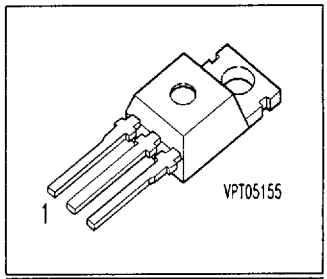
SIPMOS ® Power Transistor

- 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 Ω	TO-220 AB	C67078-S1317-A3

Maximum Ratings

Parameter	Symbol	Values	Unit
Continuous drain current T_C = 37 °C	I_D	5.5	A
Pulsed drain current T_C = 25 °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 A, V_{DD} = 50 V, R_{GS} = 25 Ω L = 3.67 mH, T_j = 25 °C	E_{AS}	120	
Gate source voltage	V_{GS}	± 20	V
Power dissipation T_C = 25 °C	P_{tot}	40	W
Operating temperature	T_j	-55 ... + 150	°C
Storage temperature	T_{stg}	-55 ... + 150	
Thermal resistance, chip case	R_{thJC}	≤ 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	

Electrical Characteristics, at T_j = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Static Characteristics					
Drain- source breakdown voltage V_{GS} = 0 V, I_D = 0.25 mA, T_j = 25 °C	$V_{(BR)DSS}$	200	-	-	V
Gate threshold voltage V_{GS}=V_{DS}, I_D = 1 mA	$V_{GS(th)}$	2.1	3	4	
Zero gate voltage drain current V_{DS} = 200 V, V_{GS} = 0 V, T_j = 25 °C V_{DS} = 200 V, V_{GS} = 0 V, T_j = 125 °C	I_{DSS}	- -	0.1 10	1 100	µA
Gate-source leakage current V_{GS} = 20 V, V_{DS} = 0 V	I_{GSS}	-	10	100	nA
Drain-Source on-resistance V_{GS} = 10 V, I_D = 4.5 A	$R_{DS(on)}$	-	0.5	0.6	Ω

Electrical Characteristics, at T_j = 25°C, unless otherwise specified

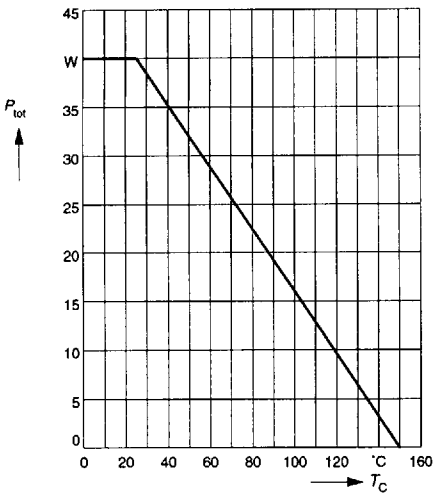
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Dynamic Characteristics					
Transconductance $V_{DS} \geq 2 \cdot I_D \cdot R_{DS(on)max}$, I_D = 4.5 A	g_{fs}	3	4.2	-	S
Input capacitance V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	C_{iss}	-	400	530	pF
Output capacitance V_{GS} = 0 V, V_{DS} = 25 V, f =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

