

# MCB

## TECS DIN MODULAR DEVICES

- **Our Belief**

Safety and protection are the prime purposes of Terasaki products. You care about safety and protection. The people who depend on products you specify care about safety and protection.

- **Ratings**

Our range of DIN modular protection products covers ratings from 2A-125A.

- **Circuit Breakers**

For overload and short-circuit protection.

- **Residual Current Devices**

Designed for the prevention of electrical shock and fires.

- **Combination**

Circuit Breakers with functions combining overload, short-circuit and residual current protection.

- **There is a solution for your applications**  
Contact us today.

**MCB | RCCB | RCBO**





### 次代に応える技術価値、企業価値の創造を

当社は1923年の創業以来、電気エネルギー制御技術をベースにした配電制御システム、ブレーカ、電子デバイスの製造に努め、船舶、建築、産業部門に貢献してきました。日本の産業構造の大きな変容、技術の世界標準志向や市場のグローバル化など激動の時代にあって、真に価値ある企業活動を推進することは容易ではありません。そんな中、当社は長年に渡り蓄積されたノウハウと実績を基盤に変革と刷新の志をもって、3事業分野におけるリーディングカンパニーとして邁進していきたいと考えます。産業と、環境と、暮らしの明日をみつめ、テラサキは進化し続けます。

### *Creating technical values and corporate values for the next generation.....*

Since our founding in 1923, TERASAKI has manufactured electric distribution and motor control systems, circuit breakers and electronic devices based on electrical energy control technologies and through our pursuit of excellence made solid contributions to the shipbuilding, construction and manufacturing industries. Yet in the turbulent times of great transformation in Japan's industrial structures, technology's path towards worldwide standardization and globalization, it is not an easy task to promote corporate activities of true value. Amidst the situation, we stand strong on our know-how and performance records accumulated over the many years and are marching forward with a will for innovations and restructuring to be a leading company in these three business fields. TERASAKI will continue to strive towards excellence with considerations on outlook on the future of industry, the environment and lifestyles.



MARINE



INDUSTRIAL



COMMERCIAL



RESIDENTIAL

## DIN MODULAR DEVICES

# TECS

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# MCB

## TECHNICAL DESCRIPTION

For use in commercial and industrial electrical distribution systems  
Protects against overloads and short circuits, switching and isolation.

### TRIP CHARACTERISTICS

#### TYPE "B" CHARACTERISTICS

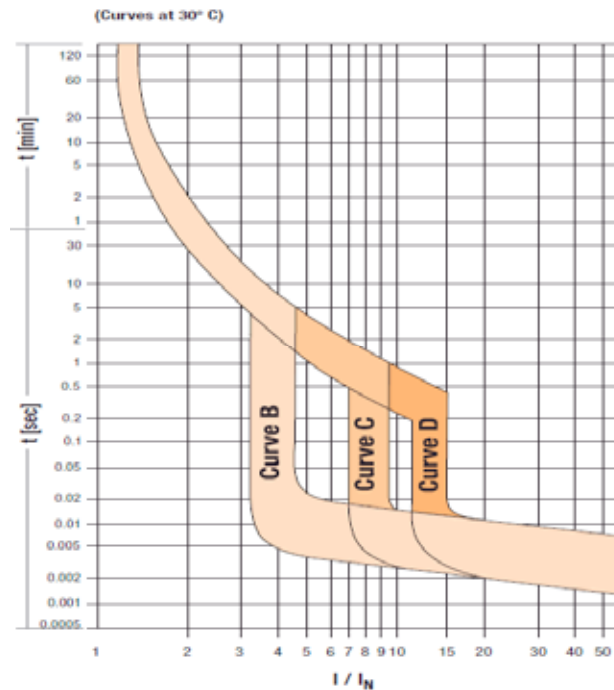
Developed primarily to protect conductors and low level signal devices such as PLCs. Instantaneous trip is three to five times the rated current of the Supplementary Protector ( $3\sim 5 \times I_n$ ). The fast trip time of these devices minimizes damage to control circuit conductors from low-level faults.

