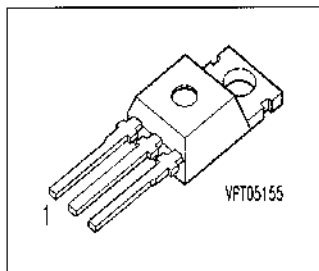


**SIPMOS® Power Transistor**

- N channel
- Enhancement mode
- Avalanche-rated



Pin 1	Pin 2	Pin 3
G	D	S

Type	$V_{DS}$	$I_D$	$R_{DS(on)}$	Package	Ordering Code
BUZ 73 A	200 V	5.5 A	0.6 $\Omega$	TO-220 AB	C67078-S1317-A3

**Maximum Ratings**

Parameter	Symbol	Values	Unit
Continuous drain current $T_C = 37\text{ }^\circ\text{C}$	$I_D$	5.5	A
Pulsed drain current $T_C = 25\text{ }^\circ\text{C}$	$I_{Dpuls}$	22	
Avalanche current, limited by $T_{jmax}$	$I_{AR}$	7	
Avalanche energy, periodic limited by $T_{jmax}$	$E_{AR}$	6.5	mJ
Avalanche energy, single pulse $I_D = 7\text{ A}$ , $V_{DD} = 50\text{ V}$ , $R_{GS} = 25\text{ }\Omega$ $L = 3.67\text{ mH}$ , $T_j = 25\text{ }^\circ\text{C}$	$E_{AS}$	120	
Gate source voltage	$V_{GS}$	$\pm 20$	V
Power dissipation $T_C = 25\text{ }^\circ\text{C}$	$P_{tot}$	40	W
Operating temperature	$T_j$	-55 ... +150	°C
Storage temperature	$T_{stg}$	-55 ... +150	
Thermal resistance, chip case	$R_{thJC}$	$\leq 3.1$	K/W
Thermal resistance, chip to ambient	$R_{thJA}$	75	
DIN humidity category, DIN 40 040		E	
IEC climatic category, DIN IEC 68-1		55 / 150 / 56	

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**Electrical Characteristics, at  $T_j = 25^\circ\text{C}$ , unless otherwise specified**

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

**Static Characteristics**

Drain-source breakdown voltage $V_{GS} = 0\text{ V}$ , $I_D = 0.25\text{ mA}$ , $T_j = 25^\circ\text{C}$	$V_{(BR)DSS}$	200	-	-	V
Gate threshold voltage $V_{GS} = V_{DS}$ , $I_D = 1\text{ mA}$	$V_{GS(th)}$	2.1	3	4	
Zero gate voltage drain current $V_{DS} = 200\text{ V}$ , $V_{GS} = 0\text{ V}$ , $T_j = 25^\circ\text{C}$ $V_{DS} = 200\text{ V}$ , $V_{GS} = 0\text{ V}$ , $T_j = 125^\circ\text{C}$	$I_{DSS}$	-	0.1 10	1 100	$\mu\text{A}$
Gate-source leakage current $V_{GS} = 20\text{ V}$ , $V_{DS} = 0\text{ V}$	$I_{GSS}$	-	10	100	nA
Drain-Source on-resistance $V_{GS} = 10\text{ V}$ , $I_D = 4.5\text{ A}$	$R_{DS(on)}$	-	0.5	0.6	$\Omega$

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**Electrical Characteristics, at  $T_j = 25^\circ\text{C}$ , unless otherwise specified**

