

3. Ordering information

Table 2: Ordering information

Type number	Package		
	Name	Description	Version
PMV65XP	SOT23	Plastic surface mounted package; 3 leads	SOT23

4. Limiting values

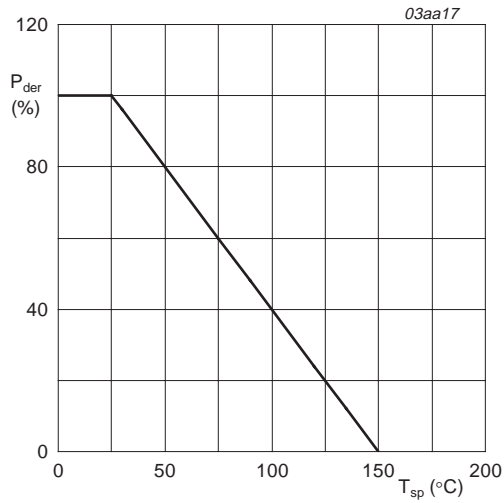
Table 3: Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	drain-source voltage (DC)	$25\text{ °C} \leq T_j \leq 150\text{ °C}$	-	-20	V
V_{DGR}	drain-gate voltage (DC)	$25\text{ °C} \leq T_j \leq 150\text{ °C}$; $R_{GS} = 20\text{ k}\Omega$	-	-20	V
V_{GS}	gate-source voltage (DC)		-	± 12	V
I_D	drain current (DC)	$T_{sp} = 25\text{ °C}$; $V_{GS} = -4.5\text{ V}$; Figure 2 and 3	-	-3.85	A
		$T_{sp} = 100\text{ °C}$; $V_{GS} = -4.5\text{ V}$; Figure 2	-	-2.44	A
I_{DM}	peak drain current	$T_{sp} = 25\text{ °C}$; pulsed; $t_p \leq 10\text{ }\mu\text{s}$; Figure 3	-	-15.4	A
P_{tot}	total power dissipation	$T_{sp} = 25\text{ °C}$; Figure 1	-	1.92	W
T_{stg}	storage temperature		-55	+150	°C
T_j	junction temperature		-55	+150	°C

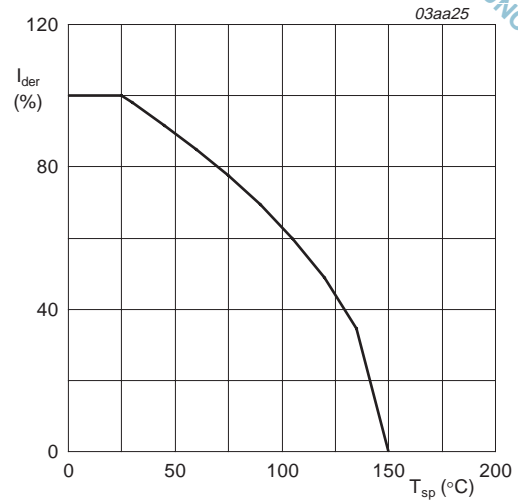
Source-drain diode

I_S	source (diode forward) current (DC)	$T_{sp} = 25\text{ °C}$	-	-1.6	A
I_{SM}	peak source (diode forward) current	$T_{sp} = 25\text{ °C}$; pulsed; $t_p \leq 10\text{ }\mu\text{s}$	-	-6.4	A



