



STAC4932F

RF power transistors HF/VHF/UHF N-channel MOSFETs

Preliminary data

Features

- Excellent thermal stability
- Common source push-pull configuration
- $P_{OUT} = 1000\text{ W min. (1200 W typ.)}$ with 26 dB gain @ 123 MHz
- Pulse conditions: 1 msec - 10%
- In compliance with the 2002/95/EC European directive
- ST air cavity packaging technology - STAC[®] package

Description

The STAC4932F is a N-channel MOS field-effect RF power transistor. It is intended for 100 V pulse applications up to 250 MHz. This device is suitable for use in industrial, scientific and medical applications.

The STAC4932B benefits from the latest generation of efficient, patent-pending package technology, otherwise known as STAC[®].

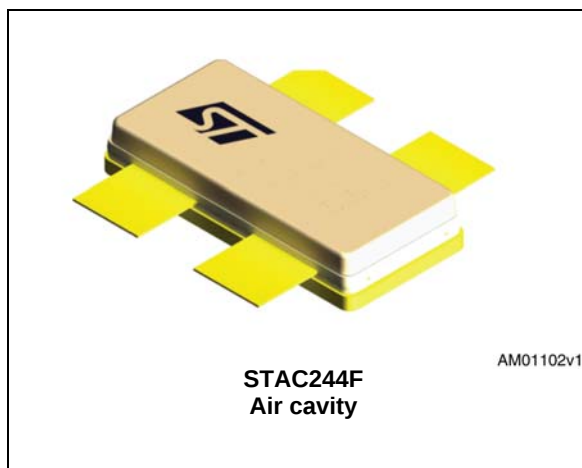


Figure 1. Pin connection

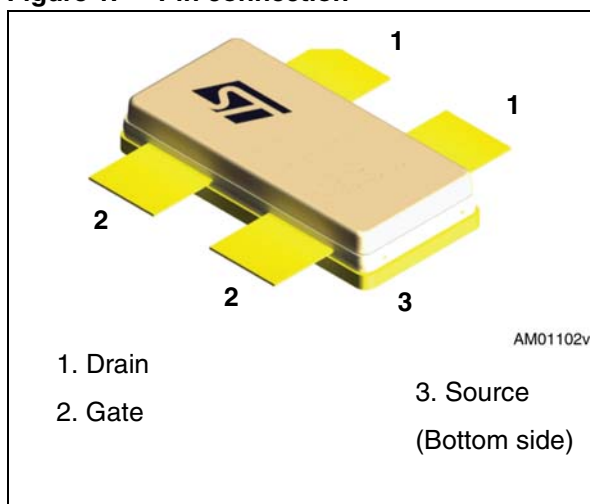


Table 1. Device summary

Order code	Marking	Package	Packaging
STAC4932F	STAC4932F	STAC244F	Plastic tray

Contents

1 **Electrical data** 3

 1.1 Maximum ratings 3

 1.2 Thermal data 3

2 **Electrical characteristics** 4

 2.1 Static 4

 2.2 Dynamic 4

3 **Impedance** 5

4 **Typical performances** 6

5 **Package mechanical data** 9

6 **Revision history** 11



1 Electrical data

1.1 Maximum ratings

Table 2. Absolute maximum ratings ($T_{CASE} = 25^{\circ}C$)

Symbol	Parameter	Value	Unit
$V_{(BR)DSS}^{(1)}$	Drain source voltage	200	V
V_{DGR}	Drain-gate voltage ($R_{GS} = 1\text{ M}\Omega$)	200	V
V_{GS}	Gate-source voltage	± 20	V
T_J	Max. operating junction temperature	200	$^{\circ}C$
T_{STG}	Storage temperature	-65 to +150	$^{\circ}C$

1. $T_J = 150\text{ }^{\circ}C$

1.2 Thermal data

Table 3. Thermal data (1 msec - 10%)

Symbol	Parameter	Value	Unit
R_{thJC}	Junction - case thermal resistance	0.075	$^{\circ}C/W$

2 Electrical characteristics

$T_{\text{CASE}} = +25\text{ }^{\circ}\text{C}$

2.1 Static

Table 4. Static (per side)