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>Dynamic Characteristics</b>					
Transconductance $V_{DS} \geq 2 \cdot I_D \cdot R_{DS(on)max}$ , $I_D = 4.5\text{ A}$	$g_{fs}$	3	4.2	-	S
Input capacitance $V_{GS} = 0\text{ V}$ , $V_{DS} = 25\text{ V}$ , $f = 1\text{ MHz}$	$C_{iss}$	-	400	530	pF
Output capacitance $V_{GS} = 0\text{ V}$ , $V_{DS} = 25\text{ V}$ , $f = 1\text{ MHz}$	$C_{oss}$	-	85	130	
Reverse transfer capacitance $V_{GS} = 0\text{ V}$ , $V_{DS} = 25\text{ V}$ , $f = 1\text{ MHz}$	$C_{rss}$	-	45	70	
Turn-on delay time $V_{DD} = 30\text{ V}$ , $V_{GS} = 10\text{ V}$ , $I_D = 3\text{ A}$ $R_{GS} = 50\ \Omega$	$t_{d(on)}$	-	10	15	ns
Rise time $V_{DD} = 30\text{ V}$ , $V_{GS} = 10\text{ V}$ , $I_D = 3\text{ A}$ $R_{GS} = 50\ \Omega$	$t_r$	-	40	60	
Turn-off delay time $V_{DD} = 30\text{ V}$ , $V_{GS} = 10\text{ V}$ , $I_D = 3\text{ A}$ $R_{GS} = 50\ \Omega$	$t_{d(off)}$	-	55	75	
Fall time $V_{DD} = 30\text{ V}$ , $V_{GS} = 10\text{ V}$ , $I_D = 3\text{ A}$ $R_{GS} = 50\ \Omega$	$t_f$	-	30	40	

**■ 8235605 0133330 269 ■**

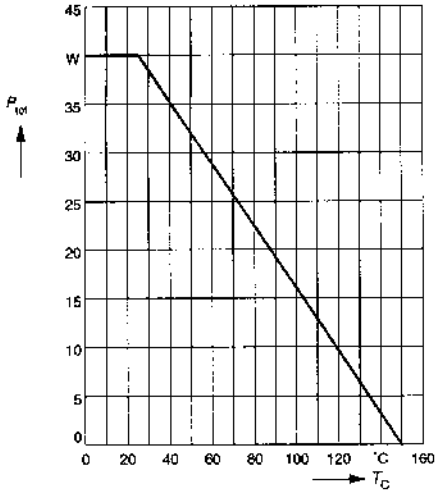
**Electrical Characteristics, at  $T_j = 25^\circ\text{C}$ , unless otherwise specified**

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>Reverse Diode</b>					
Inverse diode continuous forward current $T_C = 25^\circ\text{C}$	$I_S$	-	-	5.5	A
Inverse diode direct current, pulsed $T_C = 25^\circ\text{C}$	$I_{SM}$	-	-	22	
Inverse diode forward voltage $V_{GS} = 0\text{ V}, I_F = 14\text{ A}$	$V_{SD}$	-	1.3	1.7	V
Reverse recovery time $V_R = 100\text{ V}, I_F = I_S, di_F/dt = 100\text{ A}/\mu\text{s}$	$t_{rr}$	-	200	-	ns
Reverse recovery charge $V_R = 100\text{ V}, I_F = I_S, di_F/dt = 100\text{ A}/\mu\text{s}$	$Q_{rr}$	-	0.6	-	$\mu\text{C}$

