

# Chip-Type Ceramic Rechargeable Battery

# EnerCera<sup>®</sup> Series



## EnerCera<sup>®</sup> Pouch

- Ultra thin and bendable pouch type cell (0.45mm thick)
- Can be embedded in IC cards by hot lamination
- High current output (several 100 mA)

## EnerCera<sup>®</sup> Coin

- Heat resistant coin type cell (1-2mm height)
- Can be mounted on board by Reflow Soldering
- High current output (several 10 mA)

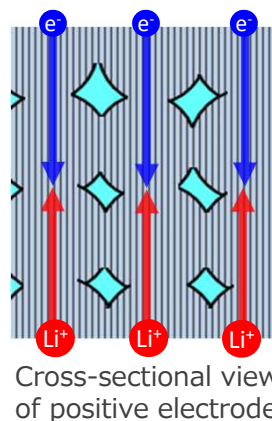
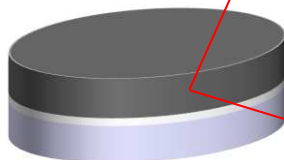
### NGK's Key Technology

#### Semi-Solid State Battery

Small amount of electrolyte is immersed into the crystal oriented ceramic plate

⇒ High heat resistance

Positive Electrode  
Separator  
Negative Electrode



#### Crystal Oriented Ceramic Electrode Plate

Formed only with active material by sintering


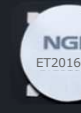
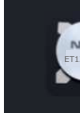



⇒ Li-ion move smoothly inside NGK Ceramic Electrode Plate

Electrolyte

- ✓ High Energy Density
- ✓ Low Internal Resistance
- ✓ High Heat Resistance
- ✓ Long Life

Surprising Ceramics.  NGK INSULATORS






# EnerCera<sup>®</sup> Coin

Model Number	ET1210C-R	ET2016C-R	ET1210C-H	ET2016C-H	ET920C	ET1616C
	under development					
Appearance						
Size	Φ12 x 1.0mm	Φ20 x 1.6mm	Φ12 x 1.0mm	Φ20 x 1.6mm	Φ9 x 2.0mm	Φ16 x 1.6mm
Nominal Capacity	5mAh	25mAh	4mAh	20mAh	11mAh	(22mAh) (provisional value)
Nominal Voltage	2.3V					
Constant Voltage(CV) Charging	OK (No current control required)					
Internal Resistance	20Ω	8Ω	25Ω	10Ω	25Ω	8Ω
Peak Discharge Current*1	25mA	60mA	20mA	45mA	20mA	(60mA) (provisional value)
Operation Temp. (recommended)	-40℃~60℃		-40℃~105℃		-40℃~60℃	
Heatproof Temp. (in process)	260℃ (reflow soldering applicable)				80℃	

\*1 Voltage drop ≤0.5 V @1sec. (25℃)

IEC62133 is in progress  
Contents may be changed without notice

# EnerCera<sup>®</sup> Pouch

Model Number	EC382504P-P	EC382204P-C	EC382704P-C	EC382704P-H	ET271704P-H
Appearance					
Dimensions	38 x 25mm	38 x 22mm	38 x 27mm	38 x 27mm	27 x 17mm
Thickness	0.45mm				
Nominal Capacity	20mAh	20mAh	27mAh	20mAh	5mAh
Nominal Voltage	3.8V				2.3V
Constant Voltage(CV) Charging	N/A (CC-CV charging is required)				OK (No current control required)
Internal Resistance	1Ω	3.5Ω	3Ω	4Ω	5Ω
Peak Discharge Current*1	500mA	140mA	170mA	125mA	100mA
Bendability	Conforming to ISO 14443-1 standard No deterioration after bending and torsion tests				
Operation Temp. (recommended)	0℃ ~ 45℃				-40℃~60℃
Heatproof Temp. (in process)	80℃ (Cold lamination is applicable)			135℃ (Hot lamination is applicable)	
Features	High power	High capacity		High heat resistance	Fast charging*2 High heat resistance

\*1 Voltage drop ≤0.5 V @1sec.(25℃)

\*2 80% Capacity is charged for 10 min.

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