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Our Product of the Month PAN1326 – Panasonic Bluetooth4.0 Smart Module, HCI/host controlled

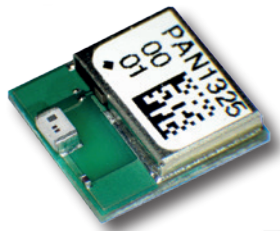


The Lego robot EV3 is a typical example for the flexible and versatile applications of the Bluetooth4.0 Smart and Smart Ready technology

Panasonic

Wireless Modules for All Current Bluetooth Standards

BLUETOOTH 4.0 LE DUAL MODE HCI (SMART READY) MODULE PAN1326



FEATURES

- » Communicates with BT Low Energy single mode devices
- » Best-in-class Bluetooth RF performance (Tx, Rx sensitivity, blocking)
- » Fully Qualified Bluetooth v4.0 EDR, FCC and IC listed, CE complied
- » Dimensions: 9.0mm×9.5mm×1.8mm (W×L×H)
- » Operating Temperature Range: -20°C to +70°C
- » Supply Voltage Range: 1.7 - 4.8 V
- » Based upon TI's CC2564
- » Profiles: SPP, HDP, Audio and others can run on the host processor (integrates with TI's ultra low-power MSP430 μP)
- » Very fast algorithm for both ACL and eSCO
- » Supports extended range Tx power with 10.5 dBm typ. output
- » Low power scan method and inquiry scans at 1/3rd normal power

Interfaces

- » 3.25 MBaud UART with transport layer detection (HCI UART, HCI Three and Four Wire UART)
- » PCM/I2S interface for digital audio

APPLICATIONS

- » All wireless applications, e. g. medical applications, printers, scanners, PDAs, access points, wireless sensors, industrial applications, PC motherboards & peripherals, mono and stereo audio applications

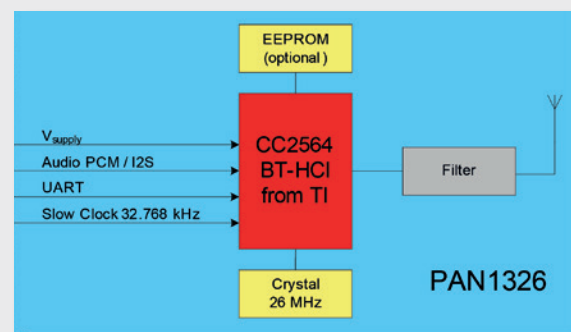
Panasonic's new PAN132x Host Controlled Interface

(HCI) Bluetooth Low Energy dual mode module brings Texas Instrument's seventh generation Bluetooth core integrated circuit, the CC2564, to an easy to use module format. Panasonic's tiny footprint technology has produced a module of only 85.5mm². The module is designed to accommodate PCBs pad pitch of 1.3mm and as little as two layers for easy implementation and manufacturing.

This module has been designed to be 100% pin compatible with the previous generation of Bluetooth Classic devices PAN1325. This unique design feature provides the possibility to seamlessly switch Bluetooth classic products to Bluetooth low energy.

The **PAN1326** connects mobile devices such as cellular phones and small button cell battery powered devices like fitness sensors, watches, and healthcare accessories. It can be easily implemented and creates a data chain from Bluetooth low energy to Bluetooth classic devices.

BLOCK DIAGRAM



SPECIFICATIONS

PARAMETER	VALUE	CONDITION/NOTE
Receiver sensitivity (BER=10 ⁻³)	-93 dBm	ideal wanted signal
Output power	10.5 dBm typ.	max. 4 dBm for BT Class 2
Power supply	1.7 ... 4.8 V	Battery or DC/DC
Ultra low power scan	135 μA	1.28 s interval
eSCO Link 2-EV3	8.3 mA	Enhanced data rate, 544.0 kb/s *1
EDR 3-DH1\3-DH5	39.2 mA	Enhanced data rate, 544.0 kb/s *1
Operating temperature	-20°C ... +70°C	

*1 Figure indicates maximum possible data rate with this packet type

LOUDSPEAKERS WITH IP67-RATING (WATERPROOF)



Increased number of inquiries for so-called 'waterproof loudspeakers' has led to the development of new types. The point was to realize robust, weatherproof communication units, for example doorphones and videophones, also for mobile devices usable in outdoor environment.

