

BDX54, BDX54A, BDX54B, BDX54C

PNP SILICON POWER DARLINGTONS

BOURNS®

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) BDX54 BDX54A BDX54B BDX54C	-45 -60 -80 -100			V
I_{CEO} Collector-emitter cut-off current	$V_{CE} = -30 \text{ V}$ $I_B = 0$ $V_{CE} = -30 \text{ V}$ $I_B = 0$ $V_{CE} = -40 \text{ V}$ $I_B = 0$ $V_{CE} = -50 \text{ V}$ $I_B = 0$ BDX54 BDX54A BDX54B BDX54C			-0.5 -0.5 -0.5 -0.5	mA
I_{CBO} Collector cut-off current	$V_{CB} = -45 \text{ V}$ $I_E = 0$ $V_{CB} = -60 \text{ V}$ $I_E = 0$ $V_{CB} = -80 \text{ V}$ $I_E = 0$ $V_{CB} = -100 \text{ V}$ $I_E = 0$ BDX54 BDX54A BDX54B BDX54C			-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	$V_{BE(off)} = 4.2 \text{ V}$ $R_L = 10 \Omega$ $t_p = 20 \mu\text{s}$, dc $\leq 2\%$		5		μs

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

PRODUCT INFORMATION

MAY 1989 - REVISED SEPTEMBER 2002

Specifications are subject to change without notice.

TYPICAL CHARACTERISTICS

TYPICAL DC CURRENT GAIN
VS
COLLECTOR CURRENT

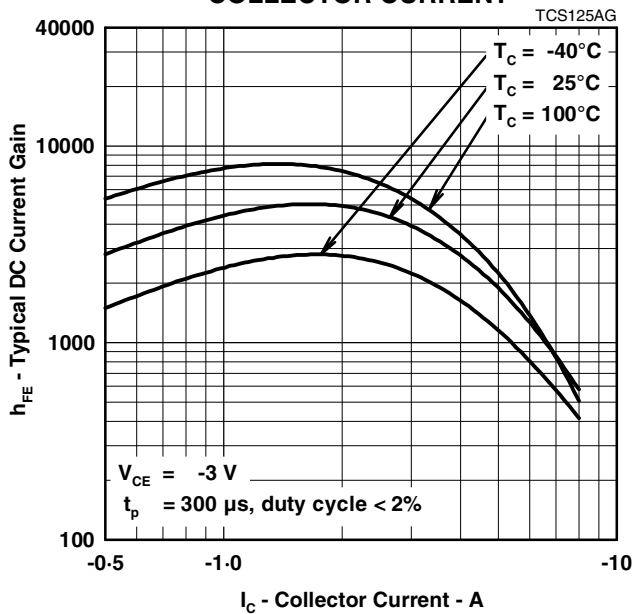


Figure 1.

COLLECTOR-EMITTER SATURATION VOLTAGE
VS
COLLECTOR CURRENT

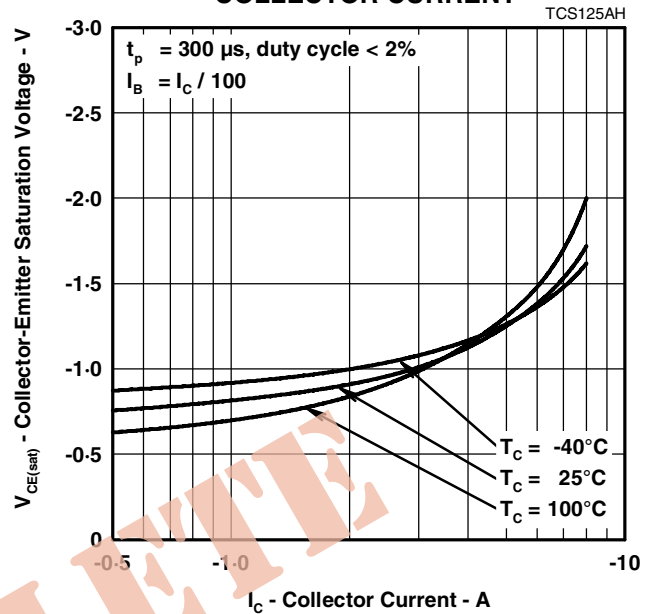


Figure 2.