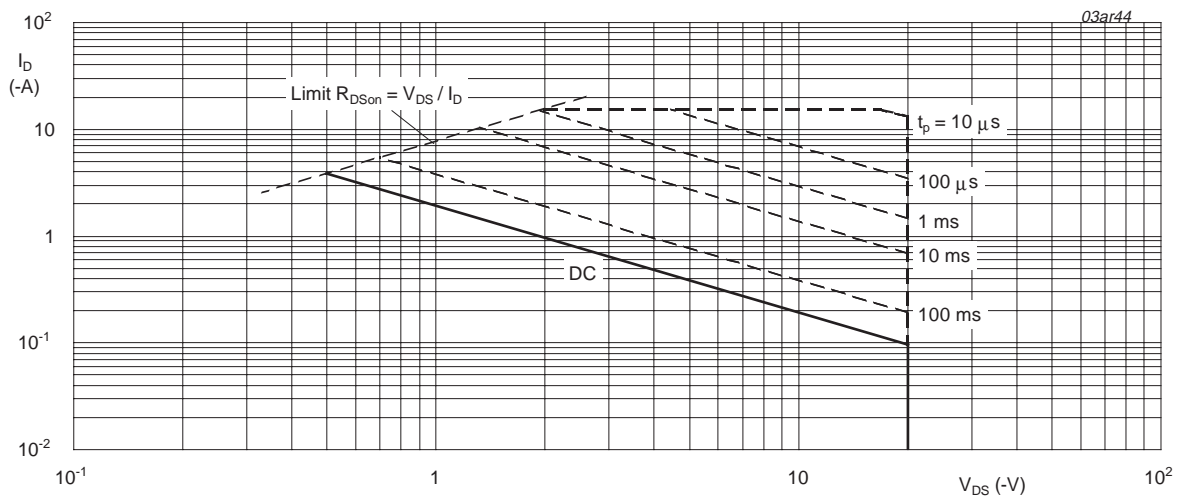
$$P_{der} = \frac{P_{tot}}{P_{tot(25^\circ C)}} \times 100\%$$

Fig 1. Normalized total power dissipation as a function of solder point temperature.



$$I_{der} = \frac{I_D}{I_{D(25^\circ C)}} \times 100\%$$

Fig 2. Normalized continuous drain current as a function of solder point temperature.



$T_{sp} = 25^\circ C$; I_{DM} is single pulse; $V_{GS} = -4.5 V$

Fig 3. Safe operating area; continuous and peak drain currents as a function of drain-source voltage.

5. Thermal characteristics

Table 4: Thermal characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{th(j-sp)}$	thermal resistance from junction to solder point	Figure 4	-	-	65	K/W

5.1 Transient thermal impedance

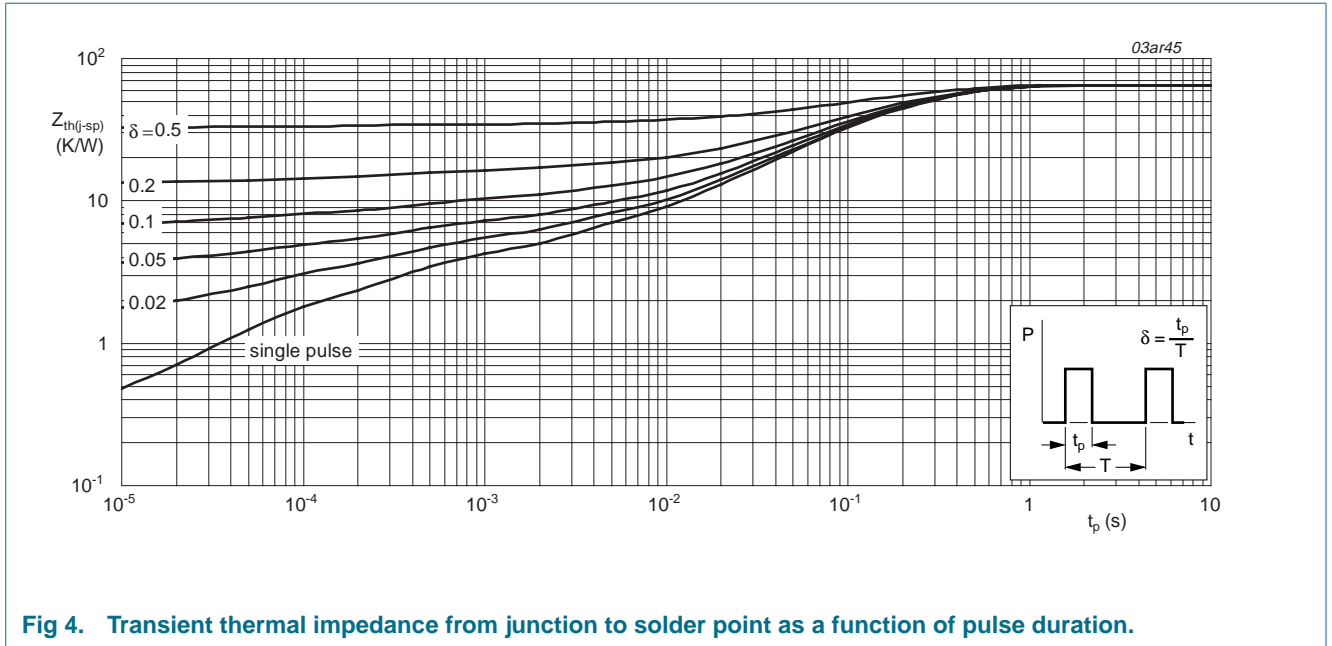
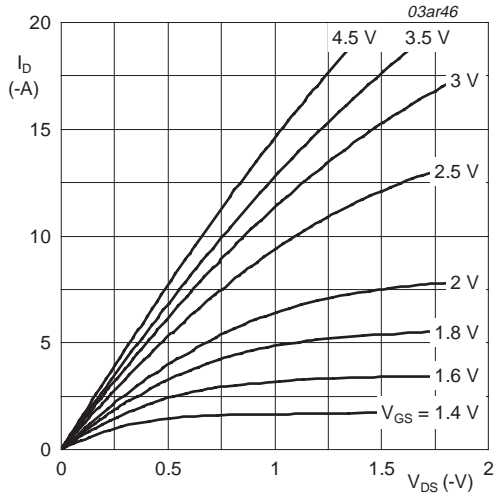


