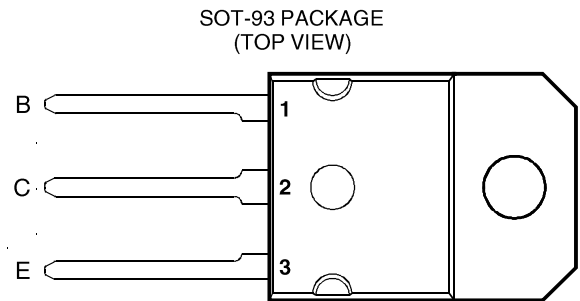


- Rugged Triple-Diffused Planar Construction
- 10 A Continuous Collector Current
- Operating Characteristics Fully Guaranteed at 100°C
- 1000 Volt Blocking Capability
- 125 W at 25°C Case Temperature



Pin 2 is in electrical contact with the mounting base.

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

RATING		SYMBOL	VALUE	UNIT
Collector-base voltage ($I_E = 0$)	TIPL765	V_{CBO}	850	V
	TIPL765A		1000	
Collector-emitter voltage ($V_{BE} = 0$)	TIPL765	V_{CES}	850	V
	TIPL765A		1000	
Collector-emitter voltage ($I_B = 0$)	TIPL765	V_{CEO}	400	V
	TIPL765A		450	
Emitter-base voltage		V_{EBO}	10	V
Continuous collector current		I_C	10	A
Peak collector current (see Note 1)		I_{CM}	15	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 $t_p \leq 10$ ms, duty cycle $\leq 2\%$.

TIPL765, TIPL765A

NPN SILICON POWER TRANSISTORS

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

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
$V_{CEO(sus)}$ Collector-emitter sustaining voltage	$I_C = 100 \text{ mA}$ $L = 25 \text{ mH}$ (see Note 2) TIPL765 TIPL765A	400 450			V
I_{CES} Collector-emitter cut-off current	$V_{CE} = 850 \text{ V}$ $V_{BE} = 0$ $V_{CE} = 1000 \text{ V}$ $V_{BE} = 0$ $V_{CE} = 850 \text{ V}$ $V_{BE} = 0$ $T_C = 100^\circ\text{C}$ $V_{CE} = 1000 \text{ V}$ $V_{BE} = 0$ $T_C = 100^\circ\text{C}$			50 50 200 200	μA
I_{CEO} Collector cut-off current	$V_{CE} = 400 \text{ V}$ $I_B = 0$ $V_{CE} = 450 \text{ V}$ $I_B = 0$			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)	15		60	
$V_{CE(sat)}$ Collector-emitter saturation voltage	$I_B = 0.4 \text{ A}$ $I_C = 2 \text{ A}$ $I_B = 1 \text{ A}$ $I_C = 5 \text{ A}$ $I_B = 2 \text{ A}$ $I_C = 10 \text{ A}$ $I_B = 2 \text{ A}$ $I_C = 10 \text{ A}$ $T_C = 100^\circ\text{C}$			0.5 1.0 2.5 5.0	V
$V_{BE(sat)}$ Base-emitter saturation voltage	$I_B = 0.4 \text{ A}$ $I_C = 2 \text{ A}$ $I_B = 1 \text{ A}$ $I_C = 5 \text{ A}$ $I_B = 2 \text{ A}$ $I_C = 10 \text{ A}$ $I_B = 2 \text{ A}$ $I_C = 10 \text{ A}$ $T_C = 100^\circ\text{C}$			1.1 1.3 1.7 1.6	V
f_t Current gain bandwidth product	$V_{CE} = 10 \text{ V}$ $I_C = 0.5 \text{ A}$ $f = 1 \text{ MHz}$		8		MHz
C_{ob} Output capacitance	$V_{CB} = 20 \text{ V}$ $I_E = 0$ $f = 0.1 \text{ MHz}$		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.

