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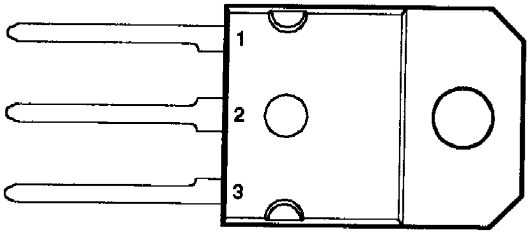
BDV65, BDV65A, BDV65B, BDV65C
NPN SILICON POWER DARLINGTONS

- **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

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

RATING		SYMBOL	VALUE	UNIT
Collector-base voltage ($I_E = 0$)	BDV65 BDV65A BDV65B BDV65C	V_{CBO}	60 80 100 120	V
Collector-emitter voltage ($I_B = 0$)	BDV65 BDV65A BDV65B BDV65C	V_{CEO}	60 80 100 120	V
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.

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