

- Designed for Complementary Use with BD646, BD648, BD650 and BD652
- 62.5 W at 25°C Case Temperature
- 8 A Continuous Collector Current
- Minimum h_{FE} of 750 at 3V, 3 A

Pin 2 is in electrical contact with the mounting base.

MDTRACA

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

RATING			VALUE	UNIT
	BD645		80	
Collector-base voltage (I _E = 0)	BD647	V	100	V
	BD649	V _{CBO}	120	
	BD651		140	
	BD645		60	
Collector-emitter voltage (I _B = 0)	BD647	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	80	V
	BD649	V _{CEO}	100	
	BD651		120	
Emitter-base voltage			5	V
Continuous collector current			8	Α
Peak collector current (see Note 1)			12	Α
Continuous base current			0.3	Α
Continuous device dissipation at (or below) 25°C case temperature (see Note 2)		P _{tot}	62.5	W
Continuous device dissipation at (or below) 25°C free air temperature (see Note 3)		P _{tot}	2	W
Unclamped inductive load energy (see Note 4)			50	mJ
Operating junction temperature range			-65 to +150	°C
Storage temperature range			-65 to +150	°C
Lead temperature 3.2 mm from case for 10 seconds			260	°C

NOTES: 1. This value applies for $t_p \le 0.3$ ms, duty cycle $\le 10\%$.

- 2. Derate linearly to 150° C case temperature at the rate of 0.4 W/° C.
- 3. Derate linearly to 150°C free air temperature at the rate of 16 mW/°C.
- 4. This rating is based on the capability of the transistor to operate safely in a circuit of: L = 20 mH, $I_{B(on)}$ = 5 mA, R_{BE} = 100 Ω , $V_{BE(off)}$ = 0, R_S = 0.1 Ω , V_{CC} = 20 V.



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 = 30 mA	I _B = 0	(see Note 5)	BD645 BD647 BD649 BD651	60 80 100 120			V
I _{CEO}	Collector-emitter cut-off current	$V_{CE} = 30 \text{ V}$ $V_{CE} = 40 \text{ V}$ $V_{CE} = 50 \text{ V}$ $V_{CE} = 60 \text{ V}$	$I_{B} = 0$ $I_{B} = 0$ $I_{B} = 0$ $I_{B} = 0$		BD645 BD647 BD649 BD651			0.5 0.5 0.5 0.5	mA
Ісво	Collector cut-off current	$V_{CB} = 120 \text{ V}$ $V_{CB} = 40 \text{ V}$ $V_{CB} = 50 \text{ V}$ $V_{CB} = 60 \text{ V}$	I _E = 0 I _E = 0	$T_{C} = 150^{\circ}C$ $T_{C} = 150^{\circ}C$ $T_{C} = 150^{\circ}C$ $T_{C} = 150^{\circ}C$	BD645 BD647 BD649 BD651 BD645 BD647 BD649 BD651			0.2 0.2 0.2 0.2 2.0 2.0 2.0 2.0	mA
I _{EBO}	Emitter cut-off current	V _{EB} = 5 V	I _C = 0	(see Notes 5 and 6)				5	mA
h _{FE}	Forward current transfer ratio	V _{CE} = 3 V	I _C = 3 A	(see Notes 5 and	d 6)	750			
V _{CE(sat)}	Collector-emitter saturation voltage	$I_B = 12 \text{ mA}$ $I_B = 50 \text{ mA}$	$I_C = 3 A$ $I_C = 5 A$	(see Notes 5 and	d 6)			2 2.5	٧
V _{BE(sat)}	Base-emitter saturation voltage	I _B = 50 mA	I _C = 5 A	(see Notes 5 and	d 6)			3	V
V _{BE(on)}	Base-emitter voltage	V _{CE} = 3 V	I _C = 3 A	(see Notes 5 and	d 6)			2.5	V

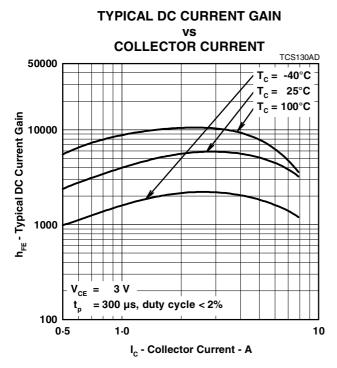
NOTES: 5. These parameters must be measured using pulse techniques, $t_p = 300 \mu s$, duty cycle $\leq 2\%$.

thermal characteristics

PARAMETER		MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction to case thermal resistance			2.0	°C/W
$R_{\theta JA}$	Junction to free air thermal resistance			62.5	°C/W

^{6.} These parameters must be measured using voltage-sensing contacts, separate from the current carrying contacts.

TYPICAL CHARACTERISTICS



COLLECTOR-EMITTER SATURATION VOLTAGE

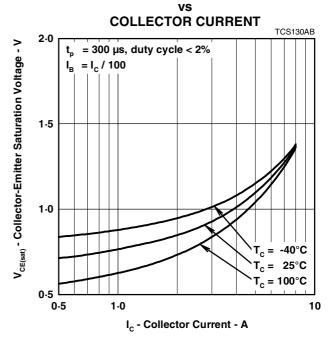
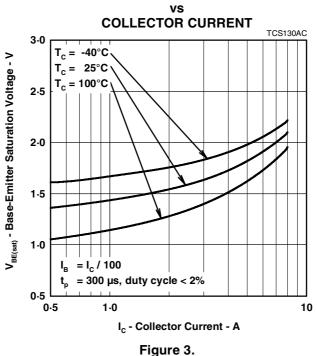


Figure 1.

Figure 2.

BASE-EMITTER SATURATION VOLTAGE



PRODUCT INFORMATION

MAXIMUM SAFE OPERATING REGIONS

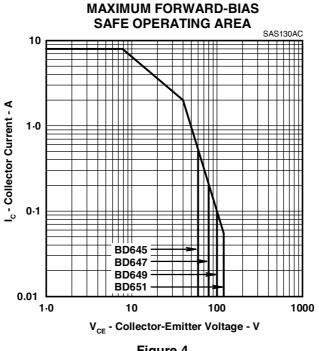


Figure 4.

THERMAL INFORMATION

MAXIMUM POWER DISSIPATION

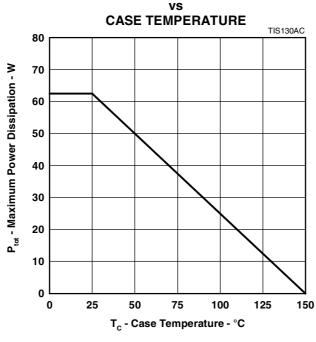


Figure 5.