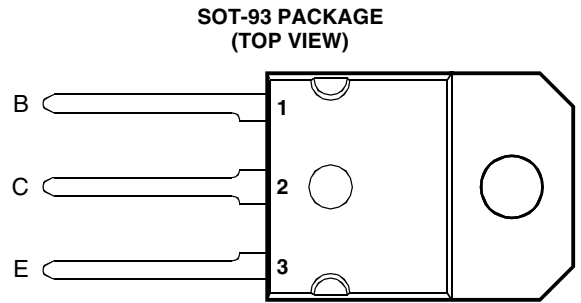


- Rugged Triple-Diffused Planar Construction
- 15 A Continuous Collector Current
- 1000 Volt Blocking Capability



Pin 2 is in electrical contact with the mounting base.

MDTRA4A

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

RATING		SYMBOL	VALUE	UNIT
Collector-emitter voltage ($V_{BE} = 0$ V)	BUV48	V_{CES}	850	V
	BUV48A		1000	
Collector-emitter voltage ($R_{BE} = 10 \Omega$)	BUV48	V_{CER}	850	V
	BUV48A		1000	
Collector-emitter voltage ($I_B = 0$)	BUV48	V_{CEO}	400	V
	BUV48A		450	
Continuous collector current		I_C	15	A
Peak collector current (see Note 1)		I_{CM}	30	A
Continuous base current		I_B	4	A
Peak base current		I_{BM}	20	A
Non repetitive accidental peak surge current		I_{CSM}	55	A
Continuous device dissipation at (or below) 25°C case temperature		P_{tot}	125	W
Operating junction temperature range		T_j	-65 to +150	°C
Storage temperature range		T_{stg}	-65 to +150	°C

NOTE 1: This value applies for $t_p \leq 2$ ms, duty cycle $\leq 2\%$.

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electrical characteristics at 25°C case temperature (unless otherwise noted)

PARAMETER	TEST CONDITIONS				MIN	TYP	MAX	UNIT
$V_{CE(sus)}$ Collector-emitter sustaining voltage	$I_C = 200 \text{ mA}$	$L = 25 \text{ mH}$	(see Note 2)	BUV48 BUV48A	400 450			V
I_{CES} Collector-emitter cut-off current	$V_{CE} = 850 \text{ V}$ $V_{CE} = 1000 \text{ V}$ $V_{CE} = 850 \text{ V}$ $V_{CE} = 1000 \text{ V}$	$V_{BE} = 0$ $V_{BE} = 0$ $V_{BE} = 0$ $V_{BE} = 0$	$T_C = 125^\circ\text{C}$ $T_C = 125^\circ\text{C}$	BUV48 BUV48A BUV48 BUV48A			0.2 0.2 2.0 2.0	mA
I_{CER} Collector-emitter cut-off current	$V_{CE} = 850 \text{ V}$ $V_{CE} = 1000 \text{ V}$ $V_{CE} = 850 \text{ V}$ $V_{CE} = 1000 \text{ V}$	$R_{BE} = 10 \Omega$ $R_{BE} = 10 \Omega$ $R_{BE} = 10 \Omega$ $R_{BE} = 10 \Omega$	$T_C = 125^\circ\text{C}$ $T_C = 125^\circ\text{C}$	BUV48 BUV48A BUV48 BUV48A			0.5 0.5 4.0 4.0	mA
I_{EBO} Emitter cut-off current	$V_{EB} = 5 \text{ V}$	$I_C = 0$					1	mA
V_{EBO} Emitter-base breakdown voltage	$I_E = 50 \text{ mA}$	$I_C = 0$			7		30	V
$V_{CE(sat)}$ Collector-emitter saturation voltage	$I_B = 2 \text{ A}$ $I_B = 3 \text{ A}$ $I_B = 1.6 \text{ A}$ $I_B = 2.4 \text{ A}$	$I_C = 10 \text{ A}$ $I_C = 15 \text{ A}$ $I_C = 8 \text{ A}$ $I_C = 12 \text{ A}$	(see Notes 3 and 4)	BUV48 BUV48 BUV48A BUV48A			1.5 5.0 1.5 5.0	V
$V_{BE(sat)}$ Base-emitter saturation voltage	$I_B = 2 \text{ A}$ $I_B = 1.6 \text{ A}$	$I_C = 10 \text{ A}$ $I_C = 8 \text{ A}$	(see Notes 3 and 4)	BUV48 BUV48A			1.6 1.6	V
f_t Current gain bandwidth product	$V_{CE} = 10 \text{ V}$	$I_C = 0.5 \text{ A}$	$f = 1 \text{ MHz}$			10		MHz
C_{ob} Output capacitance	$V_{CB} = 20 \text{ V}$	$I_C = 0$	$f = 1 \text{ MHz}$			150		pF