**■ 8235605 0133331 1T5 ■**

**Power dissipation**

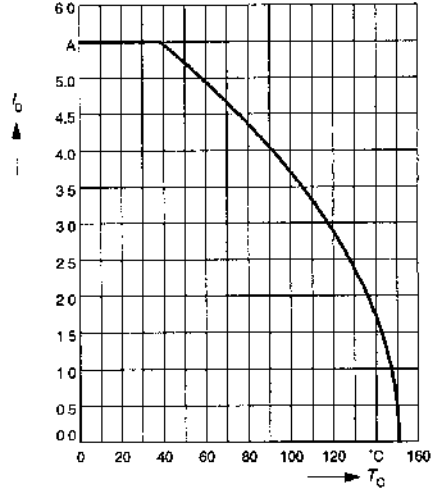
$P_{tot} = f(T_C)$



**Drain current**

$I_D = f(T_C)$

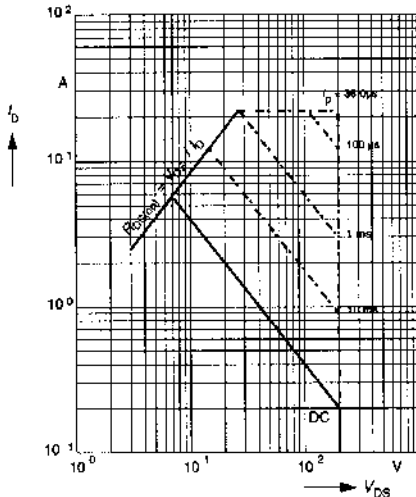
parameter:  $V_{GS} \geq 10$  V



**Safe operating area**

$I_D = f(V_{DS})$

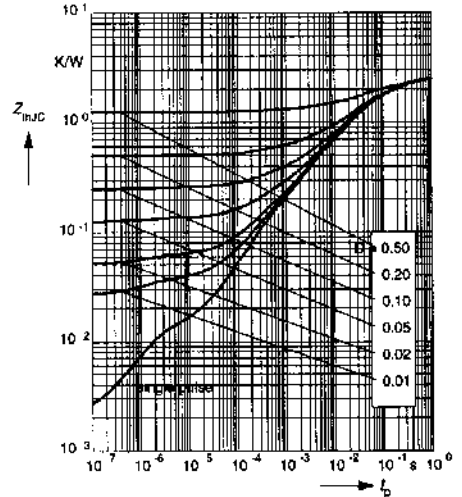
parameter:  $D = 0.01$ ,  $T_C = 25^\circ\text{C}$