Symbol	Test conditions		Min.	Typ.	Max.	Unit
$V_{(\text{BR})\text{DSS}}^{(1)}$	$V_{\text{GS}} = 0\text{ V}$	$I_{\text{DS}} = 100\text{ mA}$	200	250		V
I_{DSS}	$V_{\text{GS}} = 0\text{ V}$	$V_{\text{DS}} = 100\text{ V}$			1	mA
I_{GSS}	$V_{\text{GS}} = 20\text{ V}$	$V_{\text{DS}} = 0\text{ V}$			250	nA
V_{TH}	$I_{\text{D}} = 250\text{ mA}$		2.0		4.0	V
$V_{\text{DS(ON)}}$	$V_{\text{GS}} = 10\text{ V}$	$I_{\text{D}} = 10\text{ A}$			3.6	V
G_{FS}	$V_{\text{DS}} = 10\text{ V}$	$I_{\text{D}} = 2.5\text{ A}$		6		S
C_{ISS}	$V_{\text{GS}} = 0\text{ V}$	$V_{\text{DS}} = 100\text{ V}$		570		pF
C_{OSS}	$V_{\text{GS}} = 0\text{ V}$	$V_{\text{DS}} = 100\text{ V}$		134		pF
C_{RSS}	$V_{\text{GS}} = 0\text{ V}$	$V_{\text{DS}} = 100\text{ V}$		8		pF

1. $T_{\text{J}} = 150\text{ }^{\circ}\text{C}$

2.2 Dynamic

Table 5. Pulse / 1 mec - 10 %

Symbol	Test conditions	Min.	Typ.	Max.	Unit
P_{OUT}	$V_{\text{DD}} = 100\text{ V}$, $I_{\text{DQ}} = 2 \times 250\text{ mA}$, $f = 123\text{ MHz}$	1000	1200	-	W
h_{D}	$V_{\text{DD}} = 100\text{ V}$, $I_{\text{DQ}} = 2 \times 250\text{ mA}$, $P_{\text{OUT}} = 1000\text{ W}$, $f = 123\text{ MHz}$		60	-	%
Gain	$V_{\text{DD}} = 100\text{ V}$, $I_{\text{DQ}} = 2 \times 250\text{ mA}$, $P_{\text{OUT}} = 1000\text{ W}$, $f = 123\text{ MHz}$		26	-	dB

3 Impedance

Figure 2. Current conventions

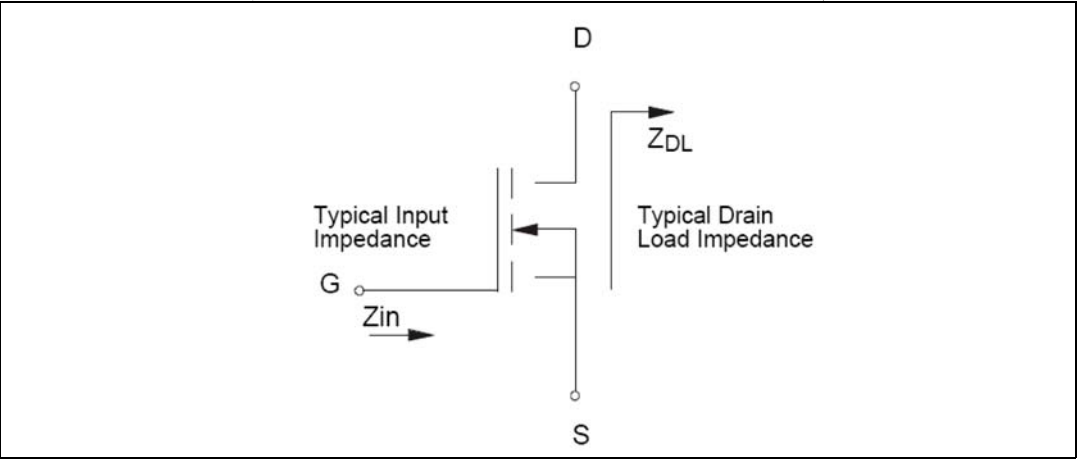


Table 6. Impedance data

Freq. (MHz)	$Z_{IN} (\Omega)$	$Z_{DL}(\Omega)$
123 MHz (Pulse)	TBD	TBD

Note: Measured gate to gate and drain to drain, respectively.