NOTES: 2. Inductive loop switching measurement.

3. These parameters must be measured using pulse techniques, $t_p = 300 \mu\text{s}$, duty cycle $\leq 2\%$.

4. 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	$^\circ\text{C/W}$

resistive-load-switching characteristics at 25°C case temperature

PARAMETER	TEST CONDITIONS †			MIN	TYP	MAX	UNIT
t_{on} Turn on time	$I_C = 10 \text{ A}$ $I_{B(on)} = 2 \text{ A}$	$V_{CC} = 150 \text{ V}$ $I_{B(off)} = -2 \text{ A}$	BUV48 (see Figures 1 and 2)			1.0	μs
t_s Storage time						3.0	μs
t_f Fall time						0.8	μs
t_{on} Turn on time	$I_C = 8 \text{ A}$ $I_{B(on)} = 1.6 \text{ A}$	$V_{CC} = 150 \text{ V}$ $I_{B(off)} = -1.6 \text{ A}$	BUV48A (see Figures 1 and 2)			1.0	μs
t_s Storage time						3.0	μs
t_f Fall time						0.8	μs

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

inductive-load-switching characteristics at 100°C case temperature

PARAMETER	TEST CONDITIONS †			MIN	TYP	MAX	UNIT
t_{sv} Voltage storage time	$I_C = 10 \text{ A}$ $V_{BE(off)} = -5 \text{ V}$	$I_{B(on)} = 2 \text{ A}$ (see Figures 3 and 4)	BUV48			4.0	μs
t_{fi} Current fall time						0.4	μs
t_{sv} Voltage storage time	$I_C = 8 \text{ A}$ $V_{BE(off)} = -5 \text{ V}$	$I_{B(on)} = 1.6 \text{ A}$ (see Figures 3 and 4)	BUV48A			4.0	μs
t_{fi} Current fall time						0.4	μs

