BDV65, BDV65A, BDV65B, BDV65C
NPN SILICON POWER DARLINGTONS

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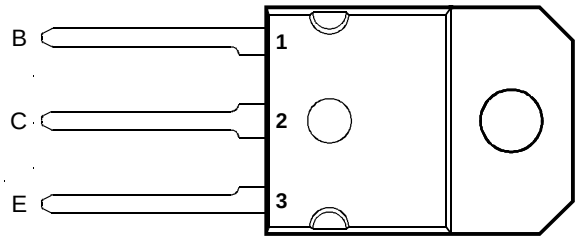
- **Designed for Complementary Use with BDV64, BDV64A, BDV64B and BDV64C**
- **125 W at 25°C Case Temperature**
- **12 A Continuous Collector Current**
- **Minimum h_{FE} of 1000 at 4 V, 5 A**

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-base voltage (I_E = 0)	BDV65	V_{CBO}	60	V
	BDV65A		80	
	BDV65B		100	
	BDV65C		120	
Collector-emitter voltage (I_B = 0)	BDV65	V_{CEO}	60	V
	BDV65A		80	
	BDV65B		100	
	BDV65C		120	
Emitter-base voltage		V_{EBO}	5	V
Continuous collector current		I_C	12	A
Peak collector current (see Note 1)		I_{CM}	15	A
Continuous base current		I_B	0.5	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}	3.5	W
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. This value applies for $t_p \leq 0.1$ ms, duty cycle $\leq 10\%$
2. Derate linearly to 150°C case temperature at the rate of 0.56 W/°C.
3. Derate linearly to 150°C free air temperature at the rate of 28 mW/°C.

Information is current as of publication date. Products conform to specifications in accordance with the terms of Power Innovations standard warranty. Production processing does not necessarily include testing of all parameters.

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 4)	BDV65	60			V
					BDV65A	80			
					BDV65B	100			
					BDV65C	120			
I_{CEO}	Collector-emitter cut-off current	V_{CB} = 30 V	I_B = 0		BDV65			2	mA
		V_{CB} = 40 V	I_B = 0		BDV65A			2	
		V_{CB} = 50 V	I_B = 0		BDV65B			2	
		V_{CB} = 60 V	I_B = 0		BDV65C			2	
I_{CBO}	Collector cut-off current	V_{CB} = 60 V	I_E = 0		BDV65			0.4	mA
		V_{CB} = 80 V	I_E = 0		BDV65A			0.4	
		V_{CB} = 100 V	I_E = 0		BDV65B			0.4	
		V_{CB} = 120 V	I_E = 0		BDV65C			0.4	
		V_{CB} = 30 V	I_E = 0	T_C = 150°C	BDV65			2	
		V_{CB} = 40 V	I_E = 0	T_C = 150°C	BDV65A			2	
		V_{CB} = 50 V	I_E = 0	T_C = 150°C	BDV65B			2	
		V_{CB} = 60 V	I_E = 0	T_C = 150°C	BDV65C			2	
I_{EBO}	Emitter cut-off current	V_{EB} = 5 V	I_C = 0					5	mA
h_{FE}	Forward current transfer ratio	V_{CE} = 4 V	I_C = 5 A	(see Notes 4 and 5)		1000			
$V_{CE(sat)}$	Collector-emitter saturation voltage	I_B = 20 mA	I_C = 5 A	(see Notes 4 and 5)				2	V
V_{BE}	Base-emitter voltage	V_{CE} = 4 V	I_C = 5 A	(see Notes 4 and 5)				2.5	V
V_{EC}	Parallel diode forward voltage	I_E = 10 A	I_B = 0	(see Notes 4 and 5)				3.5	V

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

TYPICAL CHARACTERISTICS

TYPICAL DC CURRENT GAIN vs COLLECTOR CURRENT

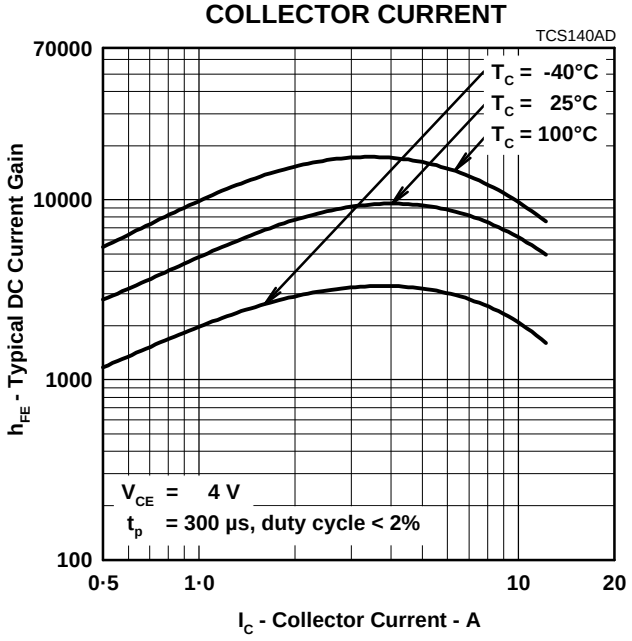


Figure 1.

