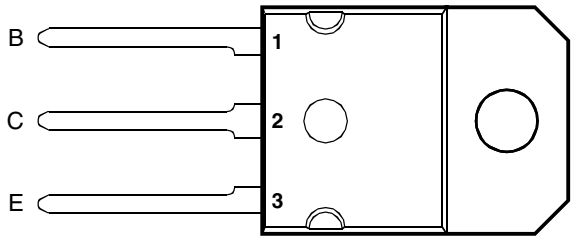
BD545, BD545A, BD545B, BD545C
NPN SILICON POWER TRANSISTORS

BOURNS®

- **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

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.

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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.

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.

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TYPICAL CHARACTERISTICS

TYPICAL DC CURRENT GAIN vs COLLECTOR CURRENT

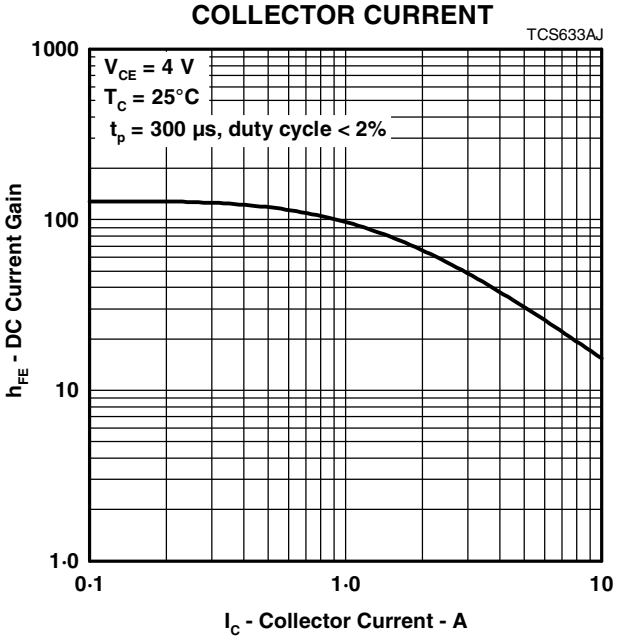

Figure 1.

COLLECTOR-EMITTER SATURATION VOLTAGE vs BASE CURRENT

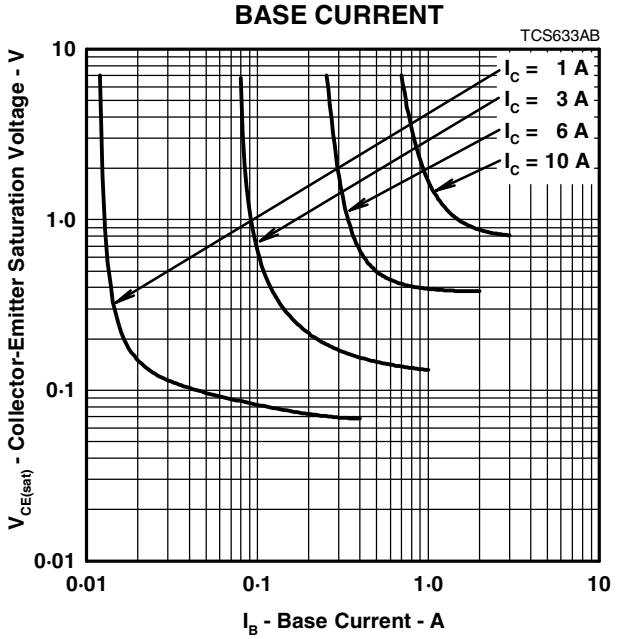

Figure 2.

