Wire-wound Ferrite Power Inductors LBQB/LBQC/LBQE series for Telecommunications Infrastructure and Industrial Equipment
Wire-wound Ferrite Power Inductors LBQN/LBQPA series for Telecommunications Infrastructure and Industrial Equipment
Wire-wound Ferrite Inductors for Signal Lines LBQM series for Telecommunications Infrastructure and Industrial Equipment
Wire-wound Ferrite Power Inductors LMQB/LMQC/LMQE series for Medical Devices classified as GHTF Class C (Japan Class III)
Wire-wound Ferrite Power Inductors LMQN/LMQPA series for Medical Devices classified as GHTF Class C (Japan Class III)
Wire-wound Ferrite Inductors for Signal Lines LMQM series for Medical Devices classified as GHTF Class C (Japan Class III)

■RELIABILITY DATA

1.Operating temperature Range	
Specified Value	−40～＋105℃(Including self-generated heat)
Test Methods and Remarks	Including self-generated heat

2. Storage Temperature Range(after soldering)	
Specified Value	−40～＋85℃
Test Methods and Remarks	Wire-wound Ferrite Inductors, Wire-wound Ferrite Power Inductors: Please refer the term of "7. storage conditions" in precautions.

3.Rated Current	
Specified Value	Within the specified tolerance

4.Inductance	
Specified Value	Within the specified tolerance
Test Methods and Remarks	Measuring equipment :LCR Mater(HP4285A or its equivalent)

5.Q	
Specified Value	Wire-wound Ferrite Inductors for Signal Lines: Within the specified tolerance
Test Methods and Remarks	Wire-wound Ferrite Inductors for Signal Lines : Measuring equipment : LCR Mater(HP4285A or its equivalent)

6.DC Resistance	
Specified Value	Within the specified tolerance
Test Methods and Remarks	Measuring equipment : DC Ohmmeter (HIOKI 3227 or its equivalent)

7.Self-Resonant Frequency	
Specified Value	Within the specified tolerance
Test Methods and Remarks	Measuring equipment : Impedance analyzer (HP4291A or its equivalent)

8.Temperature Characteristic

Specified Value	LBQMB2016				Inductance change : Within±10%
	LMQMB2016				
	LBQBA2012	LBQEA2012	LBQNA2012	LBQBA2016	Inductance change : Within±20%
	LBQNA2016	LBQBA2518	LBQEA2518	LBQNA2518	
	LBQCA3225	LBQPA3225			
	LMQBA2012	LMQEA2012	LMQNA2012	LMQBA2016	
	LMQNA2016	LMQBA2518	LMQEA2518	LMQNA2518	
	LMQCA3225	LMQPA3225			
	LBQCA2016	LBQPA2016	LBQCA2518	LBQPA2518	Inductance change : Within±25%
	LBQBA3218				
	LMQCA2016	LMQPA2016	LMQCA2518	LMQPA2518	
	LMQBA3218				
	LBQCA2012	LBQPA2012			Inductance change : Within±35%
	LMQCA2012	LMQPA2012			

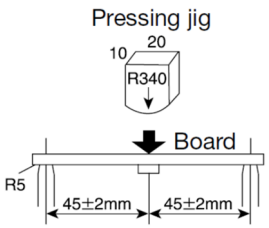
Test Methods and Remarks

Change of maximum inductance deviation in step 1–5

Step	Temperature(℃)
1	20
2	−40
3	20(Reference temperature)
4	+85(Maximum operating temperature)
5	20

9.Rasistance to Flexure of Substrate

Specified Value	No damage.
Test Methods and Remarks	Warp : 2mm Test substrate : Board according to JIS C0051 Thickness : 1.0mm



10.Body Strength

Specified Value	No damage.
Test Methods and Remarks	Applied force : 10N Duration : 10sec.

11.Adhesion of terminal electrode

Specified Value	No abnormality.
Test Methods and Remarks	Applied force : 10N to X and Y directions Duration : 5 sec. Test substrate : Printed board

12.Resistance to vibration	
Specified Value	Inductance change : Within±20% No significant abnormality in appearance.
Test Methods and Remarks	According to JIS C5102 clause 8.2. Vibration type : A Directions : 2 hrs each in X, Y and Z directions. Total:6 hrs Frequency range : 10 to 55 to 10 Hz(1min.) Amplitude : 1.5mm Mounting method : Soldering onto printed board Recovery : At least 2 hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs.

