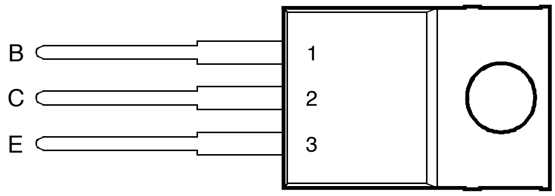
- Rugged Triple-Diffused Planar Construction
- 2.5 A Continuous Collector Current
- Operating Characteristics Fully Guaranteed at 100°C
- 850 Volt Blocking Capability
- 50 W at 25°C Case Temperature

This series is obsolete and not recommended for new designs.

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	2.5	A
Peak collector current (see Note 1)	I_{CM}	8	A
Continuous device dissipation at (or below) 25°C case temperature	P_{tot}	50	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 ≤ 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 = 100 mA, L = 25 mH (see Note 2)	400			V
I_{CES}	Collector-emitter cut-off current	V_{CE} = 850 V, V_{BE} = 0 V_{CE} = 850 V, V_{BE} = 0, T_C = 100°C			5 200	µA
I_{CEO}	Collector cut-off current	V_{CE} = 400 V, I_B = 0			5	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 = 0.2 A, I_C = 1 A (see Notes 3 and 4) I_B = 0.5 A, I_C = 2.5 A I_B = 0.5 A, I_C = 2.5 A, T_C = 100°C			1.0 2.5 5.0	V
$V_{BE(sat)}$	Base-emitter saturation voltage	I_B = 0.2 A, I_C = 1 A (see Notes 3 and 4) I_B = 0.5 A, I_C = 2.5 A I_B = 0.5 A, I_C = 2.5 A, T_C = 100°C			1.0 1.2 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		55		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			2.5	°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 = 2.5 A, $V_{BE(off)}$ = -5 V, $I_{B(on)}$ = 0.5 A (see Figures 1 and 2)			2	µs
t_{rv}	Voltage rise time				200	ns
t_{fi}	Current fall time				200	ns
t_{ti}	Current tail time				50	ns
t_{xo}	Cross over time				300	ns
t_{sv}	Voltage storage time	I_C = 2.5 A, $V_{BE(off)}$ = -5 V, $I_{B(on)}$ = 0.5 A, T_C = 100°C (see Figures 1 and 2)			2.5	µs
t_{rv}	Voltage rise time				400	ns
t_{fi}	Current fall time				250	ns
t_{ti}	Current tail time				50	ns
t_{xo}	Cross over time				500	ns

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

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PARAMETER MEASUREMENT INFORMATION

