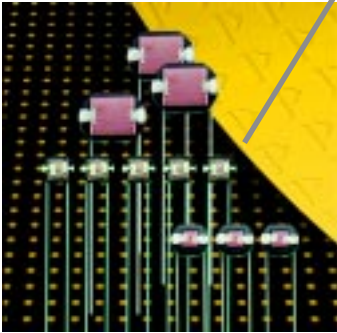


**Ambient Light Sensing Applications**

Photocells A 9050, A 9060  
Epoxy encapsulated series



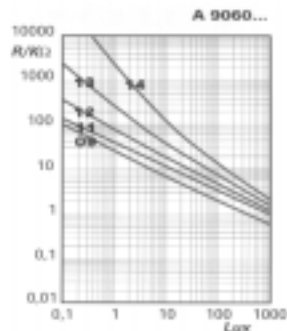
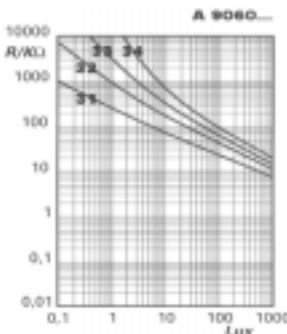
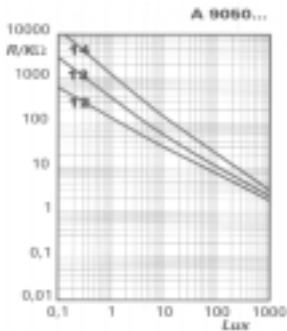
Light Switch Applications

Indoor and Outdoor

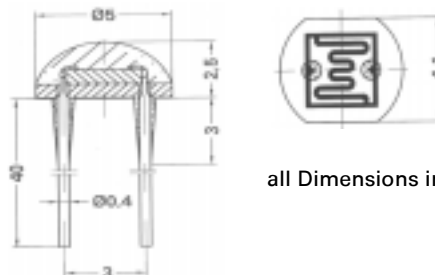
This Photocell series includes two different spectral sensitivity ranges. The A90... range is the smallest size of photocell in epoxy encapsulation. Customized selections are available upon request.

Operating Temperature Range: -20...+80 °C (non continuous)

Storage Temperature Range: -20...+80 °C (non continuous)



Type	R <sub>10</sub>	R <sub>100</sub>	R <sub>01</sub>	R <sub>05</sub>	V <sub>max</sub>	P <sub>max</sub>	γ <sub>10/100</sub>	λ <sub>peak</sub>
units	KΩ	KΩ typ.	MΩ min	MΩ min	V	mW	typ.	nm
A 9060 09	4...11	2	0,04	0,12	100	90	0,65	600
A 9060 11	9...20	3,5	0,06	0,18	150	90	0,65	600
A 9060 12	16...33	5	0,18	0,5	150	90	0,7	600
A 9060 13	27...94	8	0,5	1,5	150	90	0,8	600
A 9060 14	77...340	15	1,5	5,0	150	90	0,9	600
A 9060 31	60...130	23	0,4	1,2	300	90	0,65	600
A 9060 32	120...210	35	1,0	3,0	300	90	0,7	600
A 9060 33	200...580	50	3,0	9	300	90	0,8	600
A 9060 34	500...1200	100	5,0	15	300	90	0,9	600
A 9050 12	18...44	7	0,15	0,45	150	90	0,65	530
A 9050 13	36...88	12	0,4	1,2	150	90	0,7	530
A 9050 14	70...200	20	1,0	3,0	150	90	0,75	530



all Dimensions in mm

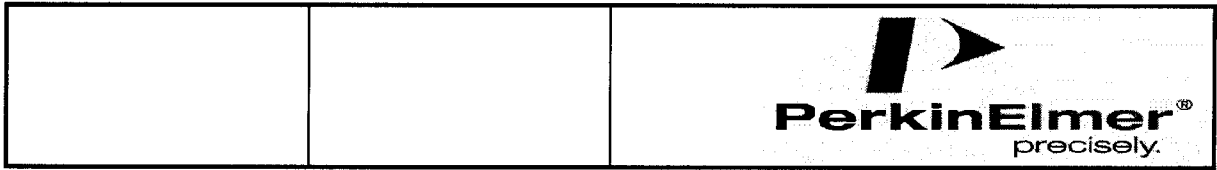
Europe:  
**PerkinElmer** Optoelectronics  
GmbH & CoKG  
Wenzel Jaksch Str 31  
65199 Wiesbaden / Germany  
Phone +49(0)611 492 0  
Fax +49(0)611 492 170

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47, Ayer Rajah Crescent #06-12  
Singapore 139947  
Phone +65 775 2022  
Fax +65 775 1008



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**SPECIFICATION  
FOR  
OPTO - SENSORS**

**Customer :**  
**Representative :**  
**Type :**           **A9013**  
**PerkinElmer Part No. :**   **95503651**  
**Date :**           **2005.11.30**

**This specification has been provided by R &D Department of  
PerkinElmer Optoelectronics**

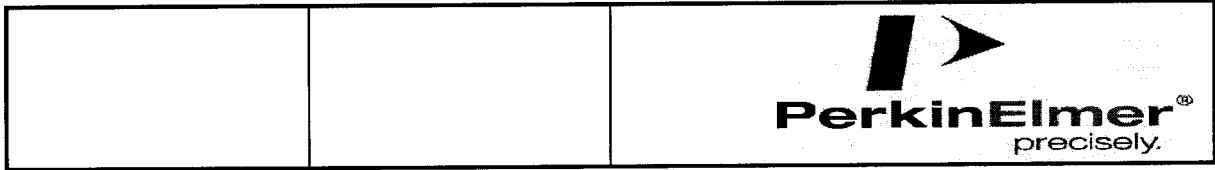
**No. of Samples :**       **NA**  
**Technical Data :**       **4 pages**

**The undersigned hereby confirm that PerkinElmer quality assurance system has been applied to the shipment this specification is attached to. All devices have met the requirements of PerkinElmer test specifications and passed a 100% final production test plus a sample lot outgoing inspection in accordance with GB/T 2828.1-2003/ISO 2859-1: 1999.**

<b>CHECKED :</b>	<b>APPROVED :</b> William Wang 2005.11.30
------------------	---

<u><b>Customer Approval :</b></u>	<b>Date</b>	<b>Signature</b>

**IN CASE OF SAMPLES ACCEPTANCE ; PLEASE ATTACH THE SIGNED FRONT PAGE OF THIS SPECIFICATION TO YOUR KIND ORDER**



**SPECIFICATION  
FOR  
OPTO - SENSORS**

**Type : A9013**

<input checked="" type="checkbox"/> <b>Standard Type</b>	<input type="checkbox"/> <b>Customer Specific Type</b>
--	--

The marked test criteria have been applied to the attached samples and will be implemented as 100% test at final assembly. Below typical characteristic data are provided for reference.

	<b>R</b>	<b>1</b>	<i>Resistance value at 1 lux (0.093 fc)</i>	:		<b>kΩ</b>
<b>x</b>	<b>R</b>	<b>10</b>	<i>Resistance value at 10 lux (0.93 fc)</i>	:	<b>27 – 94</b>	<b>kΩ</b>
	<b>R</b>	<b>100</b>	<i>Resistance value at 100 lux (9.3 fc)</i>	:		<b>kΩ</b>
	<b>R</b>		<i>Resistance value as stated besides</i>	:		<b>kΩ</b>
<b>x</b>	<b>R<sub>0</sub></b>	<b>1</b>	<i>Minimum Resistance 1 sec after removal from light</i>	:	<b>0.5</b>	<b>MΩ</b>
	<b>R<sub>0</sub></b>	<b>5</b>	<i>Minimum Resistance 5 sec after removal from light</i>	:		<b>MΩ</b>
	<b>R<sub>0</sub></b>		<i>Minimum Resistance after dark time stated besides</i>	:		<b>MΩ</b>
	<b>γ</b>		<i>Slope as given by</i> $\frac{\lg(R_{10}/R_{100})}{\lg(100/10)}$	<i>typ.</i> :		

<b>LIMIT VALUES</b>			
Maximum Power Dissipation	:	<b>90</b>	<b>mW</b>
Maximum Supply Voltage (DC or AC <sub>pk</sub> )	:	<b>150</b>	<b>V</b>
Temperature Coefficient	:	<b>0.4</b>	<b>%/°C</b>
Peak Spectral Response	:	<b>600±20</b>	<b>nm</b>

<b>ENCAPSULATION</b>	
<input type="checkbox"/>	Hermetically Sealed Metal Case
<input type="checkbox"/>	Hermetically Sealed Glass Bulb
<input checked="" type="checkbox"/>	Epoxy Coating
<input type="checkbox"/>	Lacquer Coating

