

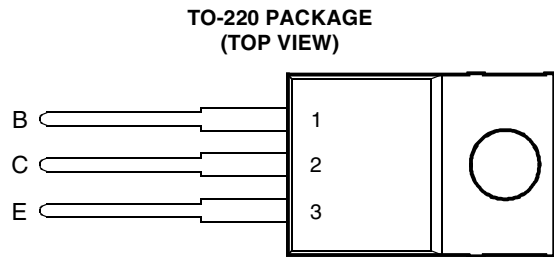


THE DATASHEET OF TIPL760C-S





- Rugged Triple-Diffused Planar Construction
- 4 A Continuous Collector Current
- Operating Characteristics Fully Guaranteed at 100°C
- 1200 Volt Blocking Capability
- 75 W at 25°C Case Temperature



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 ($I_E = 0$)	TIPL760B	V_{CBO}	1100	V
	TIPL760C		1200	
Collector-emitter voltage ($V_{BE} = 0$)	TIPL760B	V_{CES}	1100	V
	TIPL760C		1200	
Collector-emitter voltage ($I_B = 0$)	TIPL760B	V_{CEO}	500	V
	TIPL760C		550	
Emitter-base voltage		V_{EBO}	10	V
Continuous collector current		I_C	4	A
Peak collector current (see Note 1)		I_{CM}	8	A
Continuous device dissipation at (or below) 25°C case temperature		P_{tot}	75	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 $\leq 2\%$.

PRODUCT INFORMATION

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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	$I_C = 10\text{ mA}$ $L = 25\text{ mH}$ (see Note 2) TIPL760B TIPL760C	500 550			V
I_{CES} Collector-emitter cut-off current	$V_{CE} = 1100\text{ V}$ $V_{BE} = 0$ $V_{CE} = 1200\text{ V}$ $V_{BE} = 0$ $V_{CE} = 1100\text{ V}$ $V_{BE} = 0$ $T_C = 100^\circ\text{C}$ $V_{CE} = 1200\text{ V}$ $V_{BE} = 0$ $T_C = 100^\circ\text{C}$			50 50 200 200	μA
I_{CEO} Collector cut-off current	$V_{CE} = 500\text{ V}$ $I_B = 0$ $V_{CE} = 550\text{ V}$ $I_B = 0$			50 50	μA
I_{EBO} Emitter cut-off current	$V_{EB} = 10\text{ V}$ $I_C = 0$			1	mA
h_{FE} Forward current transfer ratio	$V_{CE} = 5\text{ V}$ $I_C = 0.5\text{ A}$ (see Notes 3 and 4)	20		60	
$V_{CE(sat)}$ Collector-emitter saturation voltage	$I_B = 0.4\text{ A}$ $I_C = 2\text{ A}$ $I_B = 0.6\text{ A}$ $I_C = 3\text{ A}$ (see Notes 3 and 4) $I_B = 0.6\text{ A}$ $I_C = 3\text{ A}$ $T_C = 100^\circ\text{C}$			1.0 2.5 5.0	V
$V_{BE(sat)}$ Base-emitter saturation voltage	$I_B = 0.4\text{ A}$ $I_C = 2\text{ A}$ $I_B = 0.6\text{ A}$ $I_C = 3\text{ A}$ (see Notes 3 and 4) $I_B = 0.6\text{ A}$ $I_C = 3\text{ A}$ $T_C = 100^\circ\text{C}$			1.2 1.4 1.3	V
f_t Current gain bandwidth product	$V_{CE} = 10\text{ V}$ $I_C = 0.5\text{ A}$ $f = 1\text{ MHz}$		12		MHz
C_{ob} Output capacitance	$V_{CB} = 20\text{ V}$ $I_E = 0$ $f = 0.1\text{ MHz}$		110		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			1.56	$^\circ\text{C/W}$

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

PARAMETER	TEST CONDITIONS †	MIN	TYP	MAX	UNIT
t_{sv} Voltage storage time	$I_C = 3\text{ A}$ $V_{BE(off)} = -5\text{ V}$ $I_{B(on)} = 0.6\text{ A}$ (see Figures 1 and 2)			2.5	μs
t_{rv} Voltage rise time				300	ns
t_{fi} Current fall time				250	ns
t_{ti} Current tail time				150	ns
t_{xo} Cross over time				400	ns
t_{sv} Voltage storage time	$I_C = 3\text{ A}$ $V_{BE(off)} = -5\text{ V}$ $I_{B(on)} = 0.6\text{ A}$ $T_C = 100^\circ\text{C}$ (see Figures 1 and 2)			3	μs
t_{rv} Voltage rise time				500	ns
t_{fi} Current fall time				250	ns
t_{ti} Current tail time				150	ns
t_{xo} Cross over time				750	ns

