

TUNGSRAM 

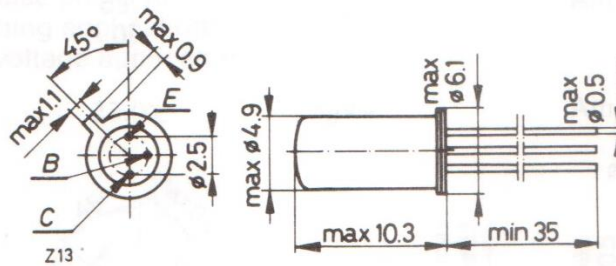
**SEMI-
CONDUCTOR
DEVICES
'80/81**

**DIODES
RECTIFIERS
THYRISTORS
TRANSISTORS**

PNP Germanium Alloy Transistors

intended for use in pre-amplifier and driver stages as well as for general purposes in the AF range. Leads are electrically isolated from case.

Dimensions in mm



Case: TO-1

Mass: approx. 1 g

Accessories (available as requested)

Cooling clip: HL-M613/A

Absolute maximum ratings

Collector-base voltage	$-V_{CBO}$	32	V
Collector-emitter voltage	$-V_{CEO}$	12	V
Collector-emitter voltage ¹	$-V_{CER}$	32	V
Emitter-base voltage	$-V_{EBO}$	10	V
Collector current	$-I_C$	200	mA
Base current	$-I_B$	5	mA
Junction temperature	T_j	90	°C
Storage temperature	T_s	-55 ... + 75	°C
Total power dissipation ²	P_{tot}	500	mW

Thermal resistance

junction to case	R_{thjc}	= 60	K/W
junction to ambient	R_{thja}	= 400	K/W
junction to ambient with a cooling clip and a heat sink of min. 12.5 cm ²	R_{thja}	= 90	K/W

Static characteristics³

$T_{amb} = 25^\circ\text{C}$

Collector-base cut-off current

$-V_{CB} = 12\text{ V}$	$-I_{CBO}$	≤ 10	μA
$-V_{CB} = 12\text{ V}, T_{amb} = 75^\circ\text{C}$	$-I_{CBO}$	≤ 550	μA
$-V_{CB} = 32\text{ V}$	$-I_{CBO}$	≤ 200	μA

Emitter-base cut-off current

$-V_{EB} = 10\text{ V}$	$-I_{EBO}$	≤ 200	μA
$-V_{EB} = 5\text{ V}, T_{amb} = 75^\circ\text{C}$	$-I_{EBO}$	≤ 550	μA

¹ $R_{BE} = \text{max. } 1\text{ k}\Omega$

² with a heat sink of min. 12.5 cm²

³ measured under pulsed conditions

AC 125, AC 126

	AC 125	AC 126	
Base current and DC forward current transfer ratio			
$-V_{CB} = 0 \text{ V}, -I_C = 50 \text{ mA}$	$-I_B$	0.28 ... 0.67	0.14 ... 0.4 mA
	h_{21E}	75 ... 175	125 ... 350
$-V_{CB} = 0 \text{ V}, -I_C = 100 \text{ mA}$	$-I_B$	1.25	0.95 mA
	h_{21E}	80	105
Base-emitter voltage			
$-V_{CB} = 0 \text{ V}, -I_C = 100 \text{ mA}$	$-V_{BE}$	≤ 0.55	≤ 0.55 V
Dynamic characteristics			
$T_{amb} = 25^\circ\text{C}$			
Transition frequency			
$-V_{CE} = 2 \text{ V}, -I_C = 10 \text{ mA}$	f_T	1.7 (≥ 1.3)	2.3 (≥ 1.7) MHz
Collector-base capacitance			
$-V_{CB} = 5 \text{ V}, f = 450 \text{ kHz}$	C_{CBO}	40 (≤ 50)	40 (≤ 50) pF
Noise figure			
$-V_{CE} = 5 \text{ V}, -I_C = 0.5 \text{ mA},$ $f = 1 \text{ kHz}, \Delta f = 200 \text{ Hz}, R_G = 500 \Omega$	F	4 (≤ 10)	4 (≤ 10) dB
Two port characteristics			
$-V_{CE} = 5 \text{ V}, -I_C = 2 \text{ mA}, f = 1 \text{ kHz}$			
Short circuit input resistance	h_{11e}	1.1 ... 2.5	1.7 ... 3.8 k Ω
Open circuit reverse voltage transfer ratio	h_{12e}	6.5 (≤ 8.5)	8 (≤ 13) 10^{-4}
Small signal forward current transfer ratio	h_{21e}	125	180
Open circuit output conductance	h_{22e}	80 (≤ 110)	100 (≤ 170) μS

Notes

As requested the devices are available, at extra charge, selected in accordance to their DC forward current transfer ratios h_{21E} .