PRODUCT INFORMATION

PARAMETER MEASUREMENT INFORMATION

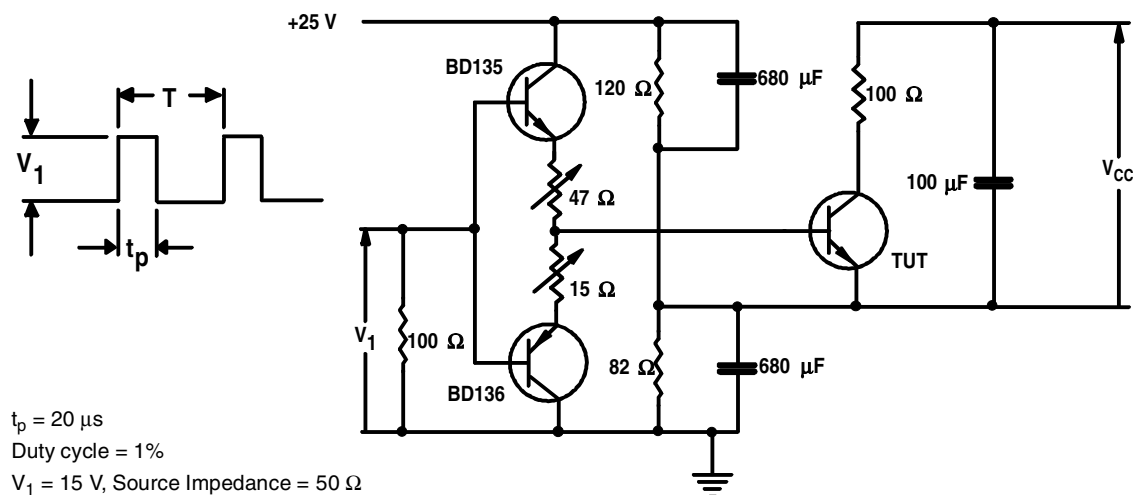


Figure 1. Resistive-Load Switching Test Circuit

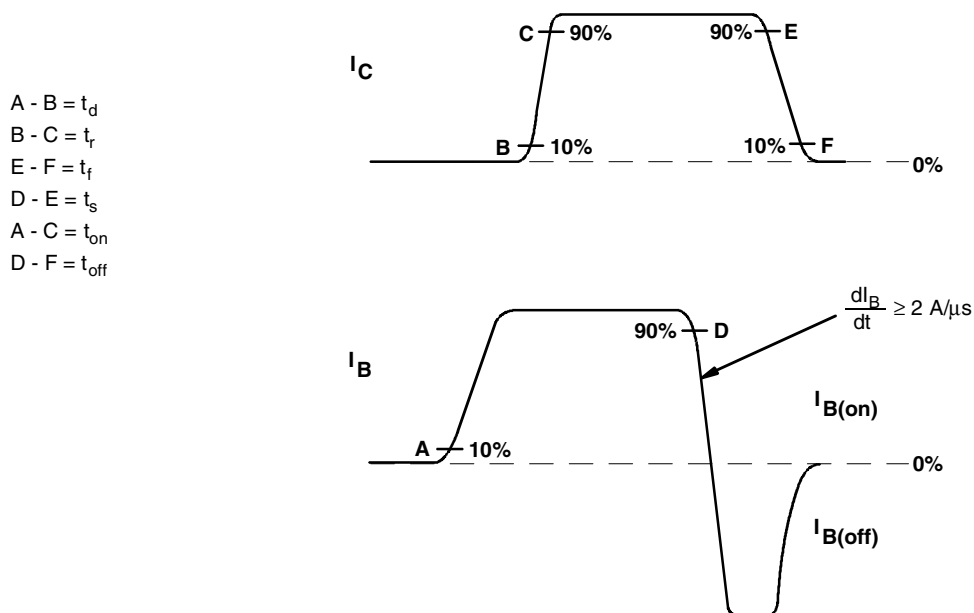


Figure 2. Resistive-Load Switching Waveforms

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PARAMETER MEASUREMENT INFORMATION