**Transient thermal Impedance**

$Z_{thJC} = f(t_p)$

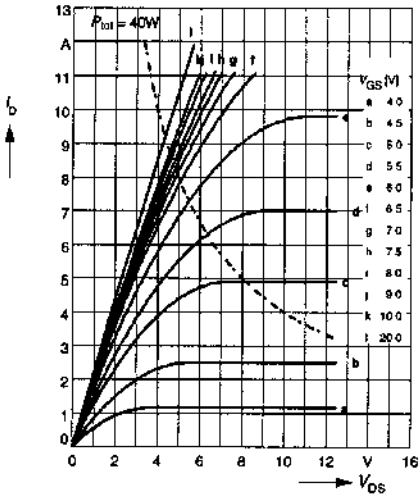
parameter:  $D = t_p / T$



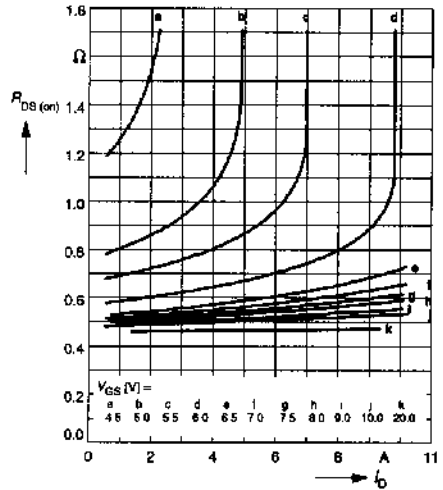
■ 8235605 0133332 031 ■

**Typ. output characteristics**

$$I_D = f(V_{DS})$$

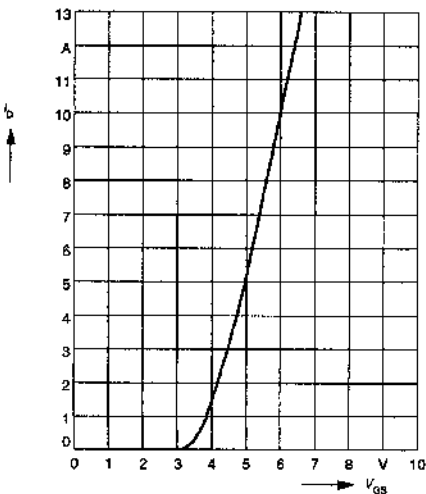
 parameter:  $t_p = 80 \mu s$ 

**Typ. drain-source on-resistance**

$$R_{DS(on)} = f(I_D)$$

 parameter:  $V_{GS}$ 

**Typ. transfer characteristics  $I_D = f(V_{GS})$** 

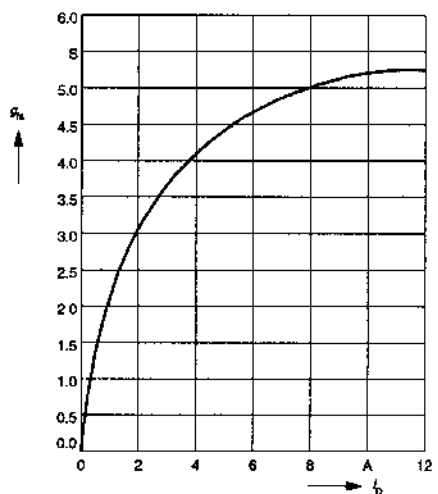
 parameter:  $t_p = 80 \mu s$ 

$$V_{DS} \geq 2 \times I_D \times R_{DS(on)max}$$


**Typ. forward transconductance  $g_{fs} = f(I_D)$** 

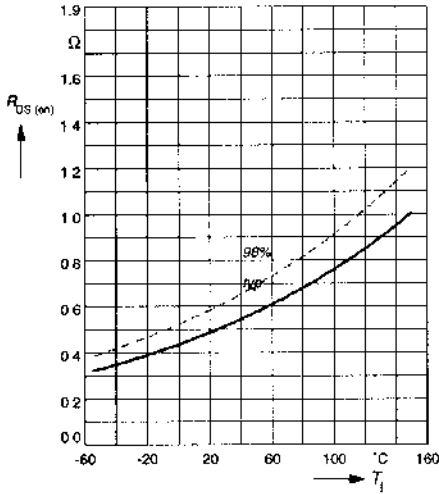
 parameter:  $t_p = 80 \mu s$ ,

$$V_{DS} \geq 2 \times I_D \times R_{DS(on)max}$$

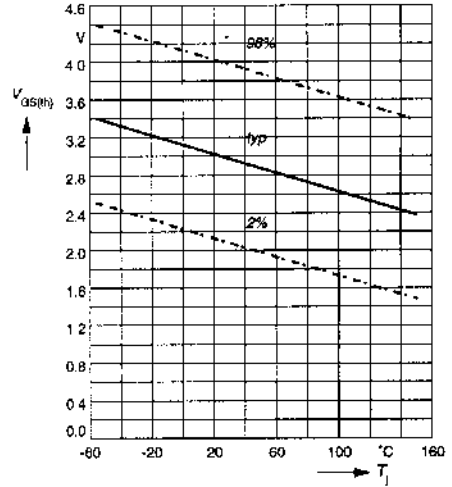