#### TYPE "C" CHARACTERISTICS

Developed primarily for applications with moderate inrush currents such as lighting, control circuits and appliances. Instantaneous trip is five to ten times the rated current of the Supplementary Protector ( $5\sim 10 \times I_n$ ). The higher instantaneous trip level prevents nuisance tripping, and components being protected can typically withstand higher fault currents without being damaged.

#### TYPE "D" CHARACTERISTICS

Developed primarily for applications with high inrush currents, i.e., transformers, and motors. Instantaneous trip is ten to twenty times the rated current of the Supplementary Protector ( $10\sim 20 \times I_n$ ). The high instantaneous trip level prevents nuisance tripping, and components being protected can typically withstand higher fault currents without being damaged.



### DC CIRCUITS USE

Thermal Characteristics for TECS breakers are unaffected by the current applied, that is either direct current or alternating current. The magnetic trip current value increases by 40%. Eg. In the case; a breaker of tripping characteristic B and 10A rated current, its magnetic tripping value will be between 30A and 50A in alternating current. The magnetic tripping value for this very same breaker in direct current will be between 42.4A and 70.7A .

For DC service, the MCBs full rated breaking capacity can be achieved without any reduction in performance by connecting protected poles in series. For values up to 48V=, 1 protected pole can be used unimpaired of the breaking capacity value. Between 48 and 100V=, 2 protected poles series connected can be used without reduction in the breaking capacity. Between 110 and 150V=, 3 protected poles series connected must be used, and 4 poles up to 200V=. Connected must be used, and 4 poles up to 200V=.

**TECS MCB**
**EP** SERIES

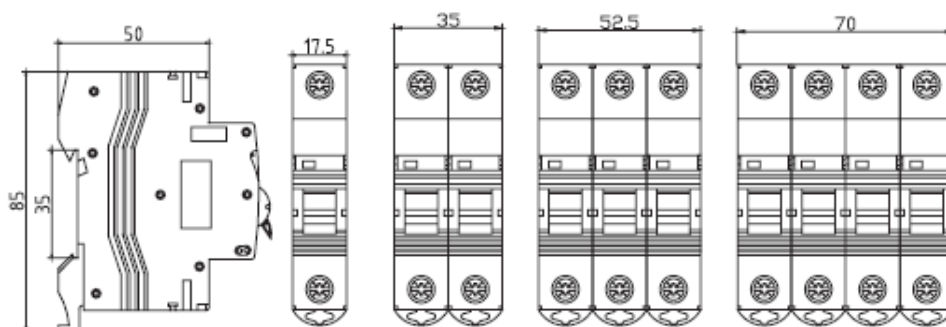
**SPECIFICATION**


## SPECIFICATIONS

Rated Capacity	Phase to Neutral 230V/240V~ / Phase to Phase 400V/415V~
Rigid Conductor	25mm <sup>2</sup> Maximum
Flexible Conductor	16mm <sup>2</sup> Maximum
Characteristics	B CURVE / C CURVE / D CURVE
Capacity	6 kA / 10kA
Standards	EN 60898 / EN 60947-2 / KEMA / SEMCO / SNI / CE / ROHS
Frequency	50/60Hz
Calibration Temperature	30°C
Electrical Endurance	8000
Mechanical Endurance	20000



## DIMENSIONS



# TECS RCCB

## TECHNICAL DESCRIPTION

*Providing protection against overload and short-circuit currents and protects people against earth fault currents: direct or indirect contact, fire.....*

### TRIP CHARACTERISTICS

The RCD employs the current balance principle which involves the supply conductors to the load (phase and neutral) wound onto a common transformer core to form the primary windings. Under healthy conditions, the current in the phase conductor is equal to the current in the neutral and the vector sum of the current is zero.

