

# Product datasheet

Specifications



## variable speed drive, Easy Altivar 610, 1.5kW, 2hp, 380 to 460V, IP20

ATV610U15N4

### Main

Range of product	Easy Altivar 610
Product or component type	Variable speed drive
Product specific application	Fan, pump, compressor, conveyor
Device short name	ATV610
Variant	Standard version
Product destination	Asynchronous motors Synchronous motors
mounting mode	Cabinet mount
EMC filter	Integrated conforming to IEC 61800-3 category C3 with 50 m
IP degree of protection	IP20
Type of cooling	Forced convection
Supply frequency	50...60 Hz +/-5 %
Network number of phases	3 phases
[Us] rated supply voltage	380...460 V - 15...10 %
Motor power kW	1.5 kW for normal duty 0.75 kW for heavy duty
Motor power hp	2 hp for normal duty 1 hp for heavy duty
Line current	5.7 A at 380 V (normal duty) 4.8 A at 460 V (normal duty) 3.1 A at 380 V (heavy duty) 2.6 A at 460 V (heavy duty)
Prospective line Isc	5 kA
Apparent power	3.8 kVA at 460 V (normal duty) 2.1 kVA at 460 V (heavy duty)
Continuous output current	4 A at 4 kHz for normal duty 2.2 A at 4 kHz for heavy duty
Maximum transient current	4.4 A during 60 s (normal duty) 3.3 A during 60 s (heavy duty)
Asynchronous motor control profile	Optimized torque mode Constant torque standard Variable torque standard
Output frequency	0.1...500 Hz
Nominal switching frequency	4 kHz
Switching frequency	2...12 kHz adjustable
number of preset speeds	16 preset speeds

<b>Communication port protocol</b>	Modbus serial
<b>Option card</b>	Slot A: communication card, Profibus DP V1 Slot A: digital or analog I/O extension card Slot A: relay output card

## Complementary

<b>Output voltage</b>	<= power supply voltage
<b>Motor slip compensation</b>	Adjustable Automatic whatever the load Not available in permanent magnet motor law Can be suppressed
<b>Acceleration and deceleration ramps</b>	S, U or customized Linear adjustable separately from 0.01 to 9000 s
<b>Braking to standstill</b>	By DC injection
<b>Protection type</b>	Thermal protection: motor Motor phase break: motor Thermal protection: drive Overheating: drive Overcurrent between output phases and earth: drive Overload of output voltage: drive Short-circuit protection: drive Motor phase break: drive Overvoltages on the DC bus: drive Line supply overvoltage: drive Line supply undervoltage: drive Line supply phase loss: drive Overspeed: drive Break on the control circuit: drive
<b>Frequency resolution</b>	Display unit: 0.1 Hz Analog input: 0.012/50 Hz
<b>Electrical connection</b>	Control, screw terminal: 0.5...1.5 mm <sup>2</sup> Line side, screw terminal: 2.5...16 mm <sup>2</sup> Motor, screw terminal: 2.5...16 mm <sup>2</sup>
<b>Connector type</b>	1 RJ45 (on the remote graphic terminal) for Modbus serial
<b>Physical interface</b>	2-wire RS 485 for Modbus serial
<b>Transmission frame</b>	RTU for Modbus serial
<b>Transmission rate</b>	4.8, 9.6, 19.2, 38.4 kbit/s for Modbus serial
<b>Type of polarization</b>	No impedance for Modbus serial
<b>Number of addresses</b>	1...247 for Modbus serial
<b>Method of access</b>	Slave
<b>Supply</b>	External supply for digital inputs: 24 V DC (19...30 V), <1.25 mA, protection type: overload and short-circuit protection Internal supply for reference potentiometer (1 to 10 kOhm): 10.5 V DC +/- 5 %, <10 mA, protection type: overload and short-circuit protection
<b>Local signalling</b>	2 LEDs for local diagnostic 1 LED (yellow) for embedded communication status 2 LEDs (dual colour) for communication module status 1 LED (red) for presence of voltage
<b>Width</b>	145 mm
<b>Height</b>	297 mm 350 mm with EMC plate
<b>Depth</b>	203 mm
<b>Net weight</b>	3.135 kg
<b>Analogue input number</b>	3