Operating point (measured under pulsed conditions):

$-V_{CB} = 0 \text{ V}, -I_C = 50 \text{ mA}, T_{amb} = 25^\circ\text{C}.$

Type	Group	h_{21E}
AC 125	V	50 ... 100
AC 125	VI	75 ... 150
AC 125, AC 126	VII	125 ... 250
AC 126	VIII	175 ... 350

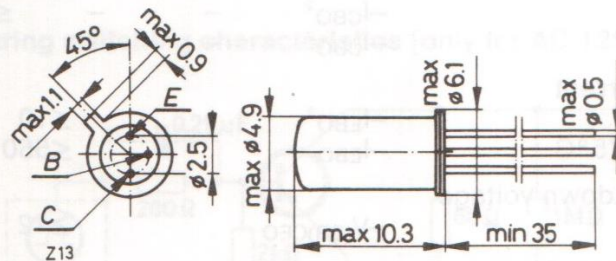
AC 125 (z), AC 125F (z), AC 125K (z), AC 125U (z)

PNP Germanium Alloy Transistors

intended for use in AF pre-amplifier and driver stages as well as for general purposes in the AF range. Leads are electrically isolated from case.

- AC 125 (z) for general purposes
- AC 125F (z) for low noise pre-amplifier
- AC 125K (z) for switching applications
- AC 125U (z) for high voltage applications

Dimensions in mm



Case: TO-1

Mass: approx. 1 g

Accessories (available as requested)

Cooling clip: HL-M 613/A

Absolute maximum ratings

		AC 125 (z)	AC 125F (z)	AC 125K (z)	AC 125U (z)	
Collector-base voltage	$-V_{CBO}$	32	32	40	60	V
Collector-emitter voltage ¹	$-V_{CER}$	32	32	40	60	V
Emitter-base voltage	$-V_{EBO}$			12		V
Collector current	$-I_C$			250		mA
Base current	$-I_B$			20		mA
Junction temperature	T_j			75		°C
Storage temperature	T_s			-55 ... +75		°C
Total power dissipation ²	P_{tot}			125		mW
Total power dissipation ³	P_{tot}			333		mW

Thermal resistance

junction to case	R_{thjc}	= 60	K/W
junction to ambient	R_{thja}	= 400	K/W
junction to ambient with a cooling clip and a heat sink of min. 12.5 cm ²	R_{thja}	= 90	K/W

¹ $R_{BE} = \text{max. } 1 \text{ k}\Omega$

² $T_{amb} \leq 25^\circ\text{C}$

³ $T_{amb} \leq 45^\circ\text{C}$, with a heat sink of min. 12.5 cm²

AC 125 (z), AC 125F (z), AC 125K (z), AC 125U (z)

Static characteristics¹

$T_{amb} = 25^{\circ}\text{C}$

Collector-base cut-off current

	AC 125 (z)	AC 125F (z)	AC 125K (z)	AC 125U (z)	
$-V_{CB} = 12\text{ V}$	$-I_{CBO}^2 \leq 10$	≤ 10	≤ 10	-	μA
$-V_{CB} = 12\text{ V}, T_{amb} = 75^{\circ}\text{C}$	$-I_{CBO} \leq 550$	≤ 550	≤ 550	≤ 550	μA
$-V_{CB} = 25\text{ V}$	-	-	-	≤ 14	μA
$-V_{CB} = 32\text{ V}$	$-I_{CBO}^2 \leq 20$	≤ 20	-	-	μA
$-V_{CB} = 40\text{ V}$	$-I_{CBO}^2$	-	≤ 20	-	μA
$-V_{CB} = 60\text{ V}$	$-I_{CBO}^2$	-	-	≤ 20	μA

Emitter-base cut-off current

$-V_{EB} = 12\text{ V}$	$-I_{EBO}^2$		≤ 10		μA
$-V_{EB} = 5\text{ V}, T_{amb} = 75^{\circ}\text{C}$	$-I_{EBO}$		≤ 550		μA