In the event of an earth fault, an amount of current will flow to earth, creating an out of balance situation in the transformer assembly. This out of balance detected by the secondary winding of the transformer will activate the trip mechanism at a pre-determined level. Single phase and neutral or three phases and neutral units (suitable for both 3 wire and 4 wire systems) are available, the latter being suitable for balanced or unbalanced 3 phase loads.

The RCD tripping mechanism will operate at a residual current of between 50%-100% of its rated tripping current. (Sensitivity)

### RESIDUAL TRIPPING CURRENTS

10mA	Suitable for use in special applications where additional protection against contact is essential
30mA	Tripping current to provide additional protection against direct contact shock
100mA	Suitable for use against direct contact shock or where protection is guard against fire hazards etc.
300mA	Suitable for use in large installations where equipment protection are main considerations and high levels of earth leakage are experienced.

### FAULT CURRENT SENSITIVITY

Semi-conductor devices are extensively integrated in equipments in industries, commerce and in our homes. They can be found in control panels to computers to toys.

As equipments are fed from the mains electrical supply; in the event of an earth fault, the presence of semi-conductors may result in the normal AC waveform being replaced by a non-sinusoidal fault current. In some cases, the waveform may be rectified. These waveforms are said to contain a pulsating DC component which can either partially desensitize a standard type AC RCD.

International standards IEC 1008 (RCCBs) and IEC 1009 (RCBOs) divide RCDs into two performance classes:

#### Type AC



RCDs for which tripping is ensured for residual sinusoidal alternating currents; whether suddenly applied or slowly arising.

#### Type A

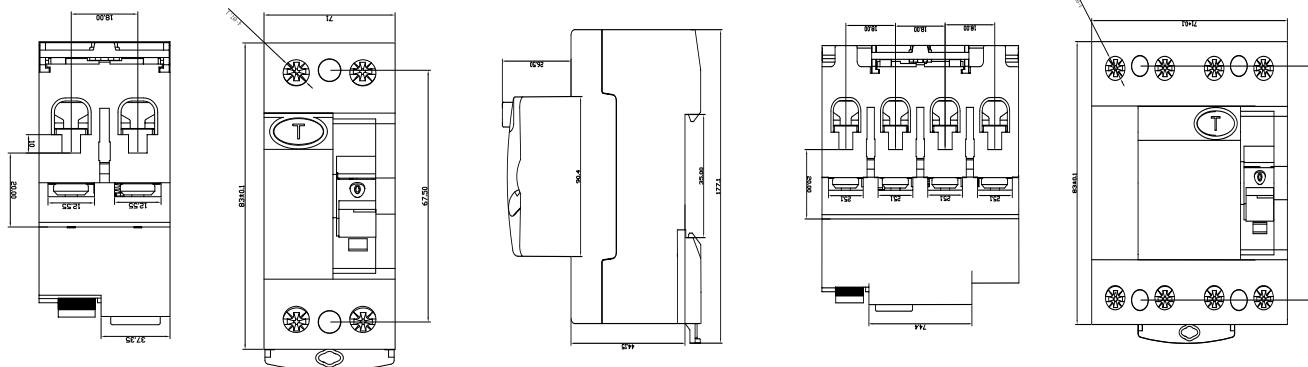


RCDs for which tripping is ensured for residual sinusoidal alternating currents and residual pulsating direct currents, whether suddenly applied or slowly arising.

