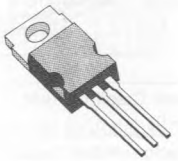
SGS-THOMSON MICROELECTRONICS

TIP47/TIP48 TIP49/TIP50

LINEAR AND SWITCHING APPLICATIONS

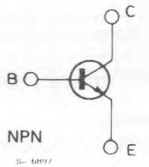
DESCRIPTION

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



TO-220

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value				Unit
		TIP47	TIP48	TIP49	TIP50	
V_{CBO}	Collector-base Voltage (I_E = 0)	350	400	450	500	V
V_{CEO}	Collector-emitter Voltage (I_B = 0)	250	300	350	400	V
V_{EBO}	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_{tot}	Total Power Dissipation at $T_{case} \leq 25$ °C	40				W
P_{tot}	Total Power Dissipation at $T_{amb} \leq 25$°C	2				W
T_{stg}	Storage Temperature	– 65 to 150				°C
T_j	Junction Temperature	150				°C

THERMAL DATA

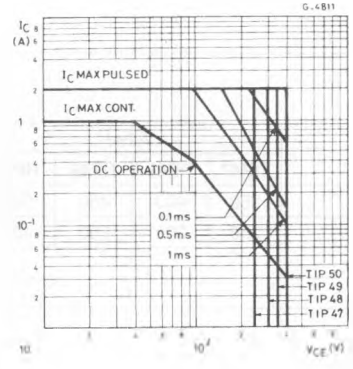
$R_{th\ j\ case}$	Thermal Resistance Junction-case	Max	3.125	°C/W
$R_{th\ j\ amb}$	Thermal Resistance Junction-ambient	Max	62.5	°C/W

ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

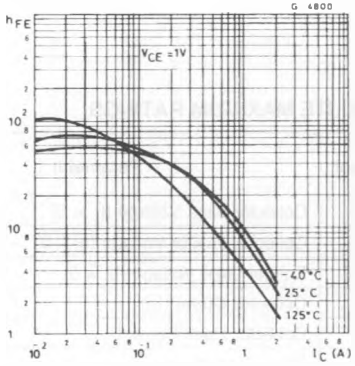
Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_{CES}	Collector Cutoff Current (V_{BE} = 0)	for **TIP47**	V_{CE} = 350 V			1	mA
		for **TIP48**	V_{CE} = 400 V			1	mA
		for **TIP49**	V_{CE} = 450 V			1	mA
		for **TIP50**	V_{CE} = 500 V			1	mA
I_{CEO}	Collector Cutoff Current (I_B = 0)	for **TIP47**	V_{CE} = 150 V			1	mA
		for **TIP48**	V_{CE} = 200 V			1	mA
		for **TIP49**	V_{CE} = 250 V			1	mA
		for **TIP50**	V_{CE} = 300 V			1	mA
I_{EBO}	Emitter Cutoff Current (I_C = 0)	V_{EB} = 5 V				1	mA
$V_{CEO(sus)}$*	Collector-emitter Sustaining Voltage	I_C = 30 mA	for **TIP47**	250			V
			for **TIP48**	300			V
			for **TIP49**	350			V
			for **TIP50**	400			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	V_{CE} = 10 V	30		150	
		I_C = 1 A	V_{CE} = 10 V	10			
f_T	Transition Frequency	V_{CE} = 10 V f = 2 MHz	I_C = 0.2 A	10			MHz
h_{fe}	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 %.

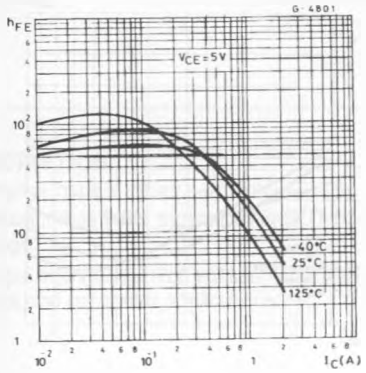
Safe Operating Areas.



