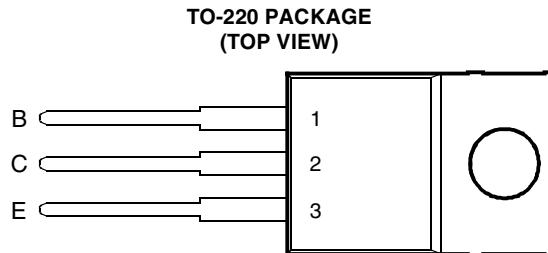


- Designed for Complementary Use with the BD743 Series
- 90 W at 25°C Case Temperature
- 15 A Continuous Collector Current
- 20 A Peak Collector Current
- Customer-Specified Selections Available



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}	-50 -70 -90 -110	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	-15	A
Peak collector current (see Note 1)	I_{CM}	-20	A
Continuous base current	I_B	-5	A
Continuous device dissipation at (or below) 25°C case temperature (see Note 2)	P_{tot}	90	W
Continuous device dissipation at (or below) 25°C free air temperature (see Note 3)	P_{tot}	2	W
Unclamped inductive load energy (see Note 4)	$\frac{1}{2}L I_C^2$	90	mJ
Operating free air temperature range	T_A	-65 to +150	°C
Operating junction temperature range	T_j	-65 to +150	°C
Storage temperature range	T_{stg}	-65 to +150	°C
Lead temperature 3.2 mm from case for 10 seconds	T_L	260	°C

NOTES: 1. This value applies for $t_p \leq 0.3$ ms, duty cycle $\leq 10\%$.

2. Derate linearly to 150°C case temperature at the rate of 0.72 W/°C.

3. Derate linearly to 150°C free air temperature at the rate of 16 mW/°C.

4. This rating is based on the capability of the transistor to operate safely in a circuit of: $L = 20$ mH, $I_{B(on)} = -0.4$ A, $R_{BE} = 100$ Ω, $V_{BE(off)} = 0$, $R_S = 0.1$ Ω, $V_{CC} = -20$ V.
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 5)	BD744 BD744A BD744B BD744C	-45 -60 -80 -100		V
I_{CBO}	Collector cut-off current	$V_{CE} = -50 \text{ V}$	$V_{BE} = 0$		BD744		-0.1	
		$V_{CE} = -70 \text{ V}$	$V_{BE} = 0$		BD744A		-0.1	
		$V_{CE} = -90 \text{ V}$	$V_{BE} = 0$		BD744B		-0.1	
		$V_{CE} = -110 \text{ V}$	$V_{BE} = 0$		BD744C		-0.1	
		$V_{CE} = -50 \text{ V}$	$V_{BE} = 0$	$T_C = 125^\circ\text{C}$	BD744		-5	mA
		$V_{CE} = -70 \text{ V}$	$V_{BE} = 0$	$T_C = 125^\circ\text{C}$	BD744A		-5	
		$V_{CE} = -90 \text{ V}$	$V_{BE} = 0$	$T_C = 125^\circ\text{C}$	BD744B		-5	
		$V_{CE} = -110 \text{ V}$	$V_{BE} = 0$	$T_C = 125^\circ\text{C}$	BD744C		-5	
I_{CEO}	Collector cut-off current	$V_{CE} = -30 \text{ V}$	$I_B = 0$		BD744/744A		-0.1	mA
		$V_{CE} = -60 \text{ V}$	$I_B = 0$		BD744B/744C		-0.1	
I_{EBO}	Emitter cut-off current	$V_{EB} = -5 \text{ V}$	$I_C = 0$				-0.5	mA
h_{FE}	Forward current transfer ratio	$V_{CE} = -4 \text{ V}$	$I_C = -1 \text{ A}$		40			
		$V_{CE} = -4 \text{ V}$	$I_C = -5 \text{ A}$	(see Notes 5 and 6)	20		150	
		$V_{CE} = -4 \text{ V}$	$I_C = -15 \text{ A}$		5			
$V_{CE(sat)}$	Collector-emitter saturation voltage	$I_B = -0.5 \text{ A}$	$I_C = -5 \text{ A}$	(see Notes 5 and 6)			-1	V
		$I_B = -5 \text{ A}$	$I_C = -15 \text{ A}$				-3	
V_{BE}	Base-emitter voltage	$V_{CE} = -4 \text{ V}$	$I_C = -5 \text{ A}$	(see Notes 5 and 6)			-1	V
		$V_{CE} = -4 \text{ V}$	$I_C = -15 \text{ A}$				-3	
h_{fe}	Small signal forward current transfer ratio	$V_{CE} = -10 \text{ V}$	$I_C = -1 \text{ A}$	$f = 1 \text{ kHz}$	25			
$ h_{fe} $	Small signal forward current transfer ratio	$V_{CE} = -10 \text{ V}$	$I_C = -1 \text{ A}$	$f = 1 \text{ MHz}$	5			