**TECS RCCB**
**EPR SERIES**
**SPECIFICATION**

**SPECIFICATIONS**

Rated Capacity	25 A, 32 A, 40 A, 63 A, 80 A, 100 A
Rigid / Flexible Conductor	35mm <sup>2</sup> / 25mm <sup>2</sup> MAXIMUM
Calibration Temperature	30 °C
Frequency	50/60Hz
Electrical Endurance	10000
Mechanical Endurance	20000
Standards	EN 61008-1 / EN 61008-2-1 / ROHS / CE
Poles	2P and 4P; Ue: 230 Vac (2P), 230/400 Vac (4P); 50/60 Hz;
IΔn	30 mA, 100 mA, 300 mA, type A and AC;
I <sub>nc</sub> = IΔc	6 kA; I <sub>m</sub> = IΔ <sub>m</sub> : 10 I <sub>n</sub> or 500 A whichever is the greater;


**DIMENSIONS**


## TECS RCBO

# EPR<sub>SERIES</sub>

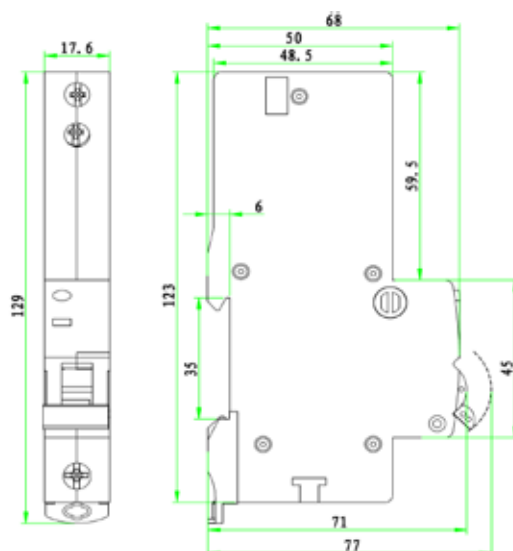
## SPECIFICATION

### SPECIFICATIONS

Rated Current (In)	6, 10, 15, 16, 20, 25, 32, 40A
Rated Voltage (Un)	230VAC
Breaking Capacity	6KA
Rated Tripping Current	30mA, 100mA, 300mA
Characteristics	B, C CURVE
Number of Poles	1P+N
Type of Terminal	LUG TYPE
Terminal Capacity	25mm <sup>2</sup> Maximum
Width	17.6mm / Module
Standards	IEC61009, EN6009



### DIMENSIONS



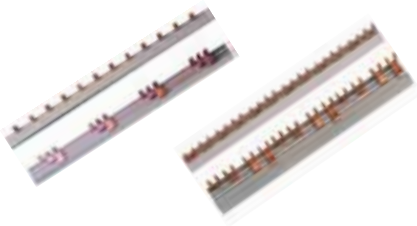


COMPLEMENTING OUR

# ACCESSORY

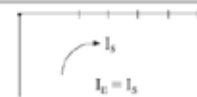
DIN MODULAR DEVICE RANGE

## INSULATED PIN TYPE BUSBAR / INSULATED FORK TYPE BUS BAR



### Current carrying capacity

Feed-in from the end  
cross section mm<sup>2</sup>  
max. current  
 $I_{\phi}$ /phase (A)



Feed-in from  
the middle  
max. current  
 $I_{\phi}$ /phase (A)



max. feed-in current  
 $I_{\phi}$ /phase

	1 pole				2, 3, 4 poles	
10	12	16	20	10	15	
63	65	80	90	63	80	
100	110	130	150	100	130	

Depends on the cross section for connection

If you feed-in from the middle you have to observe that the sum of the outgoing is not higher than the max. current of the busbars  $I_s$ /phase.

## SHUNT TRIP / UNDER VOLTAGE TRIP / AUXILLARY CONTACTS



### SHUNT TRIP RATINGS

- Shunt trip 12-48VAC / VDC
- Shunt trip 110-415VAC and 110-125VDC

### UNDER VOLTAGE TRIP RATINGS

- UVT 12-48VAC / VDC
- UVT 110-415VAC and 110-125VDC

### AUXILLARY CONTACT RATINGS

- AUX 1C / 2C
- UVT 110-415VAC and 110-125VDC

## LOAD CENTRE



Our load centre has been designed to take incoming supplies of 125A, 160A and 250A, with outgoing terminals at 18 mm or 25 mm centres and 27 mm.

