

3VJ molded case circuit breaker

SINOVA - Simply Efficient



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- Trip Units
- Accessories
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- Portfolio comparison
- Marketing Material
- Applications



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3VJ molded case circuit breakers

Key Selling Point

COMPACT DESIGN

3VJ MCCBs save space in enclosures & switchboards and reduces the overall size of the module.

RELIABLE & SAFE

Every piece of 3VJ MCCB is designed with the utmost quality for optimal performance. The 4 pole MCCB (100% rated) is perfect to operate in demanding applications.

COMPLETE RANGE

3VJ has one of the most complete MCCB ranges. The breaker is available with FTFM and ATFM for all ranges of breaker from 20 to 630 A and related breaking capacities.

ACCESSORIES

Color coded pre-wired accessories are key benefits of auxiliary switches for easy identification & user friendliness. UVR as well as ST can be installed simultaneously.

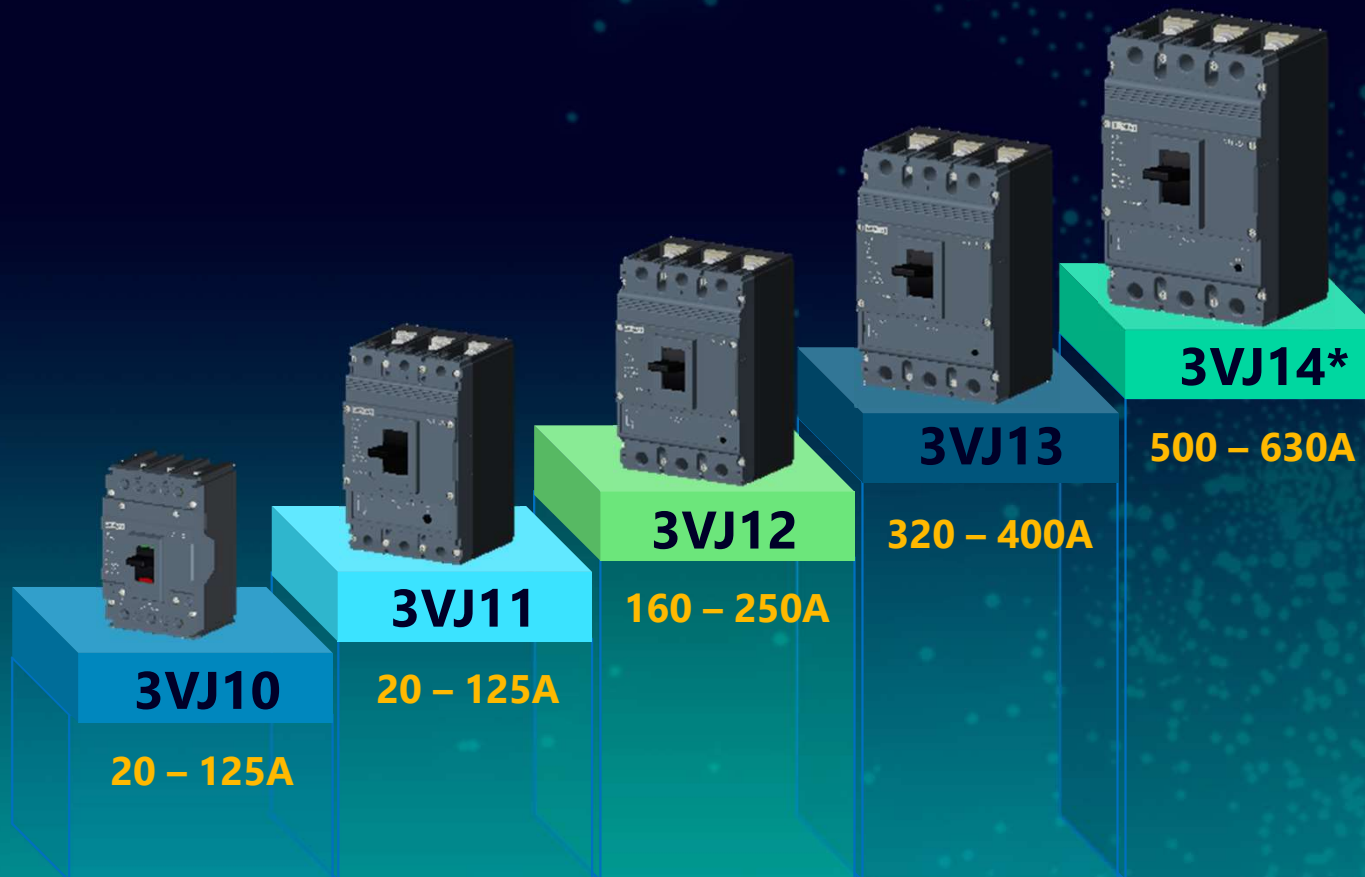
FLEXIBLE INSTALLATION

3VJ MCCBs come with common footprints from 10kA to 55kA breaking capacities and in addition no Neutral pole bias)

THE EFFICIENT CHOICE

This excellently crafted MCCB is coupled with user-friendly features and cost-effective solutions for power distribution.

3VJ molded case circuit breaker Portfolio



Variants (no. of poles)

1pole | up to 160A | FTFM

2pole | up to 250A | FTFM

3pole | up to 630A | ATFM / FTFM

4pole | up to 630A | ATFM / FTFM

Breaking capacities (in kA)