COLLECTOR-EMITTER SATURATION VOLTAGE vs COLLECTOR CURRENT

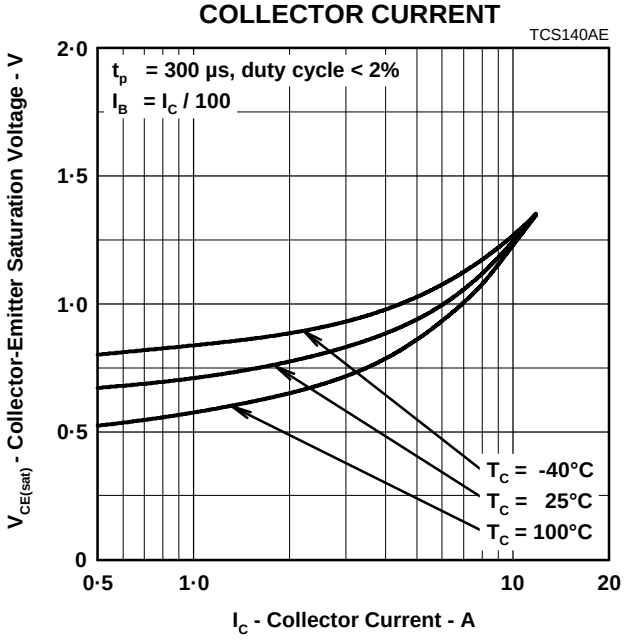


Figure 2.

BASE-EMITTER SATURATION VOLTAGE vs COLLECTOR CURRENT

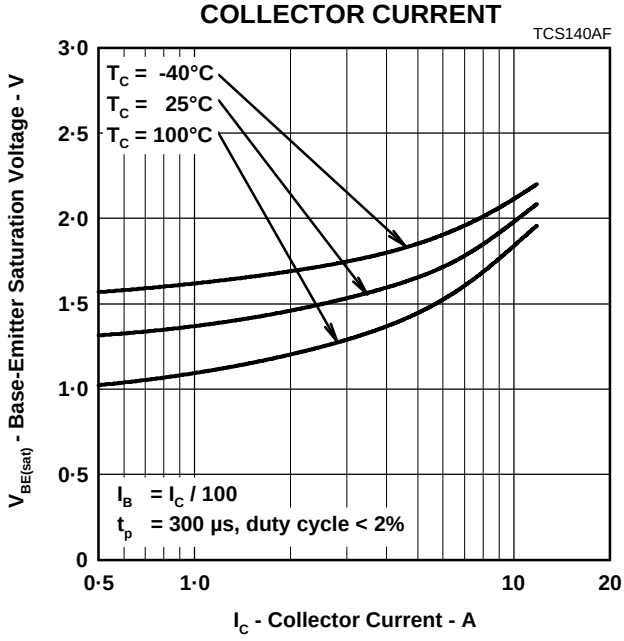


Figure 3.