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

PARAMETER MEASUREMENT INFORMATION

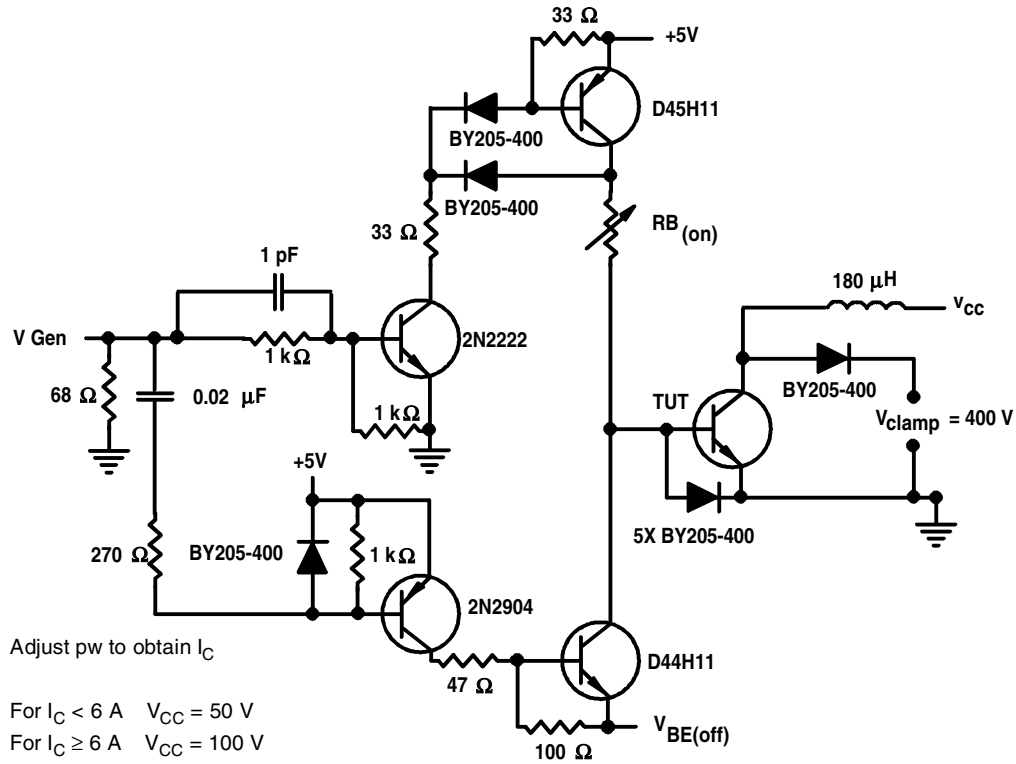
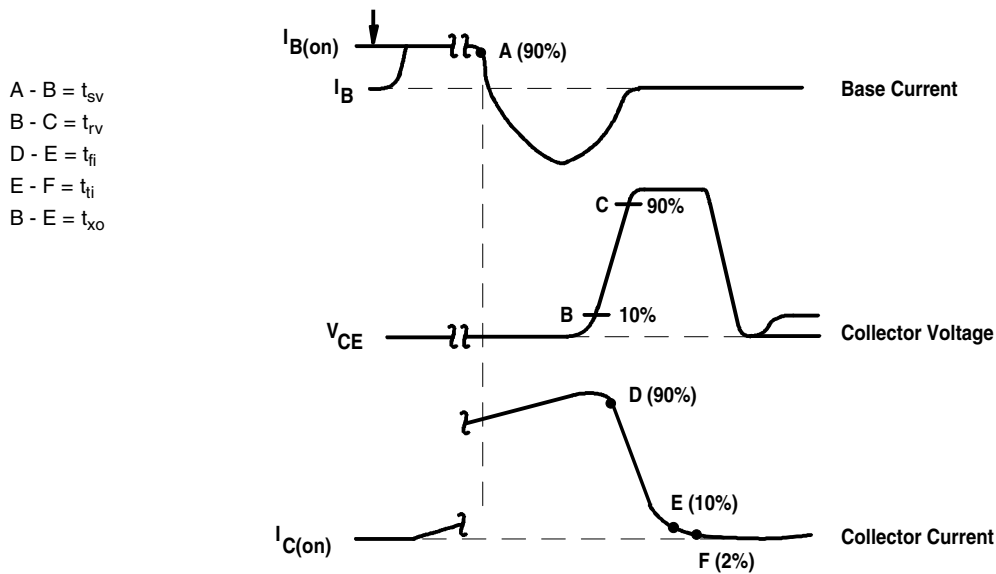


