



**THE DATASHEET OF  
2SA2199 T2L R**



# General Purpose Transistor

## (-50V, -100mA)

### 2SA2199

#### ●Applications

Small signal low frequency amplifier

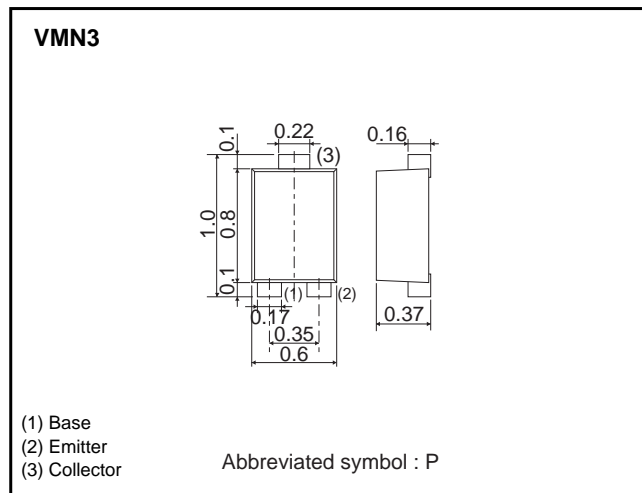
#### ●Features

- 1) Excellent  $h_{FE}$  linearity.
- 2) Complements the 2SC6114.

#### ●Structure

PNP silicon epitaxial  
planar transistor

#### ●Dimensions (Unit : mm)



#### ●Absolute maximum (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	$V_{CBO}$	-50	V
Collector-emitter voltage	$V_{CEO}$	-50	V
Emitter-base voltage	$V_{EBO}$	-5	V
Collector current	$I_C$	-100	mA
	$I_{CP}$ *1	-200	
Power dissipation	$P_D$ *2	150	mW
Junction temperature	$T_j$	150	°C
Range of storage temperature	$T_{stg}$	-55 to +150	°C

\*1  $P_w=1$ ms Single pulse

\*2 Each terminal mounted on a recommended land

Transistors

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-emitter breakdown voltage	$BV_{CEO}$	-50	-	-	V	$I_C = -1\text{mA}$
Collector-base breakdown voltage	$BV_{CBO}$	-50	-	-	V	$I_C = -50\mu\text{A}$
Emitter-base breakdown voltage	$BV_{EBO}$	-5	-	-	V	$I_E = -50\mu\text{A}$
Collector cutoff current	$I_{CBO}$	-	-	-0.1	$\mu\text{A}$	$V_{CB} = -50\text{V}$
Emitter cutoff current	$I_{EBO}$	-	-	-0.1	$\mu\text{A}$	$V_{EB} = -5\text{V}$
Collector-emitter saturation voltage	$V_{CE(sat)}$	-	-	-0.3	V	$I_C/I_B = -25\text{mA}/-2.5\text{mA}$
DC current gain	$h_{FE}$	120	-	390	-	$V_{CE} = -6\text{V}, I_C = -2\text{mA}$
Transition frequency	$f_r$	-	110	-	MHz	$V_{CE} = -10\text{V}, I_E = 1\text{mA}, f = 100\text{MHz}$
Output capacitance	$C_{ob}$	-	2.0	-	pF	$V_{CB} = -10\text{V}, I_E = 0\text{A}, f = 1\text{MHz}$

