

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



ON Semiconductor®

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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 $T_a = 25^\circ\text{C}$)

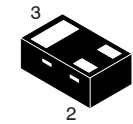
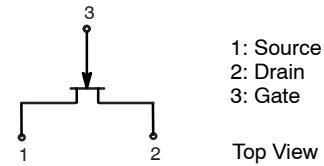
| Symbol | Parameter | Value | Unit |
|-----------|-------------------------|-------------|------------------|
| V_{DSX} | Drain-to-Source Voltage | 30 | V |
| V_{GDS} | Gate-to-Drain Voltage | -30 | V |
| I_G | Gate Current | 10 | mA |
| I_D | Drain Current | 10 | mA |
| P_D | Power Dissipation | 100 | 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.

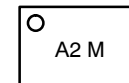
* Machine Model

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 |
| C_{iss} | Input Capacitance | $V_{DS} = 10 \text{ V}$, $V_{GS} = 0 \text{ V}$, $f = 1 \text{ MHz}$ | | 4 | | pF |
| C_{rss} | 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

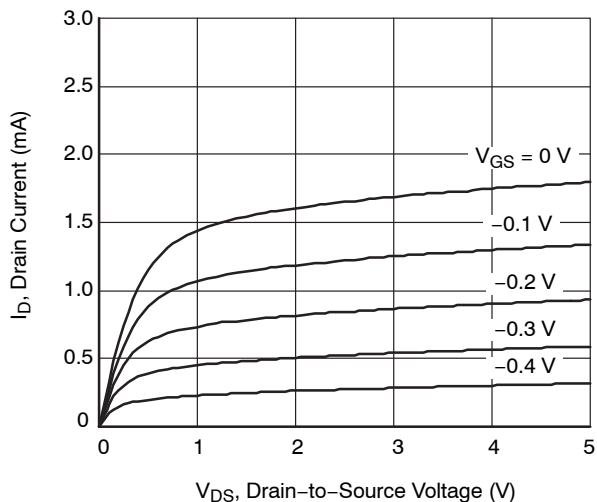


Figure 1. $I_D - V_{DS}$

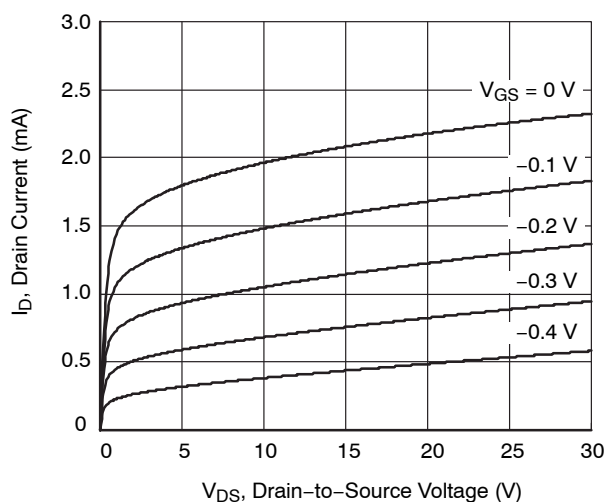


Figure 2. $I_D - V_{DS}$

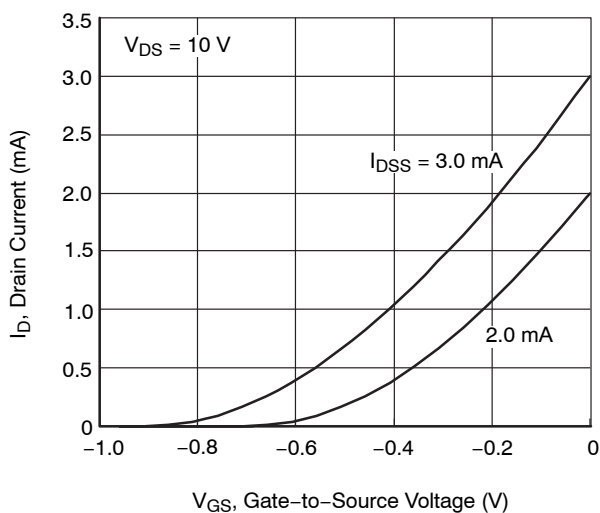


Figure 3. $I_D - V_{GS}$

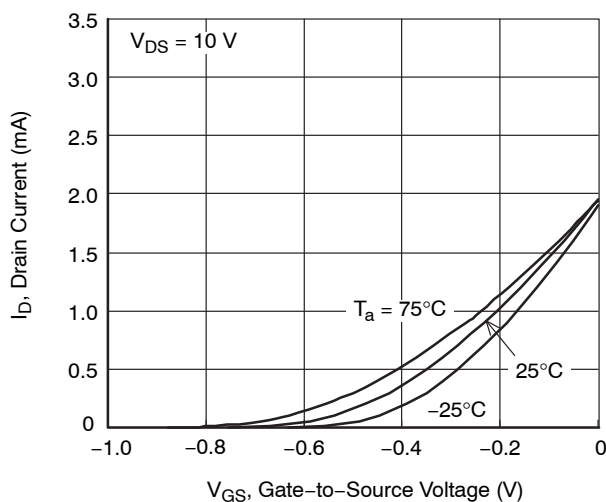


Figure 4. $I_D - V_{GS}$

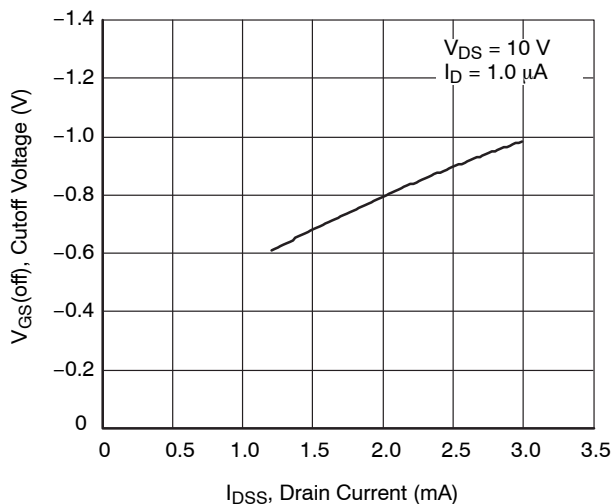


Figure 5. $V_{GS(off)} - I_{DSS}$

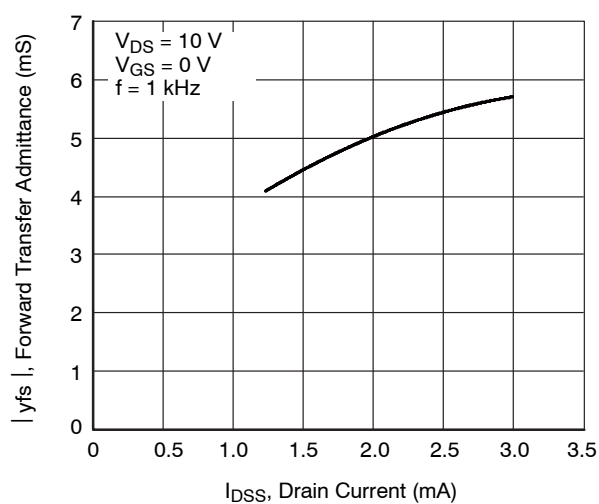


Figure 6. $|y_{fs}| - I_{DSS}$

TYPICAL CHARACTERISTICS (continued)