4 Typical performances

Figure 3. Maximum safe operating area

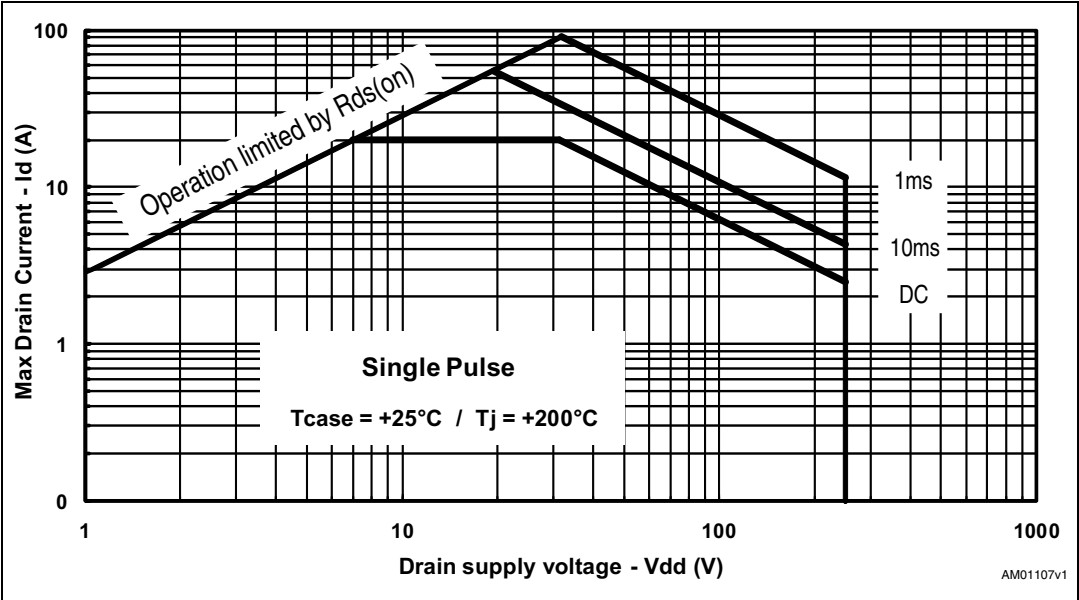


Figure 4. Transient thermal impedance

