SGS-THOMSON MICROELECTRONICS

2N5190/91/92 2N5193/94/95

MEDIUM POWER LINEAR AND SWITCHING APPLICATIONS

DESCRIPTION

The 2N5190, 2N5191, 2N5192 are silicon epitaxial-base NPN power transistors in Jedec TO-126 plastic package, intended for use in medium power linear and switching applications. The complementary PNP types are the 2N5193, 2N5194 and 2N5195 respectively.

TO-126 (SOT-32)

INTERNAL SCHEMATIC DIAGRAMS

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	NPN PNP*	2N5190 2N5193	2N5191 2N5194	2N5192 2N5195	Unit
V_{CBO}	Collector-base Voltage (I_E = 0)		40	60	80	V
V_{CEO}	Collector-emitter Voltage (I_B = 0)		40	60	80	V
V_{EBO}	Emitter-base Voltage (I_C = 0)		5			V
I_C	Collector Current		4			A
I_{CM}	Collector Peak Current (t ≤ 10 ms)		7			A
I_B	Base Current		1			A
P_{tot}	Total Power Dissipation at T_{case} ≤ 25 °C		40			W
T_{stg}	Storage Temperature		– 65 to 150			°C
T_j	Junction Temperature		150			°C

* For PNP types voltage and current values are negative.

THERMAL DATA

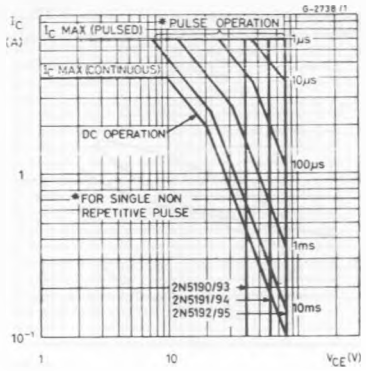
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	3.12	°C/W
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient	Max	100	°C/W

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

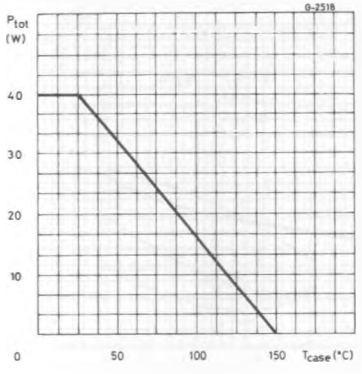
Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cutoff Current (I_E = 0)	for **2N5190/93** V_{CB} = 40 V				100	µA
		for **2N5191/94** V_{CB} = 60 V				100	µA
		for **2N5192/95** V_{CB} = 80 V				100	µA
I_{CEX}	Collector Cutoff Current (V_{EB} = 1.5 V)	for **2N5190/93** V_{CE} = 40 V				100	µA
		for **2N5191/94** V_{CE} = 60 V				100	µA
		for **2N5192/95** V_{CE} = 80 V				100	µA
		T_{case} = 125 °C					
		for **2N5190/93** V_{CE} = 40 V				2	mA
		for **2N5191/94** V_{CE} = 60 V				2	mA
		for **2N5192/95** V_{CE} = 80 V				2	mA
I_{CEO}	Collector Cutoff Current (I_B = 0)	for **2N5190/93** V_{CE} = 40 V				1	mA
		for **2N5191/94** V_{CE} = 60 V				1	mA
		for **2N5192/95** V_{CE} = 80 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_B = 0)	I_C = 100 mA	for **2N5190/93**	40			V
			for **2N5191/94**	60			V
			for **2N5192/95**	80			V
$V_{CE(sat)}$*	Collector-emitter Saturation Voltage	I_C = 1.5 A	I_B = 0.15 A			0.6	V
		I_C = 4 A	I_B = 1 A				
		for **2N5190/91/92**				1.4	V
		for **2N5193/94/95**				1.2	V
V_{BE}*	Base-emitter Voltage	I_C = 1.5 A	V_{CE} = 2 V			1.2	V
h_{FE}*	DC Current Gain	I_C = 1.5 A	V_{CE} = 2 V				
			for **2N5190/93**	25		100	
			for **2N5191/94**	25		100	
			for **2N5192/95**	20		80	
		I_C = 4 A	V_{CE} = 2 V				
			for **2N5190/93**	10			
			for **2N5191/94**	10			
			for **2N5192/95**	7			
f_T	Transistion Frequency	I_C = 1 A	V_{CE} = 10 V	2			MHz

* Pulsed : pulse duration = 300µs duty cycle = 1.5%.
For NPN types voltage and current values are negative.

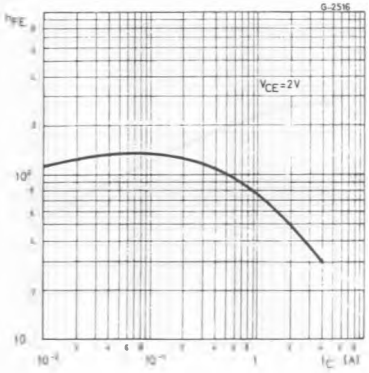
Safe Operating Areas.