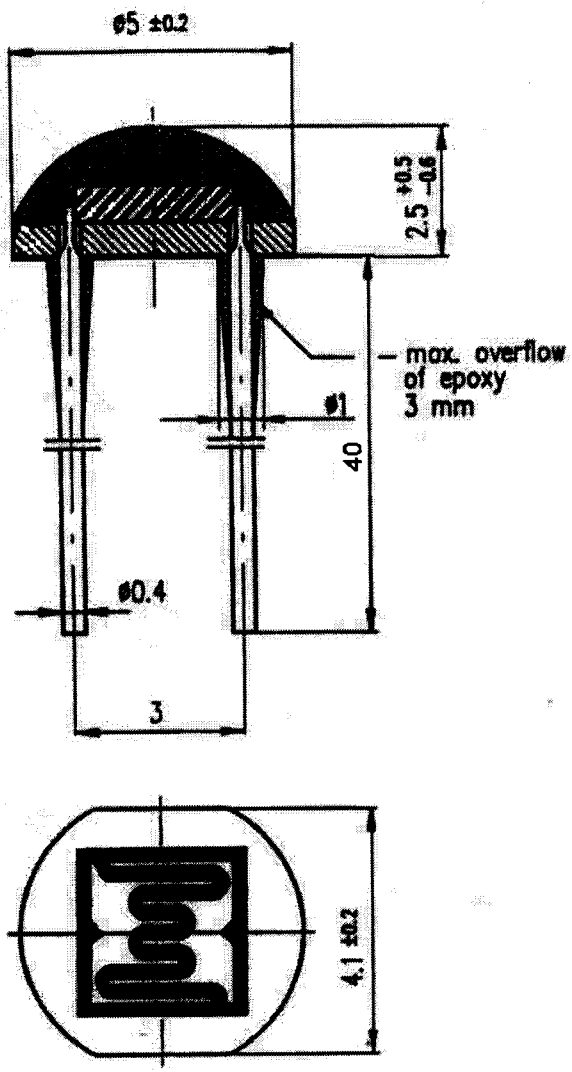
Date 2005.11.30	Signature William Wang
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**SPECIFICATION  
FOR  
OPTO - SENSORS**

Type : A9013

**Mechanical Drawing**

**PACKAGE DIMENSIONS mm**



Date  
2005.11.29

Signature  
William Wang



## **SPECIFICATION FOR OPTO - SENSORS**

### **COMMON INFORMATIONS**

PerkinElmer Photoconductive Cells pass a 100% final electrical test, consisting light readings at defined light level(s) and dark resistance  $R_0$  taken at certain sec after switch off of an illumination as specified. Additionally an outgoing test according to GB/T 2828.1-2003/ISO 2859-1: 1999 is applied to all shipments. Prior to measurements, all devices are exposed to normal room light (approx. 500 lux) for at least 16 hours. This preconditioning compensates the effect of "light history", a typical reaction of this kind of semiconductive component, leading usually to an adaption of resistance value to its preillumination within a certain range. If no special procedure is required, all readings are taken under a tungsten filament light source being run at  $2854 \pm 50$  K color temperature. Dark resistance readings are achieved at the defined time after covering the light source with an electromagnetic shutter within 10 msec.

### **LONG TIME STABILITY**

is influenced by light history effect as well. Stability of light readings will be guaranteed in case of approximately equal intervals of bright and dark ambient conditions. In case of application of only singular light condition an increase of typical readings has to be expected in case of high ambient light, a decrease in case of long dark period. The absolute variation will be within  $\pm 10\%$  at 10 lux with tendencily higher deviation at lower light levels.

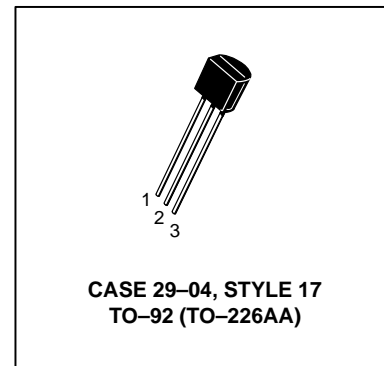
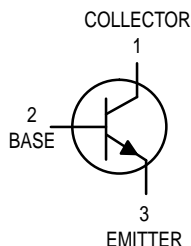
### **STORAGE AND HANDLING**

All PerkinElmer photoconductive cells are subjected to an artificial aging cycle consisting various combinations of illumination and temperature for a certain time. This aging guarantees constancy of light readings at ambient temperatures up to  $70^{\circ}\text{C}$  within the announced temperature coefficient range. Recommended storage conditions are temperatures beneath  $60^{\circ}\text{C}$  and usual moisture of approximately 50% r.H. Through soldering process a preheating of components surface exceeding  $130^{\circ}\text{C}$  should be avoided. Automatic soldering shouldn't last more than 10 seconds at  $260^{\circ}\text{C}$ . Otherwise a stand off of 5 mm should be applied.

# Amplifier Transistors

## NPN Silicon

**BC546, B**  
**BC547, A, B, C**  
**BC548, A, B, C**



### MAXIMUM RATINGS

Rating	Symbol	BC 546	BC 547	BC 548	Unit
Collector–Emitter Voltage	$V_{CEO}$	65	45	30	Vdc
Collector–Base Voltage	$V_{CBO}$	80	50	30	Vdc
Emitter–Base Voltage	$V_{EBO}$	6.0			Vdc
Collector Current — Continuous	$I_C$	100			mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	625			mW
		5.0			mW/°C
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	1.5			Watt
		12			mW/°C
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	–55 to +150			°C

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	200	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	83.3	°C/W

### ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
----------------	--------	-----	-----	-----	------

### OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage ( $I_C = 1.0\text{ mA}, I_B = 0$ )	BC546	$V_{(BR)CEO}$	65	—	—	V
	BC547		45	—	—	
	BC548		30	—	—	
Collector–Base Breakdown Voltage ( $I_C = 100\ \mu\text{Adc}$ )	BC546	$V_{(BR)CBO}$	80	—	—	V
	BC547		50	—	—	
	BC548		30	—	—	
Emitter–Base Breakdown Voltage ( $I_E = 10\ \mu\text{A}, I_C = 0$ )	BC546	$V_{(BR)EBO}$	6.0	—	—	V
	BC547		6.0	—	—	
	BC548		6.0	—	—	
Collector Cutoff Current ( $V_{CE} = 70\text{ V}, V_{BE} = 0$ ) ( $V_{CE} = 50\text{ V}, V_{BE} = 0$ ) ( $V_{CE} = 35\text{ V}, V_{BE} = 0$ ) ( $V_{CE} = 30\text{ V}, T_A = 125^\circ\text{C}$ )	BC546	$I_{CES}$	—	0.2	15	nA
	BC547		—	0.2	15	
	BC548		—	0.2	15	
	BC546/547/548		—	—	4.0	

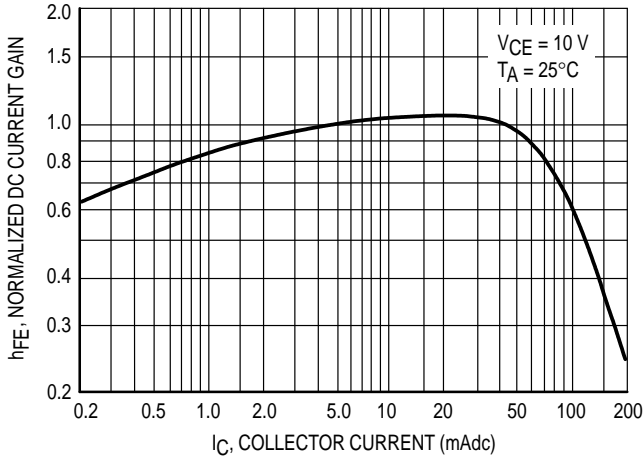
**BC546, B BC547, A, B, C BC548, A, B, C**
**ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted) (Continued)

Characteristic	Symbol	Min	Typ	Max	Unit
<b>ON CHARACTERISTICS</b>					
DC Current Gain ( $I_C = 10\ \mu\text{A}$ , $V_{CE} = 5.0\ \text{V}$ )	BC547A/548A BC546B/547B/548B BC548C	— — —	90 150 270	— — —	—
( $I_C = 2.0\ \text{mA}$ , $V_{CE} = 5.0\ \text{V}$ )	BC546 BC547 BC548 BC547A/548A BC546B/547B/548B BC547C/BC548C	110 110 110 110 200 420	— — — 180 290 520	450 800 800 220 450 800	
( $I_C = 100\ \text{mA}$ , $V_{CE} = 5.0\ \text{V}$ )	BC547A/548A BC546B/547B/548B BC548C	— — —	120 180 300	— — —	
Collector–Emitter Saturation Voltage ( $I_C = 10\ \text{mA}$ , $I_B = 0.5\ \text{mA}$ ) ( $I_C = 100\ \text{mA}$ , $I_B = 5.0\ \text{mA}$ ) ( $I_C = 10\ \text{mA}$ , $I_B = \text{See Note 1}$ )	$V_{CE(\text{sat})}$	— — —	0.09 0.2 0.3	0.25 0.6 0.6	V
Base–Emitter Saturation Voltage ( $I_C = 10\ \text{mA}$ , $I_B = 0.5\ \text{mA}$ )	$V_{BE(\text{sat})}$	—	0.7	—	V
Base–Emitter On Voltage ( $I_C = 2.0\ \text{mA}$ , $V_{CE} = 5.0\ \text{V}$ ) ( $I_C = 10\ \text{mA}$ , $V_{CE} = 5.0\ \text{V}$ )	$V_{BE(\text{on})}$	0.55 —	— —	0.7 0.77	V