$h_{FE}$  RANK

Rank	Q	R
$h_{FE}$	120 to 270	180 to 390

●Electrical characteristic curves

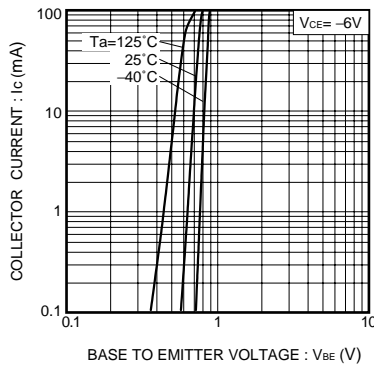


Fig.1 Grounded emitter propagation characteristics

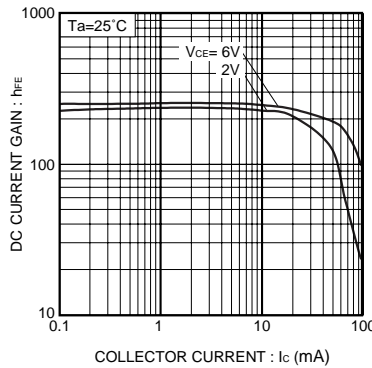


Fig.2 DC current gain vs. collector current (I)

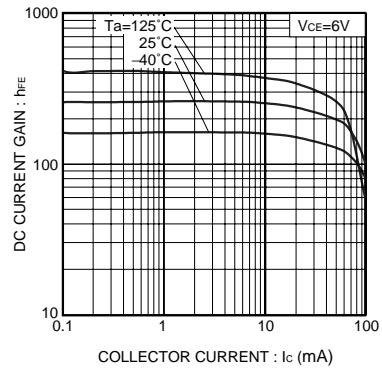


Fig.3 DC current gain vs. collector current (II)

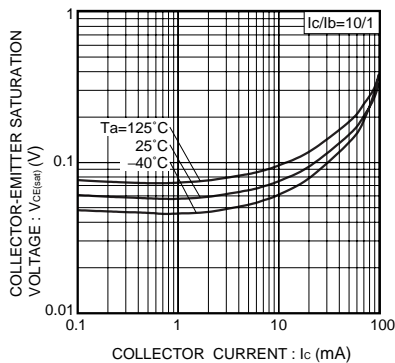


Fig.4 Collector-emitter saturation voltage vs. collector current

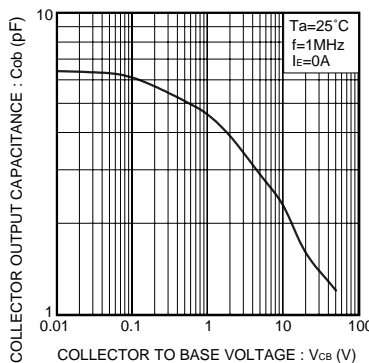


Fig.5 Collector output capacitance

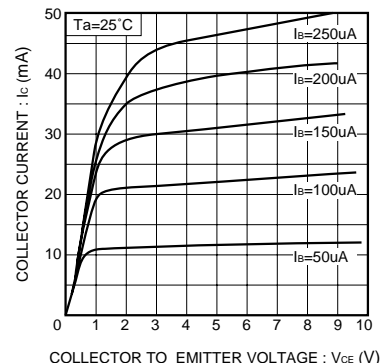


Fig.6 Typical output characteristics

Transistors

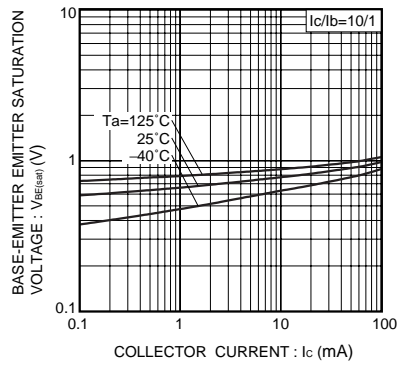


Fig.7 Base-emitter saturation voltage vs. collector current

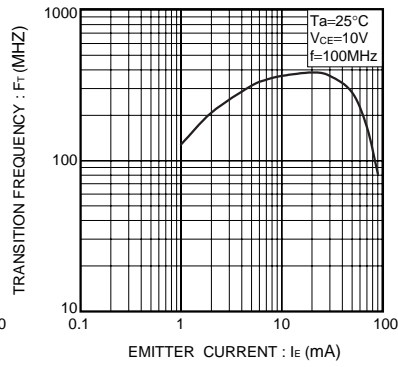


Fig.8 Transition frequency

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