# **BOURNS®**

- Designed for Complementary Use with BDV65, BDV65A, BDV65B and BDV65C
- 125 W at 25°C Case Temperature
- 12 A Continuous Collector Current
- Minimum h<sub>FE</sub> of 1000 at 4 V, 5 A

This model is currently available, but not recommended for new designs. For more information, see http://bourns.com/data/global/pdfs/TSP1203\_S0T93\_POM.pdf.

# SOT-93 PACKAGE (TOP VIEW) B 1 C 2 3

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	
	BDV64		-60		
Collector-base voltage (I <sub>E</sub> = 0)	BDV64A	V	-80	V	
	BDV64B	V <sub>CBO</sub>	-100		
	BDV64C		-120		
Collector-emitter voltage (I <sub>B</sub> = 0)	BDV64		-60		
	BDV64A	V	-80	V	
	BDV64B	V <sub>CEO</sub>	-100		
	BDV64C		-120		
Emitter-base voltage			-5	V	
Continuous collector current			-12	Α	
Peak collector current (see Note 1)		I <sub>CM</sub>	-15	Α	
Continuous base current			-0.5	Α	
Continuous device dissipation at (or below) 25°C case temperature (see Note 2)		P <sub>tot</sub>	125	W	
Continuous device dissipation at (or below) 25°C free air temperature (see Note 3)		P <sub>tot</sub>	3.5	W	
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		T <sub>L</sub> 260		°C	

NOTES: 1. This value applies for  $t_p \le 0.1$  ms, duty cycle  $\le 10\%$ 

- 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 <sub>(BR)CEO</sub>	Collector-emitter breakdown voltage	I <sub>C</sub> = -30 mA	I <sub>B</sub> = 0	(see Note 4)	BDV64 BDV64A BDV64B BDV64C	-60 -80 -100 -120			V
I <sub>CEO</sub>	Collector-emitter cut-off current	$V_{CB} = -30 \text{ V}$ $V_{CB} = -40 \text{ V}$ $V_{CB} = -50 \text{ V}$ $V_{CB} = -60 \text{ V}$	$I_{B} = 0$ $I_{B} = 0$ $I_{B} = 0$ $I_{B} = 0$		BDV64 BDV64A BDV64B BDV64C			-2 -2 -2 -2	mA
Ісво	Collector cut-off current	V <sub>CB</sub> = -120 V	I <sub>E</sub> = 0 I <sub>E</sub> = 0	$T_{C} = 150^{\circ}C$ $T_{C} = 150^{\circ}C$ $T_{C} = 150^{\circ}C$ $T_{C} = 150^{\circ}C$	BDV64 BDV64A BDV64B BDV64C BDV64 BDV64A BDV64B BDV64C			-0.4 -0.4 -0.4 -0.4 -2 -2 -2	mA
I <sub>EBO</sub>	Emitter cut-off current	V <sub>EB</sub> = -5 V	I <sub>C</sub> = 0					-5	mA
h <sub>FE</sub>	Forward current transfer ratio	V <sub>CE</sub> = -4 V	I <sub>C</sub> = -5 A	(see Notes 4 and 5)		1000			
V <sub>CE(sat)</sub>	Collector-emitter saturation voltage	I <sub>B</sub> = -20 mA	I <sub>C</sub> = -5 A	(see Notes 4 and 5)				-2	٧
V <sub>BE</sub>	Base-emitter voltage	V <sub>CE</sub> = -4 V	I <sub>C</sub> = -5 A	(see Notes 4 and 5)				-2.5	V
V <sub>EC</sub>	Parallel diode forward voltage	I <sub>E</sub> = -10 A	I <sub>B</sub> = 0	(see Notes 4 and	i 5)			-3.5	٧

NOTES: 4. These parameters must be measured using pulse techniques,  $t_p$  = 300  $\mu$ s, duty cycle  $\leq$  2%.

# thermal characteristics

	PARAMETER		TYP	MAX	UNIT
F	R <sub>eJC</sub> Junction to case thermal resistance			1	°C/W
F	R <sub>eJA</sub> Junction to free air thermal resistance			35.7	°C/W

<sup>5.</sup> These parameters must be measured using voltage-sensing contacts, separate from the current carrying contacts.

### **TYPICAL CHARACTERISTICS**

# **TYPICAL DC CURRENT GAIN** vs **COLLECTOR CURRENT** TCS145AD 10000 -40°C 25°C = 100°C h<sub>FE</sub> - Typical DC Current Gain 1000 -4 V = = 300 $\mu$ s, duty cycle < 2% 100 -0.5 -1.0 -10 -20 I<sub>c</sub> - Collector Current - A

Figure 1.

# **COLLECTOR-EMITTER SATURATION VOLTAGE**

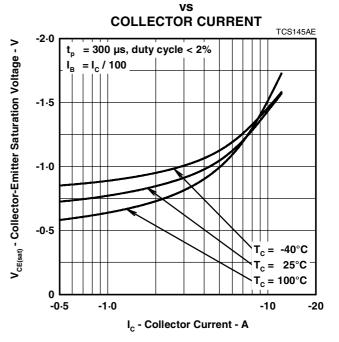


Figure 2.

### **BASE-EMITTER SATURATION VOLTAGE**

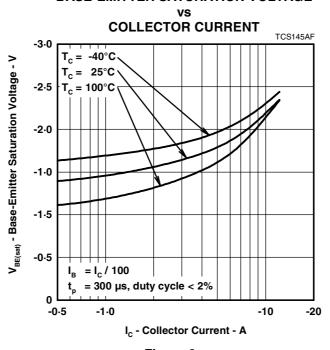


Figure 3.

# THERMAL INFORMATION

### **MAXIMUM POWER DISSIPATION**

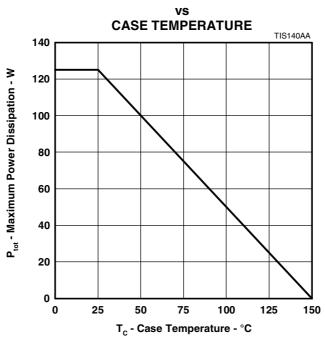


Figure 4.