Fig 4. Transient thermal impedance from junction to solder point as a function of pulse duration.

6. Characteristics

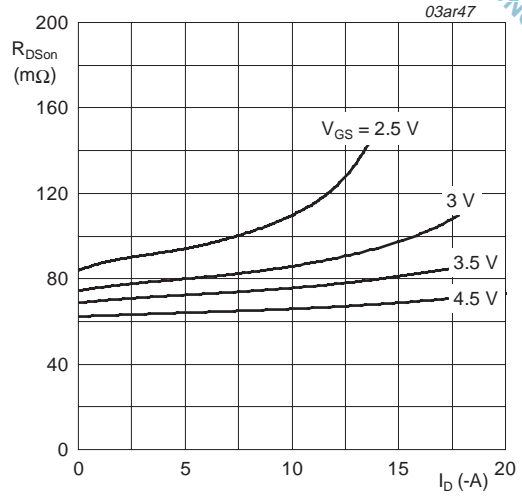
Table 5: Characteristics
 $T_j = 25\text{ °C}$ unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static characteristics						
$V_{(BR)DSS}$	drain-source breakdown voltage	$I_D = 250\text{ }\mu\text{A}$; $V_{GS} = 0\text{ V}$				
		$T_j = 25\text{ °C}$	-20	-	-	V
		$T_j = -55\text{ °C}$	-18	-	-	V
$V_{GS(th)}$	gate-source threshold voltage	$I_D = -1\text{ mA}$; $V_{DS} = V_{GS}$; Figure 9 and 10				
		$T_j = 25\text{ °C}$	-0.6	-1	-1.5	V
		$T_j = 150\text{ °C}$	<tbid>	-	-	V
		$T_j = -55\text{ °C}$	-	-	<tbid>	V
I_{DSS}	drain-source leakage current	$V_{DS} = -20\text{ V}$; $V_{GS} = 0\text{ V}$				
		$T_j = 25\text{ °C}$	-	-	-1	μA
		$T_j = \text{<tbid> °C}$	-	-	<tbid>	μA
I_{GSS}	gate-source leakage current	$V_{GS} = \pm 12\text{ V}$; $V_{DS} = 0\text{ V}$	-	-10	-100	nA
$R_{DS(on)}$	drain-source on-state resistance	$V_{GS} = -4.5\text{ V}$; $I_D = -2.8\text{ A}$; Figure 6 and 8				
		$T_j = 25\text{ °C}$	-	65	76	m Ω
		$T_j = 150\text{ °C}$	-	110	129	m Ω
		$V_{GS} = -2.5\text{ V}$; $I_D = -2.3\text{ A}$; Figure 6 and 8	-	90	112	m Ω
Dynamic characteristics						
$Q_{g(tot)}$	total gate charge	$I_D = -2.8\text{ A}$; $V_{DS} = -6\text{ V}$; $V_{GS} = -4.5\text{ V}$; Figure 11	-	7.6	-	nC
Q_{gs}	gate-source charge		-	1.6	-	nC
Q_{gd}	gate-drain (Miller) charge		-	0.65	-	nC
V_{plat}	plateau voltage		-	-1.5	-	V
C_{iss}	input capacitance	$V_{GS} = 0\text{ V}$; $V_{DS} = -20\text{ V}$; $f = 1\text{ MHz}$; Figure 13	-	725	-	pF
C_{oss}	output capacitance		-	105	-	pF
C_{rss}	reverse transfer capacitance		-	80	-	pF
$t_{d(on)}$	turn-on delay time	$V_{DS} = -6\text{ V}$; $R_L = 6\text{ }\Omega$; $V_{GS} = -4.5\text{ V}$; $R_G = 6\text{ }\Omega$	-	7	-	ns
t_r	rise time		-	21	-	ns
$t_{d(off)}$	turn-off delay time		-	68	-	ns
t_f	fall time		-	33	-	ns
Source-drain diode						
V_{SD}	source-drain (diode forward) voltage	$I_S = -1.25\text{ A}$; $V_{GS} = 0\text{ V}$; Figure 12	-	-0.77	-1.2	V