Electrical Characteristics, at T_j = 25°C, unless otherwise specified

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

Power dissipation

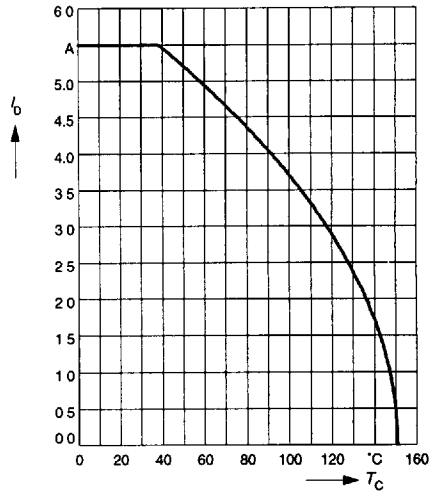
$P_{tot} = f(T_C)$



Drain current

$I_D = f(T_C)$

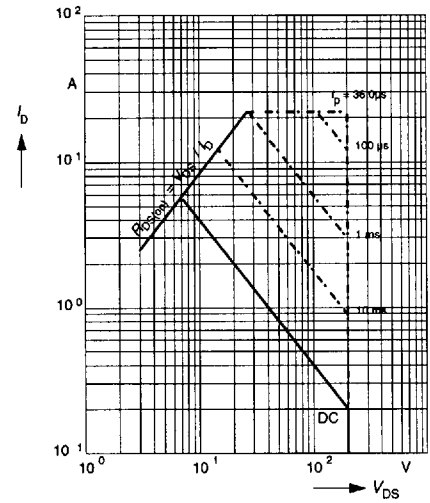
parameter: $V_{GS} \geq 10$ V



Safe operating area

$I_D = f(V_{DS})$

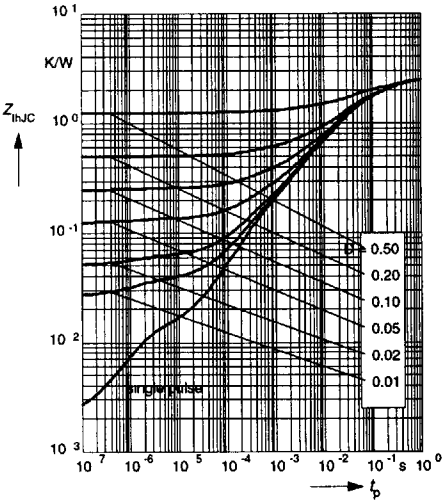
parameter: $D = 0.01$, $T_C = 25$°C



Transient thermal impedance

$Z_{th\,JC} = f(t_p)$

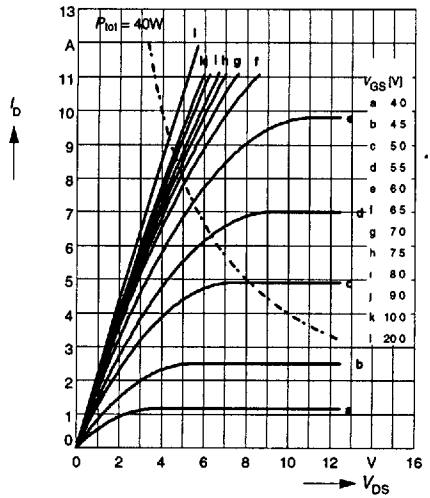
parameter: $D = t_p / T$



Typ. output characteristics

$I_D = f(V_{DS})$

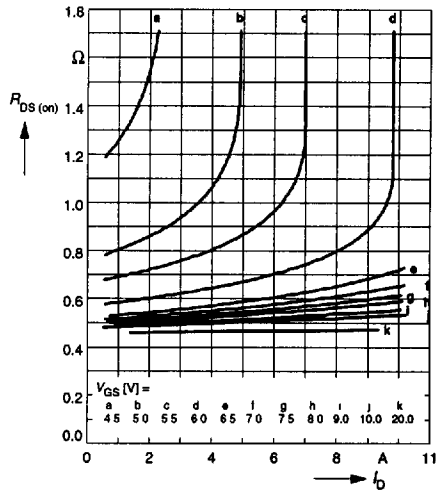
parameter: $t_p = 80\ \mu s$



Typ. drain-source on-resistance

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

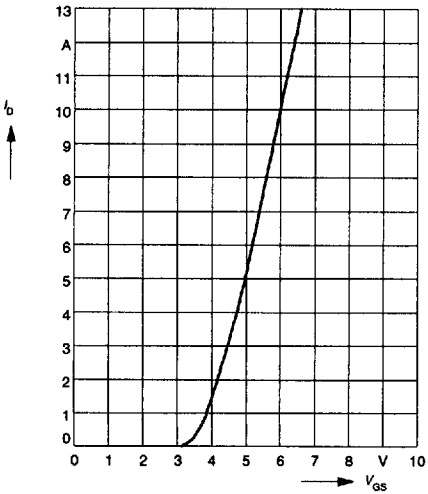
parameter: V_{GS}



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

parameter: $t_p = 80\ \mu s$

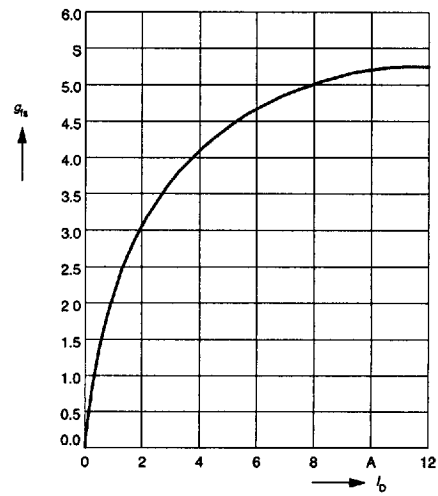
$V_{DS} \geq 2 \times I_D \times R_{DS(on)max}$