BASE-EMITTER VOLTAGE vs COLLECTOR CURRENT

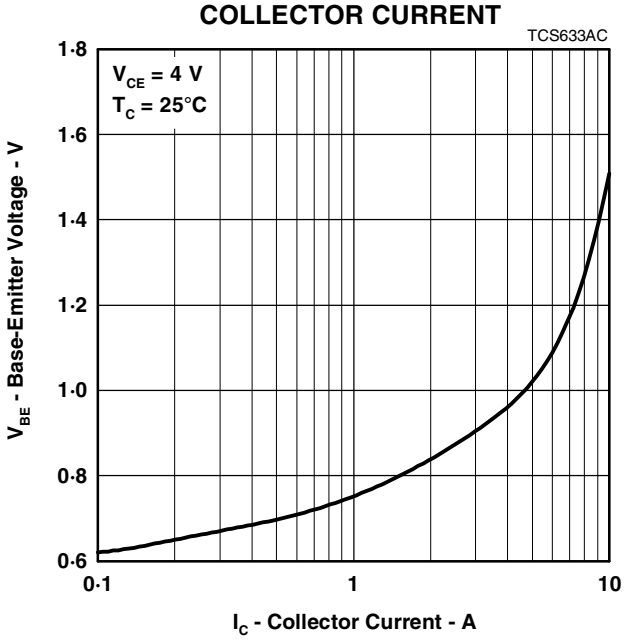

Figure 3.

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MAXIMUM SAFE OPERATING REGIONS

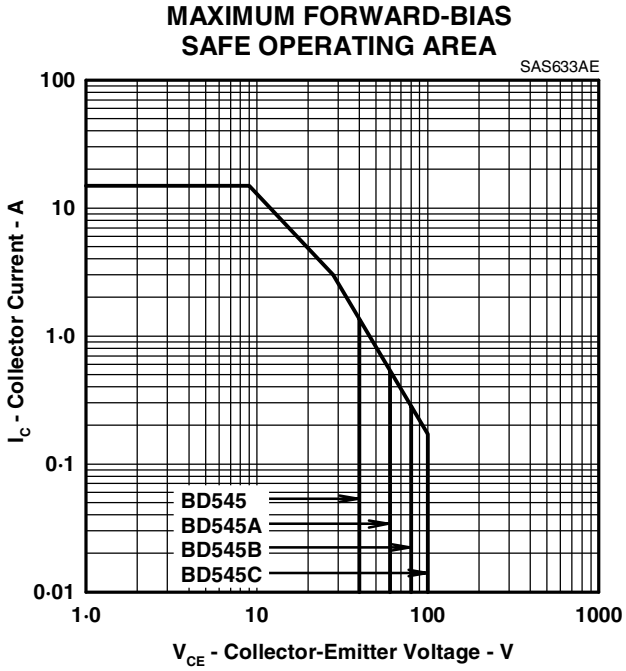

Figure 4.

THERMAL INFORMATION

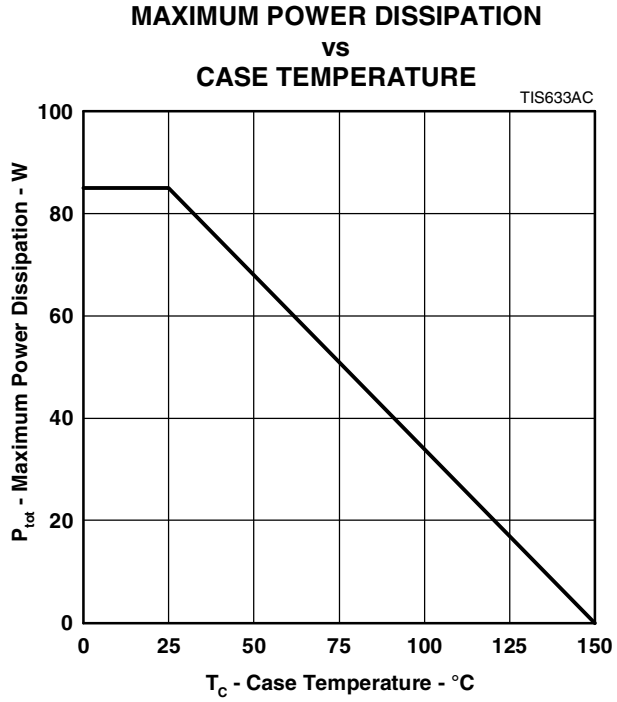

Figure 5.