# ORDERS CODES

E	P	C	1	0	1	0	1
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EP SERIES				
CURVE TYPE	B	C	D	
BREAKING CAPACITY	06	10		
AMPERE RATING				
NUMBER OF POLES	1	2	3	4

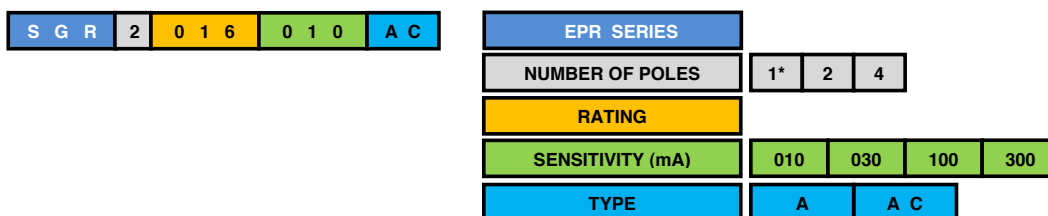
## MCB ORDER CODES

		6kA			10kA		
		B Curve	C Curve	D Curve	B Curve	C Curve	D Curve
1 POLE	2	EPB 06021	EPC 06021	EPD 06021	EPB 10021	EPC 10021	EPD 10021
	4	EPB 06041	EPC 06041	EPD 06041	EPB 10041	EPC 10041	EPD 10041
	6	EPB 06061	EPC 06061	EPD 06061	EPB 10061	EPC 10061	EPD 10061
	10	EPB 06101	EPC 06101	EPD 06101	EPB 10101	EPC 10101	EPD 10101
	16	EPB 06161	EPC 06161	EPD 06161	EPB 10161	EPC 10161	EPD 10161
	20	EPB 06201	EPC 06201	EPD 06201	EPB 10201	EPC 10201	EPD 10201
	25	EPB 06251	EPC 06251	EPD 06251	EPB 10251	EPC 10251	EPD 10251
	32	EPB 06321	EPC 06321	EPD 06321	EPB 10321	EPC 10321	EPD 10321
	40	EPB 06401	EPC 06401	EPD 06401	EPB 10401	EPC 10401	EPD 10401
	50	EPB 06501	EPC 06501	EPD 06501	EPB 10501	EPC 10501	EPD 10501
63	EPB 06631	EPC 06631	EPD 06631	EPB 10631	EPC 10631	EPD 10631	
2 POLE	2	EPB 06022	EPC 06022	EPD 06022	EPB 10022	EPC 10022	EPD 10022
	4	EPB 06042	EPC 06042	EPD 06042	EPB 10042	EPC 10042	EPD 10042
	10	EPB 06102	EPC 06102	EPD 06102	EPB 10102	EPC 10102	EPD 10102
	16	EPB 06162	EPC 06162	EPD 06162	EPB 10162	EPC 10162	EPD 10162
	20	EPB 06202	EPC 06202	EPD 06202	EPB 10202	EPC 10202	EPD 10202
	25	EPB 06252	EPC 06252	EPD 06252	EPB 10252	EPC 10252	EPD 10252
	32	EPB 06322	EPC 06322	EPD 06322	EPB 10322	EPC 10322	EPD 10322
	40	EPB 06402	EPC 06402	EPD 06402	EPB 10402	EPC 10402	EPD 10402