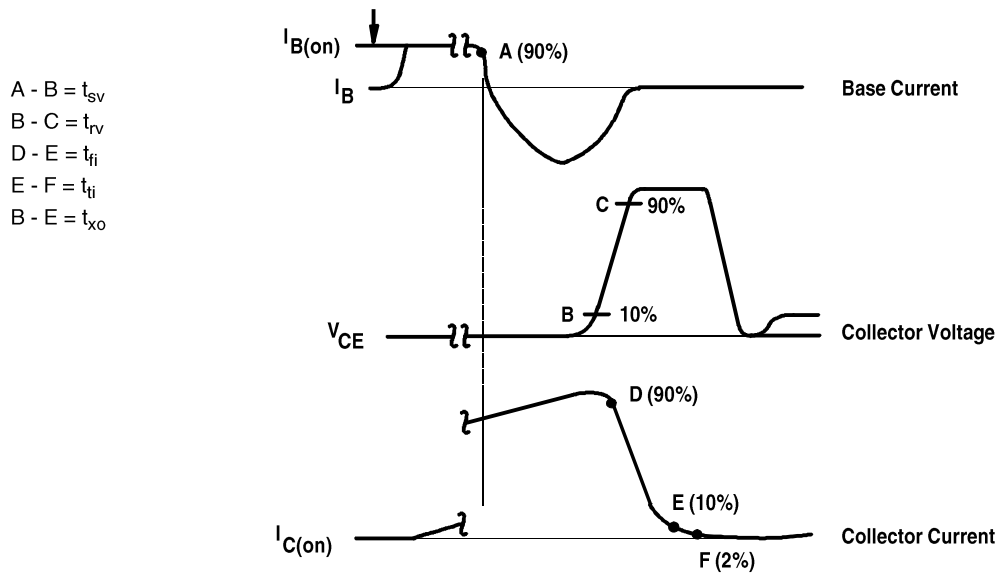
thermal characteristics

PARAMETER	MIN	TYP	MAX	UNIT
$R_{\theta JC}$ Junction to case thermal resistance			1	$^\circ\text{C}/\text{W}$

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

PARAMETER	TEST CONDITIONS †	MIN	TYP	MAX	UNIT
t_{sv} Voltage storage time	$I_C = 10 \text{ A}$ $I_{B(on)} = 2 \text{ A}$ (see Figures 1 and 2) $V_{BE(off)} = -5 \text{ V}$			2	μs
t_{rv} Voltage rise time				300	ns
t_{fi} Current fall time				200	ns
t_{ti} Current tail time				50	ns
t_{xo} Cross over time				400	ns
t_{sv} Voltage storage time	$I_C = 10 \text{ A}$ $I_{B(on)} = 2 \text{ A}$ (see Figures 1 and 2) $V_{BE(off)} = -5 \text{ V}$ $T_C = 100^\circ\text{C}$			3.5	μs
t_{rv} Voltage rise time				400	ns
t_{fi} Current fall time				300	ns
t_{ti} Current tail time				80	ns
t_{xo} Cross over time				500	ns

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



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

Figure 2. Inductive-Load Switching Waveform s

TYPICAL CHARACTERISTICS

TYPICAL DC CURRENT GAIN
VS
COLLECTOR CURRENT

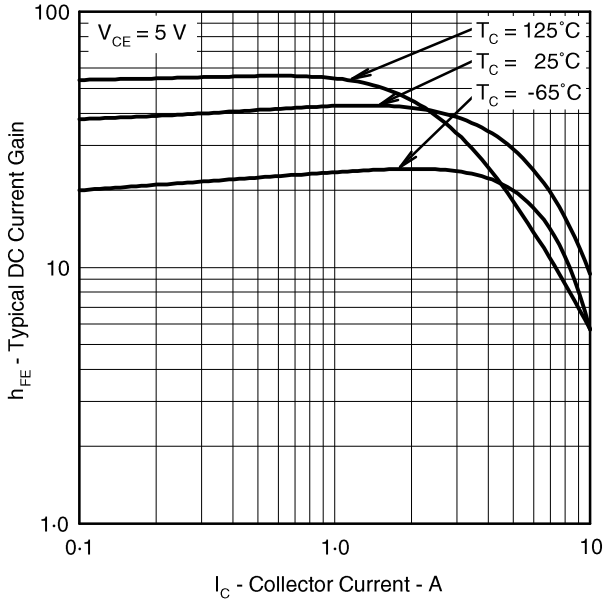


Figure 3.

COLLECTOR-EMITTER SATURATION VOLTAGE
VS
BASE CURRENT

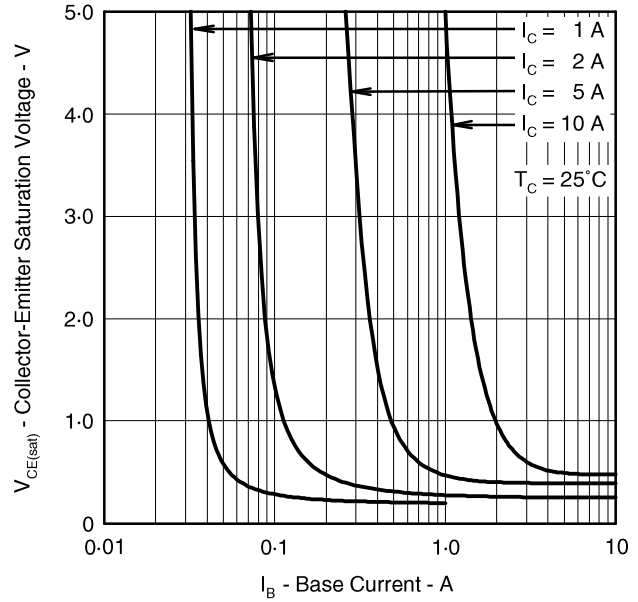


Figure 4.