**Drain-source on-resistance**

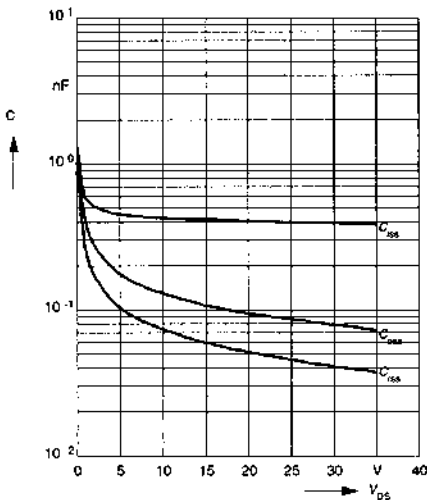
$$R_{DS(on)} = f(T_j)$$

 parameter:  $I_D = 4.5 \text{ A}$ ,  $V_{GS} = 10 \text{ V}$ 

**Gate threshold voltage**

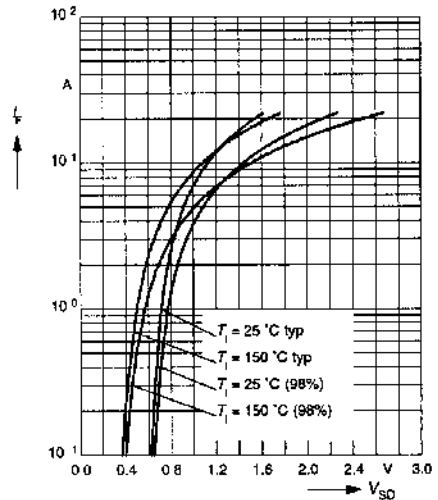
$$V_{GS(th)} = f(T_j)$$

 parameter:  $V_{GS} = V_{DS}$ ,  $I_D = 1 \text{ mA}$ 

**Typ. capacitances**

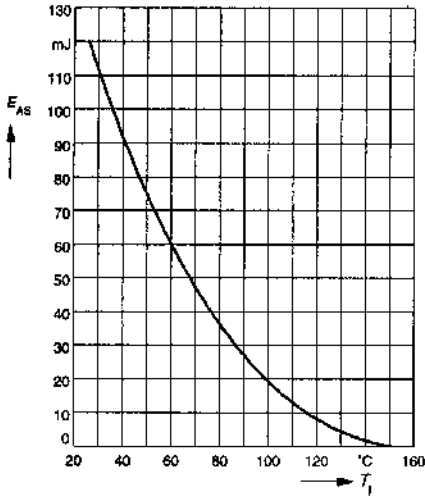
$$C = f(V_{DS})$$

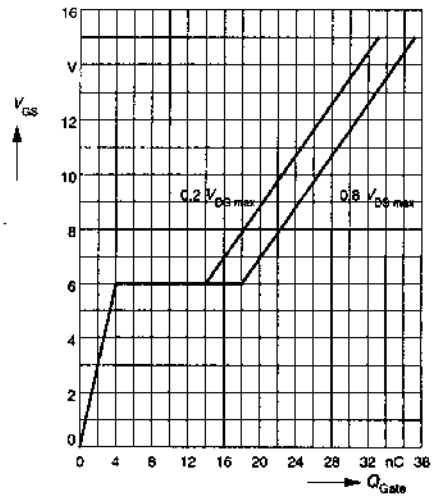
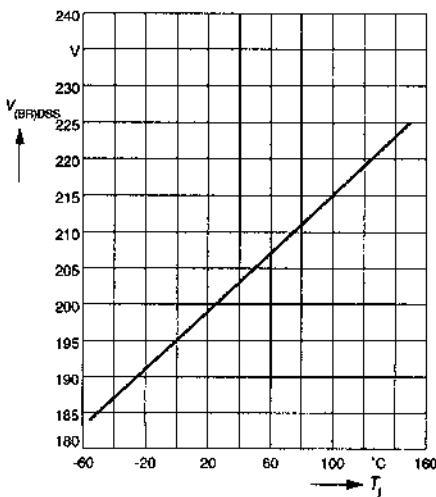
 parameter:  $V_{GS} = 0 \text{ V}$ ,  $f = 1 \text{ MHz}$ 

**Forward characteristics of reverse diode**

$$I_F = f(V_{SD})$$

 parameter:  $T_j, t_p = 80 \mu\text{s}$ 


**Avalanche energy  $E_{AS} = f(T_j)$** 

 parameter:  $I_D = 7\text{ A}$ ,  $V_{DD} = 50\text{ V}$ 
 $R_{GS} = 25\ \Omega$ ,  $L = 3.67\text{ mH}$ 

