

N-Channel JFET 30 V, 1.2 to 3.0 mA, 5.0 mS, SOT-883



ON Semiconductor®

www.onsemi.com

TF412S

Features

- Small IGSS: Max -1.0 nA ($V_{GS} = -20$ V, $V_{DS} = 0$ V)
- Small Ciss: Typ 4 pF ($V_{DS} = 10$ V, $V_{GS} = 0$ V, $f = 1$ MHz)
- Ultrasmall Package Facilitates Miniaturization in End Products
- This is a Pb-Free and Halogen Free Device

Applications

- Low-Frequency General-purpose Amplifier, Impedance Conversion, Infrared Sensor Applications

Specifications

ABSOLUTE MAXIMUM RATINGS (at $T_a = 25^\circ\text{C}$)

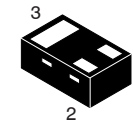
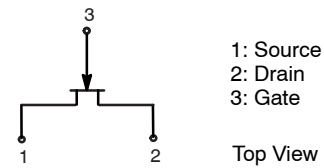
Symbol	Parameter	Value	Unit
V_{DSX}	Drain-to-Source Voltage	30	V
V_{GDS}	Gate-to-Drain Voltage	-30	V
I_G	Gate Current	10	mA
I_D	Drain Current	10	mA
P_D	Power Dissipation	100	mW
T_j	Junction Temperature	150	$^\circ\text{C}$
T_{stg}	Storage Temperature	-55 to +150	$^\circ\text{C}$

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

NOTE: This product is designed to "ESD immunity < 200 V*", so please take care when handling.

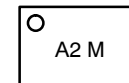
* Machine Model

ELECTRICAL CONNECTION



SOT-883 (XDFN3)
CASE 506CB

MARKING DIAGRAM



A2 = Specific Device Code
M = Date Code

ORDERING INFORMATION

Device	Package	Shipping†
TF412ST5G	SOT-883	8,000 Tape / Reel

† For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

TF412S

ELECTRICAL CHARACTERISTICS (at $T_A = 25^\circ\text{C}$)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{(BR)GDS}$	Gate-to-Drain Breakdown Voltage	$I_G = -10 \mu\text{A}$, $V_{DS} = 0 \text{ V}$	-30			V
I_{GSS}	Gate-to-Source Leakage Current	$V_{GS} = -20 \text{ V}$, $V_{DS} = 0 \text{ V}$			-1.0	nA
$V_{GS(off)}$	Cutoff Voltage	$V_{DS} = 10 \text{ V}$, $I_D = 1 \mu\text{A}$	-0.18	-0.80	-1.5	V
I_{DSS}	Drain Current	$V_{DS} = 10 \text{ V}$, $V_{GS} = 0 \text{ V}$	1.2		3.0	mA
$ y_{fs} $	Forward Transfer Admittance	$V_{DS} = 10 \text{ V}$, $V_{GS} = 0 \text{ V}$, $f = 1 \text{ kHz}$	3.0	5.0		mS
Ciss	Input Capacitance	$V_{DS} = 10 \text{ V}$, $V_{GS} = 0 \text{ V}$, $f = 1 \text{ MHz}$		4		pF
Crss	Reverse Transfer Capacitance			1.1		pF