<b>Analogue input type</b>	AI1, AI2, AI3 software-configurable voltage: 0...10 V DC, impedance: 30 kOhm, resolution 12 bits AI1, AI2, AI3 software-configurable current: 0...20 mA, impedance: 250 Ohm, resolution 12 bits AI2, AI3 software-configurable temperature probe or water level sensor
<b>Discrete input number</b>	6
<b>Discrete input type</b>	DI1...DI6 programmable as logic input, 24 V DC ( $\leq 30$ V), impedance: 3.5 kOhm DI5, DI6 programmable as pulse input: 0...30 kHz, 24 V DC ( $\leq 30$ V)
<b>Input compatibility</b>	DI1...DI6: logic input level 1 PLC conforming to IEC 61131-2 DI5, DI6: pulse input level 1 PLC conforming to IEC 65A-68
<b>Discrete input logic</b>	Positive logic (source): DI1...DI6 configurable logic input, $< 5$ V (state 0), $> 11$ V (state 1) Negative logic (sink): DI1...DI6 configurable logic input, $> 16$ V (state 0), $< 10$ V (state 1) Positive logic (source): DI5, DI6 configurable pulse input, $< 0.6$ V (state 0), $> 2.5$ V (state 1)
<b>Analogue output number</b>	2
<b>Analogue output type</b>	Software-configurable current AQ1, AQ2: 0...20 mA, resolution 10 bits Software-configurable voltage AQ1, AQ2: 0...10 V DC impedance 470 Ohm, resolution 10 bits
<b>Sampling duration</b>	5 ms $\pm$ 0.1 ms (AI1, AI2, AI3) - analog input 2 ms $\pm$ 0.5 ms (DI1...DI6)configurable - discrete input 5 ms $\pm$ 1 ms (DI5, DI6)configurable - pulse input 10 ms $\pm$ 1 ms (AQ1, AQ2) - analog output
<b>Accuracy</b>	$\pm$ 0.6 % AI1, AI2, AI3 for a temperature variation 60 °C analog input $\pm$ 1 % AQ1, AQ2 for a temperature variation 60 °C analog output
<b>Linearity error</b>	AI1, AI2, AI3: $\pm$ 0.15 % of maximum value for analog input AQ1, AQ2: $\pm$ 0.2 % for analog output
<b>Relay output number</b>	3
<b>Relay output type</b>	Configurable relay logic R1: fault relay NO/NC electrical durability 100000 cycles Configurable relay logic R2: sequence relay NO electrical durability 100000 cycles Configurable relay logic R3: sequence relay NO electrical durability 100000 cycles
<b>Refresh time</b>	Relay output (R1, R2, R3): 5 ms ( $\pm$ 0.5 ms)
<b>Minimum switching current</b>	Relay output R1, R2, R3: 5 mA at 24 V DC
<b>Maximum switching current</b>	Relay output R1, R2, R3 on resistive load, $\cos \phi = 1$ : 3 A at 250 V AC Relay output R1, R2, R3 on resistive load, $\cos \phi = 1$ : 3 A at 30 V DC Relay output R1, R2, R3 on inductive load, $\cos \phi = 0.4$ and L/R = 7 ms: 2 A at 250 V AC Relay output R1, R2, R3 on inductive load, $\cos \phi = 0.4$ and L/R = 7 ms: 2 A at 30 V DC
<b>Isolation</b>	Between power and control terminals
<b>Insulation resistance</b>	$> 1$ MOhm 500 V DC for 1 minute to earth

## Environment

<b>Noise level</b>	55 dB conforming to 86/188/EEC
<b>Power dissipation in W</b>	40 W(forced convection) at 380 V, switching frequency 4 kHz 25 W(natural convection) at 380 V, switching frequency 4 kHz
<b>Operating position</b>	Vertical $\pm$ 10 degree
<b>Electromagnetic compatibility</b>	Electrostatic discharge immunity test level 3 conforming to IEC 61000-4-2 Radiated radio-frequency electromagnetic field immunity test level 3 conforming to IEC 61000-4-3 Electrical fast transient/burst immunity test level 4 conforming to IEC 61000-4-4 1.2/50 $\mu$ s - 8/20 $\mu$ s surge immunity test level 3 conforming to IEC 61000-4-5 Conducted radio-frequency immunity test level 3 conforming to IEC 61000-4-6
<b>Pollution degree</b>	2 conforming to IEC 61800-5-1
<b>Vibration resistance</b>	1.5 mm peak to peak ( $f = 2...13$ Hz) conforming to IEC 60068-2-6 1 gn ( $f = 13...200$ Hz) conforming to IEC 60068-2-6