That's why we introduce to our program two IP67-classified speaker models made by manufacturer Vansonic (VECO).

Available models:

20CRF08-1-N38ND-W (round, outer diameter 20mm, height 3.9mm)

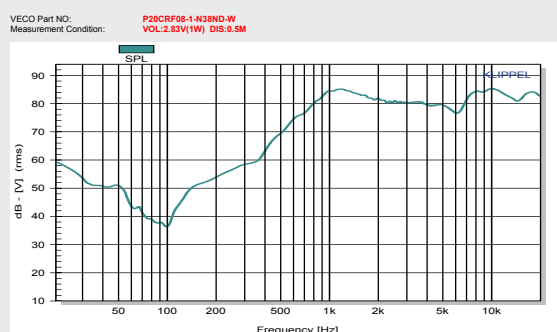
35KT08-W (square, 35 mm × 20 mm, height 5.5mm)

They are suitable for reproduction of human speech and melody signals, as they are typical and common in those communication applications.

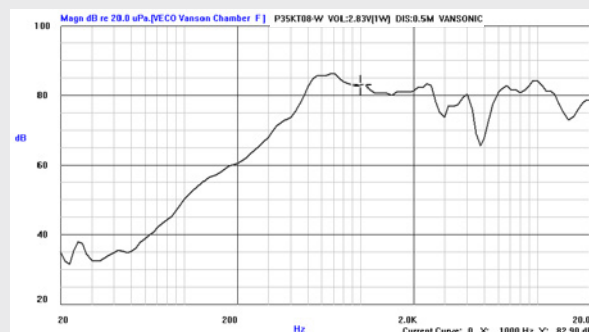
FEATURES

- » totally protected against water, dust and against the effects of immersion acc. to IP rating standard IP67
- » offered with a nominal impedance of 8 Ω standardwise
- » other impedance values can be realized upon request
- » electrical power rating is nominal 1 W (35KT08) respectively 1.2 W (20CRF08)

FREQUENCY RESPONSE



20CRF08-1-N38ND-W

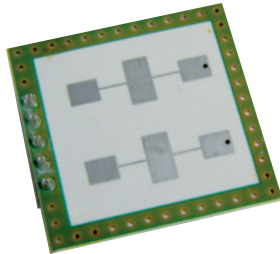


35KT08-W

SPECIFICATIONS

PARAMETER	20CRF08-1-N38ND-W	35KT08-W
Power rating (W)	1.2 / max. 1.5	1.0 W / max. 2.0 W
Frequency range (Hz)	500 ... 20000	350 Hz ... 4000 Hz
Resonant frequency (Hz)	1000 ± 20%	560 Hz ± 20%
DC resistance (Ω)	8 Ω ± 15%	8 Ω ± 15%
Sound pressure level (dB), av. at 800, 1000, 1200, 1500 Hz	83±3 dB min. at 1.2 W / 0.5 m	82±3 dB min. at 1.0 W / 0.5 m
Operating temperature (°C)	-40°C ... +85°C	-20°C ... +60°C
Waterproof level	IP67	IP67
Dimensions (mm)	∅ 20×3,9 mm	35 mm × 20 mm × 5,5 mm

RADAR TRANSCEIVER K-LC5



FEATURES

- » 24 GHz short range transceiver
- » Beam aperture 80°/34°
- » Pin-compatible with K-LC2
- » 150 MHz typical sweep rate
- » High sensitive LNA receiver
- » More than double K-LC2 sensitivity
- » I/Q IF outputs
- » Low cost design
- » Compact size: 25mm × 25mm × 6mm
- » Detection distance for persons: 25 m
- » Detection distance for cars: 60 m
- » Type K-LC5-V2 with additional internal amplifier but without VCO