13.Drop test	
Specified Value	—

14.Solderability	
Specified Value	At least 90% of surface of terminal electrode is covered by new
Test Methods and Remarks	Solder temperature : 245±5℃ Duration : 5±0.5sec Flux : Ethanol solution with 25% of colophony

15.Resistance to soldering	
Specified Value	Inductance change : Within±20%
Test Methods and Remarks	3 times of reflow oven at 230℃ MIN for 40sec. with peak temperature at 260 ℃ for 5sec.

16.Resisitance to solvent	
Specified Value	—
Test Methods and Remarks	Solvent temperature : Room temperature Type of solvent : Isopropyl alcohol Cleaning conditions : 90s. Immersion and cleaning.

17.Thermal shock	
Specified Value	Inductance change : Within±20% No significant abnormality in appearance.
Test Methods and Remarks	−40～+85℃, maintain times 30min. ,100 cycle Recovery : At least 2 hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs.

18.Damp heat life test	
Specified Value	Inductance change : Within±20% No significant abnormality in appearance.
Test Methods and Remarks	Temperature : 60±2℃ Humidity : 90～95%RH Duration : 1000 hrs Recovery : At least 2 hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs.

19.Loading under damp heat life test	
Specified Value	Inductance change : Within±20% No significant abnormality in appearance.
Test Methods and Remarks	Temperature : 60±2℃ Humidity : 90～95%RH Duration : 1000 hrs Applied current : Rated current Recovery : At least 2 hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs.

20.High temperature life test	
Specified Value	Wire-wound Ferrite Power Inductors, Wire-wound Ferrite Inductors for Signal Lines : Inductance change : Within±20% No significant abnormality in appearance
Test Methods and Remarks	Temperature : 85±2℃ Duration : 1000 hrs Recovery : At least 2 hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs.

21.Loading at high temperature life test	
Specified Value	Wire-wound Ferrite Inductors: Inductance change : Within±20% No significant abnormality in appearance
Test Methods and Remarks	Temperature : 85±2℃ Duration : 1000 hrs Applied current : Rated current Recovery : At least 2 hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs.

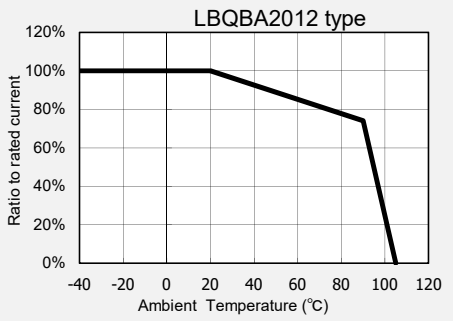
22.Low temperature life test	
Specified Value	Inductance change : Within±20% No significant abnormality in appearance.
Test Methods and Remarks	Temperature : −40±2℃ Duration : 1000 hrs Recovery : At least 2 hrs of recovery under the standard condition after the test, followed by the measurement within 48 hrs.

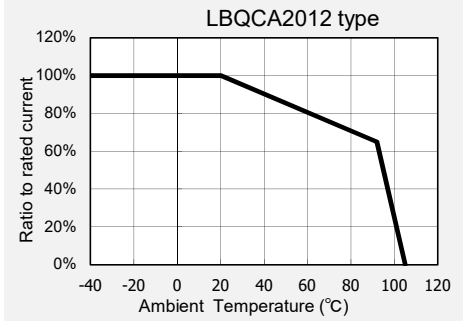
23.Standard condition	
Specified Value	Standard test conditions Unless specified, Ambient temperature is 20±15℃ and the Relative humidity is 65±20%. If there is any doubt about the test results, further measurement shall be had within the following limits: Ambient Temperature: 20±2℃ Relative humidity: 65±5% Inductance value is based on our standard measurement systems.

