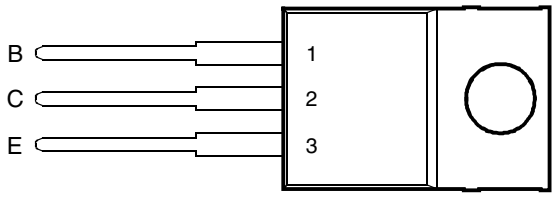
BOURNS®

-
- **40 W at 25°C Case Temperature**
- **2 A Continuous Collector Current**
- **3 A Peak Collector Current**
- **Typical t_f = 200 ns at 25°C**

TO-220 PACKAGE
(TOP VIEW)



Pin 2 is in electrical contact with the mounting base.

MDTRACA

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

RATING	SYMBOL	VALUE	UNIT
Collector-base voltage (I_E = 0)	V_{CBO}	800	V
Collector-emitter voltage (V_{BE} = 0)	V_{CES}	800	V
Collector-emitter voltage (I_B = 0)	V_{CEO}	400	V
Continuous collector current	I_C	2	A
Peak collector current (see Note 1)	I_{CM}	3	A
Continuous device dissipation at (or below) 25°C case temperature	P_{tot}	40	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 $\leq 2\%$.

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

PARAMETER		TEST CONDITIONS			MIN	TYP	MAX	UNIT
$V_{CEO(sus)}$	Collector-emitter sustaining voltage	I_C = 0.1 A	L = 25 mH	(see Note 2)	400			V
I_{CES}	Collector-emitter cut-off current	V_{CE} = 800 V V_{CE} = 800 V	V_{BE} = 0 V_{BE} = 0	 T_C = 125°C			0.2 1	mA
I_{EBO}	Emitter cut-off current	V_{EB} = 5 V	I_C = 0				1	mA
h_{FE}	Forward current transfer ratio	V_{CE} = 5 V	I_C = 0.1 A	(see Notes 3 and 4)		35		
$V_{CE(sat)}$	Collector-emitter saturation voltage	I_B = 0.03 A I_B = 0.2 A	I_C = 0.3 A I_C = 1 A	(see Notes 3 and 4)			0.8 1	V
$V_{BE(sat)}$	Base-emitter saturation voltage	I_B = 0.2 A	I_C = 1 A	(see Notes 3 and 4)			1.1	V
f_t	Current gain bandwidth product	V_{CE} = 10 V	I_C = 0.2 A			12		MHz
C_{ob}	Output capacitance	V_{CB} = 20 V	I_E = 0	f = 0.1 MHz		60		pF

NOTES: 2. Inductive loop switching measurement.
3. These parameters must be measured using pulse techniques, t_p = 300 µs, duty cycle ≤ 2%.
4. These parameters must be measured using voltage-sensing contacts, separate from the current carrying contacts.
5. To obtain f_t the [h_{FE}] response is extrapolated at the rate of -6 dB per octave from f = 1 MHz to the frequency at which [h_{FE}] = 1.

thermal characteristics

PARAMETER		MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction to case thermal resistance			2.5	°C/W

resistive-load-switching characteristics at 25°C case temperature (unless otherwise noted)

PARAMETER		TEST CONDITIONS †			MIN	TYP	MAX	UNIT
t_{on}	Turn on time	I_C = 1 A V_{CC} = 250 V	$I_{B(on)}$ = 0.2 A (see Figures 1 and 2)	$I_{B(off)}$ = -0.4 A		0.25	0.5	µs
t_s	Storage time					1.8		µs
t_f	Fall time					0.2		µs
t_f	Fall time	I_C = 1 A V_{CC} = 250 V	$I_{B(on)}$ = 0.2 A T_C = 95°C	$I_{B(off)}$ = -0.4 A			0.4	µs