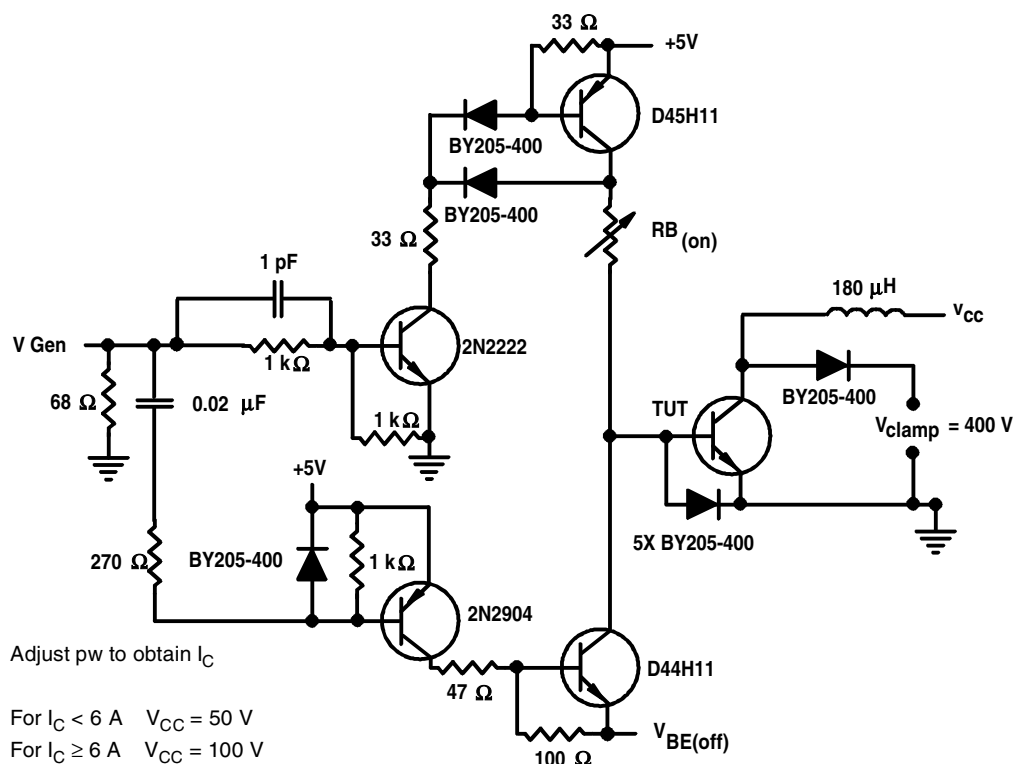
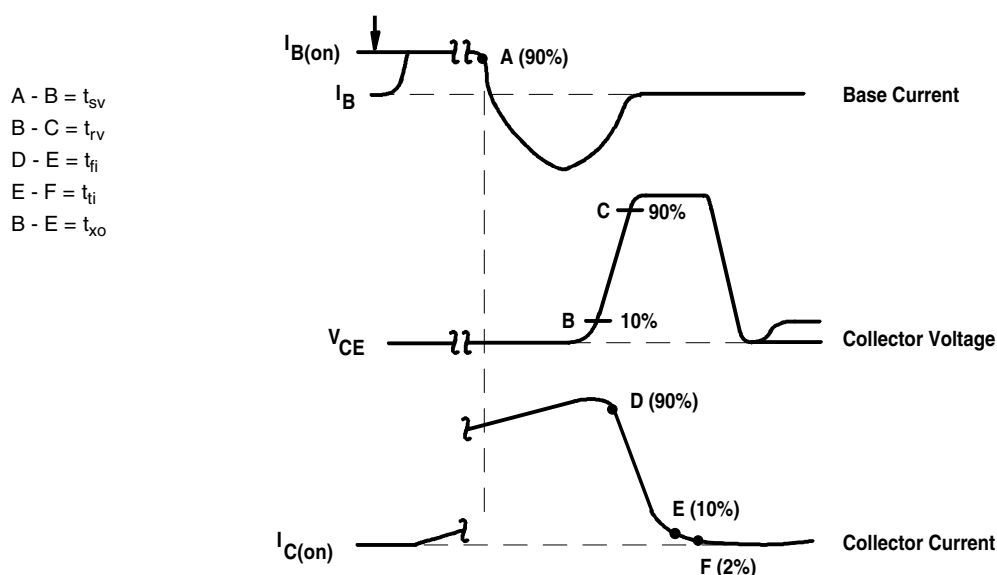


Figure 3. Inductive-Load Switching Test Circuit



NOTES: A. Waveforms are monitored on an oscilloscope with the following characteristics: $t_r < 15 \text{ ns}$, $R_{in} > 10 \Omega$, $C_{in} < 11.5 \text{ pF}$.
B. Resistors must be noninductive types.

