no deformation, and circuit performance characteristics will remain stable when operated in high humidity conditions. Leads require no additional cleaning or processing when used in soldered assembly.



NOTES: A. The centre pin is in electrical contact with the mounting tab.

MDXXBE

B. Mounting tab corner profile according to package version.

C. Typical fixing hole centre stand off height according to package version.

Version 1, 18.0 mm. Version 2, 17.6 mm.

PRODUCT INFORMATION

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