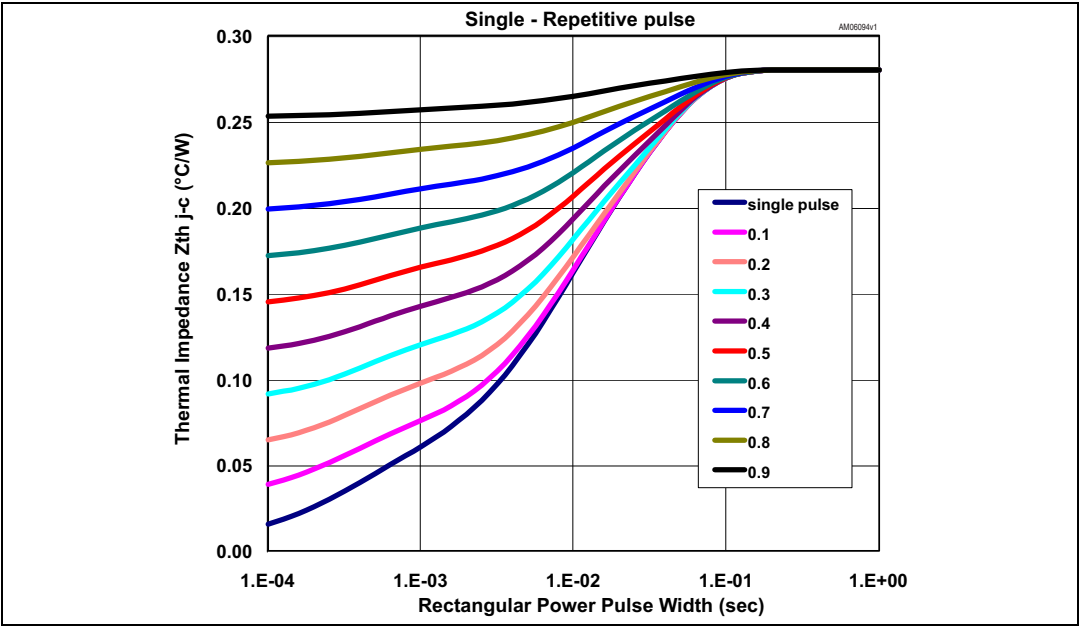


Figure 5. Transient thermal model

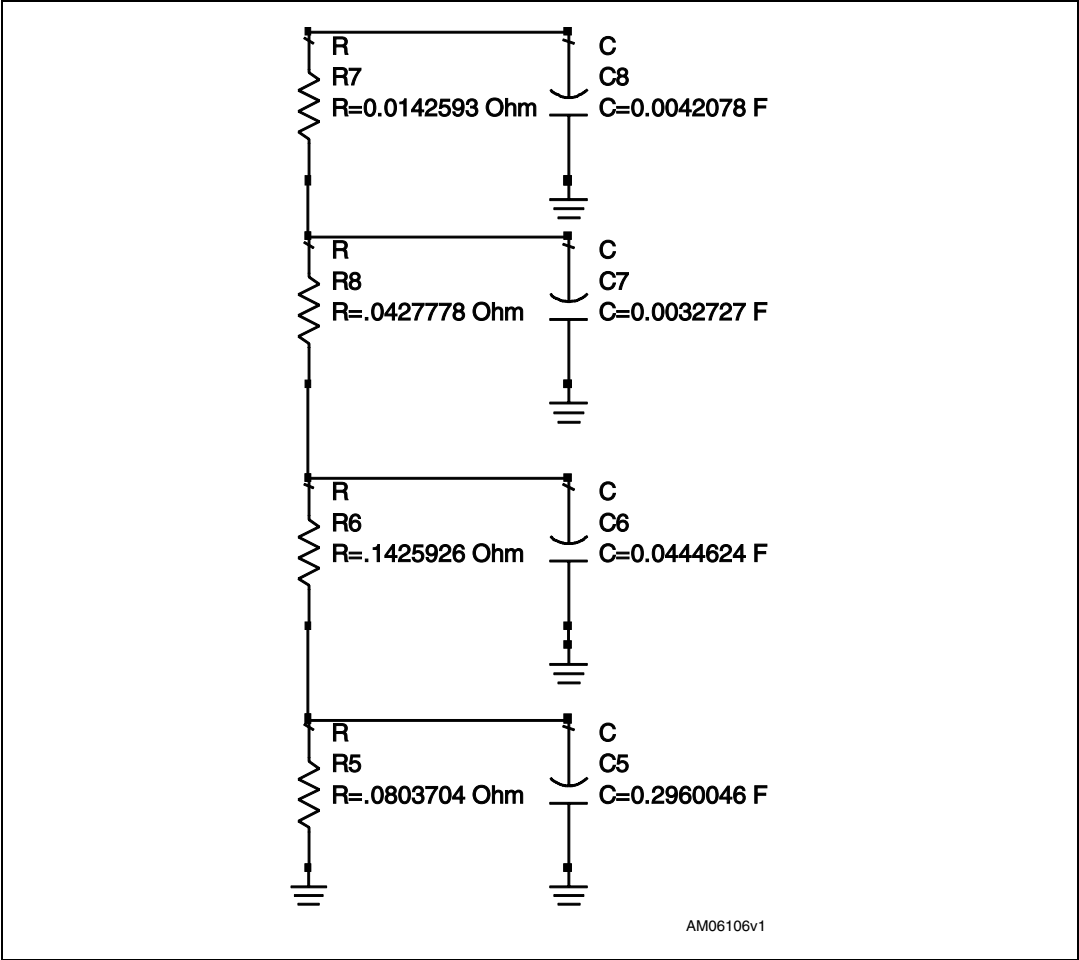


