Philips Semiconductors

P-channel enhancement mode MOS transistor

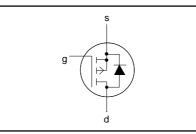
PHK04P02T

FEATURES

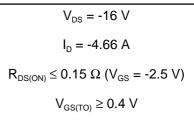
- Very low threshold voltage
- Fast switching
- Logic level compatible
- Surface mount package

SYMBOL

PINNING



QUICK REFERENCE DATA



SOT96-1

pin 1 inde

GENERAL DESCRIPTION

P-channel, enhancement mode, logic level, field-effect power transistor. This device has low threshold voltage and extremely fast switching making it ideal for battery powered applications and high speed digital interfacing.

The PHK04P02T is supplied in the SOT96-1 (SO8) surface mounting package.

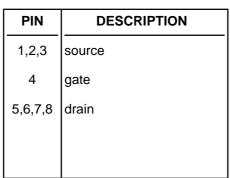
LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134)

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V _{DS}	Drain-source voltage		-	-16	V
V _{DGR}	Drain-gate voltage	$R_{GS} = 20 \text{ k}\Omega$	-	-16	V
V _{GS}	Gate-source voltage		-	± 8	V
I _D	Drain current (DC)	$T_{sp} = 25 \degree C$	-	-4.66	А
D		$T_{sp} = 25 \degree C$ $T_{sp} = 100 \degree C$	-	-1.87	А
I _{DM}	Drain current (pulse peak value)	$T_{\rm c} = 25 ^{\circ}{\rm C}$	-	-26.4	А
P _{tot}	Total power dissipation	$T_{sp}^{op} = 25 \text{°C}$	-	5.0	W
		$T_{sp}^{sp} = 25 \degree C$ $T_{sp} = 100 \degree C$	-	2.0	W
Τ _{stg} , Τ _j	Storage & operating temperature	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	- 55	150	°C

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
R _{th j-sp}	Thermal resistance junction to solder point	mounted on metal clad substrate.	25	-	K/W



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ELECTRICAL CHARACTERISTICS

 $T_i = 25^{\circ}C$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)DSS}$	Drain-source breakdown voltage	$V_{GS} = 0 \text{ V}; \text{ I}_{D} = -10 \mu\text{A}$	-16	-	-	V
$V_{GS(TO)}$	Gate threshold voltage	$V_{DS} = V_{GS}; I_{D} = -1 \text{ mA}$	-0.4	-0.6	-	V V
R _{DS(ON)}	Drain-source on-state	$T_j = 150^{\circ}C$ V _{GS} = -4.5 V; I _D = -1 A	-0.1 -	- 80	- 120	ν mΩ
D3(0N)	resistance	$V_{GS} = -2.5 \text{ V}; I_D = -1 \text{ A}$	-	117	150	mΩ
		$V_{GS} = -1.8 \text{ V}; I_D = -0.5 \text{ A}$ $V_{GS} = -2.5 \text{ V}; I_D = -1 \text{ A}; T_i = 150^{\circ}\text{C}$	-	140 175	180 230	mΩ mΩ
g _{fs}	Forward transconductance	$V_{DS} = -12.8 \text{ V}; I_{D} = -1 \text{ A}$	1.5	4.5	-	S
I _{GSS} I _{DSS}	Gate source leakage current Zero gate voltage drain	$V_{GS} = \pm 8 V; V_{DS} = 0 V$ $V_{DS} = -12.8 V; V_{GS} = 0 V;$	-	±10 -50	±100 -100	nA nA
DSS	current	$T_{j} = 150^{\circ}C$	-	-13	-100	μA
Q _{g(tot)}	Total gate charge	I _D = -1 A; V _{DD} = -10 V; V _{GS} = -4.5 V	-	7.2	-	nC
\mathbf{Q}_{gs}^{gs} \mathbf{Q}_{gd}	Gate-source charge Gate-drain (Miller) charge		-	1.7 1.83	-	nC nC
t _{d on}	Turn-on delay time	$V_{DD} = -10 \text{ V}; I_{D} = -1 \text{ A};$	-	2	-	ns
t _r	Turn-on rise time	$V_{GS} = -8 V; R_G = 6 \Omega$	-	4.5	-	ns
t _{d off} t _f	Turn-off delay time Turn-off fall time	Resistive load	-	45 20	-	ns ns
C _{iss}	Input capacitance	V _{GS} = 0 V; V _{DS} = -12.8 V; f = 1 MHz	-	528	-	рF
C _{oss} C _{rss}	Output capacitance Feedback capacitance		-	200 57	-	pF pF