BASE-EMITTER SATURATION VOLTAGE
VS
COLLECTOR CURRENT

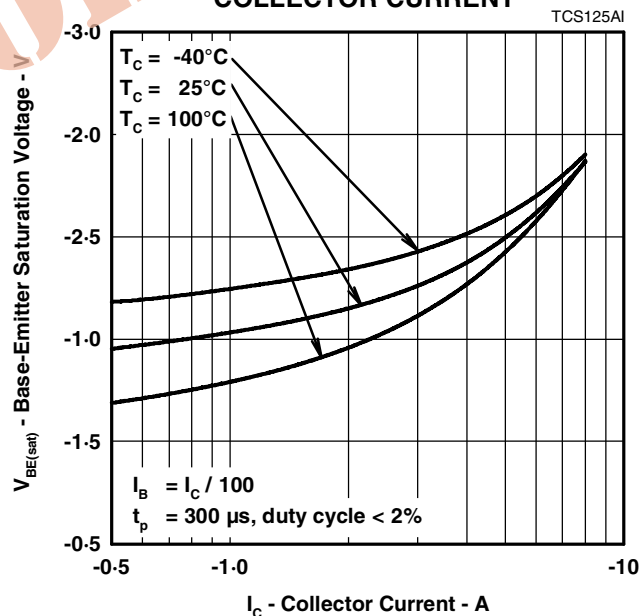


Figure 3.

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MAXIMUM SAFE OPERATING REGIONS

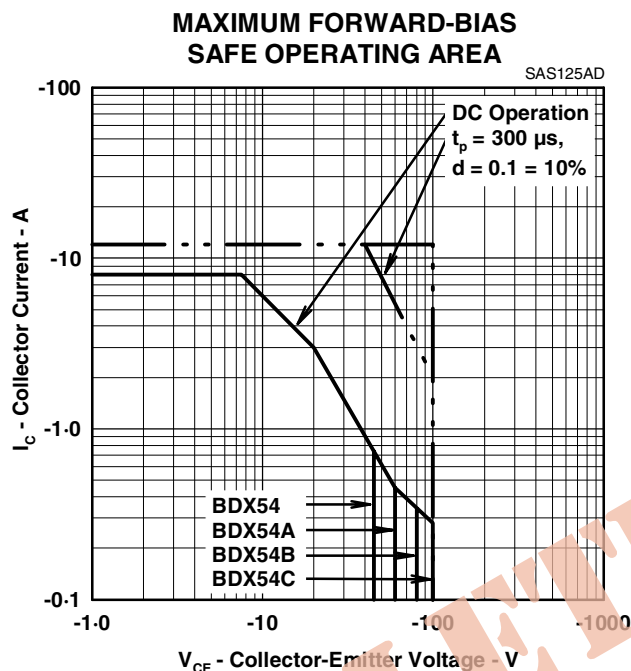


Figure 4.

THERMAL INFORMATION

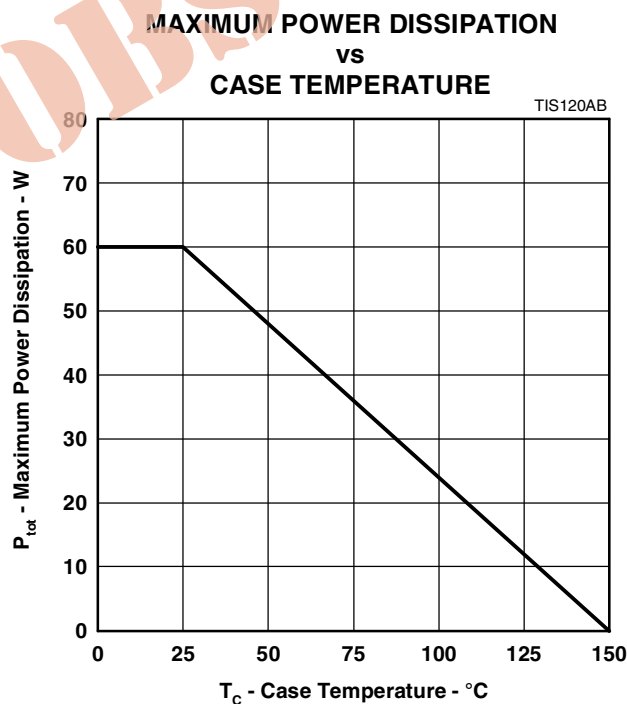


Figure 5.

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