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

TYPICAL CHARACTERISTICS

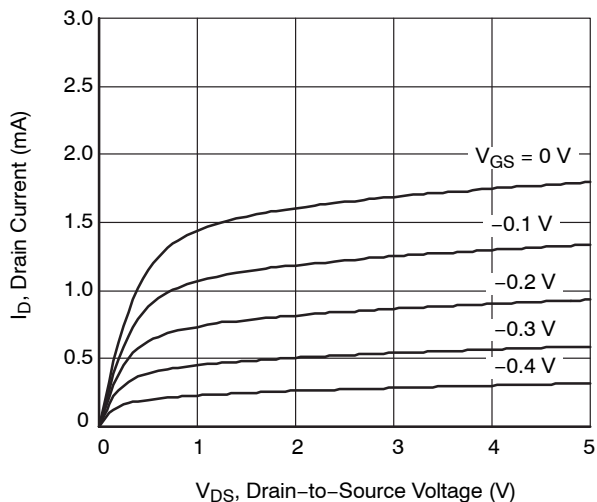


Figure 1. $I_D - V_{DS}$

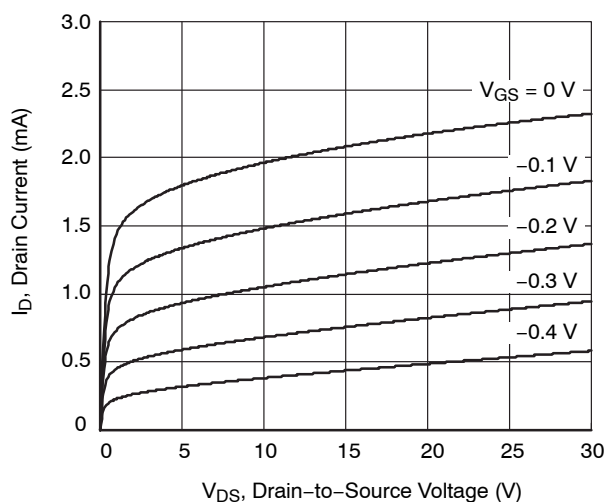


Figure 2. $I_D - V_{DS}$

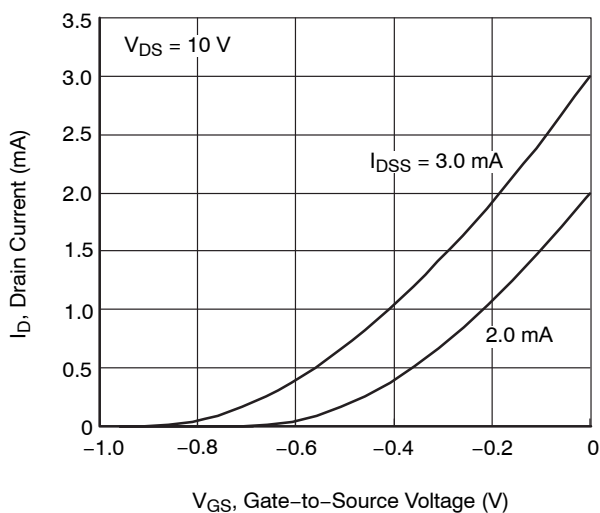


