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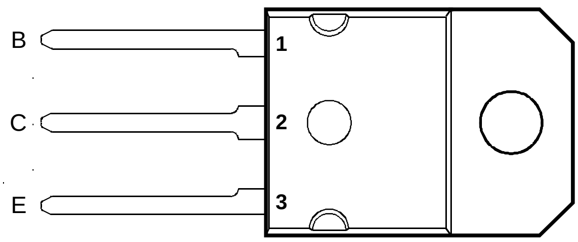
- **Designed for Complementary Use with the BD250 Series**
- **125 W at 25°C Case Temperature**
- **25 A Continuous Collector Current**
- **40 A Peak Collector Current**
- **Customer-Specified Selections Available**

SOT-93 PACKAGE
(TOP VIEW)



Pin 2 is in electrical contact with the mounting base.

MDTRAA

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

RATING		SYMBOL	VALUE	UNIT
Collector-emitter voltage (R_{BE} = 100 Ω)	BD249	V_{CER}	55	V
	BD249A		70	
	BD249B		90	
	BD249C		115	
Collector-emitter voltage (I_C = 30 mA)	BD249	V_{CEO}	45	V
	BD249A		60	
	BD249B		80	
	BD249C		100	
Emitter-base voltage		V_{EBO}	5	V
Continuous collector current		I_C	25	A
Peak collector current (see Note 1)		I_{CM}	40	A
Continuous base current		I_B	5	A
Continuous device dissipation at (or below) 25°C case temperature (see Note 2)		P_{tot}	125	W
Continuous device dissipation at (or below) 25°C free air temperature (see Note 3)		P_{tot}	3	W
Unclamped inductive load energy (see Note 4)		$½LI_C^2$	90	mJ
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	250	°C

NOTES:
1. This value applies for $t_p \leq$ 0.3 ms, duty cycle ≤ 10%.
2. Derate linearly to 150°C case temperature at the rate of 1 W/°C.
3. Derate linearly to 150°C free air temperature at the rate of 24 mW/°C.
4. This rating is based on the capability of the transistor to operate safely in a circuit of: L = 20 mH, $I_{B(on)}$ = 0.4 A, R_{BE} = 100 Ω, $V_{BE(off)}$ = 0, R_S = 0.1 Ω, V_{CC} = 20 V.

P R O D U C T   I N F O R M A T I O N

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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 5)	I_B = 0	BD249 BD249A BD249B BD249C	45 60 80 100			V
I_{CES}	Collector-emitter cut-off current	V_{CE} = 55 V V_{CE} = 70 V V_{CE} = 90 V V_{CE} = 115 V	V_{BE} = 0 V_{BE} = 0 V_{BE} = 0 V_{BE} = 0	BD249 BD249A BD249B BD249C			0.7 0.7 0.7 0.7	mA
I_{CEO}	Collector cut-off current	V_{CE} = 30 V V_{CE} = 60 V	I_B = 0 I_B = 0	BD249/249A BD249B/249C			1 1	mA
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 V_{CE} = 4 V V_{CE} = 4 V	I_C = 1.5 A I_C = 15 A I_C = 25 A	(see Notes 5 and 6)	25 10 5			
$V_{CE(sat)}$	Collector-emitter saturation voltage	I_B = 1.5 A I_B = 5 A	I_C = 15 A I_C = 25 A	(see Notes 5 and 6)			1.8 4	V
V_{BE}	Base-emitter voltage	V_{CE} = 4 V V_{CE} = 4 V	I_C = 15 A I_C = 25 A	(see Notes 5 and 6)			2 4	V
h_{fe}	Small signal forward current transfer ratio	V_{CE} = 10 V	I_C = 1 A	f = 1 kHz	25			
$\|h_{fe}\|$	Small signal forward current transfer ratio	V_{CE} = 10 V	I_C = 1 A	f = 1 MHz	3			

