

# STF202-22T1 Series

## Advance Information EMI Filter with ESD Protection

### Features:

- Provides USB Line Termination, Filtering and ESD Protection
- Single IC Offers Cost Savings by Replacing 3 Resistors, 2 Capacitors, and 5 TVs diodes
- Bi-directional EMI Filtering Prevents Noise from Entering/Leaving the System
- IEC61000-4-2 ESD Protection for USB Port
- Flexible Pull-down or Pull-up Line Termination to Meet USB 1.1 Low Speed and High Speed Specification

### Benefits:

- TSOP-6 Package Minimizes PCB Space
- Integrated Circuit Increases System Reliability versus Discrete Component Implementation
- TVs Devices Provide ESD Protection That is Better than a Discrete Implementation because the Small IC minimizes Parasitic Inductances

### Typical Applications:

- USB Serial Ports
- Portable Equipment
- Cellular Phones
- Computers

### MAXIMUM RATINGS (T<sub>A</sub> = 25°C)

Rating	Symbol	Value	Unit
Steady State Power	P <sub>D</sub>	225	mW
IEC61000-4-2 (Level 4)	V <sub>PP</sub>	16	kV
Air Discharge		8.0	
Contact Discharge			
Maximum Junction Temperature	T <sub>J</sub>	150	°C
Lead Solder Temperature (10 second duration)	T <sub>L</sub>	260	°C

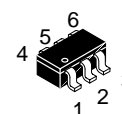
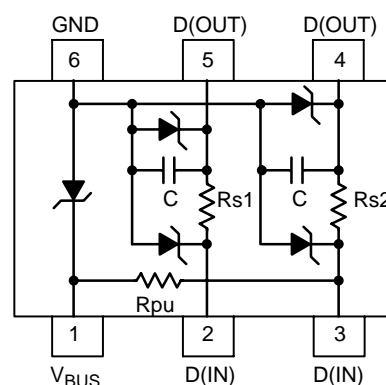
This document contains information on a new product. Specifications and information herein are subject to change without notice.



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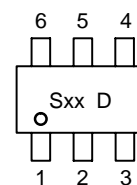
<http://onsemi.com>

### CIRCUIT DESCRIPTION



TSOP-6  
CASE 318G  
STYLE 8

### MARKING DIAGRAM



Sxx = Specific Device Code  
xx = 22 or 30  
D = Date Code

### ORDERING INFORMATION

Device	Package	Shipping
STF202-22T1	TSOP-6	3000/Tape & Reel
STF202-30T1	TSOP-6	3000/Tape & Reel

## STF202–22T1 Series

### ELECTRICAL CHARACTERISTICS

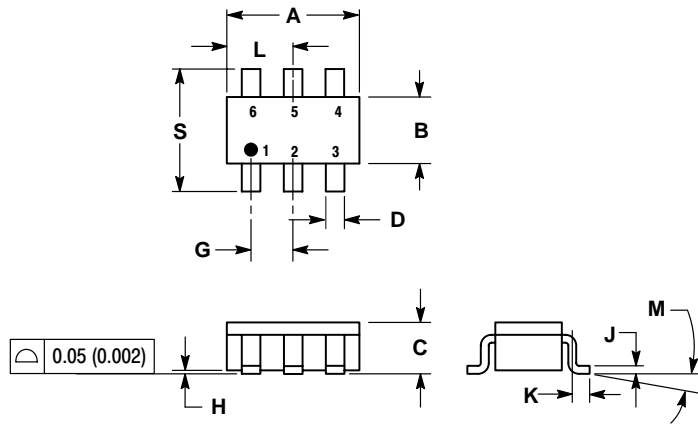
Device	Device Marking	V <sub>RWM</sub> (Volts)	V <sub>BR</sub> @ 1 mA		Max I <sub>R</sub> @ V <sub>RWM</sub> = 5.25 V V <sub>BUS</sub> to GND (μA)	Max I <sub>R</sub> @ V <sub>RWM</sub> = 3.3 V I/O Pin (μA)	Typical Total Line Capacitance I/O Pins to GND (pF)	Series Resistor Rs (Ω)			Pull-up Resistor Rup (kΩ)		
			Min	Max				Min	Nom	Max	Min	Nom	Max
STF202–22T1	S22	5.25	6.0	8.0	5.0	1.0	60	20	22	24	1.35	1.5	1.65
STF202–30T1	S30	5.25	6.0	8.0	5.0	1.0	60	27	30	33	1.35	1.5	1.65

# STF202–22T1 Series

## OUTLINE DIMENSIONS

### EMI Filter with ESD Protection

TSOP-6  
CASE 318G-02  
ISSUE H



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: MILLIMETER.
  3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.90	3.10	0.1142	0.1220
B	1.30	1.70	0.0512	0.0669
C	0.90	1.10	0.0354	0.0433
D	0.25	0.50	0.0098	0.0197
E	0.85	1.05	0.0335	0.0413
F	0.013	0.100	0.0005	0.0040
J	0.10	0.26	0.0040	0.0102
K	0.20	0.60	0.0079	0.0236
L	1.25	1.55	0.0493	0.0610
M	0 °	10 °	0 °	10 °
S	2.50	3.00	0.0985	0.1181

#### STYLE 1:

- PIN 1. DRAIN  
2. DRAIN  
3. GATE  
4. SOURCE  
5. DRAIN  
6. DRAIN

#### STYLE 2:

- PIN 1. EMITTER 2  
2. BASE 1  
3. COLLECTOR 1  
4. EMITTER 1  
5. BASE 2  
6. COLLECTOR 2

#### STYLE 3:

- PIN 1. ENABLE  
2. N/C  
3. R BOOST  
4. Vz  
5. Vin  
6. Vout

#### STYLE 4:

- PIN 1. N/C  
2. Vin  
3. NOT USED  
4. GROUND  
5. ENABLE  
6. LOAD

#### STYLE 5:

- PIN 1. EMITTER 2  
2. BASE 2  
3. COLLECTOR 1  
4. EMITTER 1  
5. BASE 1  
6. COLLECTOR 2

#### STYLE 6:

- PIN 1. COLLECTOR  
2. COLLECTOR  
3. BASE  
4. EMITTER  
5. COLLECTOR  
6. COLLECTOR

#### STYLE 7:

- PIN 1. COLLECTOR  
2. COLLECTOR  
3. BASE  
4. N/C  
5. COLLECTOR  
6. EMITTER

#### STYLE 8:

- PIN 1. Vbus  
2. D(in)-  
3. D(in)+  
4. D(out)+  
5. D(out)-  
6. GND

## STF202–22T1 Series

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