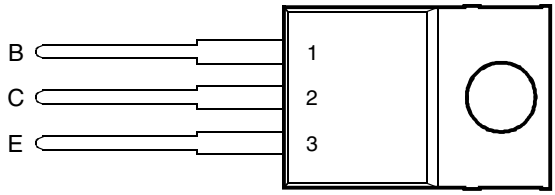
BOURNS®

- **Rugged Triple-Diffused Planar Construction**
- **100 W at 25°C Case Temperature**
- **5 A Continuous Collector Current**

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}	850	V
Collector-emitter voltage (V_{BE} = 0)	V_{CES}	850	V
Collector-emitter voltage (I_B = 0)	V_{CEO}	400	V
Emitter-base voltage	V_{EBO}	10	V
Continuous collector current	I_C	5	A
Peak collector current (see Note 1)	I_{CM}	10	A
Continuous device dissipation at (or below) 25°C case temperature	P_{tot}	100	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 $t_p \leq 10$ 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} = 850 V V_{CE} = 850 V	V_{BE} = 0 V_{BE} = 0	 T_C = 125°C			50 500	µA
I_{EBO}	Emitter cut-off current	V_{EB} = 10 V	I_C = 0				1	mA
h_{FE}	Forward current transfer ratio	V_{CE} = 5 V	I_C = 0.5 A	(see Notes 3 and 4)	20		60	
$V_{CE(sat)}$	Collector-emitter saturation voltage	I_B = 0.6 A	I_C = 3 A	(see Notes 3 and 4)			1.5	V
$V_{BE(sat)}$	Base-emitter saturation voltage	I_B = 0.6 A	I_C = 3 A	(see Notes 3 and 4)			1.3	V
f_t	Current gain bandwidth product	V_{CE} = 10 V	I_C = 0.5 A	f = 1 MHz		12		MHz
C_{ob}	Output capacitance	V_{CB} = 20 V	I_E = 0	f = 0.1 MHz		110		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.

thermal characteristics

PARAMETER		MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction to case thermal resistance			1.25	°C/W

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

PARAMETER		TEST CONDITIONS †			MIN	TYP	MAX	UNIT
t_{sv}	Voltage storage time	I_C = 3 A	$I_{B(on)}$ = 0.6A	$V_{BE(off)}$ = -5 V			1.4	µs
t_{fi}	Current fall time	V_{CC} = 50 V	(see Figures 1 and 2)				150	ns
t_{sv}	Voltage storage time	I_C = 3 A	$I_{B(on)}$ = 0.6A	$V_{BE(off)}$ = -5 V			1.5	µs
t_{fi}	Current fall time	V_{CC} = 50 V	T_C = 100°C				300	ns