Figure 1. Inductive-Load Switching Test Circuit



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

Figure 2. Inductive-Load Switching Waveforms

PRODUCT INFORMATION

TYPICAL CHARACTERISTICS

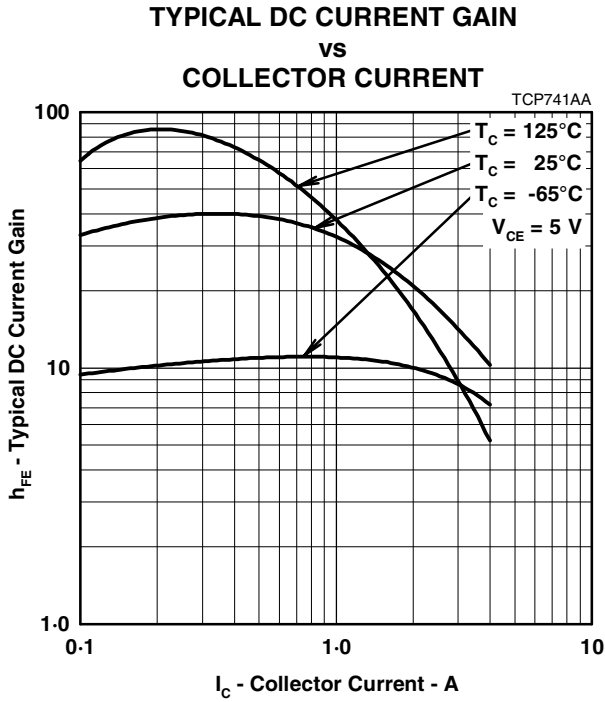


Figure 3.

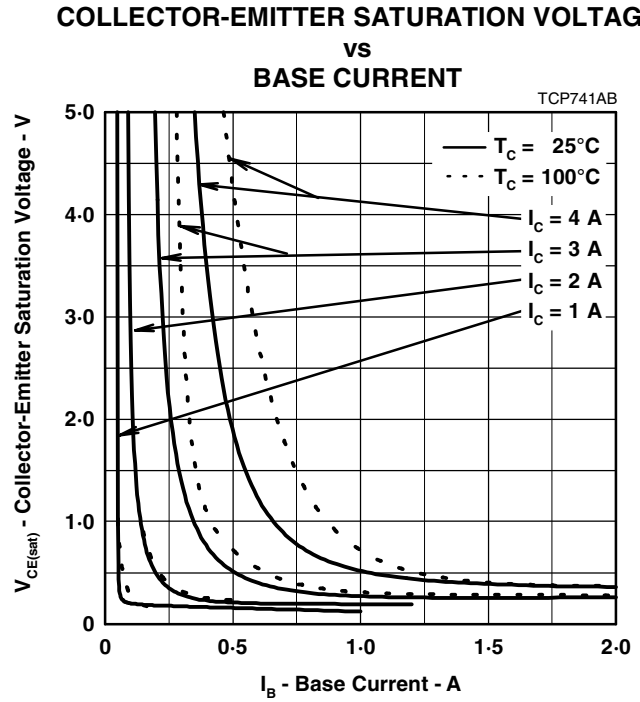


Figure 4.

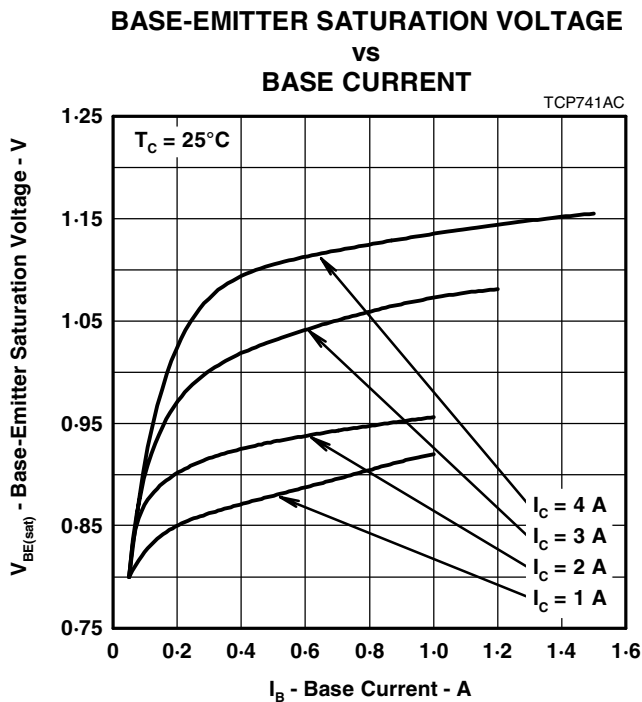


Figure 5.