$I_{CS} = 75\%I_{CU}$ at 415 V AC

3VJ10 : 10kA – 25kA

3VJ11 : 25kA – 55kA

3VJ12 : 25kA – 55kA

3VJ13 / 3VJ14 : 36kA – 55kA

Release Type (TMTU)

Fixed Thermal, Fixed Magnetic
(FTFM release)

Adj. Thermal, Fixed Magnetic
(ATFM release)

Approbations

IEC 60947-2 (CB scheme)

ROHS directive

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* Available by Q4 FY21

3VJ molded case circuit breaker

Frame sizes and nominal current

		Line Protection				
3VJ		3VJ10 125 A	3VJ11 125 A	3VJ12 250 A	3VJ13 400 A	3VJ14 630 A
Nominal current I _n / A	20	1p, 2p, 3p, 4p				
	25	1p, 2p, 3p, 4p	2p, 3p, 4p			
	32	1p, 2p, 3p, 4p	2p, 3p, 4p			
	40	1p, 2p, 3p, 4p	2p, 3p, 4p			
	50	1p, 2p, 3p, 4p	2p, 3p, 4p			
	63	1p, 2p, 3p, 4p	2p, 3p, 4p			
	80	1p, 2p, 3p, 4p	2p, 3p, 4p			
	100	1p, 2p, 3p, 4p	2p, 3p, 4p			
	125	1p, 2p, 3p, 4p	2p, 3p, 4p			
	160			1p*, 2p, 3p, 4p		
	200			2p, 3p, 4p		
	250			2p, 3p, 4p		
	320				3p, 4p	
	400				3p, 4p	
	500 *					3p, 4p
	630 *					3p, 4p

* Available by Q4 FY21



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3VJ molded case circuit breaker

Breaking capacity classes

	3VJ10			3VJ11		3VJ12				3VJ13			3VJ14	
3VJ AC	125 A 2p/ 3p / 4p			125 A 2p/ 3p / 4p		250 A 2p/ 3p / 4p				400 A 3p / 4p			630 A 3p / 4p	
Breaking capacity														
Icu @ 415 V / 50 Hz	10	18	25	36	55	18	25	36	55	25	36	55	36	55
Ics @ 415 V / 50 Hz	100% Icu	75% Icu												

	3VJ10			3VJ12	
3VJ AC	125 A 1p			160 A 1p	
Breaking capacity					
Icu @240 V / 50 Hz	10	18	25	18	25
Ics @240 V / 50 Hz	100% of Icu	75% of Icu			

3VJ MCCB

The Perfect Choice !