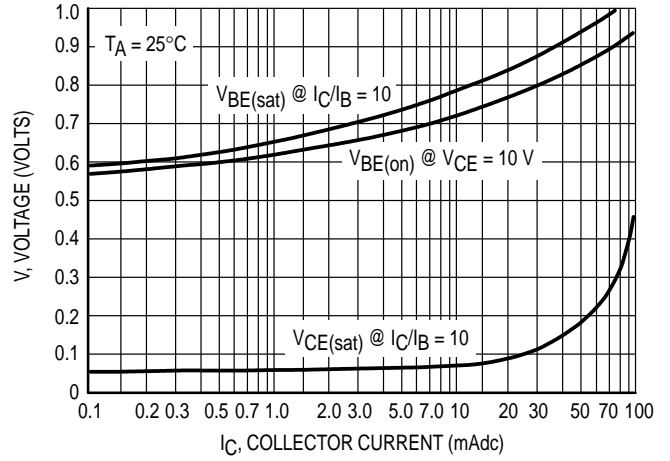
**SMALL–SIGNAL CHARACTERISTICS**

Current–Gain — Bandwidth Product ( $I_C = 10\ \text{mA}$ , $V_{CE} = 5.0\ \text{V}$ , $f = 100\ \text{MHz}$ )	BC546 BC547 BC548	$f_T$	150 150 150	300 300 300	— — —	MHz
Output Capacitance ( $V_{CB} = 10\ \text{V}$ , $I_C = 0$ , $f = 1.0\ \text{MHz}$ )		$C_{obo}$	—	1.7	4.5	pF
Input Capacitance ( $V_{EB} = 0.5\ \text{V}$ , $I_C = 0$ , $f = 1.0\ \text{MHz}$ )		$C_{ibo}$	—	10	—	pF
Small–Signal Current Gain ( $I_C = 2.0\ \text{mA}$ , $V_{CE} = 5.0\ \text{V}$ , $f = 1.0\ \text{kHz}$ )	BC546 BC547/548 BC547A/548A BC546B/547B/548B BC547C/548C	$h_{fe}$	125 125 125 240 450	— — 220 330 600	500 900 260 500 900	—
Noise Figure ( $I_C = 0.2\ \text{mA}$ , $V_{CE} = 5.0\ \text{V}$ , $R_S = 2\ \text{k}\Omega$ , $f = 1.0\ \text{kHz}$ , $\Delta f = 200\ \text{Hz}$ )	BC546 BC547 BC548	NF	— — —	2.0 2.0 2.0	10 10 10	dB

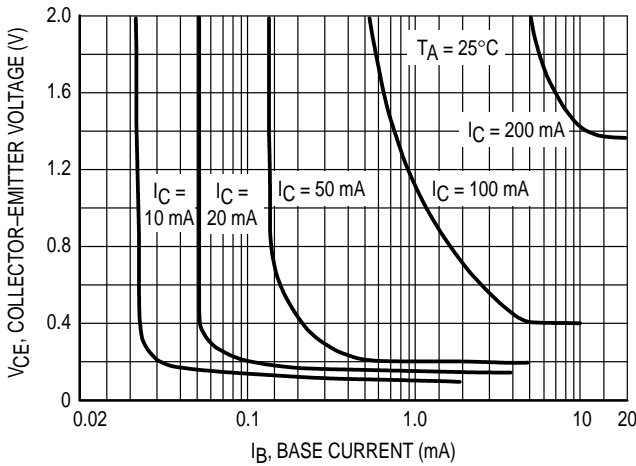
Note 1:  $I_B$  is value for which  $I_C = 11\ \text{mA}$  at  $V_{CE} = 1.0\ \text{V}$ .



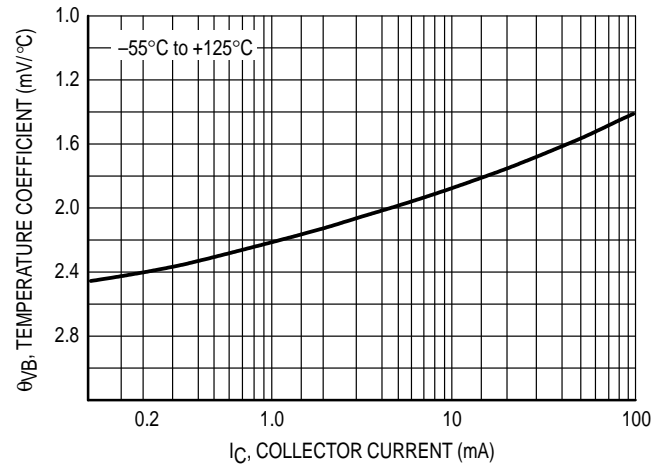
**Figure 1. Normalized DC Current Gain**