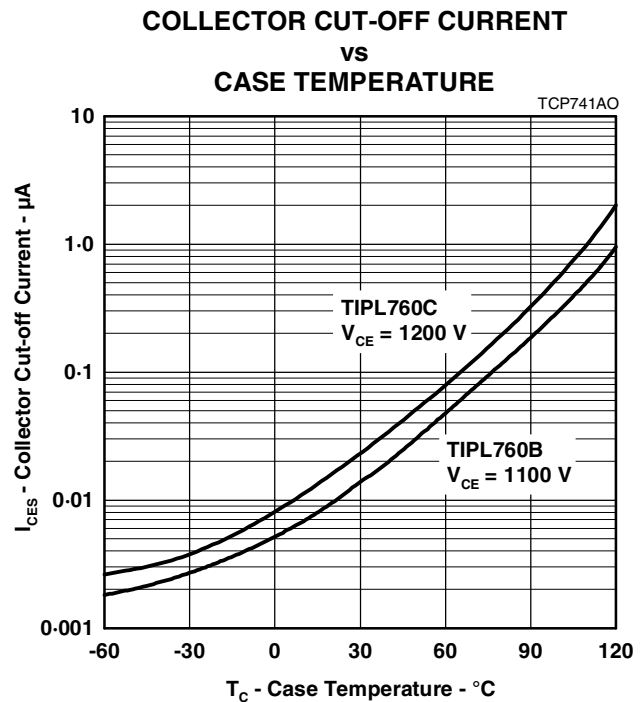


Figure 6.

PRODUCT INFORMATION

MAXIMUM SAFE OPERATING REGIONS

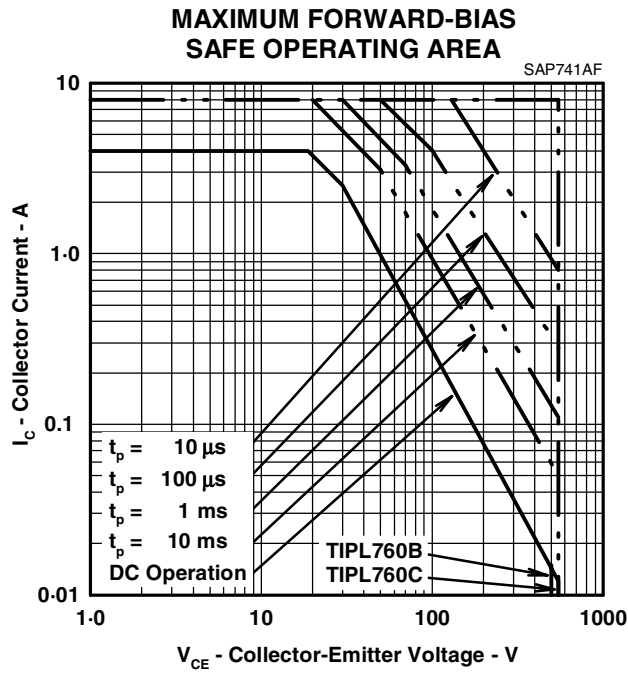


Figure 7.

THERMAL INFORMATION

**THERMAL RESPONSE JUNCTION TO CASE
VS
POWER PULSE DURATION**

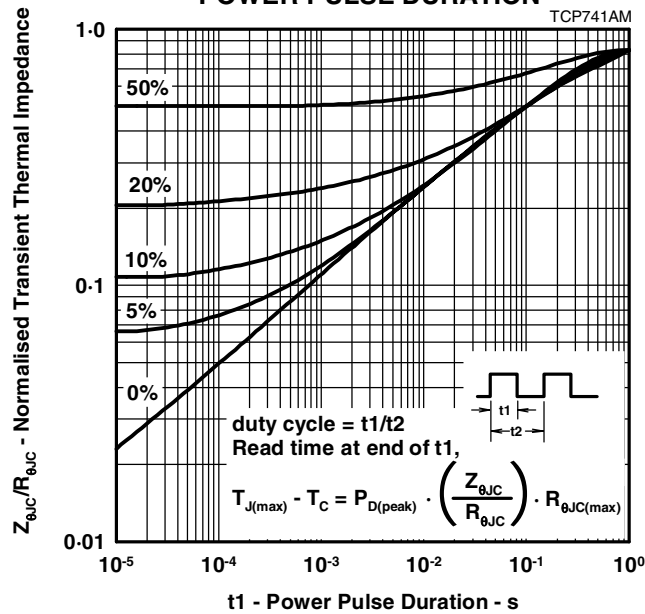


Figure 8.

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