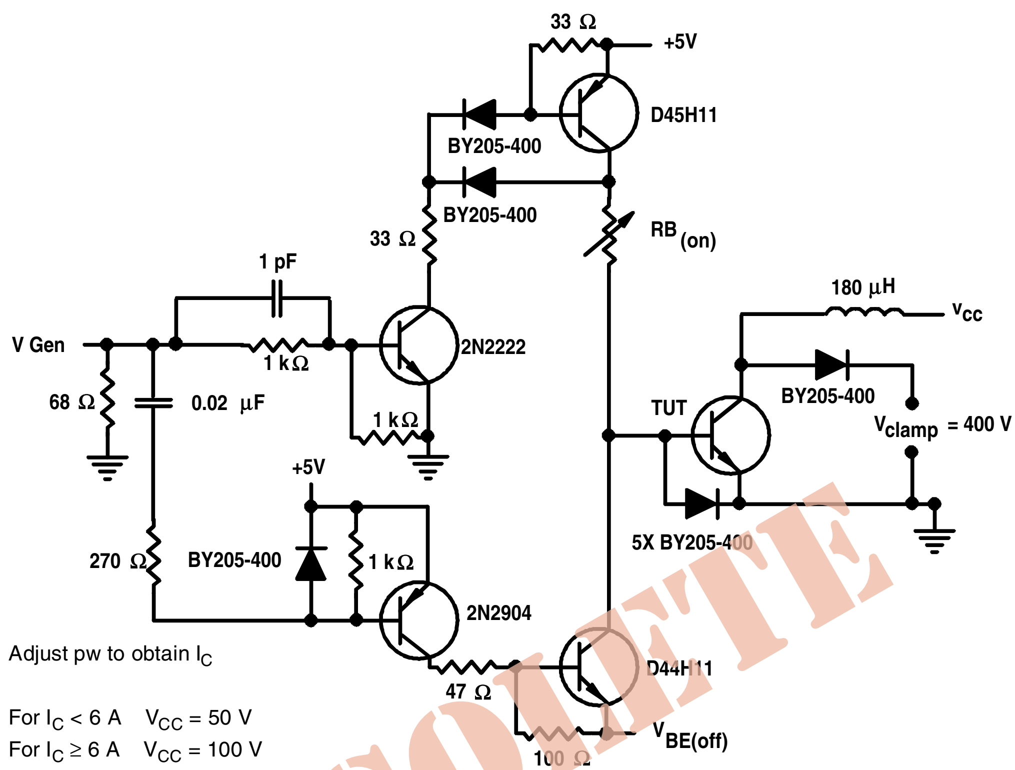
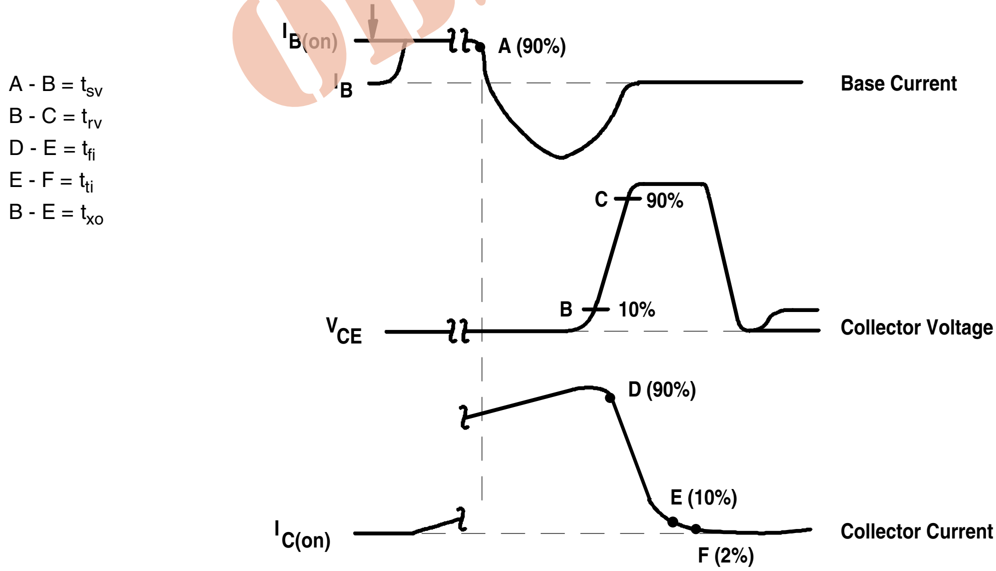


Figure 1. Inductive-Load Switching Test Circuit



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

TYPICAL CHARACTERISTICS

TYPICAL DC CURRENT GAIN vs COLLECTOR CURRENT

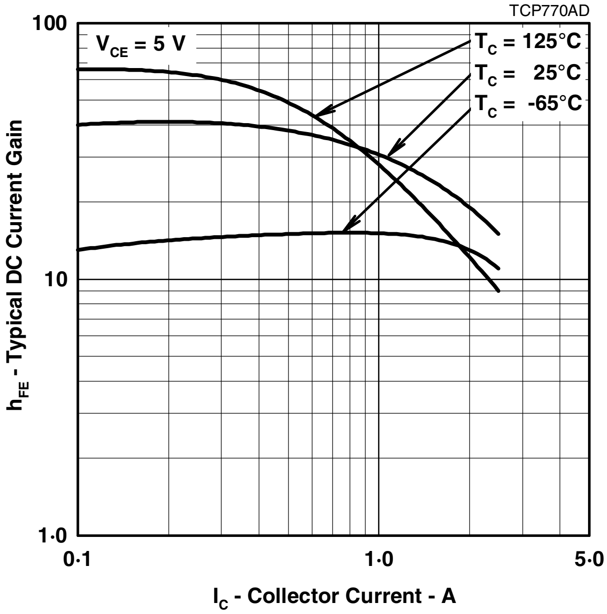


Figure 3.

COLLECTOR-EMITTER SATURATION VOLTAGE vs BASE CURRENT

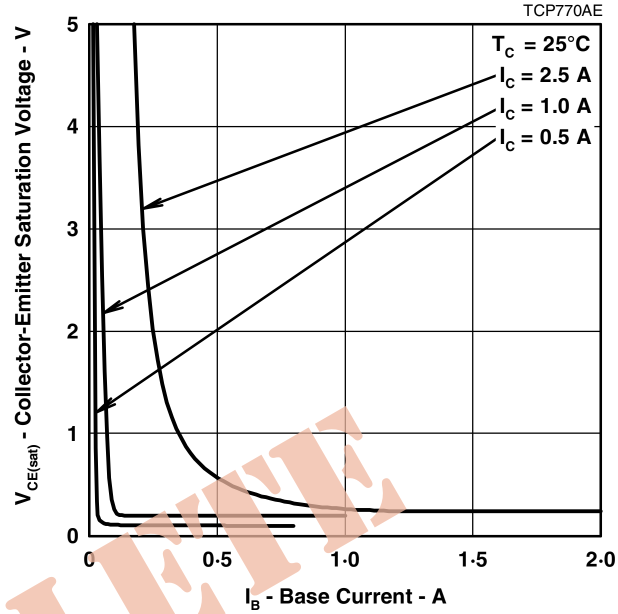


Figure 4.

