NZF220TT1

EMI Filter with ESD Protection

Features:

- EMI/RFI Bi−directional “Pi” Low−Pass Filters
- ESD Protection Meets IEC61000−4−2
- Diode Capacitance: 7 – 10 pF
- Zener/Resistor Line Capacitance: 22 ± 20% pF
- Low Zener Diode Leakage: 1 μA Maximum
- Zener Breakdown Voltage; 6 – 8 Volts
- Pb−Free Package is Available

Benefits:

- Designed to Suppress EMI/RFI Noise in Systems Subjected to Electromagnetic Interference
- Small Package Size Minimizes Parasitic Inductance, Thus a More “Ideal” Low Pass Filtering Response

Applications:

- Cellular Phones
- Communication Systems
- Computers
- Portable Products with Input/Output Conductors

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Power Dissipation (Note 1) 8 × 20 μs Pulse	P_{PK}	14	W
Maximum Junction Temperature	T_J	150	°C

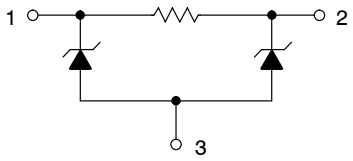
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

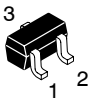
1. All diodes under power

ON Semiconductor®

http://onsemi.com

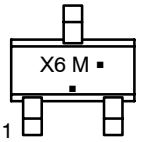
CIRCUIT DESCRIPTION





SC−75
CASE 463
STYLE 4

MARKING DIAGRAM



X6 = Device Code
M = Date Code*
▪ = Pb−Free Package

(Note: Microdot may be in either location)

*Date Code orientation may vary depending upon manufacturing location.

ORDERING INFORMATION

Device	Package	Shipping†
NZF220TT1	SC−75	3000/Tape & Reel
NZF220TT1G	SC−75 (Pb−Free)	3000/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.

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ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Min	Typ	Max	Unit
Zener Breakdown Voltage, @ I_{ZT} = 1 mA	V_Z	6.0	–	8.0	V
Zener Leakage Current, @ V_R = 3 V	I_r	N/A	–	1.0	μA
Zener Forward Voltage, @ I_F = 50 mA	V_F	N/A	–	1.25	V
Zener Internal Capacitance, @ 0 V Bias	C	7.0	–	10	pF
Zener/Resistor Array Line Capacitance	C	17.6	–	26.4	pF
Resistance	R	90	–	110	Ω
Cutoff Frequency	F_C (Note 2)	–	220	–	MHz

2. 50 Ω Source and 50 Ω Lead Termination per Figure 2

Applications Information

Suppressing Noise at the Source

- Filter all I/O signals leaving the noisy environment
- Locate I/O driver circuits close to the connector
- Use the longest rise/fall times possible for all digital signals

Reducing Noise at the Receiver

- Filter all I/O signals entering the unit
- Locate the I/O filters as close as possible to the connector

Minimizing Noise Coupling

- Use multilayer PCBs to minimize power and ground inductance
- Keep clock circuits away from the I/O connector
- Ground planes should be used whenever possible
- Minimize the loop area for all high speed signals
- Provide for adequate power decoupling

ESD Protection

- Locate the suppression devices as close to the I/O connector as possible
- Minimize the PCB trace length to the suppression device
- Minimize the PCB trace length for the ground return for the suppression device

