Priority Markets and Strategic Products

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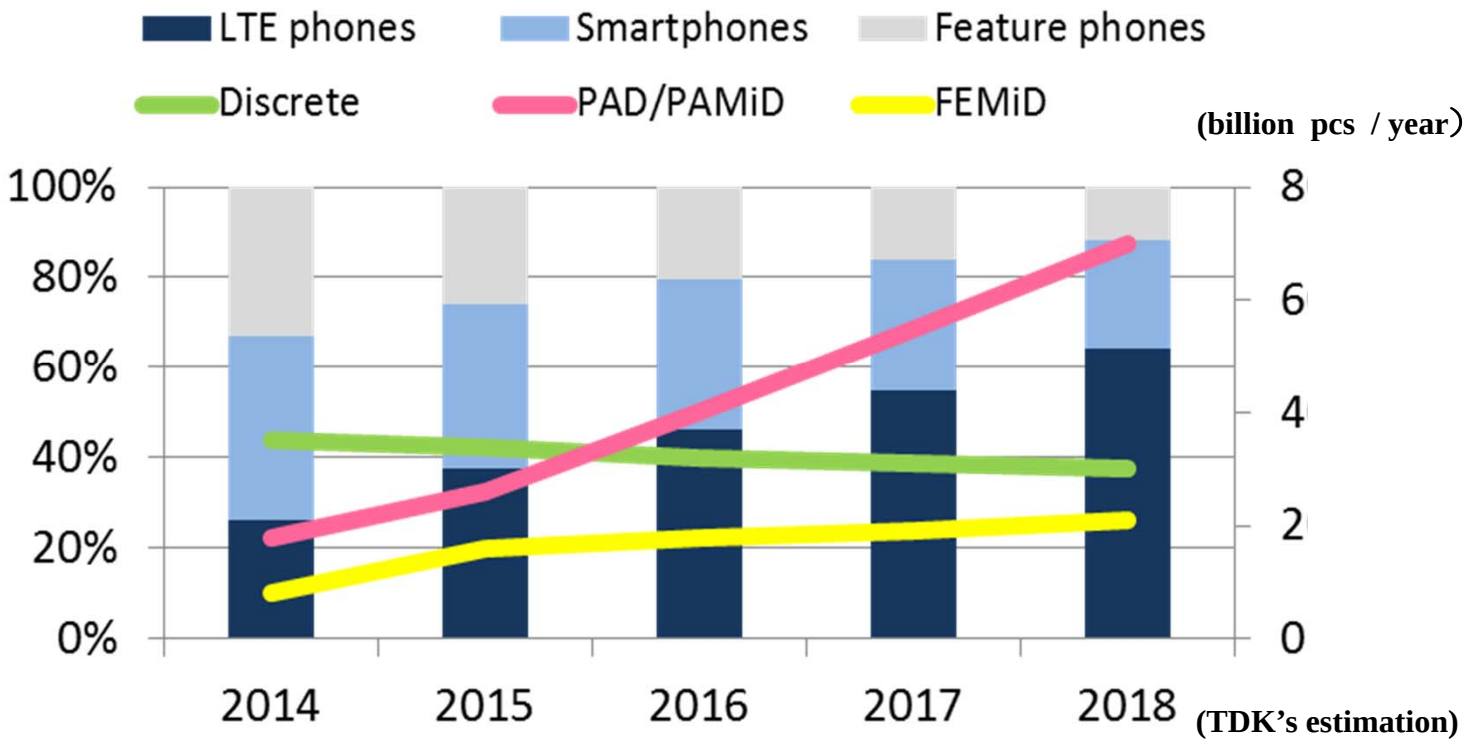
ICT market and TDK's strategic products

Progression of mobile phone production and RF components



The increasing amount of information transmitted via mobile communications necessitates the use of faster communication networks and accelerates the spread of LTE user equipment.

Increasingly complex circuits used in LTE user equipment require components with reduced footprints, which is fuelling a growing demand for components for PAD, PAMiD and FEMiD modules.

ICT market and TDK's strategic products

Medium-term strategies targeting the ICT market

Market drivers are

LTE-4G • 5G

Change points:

