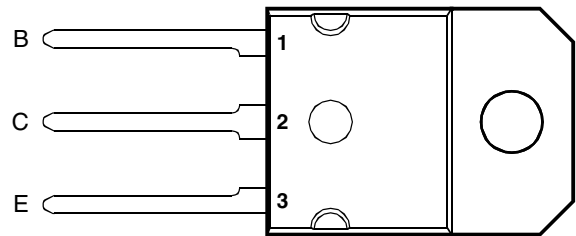


- Designed for Complementary Use with the BD545 Series
- 85 W at 25°C Case Temperature
- 15 A Continuous Collector Current
- Customer-Specified Selections Available

SOT-93 PACKAGE  
(TOP VIEW)



Pin 2 is in electrical contact with the mounting base.

MDTRAAA

**absolute maximum ratings at 25°C case temperature (unless otherwise noted)**

RATING		SYMBOL	VALUE	UNIT
Collector-base voltage ( $I_E = 0$ )	BD546	$V_{CBO}$	-40	V
	BD546A		-60	
	BD546B		-80	
	BD546C		-100	
Collector-emitter voltage ( $I_B = 0$ ) (see Note 1)	BD546	$V_{CEO}$	-40	V
	BD546A		-60	
	BD546B		-80	
	BD546C		-100	
Emitter-base voltage		$V_{EBO}$	-5	V
Continuous collector current		$I_C$	-15	A
Continuous device dissipation at (or below) 25°C case temperature (see Note 2)		$P_{tot}$	85	W
Continuous device dissipation at (or below) 25°C free air temperature (see Note 3)		$P_{tot}$	3.5	W
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. These values apply when the base-emitter diode is open circuited.  
 2. Derate linearly to 150°C case temperature at the rate of 0.68 W/°C.  
 3. Derate linearly to 150°C free air temperature at the rate of 28 mW/°C.

**PRODUCT INFORMATION**

**electrical characteristics at 25°C case temperature**

PARAMETER	TEST CONDITIONS			MIN	TYP	MAX	UNIT
$V_{(BR)CEO}$ Collector-emitter breakdown voltage	$I_C = -30 \text{ mA}$ (see Note 4)	$I_B = 0$	BD546 BD546A BD546B BD546C	-40 -60 -80 -100			V
$I_{CES}$ Collector-emitter cut-off current	$V_{CE} = -40 \text{ V}$ $V_{CE} = -60 \text{ V}$ $V_{CE} = -80 \text{ V}$ $V_{CE} = -100 \text{ V}$	$V_{BE} = 0$ $V_{BE} = 0$ $V_{BE} = 0$ $V_{BE} = 0$	BD546 BD546A BD546B BD546C			-0.4 -0.4 -0.4 -0.4	mA
$I_{CEO}$ Collector cut-off current	$V_{CE} = -30 \text{ V}$ $V_{CE} = -60 \text{ V}$	$I_B = 0$ $I_B = 0$	BD546/546A BD546B/546C			-0.7 -0.7	mA
$I_{EBO}$ Emitter cut-off current	$V_{EB} = -5 \text{ V}$	$I_C = 0$				-1	mA
$h_{FE}$ Forward current transfer ratio	$V_{CE} = -4 \text{ V}$ $V_{CE} = -4 \text{ V}$ $V_{CE} = -4 \text{ V}$	$I_C = -1 \text{ A}$ $I_C = -5 \text{ A}$ $I_C = -10 \text{ A}$	(see Notes 4 and 5)	60 25 10			
$V_{CE(sat)}$ Collector-emitter saturation voltage	$I_B = -625 \text{ mA}$ $I_B = -2 \text{ A}$	$I_C = -5 \text{ A}$ $I_C = -10 \text{ A}$	(see Notes 4 and 5)			-0.8 -1	V
$V_{BE}$ Base-emitter voltage	$V_{CE} = -4 \text{ V}$	$I_C = -10 \text{ A}$	(see Notes 4 and 5)			-1.8	V
$h_{fe}$ Small signal forward current transfer ratio	$V_{CE} = -10 \text{ V}$	$I_C = -0.5 \text{ A}$	$f = 1 \text{ kHz}$	20			
$ h_{fe} $ Small signal forward current transfer ratio	$V_{CE} = -10 \text{ V}$	$I_C = -0.5 \text{ A}$	$f = 1 \text{ MHz}$	3			

NOTES: 4. These parameters must be measured using pulse techniques,  $t_p = 300 \mu\text{s}$ , duty cycle  $\leq 2\%$ .

