

Li-ion Battery Protection MOSFET

The industry's top-level * low RDS(on) 10.5mΩ

ECH8 / EMH8 / EFCP Series

*: as of July 31 2008

Sample time : Aug. 2008

Output plan : 45Mpcs/M

MP starts from Sept. (peak quantity)

Sample price: ¥105

ECH8 Series

2.9mm×2.8mm×t 0.9mm



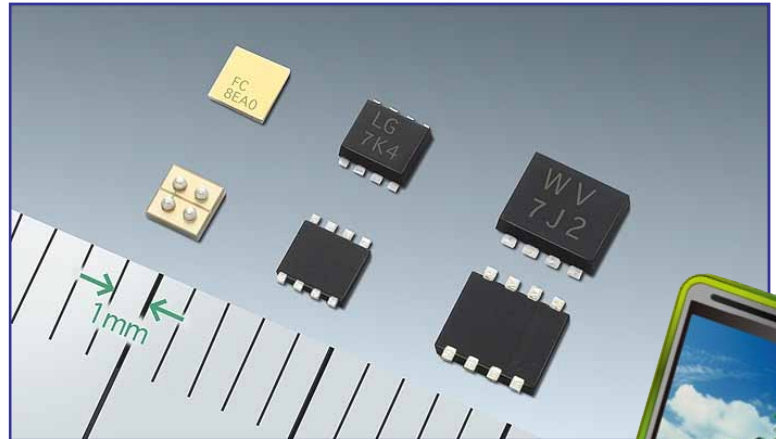
EMH8 Series

2.0mm×2.1mm×t 0.75mm



EFCP Series

1.61mm×1.61mm×t 0.55mm
1.81mm×1.81mm×t 0.55mm



Growth of cell phone market

High-energy Li-ion Battery

Protection MOSFET

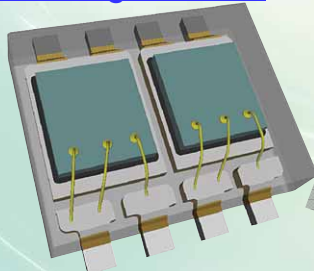


Reduced Package Resistance

Source wireless structure ⇒
Bring out the devices' intrinsic performance

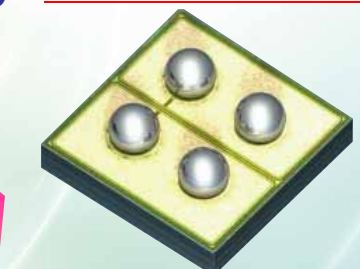
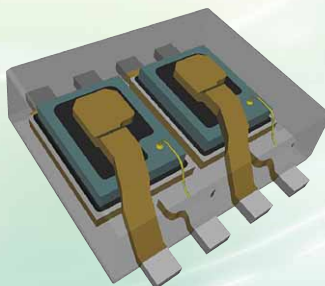
Small & Thin
CSP-structure EFCP

Existing Product



Rw=10 to 50mΩ

R (Package) 90%↓
High Power



Adopted Product

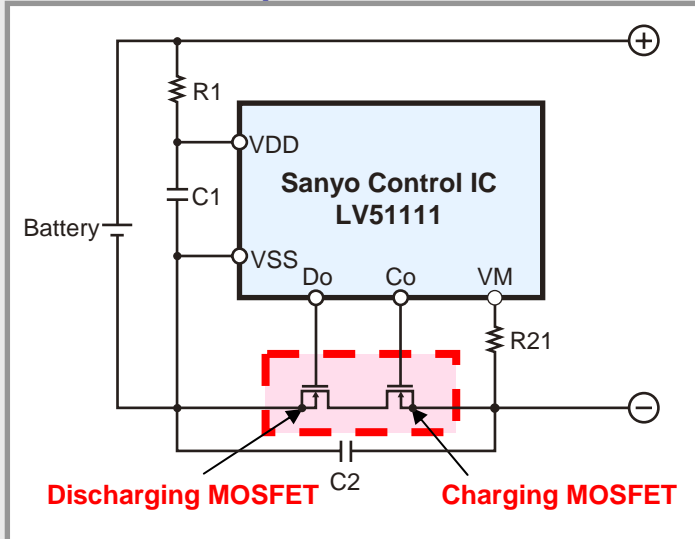
EMH8 (2.0×2.1mm)
ECH8 (2.9×2.8mm)
TSSOP8 (3.0×6.4mm)
SOP8 (5.0×6.0mm)
Rw=0mΩ, RI≤1mΩ

Li-ion Battery Charging/Discharging Protection circuit

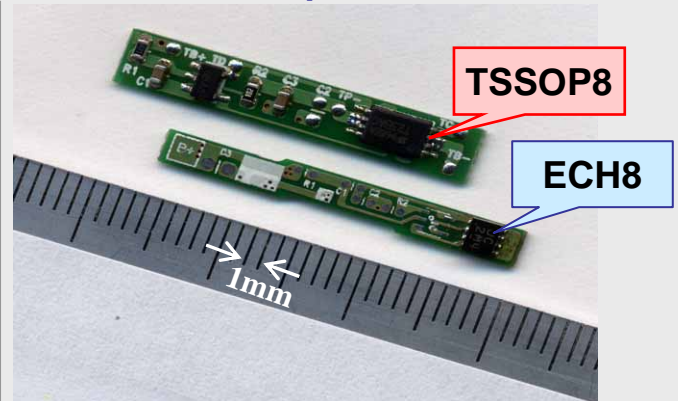
In order to protect the **Li-ion battery** from **heat, explosion or deterioration** when being charged or discharged, **protection circuits** (over-voltage, over-discharge, over-current & short protection circuits) are built in the battery PACK.

MOSFET is used as the switch for this charging/discharging protection circuit. Since it is connected in series with the battery, it is required to be small-sized and have low ON resistance characteristic.

▼Circuit Example▼



▼PCB Example▼



Product Lineup

◆ECH8 Series

Type No.	VDSS (V)	ID (A)	IDP (A)	RDSon(4.5V) min./typ./max.(mΩ)	RDSon(2.5V) min./typ./max.(mΩ)	Size (mm)
ECH8601M	24	8	60	13.5/17/23	16/24/35	2.9×2.8×0.9
ECH8651R	24	10	60	7/10.5/14	9/15/21	
ECH8655R	24	9	60	9/13/17	10.5/18/25.5	
ECH8663R	30	8	60	10.5/15.5/20.5	12/20/28	
ECH8664R	30	7	60	12.5/18/23.5	14.5/24/34	



◆EMH8 Series

Type No.	VDSS (V)	ID (A)	IDP (A)	RDSon(4.5V) min./typ./max.(mΩ)	RDSon(2.5V) min./typ./max.(mΩ)	Size (mm)
EMH2407	20	6	24	13/19/25	16/28/39	2.0×2.1×0.75
EMH2412	24	6	60	16/21/27	21/30/42	
EMH2411	30	5	60	19.5/28/36.5	22.5/38/54	



◆EFCP Series

Type No.	VDSS (V)	ID (A)	IDP (A)	RSSon(4.5V) min./typ./max.(mΩ)	RSSon(2.5V) min./typ./max.(mΩ)	Size (mm)
EFC4601R	24	6	60	23.5/34/44	30/50/70	1.61×1.61×0.55
EFC4602	20	6	60	19.5/28/36.5	23/38/53.5	1.81×1.81×0.55
EFC4606	24	6	60	22/30/38	30.5/41/57.5	1.81×1.81×0.55



EFCP: indicated by Rsson (RDSon×2)