NOTES: 5. These parameters must be measured using pulse techniques, t_p = 300 µs, duty cycle ≤ 2%.
6. 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	°C/W
$R_{\theta JA}$	Junction to free air thermal resistance			42	°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 = 5 A	$I_{B(on)}$ = 0.5 A	$I_{B(off)}$ = -0.5 A		0.3		µs
t_{off}	Turn-off time	$V_{BE(off)}$ = -5 V	R_L = 5 Ω	t_p = 20 µs, dc ≤ 2%		0.9		µs

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

TYPICAL CHARACTERISTICS

TYPICAL DC CURRENT GAIN vs COLLECTOR CURRENT

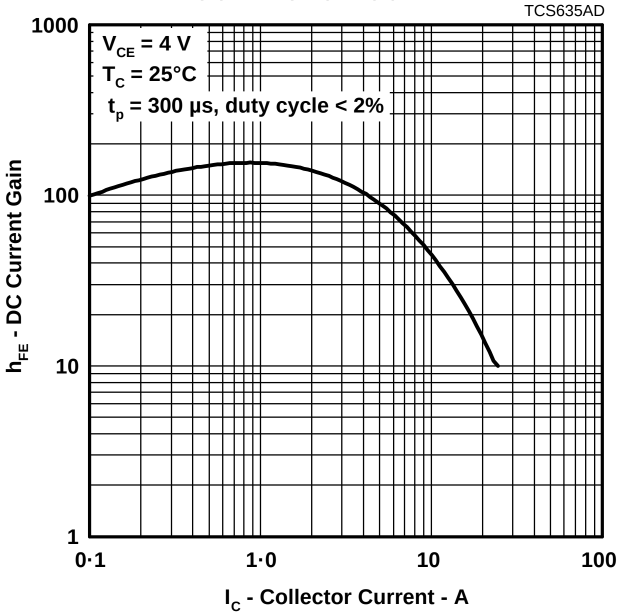

Figure 1.

COLLECTOR-EMITTER SATURATION VOLTAGE vs BASE CURRENT

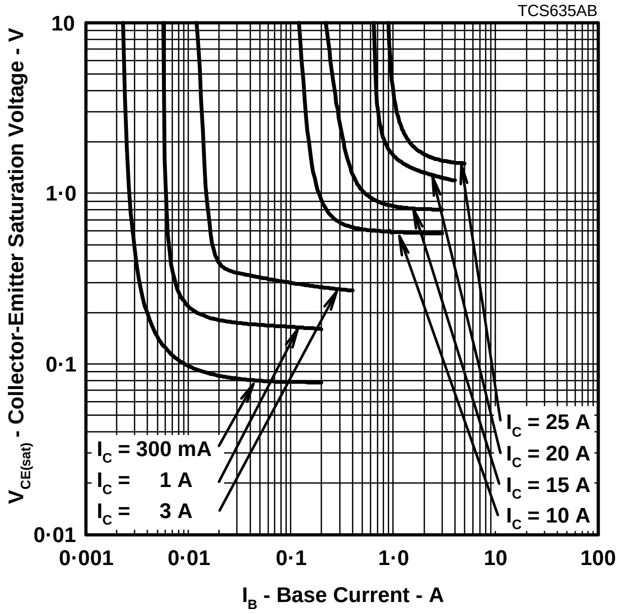

Figure 2.