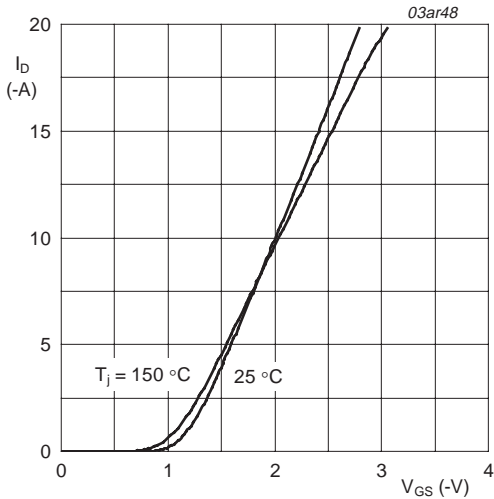
T_j = 25 °C

Fig 5. Output characteristics: drain current as a function of drain-source voltage; typical values.



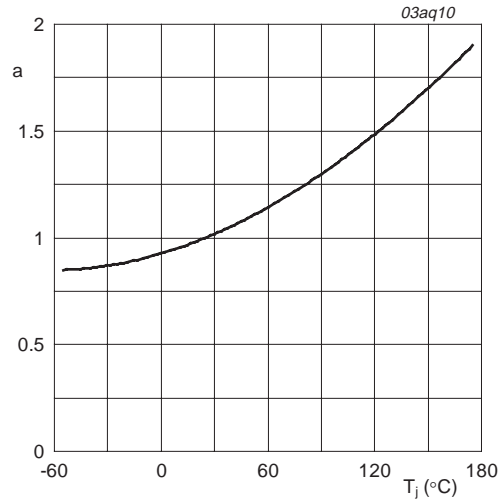
T_j = 25 °C

Fig 6. Drain-source on-state resistance as a function of drain current; typical values.



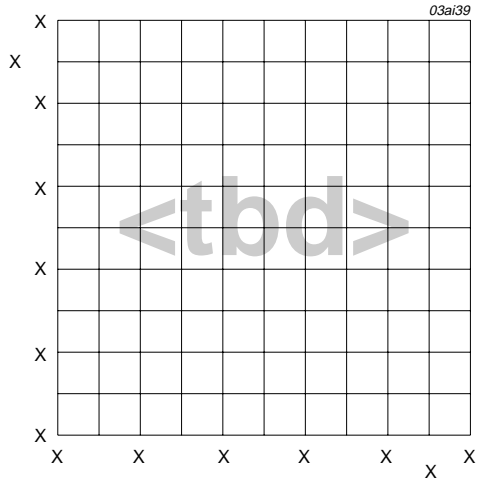
T_j = 25 °C and 150 °C; V_{DS} > I_D × R_{DS(on)}

Fig 7. Transfer characteristics: drain current as a function of gate-source voltage; typical values.



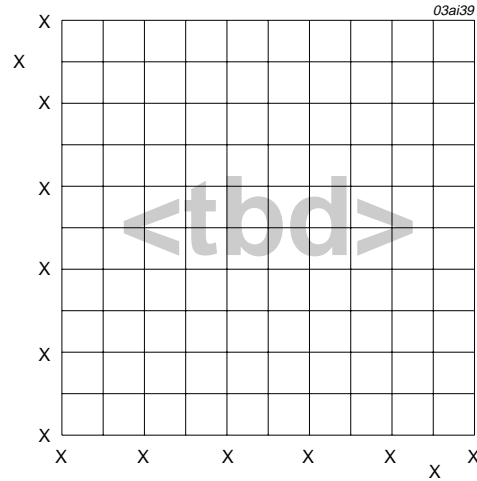
$$a = \frac{R_{DS(on)}}{R_{DS(on)(25^\circ\text{C})}}$$

Fig 8. Normalized drain-source on-state resistance factor as a function of junction temperature.