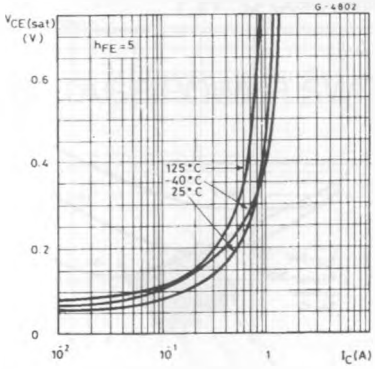
DC Current Gain.



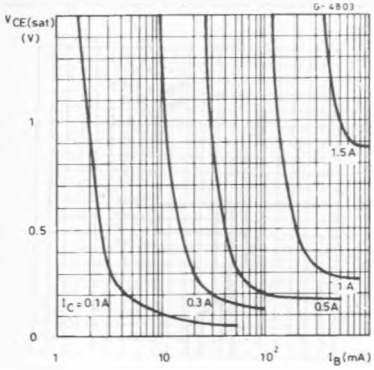
DC Current Gain.



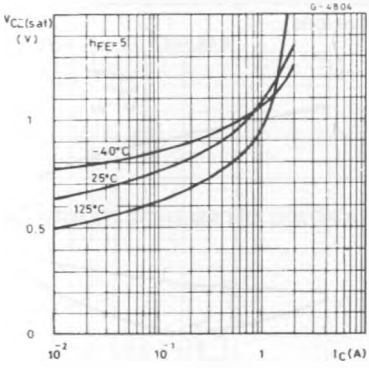
Collector-emitter Saturation Voltage.



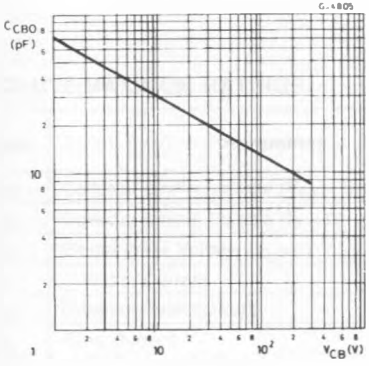
Collector-emitter Saturation Voltage.



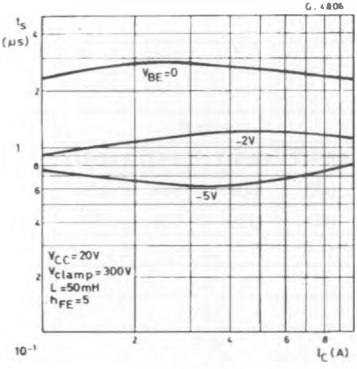
Base-emitter Saturation Voltage.



Collector-base capacitance.



Saturated Swtiching Characteristics (inductive load).



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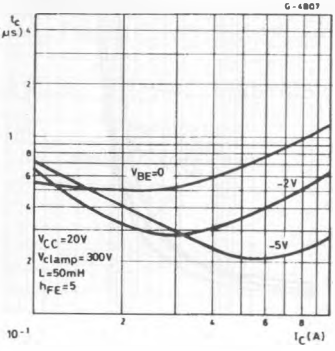
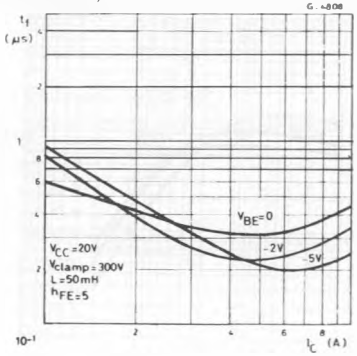
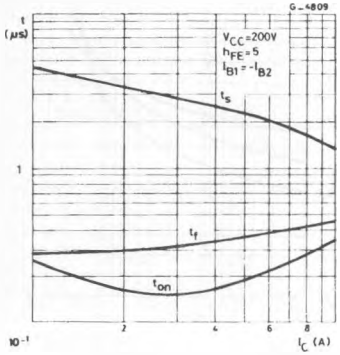


Saturated Swtiching Characteristics (inductive load).



Saturated Swtiching Characteristics (resistive load).



Campled Reverse Bias Safe Operating Areas.