NOTES: 5. These parameters must be measured using pulse techniques, $t_p = 300 \mu\text{s}$, duty cycle $\leq 2\%$.

6. These parameters must be measured using voltage-sensing contacts, separate from the current carrying contacts.

thermal characteristics

PARAMETER	MIN	TYP	MAX	UNIT
$R_{\theta JC}$			1.4	°C/W
$R_{\theta JA}$			62.5	°C/W

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

PARAMETER	TEST CONDITIONS [†]			MIN	TYP	MAX	UNIT
t_d	Delay time				20		ns
t_r	Rise time	$I_C = -5 \text{ A}$	$I_{B(on)} = -0.5 \text{ A}$	$I_{B(off)} = 0.5 \text{ A}$	120		ns
t_s	Storage time	$V_{BE(off)} = 4.2 \text{ V}$	$R_L = 6 \Omega$	$t_p = 20 \mu\text{s}$, dc $\leq 2\%$	600		ns
t_f	Fall time				300		ns

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

PRODUCT INFORMATION

TYPICAL CHARACTERISTICS

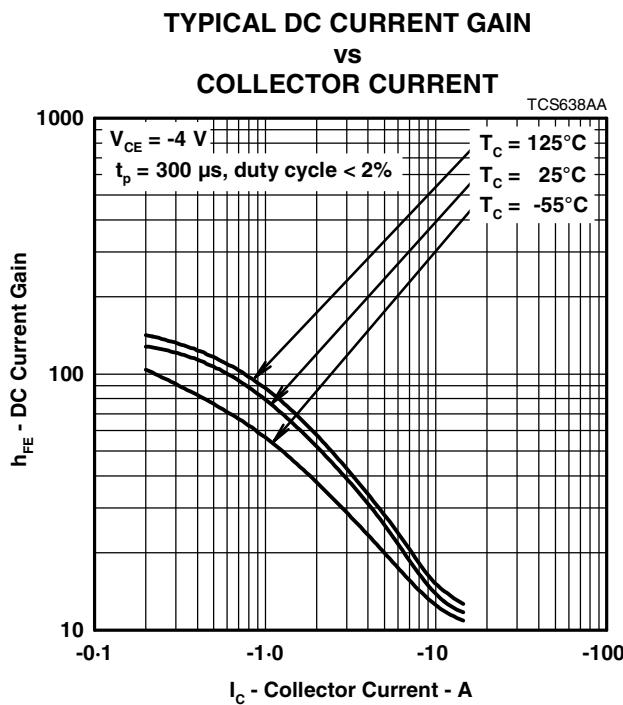


Figure 1.