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

parameter: $t_p = 80\ \mu s$,

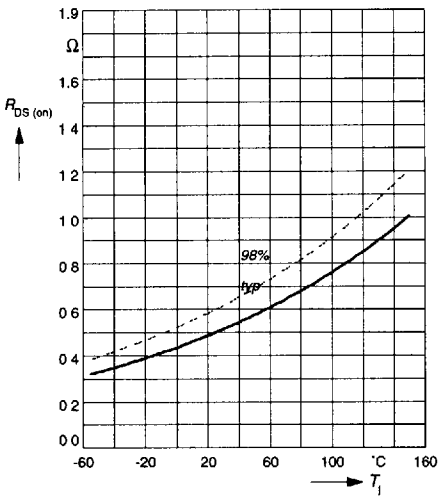
$V_{DS} \geq 2 \times I_D \times R_{DS(on)max}$



Drain-source on-resistance

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

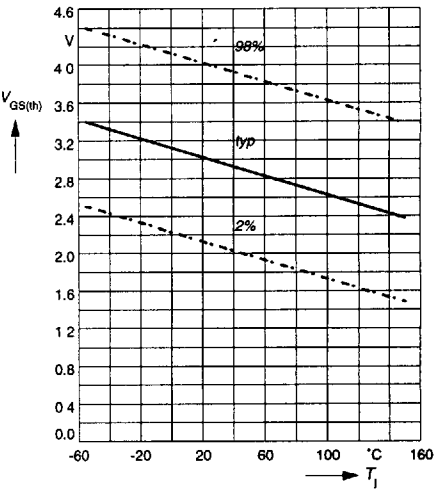
parameter: I_D = 4.5 A, V_{GS} = 10 V



Gate threshold voltage

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

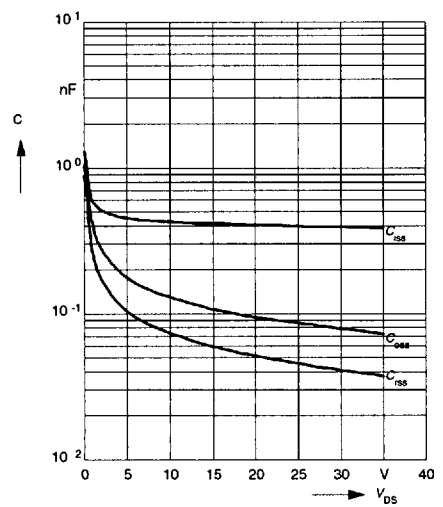
parameter: $V_{GS} = V_{DS}$, I_D = 1 mA



Typ. capacitances

$C = f(V_{DS})$

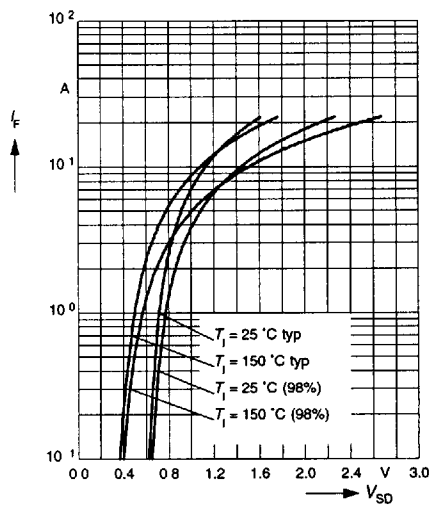
parameter: V_{GS} = 0V, f = 1MHz



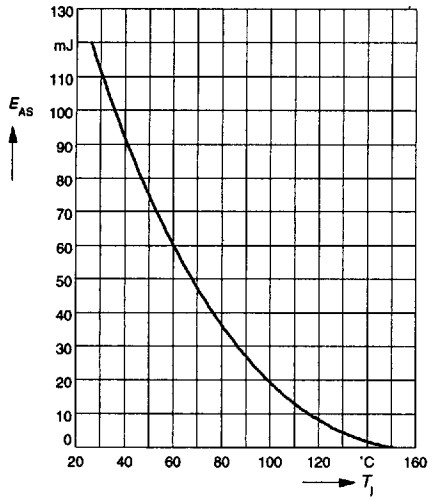
Forward characteristics of reverse diode

