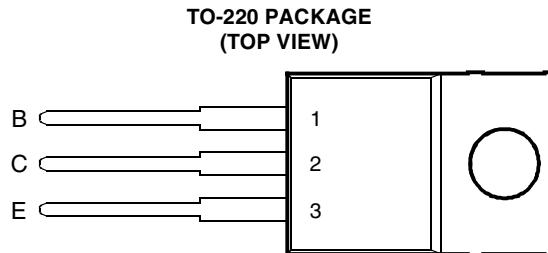


- Designed for Complementary Use with BDT61, BDT61A, BDT61B and BDT61C
- 50 W at 25°C Case Temperature
- 4 A Continuous Collector Current
- Minimum h_{FE} of 750 at 1.5V, 3 A



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 ($I_E = 0$)	BDT60 BDT60A BDT60B BDT60C	V_{CBO}	-60 -80 -100 -120	V
Collector-emitter voltage ($I_B = 0$)	BDT60 BDT60A BDT60B BDT60C	V_{CEO}	-60 -80 -100 -120	V
Emitter-base voltage		V_{EBO}	-5	V
Continuous collector current		I_C	-4	A
Continuous base current		I_B	-0.1	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	$I_C = -30 \text{ mA}$	$I_B = 0$	(see Note 3)	BDT60 BDT60A BDT60B BDT60C	-60 -80 -100 -120		V
I_{CEO} Collector-emitter cut-off current	$V_{CE} = -30 \text{ V}$	$I_B = 0$		BDT60		-0.5	
	$V_{CE} = -40 \text{ V}$	$I_B = 0$		BDT60A		-0.5	
	$V_{CE} = -50 \text{ V}$	$I_B = 0$		BDT60B		-0.5	
	$V_{CE} = -60 \text{ V}$	$I_B = 0$		BDT60C		-0.5	
I_{CBO} Collector cut-off current	$V_{CB} = -60 \text{ V}$	$I_E = 0$		BDT60		-0.2	
	$V_{CB} = -80 \text{ V}$	$I_E = 0$		BDT60A		-0.2	
	$V_{CB} = -100 \text{ V}$	$I_E = 0$		BDT60B		-0.2	
	$V_{CB} = -120 \text{ V}$	$I_E = 0$		BDT60C		-0.2	
	$V_{CB} = -30 \text{ V}$	$I_E = 0$	$T_C = 150^\circ\text{C}$	BDT60		-2.0	
	$V_{CB} = -40 \text{ V}$	$I_E = 0$	$T_C = 150^\circ\text{C}$	BDT60A		-2.0	
	$V_{CB} = -50 \text{ V}$	$I_E = 0$	$T_C = 150^\circ\text{C}$	BDT60B		-2.0	
	$V_{CB} = -60 \text{ V}$	$I_E = 0$	$T_C = 150^\circ\text{C}$	BDT60C		-2.0	
I_{EBO} Emitter cut-off current	$V_{EB} = -5 \text{ V}$	$I_C = 0$				-5	mA
h_{FE} Forward current transfer ratio	$V_{CE} = -3 \text{ V}$	$I_C = -1.5 \text{ A}$	(see Notes 3 and 4)	750			
$V_{CE(\text{sat})}$ Collector-emitter saturation voltage	$I_B = -6 \text{ mA}$	$I_C = -1.5 \text{ A}$	(see Notes 3 and 4)			-2.5	V
$V_{BE(\text{on})}$ Base-emitter voltage	$V_{CE} = -3 \text{ V}$	$I_C = -1.5 \text{ A}$	(see Notes 3 and 4)			-2.5	V
V_{EC} Parallel diode forward voltage	$I_E = -1.5 \text{ A}$	$I_B = 0$				-2.0	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	$I_C = -2 \text{ A}$	$I_{B(\text{on})} = -8 \text{ mA}$	$I_{B(\text{off})} = 8 \text{ mA}$		1		μs
t_{off} Turn-off time	$V_{BE(\text{off})} = 5 \text{ V}$	$R_L = 20 \Omega$	$t_p = 20 \mu\text{s}$, dc $\leq 2\%$		4.5		μs

