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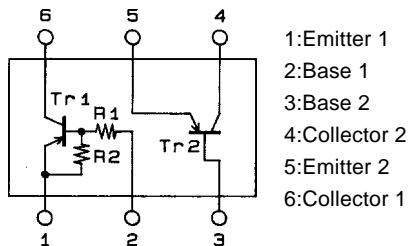
PNP Epitaxial Planar Silicon Transistor (With bias resistances)
PNP Epitaxial Planar Silicon Transistor

Constant-Current Circuit Applications

Features

- Complex type of 2 devices (transistor with resistances and low saturation transistor) contained in one package, facilitating high-density mounting.

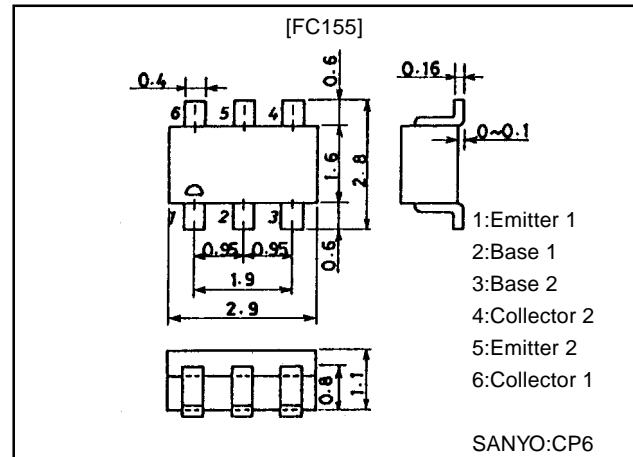
Electrical Connection



Package Dimensions

unit:mm

2104A



Specifications

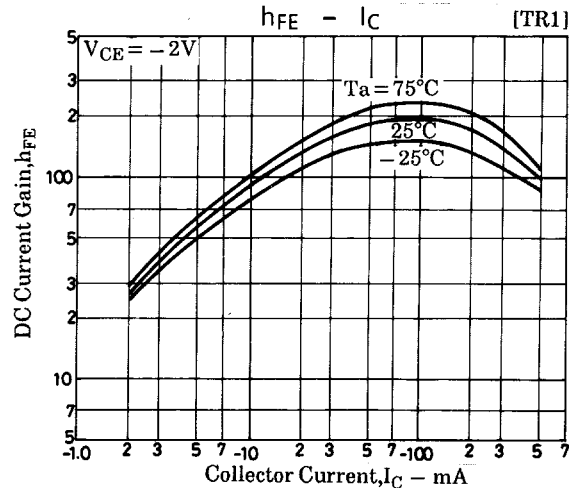
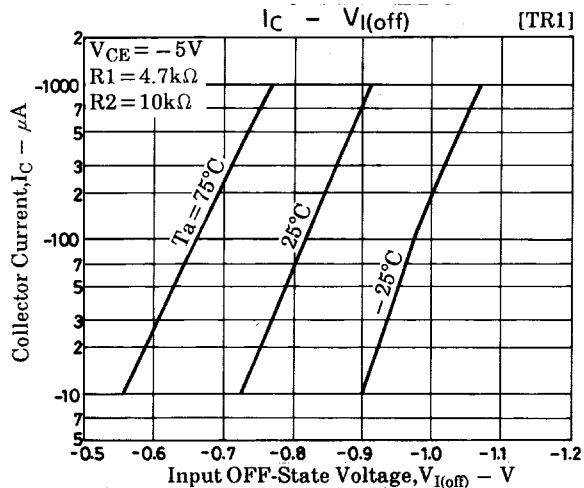
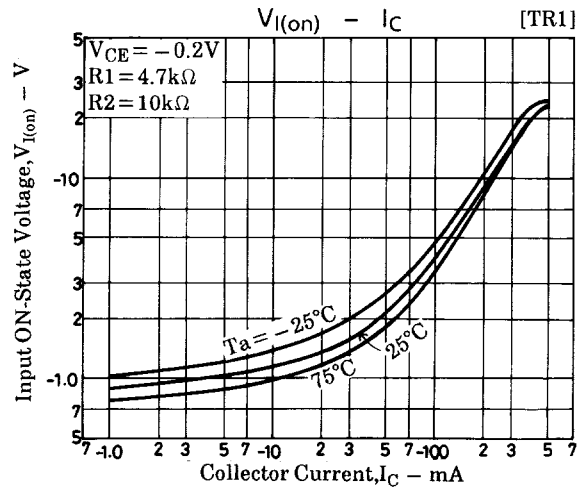
