



TOSHIBA

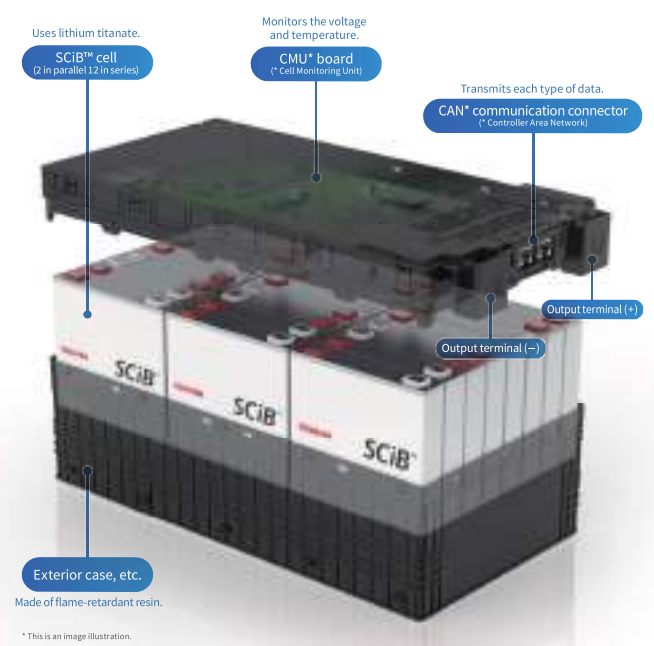
Rechargeable Lithium-ion Battery

SCiB™ Battery System Components



SCiB™ Type3 Battery Module

Capable of constructing various scales of battery systems



Several SCiB™ cells are combined to provide user-friendly modules. Depending on the requirement, battery systems of various sizes can be built. This product can be used in a wide range of applications that support social infrastructure, from public, industrial, electric power and transportation systems to general households.

Examples of module application

Characteristics of Type3 battery module for the stationary / industrial applications