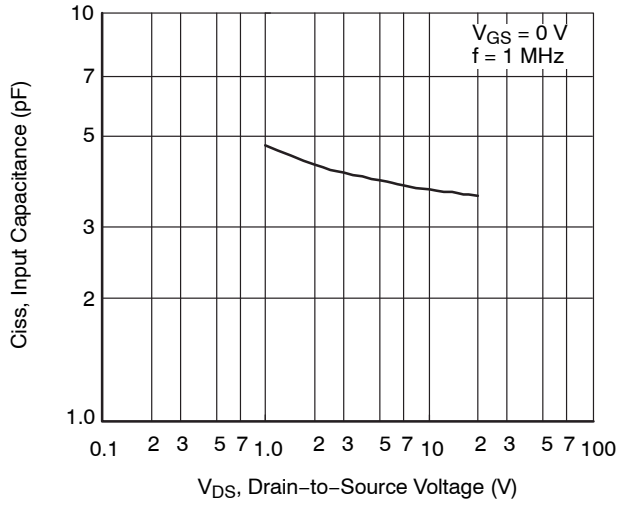


Figure 7. C_{iss} - V_{DS}

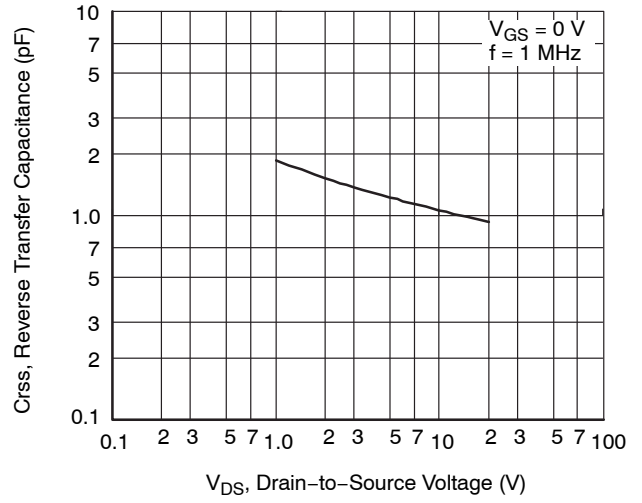


Figure 8. C_{rss} - V_{DS}

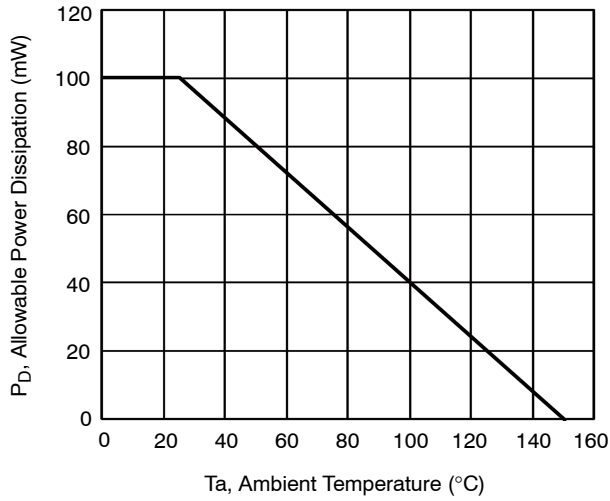


Figure 9. P_D - T_a

MECHANICAL CASE OUTLINE

PACKAGE DIMENSIONS

ON Semiconductor®



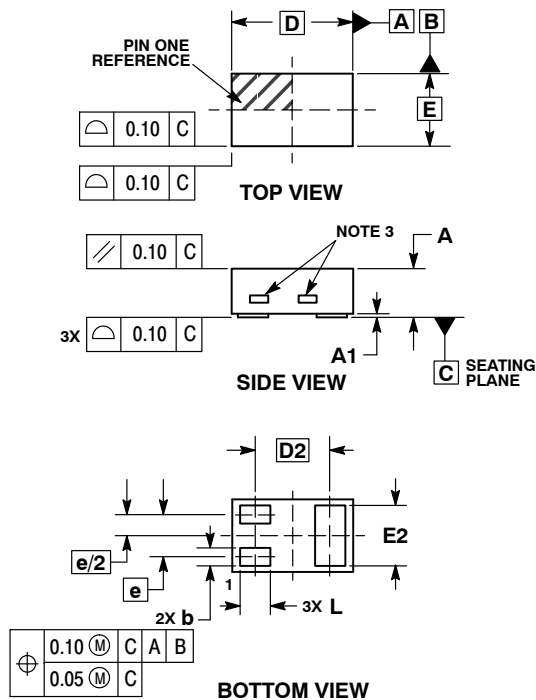
SOT-883 (XDFN3), 1.0x0.6, 0.35P

CASE 506CB
ISSUE A

DATE 30 MAR 2012



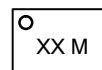
SCALE 8:1



- 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 |

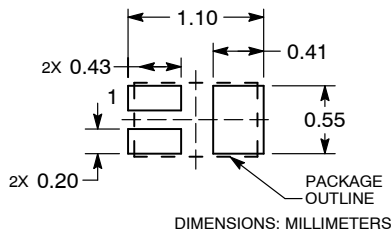
GENERIC MARKING DIAGRAM*



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.

| | | |
|-------------------------|--|--|
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| DESCRIPTION: | SOT-883 (XDFN3), 1.0X0.6, 0.35P | PAGE 1 OF 1 |

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