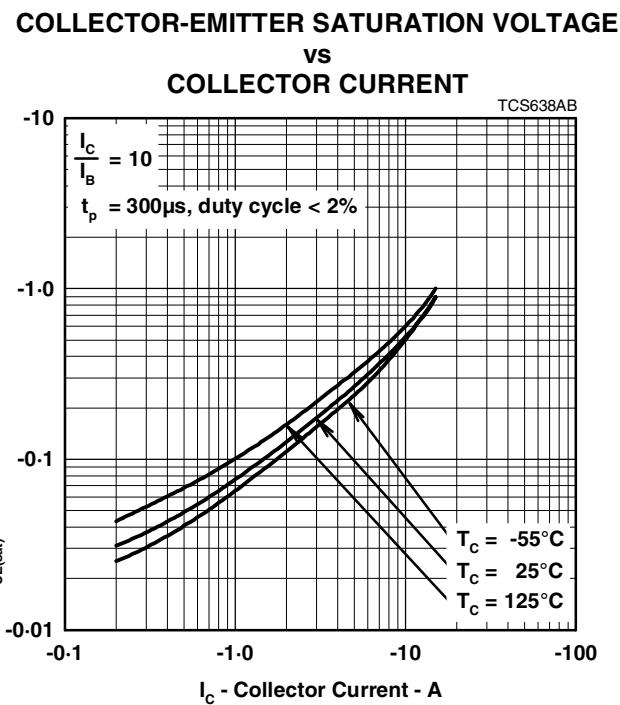


Figure 2.

MAXIMUM SAFE OPERATING REGIONS

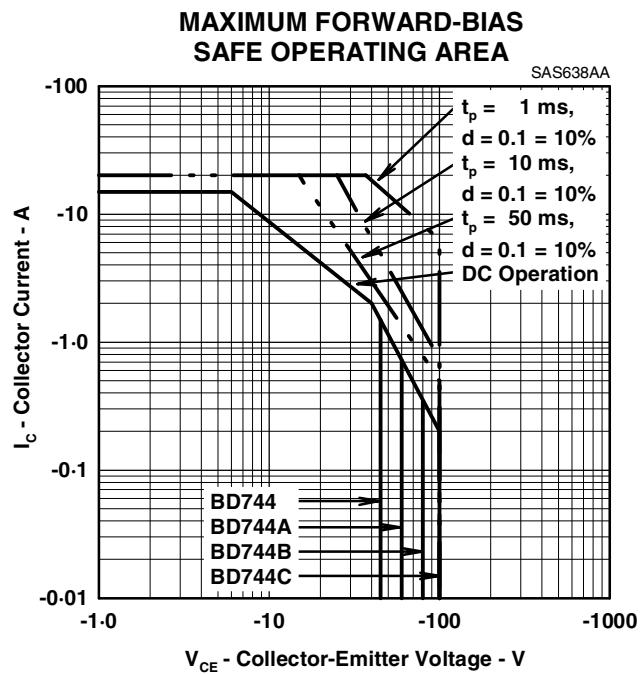


Figure 3.

PRODUCT INFORMATION

THERMAL INFORMATION

MAXIMUM POWER DISSIPATION vs CASE TEMPERATURE

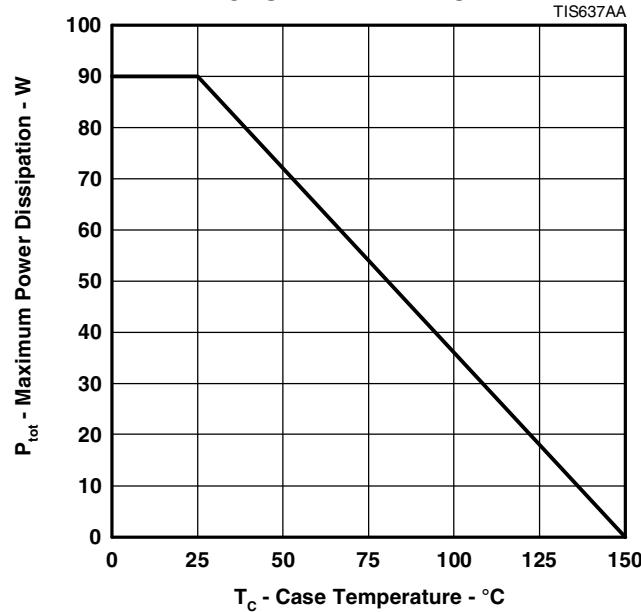


Figure 4.

