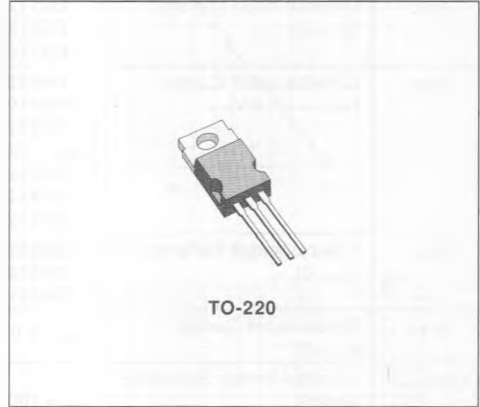


## MEDIUM POWER LINEAR AND SWITCHING APPLICATIONS

### DESCRIPTION

The 2N6121, 2N6122 and 2N6123 are silicon epitaxial-base NPN power transistors in Jedec TO-220 plastic package, intended for use in medium power linear and switching applications.

The complementary PNP types are the 2N6124, 2N6125 and 6126 respectively.



### INTERNAL SCHEMATIC DIAGRAMS



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	NPN PNP*	2N6121	2N6122	2N6123	Unit
			2N6124	2N6125	2N6126	
$V_{CBO}$	Collector-base Voltage ( $I_E = 0$ )		45	60	80	V
$V_{CES}$	Collector-emitter Voltage ( $V_{BE} = 0$ )		45	60	80	V
$V_{CEO}$	Collector-emitter Voltage ( $I_B = 0$ )		45	60	80	V
$V_{EBO}$	Emitter-base Voltage ( $I_C = 0$ )		5			V
$I_C$	Collector Current		4			A
$I_{CM}$	Collector Peak Current		7			A
$I_B$	Base Current		1			A
$P_{Tot}$	Total Power Dissipation at $T_{case} \leq 25^\circ C$		40			W
$T_{stg}$	Storage Temperature		- 65 to 150			$^\circ C$
$T_j$	Junction Temperature		150			$^\circ C$

For PNP type voltage and current values are negative.

## THERMAL DATA

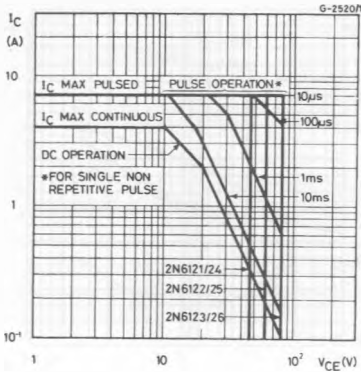
$R_{th\ j-case}$	Thermal Resistance Junction-case	Max	3.12	$^{\circ}C/W$
$R_{th\ j-amb}$	Thermal Resistance Junction-ambient	Max	70	$^{\circ}C/W$

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

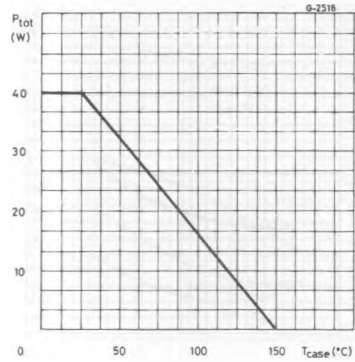
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CBO}$	Collector cutoff Current ( $I_E = 0$ )	for 2N6121/24 $V_{CB} = 45\ V$ for 2N6122/25 $V_{CB} = 60\ V$ for 2N6123/26 $V_{CB} = 80\ V$			100 100 100	$\mu A$ $\mu A$ $\mu A$
$I_{CEX}$	Collector cutoff Current ( $V_{BE} = -1.5\ V$ )	for 2N6121/24 $V_{CE} = 45\ V$ for 2N6122/25 $V_{CE} = 60\ V$ for 2N6123/26 $V_{CE} = 80\ V$ $T_{case} = 125^{\circ}C$ for 2N6121/24 $V_{CE} = 45\ V$ for 2N6122/25 $V_{CE} = 60\ V$ for 2N6123/26 $V_{CE} = 80\ V$			100 100 100  2 2 2	$\mu A$ $\mu A$ $\mu A$  $\mu A$ $\mu A$ $\mu A$
$I_{CEO}$	Collector cutoff Current ( $I_B = 0$ )	for 2N6121/24 $V_{CE} = 45\ V$ for 2N6122/25 $V_{CE} = 60\ V$ for 2N6123/26 $V_{CE} = 80\ V$			1 1 1	mA mA 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 2N6121/24 for 2N6122/25 for 2N6123/26	45 60 80			V V V
$V_{CE(sat)}^*$	Collector-emitter Saturation Voltage	$I_C = 1.5\ A$ $I_C = 4\ A$ $I_B = 0.15\ A$ $I_B = 1\ A$			0.6 1.4	V 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 2N6121/24 for 2N6122/25 for 2N6123/26  $I_C = 4\ A$ $V_{CE} = 2\ V$ for 2N6121/24 for 2N6122/25 for 2N6123/26	25 25 20  10 10 7		100 100 80	
$h_{fe}$	Small Signal Current Gain	$I_C = 1\ A$ $f = 1\ MHz$ $V_{CE} = 4\ V$	2.5			

\* Pulsed : pulse duration = 300 $\mu s$ , duty cycle = 1.5 %..  
For PNP types voltage and current values are negative.

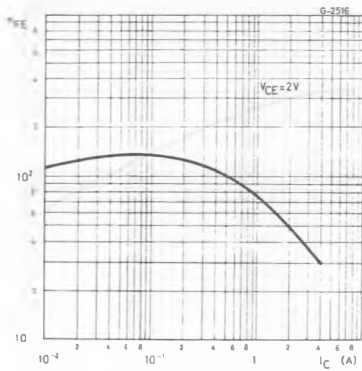
Safe Operating Areas.