COLLECTOR-EMITTER SATURATION VOLTAGE
VS
BASE CURRENT

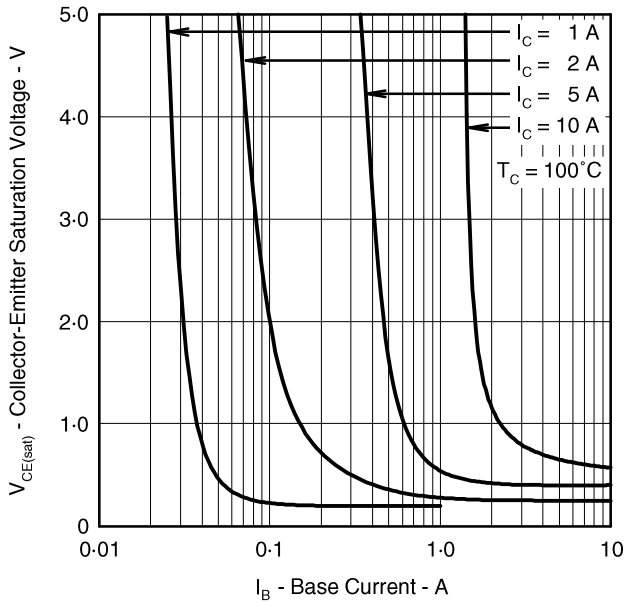


Figure 5.

BASE-EMITTER SATURATION VOLTAGE
VS
BASE CURRENT

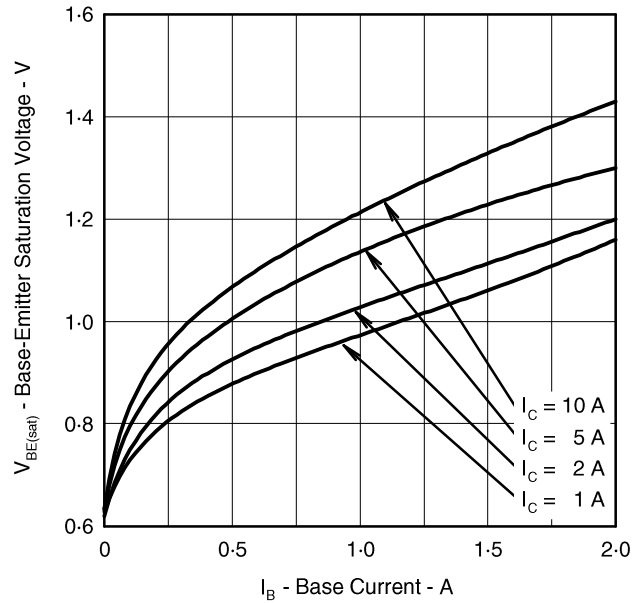


Figure 6.

TYPICAL CHARACTERISTICS

COLLECTOR CUT-OFF CURRENT
vs
CASE TEMPERATURE

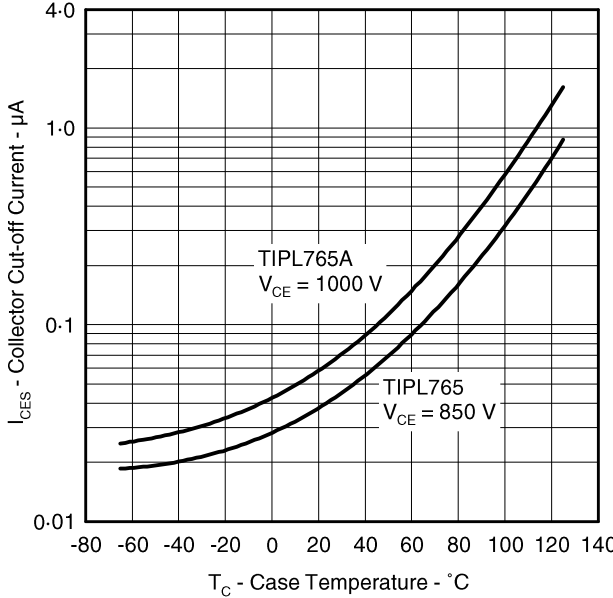


Figure 7.

MAXIMUM SAFE OPERATING REGIONS

MAXIMUM FORWARD-BIAS
SAFE OPERATING AREA

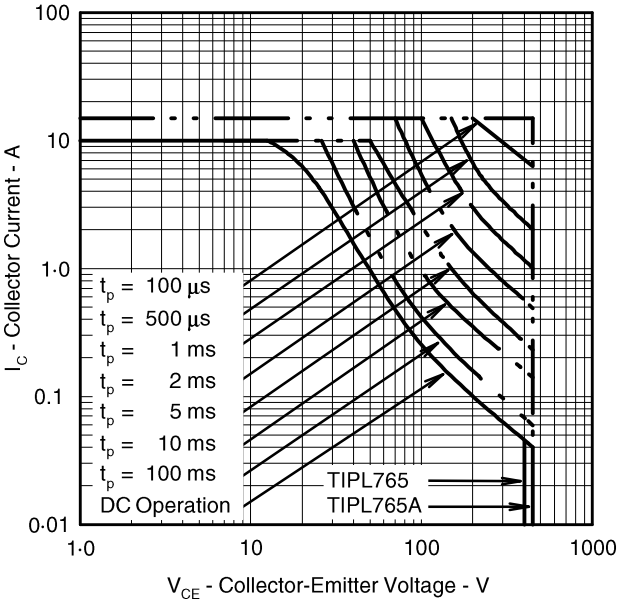


Figure 8.