PRODUCT INFORMATION

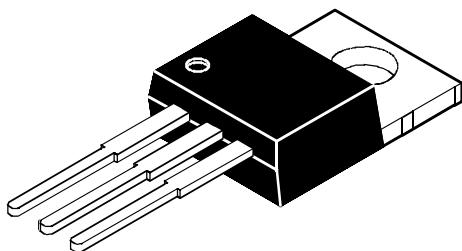
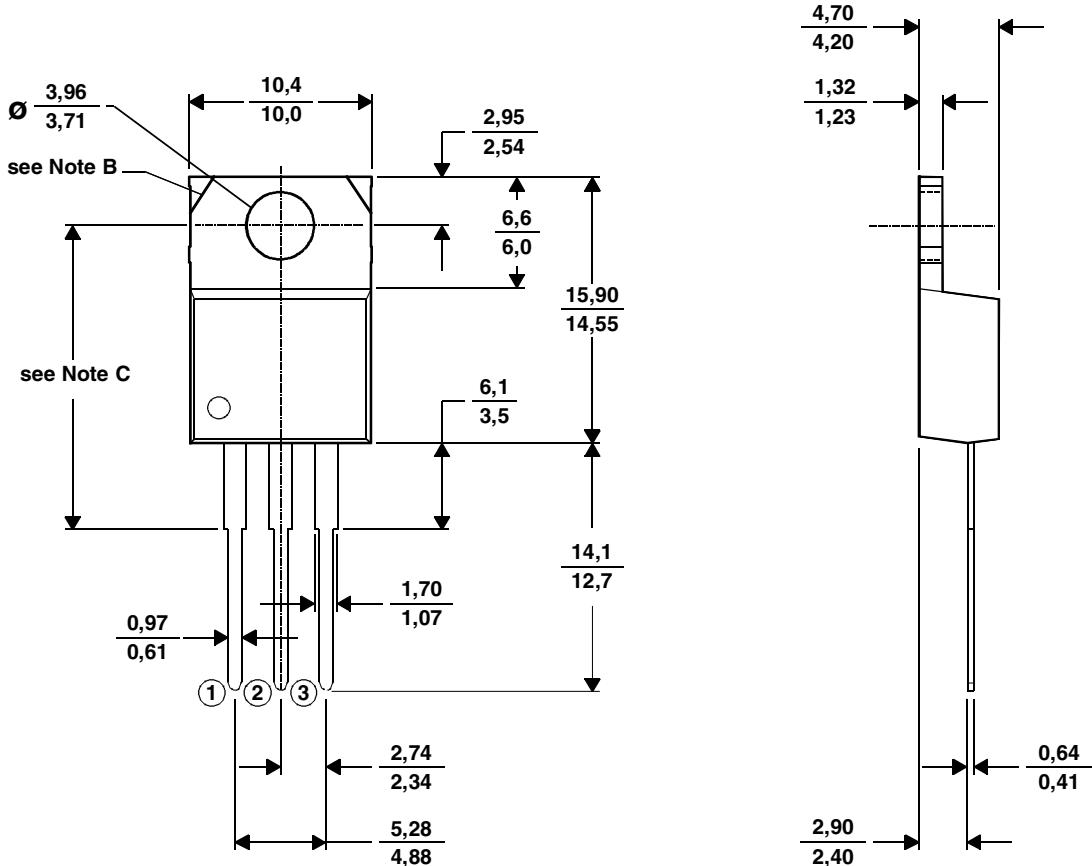
MECHANICAL DATA

TO-220

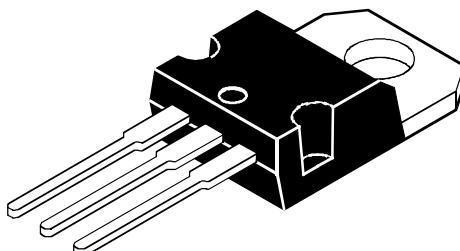
3-pin plastic flange-mount package

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.

TO220



VERSION 1



VERSION 2

ALL LINEAR DIMENSIONS IN MILLIMETERS

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