**Figure 2. "Saturation" and "On" Voltages**

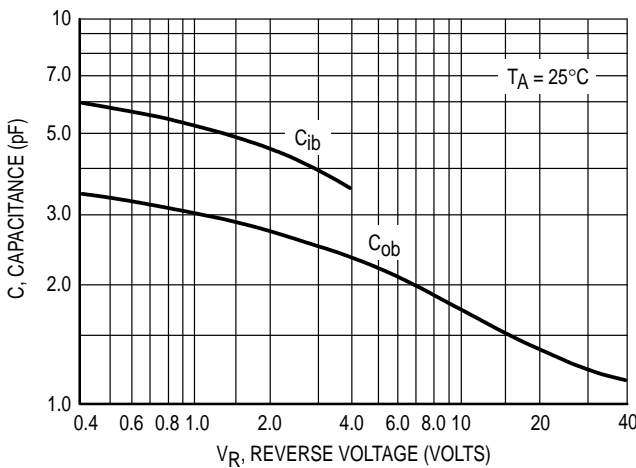


**Figure 3. Collector Saturation Region**

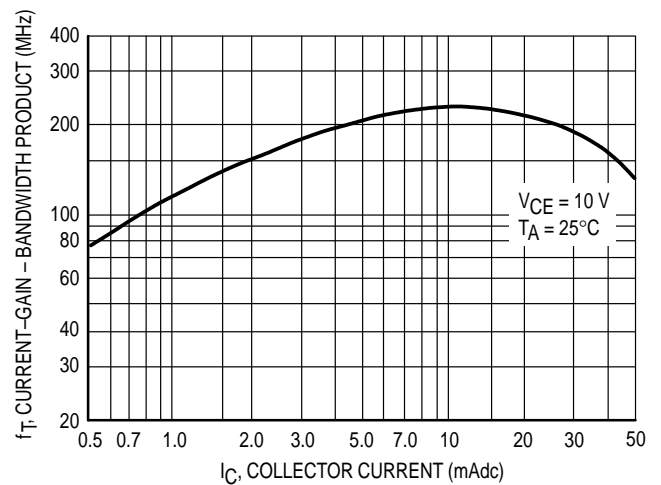


**Figure 4. Base-Emitter Temperature Coefficient**

**BC547/BC548**



**Figure 5. Capacitances**



**Figure 6. Current-Gain - Bandwidth Product**



BC547/BC548

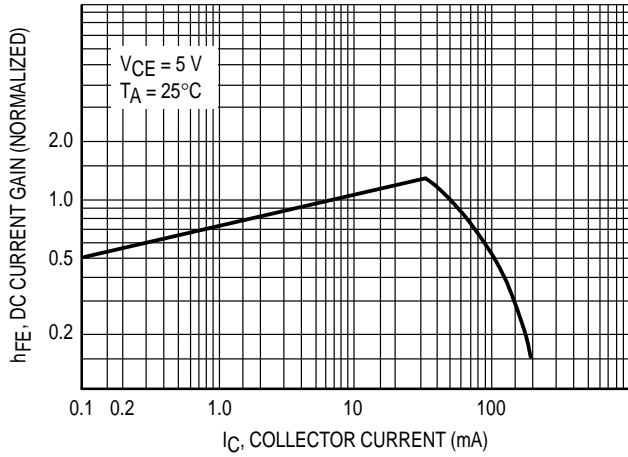


Figure 7. DC Current Gain

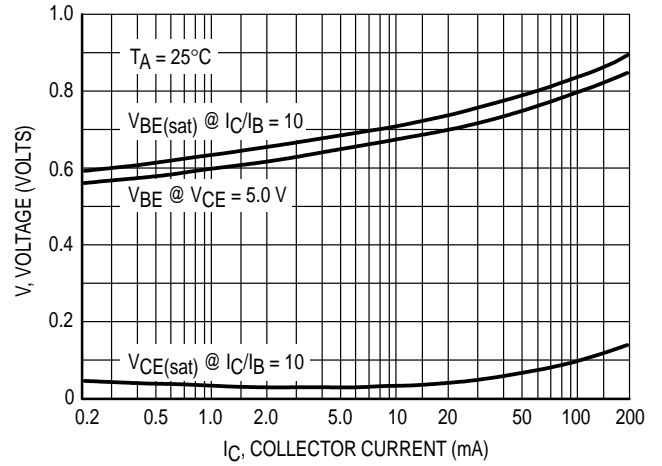


Figure 8. "On" Voltage

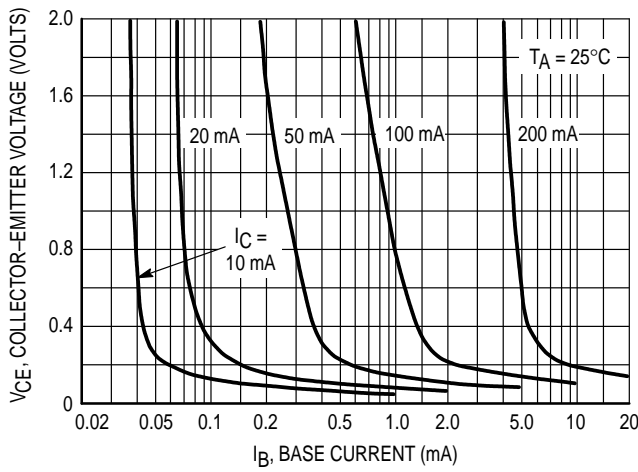


Figure 9. Collector Saturation Region

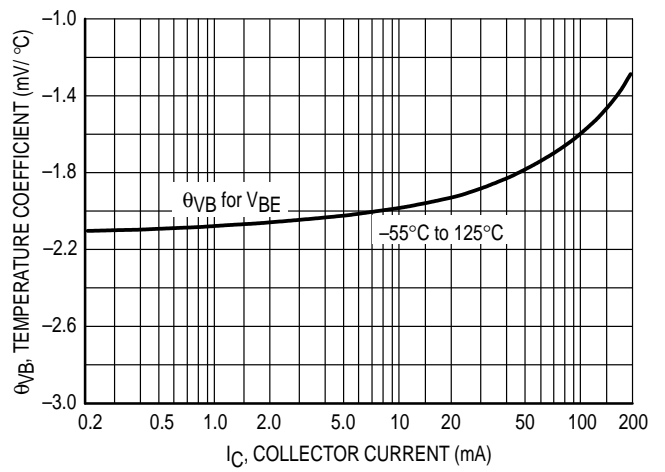


Figure 10. Base-Emitter Temperature Coefficient

BC546

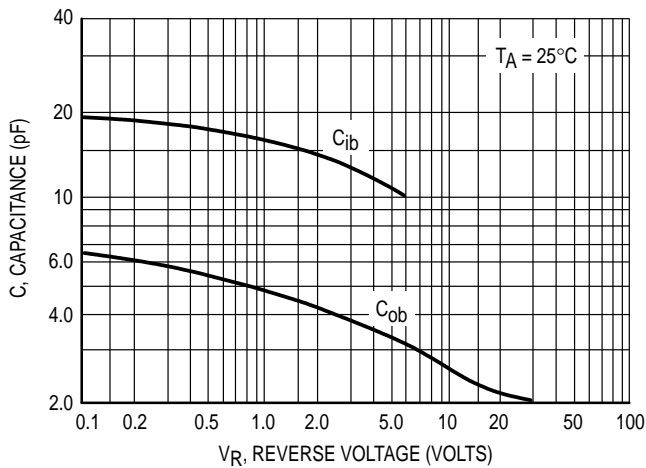


Figure 11. Capacitance

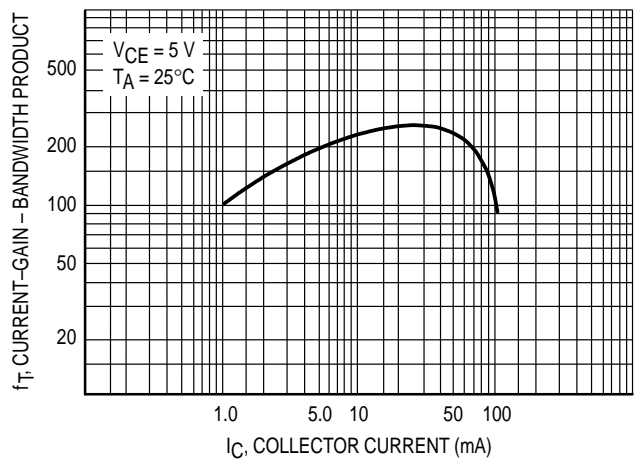
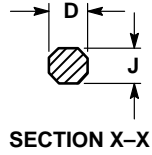
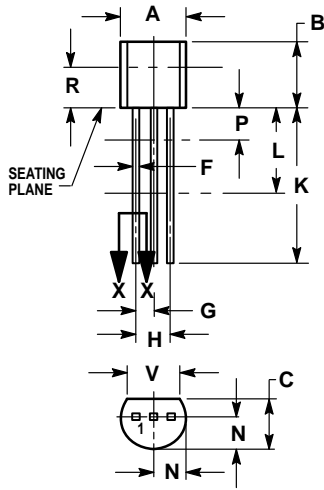


Figure 12. Current-Gain - Bandwidth Product

PACKAGE DIMENSIONS



NOTES:


1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. DIMENSION F APPLIES BETWEEN P AND L. DIMENSION D AND J APPLY BETWEEN L AND K MINIMUM. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.175	0.205	4.45	5.20
B	0.170	0.210	4.32	5.33
C	0.125	0.165	3.18	4.19
D	0.016	0.022	0.41	0.55
F	0.016	0.019	0.41	0.48
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.015	0.020	0.39	0.50
K	0.500	—	12.70	—
L	0.250	—	6.35	—
N	0.080	0.105	2.04	2.66
P	—	0.100	—	2.54
R	0.115	—	2.93	—
V	0.135	—	3.43	—

CASE 029-04  
(TO-226AA)  
ISSUE AD

STYLE 17:

- PIN 1. COLLECTOR
2. BASE
3. EMITTER

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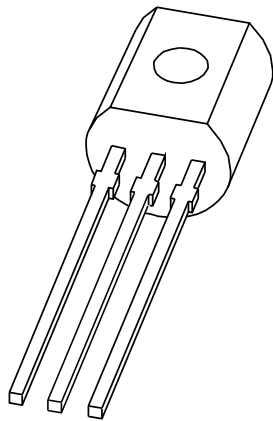
**JAPAN:** Nippon Motorola Ltd.; Tatsumi-SPD-JLDC, Toshikatsu Otsuki,  
6F Seibu-Butsuryu-Center, 3-14-2 Tatsumi Koto-Ku, Tokyo 135, Japan. 03-3521-8315

**MFAX:** RMFAX0@email.sps.mot.com – TOUCHTONE (602) 244-6609  
**INTERNET:** <http://Design-NET.com>

**HONG KONG:** Motorola Semiconductors H.K. Ltd.; 8B Tai Ping Industrial Park,  
51 Ting Kok Road, Tai Po, N.T., Hong Kong. 852-26629298



# DATA SHEET



## **BC556; BC557; BC558** PNP general purpose transistors

Product specification  
Supersedes data of September 1994  
File under Discrete Semiconductors, SC04

1997 Mar 27

# PNP general purpose transistors

# BC556; BC557; BC558

### FEATURES

- Low current (max. 100 mA)
- Low voltage (max. 65 V).

### APPLICATIONS

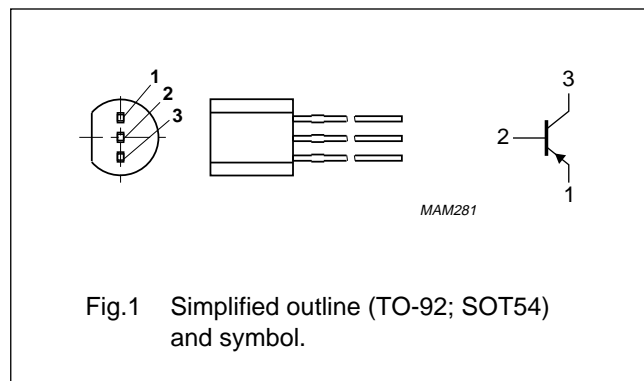
- General purpose switching and amplification.

### DESCRIPTION

PNP transistor in a TO-92; SOT54 plastic package.  
 NPN complements: BC546, BC547 and BC548.

### PINNING

PIN	DESCRIPTION
1	emitter
2	base
3	collector



### QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>CB0</sub>	collector-base voltage	open emitter			
	BC556		–	–80	V
	BC557		–	–50	V
V <sub>CEO</sub>	collector-emitter voltage	open base			
	BC556		–	–65	V
	BC557		–	–45	V
	BC558		–	–30	V
I <sub>CM</sub>	peak collector current		–	–200	mA
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C	–	500	mW
h <sub>FE</sub>	DC current gain	I <sub>C</sub> = –2 mA; V <sub>CE</sub> = –5 V			
	BC556		125	475	
	BC557; BC558		125	800	
f <sub>T</sub>	transition frequency	I <sub>C</sub> = –10 mA; V <sub>CE</sub> = –5 V; f = 100 MHz	100	–	MHz

## PNP general purpose transistors

## BC556; BC557; BC558

**LIMITING VALUES**

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>CBO</sub>	collector-base voltage	open emitter			
	BC556		–	–80	V
	BC557		–	–50	V
	BC558		–	–30	V
V <sub>CEO</sub>	collector-emitter voltage	open base			
	BC556		–	–65	V
	BC557		–	–45	V
	BC558		–	–30	V
V <sub>EBO</sub>	emitter-base voltage	open collector	–	–5	V
I <sub>C</sub>	collector current (DC)		–	–100	mA
I <sub>CM</sub>	peak collector current		–	–200	mA
I <sub>BM</sub>	peak base current		–	–200	mA
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C	–	500	mW
T <sub>stg</sub>	storage temperature		–65	+150	°C
T <sub>j</sub>	junction temperature		–	150	°C
T <sub>amb</sub>	operating ambient temperature		–65	+150	°C

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R <sub>th j-a</sub>	thermal resistance from junction to ambient	note 1	250	K/W

**Note**

1. Transistor mounted on an FR4 printed-circuit board.

## PNP general purpose transistors

## BC556; BC557; BC558

## CHARACTERISTICS

$T_j = 25\text{ °C}$  unless otherwise specified.