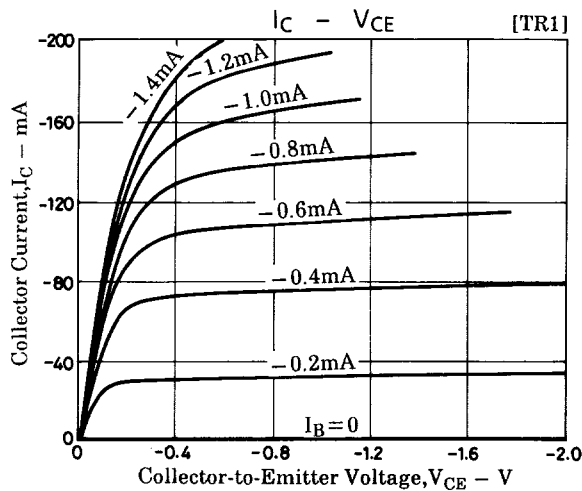
Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
[TR1]				
Collector-to-Base Voltage	V_{CBO}		-20	V
Collector-to-Emitter Voltage	V_{CEO}		-15	V
Emitter-to-Base Voltage	V_{EBO}		-5	V
Collector Current	I_C		-500	mA
Collector Current (Pulse)	I_{CP}		-1	A
Base Current	I_B		-5	mA
Collector Dissipation	P_C	1 unit	200	mW
Total Dissipation	P_T		300	mW
Junction Temperature	T_j		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$
[TR2]				
Collector-to-Base Voltage	V_{CBO}		-20	V
Collector-to-Emitter Voltage	V_{CEO}		-15	V
Emitter-to-Base Voltage	V_{EBO}		-5	V
Collector Current	I_C		-500	mA