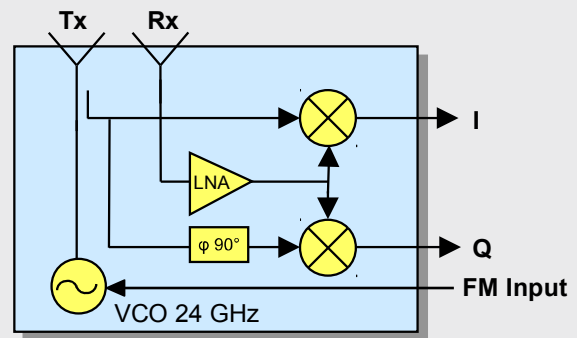
APPLICATIONS

- » Security systems
- » Directional object speed measurement systems
- » Directional movement detectors
- » Ranging of moving objects
- » Industrial sensors

K-LC5 is an extended range dual channel Doppler Radar module with an asymmetrical beam for short distance sensors. It is ideally suited for person movement sensors. Dual IF I and Q allow movement direction detection and high performance signal processing. FM input allows FSK ranging applications.

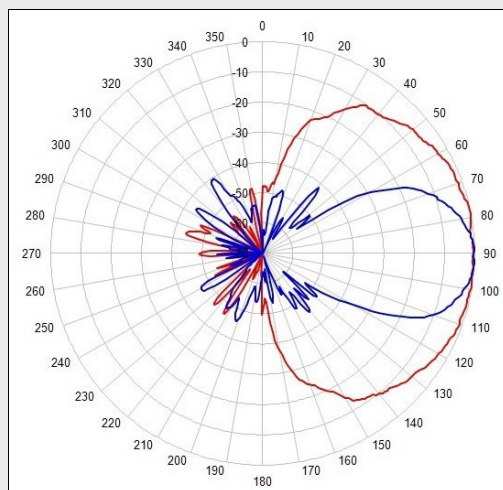
An extremely slim construction with only 6 mm depth gives you maximum flexibility in your equipment design. Powerful starterkits with signal conditioning and visualization are also available.

K-LC5 BLOCK DIAGRAM

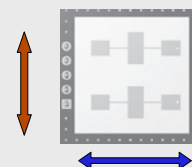


ANTENNA SYSTEM DIAGRAM (LOGARITHMIC SCALE)

This diagram shows module sensitivity (output voltage) in both azimuth and elevation directions. It incorporates the transmitter and receiver antenna characteristics.



Azimuth 34° , Elevation 80°
At IF output voltage -6dB
(corresponds to -3dB Tx power)