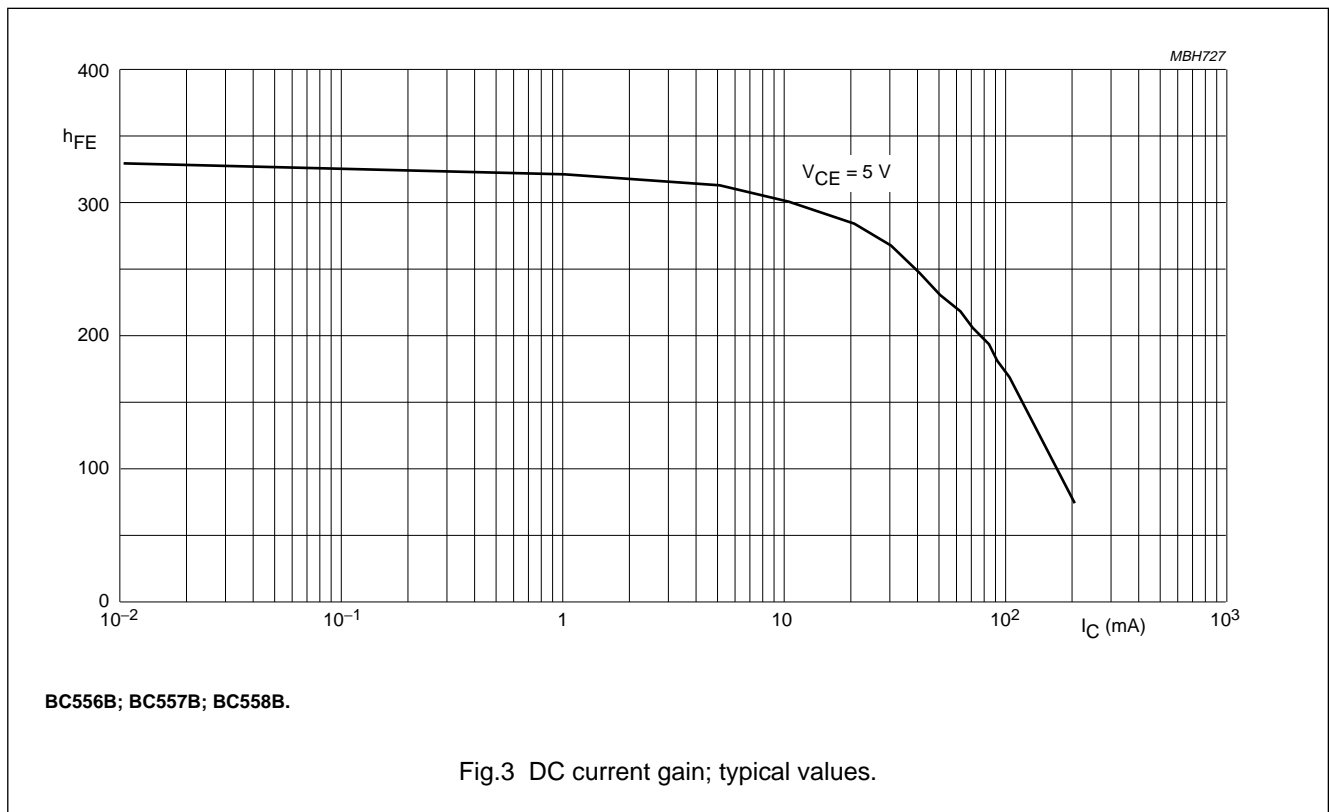
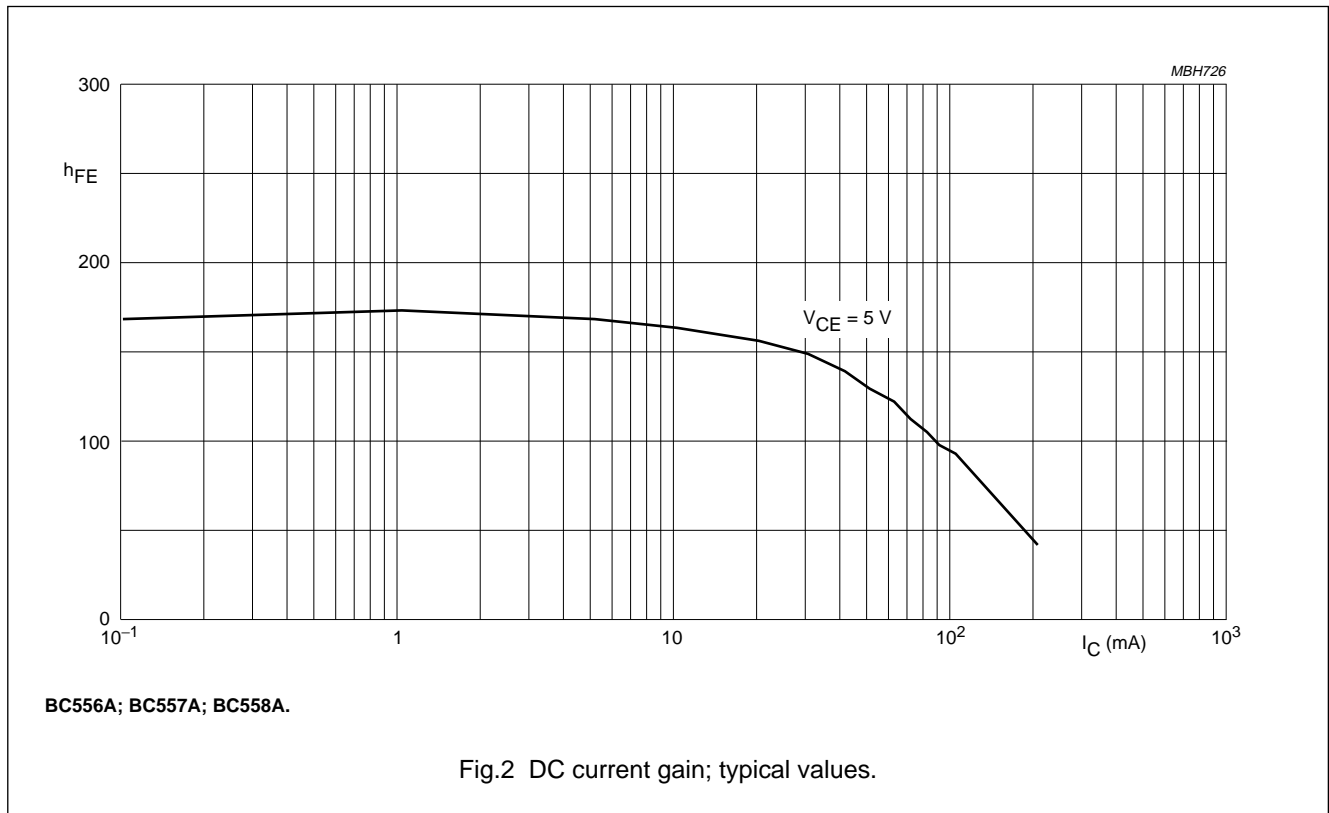
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$I_{CBO}$	collector cut-off current	$I_E = 0; V_{CB} = -30\text{ V}$	–	–1	–15	nA
		$I_E = 0; V_{CB} = -30\text{ V}; T_j = 150\text{ °C}$	–	–	–4	$\mu\text{A}$
$I_{EBO}$	emitter cut-off current	$I_C = 0; V_{EB} = -5\text{ V}$	–	–	–100	nA
$h_{FE}$	DC current gain BC556 BC557; BC558 BC556A; BC557A; BC558A BC556B; BC557B; BC558B BC557C; BC558C	$I_C = -2\text{ mA}; V_{CE} = -5\text{ V};$ see Figs 2, 3 and 4	125	–	475	
			125	–	800	
			125	–	250	
			220	–	475	
			420	–	800	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = -10\text{ mA}; I_B = -0.5\text{ mA}$	–	–60	–300	mV
		$I_C = -100\text{ mA}; I_B = -5\text{ mA}$	–	–180	–650	mV
$V_{BEsat}$	base-emitter saturation voltage	$I_C = -10\text{ mA}; I_B = -0.5\text{ mA};$ note 1	–	–750	–	mV
		$I_C = -100\text{ mA}; I_B = -5\text{ mA};$ note 1	–	–930	–	mV
$V_{BE}$	base-emitter voltage	$I_C = -2\text{ mA}; V_{CE} = -5\text{ V};$ note 2	–600	–650	–750	mV
		$I_C = -10\text{ mA}; V_{CE} = -5\text{ V};$ note 2	–	–	–820	mV
$C_c$	collector capacitance	$I_E = i_e = 0; V_{CB} = -10\text{ V}; f = 1\text{ MHz}$	–	3	–	pF
$C_e$	emitter capacitance	$I_C = i_c = 0; V_{EB} = -0.5\text{ V}; f = 1\text{ MHz}$	–	10	–	pF
$f_T$	transition frequency	$I_C = -10\text{ mA}; V_{CE} = -5\text{ V}; f = 100\text{ MHz}$	100	–	–	MHz
F	noise figure	$I_C = -200\text{ }\mu\text{A}; V_{CE} = -5\text{ V}; R_S = 2\text{ k}\Omega;$ $f = 1\text{ kHz}; B = 200\text{ Hz}$	–	2	10	dB

## Notes

- $V_{BEsat}$  decreases by about  $-1.7\text{ mV/K}$  with increasing temperature.
- $V_{BE}$  decreases by about  $-2\text{ mV/K}$  with increasing temperature.