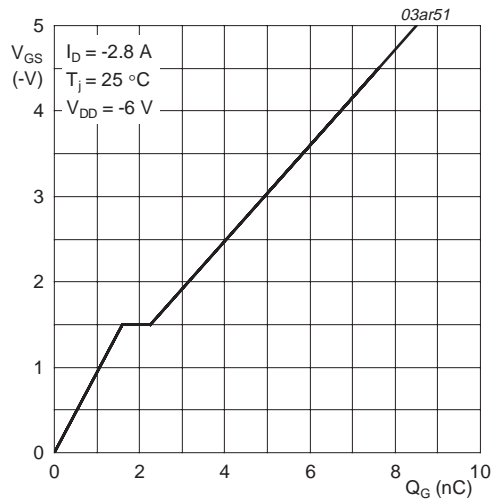
$I_D = -1 \text{ mA}; V_{DS} = V_{GS}$

Fig 9. Gate-source threshold voltage as a function of junction temperature.



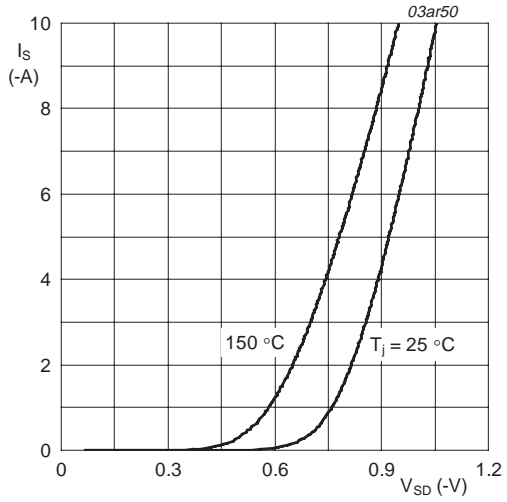
$T_j = 25 \text{ }^\circ\text{C}; V_{DS} = -5 \text{ V}$

Fig 10. Sub-threshold drain current as a function of gate-source voltage.



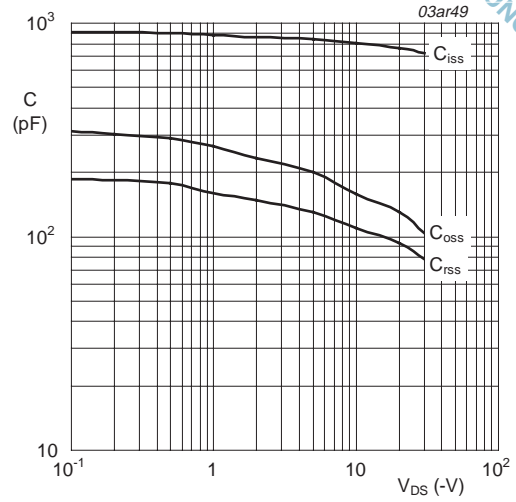
$I_D = -2.8 \text{ A}; V_{DS} = -6 \text{ V}$

Fig 11. Gate-source voltage as a function of gate charge; typical values.



$T_j = 25^\circ\text{C}$ and 150°C ; $V_{GS} = 0\text{ V}$

Fig 12. Source (diode forward) current as a function of source-drain (diode forward) voltage; typical values.



$V_{GS} = 0\text{ V}$; $f = 1\text{ MHz}$

Fig 13. Input, output and reverse transfer capacitances as a function of drain-source voltage; typical values.