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

TYPICAL CHARACTERISTICS

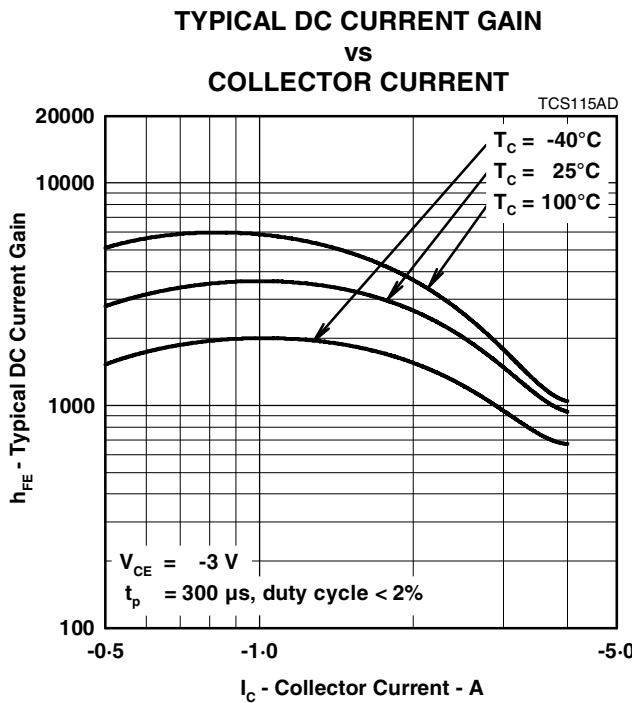


Figure 1.

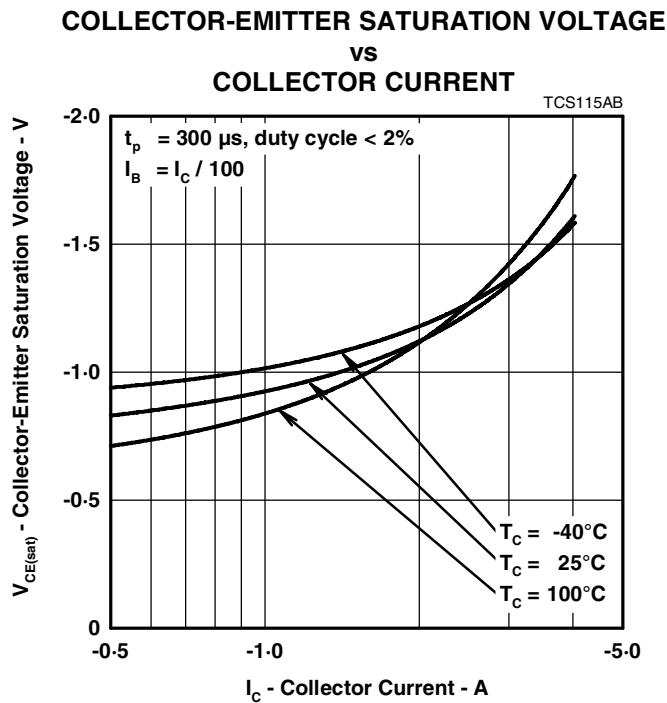


Figure 2.