**Typ. gate charge**
 $V_{GS} = f(Q_{Gate})$ 

 parameter:  $I_{D\text{ puls}} = 14\text{ A}$ 

**Drain-source breakdown voltage**
 $V_{(BR)DSS} = f(T_j)$ 




**Gehäusemaßbilder**

(Maße in mm, wenn nicht anders angegeben)

**Package Outlines**

(Dimensions in mm, unless otherwise specified)

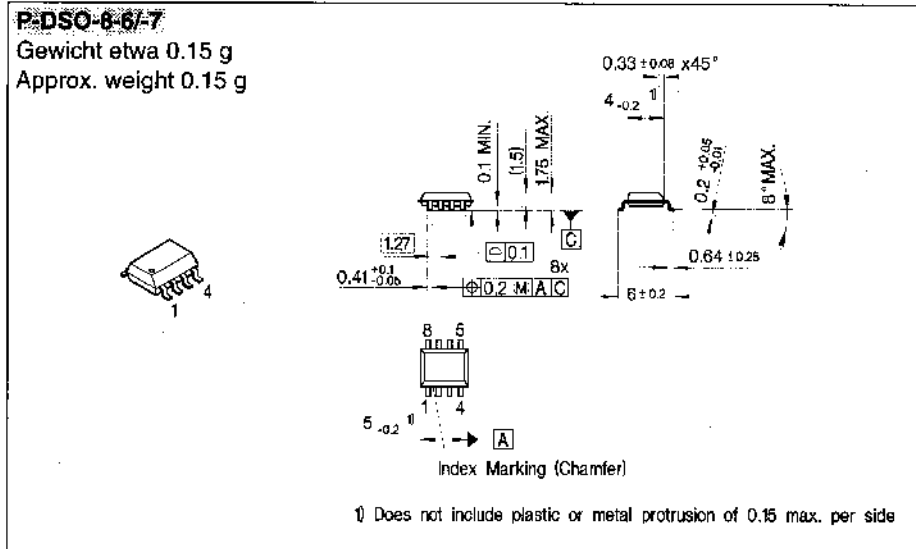


Bild 16

Figure 16

**P-TO218-AA (P-TO218-2-1)**

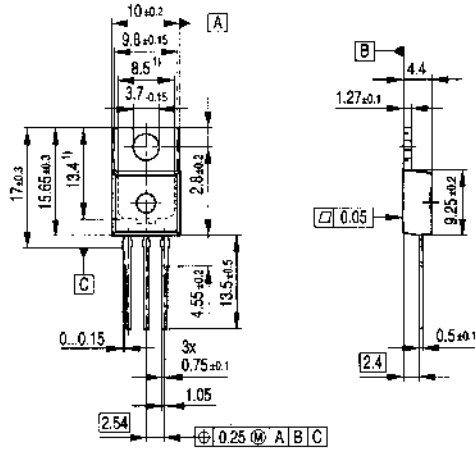
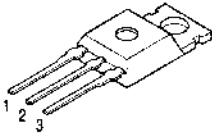
Gewicht etwa 4.9 g  
Approx. weight 4.9 g

Bild 17

Figure 17

**P-TO220-3-1**

Gewicht etwa 1.8 g  
Approx. weight 1.8 g



<sup>1)</sup> Typical

All metal surfaces tin plated, except area of cut.

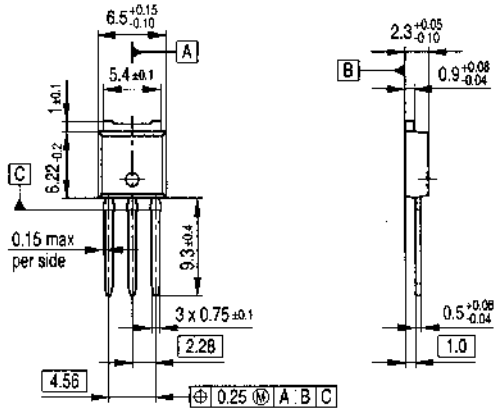
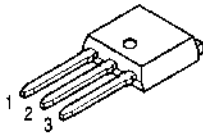
GPT06155

Bild 18

Figure 18

**P-TO251-3-1**

Gewicht etwa 2.0 g  
Approx. weight 2.0 g



All metal surfaces tin plated, except area of cut.