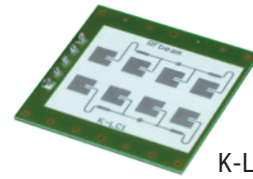




RADAR SENSORS – PRODUCT SELECTION

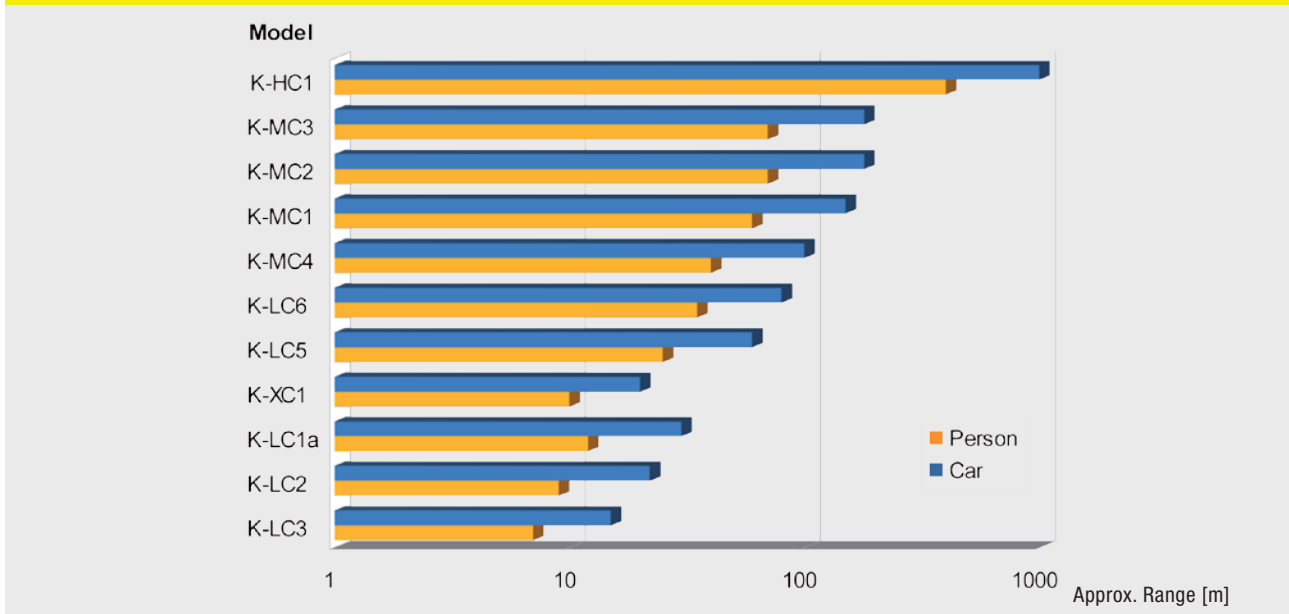
SELECTION BY DETECTION RANGE

These are indicative values only and cannot be guaranteed. Range depends on many parameters like size of object, direction of movement and data processing method.



K-LC1a

Selection by detection range

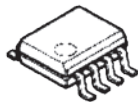


SELECTION BY PARAMETERS

	PART NUMBER	MIN. RANGE PERSON [m] ¹	MIN. RANGE CAR [m]	FIELD PATTERN VERTICAL [°]	FIELD PATTERN HORIZONTAL [°]	OUTPUT I/Q	IF AMPLIFIER	SUPPLY VOLTAGE [VDC] ²	CURRENT CONSUMPT. [mA]	FMVCO	SIZE [mm]
K-LC3	7	15	138	132	no	no	5	35	no		25 × 25 × 6
K-LC2	9	22	80	34	yes	no	5	35	yes		25 × 25 × 6
K-LC1a	12	30	80	34	no	no	5	35	yes		25 × 25 × 6
K-XC1	10	20	Ext. ant.	Ext. ant.	yes	yes	12...24	300	n. a.		
K-LC5	25	60	80	34	yes	no	5	45	yes		25 × 25 × 6
K-LC5-v2	25	60	80	34	yes	no	5	45	no		25 × 25 × 6
K-LC6	35	80	80	12	yes	no	5	45	yes		66 × 25 × 6
K-LC6-v2	35	80	80	12	yes	yes	5	47	yes		66 × 25 × 6
K-MC4	40	100	30	12	yes	yes	5	120/10	yes		98 × 78 × 7
K-MC1	60	150	25	12	yes	yes	5	100/10	yes		65 × 65 × 6
K-MC2	70	180	25	7	yes	yes	5	100/10	yes		138 × 65 × 6
K-MC3	70	180	25	7	yes	yes	5	100/10	yes		105 × 85 × 5
K-HC1	400	1000	25	12	yes	yes	15...30	220	digital		110 × 77 × 19
NEW K-MC1-LP	50	140	25	12	yes	yes	3.3...5	7.5	no		65 × 65 × 8.5
NEW K-MC5	38	100	6.5	5	yes	yes	3.3...5	8	no		186 × 143 × 10

¹ - values with simple comparator detector, ² - 3.3 V on request

DUAL HALF BRIDGE DRIVER (WIDE INPUT RANGE PRODUCTS) – NJW4810A



NJW4810AGM1

FEATURES

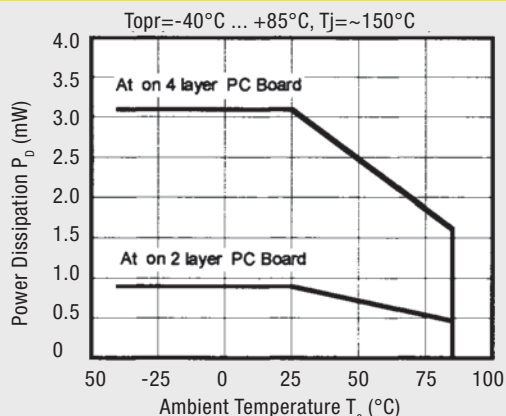
- » Output Switch Current (± 1 A)
- » Operating Voltage (8.0V to 40V)
- » Thermal Shut Down
- » Over Current Protection
- » Under Voltage Lockouts
- » Fault Indicator Output
- » High Heat Radiation Package
- » Package Outline (HSOP8)

The **NJW4810A** is a general-purpose dual half bridge driver capable of supplying 1 A current. Output duty=100 % can be operated by high side P channel MOSFET. It can use as a full bridge driver by connecting VDD1 and VDD2. The internal gate driver drives high-side/low-side power MOSFET; therefore, it is able to fast switching. Additionally, it has protection features such as over current protection and thermal shutdown. And in the case of failure, it can output a fault flag. It is suitable for power switching applications of DSP/micro controller.