Figure 4. Inductive-Load Switching Waveforms

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TYPICAL CHARACTERISTICS

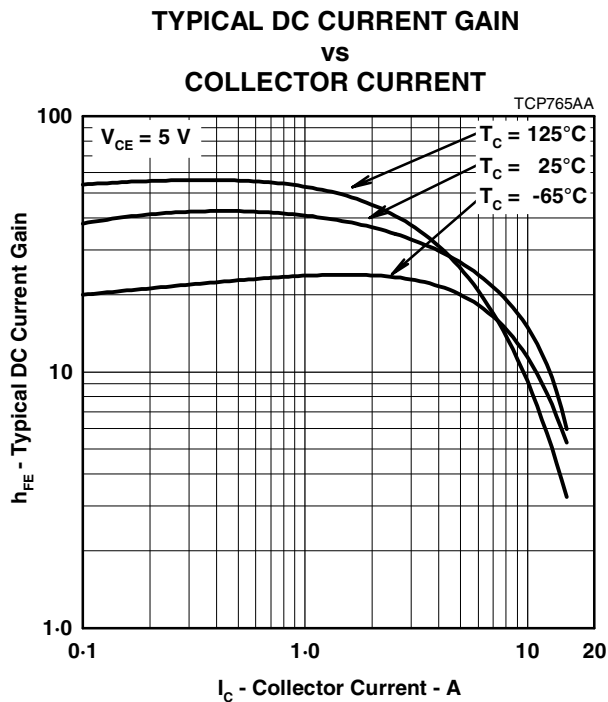


Figure 5.

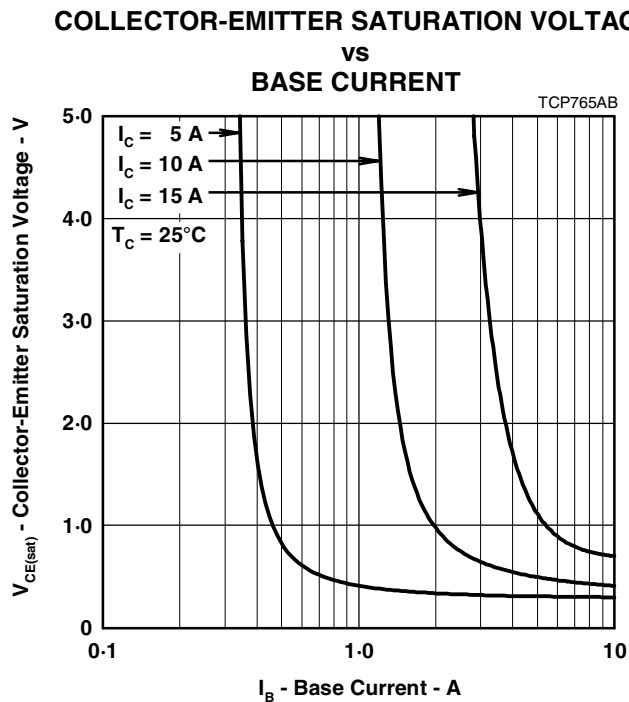


Figure 6.

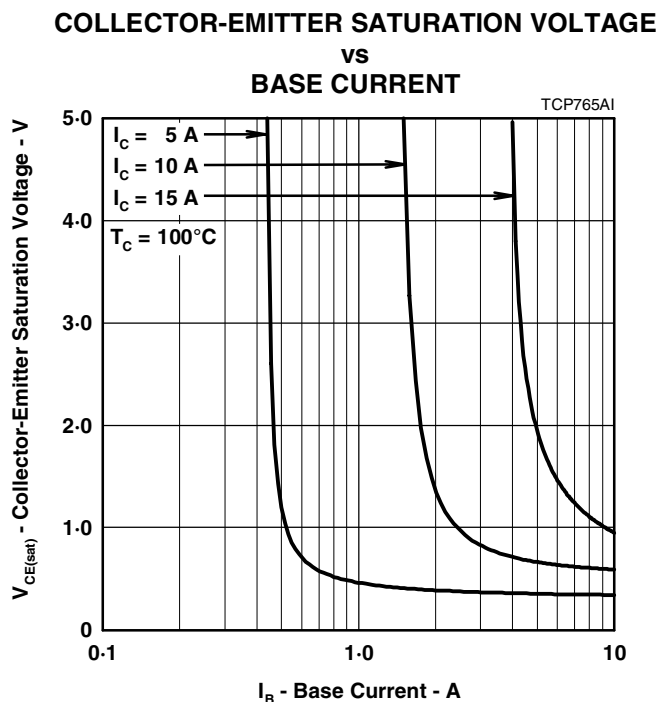


Figure 7.