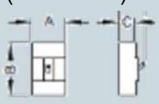
I_{cu}: Rated ultimate short – circuit breaking capacity | I_{cs}: Rated service short – circuit breaking capacity

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3VJ molded case circuit breakers

Technical specifications



		3VJ					
		125 A		125 A	250 A	400 A	630 A
		3VJ10		3VJ11	3VJ12	3VJ13	3VJ14
		1p	2p*/ 3p / 4p	2p/ 3p / 4p	2p/ 3p / 4p	3p / 4p	3p / 4p
Rated operational voltage, U _e AC	[V]	230	415	415	415	415	415
Rated impulse withstand voltage, U _{imp}	[kV]	6		8			
Rated insulation voltage, U _i	[V]	800		1000			
Reference standard		IEC 60947-2					
Utilization category as per IEC 60947-2		A					
Mechanical life (number of operations)		15,000		15000	15000	10,000	10,000
Electrical life @ 415 V AC (number of operations)		3,000		5000	5000	4,000	3,000
Dimensions (W X H X D)	 [mm]	35 x 118 x 62	80 (2P/3P) / 103.5 (4P) X 126 X 62	92 (2P/3P) / 122 (4P) X 150 X 81	107.5 (2P/3P) / 142.5 (4P) X 166 X 81	150 (3P) / 198 (4P) X 260 X 104	150 (3P) / 198 (4P) X 260 X 104

* 2-pole in 3-pole housing

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3VJ molded case circuit breakers

Derating Charts

Temperature

3VJ1 moulded case circuit breakers are used at ambient temperatures from -10 °C to +60 °C.

Derating (reduction in rated operational current) is required at temperatures above +45 °C. Refer to the table below for the correction factors for determining the key values:

Ambient Temperature	3VJ10	3VJ11	3VJ12	3VJ13
50 °C	0.942	0.942	0.963	0.954
55 °C	0.912	0.912	0.944	0.930
60 °C	0.881	0.881	0.925	0.905



Altitude

When 3VJ1 moulded case circuit breakers are used at up to 2000 m above main sea level, the rated current will not change, however installation altitude above 2000m can lead to higher temperatures at the switching devices. The lower density of air can significantly reduce heat dissipation, making it necessary to decrease rated current and short circuit breaking capacities.

Refer to the table below for the correction factors for determining the key values:

Elevation (m)	2000	3000	4000	5000
Power Frequency withstand voltage (V)	3000	2500	2000	1800
Correction factor for Current	1	0.94	0.88	0.83
Correction factor for Icu / Ics	1	0.83	0.71	0.63



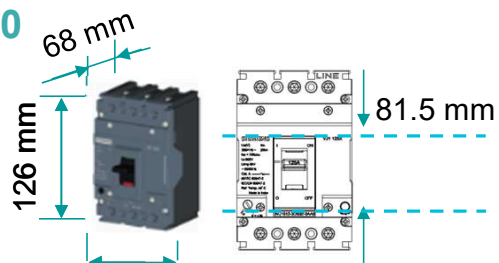
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3VJ molded case circuit breaker