$I_F = f(V_{SD})$

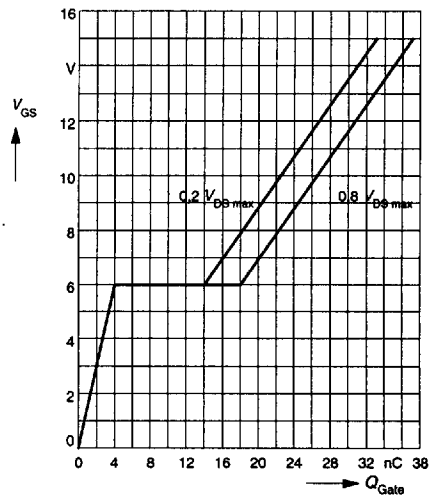
parameter: T_j, t_p = 80 µs



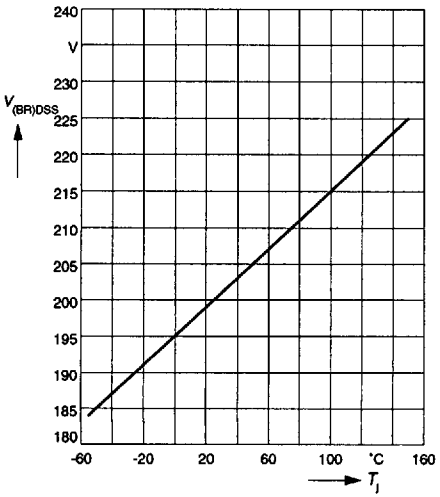
Avalanche energy $E_{AS} = f(T_j)$
parameter: $I_D = 7$ A, $V_{DD} = 50$ V
$R_{GS} = 25\ \Omega$, $L = 3.67$ mH



Typ. gate charge
$V_{GS} = f(Q_{Gate})$
parameter: $I_{D\ puls} = 14$ A



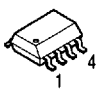
Drain-source breakdown voltage
$V_{(BR)DSS} = f(T_j)$

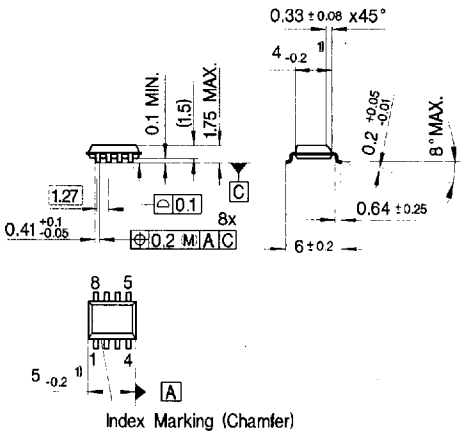


Gehäusemaßbilder
(Maße in mm, wenn nicht anders angegeben)

Package Outlines
(Dimensions in mm, unless otherwise specified)

P-DSO-8-6/-7
Gewicht etwa 0.15 g
Approx. weight 0.15 g

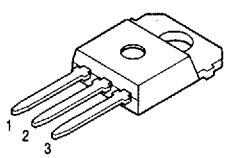


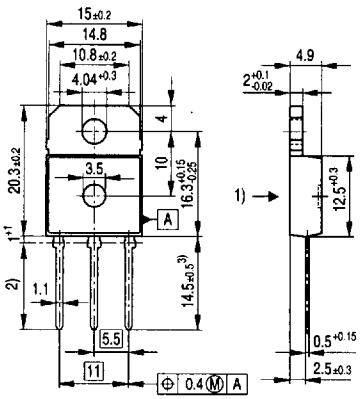


1) Does not include plastic or metal protrusion of 0.15 max. per side

Bild 16 **Figure 16**

P-TO218-AA (P-TO218-2-1)
Gewicht etwa 4.9 g
Approx. weight 4.9 g



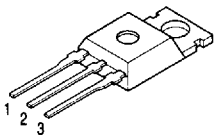


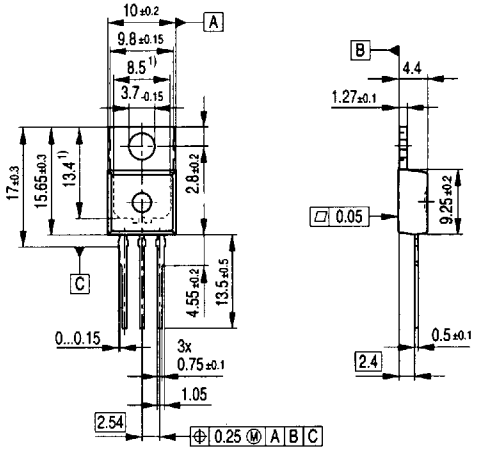
1) Punch direction, burr max. 0.04
2) Dip tinning
3) Max. 15.5 by dip tinning
press burr max. 0.05
radii not dimensioned max. 0.2