BASE-EMITTER VOLTAGE vs COLLECTOR CURRENT

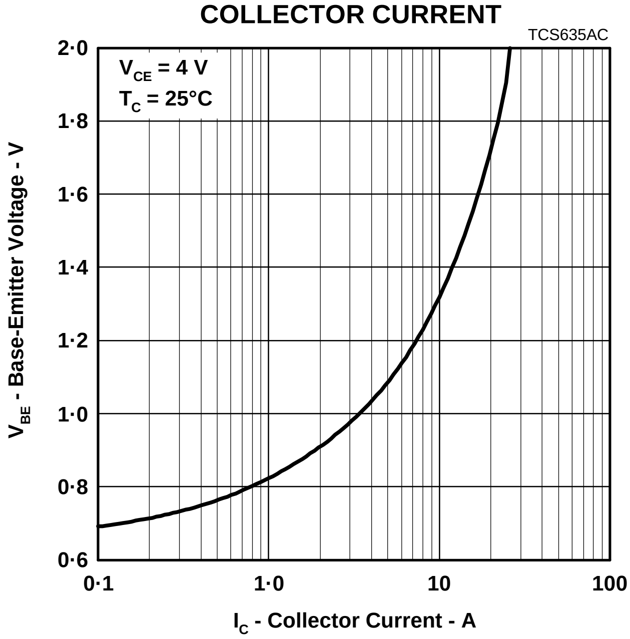

Figure 3.

MAXIMUM SAFE OPERATING REGIONS

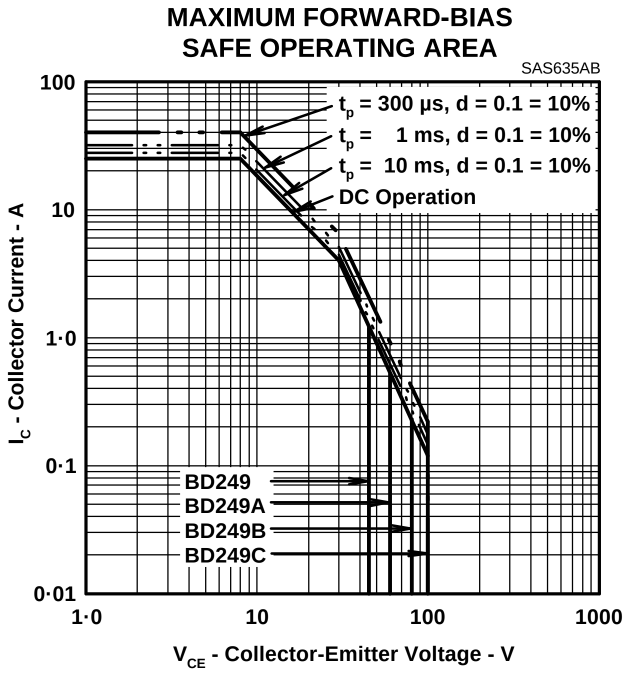

Figure 4.

THERMAL INFORMATION

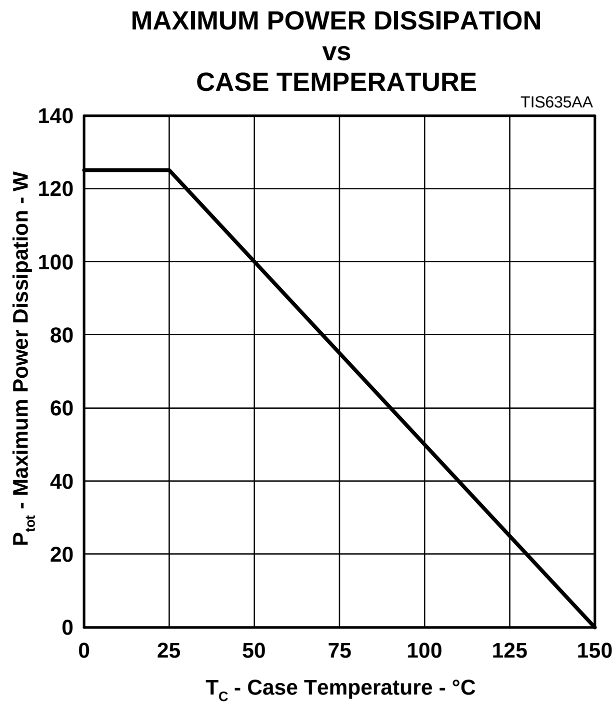

Figure 5.