7. Package outline

Plastic surface mounted package; 3 leads

SOT23

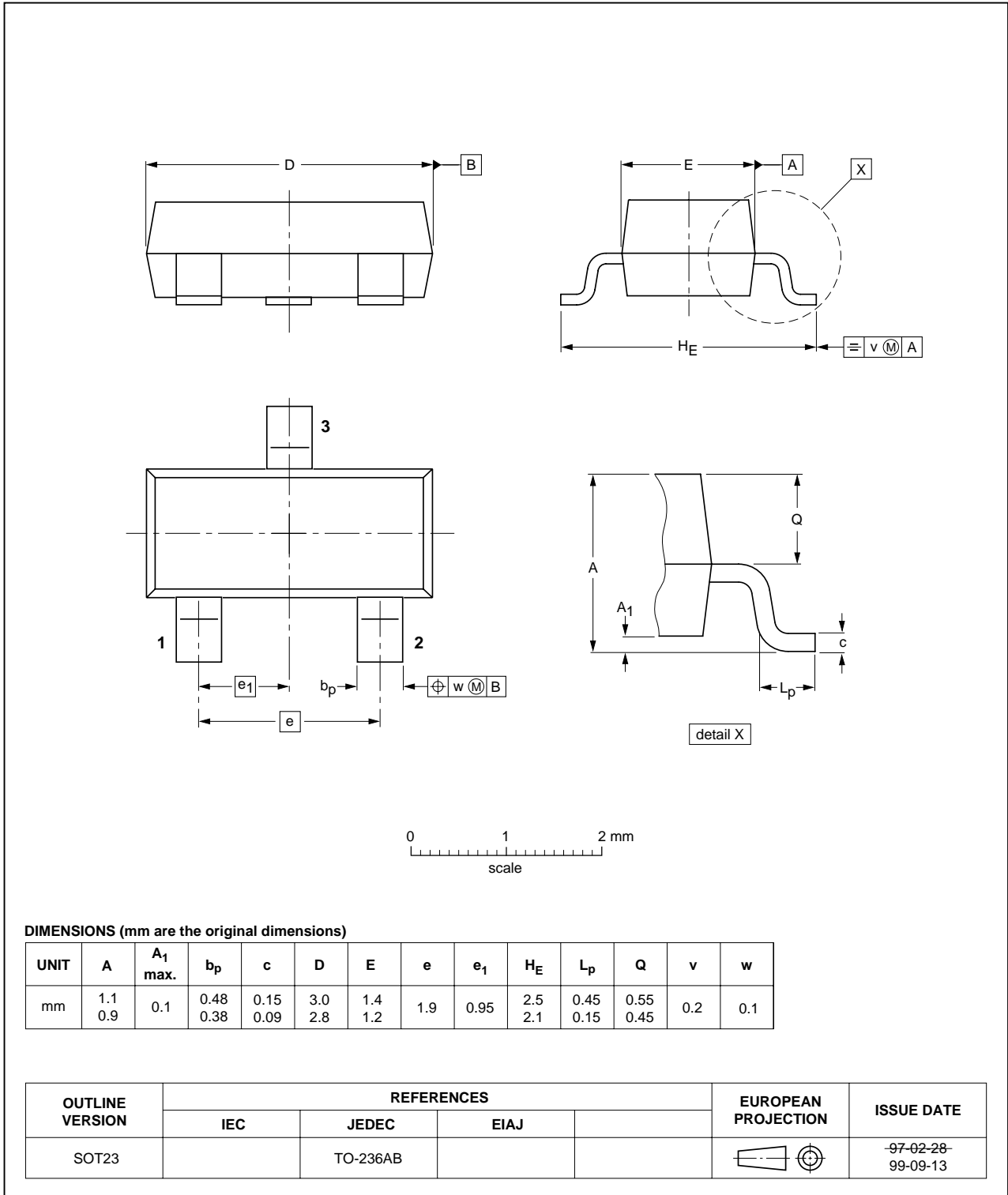


Fig 14. SOT23 package outline.



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8. Revision history

Table 6: Revision history

Document ID	Release date	Data sheet status	Change notice	Document number	Supersedes
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9. Data sheet status

Level	Data sheet status ^[1]	Product status ^{[2] [3]}	Definition
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
II	Preliminary data	Qualification	This data sheet contains data from the preliminary specification. Supplementary data will be published at a later date. Philips Semiconductors reserves the right to change the specification without notice, in order to improve the design and supply the best possible product.
III	Product data	Production	This data sheet contains data from the product specification. Philips Semiconductors reserves the right to make changes at any time in order to improve the design, manufacturing and supply. Relevant changes will be communicated via a Customer Product/Process Change Notification (CPCN).

[1] Please consult the most recently issued data sheet before initiating or completing a design.

[2] The product status of the device(s) described in this data sheet may have changed since this data sheet was published. The latest information is available on the Internet at URL <http://www.semiconductors.philips.com>.

[3] For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

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Short-form specification — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). 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.

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