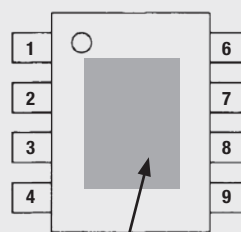
APPLICATIONS

- » 2ch Synchronous PWM step down switching regulators
- » Full bridge motor drivers
- » Latch type solenoid drivers

DISSIPATION POWER VS. AMBIENT TEMPERATURE

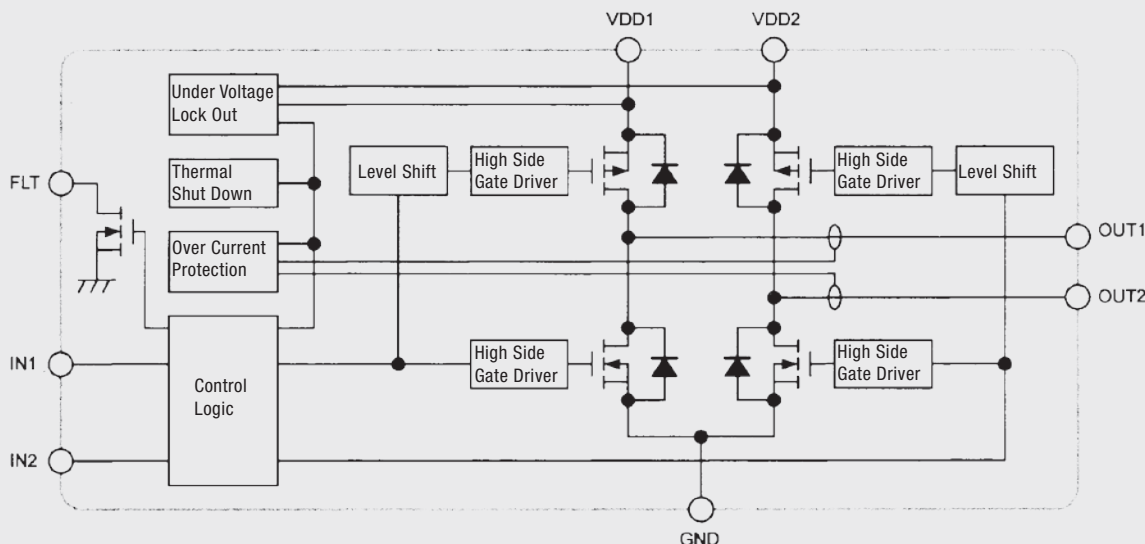


PIN CONFIGURATION

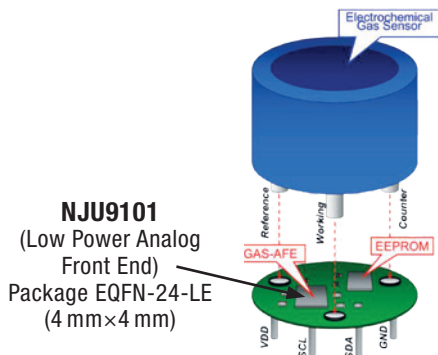


1. IN2
2. IN1
3. VDD1
4. OUT1
5. GND
6. OUT2
7. VDD2
8. FLT

BLOCK DIAGRAM



LOW POWER ANALOG FRONT END NJU9101 (SMART SENSOR MODULE)