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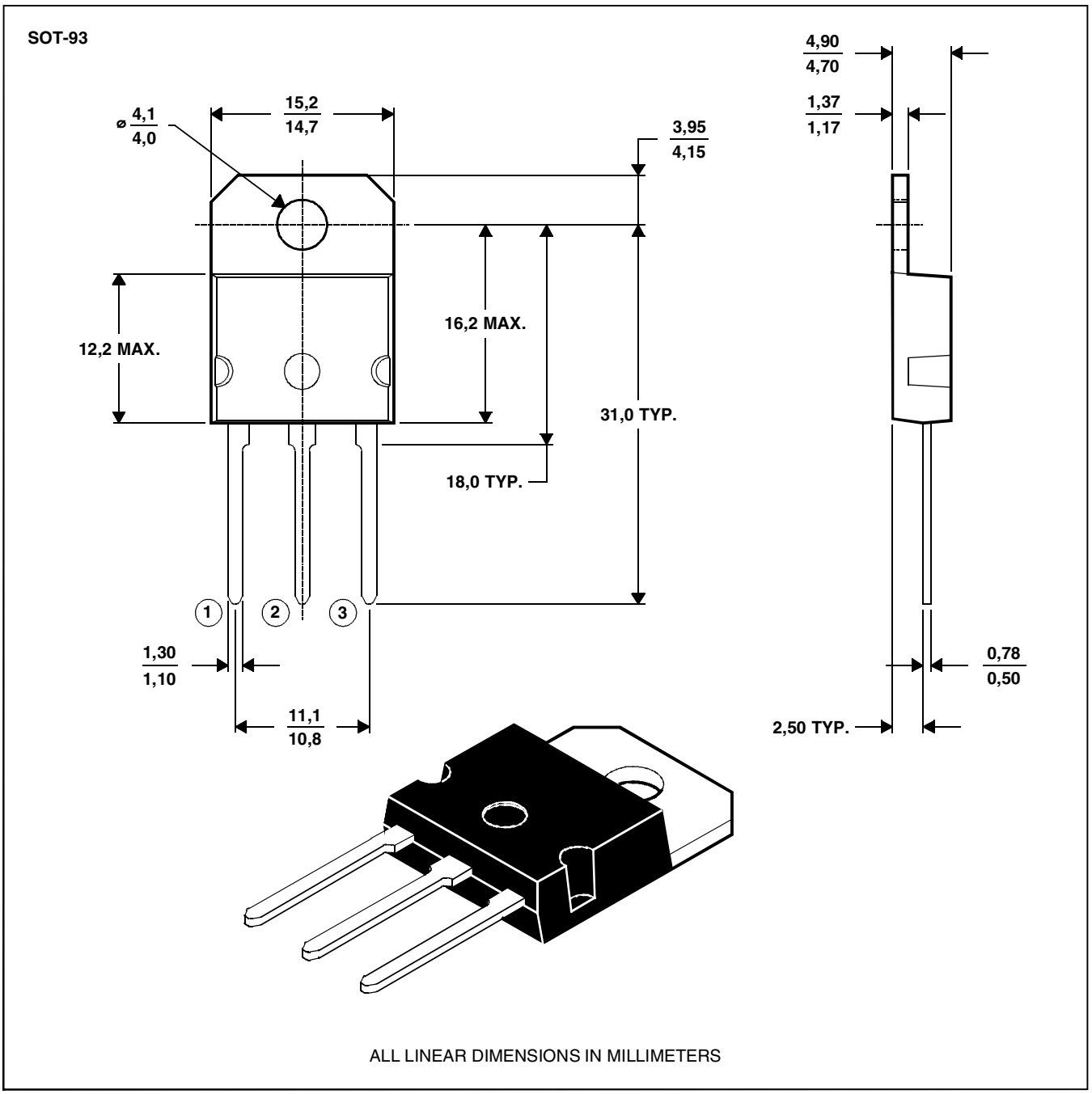
MECHANICAL DATA

SOT-93
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.



NOTE A: The centre pin is in electrical contact with the mounting tab.

MDXXAW