GPT05156

Bild 17 **Figure 17**

P-TO220-3-1
Gewicht etwa 1.8 g
Approx. weight 1.8 g

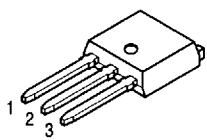


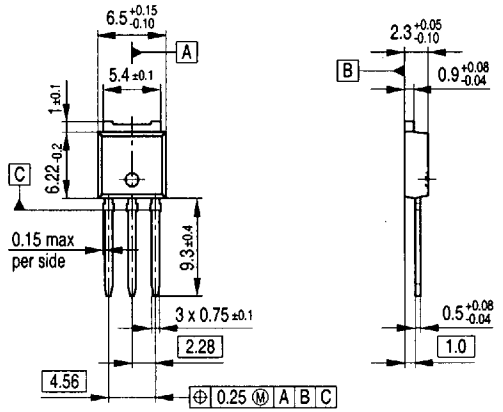


1) Typical
All metal surfaces tin plated, except area of cut. GPT05155

Bild 18 **Figure 18**

P-TO251-3-1
Gewicht etwa 2.0 g
Approx. weight 2.0 g

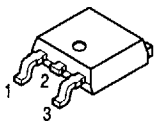


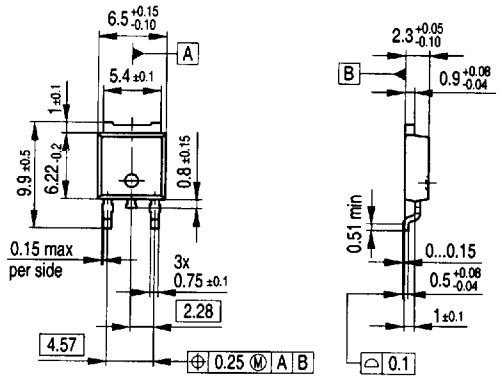


All metal surfaces tin plated, except area of cut. GPT09050

Bild 19 **Figure 19**

P-TO252-3-1
Gewicht etwa 0.38 g
Approx. weight 0.38 g



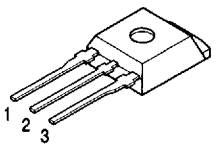


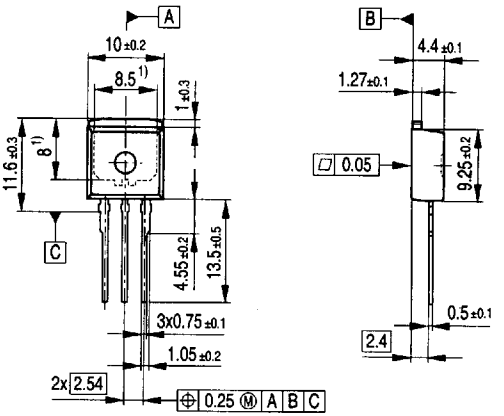
All metal surfaces tin plated, except area of cut.

GPT09051

Bild 20 **Figure 20**

P-TO262-3-1/I²PAK



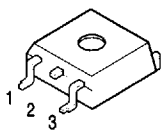


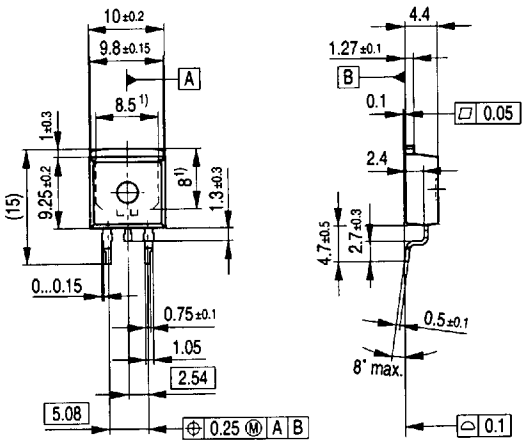
1) Typical
Metal surface min. X = 7.25, Y = 7.35
All metal surfaces tin plated, except area of cut.