Safety

Low risk of fire or explosion

Long life

Cycle life of 20,000* times or more

Low-temperature operation

Usable even at -30℃

High input/output

Large current can be input/output

Rapid charging

Charges to approx. 80% of the capacity in 12 minutes

Wide effective SOC* range

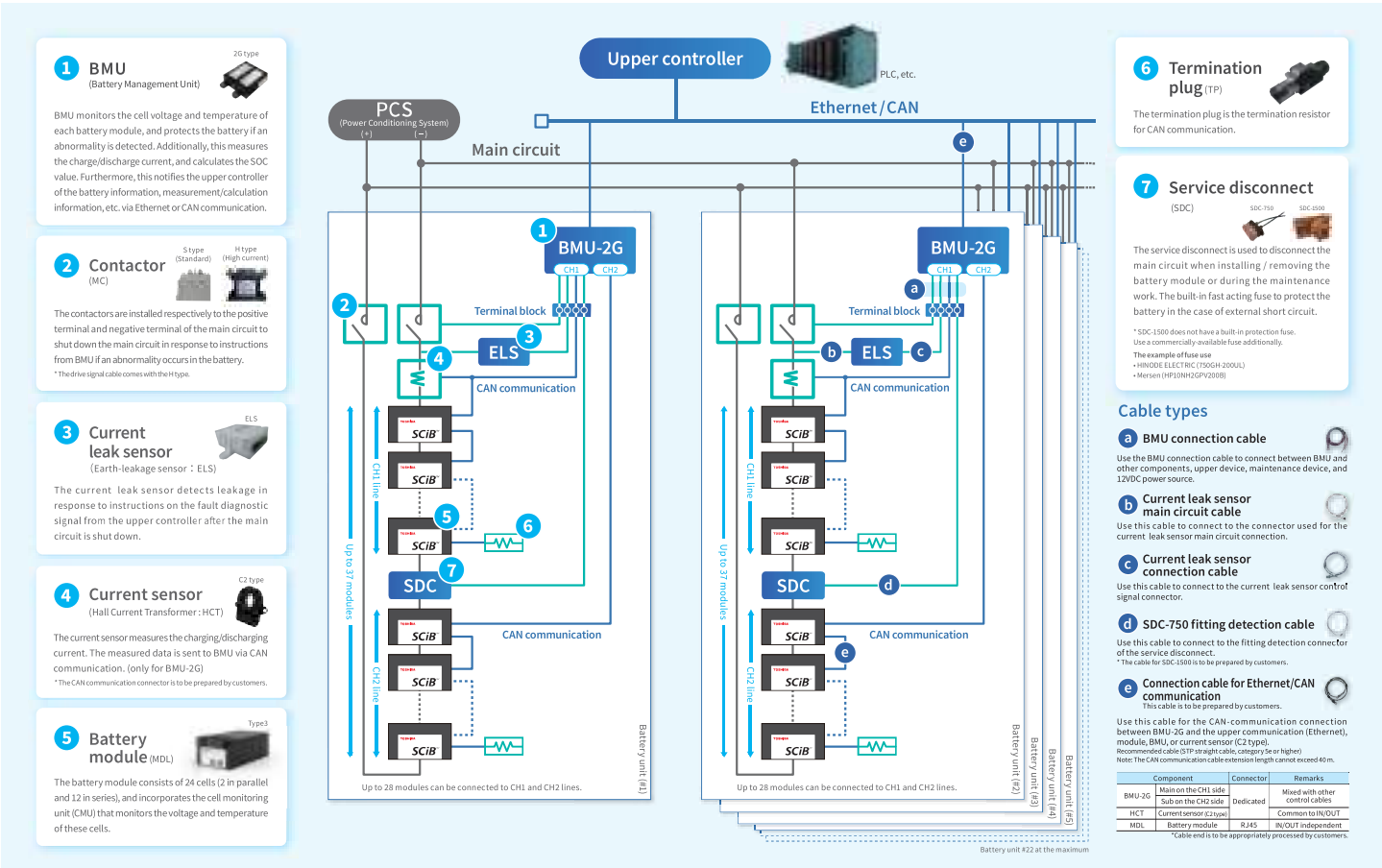
Available SOC range of 0-100%

Note: The above values are measurement using a Type3-20 battery module under specific conditions, and are not guaranteed values. Performance depends on customers' usage conditions.

2

3

Battery system block diagram



Products required for constructing the battery system

Battery module (MDL)					
Product name	Type3-20	Type3-23	Type3-20HP	Dimensions	W180×D360×H125mm (not include protruding portion)
Model name	FM01202CCA04A	FM01202CCB01A	FM01202CCD01A	Nominal voltage	27.6V
Rated capacity	40Ah	45Ah	39Ah	Ambient temperature	-30 to 45 °C
Nominal energy	1104Wh	1242Wh	1076Wh	Ambient humidity	85%RH or less (no condensation)
Max. charge/discharge current	160 A (continuous), 350 A (rush current)		160 A (continuous), 350 A (rush current)	Major built-in functions	Cell voltage measurement, module temperature measurement, cell balancing*, CAN communication * For each 16 modules in voltage monitoring connection series.
Range of battery voltage	DC18.0V ~ 32.4V				
Weight	Approx 14 kg		Approx 15 kg		

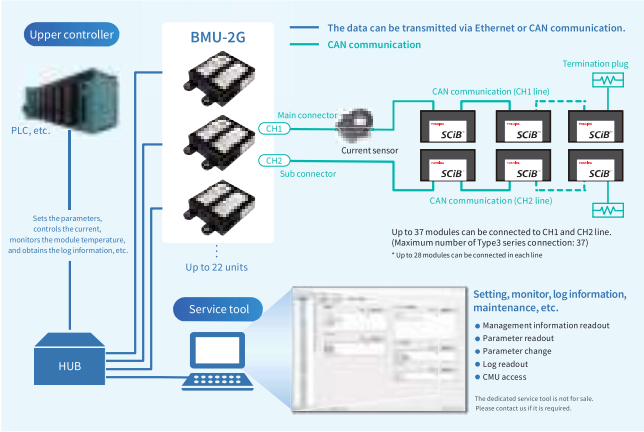
Combine the battery module and battery system components for using. Please contact our sales team for details.