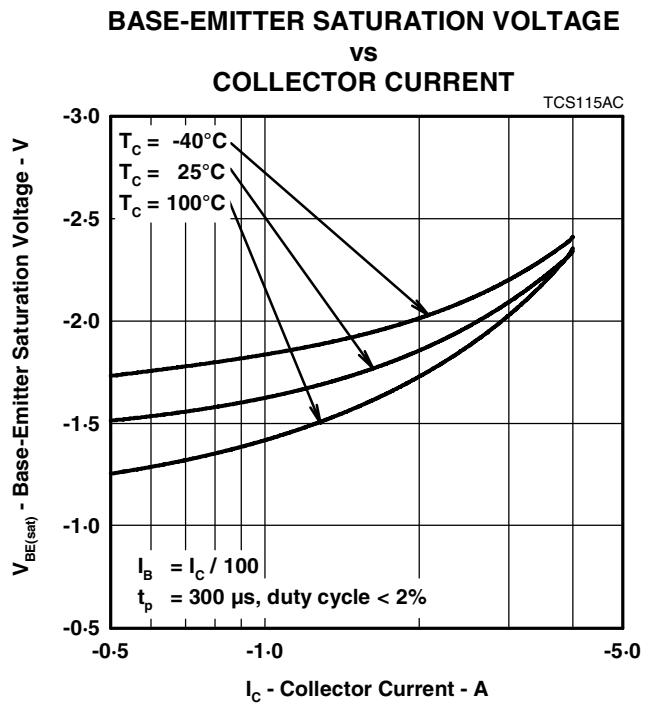


Figure 3.

PRODUCT INFORMATION

MAXIMUM SAFE OPERATING REGIONS

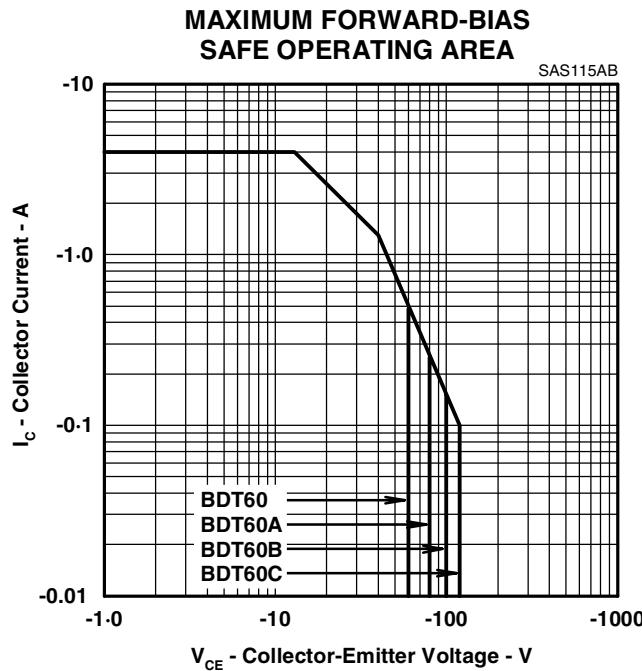


Figure 4.

THERMAL INFORMATION

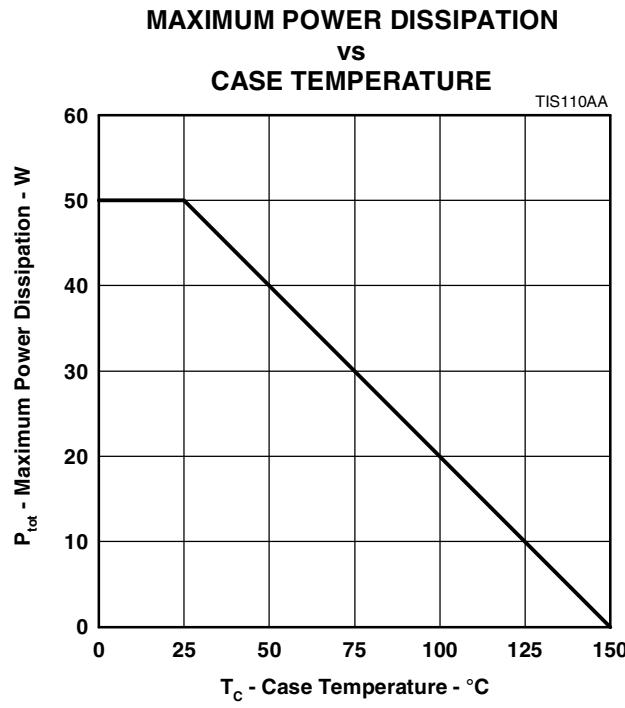


Figure 5.