FEATURES

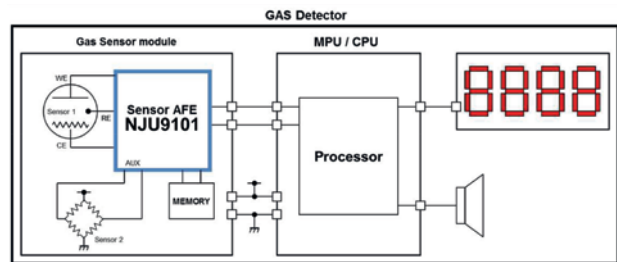
- » Supply Voltage +2.4V to +3.6V
- » **Low Current Consumption** 4µA (OPA, OPB), 150µA (ADC)
- » Low Offset Voltage amplifier (OPA, OPB) 300µV max.
- » Low Noise amplifier (OPA, OPB) 1.3µVpp typ (0.1~10 Hz)
- » RF immunity amplifier (OPA, OPB)
- » Programmable Cell Bias Volt. OPA: 0.3V~1.7V (Total 5 steps)
OPB: 0.25V~1.75V (50 mV steps)
- » Programmable Gain Pre-Amplifier X1, X2, X4, X8
- » High resolution Programmable Gain ADC 16bit (NFB≈16bit)
- » System Calibration for offset & gain drift
- » **Control external EEPROM as a Master device**
- » Built-in Temperature Sensor
- » **Auxiliary Input for additional Sensor**
- » SPDT Analog Switch 10Ω typ.
- » I²C Compatible Bus interface (F/S-mode)
- » I²C 3 bits selectable slave address (multi-gas detection)

The **NJU9101** is a Low Power Analog Front End IC for use in micro-power sensing applications, especially electrochemical sensors. It provides a complete signal processing solution between sensor and micro-processor as smart-sensor module. NJU9101 has 2 channel low power operational amplifiers. These amplifiers provide potentiostat and trans-impedance-amplifier to constitute gas sensor systems. The NJU9101 has calibration circuit by using output data of built-in high precision ADC. It is suitable for temperature variation of sensor. NJU9101 operates over voltage range of 2.4V to 3.6V. Total average current consumption can be less than 10µA.

APPLICATIONS

- » Gas monitor
- » Blood glucose meter
- » Current sensing systems, photodiode sensing systems
- » Low power and portable equipment