PNP general purpose transistors

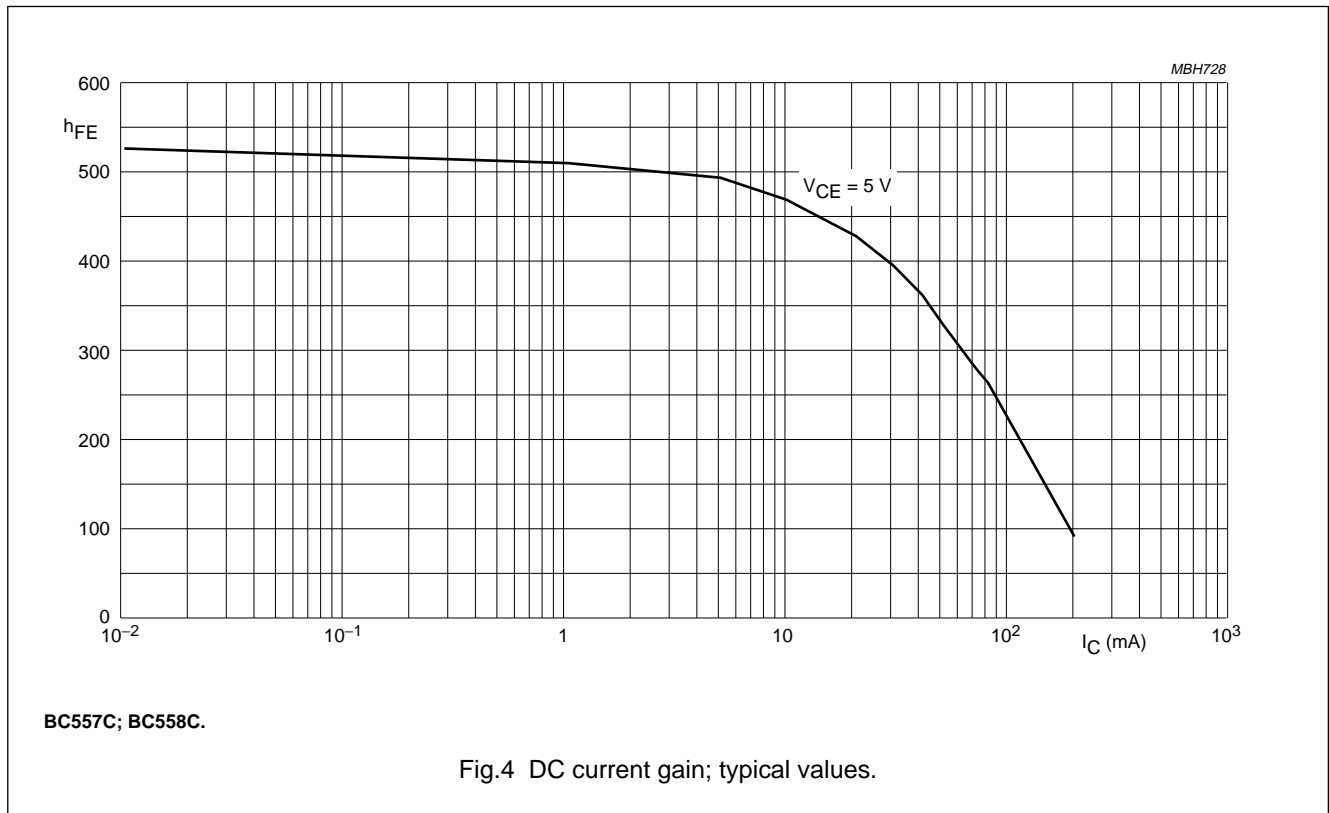
BC556; BC557; BC558





PNP general purpose transistors

BC556; BC557; BC558



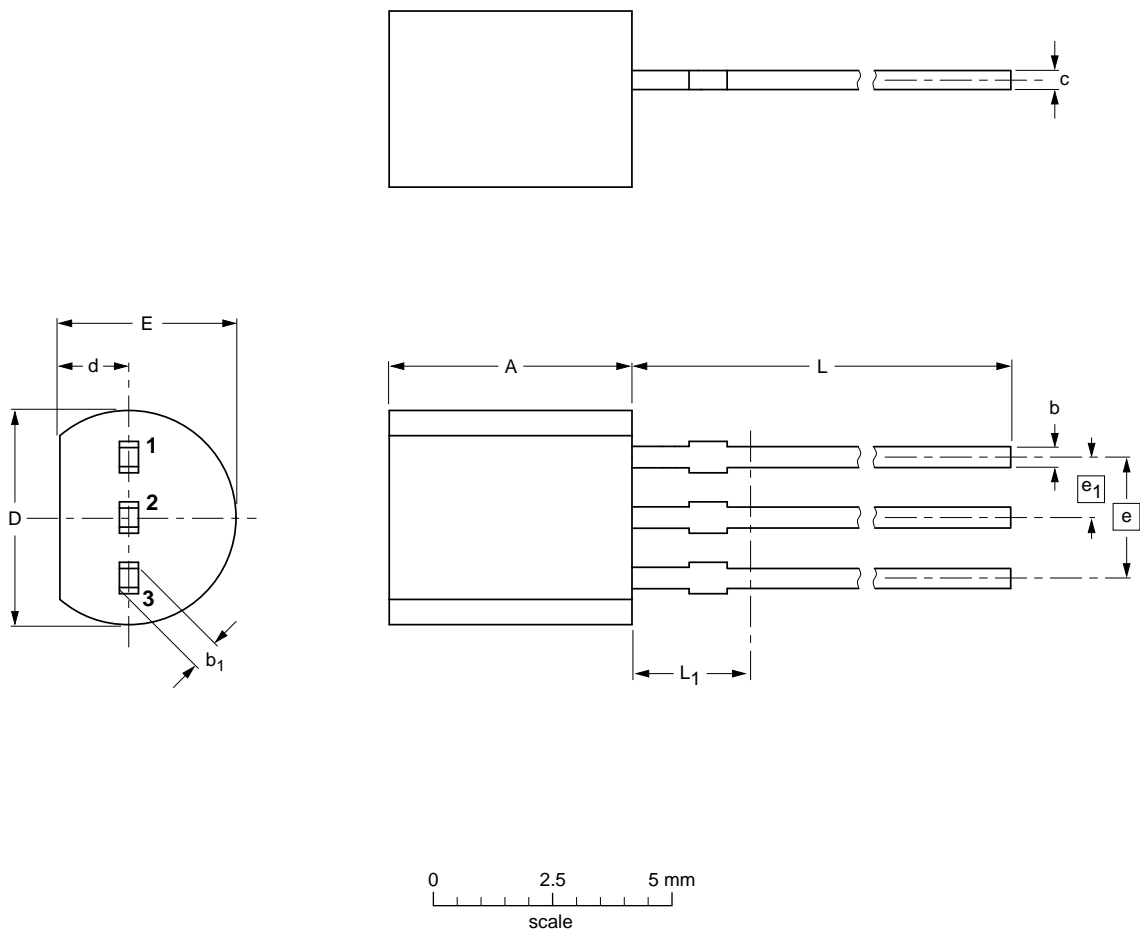
PNP general purpose transistors

BC556; BC557; BC558

PACKAGE OUTLINE

Plastic single-ended leaded (through hole) package; 3 leads

SOT54



DIMENSIONS (mm are the original dimensions)

UNIT	A	b	b <sub>1</sub>	c	D	d	E	e	e <sub>1</sub>	L	L <sub>1</sub> <sup>(1)</sup>
mm	5.2 5.0	0.48 0.40	0.66 0.56	0.45 0.40	4.8 4.4	1.7 1.4	4.2 3.6	2.54	1.27	14.5 12.7	2.5

Note

1. Terminal dimensions within this zone are uncontrolled to allow for flow of plastic and terminal irregularities.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT54		TO-92	SC-43			97-02-28

## PNP general purpose transistors

BC556; BC557; BC558

**DEFINITIONS**

<b>Data sheet status</b>	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
<b>Limiting values</b>	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
<b>Application information</b>	
Where application information is given, it is advisory and does not form part of the specification.	

