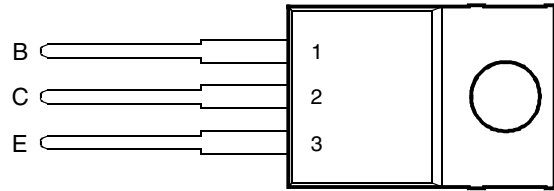


- Designed for Complementary Use with BDX54, BDX54A, BDX54B and BDX54C
- 60 W at 25°C Case Temperature
- 8 A Continuous Collector Current
- Minimum h_{FE} of 750 at 3V, 3 A

TO-220 PACKAGE
(TOP VIEW)



This series is obsolete and not recommended for new designs.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 ($I_E = 0$)	BDX53	V_{CBO}	45	V
	BDX53A		60	
	BDX53B		80	
	BDX53C		100	
Collector-emitter voltage ($I_B = 0$)	BDX53	V_{CEO}	45	V
	BDX53A		60	
	BDX53B		80	
	BDX53C		100	
Emitter-base voltage		V_{EBO}	5	V
Continuous collector current		I_C	8	A
Continuous base current		I_B	0.2	A
Continuous device dissipation at (or below) 25°C case temperature (see Note 1)		P_{tot}	60	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
Operating 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 0.48 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) BDX53 BDX53A BDX53B BDX53C	45 60 80 100			V
I_{CEO} Collector-emitter cut-off current	$V_{CE} = 30 \text{ V}$ $I_B = 0$ $V_{CE} = 30 \text{ V}$ $I_B = 0$ $V_{CE} = 40 \text{ V}$ $I_B = 0$ $V_{CE} = 50 \text{ V}$ $I_B = 0$ BDX53 BDX53A BDX53B BDX53C			0.5 0.5 0.5 0.5	mA
I_{CBO} Collector cut-off current	$V_{CB} = 45 \text{ V}$ $I_E = 0$ $V_{CB} = 60 \text{ V}$ $I_E = 0$ $V_{CB} = 80 \text{ V}$ $I_E = 0$ $V_{CB} = 100 \text{ V}$ $I_E = 0$ BDX53 BDX53A BDX53B BDX53C			0.2 0.2 0.2 0.2	mA
I_{EBO} Emitter cut-off current	$V_{EB} = 5 \text{ V}$ $I_C = 0$			2	mA
h_{FE} Forward current transfer ratio	$V_{CE} = 3 \text{ V}$ $I_C = 3 \text{ A}$ (see Notes 3 and 4)	750			
$V_{BE(sat)}$ Base-emitter saturation voltage	$I_B = 12 \text{ mA}$ $I_C = 3 \text{ A}$ (see Notes 3 and 4)			2.5	V
$V_{CE(sat)}$ Collector-emitter saturation voltage	$I_B = 12 \text{ mA}$ $I_C = 3 \text{ A}$ (see Notes 3 and 4)			2	V
V_{EC} Parallel diode forward voltage	$I_E = 3 \text{ A}$ $I_B = 0$			2.5	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			2.08	°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	$I_C = 3 \text{ A}$ $I_{B(on)} = 12 \text{ mA}$ $I_{B(off)} = -12 \text{ mA}$		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

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

TYPICAL CHARACTERISTICS

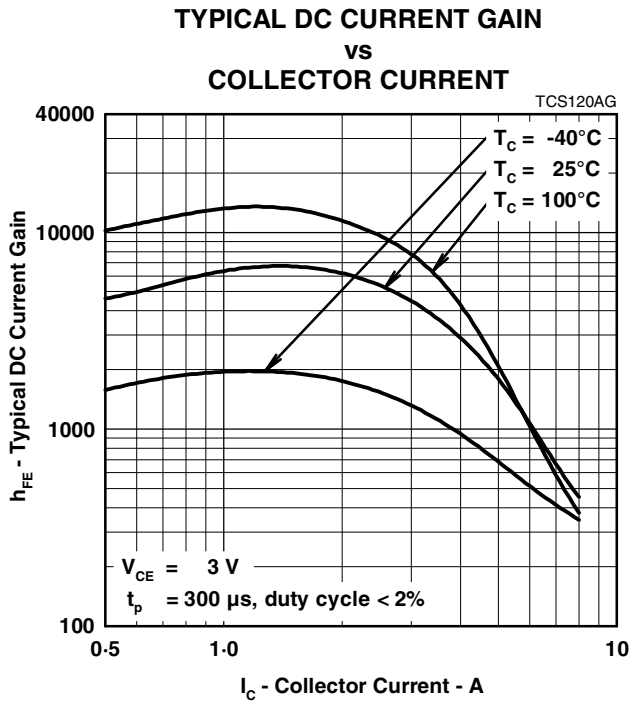


Figure 1.