Figure 3. $I_D - V_{GS}$

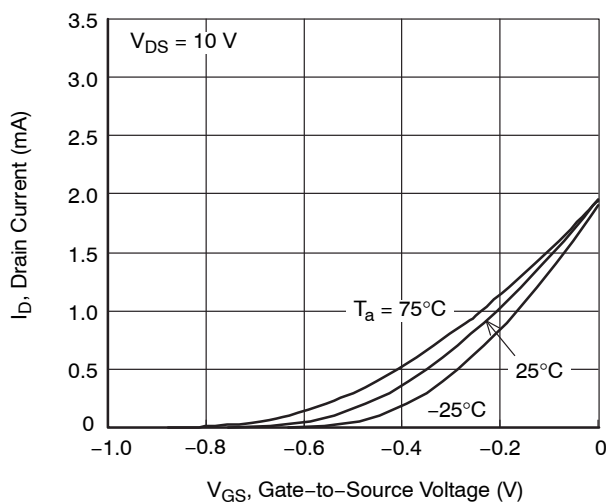


Figure 4. $I_D - V_{GS}$

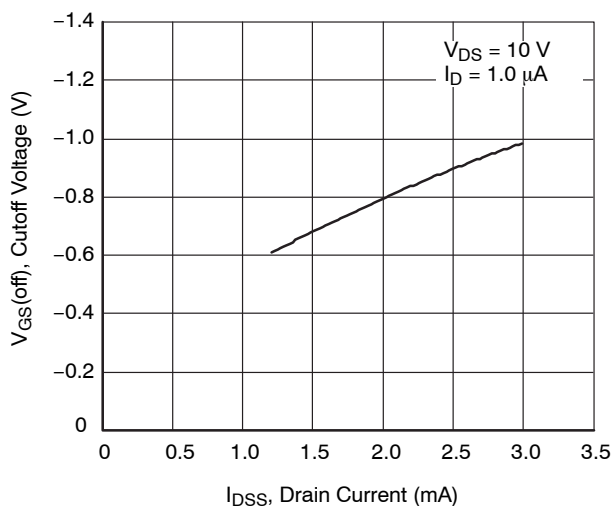


Figure 5. $V_{GS(off)} - I_{DSS}$

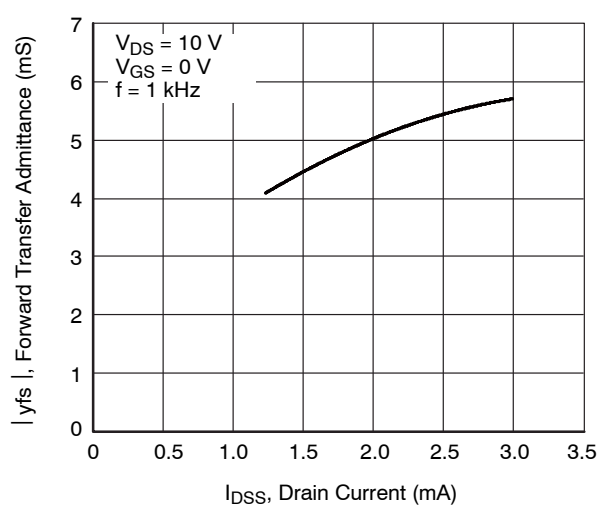


Figure 6. $|y_{fs}| - I_{DSS}$

TYPICAL CHARACTERISTICS (continued)