Frequency Response Specification

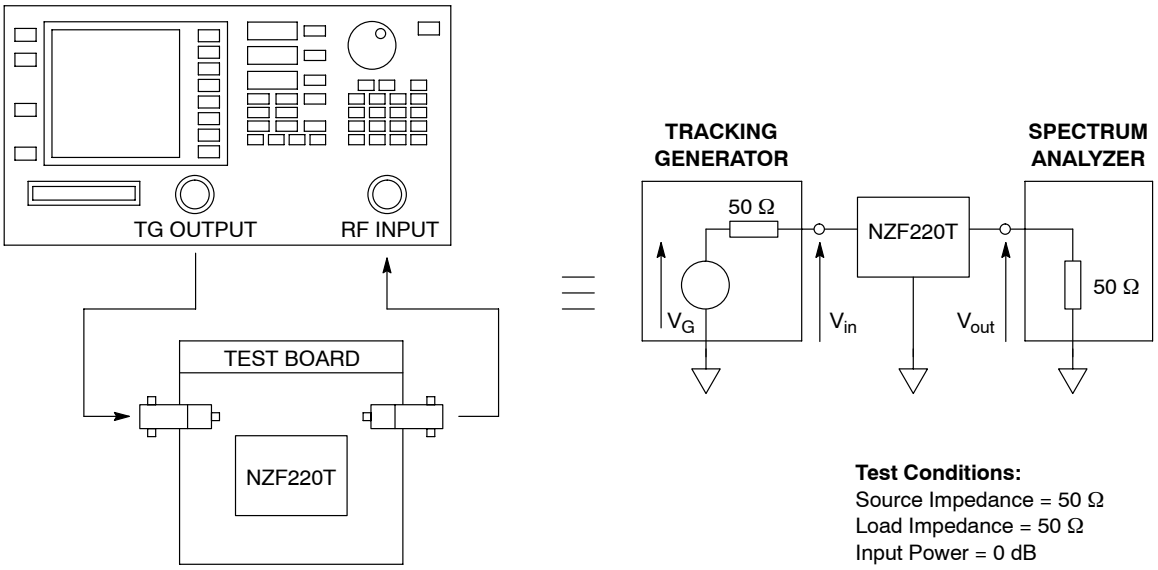


Figure 1. Measurement Conditions

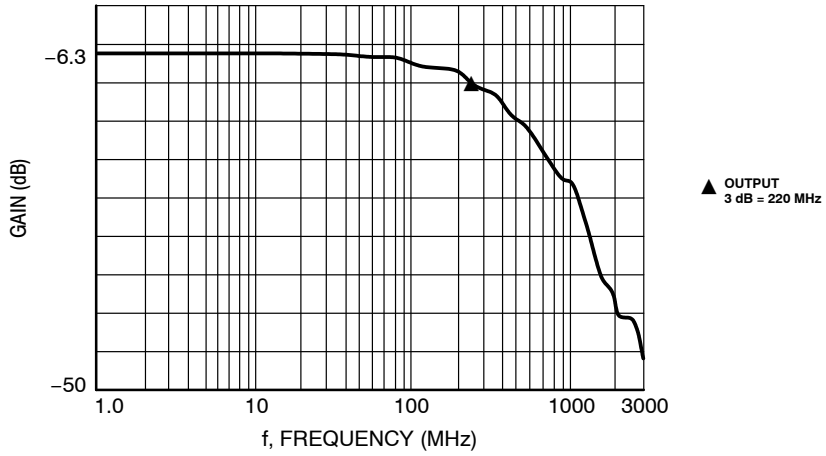
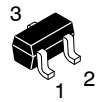


Figure 2. Typical EMI Filter Response (50 Ω Source and 50 Ω Lead Termination)

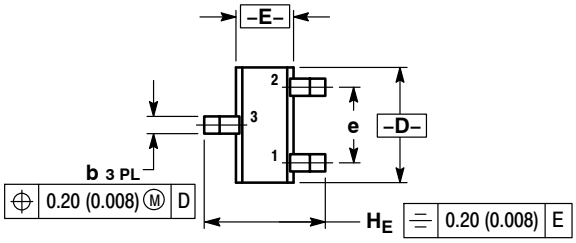
MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

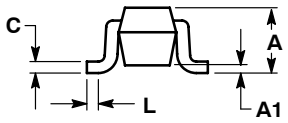
SC−75/SOT−416
CASE 463
ISSUE G

DATE 07 AUG 2015



SCALE 4:1





NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.

	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
A	0.70	0.80	0.90	0.027	0.031	0.035
A1	0.00	0.05	0.10	0.000	0.002	0.004
b	0.15	0.20	0.30	0.006	0.008	0.012
C	0.10	0.15	0.25	0.004	0.006	0.010
D	1.55	1.60	1.65	0.061	0.063	0.065
E	0.70	0.80	0.90	0.027	0.031	0.035
e	1.00 BSC			0.04 BSC		
L	0.10	0.15	0.20	0.004	0.006	0.008
H_E	1.50	1.60	1.70	0.060	0.063	0.067

STYLE 1:
PIN 1. BASE
2. EMITTER
3. COLLECTOR

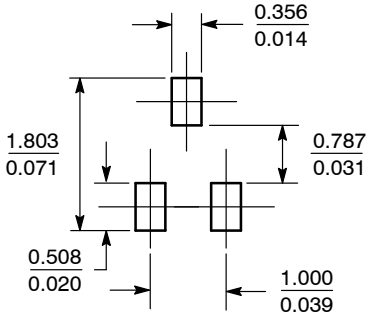
STYLE 2:
PIN 1. ANODE
2. N/C
3. CATHODE

STYLE 3:
PIN 1. ANODE
2. ANODE
3. CATHODE

STYLE 4:
PIN 1. CATHODE
2. CATHODE
3. ANODE

STYLE 5:
PIN 1. GATE
2. SOURCE
3. DRAIN

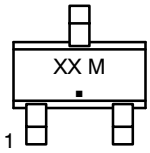
RECOMMENDED SOLDERING FOOTPRINT*



SCALE 10:1 (mm / inches)

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

GENERIC MARKING DIAGRAM*



XX = Specific Device Code
M = Date Code
▪ = Pb−Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G” or microdot “▪”, may or may not be present. Some products may not follow the Generic Marking.

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