<b>Shock resistance</b>	15 gn for 11 ms conforming to IEC 60068-2-27
<b>Relative humidity</b>	5...95 % without condensation conforming to IEC 60068-2-3
<b>Ambient air temperature for operation</b>	-15...45 °C (without derating) 45...60 °C (with derating factor)
<b>Operating altitude</b>	<= 1000 m without derating 1000...4800 m with current derating 1 % per 100 m
<b>Environmental characteristic</b>	Chemical pollution resistance class 3C3 conforming to IEC 60721-3-3 Dust pollution resistance class 3S3 conforming to IEC 60721-3-3
<b>Standards</b>	IEC 61800-3 Environment 2 category C3 IEC 61800-3 IEC 61800-5-1 IEC 60721-3
<b>marking</b>	CE

## Packing Units

<b>Unit Type of Package 1</b>	PCE
<b>Number of Units in Package 1</b>	1
<b>Package 1 Height</b>	19.6 cm
<b>Package 1 Width</b>	12.8 cm
<b>Package 1 Length</b>	28.0 cm
<b>Package 1 Weight</b>	5.7 kg

## Sustainability

**Green Premium™ label** is Schneider Electric's commitment to delivering products with best-in-class environmental performance. Green Premium promises compliance with the latest regulations, transparency on environmental impacts, as well as circular and low-CO<sub>2</sub> products.

**Guide to assessing product sustainability** is a white paper that clarifies global eco-label standards and how to interpret environmental declarations.

[Learn more about Green Premium >](#)

[Guide to assess a product's sustainability >](#)



Transparency RoHS/REACH

## Resource performance

✓ Upgradeable Through Digital Modules  
And Upgraded Components

## Well-being performance

✓ Mercury Free

✓ Rohs Exemption Information [Yes](#)

## Certifications & Standards

**Eu Rohs Directive** Pro-active compliance (Product out of EU RoHS legal scope)

**China Rohs Regulation** [China RoHS declaration](#)

**Environmental Disclosure** [Product Environmental Profile](#)

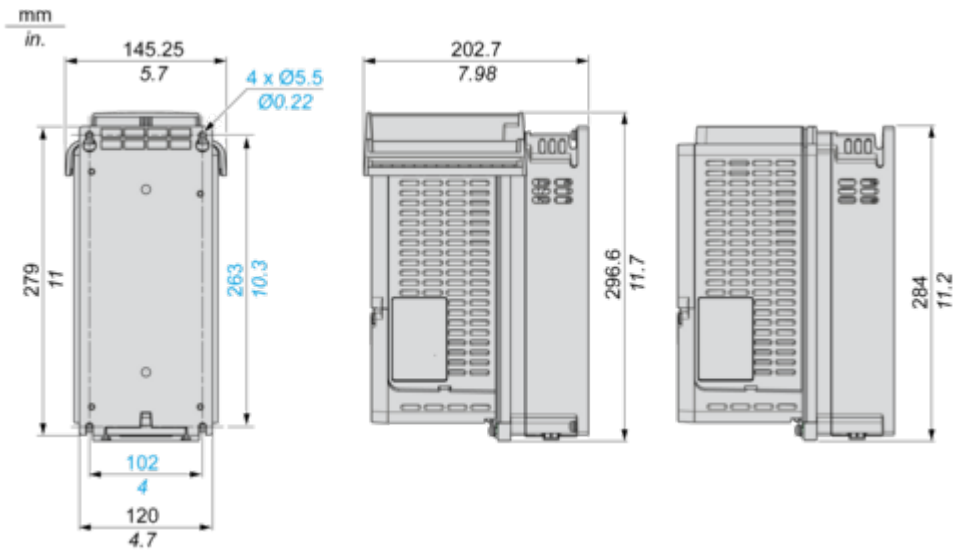
**Weee** The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins

**Circularity Profile** [End of Life Information](#)

Dimensions Drawings

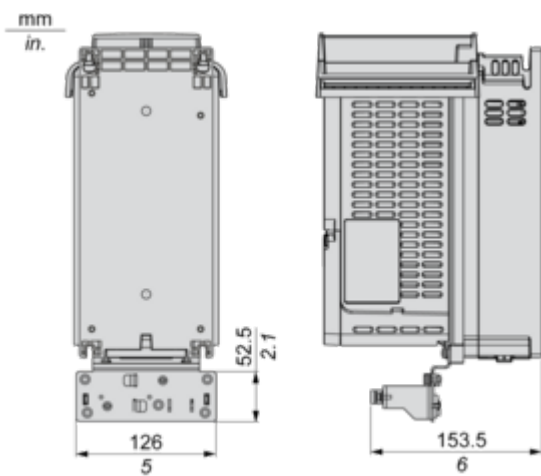
Dimensions

IP20 Drives



Drawings from left to right: rear view, right side view with top cover, right side view without top cover.

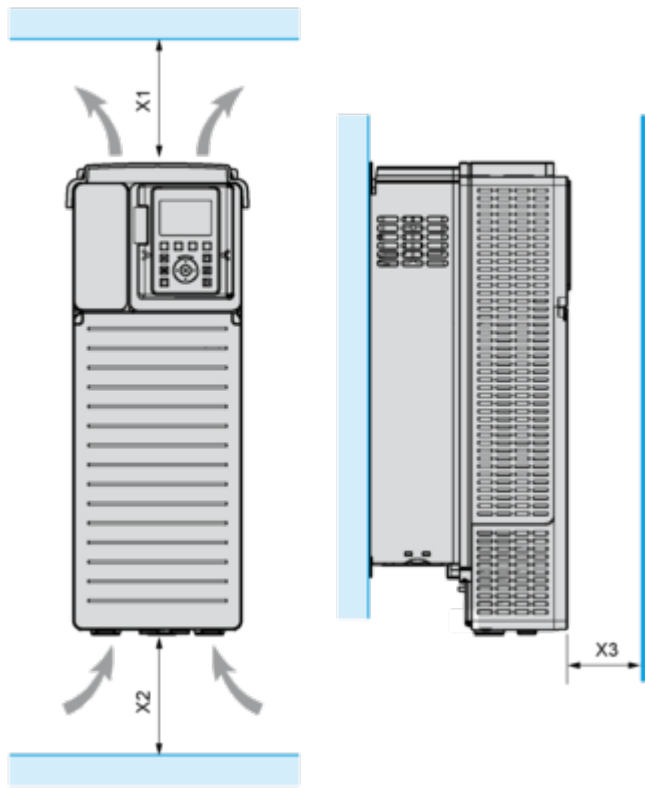
IP20 Drives With EMC Plate



Drawings from left to right: rear view, right side view with top cover.

Mounting and Clearance

Clearances



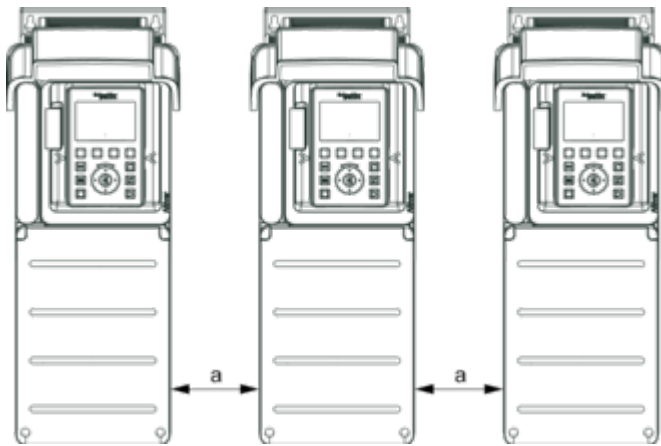
X1	X2	X3
≥ 100 mm (3.94 in.)	≥ 100 mm (3.94 in.)	≥ 10 mm (0.39 in.)

- Mount the device in a vertical position ( $\pm 10^\circ$ ). This is required for cooling the device.
- Do not mount the device close to heat sources.
- Leave sufficient free space so that the air required for cooling purposes can circulate from the bottom to the top of the drive.