Collector-emitter breakdown voltage

$-I_{CEO} = 10\text{ mA}$	$-V_{(BR)CEO}$		≥ 12		V
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Base current and DC forward current transfer ratio

$-V_{CB} = 0\text{ V}, -I_C = 50\text{ mA}$	$-I_B^2$		$0.2 \dots 1$		mA	
	h_{21E}^2		$50 \dots 250$			
$-V_{CB} = 0\text{ V}, -I_C = 100\text{ mA}$	$-I_B$	1.25	-	1.25	1.25	mA
	h_{21E}	80	-	80	80	
$-V_{CB} = 0\text{ V}, -I_C = 250\text{ mA}$	$-I_B$	-	-	4.2	4.2	mA
	h_{21E}	-	-	60	60	

Base-emitter voltage

$-V_{CB} = 0\text{ V}, -I_C = 100\text{ mA}$	$-V_{BE}$	≤ 0.55	≤ 0.55	≤ 0.55	≤ 0.55	V
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Collector-emitter saturation voltage

$-I_C = 100\text{ mA}, -I_B = 20\text{ mA}$	$-V_{CEsat}$	-	-	0.15 (≤ 0.25)	0.15 (≤ 0.25)	V
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Dynamic characteristics

$T_{amb} = 25^{\circ}\text{C}$

Transition frequency

$-V_{CE} = 2\text{ V}, -I_C = 10\text{ mA}$	f_T		$1.5 (\geq 0.9)$		MHz
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Collector-base capacitance

$-V_{CB} = 5\text{ V}, f = 450\text{ kHz}$	C_{CBO}		$40 (\leq 50)$		pF
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Noise figure

$-V_{CE} = 5\text{ V}, -I_C = 0.5\text{ mA},$

$f = 1\text{ kHz}, B = 200\text{ Hz}, R_G = 500\ \Omega$	F	≤ 10	≤ 5	≤ 10	≤ 10	dB
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¹ measured under pulsed conditions

² AQL = 1%

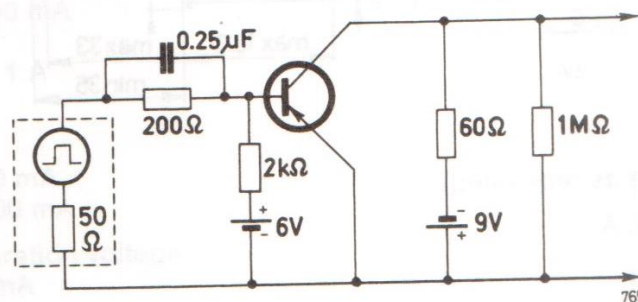
AC 125 (z), AC 125F (z), AC 125K (z), AC 125U (z)

Two port characteristics

$-V_{CE} = 5\text{ V}$, $-I_C = 2\text{ mA}$, $f = 1\text{ kHz}$

Short circuit input resistance	h_{11e}	1.3 (0.6 ... 3.8)	$k\Omega$
Open circuit reverse voltage transfer ratio	h_{12e}	6.5 (≤ 13)	10^{-4}
Small signal forward current transfer ratio	h_{21e}	100 (50 ... 250)	
Open circuit output conductance	h_{22e}	80 (≤ 170)	μS

Test circuit for measuring switching characteristics [only for AC 125K (z)]



$-V_{CE} = 9\text{ V}$, $-I_{CX} = 150\text{ mA}$,
 $-I_{BX} = 30\text{ mA}$, $V_{BB} = 6\text{ V}$

$t_r = 0.55\ \mu s$
 $t_s = 0.6\ \mu s$
 $t_f = 0.35\ \mu s$

Notes

As requested the devices are available at extra charge selected in accordance to their DC forward current transfer ratios h_{21E} .

Operating point (measured under pulsed conditions):

$-V_{CB} = 0\text{ V}$, $-I_C = 50\text{ mA}$, $T_{amb} = 25^\circ\text{C}$

Type	Group	h_{21E}
AC 125 (z) ... AC 125U (z)	V	50 ... 100
AC 125 (z) ... AC 125U (z)	VI	75 ... 150
AC 125 (z) ... AC 125K (z)	VII	125 ... 250