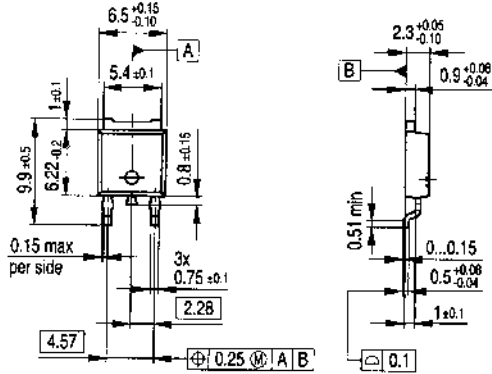
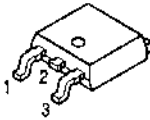
GPT09050

Bild 19

Figure 19

**P-TO252-3-1**

Gewicht etwa 0.38 g  
Approx. weight 0.38 g



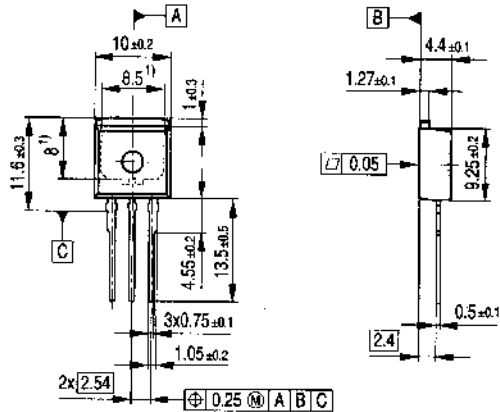
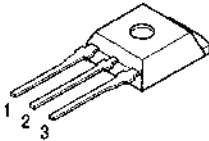
All metal surfaces tin plated, except area of cut.

GPT08061

Bild 20

Figure 20

**P-TO262-3-1/1<sup>2</sup>PAK**



1) Typical

Metal surface min. X = 7.25, Y = 7.35

All metal surfaces tin plated, except area of cut.

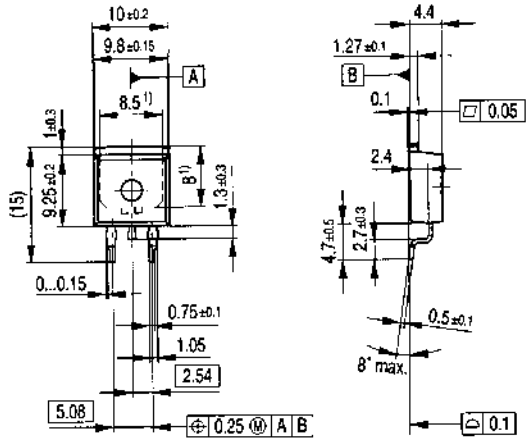
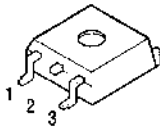
GPT08244

Bild 21

Figure 21

**P-TQ263-3-2/D<sup>2</sup>PAK**

Gewicht etwa 1.38 g  
Approx. weight 1.38 g



<sup>1)</sup> Typical

All metal surfaces tin plated, except area of cut.