- Additional increase in number of bands
- Efficient power management

Technology

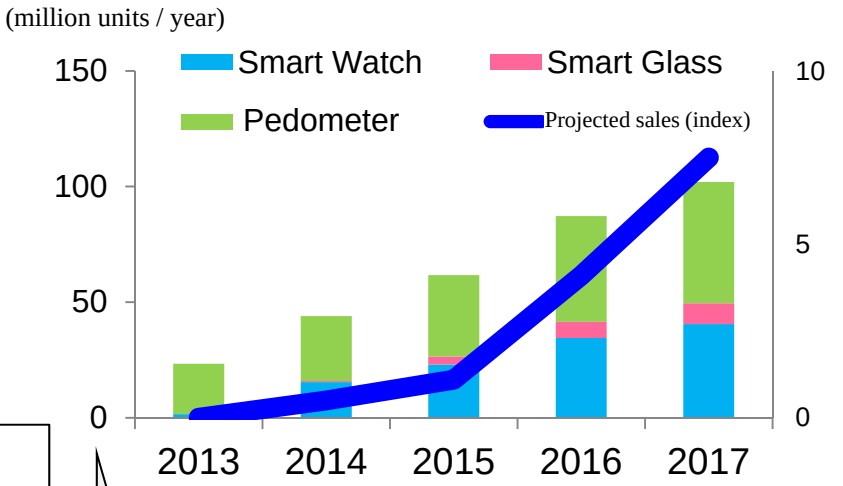
- Thin-film technology
- Packaging technology
- SESUB

Strategic products

- ◆ Narrow pass band filters
  - BAW / SAW
- ◆ Components for PAMiD, FEMiD
  - BAW / SAW / Thin-film products
- ◆ Power management components
  - Power inductors / Power management modules

Spread of wearable devices

*Based on estimates by TDK



Wearable device output and projected sales by TDK

Deployment of strategic products involves providing components that meet the requirements for wearable devices

IC collaboration

Sales promotion for strategic products through IC collaborations

IC collaboration

Function	IC makers (including PA)	Strategic products (example)
RF use and Power line use	Company C Company T Company N Company P Company K Company V Company L Company X	■ Thin film products Power inductors, Filters etc.
		■ BAW / SAW / Discrete
		■ PAD / PAMiD / FEMiD
		■ SESUB Module (RF, Power management)

+

Sales promotion for existing products

Products with notable features
Lithium polymer battery
Wireless charging unit (WLC)
Low-consumption Bluetooth® module (BLE)
Film photovoltaics
Various sensors

TDK sales over time in the automobile market

Spread of smart cars
● **Smart Assist**
- **Wireless network module**
- **TMR sensors** • **Batteries**

Spread of onboard networks
● **xEV、CanBus**
- **Common-mode filters**
- **SMD components**
- **Magnets**

Emergence of electric vehicles
●**xEVs and various motors**
- **DC/DC converters**
- **SMD coils** • **MLCC**
- **NEO magnets**

Beginning of electronic control
●**Power windows and ECUs**
- **Motor magnets**
- **Coils/capacitors**
- **Thermistors**

Start of use of in-vehicle electrical/electronic devices
●**Onboard radio and meters**
- **Choke coils**
- **Ceramic disc capacitors**
- **Motor Magnets**

‘70s (Accounted for 3% of sales)

‘80s (5%)

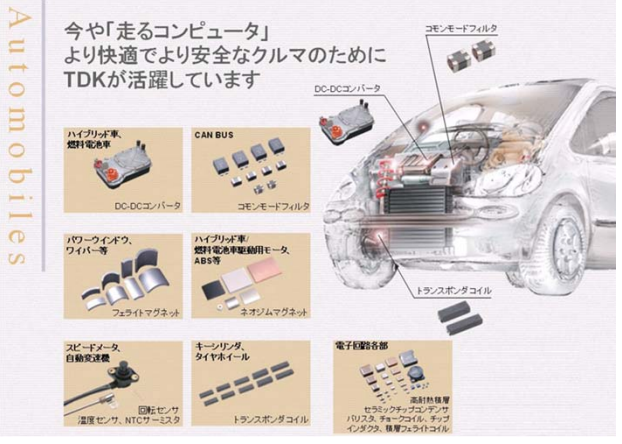
‘90s (8%)

‘00s (9%)

Present (20%)

Medium term (30%)

Growth of V2x
●ADAS
●Automatic driving
- Sensors
- Communications components
- Energy management

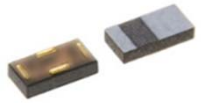
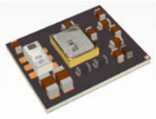


***2004 Company Guide (excerpts)**

＊xEV : EV, HEV, PHEV

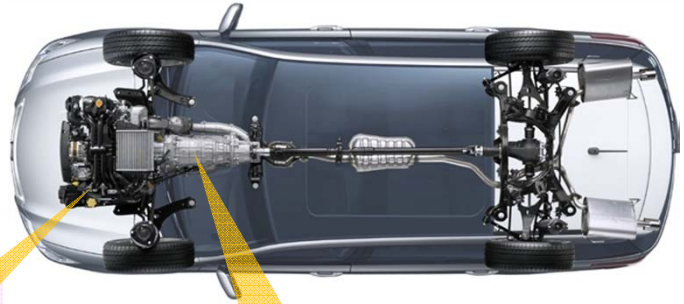
TDK's strategic products targeting the automobile market

