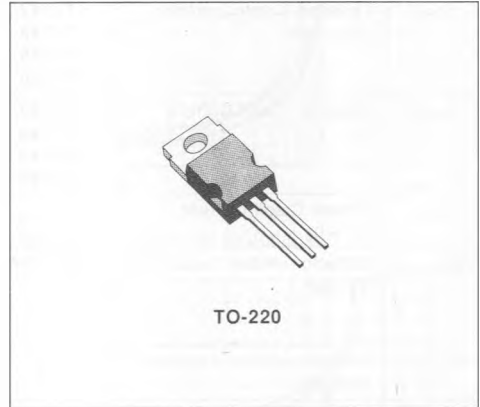


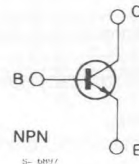
LINEAR AND SWITCHING APPLICATIONS

DESCRIPTION

The TIP47 to TIP50 are silicon multi-epitaxial planar transistors in TO-220 plastic package intended for linear and switching applications.



INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value				Unit
		TIP47	TIP48	TIP49	TIP50	
V_{CB0}	Collector-base Voltage ($I_E = 0$)	350	400	450	500	V
V_{CE0}	Collector-emitter Voltage ($I_B = 0$)	250	300	350	400	V
V_{EB0}	Emitter-base Voltage ($I_C = 0$)	5				V
I_C	Collector Current	1				A
I_{CM}	Collector Peak Current	2				A
I_B	Base Current	0.6				A
P_{TO1}	Total Power Dissipation at $T_{case} \leq 25^\circ\text{C}$	40				W
P_{TO1}	Total Power Dissipation at $T_{amb} \leq 25^\circ\text{C}$	2				W
T_{sig}	Storage Temperature	- 65 to 150				$^\circ\text{C}$
T_J	Junction Temperature	150				$^\circ\text{C}$

THERMAL DATA

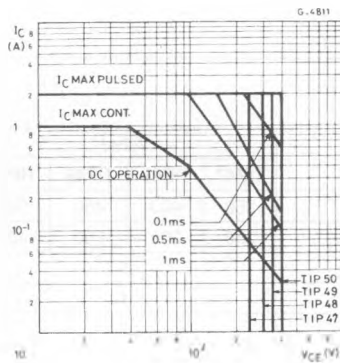
$R_{th(j\ case)}$	Thermal Resistance Junction-case	Max	3.125	$^{\circ}C/W$
$R_{th(j\ amb)}$	Thermal Resistance Junction-ambient	Max	62.5	$^{\circ}C/W$

ELECTRICAL CHARACTERISTICS ($T_{case} = 25\ ^{\circ}C$ unless otherwise specified)

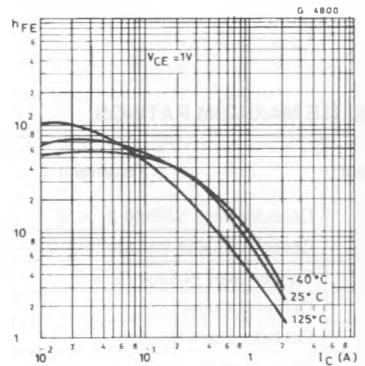
Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_{CES}	Collector Cutoff Current ($V_{BE} = 0$)	for TIP47 for TIP48 for TIP49 for TIP50	$V_{CE} = 350\ V$ $V_{CE} = 400\ V$ $V_{CE} = 450\ V$ $V_{CE} = 500\ V$			1 1 1 1	mA mA mA mA
I_{CEO}	Collector Cutoff Current ($I_B = 0$)	for TIP47 for TIP48 for TIP49 for TIP50	$V_{CE} = 150\ V$ $V_{CE} = 200\ V$ $V_{CE} = 250\ V$ $V_{CE} = 300\ V$			1 1 1 1	mA mA mA mA
I_{EBO}	Emitter Cutoff Current ($I_C = 0$)	$V_{EB} = 5\ V$				1	mA
$V_{CE(sus)^*}$	Collector-emitter Sustaining Voltage	$I_C = 30\ mA$	for TIP47 for TIP48 for TIP49 for TIP50	250 300 350 400			V V V V
$V_{CE(sat)^*}$	Collector-emitter Saturation Voltage	$I_C = 1\ A$	$I_B = 0.2\ A$			1	V
$V_{BE(on)^*}$	Base-emitter on Voltage	$I_C = 1\ A$	$V_{CE} = 10\ V$			1.5	V
h_{FE}^*	DC current Gain	$I_C = 0.3\ A$ $I_C = 1\ A$	$V_{CE} = 10\ V$ $V_{CE} = 10\ V$	30 10		150	
f_T	Transition Frequency	$V_{CE} = 10\ V$ $f = 2\ MHz$	$I_C = 0.2\ A$	10			MHz
h_{ie}	Small Signal Current Gain	$V_{CE} = 10\ V$ $f = 1\ KHz$	$I_C = 0.2\ A$	25			

* Pulsed : pulse duration = 300 μs , duty cycle < 2%.