Dimensions / Door cut-out

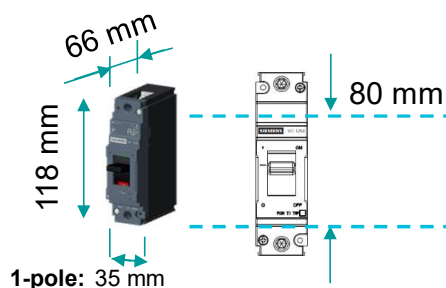
Frame 1X | 125 A

3VJ10



2-pole: 80 mm
3-pole: 80 mm
4-pole: 103.5 mm

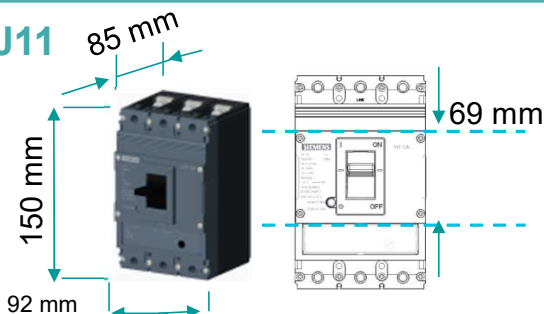
Frame 1X | 125 A- 1P



1-pole: 35 mm

Frame 1 | 125 A

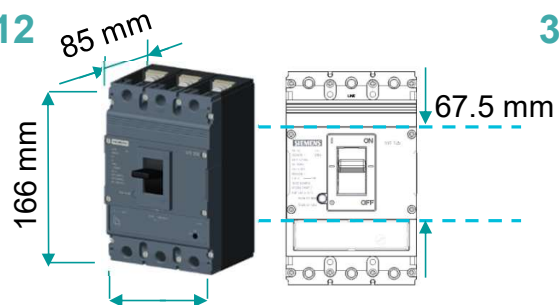
3VJ11



2-pole: 92 mm
3-pole: 92 mm
4-pole: 122 mm

Frame 2 | 250 A

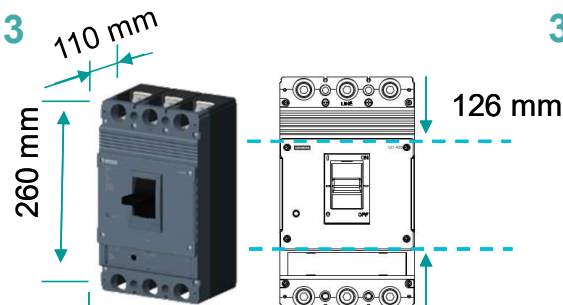
3VJ12



2-pole: 107.5 mm
3-pole: 107.5 mm
4-pole: 142.5 mm

Frame 3 | 400 A

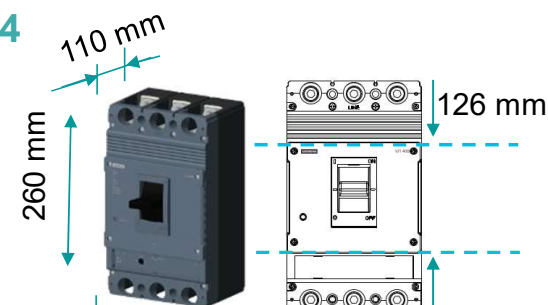
3VJ13



3-pole: 150 mm
4-pole: 198 mm

Frame 4 | 630 A

3VJ14



3-pole: 150 mm
4-pole: 198 mm

Depth till name plate cut out

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Fixed Thermal, Fixed Magnetic

IEC 60947-2	125 A	125 A	250 A	400A	630A
FTFM - Fixed Thermal - Fixed Magnetic	1 / 2 / 3 / 4 - pole	2 / 3 / 4 - pole	2 / 3 / 4 - pole	3 / 4 - pole	3 / 4 - pole
N-conductor, 4- pole available in form of:	100% protection	100% protection	100% protection	100% protection	100% protection

Front view

$t_i = \dots +45^{\circ}\text{C}$
3VJ11... DA32-0AA0
 $I_r = I_n$

$I_n = \dots$

Characteristic curve

	I_n	Thermal Setting	Magnetic Setting
3VJ10	20-25A	Rated I_n	500A
	32-40A		550A
	50A		600A
	63-80A		850A
	100-125A		1250A
3VJ11	25A		450A
	32-50A		600A
	63-125A		$10 \times I_n$
3VJ12	125-250A		$10 \times I_n$
3VJ13	320-400A		$10 \times I_n$
3VJ14	500-630A	$10 \times I_n$	

3VJ molded case circuit breaker Adjustable Thermal, Fixed Magnetic

IEC 60947-2	125 A	125 A	250 A	400A	630A
ATFM - Adjustable Thermal - Fixed Magnetic	3 / 4 - pole	3 / 4 - pole	3 / 4 - pole	3 / 4 - pole	3 / 4 - pole
N-conductor, 4- pole available in form of:	100% protection	100% protection	100% protection	100% protection	100% protection