NJU9101 SOLUTION



APPLICATION BLOCK DIAGRAM

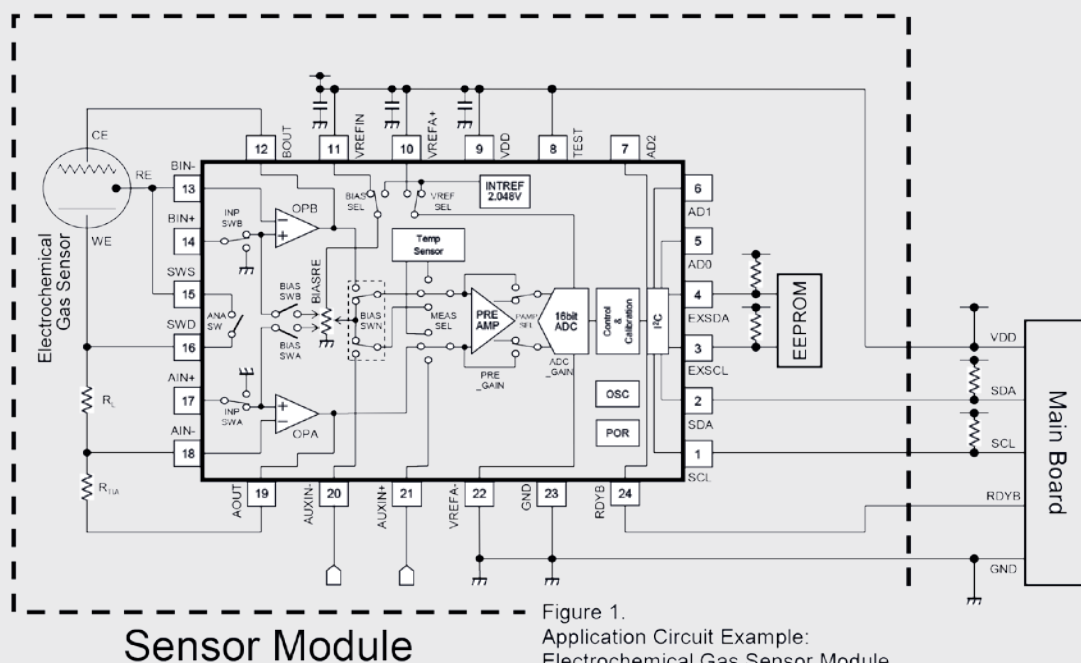


Figure 1.
Application Circuit Example:
Electrochemical Gas Sensor Module



SEMITEC
SEMITEC Corporation



HIGH PRECISION THERMISTORS

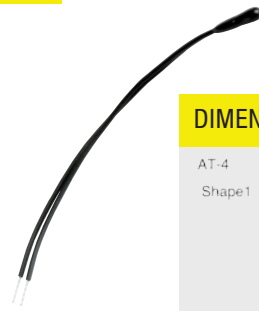
SEMITEC HIGH PRECISION THERMISTOR – AT-4 SERIES

FEATURES

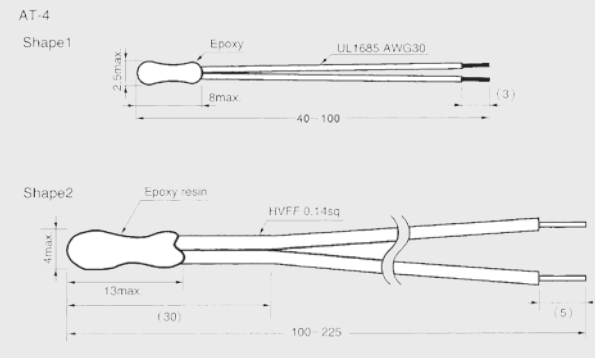
- » High-precision thermal sensing device
- » Extremely small tolerances of R_{25} and B-value
- » Insures temperature precision of $\pm 0.3^\circ\text{C}$
- » Category temperature range: $-30^\circ\text{C} \dots +90^\circ\text{C}$
- » Excellent long-term stability
- » Low time constants
- » Samples available ex stock

APPLICATIONS

- » Battery packs, heat meters
- » Precision temperature measuring and compensation
- » Temperature monitoring, medical equipment



DIMENSIONS AT-4 SERIES (mm)



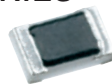
SPECIFICATIONS

- » 103AT-4 - R_{25} : $10\text{ k}\Omega \pm 1\%$, B-value: $3435\text{K} \pm 1\%$ (Shape 1)
- » 103AT-4 - R_{25} : $10\text{ k}\Omega \pm 1\%$, B-value: $3435\text{K} \pm 1\%$ (Shape 2)
- » 682AT-4 - R_{25} : $6.8\text{ k}\Omega \pm 1\%$, B-value: $3975\text{K} \pm 1\%$

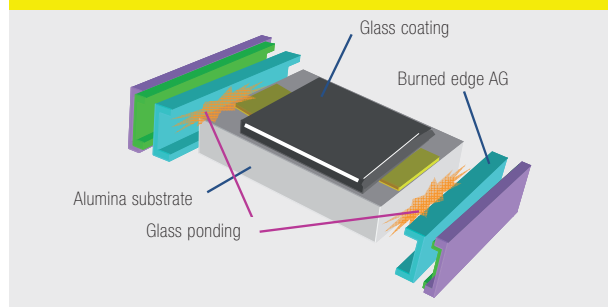
TATEYAMA THICK FILM CHIP THERMISTOR – TFT SERIES

FEATURES

- » High mechanical strength by alumina base & glass coating
- » Superior thermal responsiveness
- » Thin structure by thick film element & constant thickness with any resistance value
- » High quality and high reliability by TS 16949 certification



THICK FILM CHIP CONSTRUCTION



APPLICATIONS

- » Various temperature compensation
- » Printer, digital camera, battery pack, fuel cell
- » Air conditioner (room, car), information appliance

PARAMETER	SPECIFICATION
Chip type size	0201, 0402, 0603, 0805
Resistance value range	100 Ω ... 2 M Ω
Resistance value tolerance	$\pm 1\% \dots \pm 10\%$
B constant value range	2700 K ... 4800 K
B value tolerance	$\pm 1\% \dots \pm 5\%$
Power rating	5 mW
Dissipation constant (in air)	$\delta \leq 1.1 \dots 1.3\text{ mW}/^\circ\text{C}$
Thermal constant time (in air)	$\tau \leq 1.5 \dots 2.5\text{ s}$

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