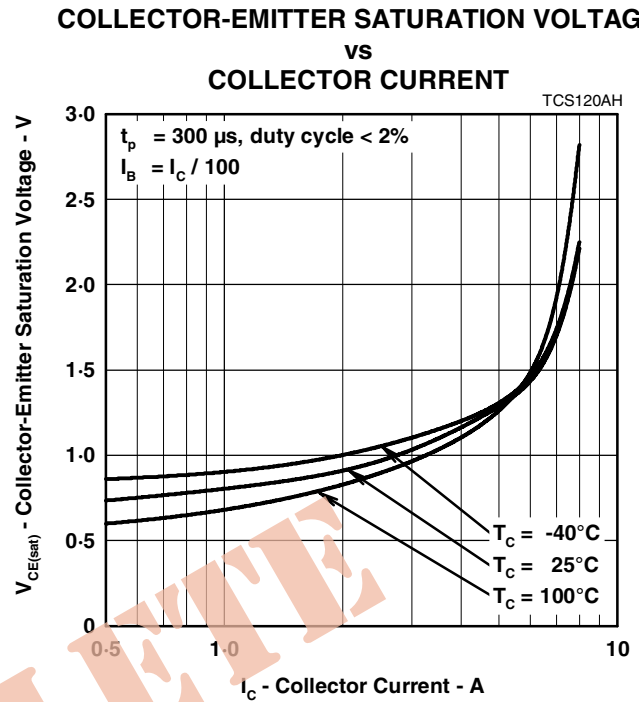


Figure 2.

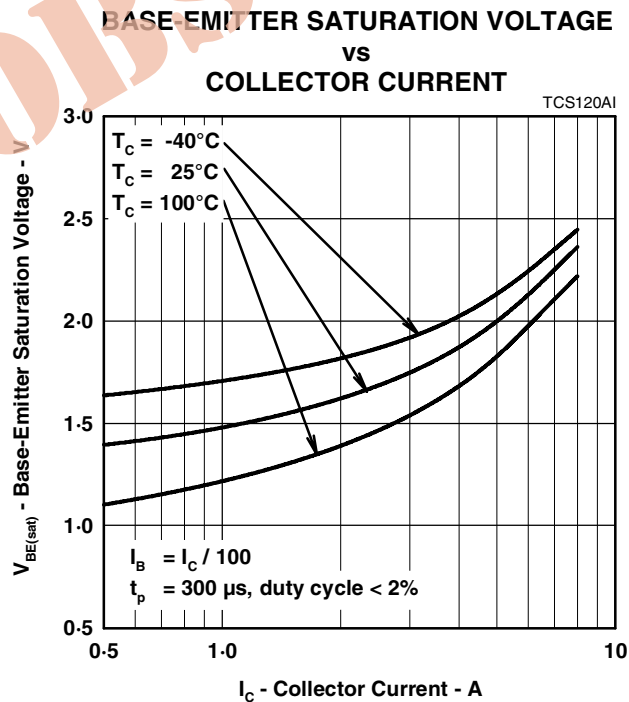


Figure 3.

PRODUCT INFORMATION

MAXIMUM SAFE OPERATING REGIONS

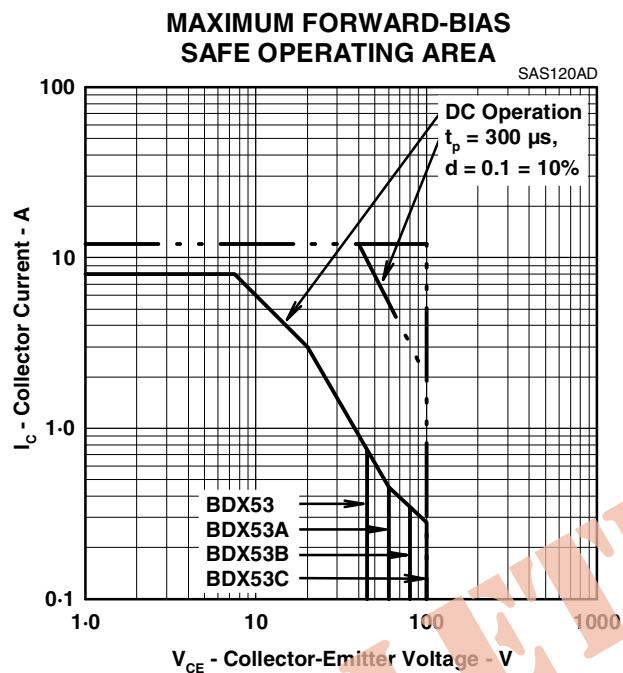


Figure 4.

THERMAL INFORMATION

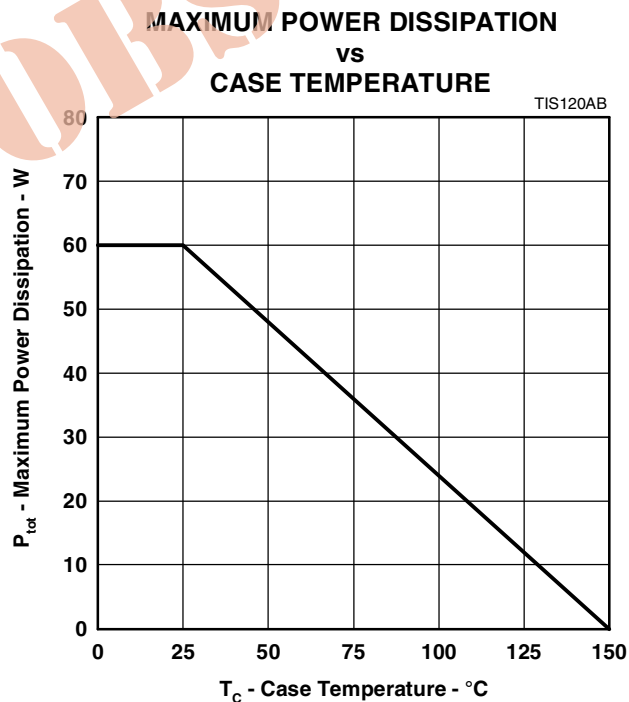


Figure 5.

PRODUCT INFORMATION

MAY 1989 - REVISED SEPTEMBER 2002
Specifications are subject to change without notice.