Collector Current (Pulse)	I_{CP}		-1	A
Base Current	I_B		-100	mA
Collector Dissipation	P_C	1 unit	200	mW
Total Dissipation	P_T		300	mW
Junction Temperature	T_j		150	$^\circ\text{C}$
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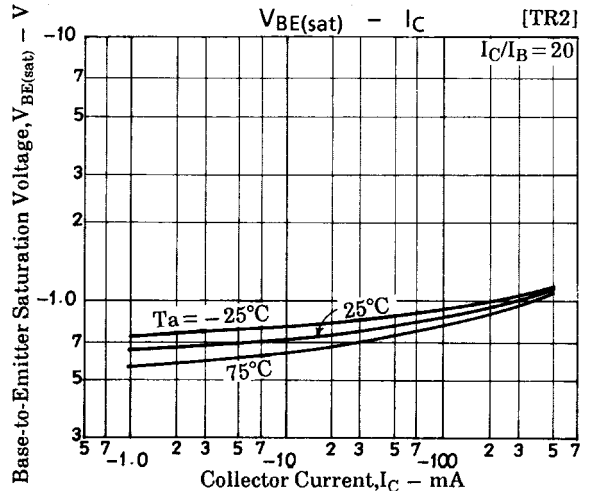
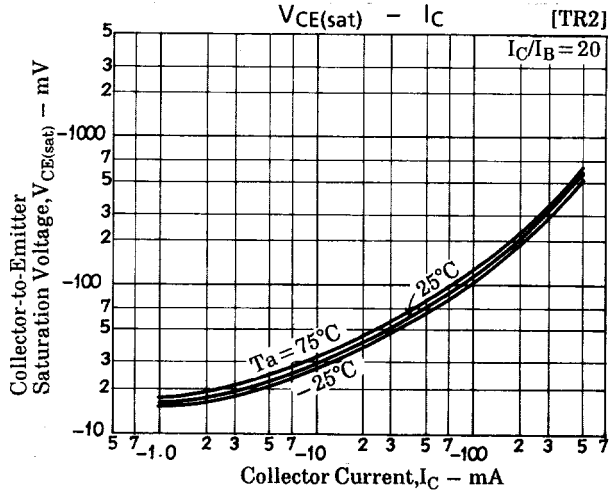
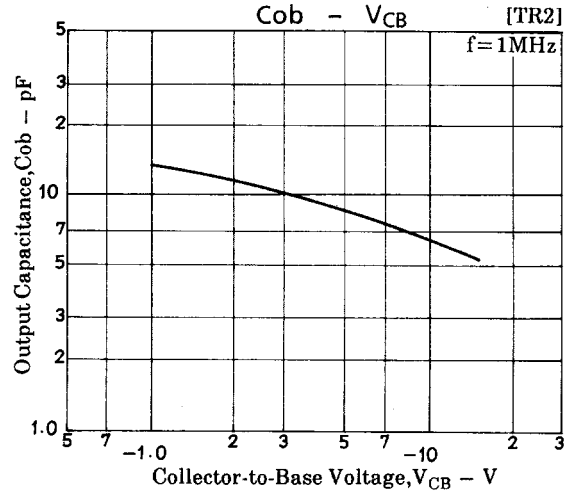
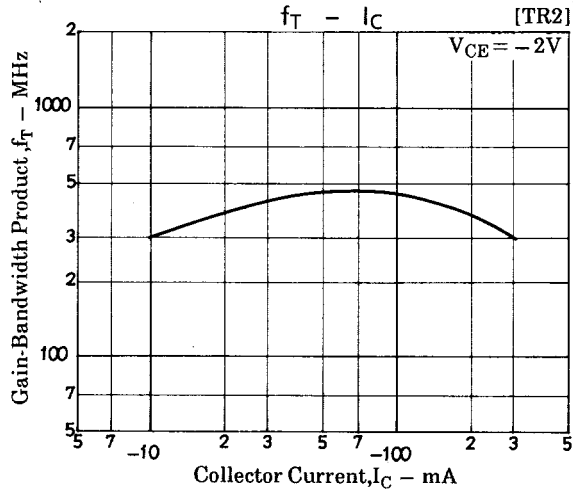
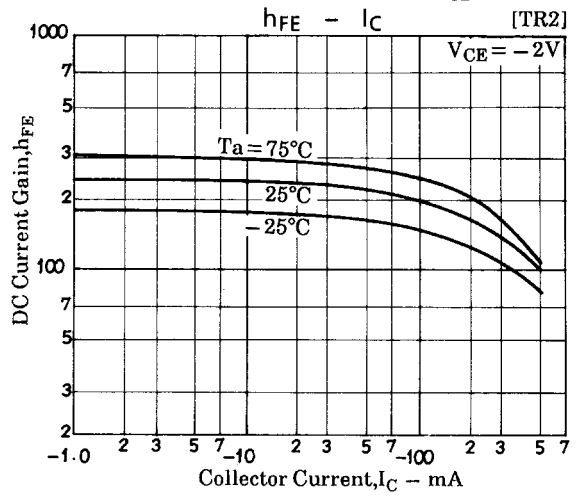
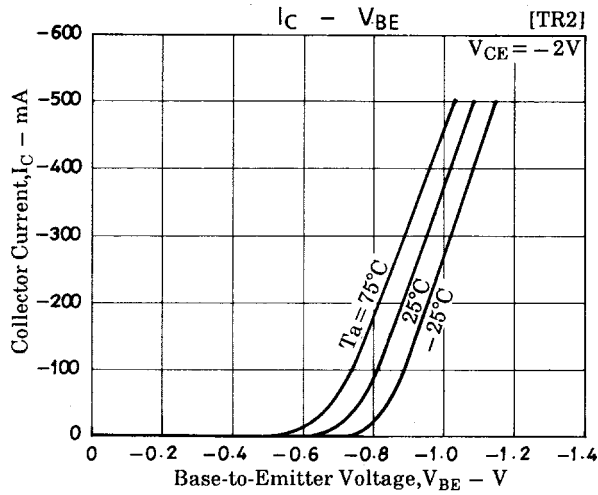
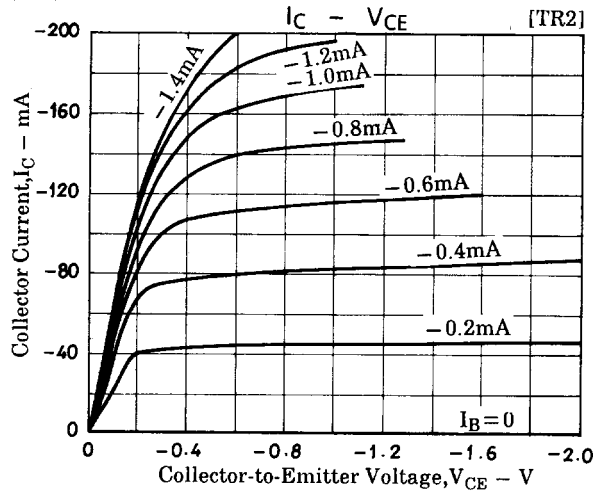
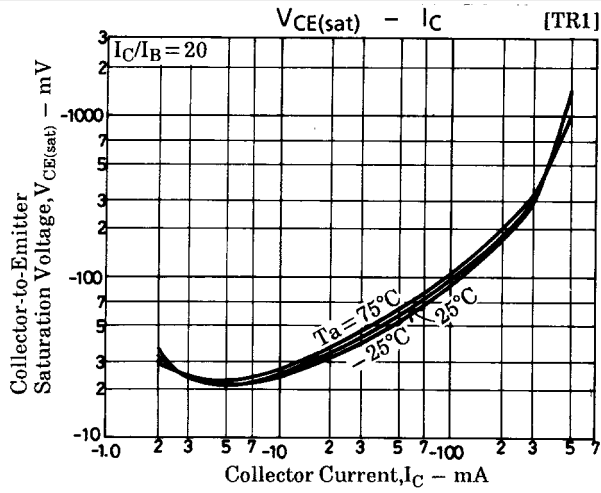
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Electrical Characteristics at Ta = 25°C