THERMAL INFORMATION

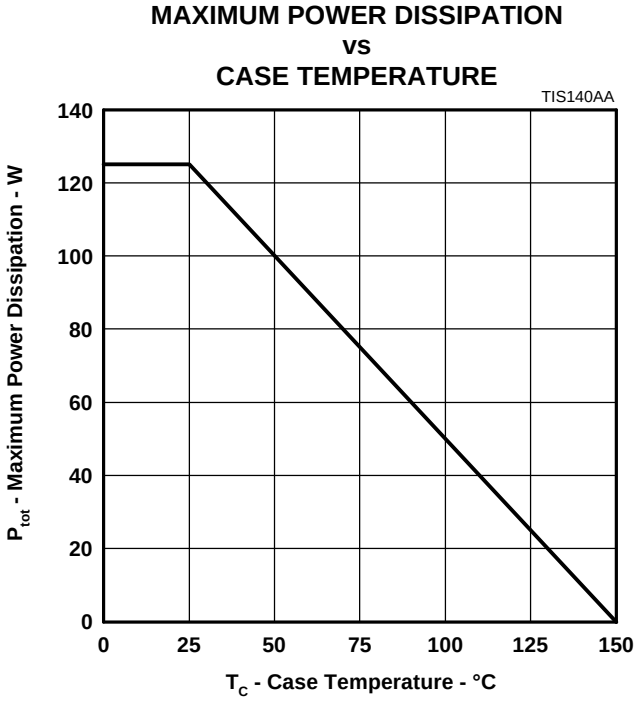
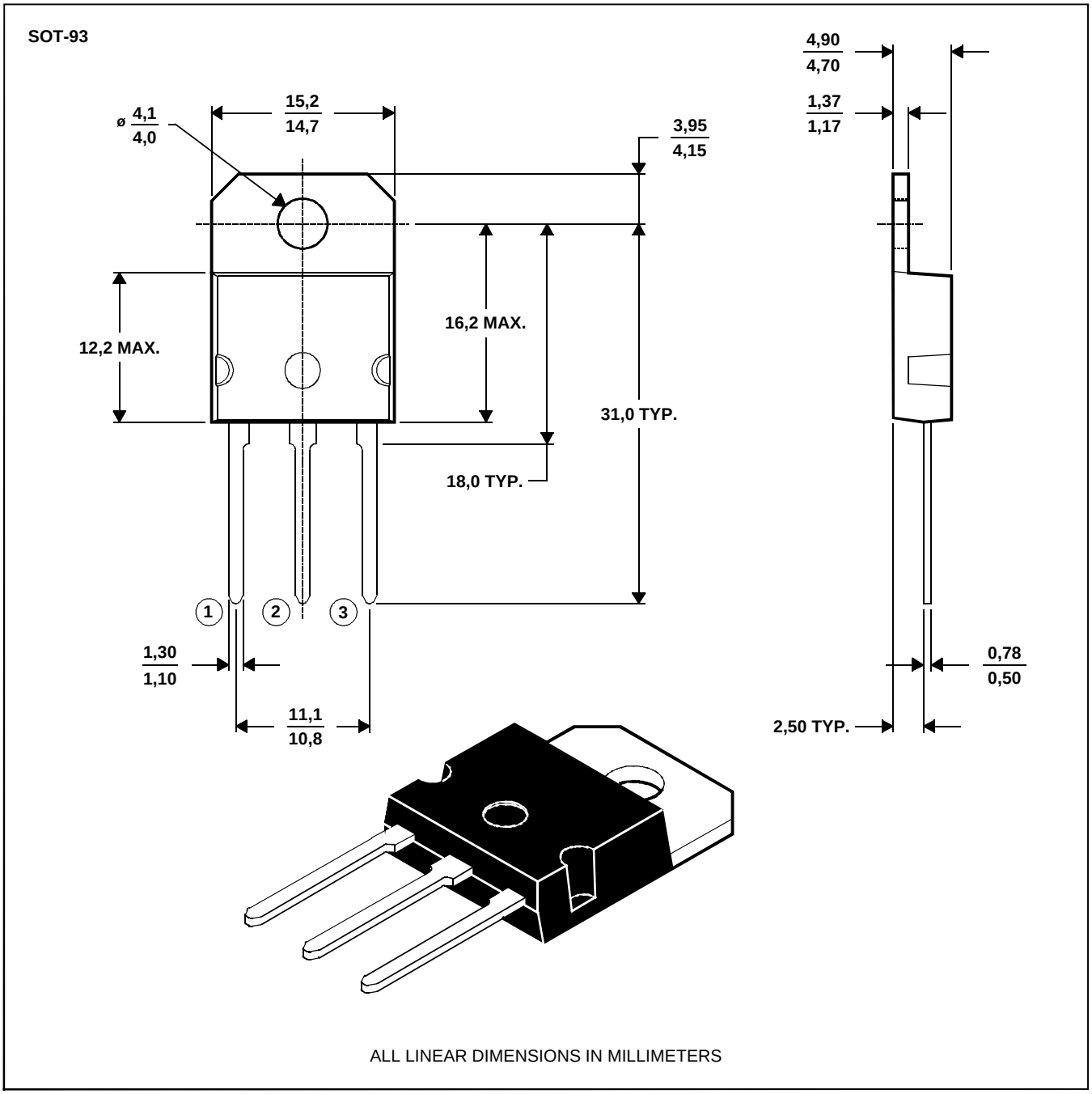


Figure 4.

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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