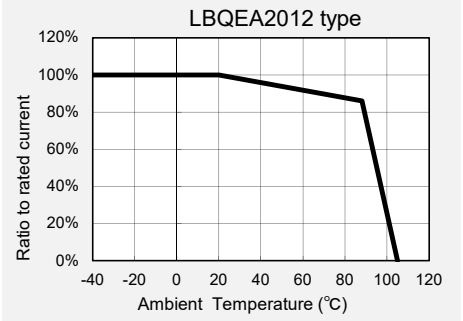
Derating of Rated Current

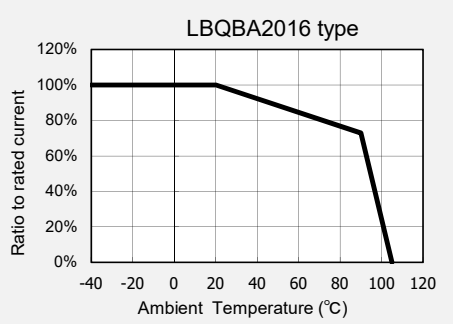
LBQB/LBQC/LBQE series

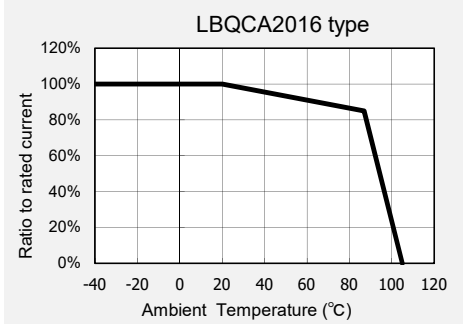
Derating of current is necessary for LBQB/LBQC/LBQE series series depending on ambient temperature.
Please refer to the chart shown below for appropriate derating of current.