**Mounting Types**

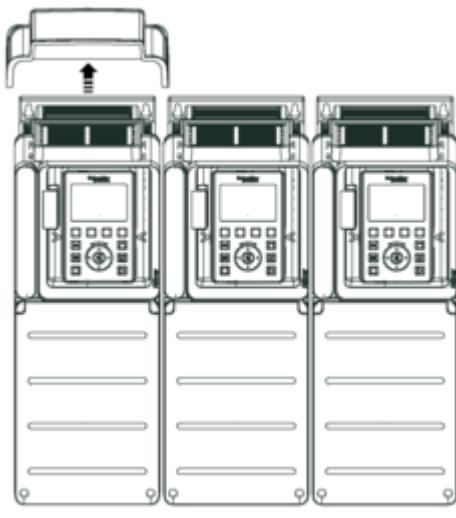
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**Mounting Type A: Individual IP21**



$a \geq 100 \text{ mm (3.94 in.)}$

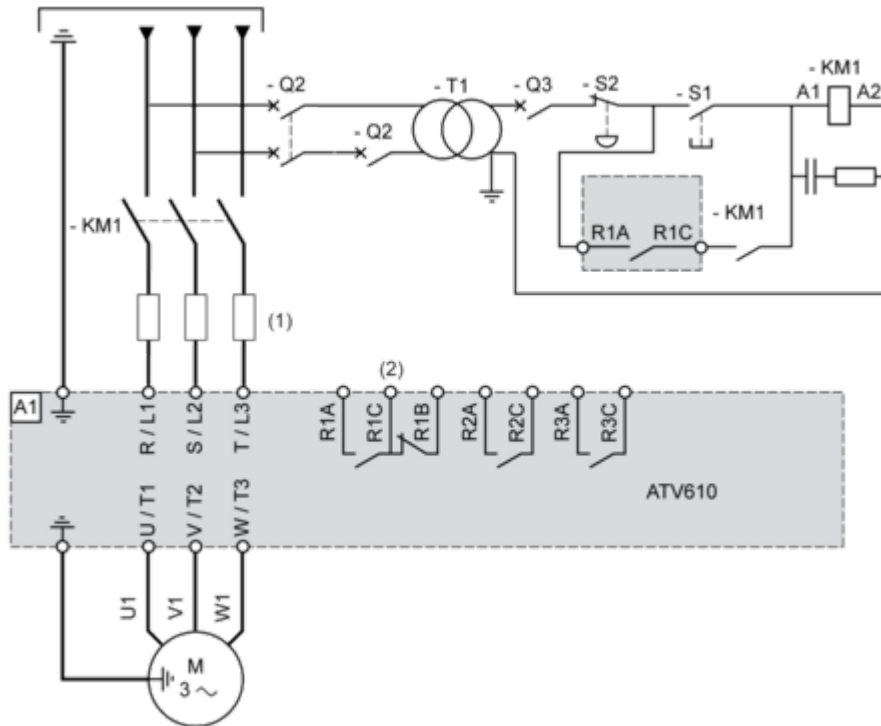
**Mounting Type B: Side by Side IP20**





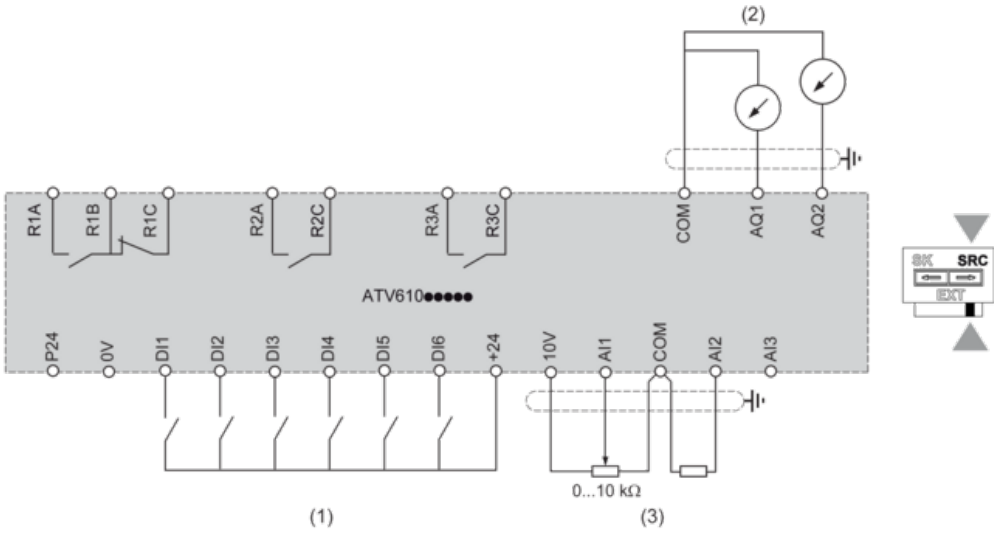
Connections and Schema

Single or Three-phase Power Supply - Diagram With Line Contactor



- (1) Line chokes
- (2) See control block wiring diagram
- A1 : Drive
- KM1 : Line Contactor
- Q2, Q3 : Circuit breakers