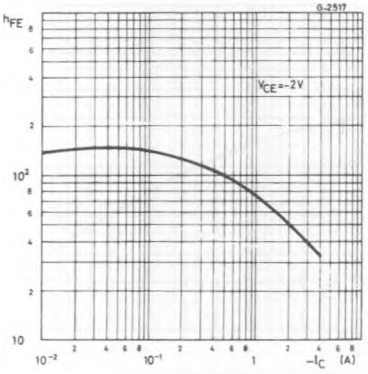
Power Rating Chart.



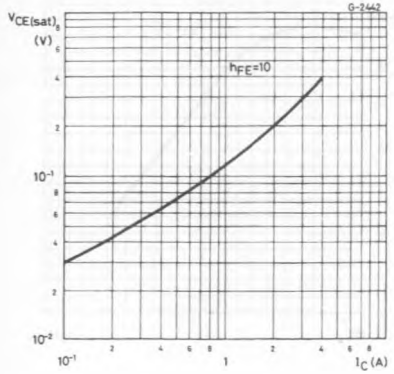
DC Current Gain (NPN types).



DC Current Gain (PNP types).



Collector-emitter Saturation Voltage (NPN types).



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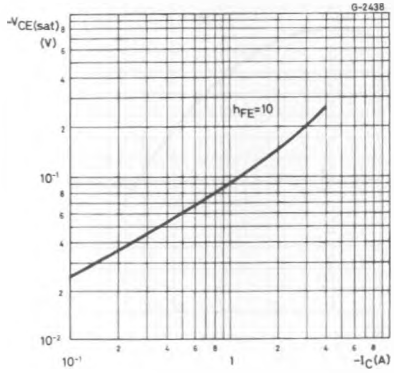
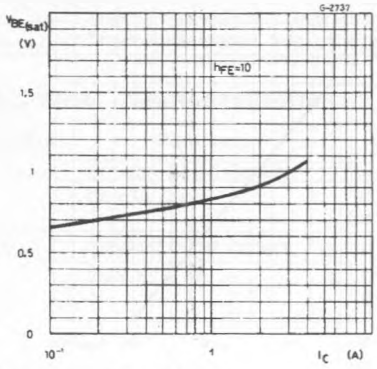
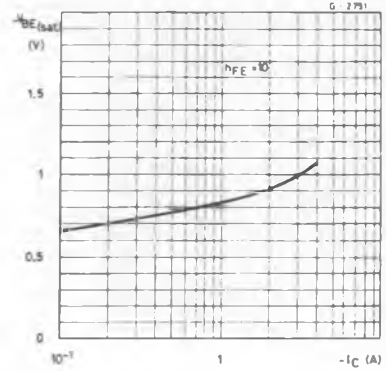


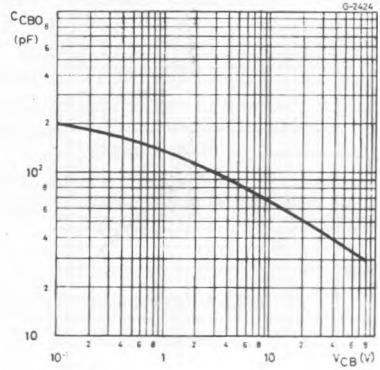
Base-emitter Saturation Voltage (NPN types).



Base-emitter Saturation Voltage (PNP types).



Collector-base Capacitance (NPN types).



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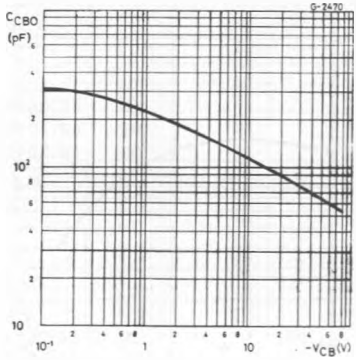
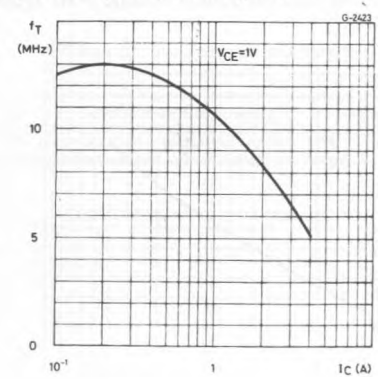


Transition Frequency (NPN types).



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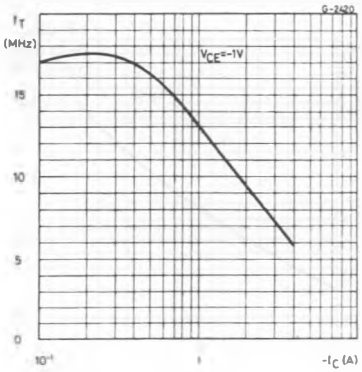
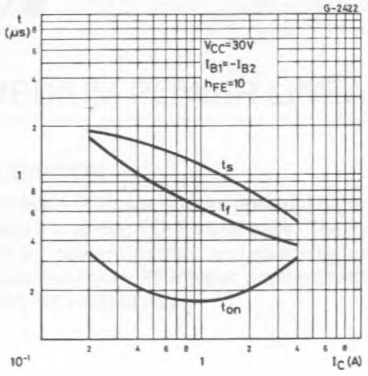


Saturated Switching Characteristics (NPN types).



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