5. 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			1.47	°C/W
$R_{\theta JA}$ Junction to free air thermal resistance			35.7	°C/W

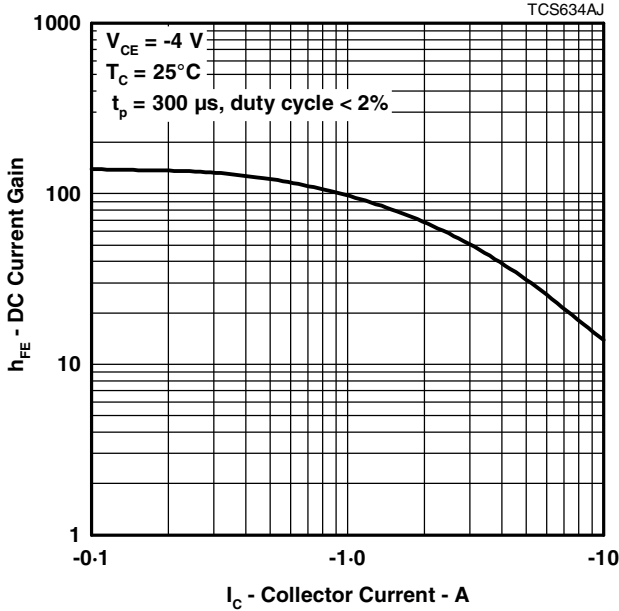
**resistive-load-switching characteristics at 25°C case temperature**

PARAMETER	TEST CONDITIONS †			MIN	TYP	MAX	UNIT
$t_{on}$ Turn-on time	$I_C = -6 \text{ A}$	$I_{B(on)} = -0.6 \text{ A}$	$I_{B(off)} = 0.6 \text{ A}$		0.4		$\mu\text{s}$
$t_{off}$ Turn-off time	$V_{BE(off)} = 4 \text{ V}$	$R_L = 5 \Omega$	$t_p = 20 \mu\text{s}$ , dc $\leq 2\%$		0.7		$\mu\text{s}$