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

PARAMETER MEASUREMENT INFORMATION

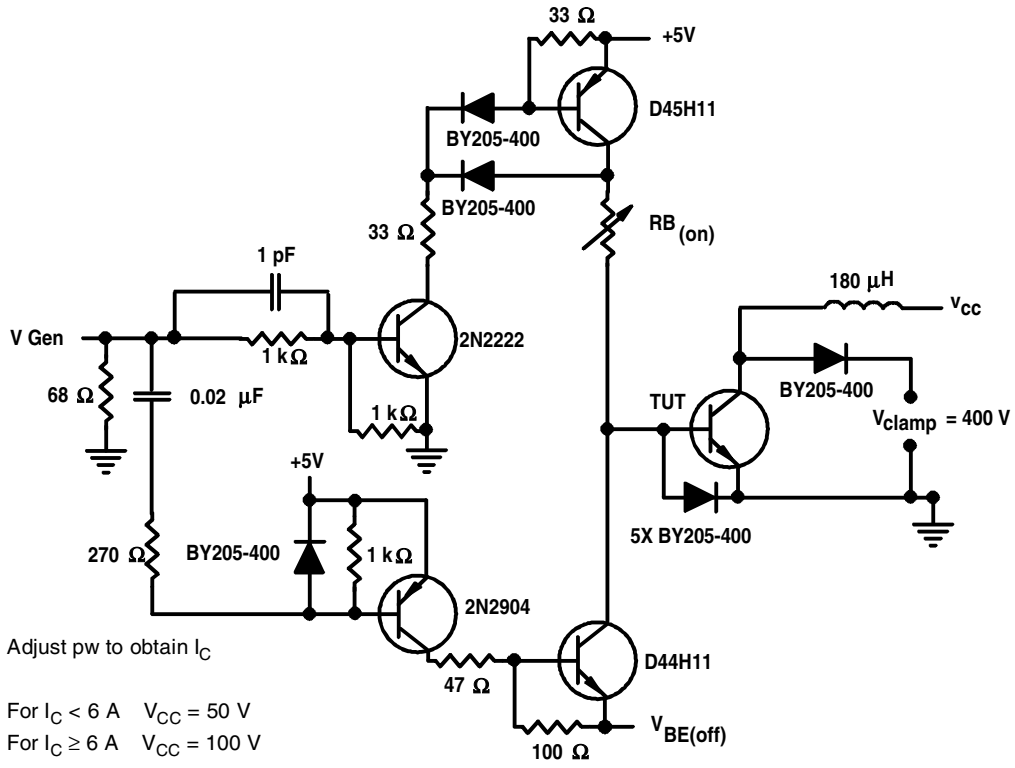
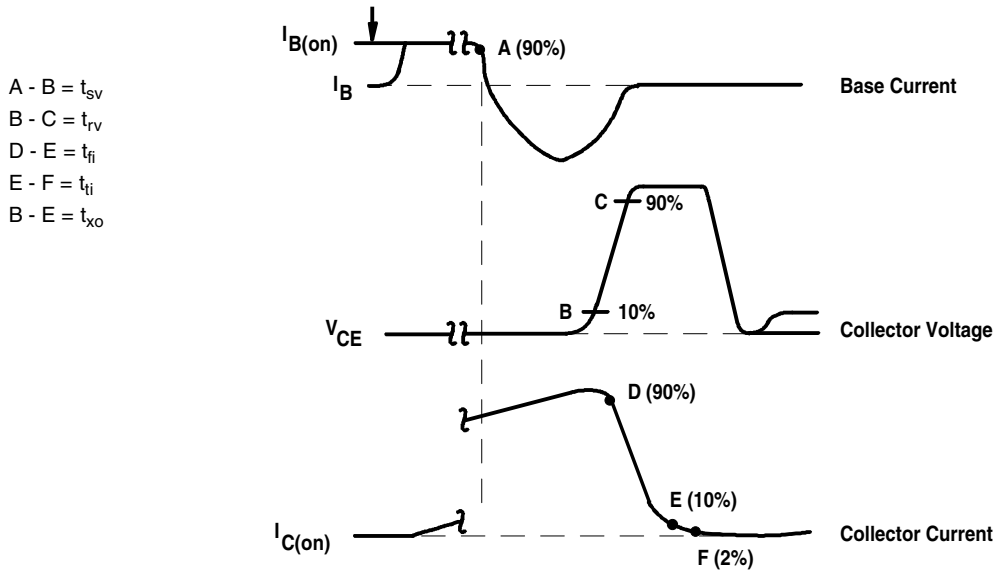


Figure 1. Inductive-Load Switching Test Circuit



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

Figure 2. Inductive-Load Switching Waveforms

MAXIMUM SAFE OPERATING REGIONS

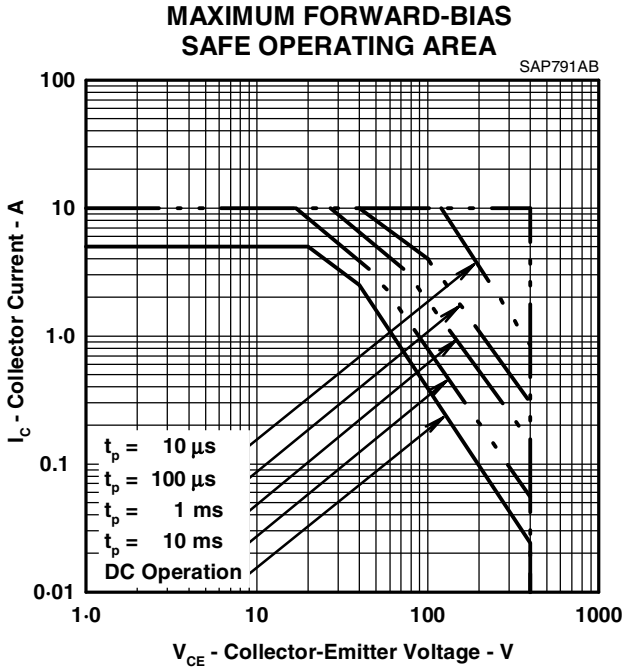


Figure 3.