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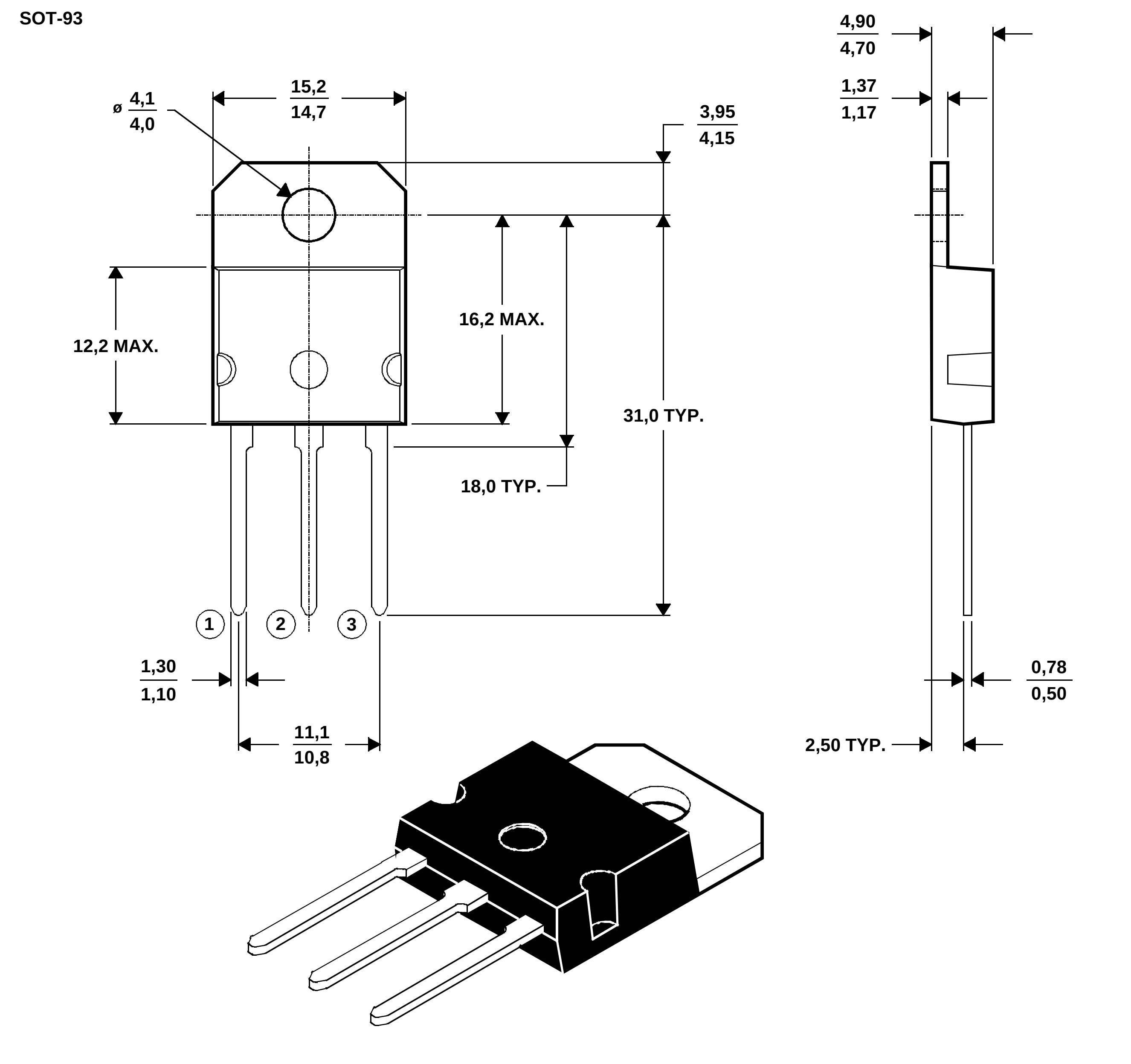
MECHANICAL DATA

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.

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