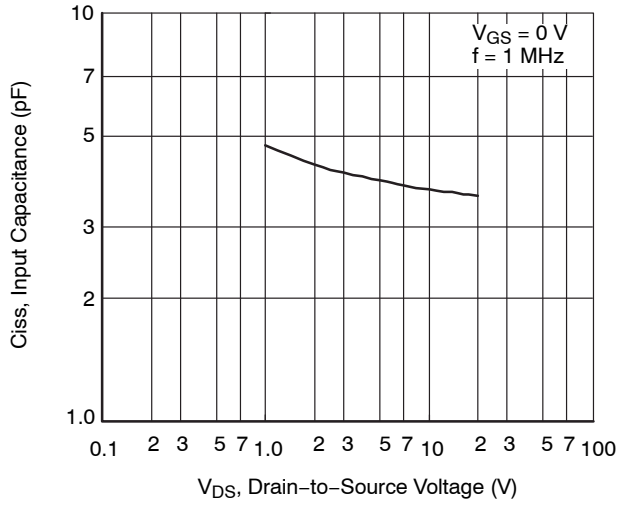


Figure 7. C_{iss} - V_{DS}

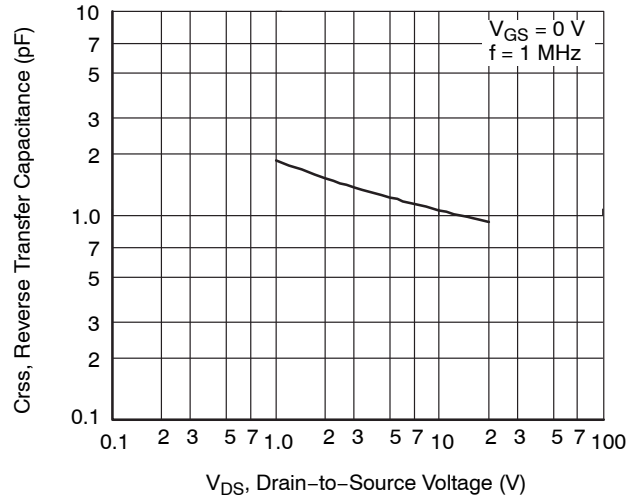


Figure 8. C_{rss} - V_{DS}

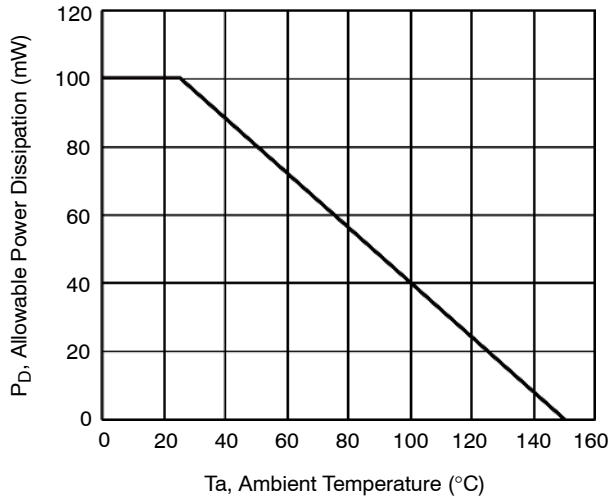


Figure 9. P_D - T_a

MECHANICAL CASE OUTLINE

PACKAGE DIMENSIONS

ON Semiconductor®



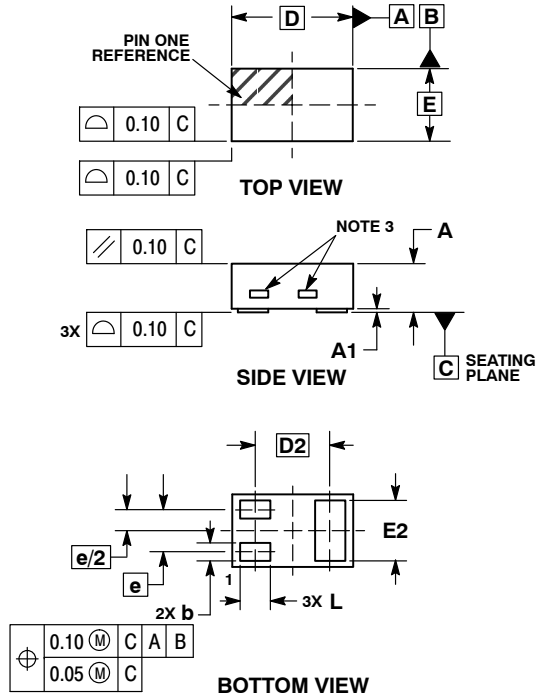
SOT-883 (XDFN3), 1.0x0.6, 0.35P

CASE 506CB
ISSUE A

DATE 30 MAR 2012



SCALE 8:1

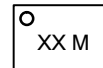


NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. EXPOSED COPPER ALLOWED AS SHOWN.

MILLIMETERS		
DIM	MIN	MAX
A	0.340	0.440
A1	0.000	0.030
b	0.075	0.200
D	0.950	1.075
D2	0.620 BSC	
e	0.350 BSC	
E	0.550	0.675
E2	0.425	0.550
L	0.170	0.300

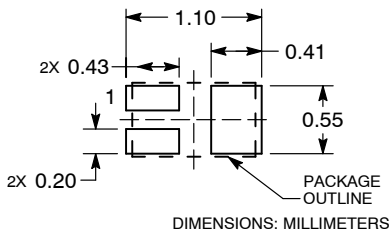
GENERIC MARKING DIAGRAM*



XX = Specific Device Code
M = Date Code

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G", may or not be present.

RECOMMENDED SOLDER FOOTPRINT*



*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

DOCUMENT NUMBER:	98AON65407E	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
DESCRIPTION:	SOT-883 (XDFN3), 1.0X0.6, 0.35P	PAGE 1 OF 1

ON Semiconductor and are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. ON Semiconductor does not convey any license under its patent rights nor the rights of others.

onsemi, **Onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:

Technical Library: www.onsemi.com/design/resources/technical-documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support

For additional information, please contact your local Sales Representative at www.onsemi.com/support/sales