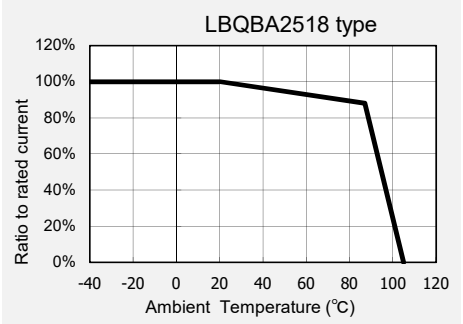


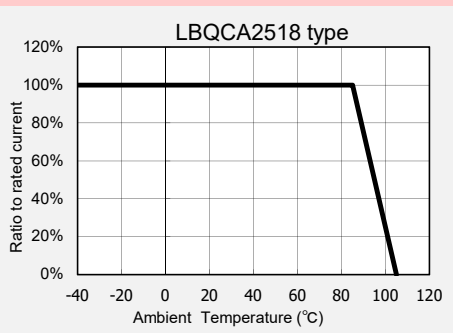


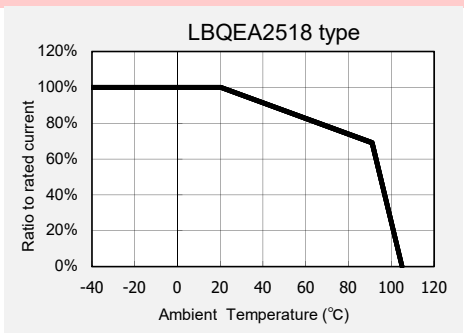


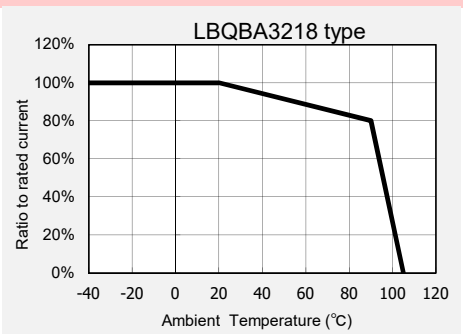


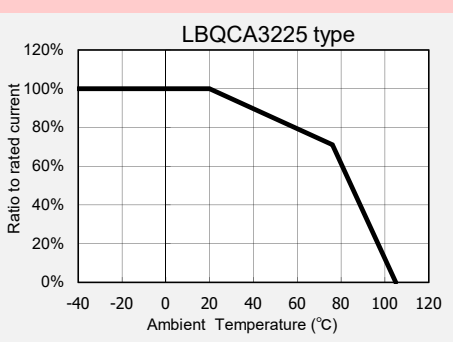








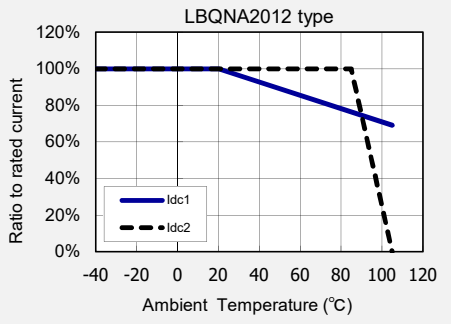


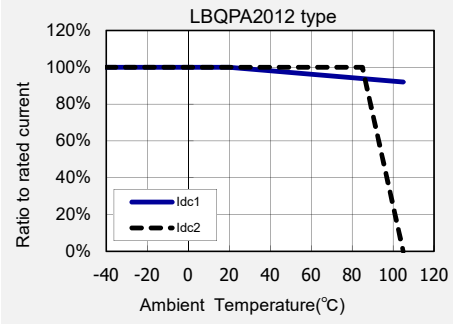


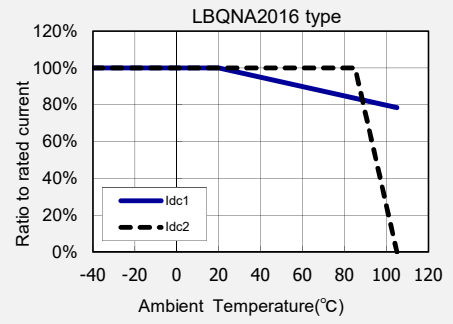
Derating of Rated Current

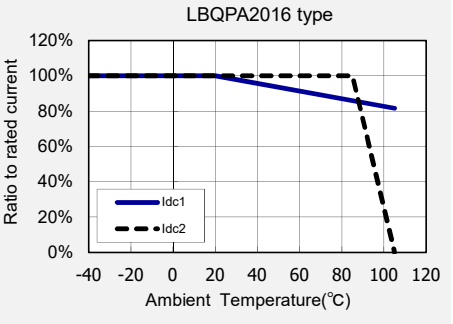
LBQN/LBQPA series

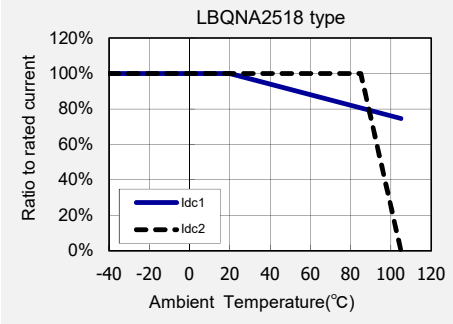
Derating of current is necessary for LBQN/LBQPA series depending on ambient temperature.
Please refer to the chart shown below for appropriate derating of current.

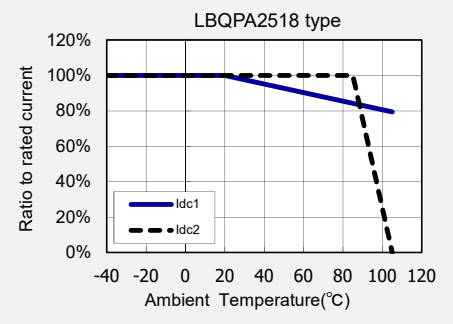


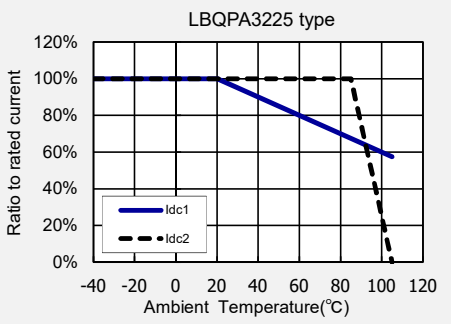








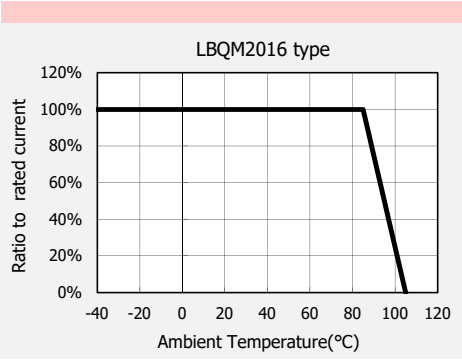




Derating of Rated Current

LBQM series

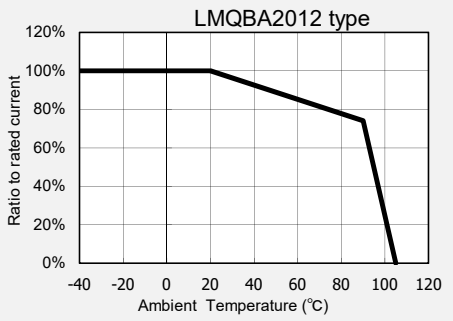
Derating of current is necessary for LBQM series depending on ambient temperature.
Please refer to the chart shown below for appropriate derating of current.

