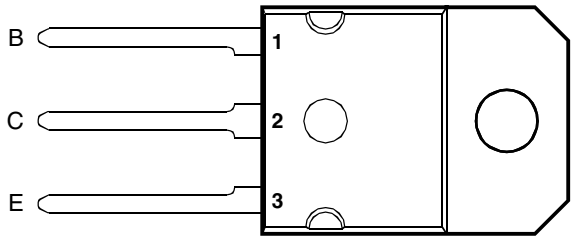
- **Designed for Complementary Use with the BD546 Series**
- **85 W at 25°C Case Temperature**
- **15 A Continuous Collector Current**
- **Customer-Specified Selections Available**

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)	BD545	V_{CBO}	40	V
	BD545A		60	
	BD545B		80	
	BD545C		100	
Collector-emitter voltage (I_B = 0) (see Note 1)	BD545	V_{CEO}	40	V
	BD545A		60	
	BD545B		80	
	BD545C		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

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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.

electrical characteristics at 25°C case temperature

PARAMETER		TEST CONDITIONS			MIN	TYP	MAX	UNIT
$V_{(BR)CEO}$	Collector-emitter breakdown voltage	I_C = 30 mA (see Note 4)	I_B = 0	BD545	40			V
				BD545A	60			
				BD545B	80			
				BD545C	100			
I_{CES}	Collector-emitter cut-off current	V_{CE} = 40 V	V_{BE} = 0	BD545			0.4	mA
		V_{CE} = 60 V	V_{BE} = 0	BD545A			0.4	
		V_{CE} = 80 V	V_{BE} = 0	BD545B			0.4	
		V_{CE} = 100 V	V_{BE} = 0	BD545C			0.4	
I_{CEO}	Collector cut-off current	V_{CE} = 30 V	I_B = 0	BD545/545A			0.7	mA
		V_{CE} = 60 V	I_B = 0	BD545B/545C			0.7	
I_{EBO}	Emitter cut-off current	V_{EB} = 5 V	I_C = 0				1	mA
h_{FE}	Forward current transfer ratio	V_{CE} = 4 V	I_C = 1 A		60			
		V_{CE} = 4 V	I_C = 5 A	(see Notes 4 and 5)	25			
		V_{CE} = 4 V	I_C = 10 A		10			
$V_{CE(sat)}$	Collector-emitter saturation voltage	I_B = 625 mA	I_C = 5 A	(see Notes 4 and 5)			0.8	V
		I_B = 2 A	I_C = 10 A				1	
V_{BE}	Base-emitter voltage	V_{CE} = 4 V	I_C = 10 A	(see Notes 4 and 5)			1.8	V
h_{fe}	Small signal forward current transfer ratio	V_{CE} = 10 V	I_C = 0.5 A	f = 1 kHz	20			
$\|h_{fe}\|$	Small signal forward current transfer ratio	V_{CE} = 10 V	I_C = 0.5 A	f = 1 MHz	3			

NOTES: 4. These parameters must be measured using pulse techniques, t_p = 300 µs, duty cycle ≤ 2%.
5. These parameters must be measured using voltage-sensing contacts, separate from the current carrying contacts.

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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 A	$I_{B(on)}$ = 0.6 A	$I_{B(off)}$ = -0.6 A		0.6		µs
t_{off}	Turn-off time	$V_{BE(off)}$ = -4 V	R_L = 5 Ω	t_p = 20 µs, dc ≤ 2%		1		µs

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

TYPICAL CHARACTERISTICS

TYPICAL DC CURRENT GAIN vs COLLECTOR CURRENT

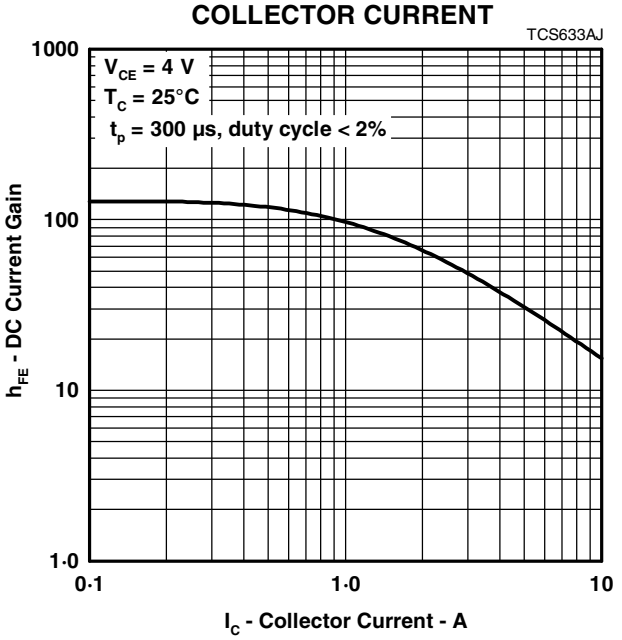


Figure 1.