	50	EPB 06502	EPC 06502	EPD 06502	EPB 10502	EPC 10502	EPD 10502
	63	EPB 06632	EPC 06632	EPD 06632	EPB 10632	EPC 10632	EPD 10632
3 POLE	2	EPB 06023	EPC 06023	EPD 06023	EPB 10023	EPC 10023	EPD 10023
	4	EPB 06043	EPC 06043	EPD 06043	EPB 10043	EPC 10043	EPD 10043
	6	EPB 06063	EPC 06063	EPD 06063	EPB 10063	EPC 10063	EPD 10063
	10	EPB 06103	EPC 06103	EPD 06103	EPB 10103	EPC 10103	EPD 10103
	16	EPB 06163	EPC 06163	EPD 06163	EPB 10163	EPC 10163	EPD 10163
	20	EPB 06203	EPC 06203	EPD 06203	EPB 10203	EPC 10203	EPD 10203
	25	EPB 06253	EPC 06253	EPD 06253	EPB 10253	EPC 10253	EPD 10253
	32	EPB 06323	EPC 06323	EPD 06323	EPB 10323	EPC 10323	EPD 10323
	40	EPB 06403	EPC 06403	EPD 06403	EPB 10403	EPC 10403	EPD 10403
	50	EPB 06503	EPC 06503	EPD 06503	EPB 10503	EPC 10503	EPD 10503
63	EPB 06633	EPC 06633	EPD 06633	EPB 10633	EPC 10633	EPD 10633	
4 POLE	2	EPB 06024	EPC 06024	EPD 06024	EPB 10024	EPC 10024	EPD 10024
	4	EPB 06044	EPC 06044	EPD 06044	EPB 10044	EPC 10044	EPD 10044
	6	EPB 06064	EPC 06064	EPD 06064	EPB 10064	EPC 10064	EPD 10064
	10	EPB 06104	EPC 06104	EPD 06104	EPB 10104	EPC 10104	EPD 10104
	16	EPB 06164	EPC 06164	EPD 06164	EPB 10164	EPC 10164	EPD 10164
	20	EPB 06204	EPC 06204	EPD 06204	EPB 10204	EPC 10204	EPD 10204
	25	EPB 06254	EPC 06254	EPD 06254	EPB 10254	EPC 10254	EPD 10254
	32	EPB 06324	EPC 06324	EPD 06324	EPB 10324	EPC 10324	EPD 10324
	40	EPB 06404	EPC 06404	EPD 06404	EPB 10404	EPC 10404	EPD 10404
	50	EPB 06504	EPC 06504	EPD 06504	EPB 10504	EPC 10504	EPD 10504
63	EPB 06634	EPC 06634	EPD 06634	EPB 10634	EPC 10634	EPD 10634	