Battery system components						
Product name	Photo	Type	Model name	Specification	Dimensions (mm)	Weight
BMU (Battery Management Unit)		2G type (BMU-2G R-J45)	SP4E0124F001	Upper communication: Select from Ethernet/CAN Maximum number of Type3 series connection: 31* * For BMU-2G, up to 36 modules can be connected.	W95.0×D88.0×H32.0 (Protrusions excluded)	130
Contactor (MC)		S type (Standard)	FMW-GA0004P	Contact rated capacity: 800 VDC/100 A Coil rating: 12 VDC/583 mA ± 10%	W98.0×D44.0×H86.2	650
		H type (High current)	SP4E093P001	Contact rated capacity: 750 VDC/200 A Coil rating: 12 VDC/3.3 A ± 10%	W111.0×D63.0×H74.7	750
Current sensor (Hall Current Transformer: HCT)		C2 type (CAN communication type)	PUR-000014S	Measurement range: -500 to 500 A High resolution	W51.4×D21.3×H71.5	67
		A2 type (Analog type)	FMW-GA0007P	Measurement range: Channel 1: -30 to 30 A Channel 2: -350 to 350 A	W62.0×D43.5×H24.0	82
Service disconnect (SDC)		SDC-750P (Plug)	FMW-GA0003P	Rated voltage: 750 VDC Rated current: 120 A or lower Fuse: 750 VDC - 125 A (built-in)	W149.5×D43.9×H97.0	585
		SDC-750R (Receptacle)	FMW-GA0003P			
		SDC-1500	SP4E093P002	Rated voltage: AC/DC 1500V Rated current: 200 A or lower Fuse: Combined with a commercially available fuse	W110.0×D76.75×H50.0	270
Current leak sensor (Earth leakage sensor: ELS)		-	FMW-GA0002P	Ground pressure resistance range: DC 1,800 V Electric leakage detection resistance value: 500 ~ 100kΩ	W73.0×D62.0×H30.0 (Protrusions excluded)	90
Termination plug (TP)		-	SP4E0003P001	120Ω ± 5% or less (Allowable loss: 1JW or more)	Overall length: 52.5	10
Self-Starter Gateway for BMU		-	FMW-GA0070P	Gateway: CAN ↔ RS232C / DIO conversion Self-starting function Self-shutdown function	W95.0×D88.0×H32.0 (Protrusions excluded)	138
BMU connection cable		-	FMW-HA0002P	For connecting between BMU and module/current leak sensor/electric leakage sensor/SDC/contactor, etc.	Cable length: 2000	530
SDC-750 fitting detection cable		-	FMW-HA0003P	Connection between SDC-750 and BMU	Cable length: 1000	20
Current sensor (A2 type) connection cable		-	FMW-HA0005P	Connection between the current sensor and BMU	Cable length: 1000	37
Current leak sensor connection cable		-	FMW-HA0005P	Connection between the current sensor and BMU	Cable length: 1000	30
Current leak sensor main circuit cable		-	FMW-HA0006P	Connection between the electric leakage sensor and negative terminal contactor	Cable length: 1000	70

Please refer to the combination list on page 8.

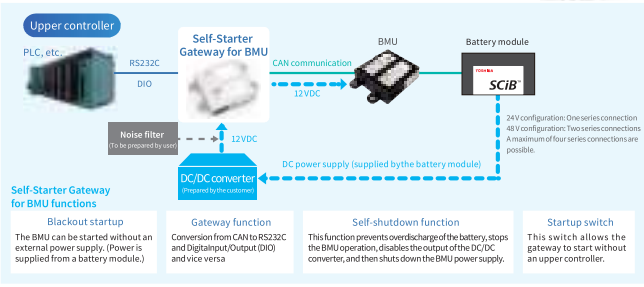
Characteristics of the second-generation BMU "BMU-2G"

BMU-2G collects the information such as cell voltage or module temperature from each battery module in the battery unit, and performs controls, abnormality detection and diagnosis to protect the battery module. Additionally, BMU-2G reads the total current of the battery unit from the current sensor, and performs the SOC calculation of the battery unit.



Self-starter Gateway for BMU

This gateway eliminates the need for an external power supply to start a system. It allows the interface with an upper controller to be selected from CAN, RS232C, and Digital Input/Output (DIO), simplifying data communication with the upper controller.



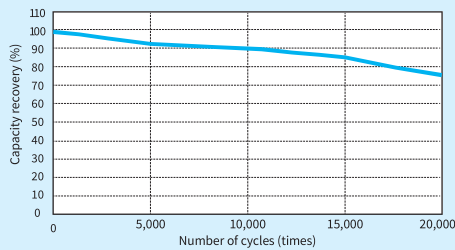
Specifications are subject to change without notice.