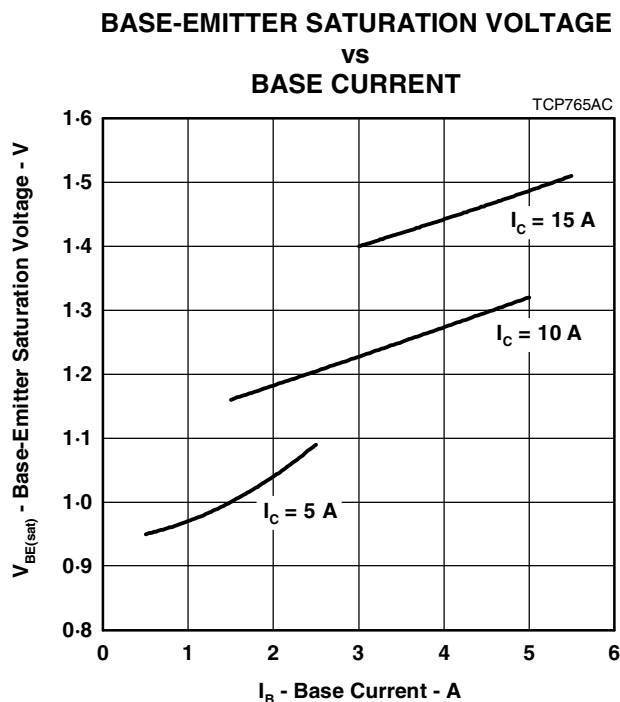


Figure 8.

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TYPICAL CHARACTERISTICS

COLLECTOR CUT-OFF CURRENT VS CASE TEMPERATURE

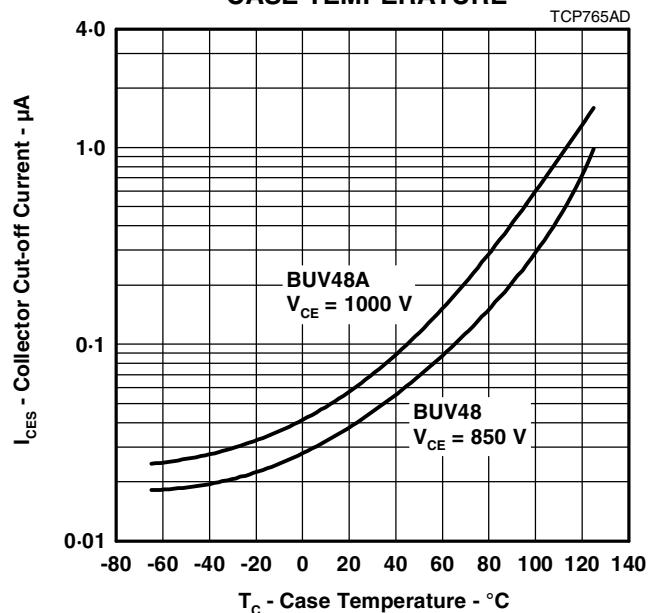


Figure 9.

MAXIMUM SAFE OPERATING REGIONS

MAXIMUM FORWARD-BIAS SAFE OPERATING AREA

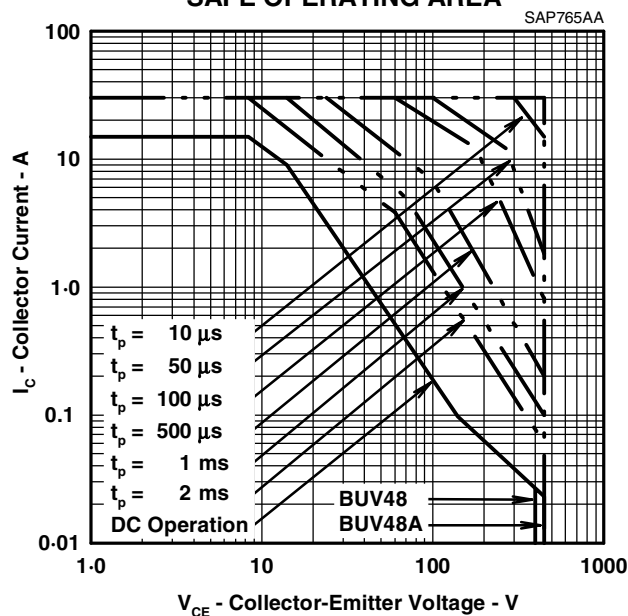


Figure 10.

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