# ORDERS CODES

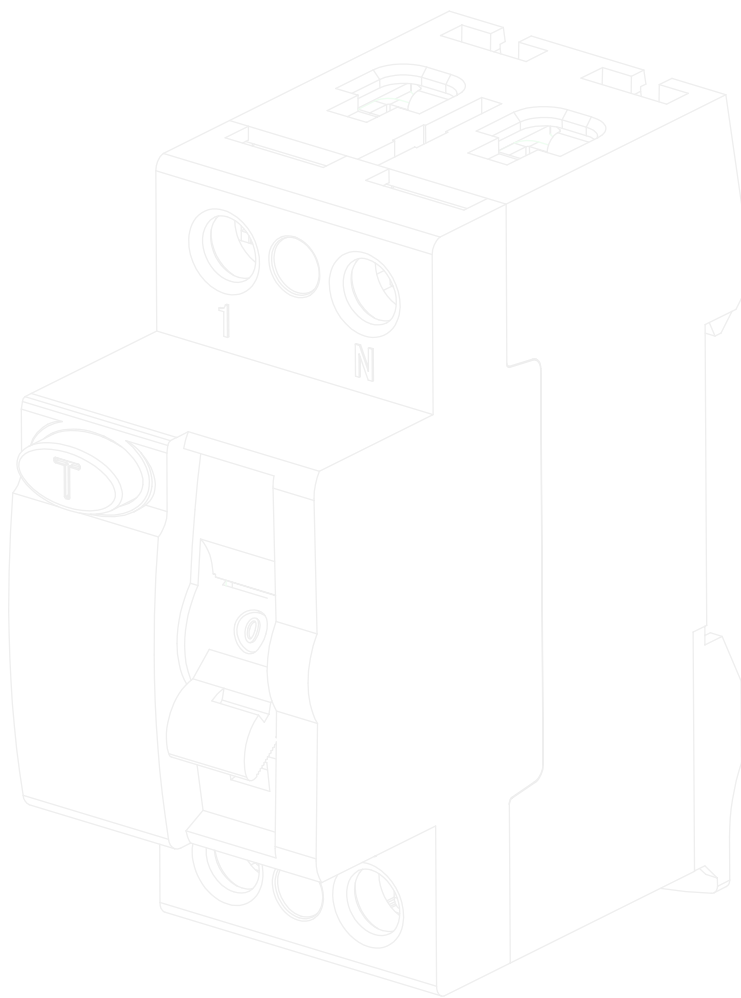
## MCB 80A, 100A, 125A ORDER CODES

		6kA			10kA		
		80A	100A	125A	80A	100A	125A
80A, 100A, 125A	1P	EP 06801	EP 061001	EP 061251	EP 10801	EP 101001	EP 101251
	2P	EP 06802	EP 061002	EP 061252	EP 10802	EP 101002	EP 101252
	3P	EP 06803	EP 061003	EP 061253	EP 10803	EP 101003	EP 101253
	4P	EP 06804	EP 061004	EP 061254	EP 10804	EP 101004	EP 101254



## RCCB ORDER CODES

		2P		4P	
$I_n$		AC TYPE	A TYPE	AC TYPE	A TYPE
10 mA	16	SGR2016010AC	SGR2016010A	SGR4016010AC	SGR4016010A
	20	SGR2020010AC	SGR2020010A	SGR4020010AC	SGR4020010A
30 mA	16	SGR2016030AC	SGR2016030A	SGR4016030AC	SGR4016030A
	25	SGR2025030AC	SGR2025030A	SGR4025030AC	SGR4025030A
	32	SGR2032030AC	SGR2032030A	SGR4032030AC	SGR4032030A
	40	SGR2040030AC	SGR2040030A	SGR4040030AC	SGR4040030A
	63	SGR2063030AC	SGR2063030A	SGR4063030AC	SGR4063030A
	80	SGR2080030AC	SGR2080030A	SGR4080030AC	SGR4080030A
100 mA	100	SGR2010030AC	SGR2100030A	SGR4100030AC	SGR4100030A
	16	SGR2016100AC	SGR2016100A	SGR4016100AC	SGR4016100A
	25	SGR2025100AC	SGR2025100A	SGR4025100AC	SGR4025100A
	32	SGR2032100AC	SGR2032100A	SGR4032100AC	SGR4032100A
	40	SGR2040100AC	SGR2040100A	SGR4040100AC	SGR4040100A
	63	SGR2063100AC	SGR2063100A	SGR4063100AC	SGR4063100A
300 mA	80	SGR2080100AC	SGR2080100A	SGR4080100AC	SGR4080100A
	100	SGR2100100AC	SGR2100100A	SGR4100100AC	SGR4100100A
	16	SGR2016300AC	SGR2016300A	SGR4016300AC	SGR4016300A
	25	SGR2025300AC	SGR2025300A	SGR4025300AC	SGR4025300A
	32	SGR2032300AC	SGR2032300A	SGR4032300AC	SGR4032300A
	40	SGR2040300AC	SGR2040300A	SGR4040300AC	SGR4040300A
300 mA	63	SGR2063300AC	SGR2063300A	SGR4063300AC	SGR4063300A
	80	SGR2080300AC	SGR2080300A	SGR4080300AC	SGR4080300A
	100	SGR2100300AC	SGR2100300A	SGR4100300AC	SGR4100300A



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TERASAKI follows a policy of continuous innovation and development, and therefore reserves the right to supply products which may differ in detail from those shown in this publication.

For further information, please contact our sales department.