Characteristics of 20Ah cell

Cycle characteristics

Test conditions

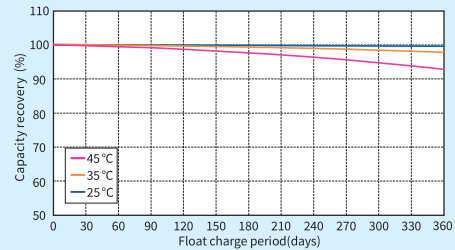
A test condition for the battery:
high-rate (3C) charge/discharge
cycles at 25°C



Float charge characteristics

Test conditions

Float charge voltage: 2.7V
Test temperatures: 25, 35, 45°C

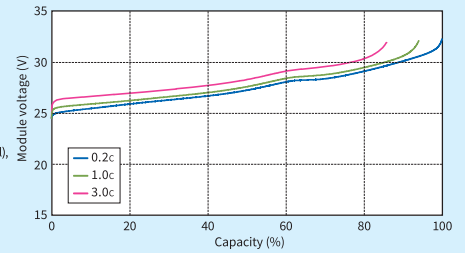


Module characteristics (Type3-20)

Charge characteristics (rate characteristics)

Test conditions

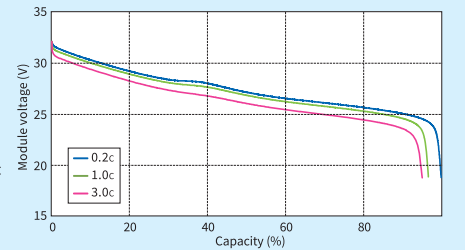
Discharge: Discharge 0.2C (1.5V cut-off/cell),
25°C
Charge: After rest, charge at each
current (2.7V cut-off/cell), 25°C



Discharge characteristics (rate characteristics)

Test conditions

Charge: Step-down charge from
1C to 0.05C (2.7V cut-off/cell), 25°C
Discharge: After rest, discharge at each
current (1.5V cut-off/cell), 25°C



* The values described in the technical materials, etc. are not guarantee values. The performance varies according to the customer's conditions for use.

Combination list

Maximum voltage		750V or less	910V or less	1200V or less
Number of Type3 battery module series connection *1		1 to 23	24 to 28	29 to 37
BMU	2G type *2	○	○	○
Contactor	S type (Standard)	○	△*3	
	H type (High current)	○		
Current sensor	C2 type (CAN communication type)	○	○	○
	A2 type (Analog type)	○	○	○
Service disconnect	SDC-750	○		
	SDC-1500	○	○	○
Others	Current leak sensor	○	△*3	
	Termination plug	○	○	○
Cable	BMU connection cable	○	○	
	SDC-750 fitting detection cable	○		
	Current sensor (A2 type) connection cable	○	○	○
	Current leak sensor connection cable	○	△*3	
	Current leak sensor main circuit cable	○	△*3	

Confirmation items for customers

Please let us know about the items listed below when inquiring.

Item		Required specifications
Rating	Voltage	()V
	Capacity	()Wh/()Ah
Discharge	Voltage	Upper limit voltage ()V
		Lower limit voltage ()V
	Current	Average current ()A ()sec or ()h
		Max. operating current ()A ()sec
		Inrush current ()A ()ms
Charging	Discharging time	()h
	Current value	()A
Application	Charging time	()h
	Operation procedures	
Environment	Installation place	(Indoor / Outdoor) (Fixed / Movable)
	Temperature	()°C to ()°C
	Altitude	()m or lower
Schedule	Development period	
	Start of mass production	
Quantity		
Application		
Applied standard		
Others		

*1: Number or series connection is calculated assuming the maximum charging voltage of a cell is 2.7 V. *2: For BMU-2G, up to 56 modules can be connected. *3: Usable up to 24 in series

⚠ Safety precautions

- Do not use this product for facilities in which there is a risk to human life or a disruption to public functionality if the product fails or malfunctions (nuclear power generator controls, aerospace applications, traffic equipment, life support equipment, safety equipment, and others).
- This product is produced under strict quality controls, however it may malfunction depending on the operating environment and conditions. Please consider countermeasure design (redundancies, failsafe measures, etc.) if using this product in facilities in which failure of the product would be expected to cause a great loss or accident.
- The operating environment must be within the range of specifications noted in the catalog and instruction manuals. Using the product outside the specified range may cause injury, a re, or some other accident.
- Be sure to carefully read the instruction manuals before using this product so that you can use it correctly.
- Toshiba is not responsible for any losses related to malfunctions or abnormalities in equipment or devices connected to the product when the product fails or malfunctions, including losses from other secondary repercussions.
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SBT(E)-005h 23-02



For detailed information of this product, please visit our Website.

SCiB

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The contents of this catalog are as of February 2023.