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These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.

PNP general purpose transistors

BC556; BC557; BC558

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**NOTES**

PNP general purpose transistors

BC556; BC557; BC558

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**NOTES**

PNP general purpose transistors

BC556; BC557; BC558

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**NOTES**

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## LSM-50M/F (Artikel-Nr. 335405-07)

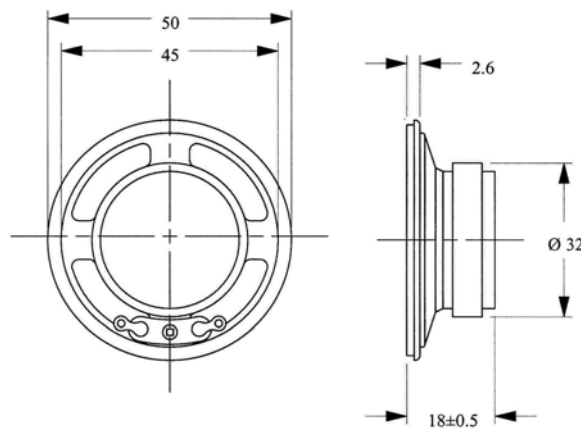
## EKULIT

### SPECIFICATIONS:

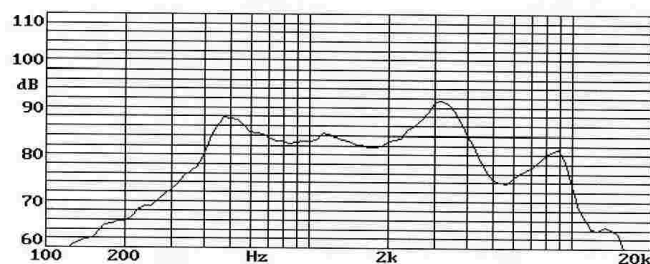
TYPE	UNIT	LSM-50M/F
Impedance	$\Omega$	$8 \pm 15\%$
Power (Nominal)	W	0.2
Power (Maximum)	W	0.4
Resonant Frequency	Hz	$550 \pm 20\%$
Sound Pressure Level	dB	$84 \pm 3$
Frequency Range	Hz	Fo~4.500
Operating Temperature	$^{\circ}\text{C}$	-20~+60
Storage Temperature	$^{\circ}\text{C}$	-30~+70

### DIMENSIONS :

(Unit: mm)



### Frequency response:





# Einstellregler PT15 (15 mm Durchmesser)

## KOHLESCHICHT

- Kein Hartpapier-Träger, sondern hochwertige Polyester-Folie; dadurch hervorragend hinsichtlich Feuchtigkeit und mechanischer Beanspruchung (keine Haarrisse).
- Volleingekapselte Gehäuse, die das Eindringen von Staub, Kolophonium und anderen umweltschädlichen Einflüssen verhindern.

### Auf Anfrage:

- Auch als Drehschalter bzw. Umschalter verwendbar.
- Mittelrast.
- Lange mechanische Lebensdauer ( $\geq 10.000$  Zyklen) PTE 15 ...
- Kunststoff selbstlöschend nach DIN UL-94 : V-0.
- Langloch für Steckachse um  $90^\circ$  verdreht (PT15 NG ...)
- Höhe 8,5 mm anstatt 7 mm Standard (PT15 NvΔ ...)

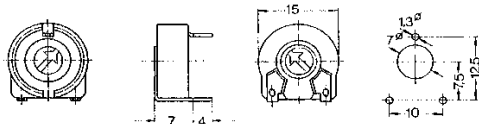
## Mechanische und elektrische Eigenschaften

Drehwinkel mechanisch	$265^\circ \pm 5^\circ$
Drehwinkel elektrisch	$250^\circ \pm 20^\circ$ (auf Anfrage: $\pm 2^\circ$ )
Drehmoment gemessen bei 3-5 U/sec.	0,5 bis 2,5 Ncm
Anschlagfestigkeit	10 Ncm
Fertigungsbereich	$100 \Omega - 5 \text{ M} \Omega$ (Werte: $50 \Omega$ und $10 \text{ M} \Omega$ auf Anfrage)
Toleranz	Werte: $100 \Omega - 1 \text{ M} \Omega : \pm 20\% / > 1 \text{ M} \Omega - 5 \text{ M} \Omega \pm 30\% /$ $50 \Omega$ und $10 \text{ M} \Omega : + 50\% - 30\%$ (Toleranz - Selektierung: Auf Anfrage)
Belastbarkeit	Tu $40^\circ \text{ C} / \text{LIN}: 0,25 \text{ W} / \text{LOG}: 0,125 \text{ W}$
Grenzspannung $V_R$ (V)	LIN: $250 \text{ V} = / \text{LOG}: 200 \text{ V} =$
Kurvenformen	LIN, Pos. LOG, Neg. LOG (Kurven 1, 4 und 5 nach DIN 41450) (Kurven 4 und 5 ab $1 \text{ K} \Omega$ lieferbar)
Restwiderstand (nach DIN 41450)	LIN: $\leq 500 \Omega : 2 \Omega / > 500 \Omega \leq 5 \cdot 10^{-3} R_N$ LOG: Anfang $\leq 1 \cdot 10^{-3} R_N / \text{Ende} \leq 2 \cdot 10^{-2} R_N$
Temperaturbereich	- $25$ bis $+70^\circ \text{ C}$
Widerstandsrauschen bei 10-15 U/sec.	$\leq 3\%$ des $R_N$ oder $3 \Omega$
Übergangswiderstand	$\leq 5\%$ des $R_N$

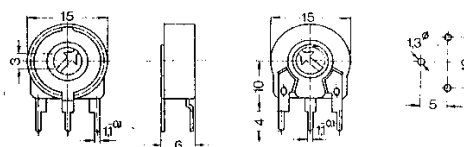
## Lieferbare Ausführungen ab Lager - Verpackungseinheit 200 Stück

## KOHLESCHICHT

### PT 15 Lv (12,5)

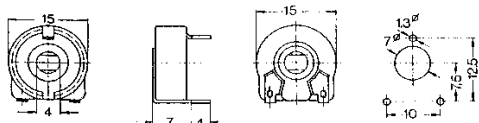


### PT 15 Lh (5)

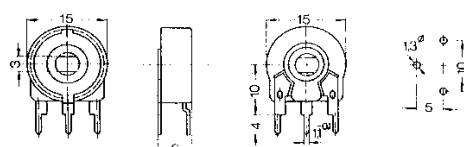


Schichtdrehwiderstand ( $\geq 10.000$  Betätigungen)