- S1, S2 : Pushbuttons
- T1 : Transformer for control part

Control Block Wiring Diagram

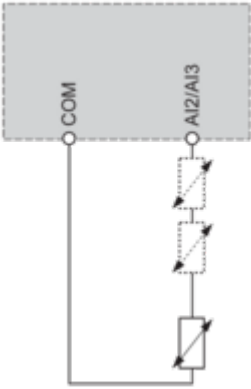


- (1) Digital Input
- (2) Analog Output
- (3) Analog Input

R1A, R1B, R1C : Fault relay output  
 R2A, R2C : Sequence relay output  
 R3A, R3C : Sequence relay output

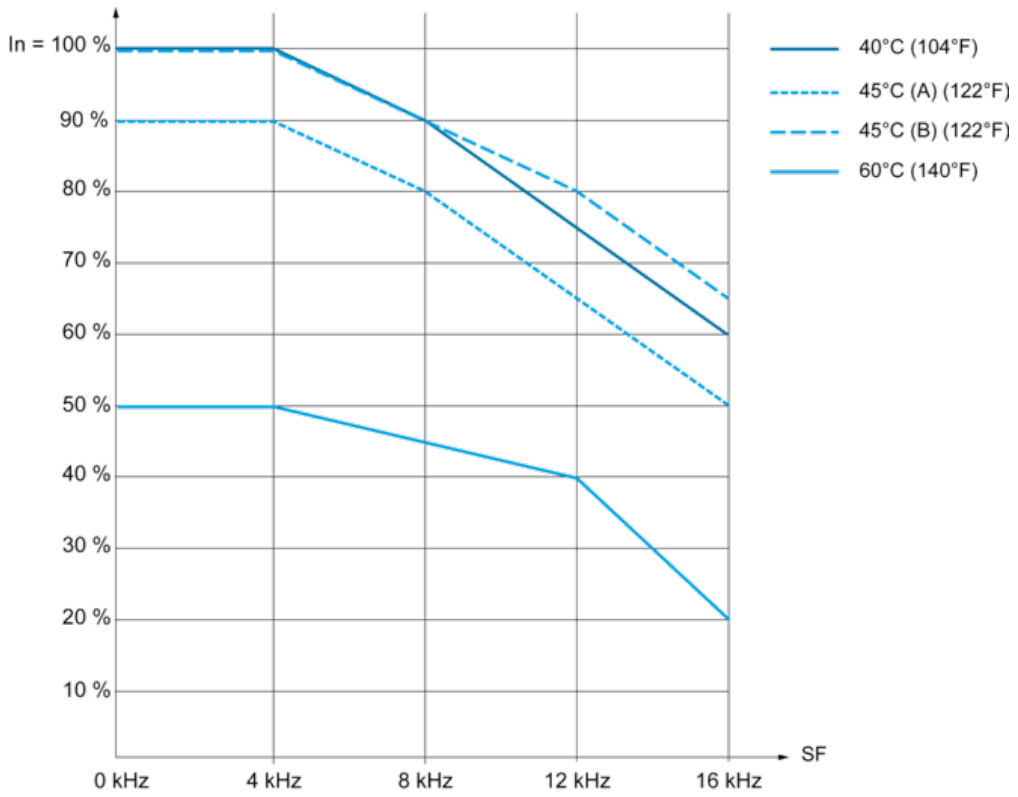
Sensor Connection

It is possible to connect either 1 or 3 sensors on terminals AI2 or AI3.



Performance Curves

Derating Curves



In : Nominal Drive Current  
SF : Switching Frequency