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

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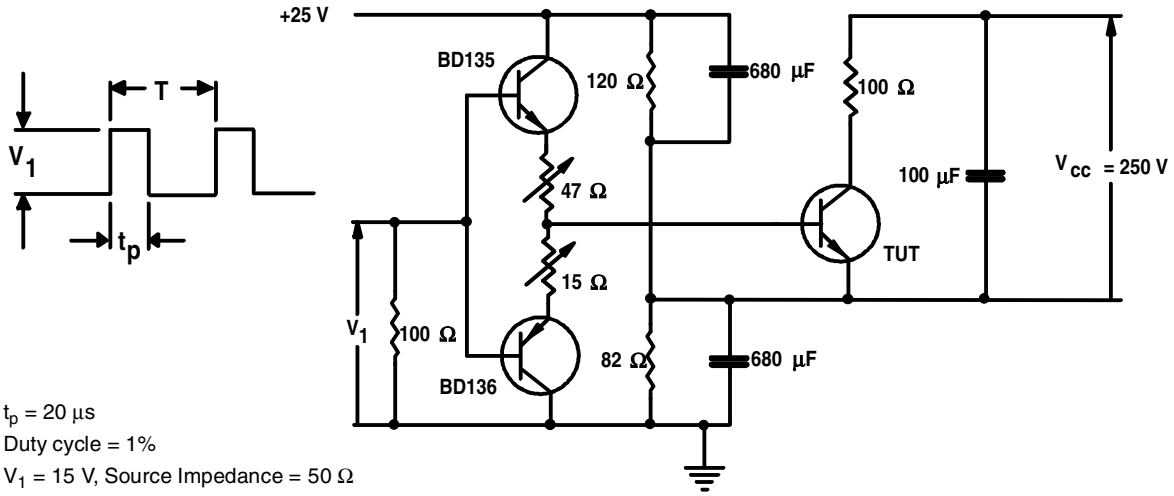
PARAMETER MEASUREMENT INFORMATION



t_p = 20 µs
Duty cycle = 1%
V_1 = 15 V, Source Impedance = 50 Ω

Figure 1. Resistive-Load Switching Test Circuit

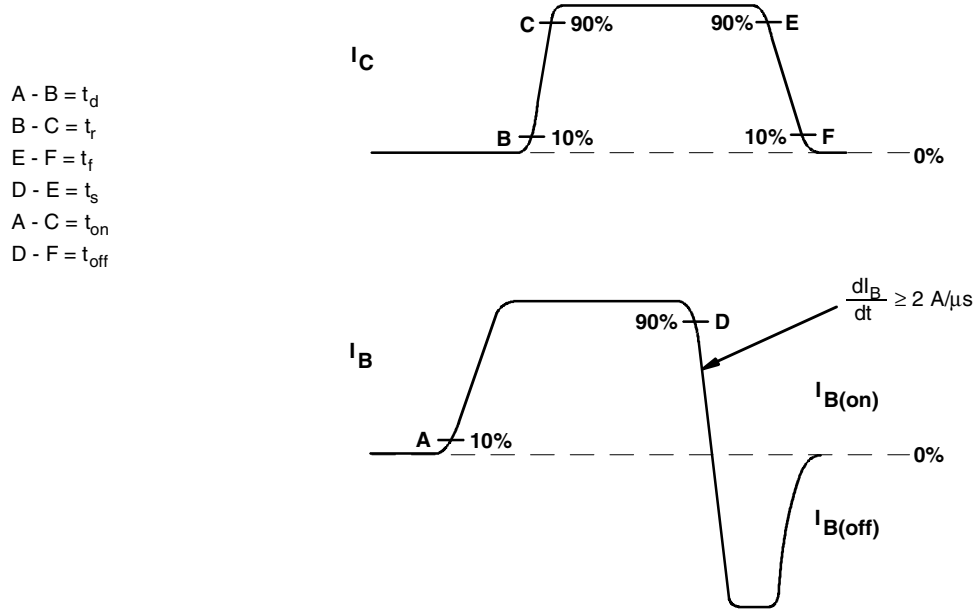


Figure 2. Resistive-Load Switching Waveforms

TYPICAL CHARACTERISTICS

TYPICAL DC CURRENT GAIN vs COLLECTOR CURRENT

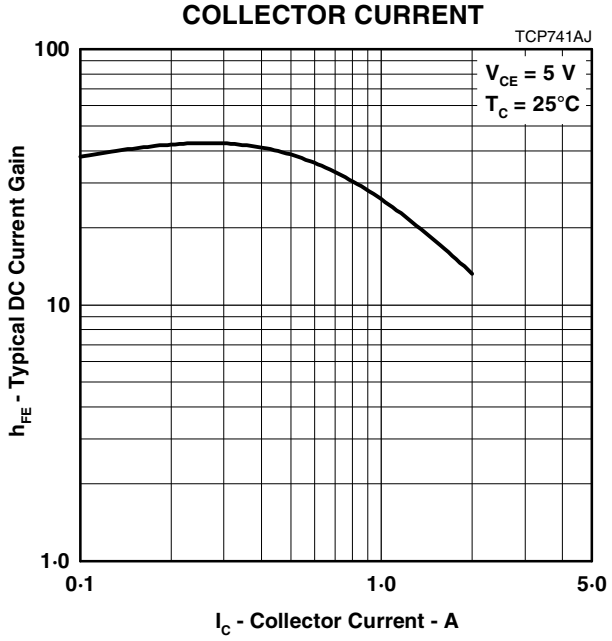


Figure 3.