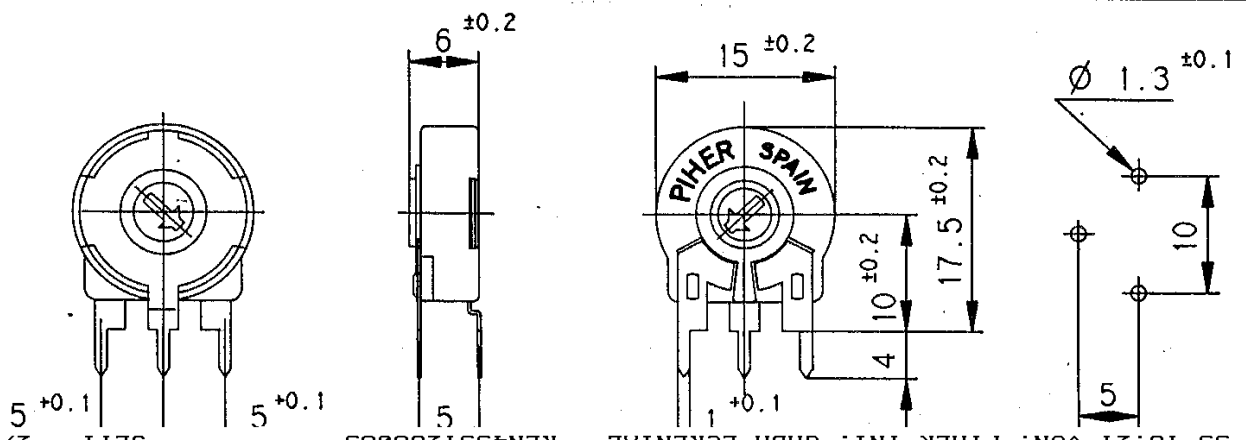
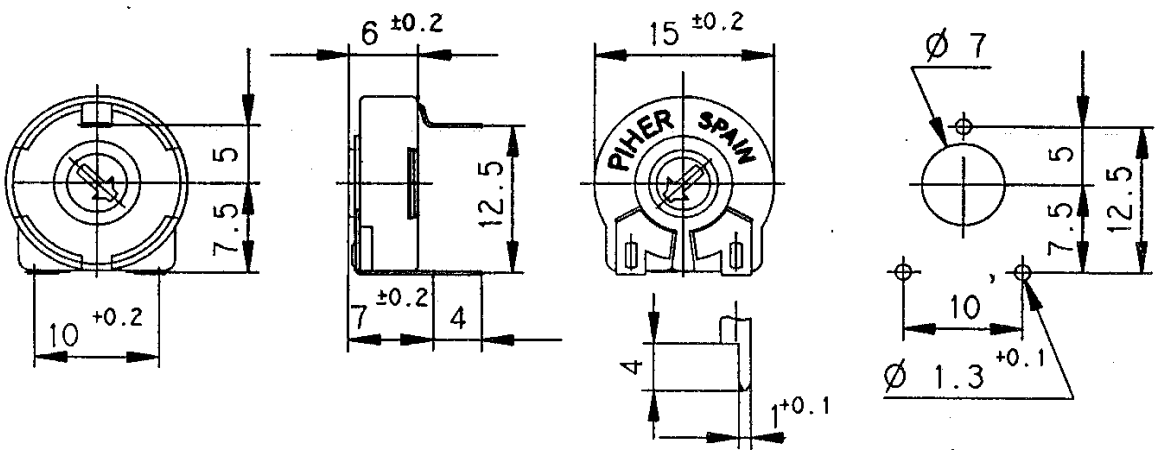
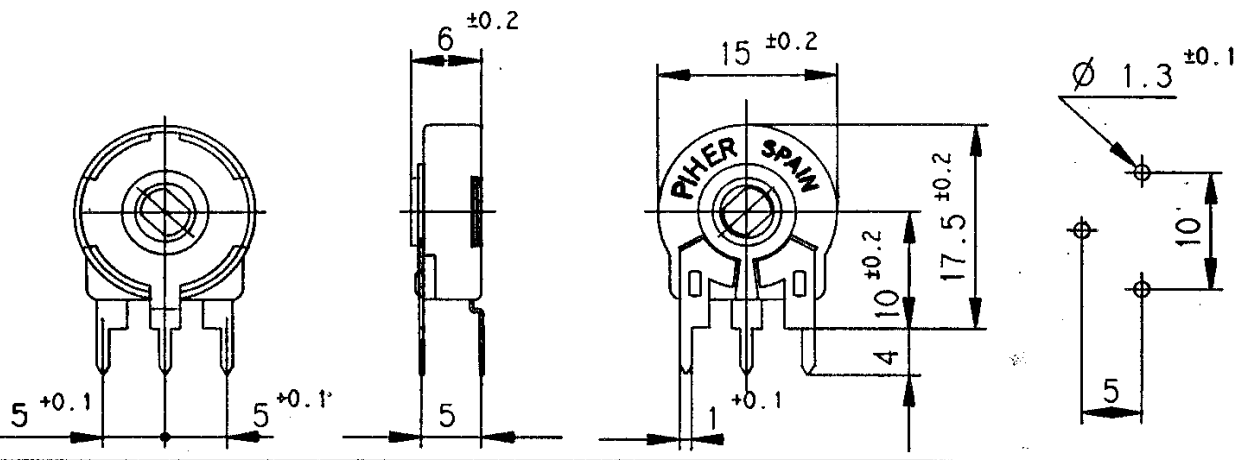
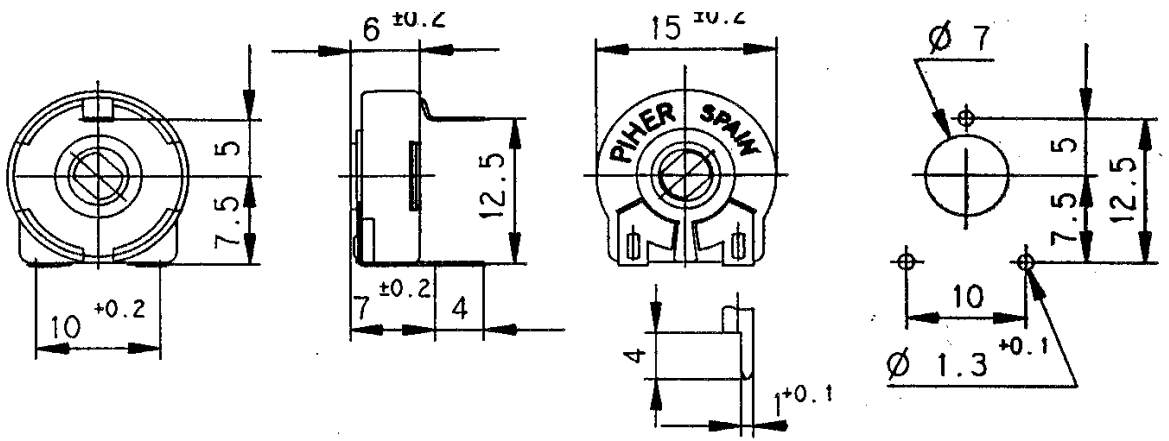
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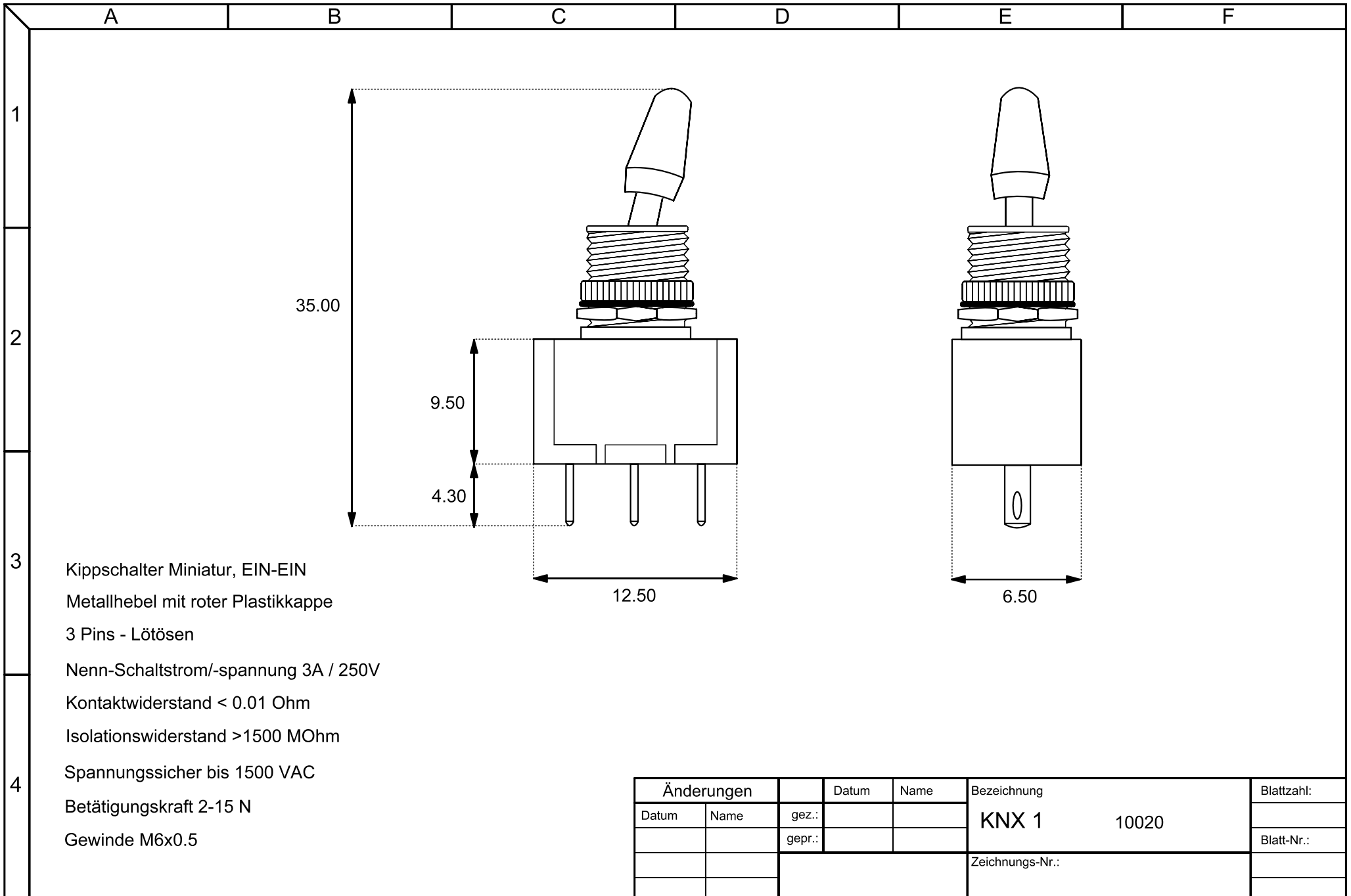


### PT 15 Nh (5)



Abmessungen in mm





Kippschalter Miniatur, EIN-EIN  
 Metallhebel mit roter Plastikkappe  
 3 Pins - Lötösen  
 Nenn-Schaltstrom/-spannung 3A / 250V  
 Kontaktwiderstand < 0.01 Ohm  
 Isolationswiderstand >1500 MOhm  
 Spannungssicher bis 1500 VAC  
 Betätigungskraft 2-15 N  
 Gewinde M6x0.5

Änderungen		Datum	Name	Bezeichnung	Blattzahl:
Datum	Name	gez.:		<b>KNX 1</b> 10020	
		gepr.:			Blatt-Nr.:
				Zeichnungs-Nr.:	