Figure 6. Power gain vs. output power

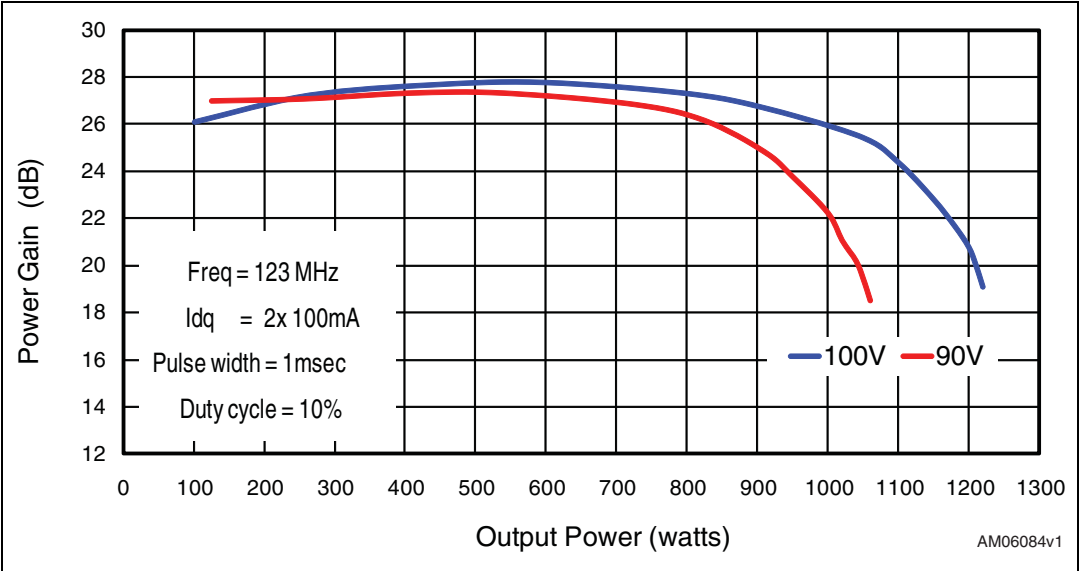
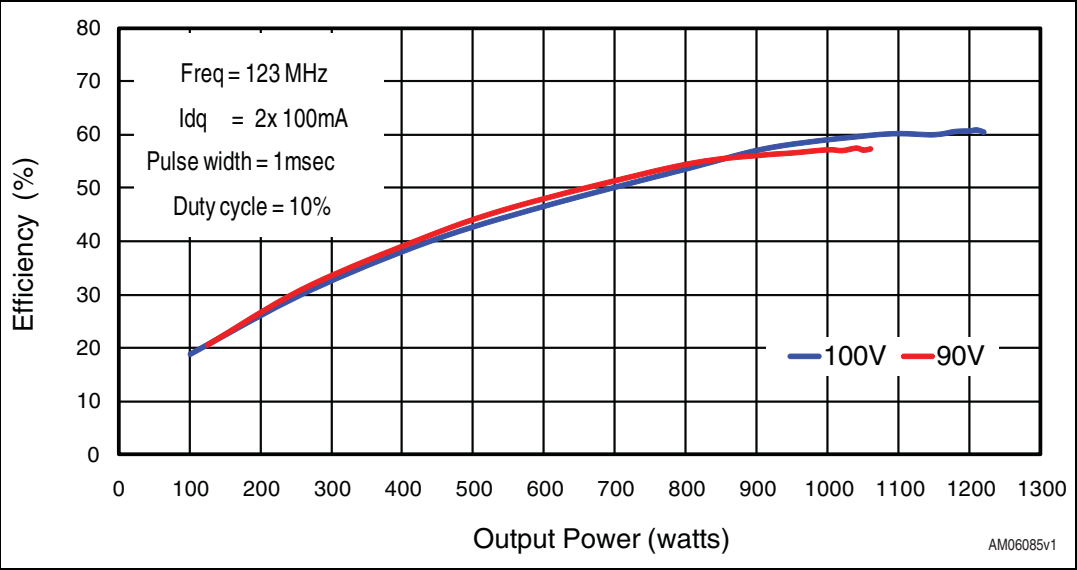