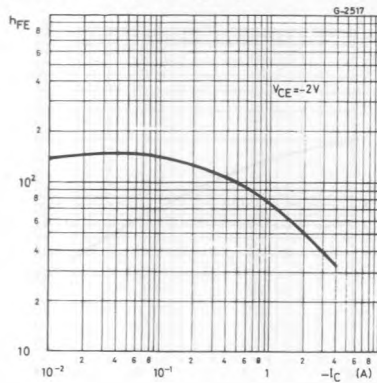
Power Rating Chart.



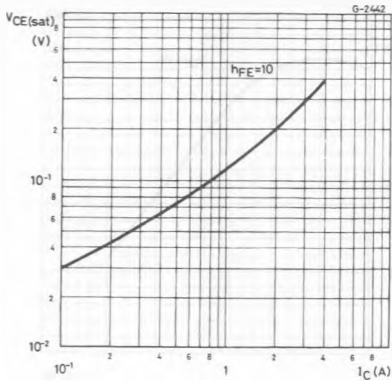
DC Current Gain (NPN types).



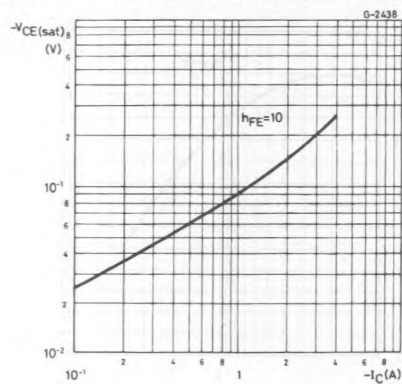
DC Current Gain (PNP types).



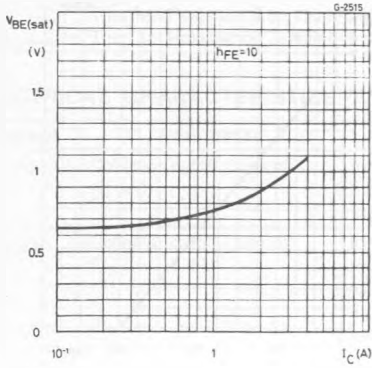
Collector-emitter Saturation Voltage (NPN types).



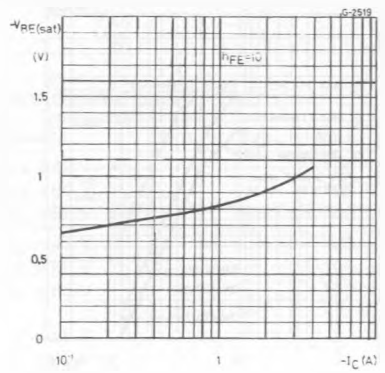
Collector-emitter Saturation Voltage (PNP types).



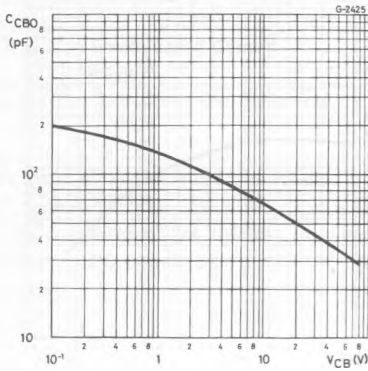
Base-emitter Saturation Voltage (NPN types).



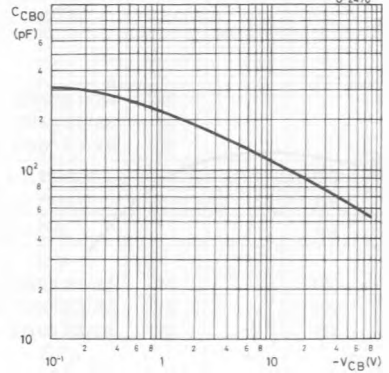
Base-emitter Saturation Voltage (PNP types).



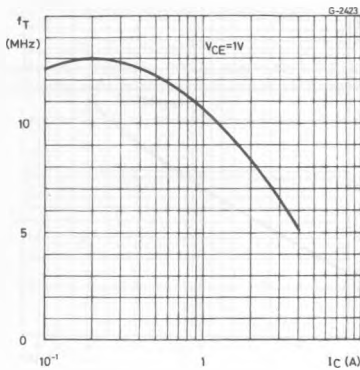
Collector-base Capacitance (NPN types).



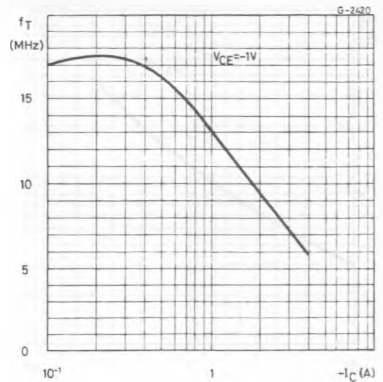
Collector-base Capacitance (PNP types).



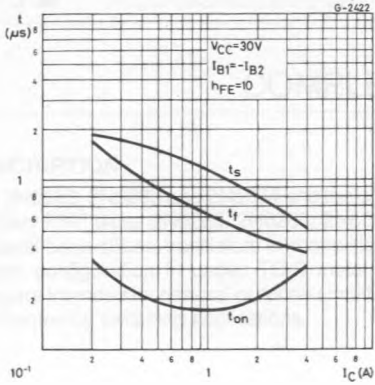
Transition Frequency (NPN types).



Transition Frequency (PNP types).



Saturated Switching Characteristics (NPN types).



Saturated Switching Characteristics (PNP types).