Front view

Characteristic curve

	In	Thermal Setting	Magnetic Setting
3VJ10	20-25A	0.8, 1 X In	500A
	32-40A		550A
	50A		600A
	63-80A		850A
	100-125A		1250A
3VJ11	25A	0.8 – 0.9 – 1 X In	450A
	32-50A		600A
	63-125A		10 x In
3VJ12	125-250A		10 x In
3VJ13	320-400A		10 x In
3VJ14	500-630A	10 x In	

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Accessories (Internal & External) overview

Accessories	Frame Sizes				
	3VJ10 125 A	3VJ 11 125 A	3VJ12 250 A	3VJ13 400 A	3VJ14 630 A
Auxiliary switches	✓	✓	✓	✓	✓
Alarm switches	✓	✓	✓	✓	✓
Auxiliary + Alarm Switches	✓	✓	✓	✓	✓
Shunt releases	✓	✓	✓	✓	✓
Undervoltage releases	○	✓	✓	✓	✓
Connection technology (Screw)	✓	✓	✓	✓	✓
Manual operators	✓	✓	✓	✓	✓
Locking technology ¹⁾	✓	✓	✓	✓	✓
Interlocking (sliding lever) technology* ¹⁾	○	✓	✓	✓	✓
Sheet Steel Enclosure ¹⁾	✓	✓	✓	○	○

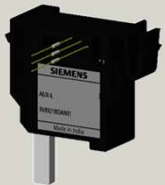
○ → Not available | ✓ → Available

*Castell Interlock with Extended Rotary operator available with all frame sizes | ¹⁾ available by Q4 FY21

3VJ molded case circuit breakers

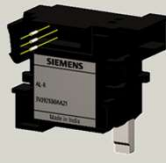
Internal accessories

Functions and portfolio



AUX auxiliary switch

- Status of main contacts
- Left & Right cavity variants available



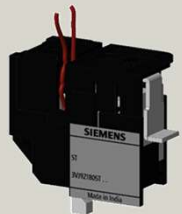
AL alarm switch

- MCCB tripped → TRIP position of the handle
- Independent of the various reasons for the tripping



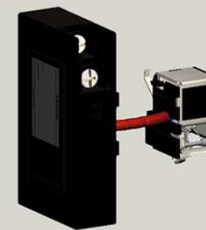
Aux +AL auxiliary switch

- Status of main contacts
- MCCB tripped → TRIP position of the handle
- Independent of the various reasons for the tripping



STL shunt trip

- Standard version of the shunt trips available in variety of AC & DC voltages
 - 24V DC
 - 48V DC
 - 110V AC / 110V DC
 - 220V AC
 - 415V AC
- Can be installed in the **RIGHT** accessory compartment



UVR under voltage release

- Standard version of the UVR available in variety of AC & DC voltages
 - 24V DC
 - 48V DC
 - 220V AC
 - 415V AC
- Can be installed in the **LEFT** accessory compartment

24V DC & 48V DC UVR available for 3VJ11 & 12 only

3VJ molded case circuit breakers

Internal Accessory Fitment guide

Accessory Mounting Location		3VJ10						3VJ11						3VJ12						3VJ13					
		2 and 3 Pole			4 Pole			2 and 3 Pole			4 Pole			2 and 3 Pole			4 Pole			2 and 3 Pole			4 Pole		
		Slot	Left	Right	2nd Left	1st Left	Right	Left	Right	Left	Right	1st Right	2nd Right	Left	Right	Left	Right	1st Right	2nd Right	Left	Right	Left	Right	1st Right	2nd Right
Accessory	Type																								
Auxiliary Switch	AUX	X			X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Alarm Switch	AL	X				X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Auxiliary + Alarm Switch	AUX + AL	X				X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Shunt Trip	ST			X			X		X			X	X		X		X	X		X			X	X	
Undervoltage Release	UV							X		X				X		X				X		X			

