L7220

Disk drive spindle and VCM motor driver

Data Brief

Features

- Suitable for enterprise and multi-platter desktop high performance drives
- Register based architecture
- Serial communication interface up to 60MHz

VCM driver

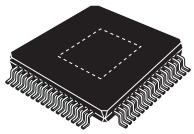
- 2.5A peak current drive capability
- Integrated bridge power devices with 0.3Ωmax bridge impedance
- 15 bit linear DAC for current command with gain switch
- Power on ramp loading and unloading capability with 10 bit ADC
- Fully integrated discontinuous mode ramp unload circuitry at power off with end of travel detection or alternate voltage mode power off scheme

Spindle driver

- 3.0A peak current drive capability
- Integrated bridge power devices with 0.3Ωmax bridge impedance
- ST's SmoothDrive™ architecture
- Voltage mode sinusoidal driving
- Inductance sense start-up capability

Other functions

- 4 high efficiency hysteretic switching positive regulators controllers with voltage margining
- -5V regulator controller with voltage margining



TQFP64
(exposed pad down)

- External isolation FET driver
- Voltage monitoring
- Power-on reset with soft start and programmable integrated delay
- 10 bit ADC with multiplexed inputs
- Thermal sense circuit and overtemperature shutdown

Description

L7220 is a motor controller IC designed for both enterprise and multi-platter desktop hard disk drive applications.

The spindle motor driver subsystem integrates all power FETs driven by ST's SmoothDrive commutation technology.

The voice coil driver block includes the power FETs, as well as ramp load and unload capability.

Hysteretic switching regulator controllers are included.

L7220 embeds a serial interface with a maximum speed of 60MHz.

Table 1. Device summary

Order code	Package	Packing
L7220	TQFP64	Tray

1 Package information

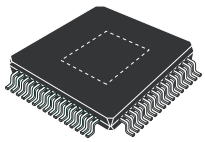
In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a Lead-free second level interconnect. The category of second Level Interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label.

ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com.

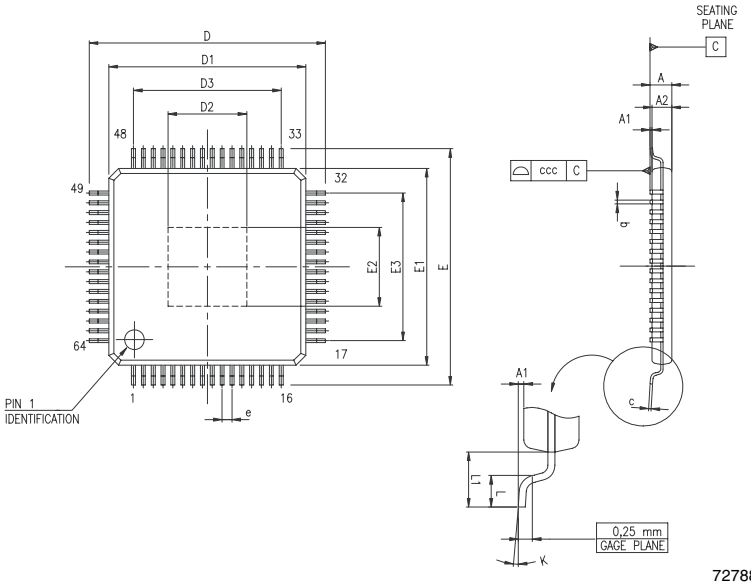
Figure 1. TQFP64 mechanical data & package dimensions

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			1.20			0.0472
A1	0.05		0.15	0.002		0.006
A2	0.95	1.00	1.05	0.0374	0.0393	0.0413
b	0.17	0.22	0.27	0.0066	0.0086	0.0086
c	0.09		0.20	0.0035		0.0078
D	11.80	12.00	12.20	0.464	0.472	0.480
D1	9.80	10.00	10.20	0.386	0.394	0.401
D2	2.00			0.787		
D3		7.50			0.295	
E	11.80	12.00	12.20	0.464	0.472	0.480
E1	9.80	10.00	10.20	0.386	0.394	0.401
E2	2.00			0.787		
E3		7.50			0.295	
e		0.50			0.0197	
L	0.45	0.60	0.75	0.0177	0.0236	0.0295
L1		1.00			0.0393	
k	0°	3.5°	7°	0°	3.5°	7°
ccc			0.080			0.0031

OUTLINE AND MECHANICAL DATA



TQFP64 (10x10x1.0mm)
Exposed Pad Down



2 Revision history

Table 2. Document revision history

Date	Revision	Changes
24-Dec-2007	1	Initial release.

Please Read Carefully:

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries (“ST”) reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST’s terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

UNLESS OTHERWISE SET FORTH IN ST’S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

UNLESS EXPRESSLY APPROVED IN WRITING BY AN AUTHORIZED ST REPRESENTATIVE, ST PRODUCTS ARE NOT RECOMMENDED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. ST PRODUCTS WHICH ARE NOT SPECIFIED AS "AUTOMOTIVE GRADE" MAY ONLY BE USED IN AUTOMOTIVE APPLICATIONS AT USER’S OWN RISK.

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com