COLLECTOR CUT-OFF CURRENT vs CASE TEMPERATURE

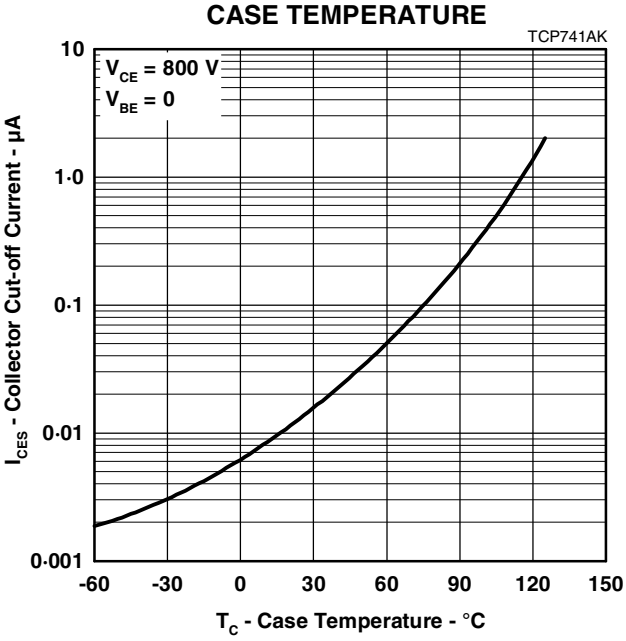


Figure 4.

MAXIMUM SAFE OPERATING REGIONS

MAXIMUM FORWARD-BIAS SAFE OPERATING AREA

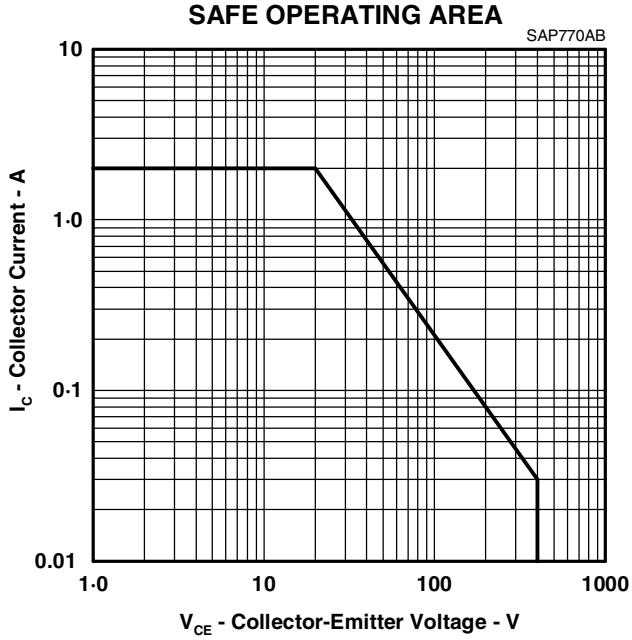


Figure 5.

THERMAL INFORMATION

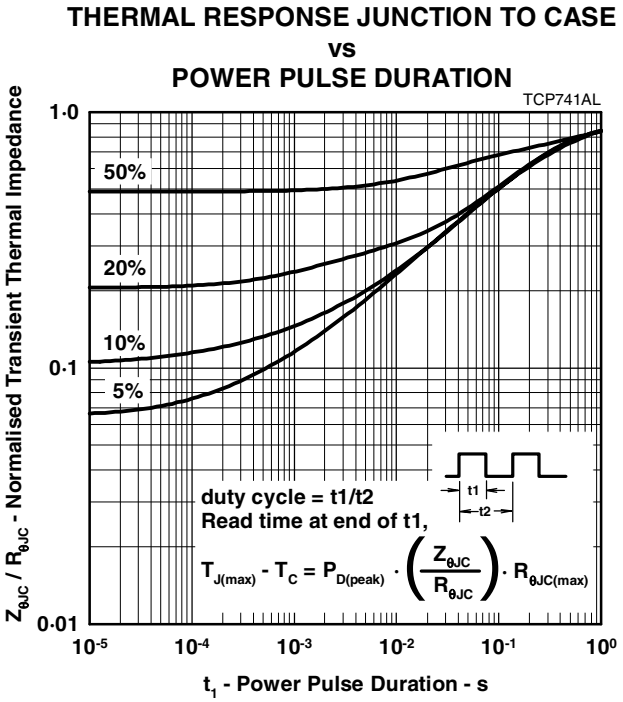


Figure 6.