Deployment of existing products

Existing products	Newly developed products
Common Mode Filters 	• Ethernet common-mode filters • Suitable for location-free production 
Capacitors   	• Guaranteed operation at high temp. (200ºC) • Capacitor with resin electrodes 
Inductive Devices (Ferrite type, Metal type)	**Power Inductors** • Guaranteed operation at high temp. (150ºC) 
	• Smart keys • Transponder inductors for TPMS 
Deployment of communications components for automobile applications	• SAW Devices 
	• Thin-film high frequency filters 
	• Bluetooth®Modules 

TDK's strategic products targeting the automobile market

Custom-designed products



Power Supply Units

DC-DC Converter

Battery Charger

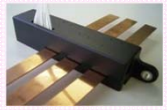
IGBT Transformer

Various Motors

Magnets

- Dysprosium (Dy)-free neodymium magnets
- Lanthanum (La)-free and cobalt (Co)-free ferrite magnets

Sensors



Gear Tooth/ Pressure / Current / Temperature

Wireless Charging Devices for Vehicles

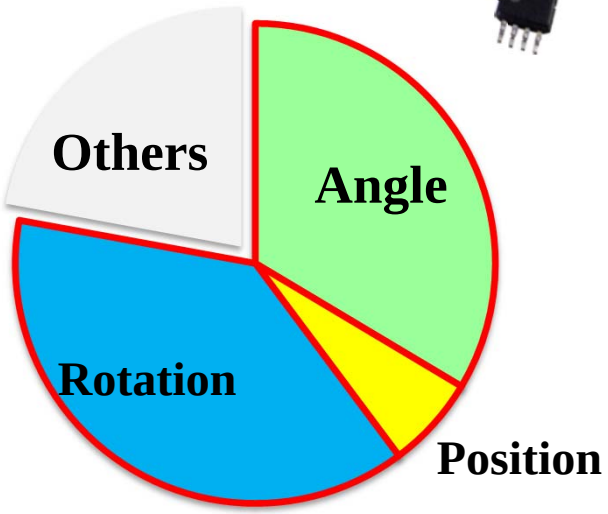
Lithium-Ion Battery

TDK's strategic products targeting the automobile market

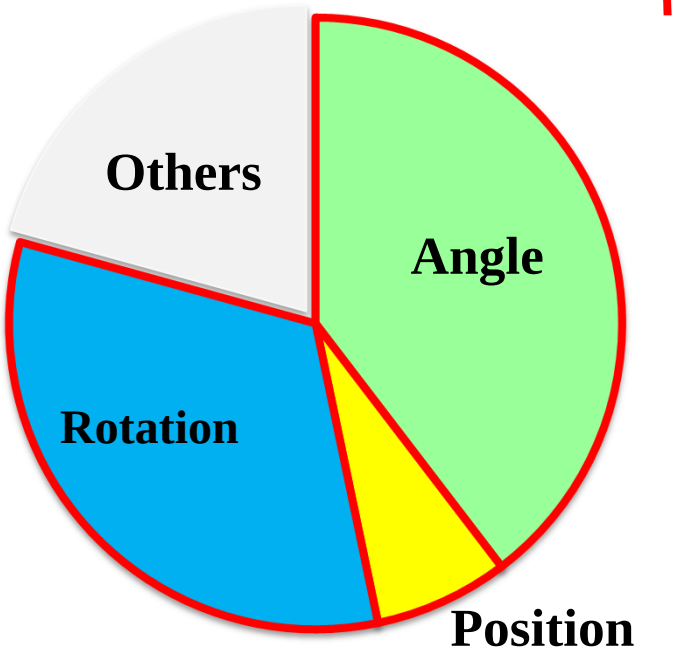
New products

Magnetic Sensors (TMR/GMR)

High-accuracy sensing by TMR/GMR sensors



CY2014 90 billion yen



CY2018 120 billion yen

Demand breakdown for onboard magnetic sensors, by use (billion Yen /Year)

Source: IHS's materials

TDK's strategic products targeting the industrial equipment market

Wireless-charging and TMR/GMR sensors for industrial equipment

Target equipment (example)
Hybrid buses
Catenary-free streetcars
Cable-less elevators

Target equipment (example)
Linear motor encoders
Industrial robots

Electronic components for renewable energy applications

CeraLink

Film capacitors
Aluminum capacitors

Magnets for wind power generator

High performance ferrite cores

Filters • Varistors • Arresters

Sensors

Framework of Electronic Components Sales & Marketing Group

Building Customer Value

IC Collaboration — TDK — **Application Marketing**

Electronic Components Sales & Marketing Group

Priority regions	USA • China • Korea	Japan • Europe • USA	Europe • Japan
Market sector-specific marketing	ICT (including wearable devices)	Automobiles	Industrial Equiptment

R&D department • Production department

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