X Slot for accessory

3VJ molded case circuit breakers

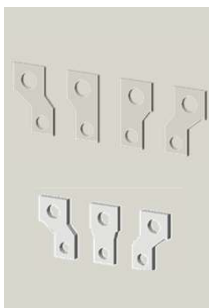
External accessories

Functions and portfolio



Manual Operator (8UC)

- Switch position indicator
- Handle, lockable in OFF
- Castell interlocks with 8UC design



Spreader

- Allows flexibility in termination



Locking Device*

- Locking in OFF
- Lockable up to 3 padlocks
- Prevent the unauthorized access



Earth Fault/ Leakage Relay

- To be connected externally with shunt release
- Variety of current & time settings
- Covered under RC-IN Control Products portfolio



Sheet Steel Enclosure*

- Separate variants for 3P & 4P
- Available up to 250A



Interlocking Device*

- Mechanically interlock between 2 MCCBs of same frame size
- Lockable up to 3 padlocks
- Prevent the unauthorized access

* available by Q4 FY21

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3VJ molded case circuit breakers

Quick Selection Guide

		3VJ	1	2	25	-	7	DA	3	2	-	0AA0
Breaker type:			1									
Frame size:	3VJ10	20 – 125		0								
	3VJ11	25 – 125		1								
	3VJ12	160 – 250		2								
	3VJ13	320 – 400		3								
	3VJ14	500 – 630		4								
Rated current in A:	3VJ10	3VJ11	3VJ12	3VJ13	3VJ14							
	$I_n = 20$					02						
	$I_n = 25$	$I_n = 25$				92						
	$I_n = 32$	$I_n = 32$				03						
	$I_n = 40$	$I_n = 40$				04						
	$I_n = 50$	$I_n = 50$				05						
	$I_n = 63$	$I_n = 63$				06						
	$I_n = 80$	$I_n = 80$				08						
	$I_n = 100$	$I_n = 100$				10						
	$I_n = 125$	$I_n = 125$				12						
			$I_n = 160$			16						
			$I_n = 200$			20						
			$I_n = 250$			25						
				$I_n = 320$		32						
				$I_n = 400$		40						
					$I_n = 500$	50						
					$I_n = 630$	63						

		3VJ	1	2	25	-	7	DA	3	2	-	0AA0
Breaking capacity @ 415 V:	3VJ10	3VJ11	3VJ12	3VJ13	3VJ14							
	1P 2P 3P 4P	2P 3P 4P	2P 3P 4P	3P 4P	3P 4P							
	10/10					0						
	18/12		18/12			1						
	25/18	25/18	25/18	25/18		3						
I_{cu} / I_{cs}		36/27	36/27	36/27	36/27	5						
		55/41	55/41	55/41	55/41	7						
Trip unit:			1P 2P 3P					DA				
	TM	FTFM	4P					EA				
		ATFM	3P					DB				
			4P					EB				
Pole:	1-pole								1			
	2-pole								2			
	3-pole								3			
	4-pole								4			
Screw connection:										2		
Internal accessory:												W/O

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3VJ molded case circuit breakers

Portfolio performance positioning against our Own portfolio



Feature	3VJ	3VM	3VA
Portfolio - Rated current Type of release	20 – 630A 1p,2p,3p,4p TMTU FTFM, ATFM	✓ 16 – 630A 1p,2p,3p,4p TMTU FTFM, ATFM, FM / AM	✓ 16 – 1600A 1p,2p,3p,4p TMTU FTFM, ATFM, ATAM, FM / AM, ETU
Breaking capacity	10kA – 55kA Ics = 75% Icu	18 – 55kA Ics = 75% Icu	✓ 18 – 110kA Ics = 100%Icu
Ambient temperature	Rated @ 45 °C (100%) Derating chart up to 60°C	✓ Rated @ 50 °C Derating chart up to 70°C	✓ Rated @ 50 °C Derating chart up to 70°C
Endurance	Mechanical - 15k Electrical – 5k	Mechanical - 10k to 12k Electrical - 2k to 6k	✓ Mechanical – 15k Electrical – 8k
Line / Load reversibility	No (Line marked)	✓ Yes; possible complete range	✓ Yes; possible complete range
Accessories - Mounting Connection Residual current device Manual Operators	Fixed (only) Screw connection None Door mounted (only)	Fixed, Plug-in Screw, Box terminals, Rear etc. ✓ Yes Door / Direct mounted	Fixed, Plug-in, Draw Out Screw, Box terminals, Rear etc. ✓ Yes Door / Direct mounted
Approbation / Certification	IEC (CB scheme), RoHS	✓ IEC (CB scheme), CCC, CE, EAC, DNV, LR, VDE, RoHS	✓ IEC (CB scheme), CCC, CE, DNV, Norske, UL, VDE, EAC etc.