PRODUCT INFORMATION

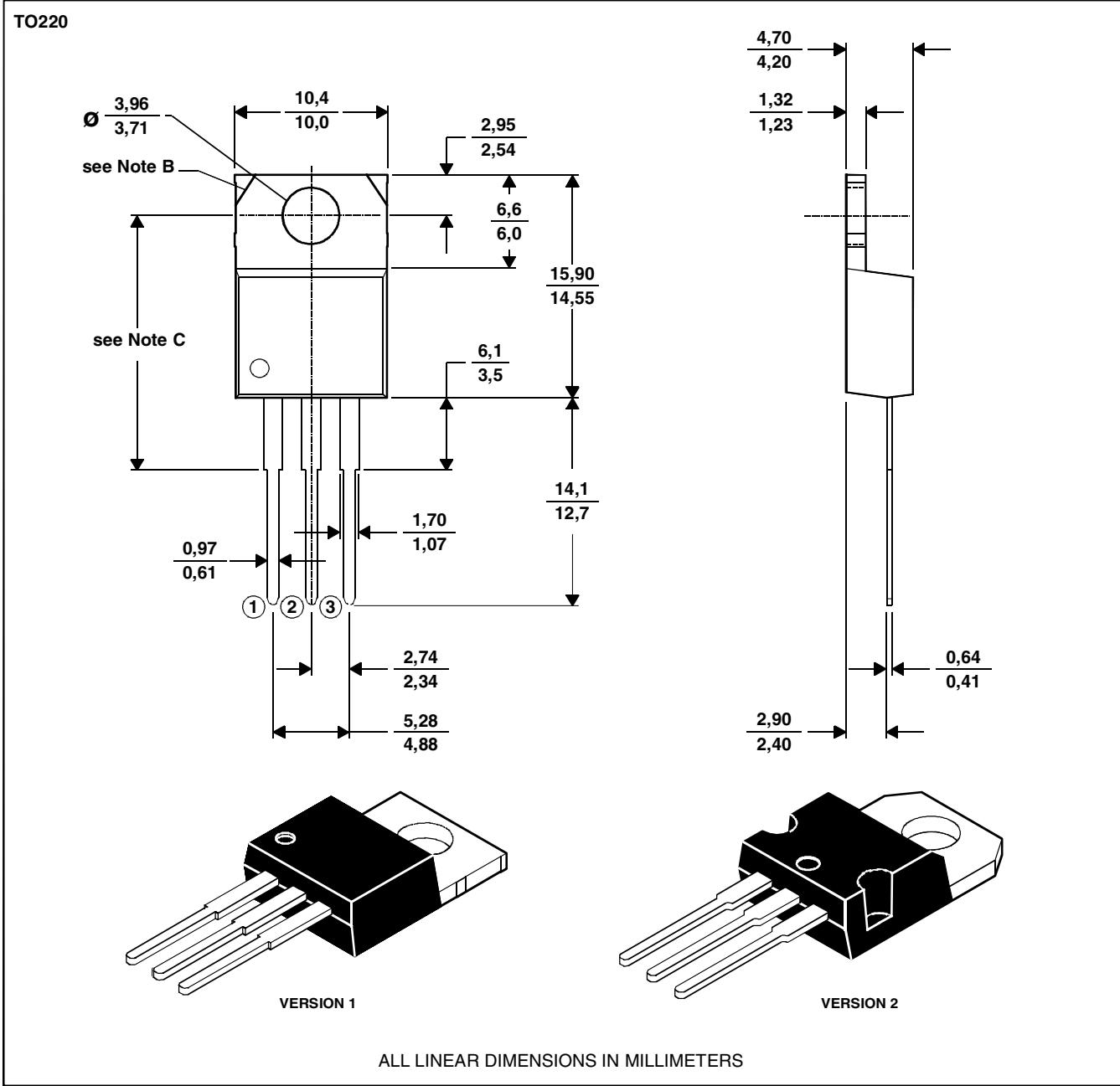
AUGUST 1993 - REVISED SEPTEMBER 2002
Specifications are subject to change without notice.

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.

MDXXB

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