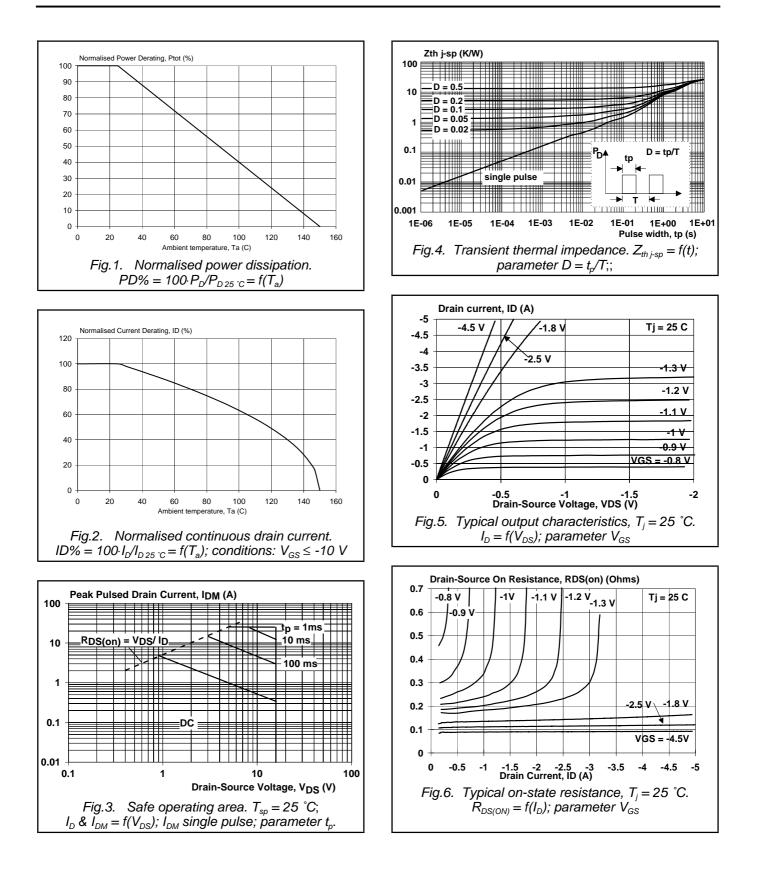
REVERSE DIODE LIMITING VALUES AND CHARACTERISTICS

 $T_j = 25^{\circ}C$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I _{DR}	Continuous reverse drain current	$T_{sp} = 25$ °C, t ≤ 5 s	-	-	-4.66	A
I _{drm} V _{sd}	Pulsed reverse drain current Diode forward voltage	$I_{\rm F}$ = -0.62 A; $V_{\rm GS}$ = 0 V	-	- -0.62	-26 -1.3	A V
t _{rr} Q _{rr}	Reverse recovery time Reverse recovery charge		-	75 69	-	ns nC

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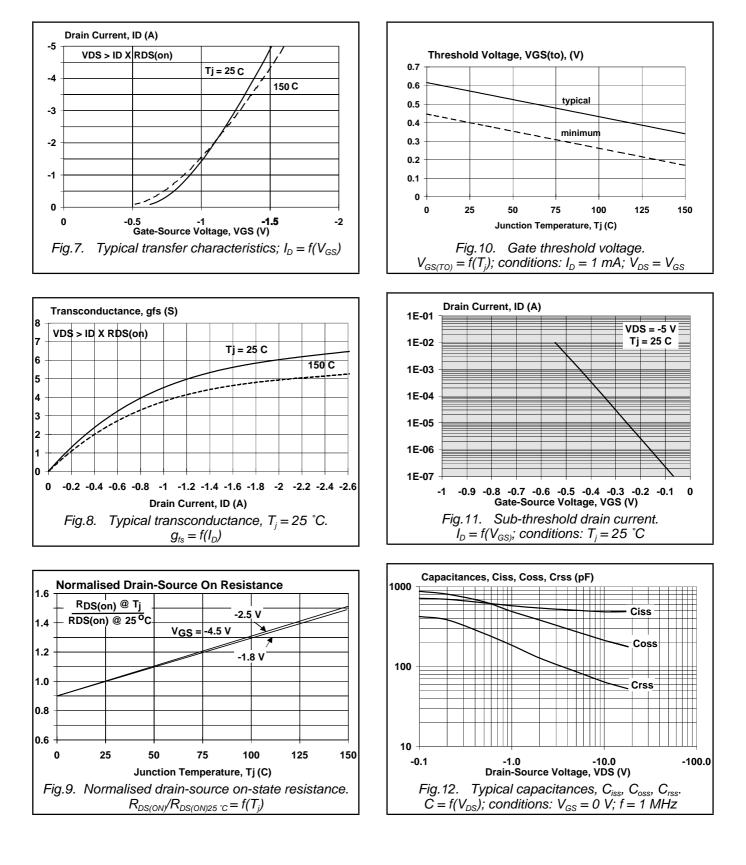
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Product specification