COLLECTOR-EMITTER SATURATION VOLTAGE vs BASE CURRENT

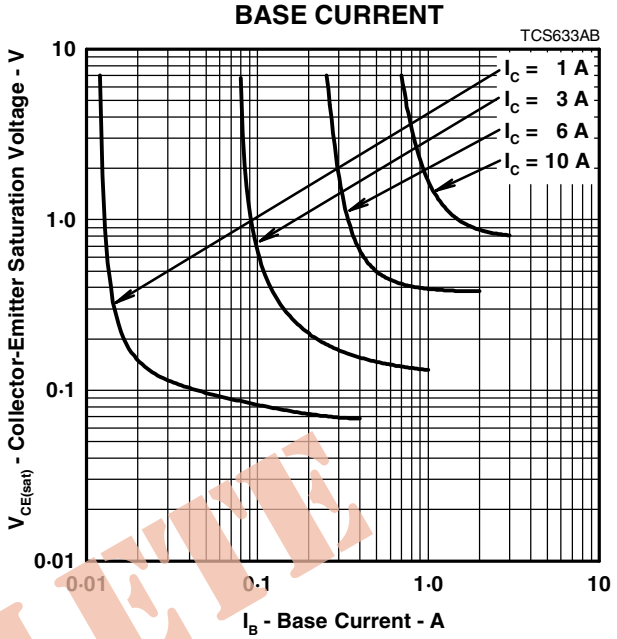


Figure 2.

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BASE-EMITTER VOLTAGE vs COLLECTOR CURRENT

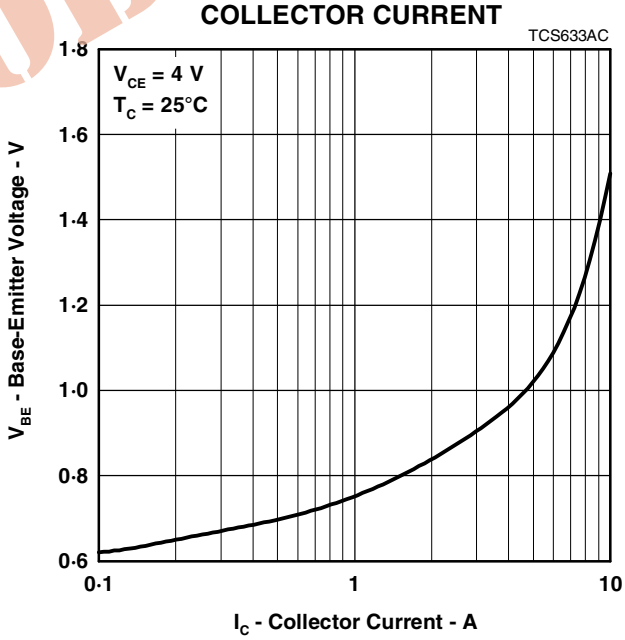


Figure 3.

MAXIMUM SAFE OPERATING REGIONS

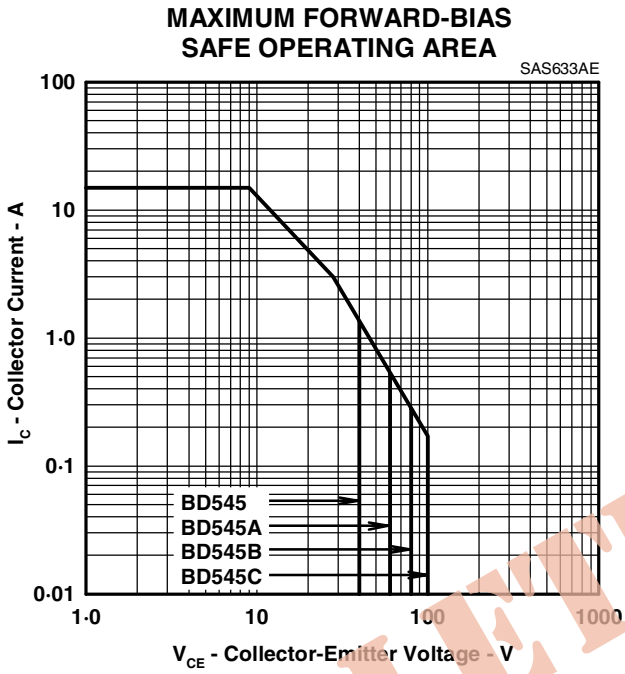


Figure 4.

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THERMAL INFORMATION

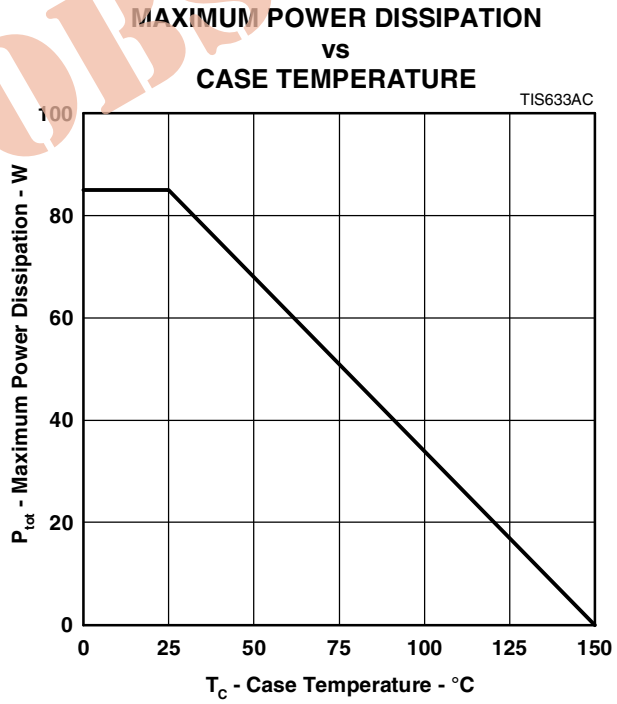


Figure 5.