⬡ **TDK**

EPCOS Sample Kit 2012

SMD NTC Thermistors

**General-Use Components for Temperature
Measurement and Compensation**

25°

What are SMD NTC thermistors?

- As defined by IEC 60539, NTC (Negative Temperature Coefficient) thermistors are thermally sensitive semiconductor resistors which show a decrease in resistance as temperature increases.
- SMD NTCs are designed for temperature measurement and compensation.

Benefits for customer applications

- Available case sizes 0402, 0603 and 0805 (1206 upon request)
- Resistance values 1 kΩ up to 680 kΩ
- Operating temperature range: –55 … +125 °C
- Excellent long-term aging stability in high-temperature environment
- Nickel barrier termination and lead-free solderability

Components

B57221 **V2472J060**	**B57230** **V2103F260**	**B57221** **V2103J060**	**B57261** **V2223J060**	**B57221** **V2473J060**	**B57321** **V2102J060**	**B57301** **V2472J060**	**B57330** **V2103F260**	**B57321** **V2103J060**

B57371 **V2103J060**	**B57321** **V2223J060**	**B57371** **V2223J060**	**B57321** **V2473J060**	**B57371** **V2473J060**	**B57371** **V2104J060**	**B57371** **V2474J060**	**B57421** **V2102J062**	**B57421** **V2222J062**

B57401 **V2472J062**	**B57471** **V2472J062**	**B57421** **V2103J062**	**B57471** **V2103J062**	**B57421** **V2223J062**	**B57471** **V2223J062**	**B57471** **V2473J062**	**B57471** **V2104J062**	**B57471** **V2474J062**

Product range

EPCOS

Electrical specifications and ordering codes

EIA case size	R_{25} [kΩ]	ΔR_R %	$B_{25/50}$ [K]	$B_{25/85}$ [K]	$B_{25/100}$ [K]	Ordering code
Case size 0402						
0402	4.7	±5	3940	3980	4000 ±3%	B57221V2472J060
0402	10	±1	3380	3435	3455 ±1%	B57230V2103F260 **NEW**
0402	10	±5	3940	3980	4000 ±3%	B57221V2103J060
0402	22	±5	4473	4548	4575 ±3%	B57261V2223J060
0402	47	±5	3940	3980	4000 ±3%	B57221V2473J060
Case size 0603						
0603	1	±3, ±5	3940	3980	4000 ±3%	B57321V2102+060
0603	4.7	±3, ±5	3590	3635	3650 ±3%	B57301V2472+060
0603	10	±1	3380	3435	3455 ±1%	B57330V2103F260 **NEW**
0603	10	±3, ±5	3940	3980	4000 ±3%	B57321V2103+060
0603	10	±3, ±5	4386	4455	4480 ±3%	B57371V2103+060
0603	22	±3, ±5	3940	3980	4000 ±3%	B57321V2223+060
0603	22	±3, ±5	4386	4455	4480 ±3%	B57371V2223+060
0603	47	±3, ±5	3940	3980	4000 ±3%	B57321V2473+060
0603	47	±3, ±5	4386	4455	4480 ±3%	B57371V2473+060
0603	100	±3, ±5	4386	4455	4480 ±3%	B57371V2104+060
0603	470	±3, ±5	4386	4455	4480 ±3%	B57371V2474+060
Case size 0805						
0805	1	±3, ±5	3940	3980	4000 ±3%	B57421V2102+062
0805	2.2	±3, ±5	3940	3980	4000 ±3%	B57421V2222+062
0805	4.7	±3, ±5	3590	3635	3650 ±3%	B57401V2472+062
0805	4.7	±3, ±5	4386	4455	4480 ±3%	B57471V2472+062
0805	10	±3, ±5	3940	3980	4000 ±3%	B57421V2103+062
0805	10	±3, ±5	4386	4455	4480 ±3%	B57471V2103+062
0805	22	±3, ±5	3940	3980	4000 ±3%	B57421V2223+062
0805	22	±3, ±5	4386	4455	4480 ±3%	B57471V2223+062
0805	47	±3, ±5	4386	4455	4480 ±3%	B57471V2473+062
0805	100	±3, ±5	4386	4455	4480 ±3%	B57471V2104+062
0805	470	±3, ±5	4386	4455	4480 ±3%	B57471V2474+062

See enclosed CD-ROM for data sheets and further details.   + = Resistance tolerance: H = ±3%, J = ±5%
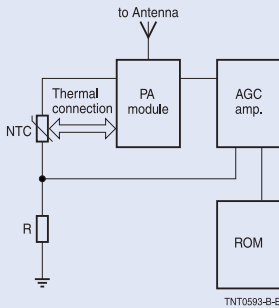
Application examples for SMD NTC thermistors

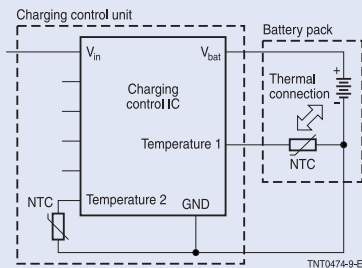## Diagrams for LED, power amplifier and battery pack
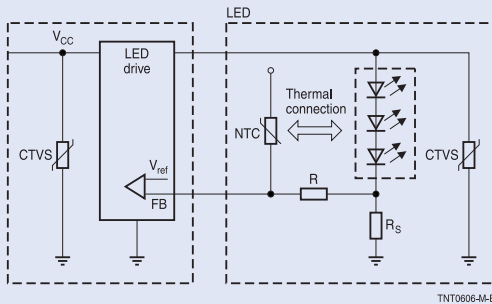
LED
LED lifetime is extended if the current through the LED is controlled by using a NTC thermistor as temperature sensor.

  10 kΩ ±5%
   10 kΩ ±1%
100 kΩ ±5%

Power amplifier
Compensation circuit of a power amplifier using a NTC thermistor as temperature sensor.

Battery pack
Schematic drawing of the charging control unit of a battery pack using NTC thermistors as temperature sensors.

10 kΩ ±5%
10 kΩ ±1%

Further applications:

Temperature sensing and compensation in e.g.

- Household electronics (refrigerators and deep-freezers, washing machines, water boilers, LED lighting etc.)
- Heating and air-conditioning
- Industrial electronics
- Computer and consumer electronics
- Telecommunications