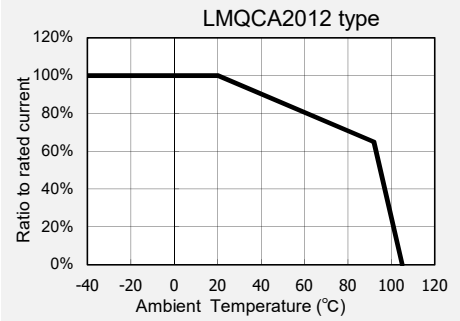


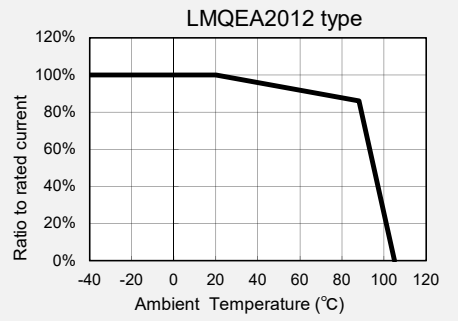
Derating of Rated Current

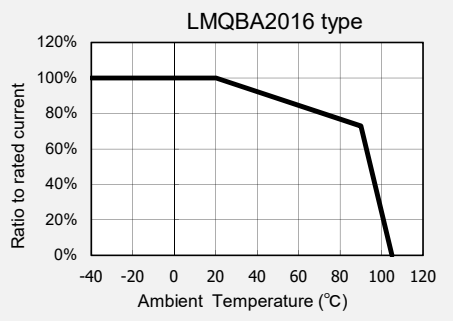
LMQB/LMQC/LMQE series

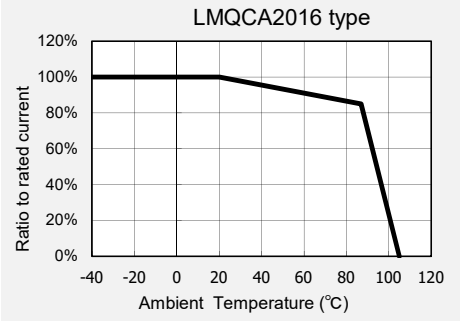
Derating of current is necessary for LMQB/LMQC/LMQE series series depending on ambient temperature.
Please refer to the chart shown below for appropriate derating of current.