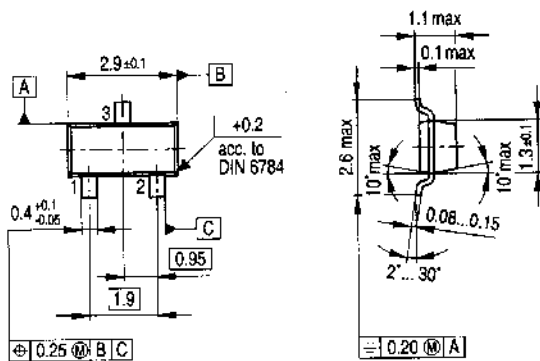
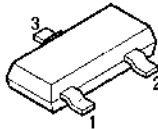
GPT09085

Bild 22

Figure 22

**SOT-23 (P-SOT23-3-1)**

Gewicht etwa 0.01 g  
Approx. weight 0.01 g



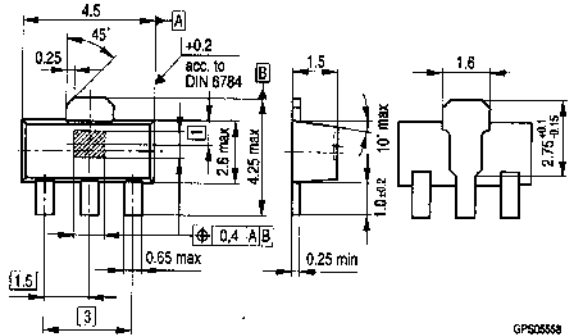
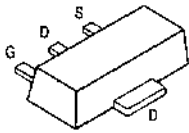
GPS06557

Bild 23

Figure 23

**SOT-89**

Gewicht etwa 0.01 g  
Approx. weight 0.01 g



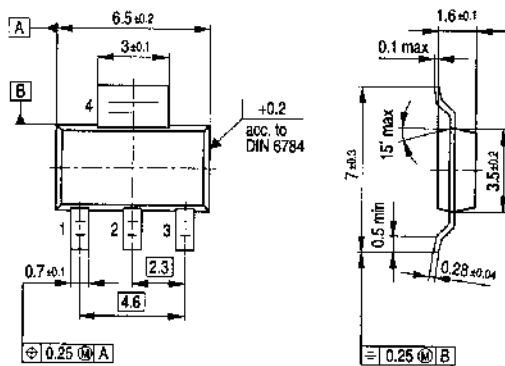
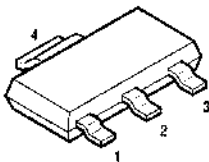
GPS05558

Bild 24

Figure 24

**SOT-223 (P-SOT223-4-1)**

Gewicht etwa 0.15 g  
Approx. weight 0.15 g



GPS05560

Bild 25

Figure 25

**TO-92**

Gewicht etwa 0.23 g  
Approx. weight 0.23 g

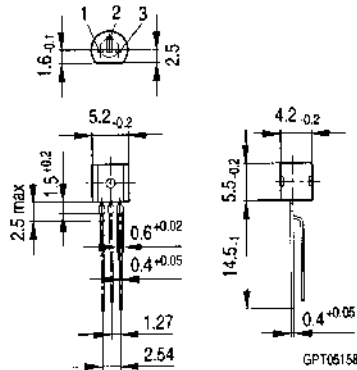
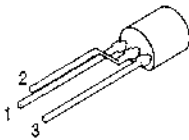


Bild 26

Figure 26

**TO-92-E6288**

Gewicht etwa 0.23 g  
Approx. weight 0.23 g

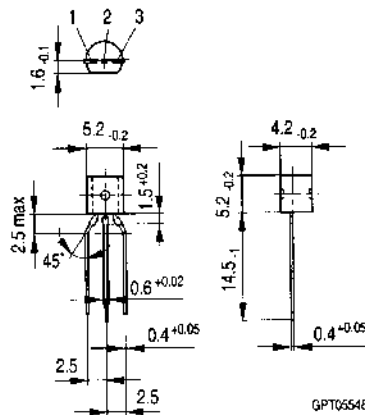
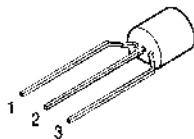


Bild 27

Figure 27

**Sorts of Packing**

Package outlines for tubes, trays etc. are contained in our Data Book "Package Information".

**SMD = Surface Mounted Device**