GPT09244

Bild 21 **Figure 21**

P-TO263-3-2/D²PAK
Gewicht etwa 1.38 g
Approx. weight 1.38 g



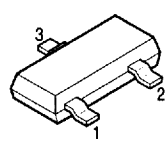


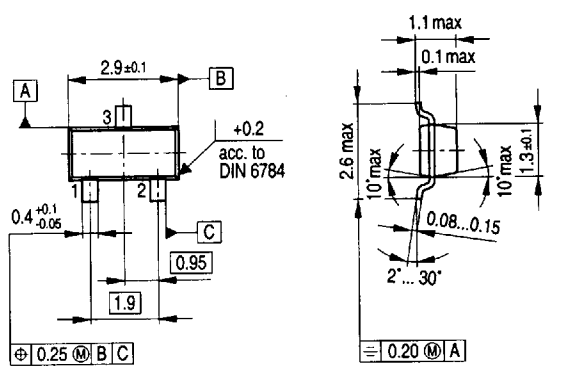
1) Typical
All metal surfaces tin plated, except area of cut.

GPT09085

Bild 22 **Figure 22**

SOT-23 (P-SOT23-3-1)
Gewicht etwa 0.01 g
Approx. weight 0.01 g

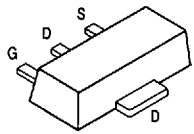




GPS05557

Bild 23 **Figure 23**

SOT-89
Gewicht etwa 0.01 g
Approx. weight 0.01 g



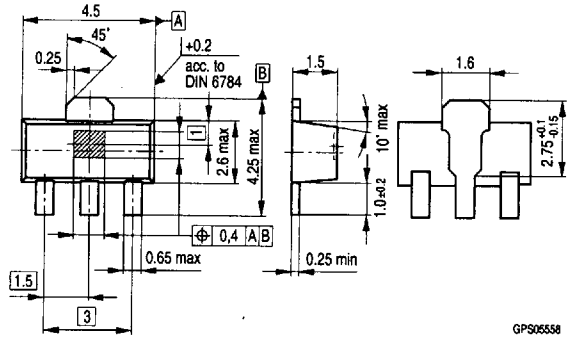
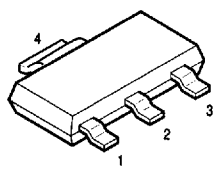


Bild 24 **Figure 24**

SOT-223 (P-SOT223-4-1)
Gewicht etwa 0.15 g
Approx. weight 0.15 g



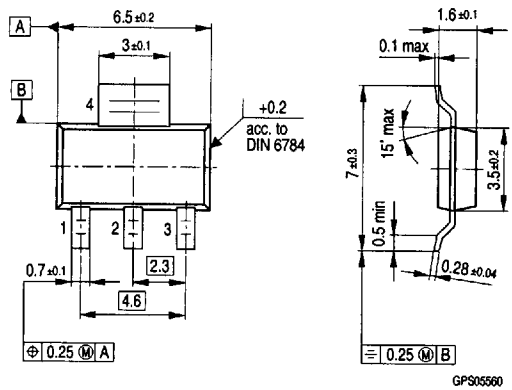
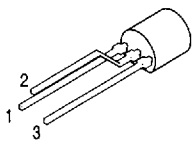


Bild 25 **Figure 25**

TO-92
Gewicht etwa 0.23 g
Approx. weight 0.23 g



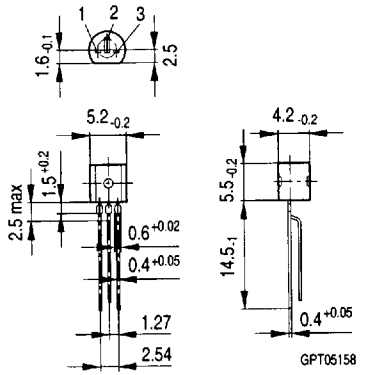
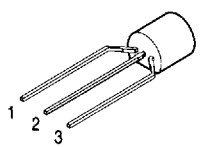


Bild 26 **Figure 26**

TO-92-E6288
Gewicht etwa 0.23 g
Approx. weight 0.23 g



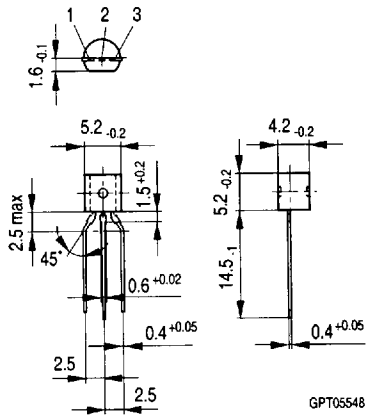


Bild 27 **Figure 27**

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

SMD = Surface Mounted Device