COLLECTOR-EMITTER SATURATION VOLTAGE vs BASE CURRENT

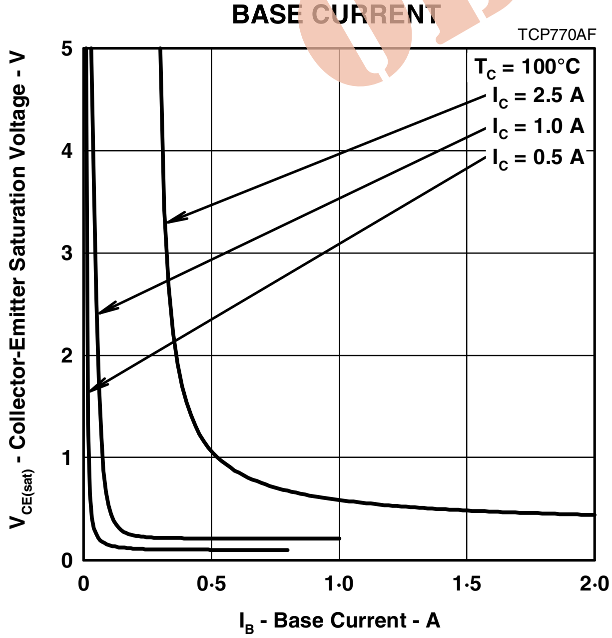


Figure 5.

BASE-EMITTER SATURATION VOLTAGE vs BASE CURRENT

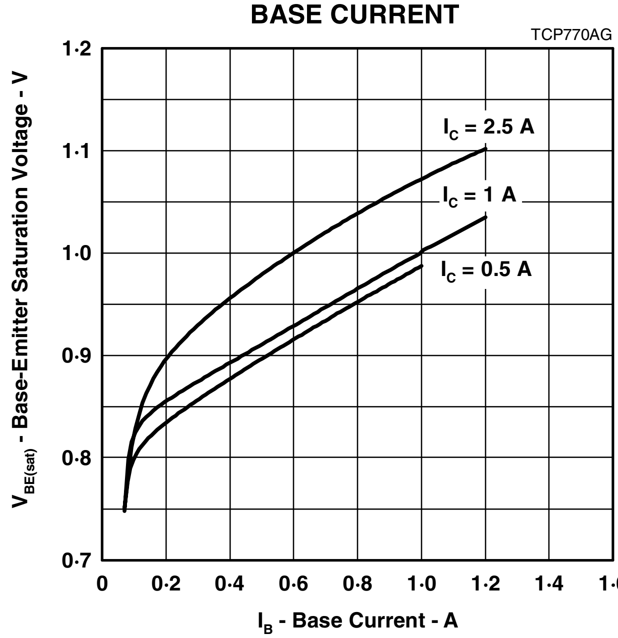


Figure 6.

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MAXIMUM SAFE OPERATING REGIONS

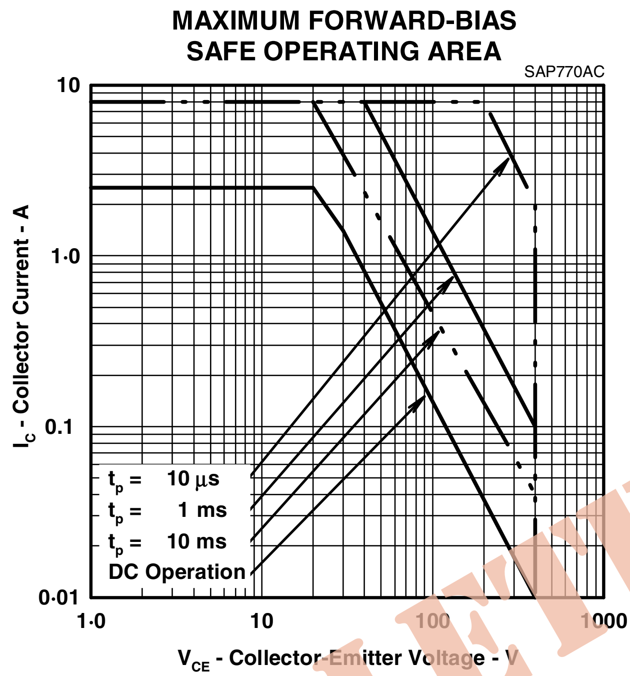

Figure 7.