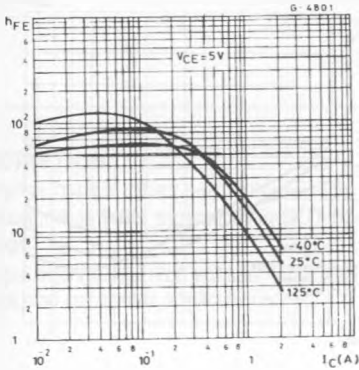
Safe Operating Areas.



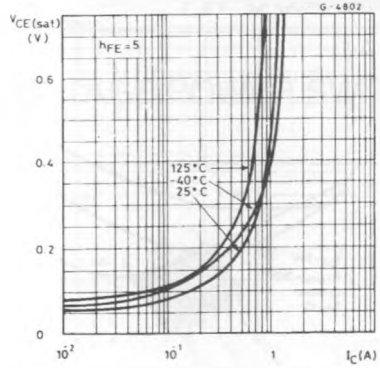
DC Current Gain.



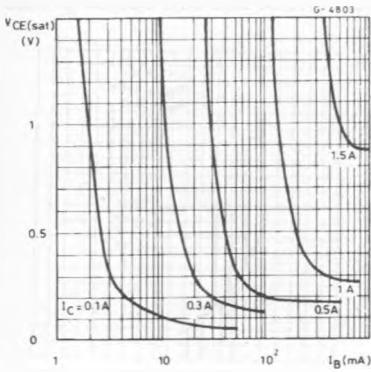
DC Current Gain.



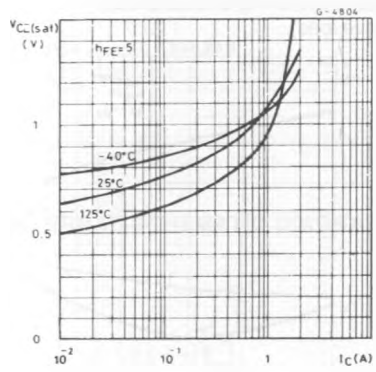
Collector-emitter Saturation Voltage.



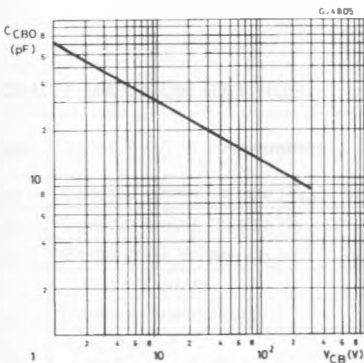
Collector-emitter Saturation Voltage.



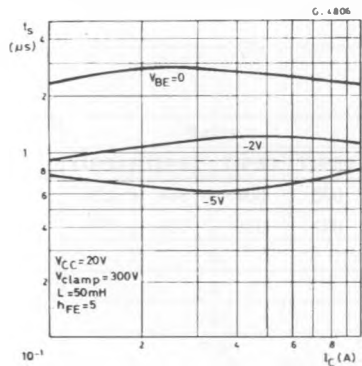
Base-emitter Saturation Voltage.



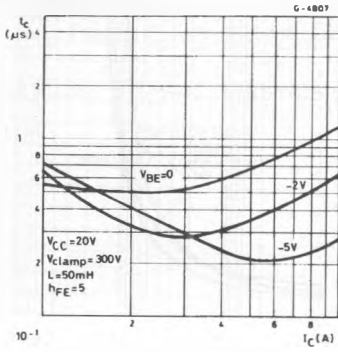
Collector-base capacitance.



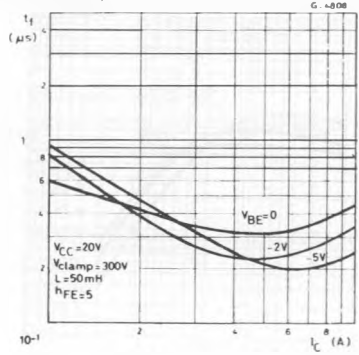
Saturated Switching Characteristics (inductive load).



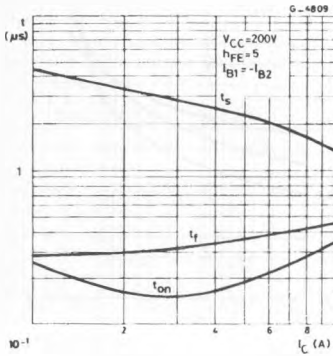
Saturated Switching Characteristics
(inductive load).



Saturated Switching Characteristics
(inductive load).



Saturated Switching Characteristics
(resistive load).



Compled Reverse Bias Safe Operating Areas.