Figure 7. Efficiency vs. output power



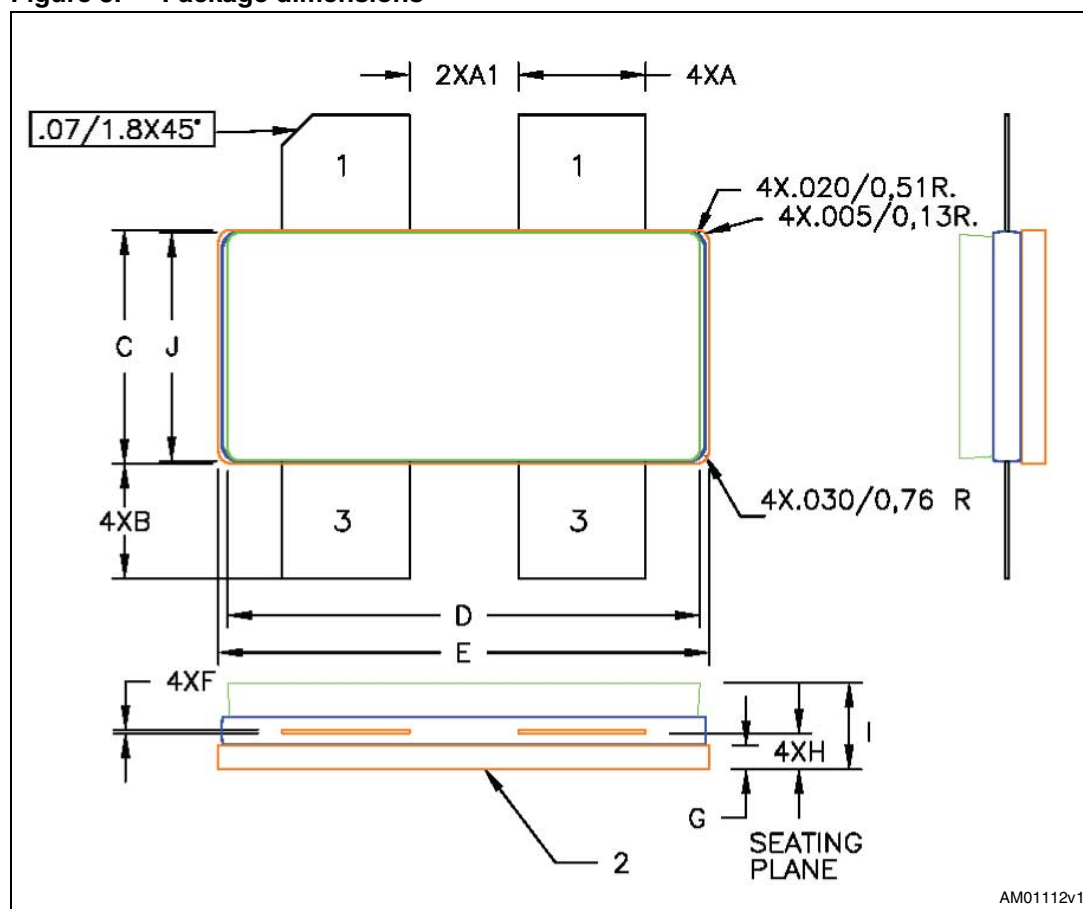
5 Package mechanical data

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: www.st.com. ECOPACK is an ST trademark.

Table 7. STAC244F package dimensions

Dim.	mm.		Inch	
	Min	Max	Min	Max
A	5.10	5.59	200	220
A1	4.32	4.83	170	190
B	4.32	5.33	170	210
C	9.65	9.91	380	390
D	19.61	20.02	772	788
E	20.45	20.70	805	815
F	0.08	1.15	0.003	0.006
G	0.89	1.14	0.035	0.045
H	1.45	1.70	0.057	0.067
I	3.18	4.32	0.125	0.170
J	9.27	9.53	0.365	0.375

Figure 8. Package dimensions



6 Revision history

Table 8. Document revision history

Date	Revision	Changes
22-Feb-2010	1	First release.
03-Aug-2010	2	Updated description on cover page and Table 3 .
02-Sep-2010	3	Updated Figure 8 . Added Figure 3, 4 and 5 .

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.

© 2010 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

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

www.st.com

AMEYA360

Components Supply Platform

Authorized Distribution Brand :



Website :

Welcome to visit www.ameya360.com

Contact Us :

➤ Address :

401 Building No.5, JiuGe Business Center, Lane 2301, Yishan Rd
Minhang District, Shanghai , China

➤ Sales :

Direct +86 (21) 6401-6692

Email amall@ameya360.com

QQ 800077892

Skype ameyasales1 ameyasales2

➤ Customer Service :

Email service@ameya360.com

➤ Partnership :

Tel +86 (21) 64016692-8333

Email mkt@ameya360.com