molded case circuit breakers

Portfolio performance positioning against Competitor portfolio



Features		Siemens 3VJ1		Schneider CVS		Schneider EZS		ABB Formula
1	Rated Current Type of Release	20 – 630A 1p,2p,3p,4p TMTU FTFM, ATFM	X	16 – 600A 3p,4p TMTU ATFM only ETU above 400A	X	16 – 600A 1p,2p,3p,4p TMTU FTFM only	X	15 – 500A 2p,3p,4p TMTU FTFM only
2	Breaking capacity @ 415VAC	10kA – 55kA Ics = 75% Icu	X	25 – 50kA Ics = 100% Icu	✓	25 - 50kA EZS100 Ics = 50%Icu (100A) 125-600A Ics = 100%Icu	X	10 – 50kA 18/36kA Ics = 25%Icu (100A) Others Ics = 50%Icu
3	Ambient temperature	Rated @ 45 °C (100%) Derating chart up to 60°C	X	Rated @ 40 °C	X	Rated @ 50 °C (100A); 40 °C (125-630A) Derating chart up to 70 °C	✓	Rated @ 50 °C Derating chart up to 70°C
4	Endurance (in operations)	Mechanical - 15k Electrical – 5k	✓	Mechanical – 15k to 30k Electrical - 4k to 12k	✓	Mechanical – 13 to 25k Electrical – 4k to 12k	X	Mechanical – 5k to 10k Electrical – 1.5k to 4k
5	Line Load reversibility	No (Line marked)	✓	Yes; Line Load reversibility possible	–	No (above 240 VAC)	✓	Yes; Line Load reversibility possible

✓ Advantage

X Disadvantage

-- Neutral

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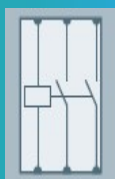
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Marketing data - CAX data

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Ingenuity for life

1
Wiring
Diagram



5
Circuit
diagrams



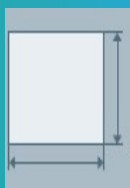
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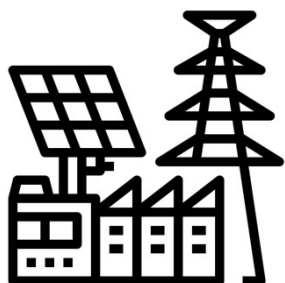
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Applications



Utilities



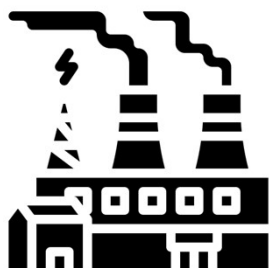
Commercial Building



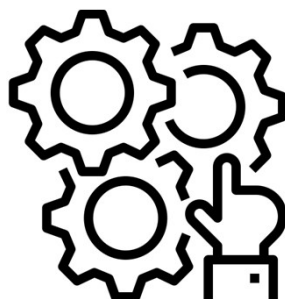
Residential Building



Industry



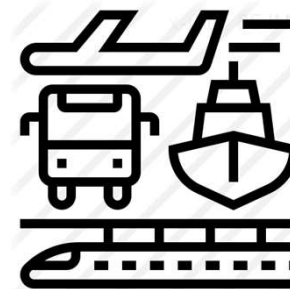
Power Utilities



OEM



Retail



Infrastructure



Thank you for your attention!

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siemens.com.my/3VJ