PHK04P02T

P-channel enhancement mode MOS transistor

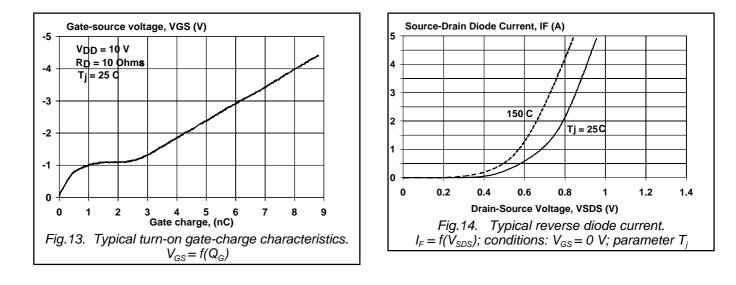


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Product specification

P-channel enhancement mode MOS transistor

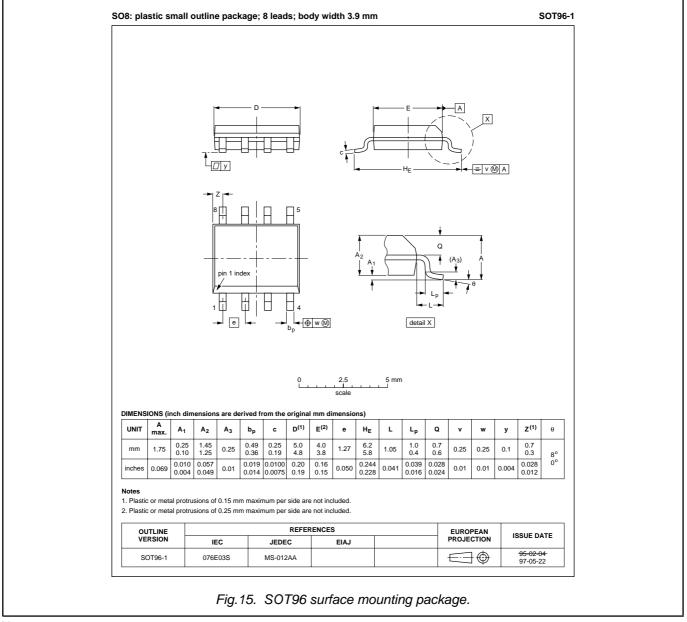
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MECHANICAL DATA



Notes

- 1. This product is supplied in anti-static packaging. The gate-source input must be protected against static discharge during transport or handling.
- 2. Refer to Integrated Circuit Packages, Data Handbook IC26.
- 3. Epoxy meets UL94 V0 at 1/8".

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DEFINITIONS

DATA SHEET STATUS					
DATA SHEET STATUS ¹	PRODUCT STATUS ²	DEFINITIONS			
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			
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 with notice, in order to improve the design and supply the best possible product			
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. Changes wi be communicated according to the Customer Product/Process Change Notification (CPCN) procedure SNW-SQ-650A			
Limiting values					
or more of the limitin operation of the dev	ng values may cause vice at these or at any	with the Absolute Maximum Rating System (IEC 134). Stress above one e permanent damage to the device. These are stress ratings only and y other conditions above those given in the Characteristics sections of re to limiting values for extended periods may affect device reliability.			
Application inform	ation				
Where application information is given, it is advisory and does not form part of the specification.					
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¹ Please consult the most recently issued datasheet before initiating or completing a design.

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