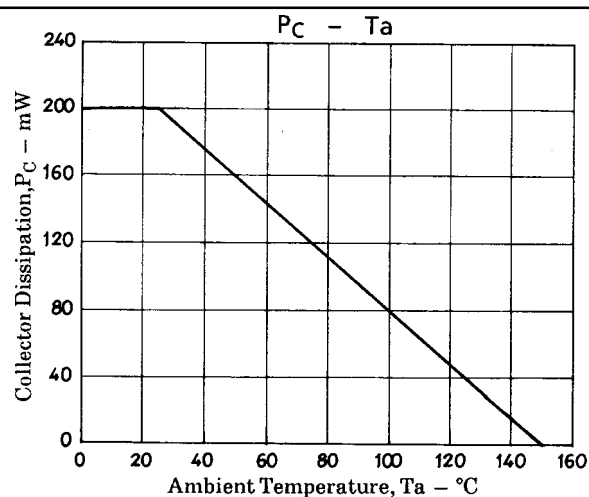
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[TR1]						
Collector Cutoff Current	I_{CBO}	$V_{CB}=-15V, I_E=0$			-0.1	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=-4V, I_C=0$	-210	-270	-390	μA
DC Current Gain	h_{FE}	$V_{CE}=-2V, I_C=-100mA$	100			
Gain-Bandwidth Product	f_T	$V_{CE}=-2V, I_C=-50mA$		150		MHz
Output Capacitance	C_{ob}	$V_{CE}=-10V, f=1MHz$		5		pF
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C=-100mA, I_B=-5mA$		-100	-250	mV
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C=-10\mu A, I_E=0$	-20			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C=-1mA, R_{BE}=\infty$	-15			V
Input-OFF-State Voltage	$V_{I(off)}$	$V_{CE}=-5V, I_C=-100\mu A$	-0.7	-0.80	-0.95	V
Input-ON-State Voltage	$V_{I(on)}$	$V_{CE}=-0.2V, I_C=-10mA$	-0.85	-1.2	-1.8	V
Input Resistance	R1		3.3	4.7	6.1	V
Resistance Ratio	R1/R2			0.47		k Ω
[TR2]						
Collector Cutoff Current	I_{CBO}	$V_{CB}=-15V, I_E=0$			-0.1	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=-4V, I_C=0$			-0.1	μA
DC Current Gain	$h_{FE(1)}$	$V_{CE}=-2V, I_C=-10mA$	160		560	
	$h_{FE(2)}$	$V_{CE}=-2V, I_C=-400mA$	70			MHz
Gain-Bandwidth Product	f_T	$V_{CE}=-2V, I_C=-50mA$		400		pF
Output Capacitance	C_{ob}	$V_{CE}=-10V, f=1MHz$		6.5		mV
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C=-200mA, I_B=-10mA$		-200	-360	V
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C=-200mA, I_B=-10mA$		-0.95	-1.2	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C=-10\mu A, I_E=0$	-20			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C=-1mA, R_{BE}=\infty$	-15			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_C=-10\mu A, I_C=0$	-5			V



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