

# DATA SHEET

**PHN70308**

**7 N-channel 30/80 mΩ FET array**

Objective specification

1999 Apr 06

# 7 N-channel 30/80 mΩ FET array

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### FEATURES

- 30 mΩ pass/isolation FET
- 80 mΩ spindle FETs
- TrenchMOS (low in switching losses).

### APPLICATIONS

- Driving high performance three phase brushless DC motors.

### DESCRIPTION

Seven enhancement mode MOS transistors in a 28-pin plastic SOT341-1 (SSOP28) package.

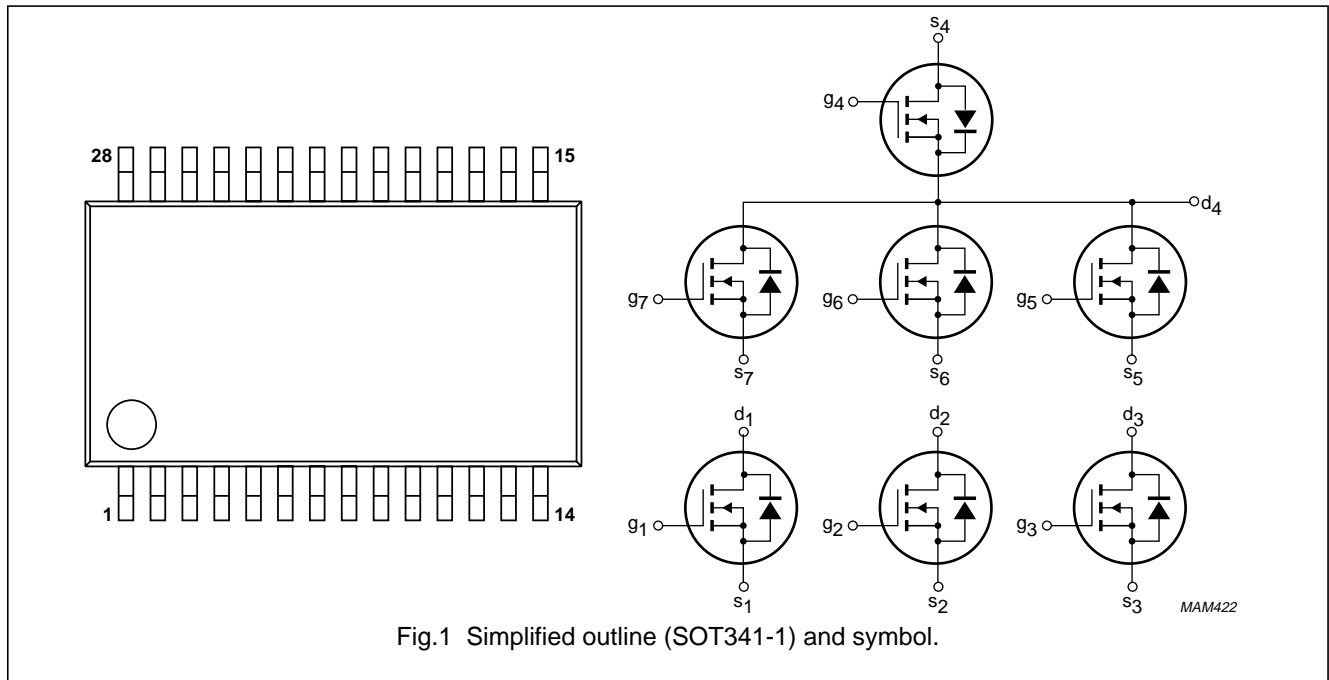
FETs 1, 2, 3, 5, 6 and 7 have an  $R_{DSon}$  of 80 mΩ and can be configured in three half bridges to drive the spindle, while FET 4 is rated at 30 mΩ and is intended to pass the current through to the motor and/or isolate the motor from the driver stage in case of power loss.

### PINNING SOT341-1 (SSOP28)

PIN	SYMBOL	DESCRIPTION
1 and 3	d1	drain 1
2	s1	source 1
4	g1	gate 1
5 and 7	d2	drain 2
6	s2	source 2
8	g2	gate 2
9 and 11	d3	drain 3
10	s3	source 3
12	g3	gate 3
13, 14, 15, 19, 22, 25 and 28	d4	drain 4
16 and 17	s4	source 4
18	g4	gate 4
20	g5	gate 5
21	s5	source 5
23	g6	gate 6
24	s6	source 6
26	g7	gate 7
27	s7	source 7

**CAUTION**

The device is supplied in an antistatic package. The gate inputs must be protected against static discharge during transport or handling.



Full Data Sheet will appear: on WWW (Internet; details in front section/back of this HB/CD-ROM) or updated Loose leaf

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**QUICK REFERENCE DATA**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>DS</sub>	drain-source voltage (DC)		–	25	V
V <sub>GS</sub>	gate-source voltage (DC)		–	±20	V
V <sub>GSth</sub>	gate-source threshold voltage	V <sub>DS</sub> = V <sub>GS</sub> ; I <sub>D</sub> = 1 mA	1	–	V
I <sub>D</sub>	drain current (DC)	T <sub>S</sub> = 50 °C; note 1	–	5	A
R <sub>DSon</sub>	drain-source on-state resistance spindle drive FETs isolation transistor	V <sub>GS</sub> = 10 V; I <sub>D</sub> = 2 A	– –	0.08 0.03	Ω Ω
P <sub>tot</sub>	total power dissipation	T <sub>S</sub> = 50 °C	–	8	W

**Note**

1. T<sub>S</sub> is the temperature at the soldering point of the drain leads.

**LIMITING VALUES**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>DS</sub>	drain-source voltage (DC)		–	25	V
V <sub>GS</sub>	gate-source voltage (DC)		–	±20	V
I <sub>D</sub>	drain current (DC) spindle drive FETs isolation transistor	T <sub>S</sub> = 50 °C duty cycle = 33.3% duty cycle = 100%	– –	5 5	A A
I <sub>DM</sub>	peak drain current	note 1	–	20	A
P <sub>tot</sub>	total power dissipation	T <sub>S</sub> = 50 °C; note 2 T <sub>S</sub> = 50 °C; note 3 T <sub>S</sub> = 50 °C; note 4	– – –	2.3 5 8	W W W
T <sub>stg</sub>	storage temperature		–55	+150	°C
T <sub>j</sub>	operating junction temperature		–55	+150	°C
<b>Source-drain diode</b>					
I <sub>S</sub>	source current (DC) spindle drive FETs isolation transistor	T <sub>S</sub> = 50 °C duty cycle = 33.3% duty cycle = 100%	– –	5 5	A A
I <sub>SM</sub>	peak source current	note 1	–	20	A

**Notes**

1. Pulse width and duty cycle limited by maximum junction temperature.
2. For either one of the spindle drive FETs (FET 1, 2, 3, 5, 6 or 7).
3. For the isolation transistor (FET 4).
4. When FET 4 (duty cycle = 100%) plus either combination of FETs 1-5, 1-6, 2-5, 2-7, 3-6 or 3-7 (duty cycle = 33.3%) are carrying the same current.

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**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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