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

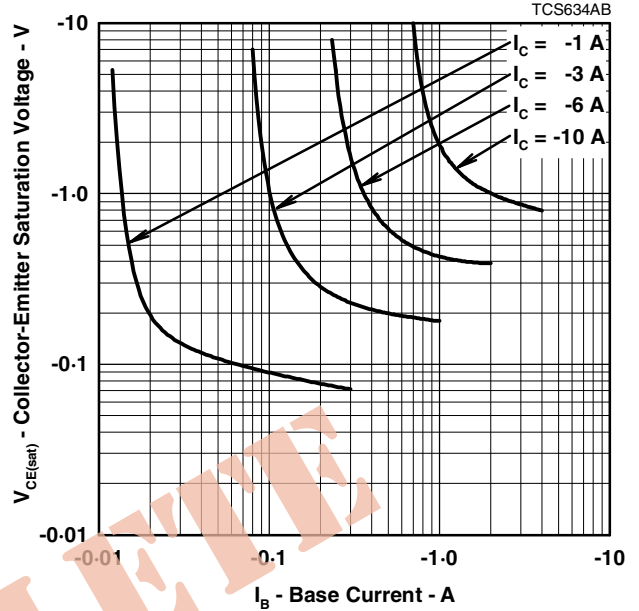
**TYPICAL CHARACTERISTICS**

**TYPICAL DC CURRENT GAIN  
vs  
COLLECTOR CURRENT**



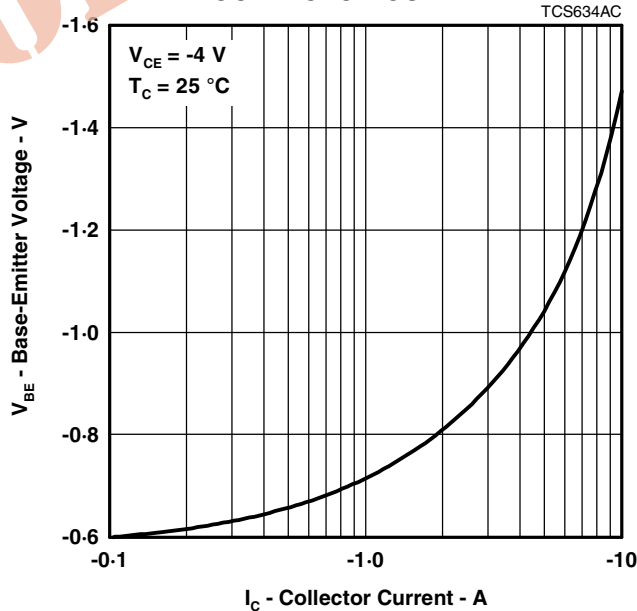
**Figure 1.**

**COLLECTOR-EMITTER SATURATION VOLTAGE  
vs  
BASE CURRENT**



**Figure 2.**

**BASE-EMITTER VOLTAGE  
vs  
COLLECTOR CURRENT**



**Figure 3.**

**PRODUCT INFORMATION**

**MAXIMUM SAFE OPERATING REGIONS**

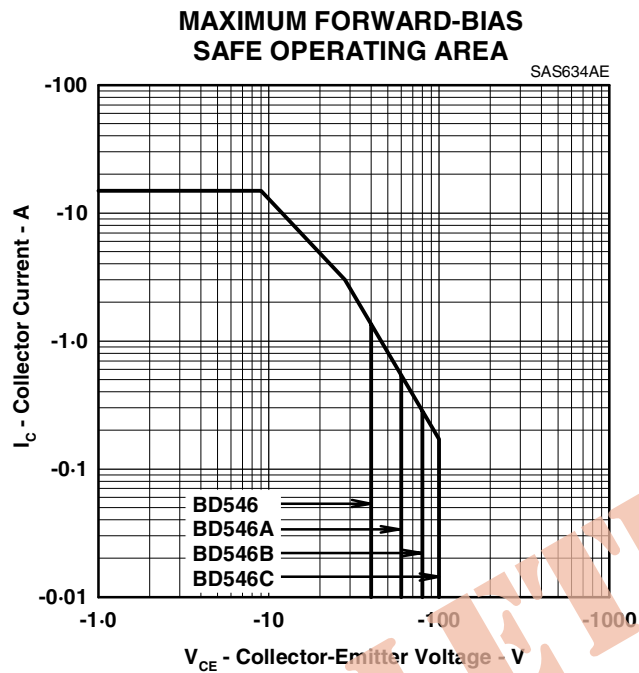


Figure 4.

**THERMAL INFORMATION**

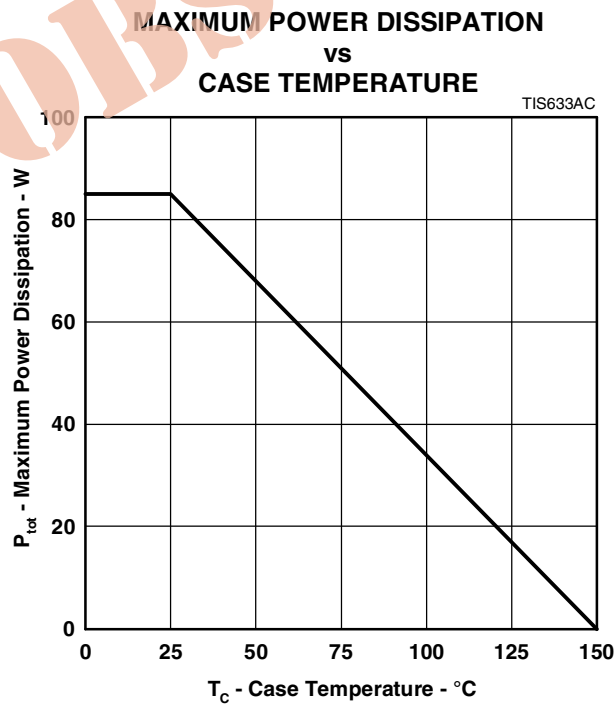


Figure 5.

**PRODUCT INFORMATION**