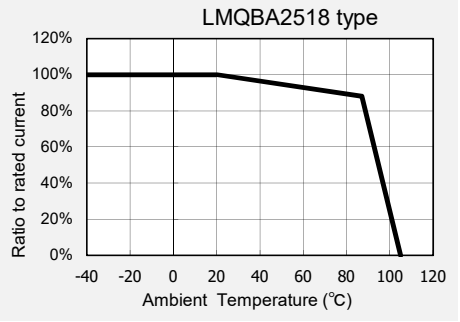


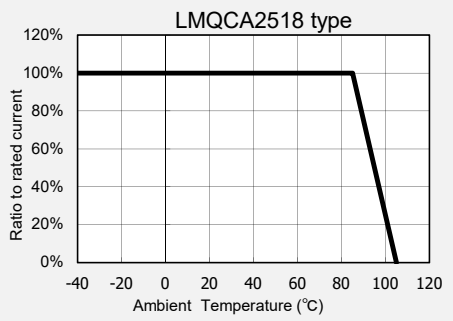


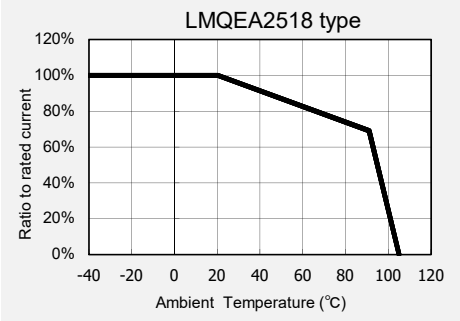


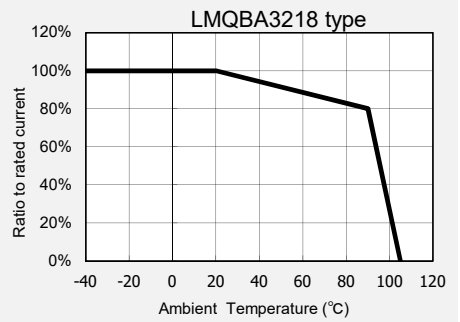


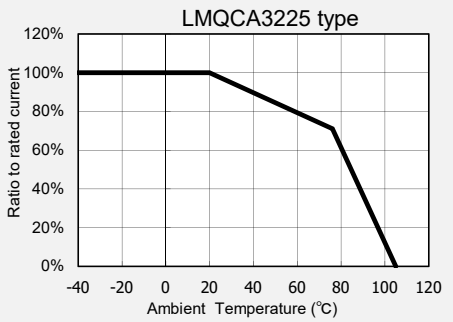








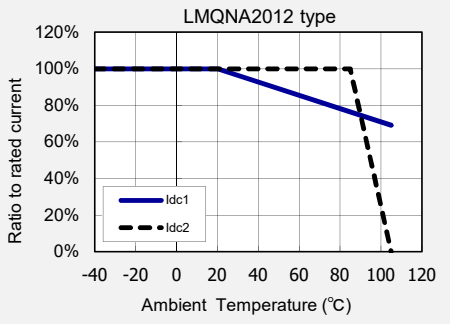


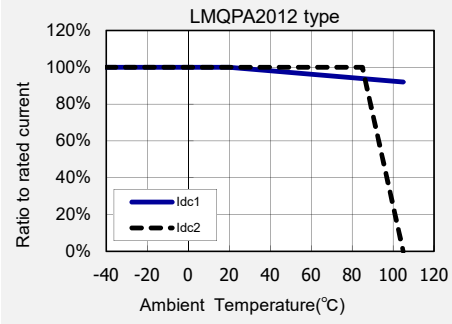


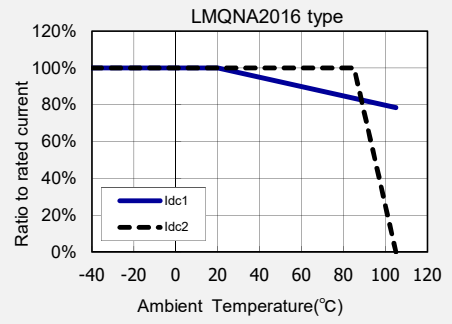
Derating of Rated Current

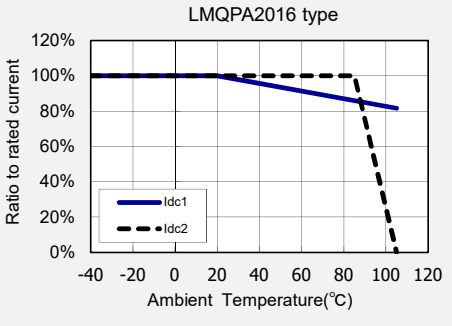
LMQN/LMQPA series

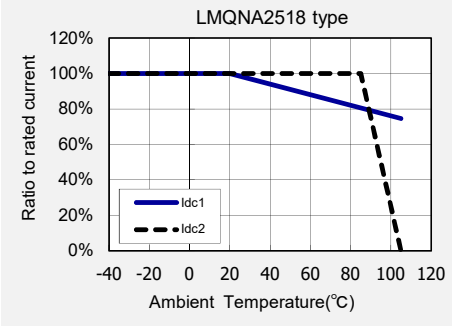
Derating of current is necessary for LMQN/LMQPA series depending on ambient temperature.
Please refer to the chart shown below for appropriate derating of current.

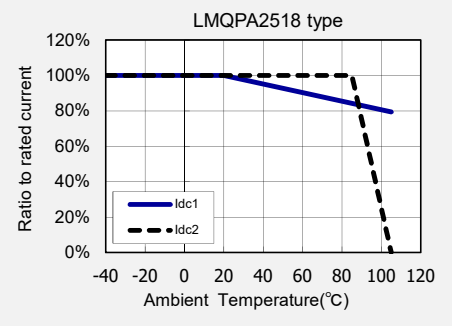


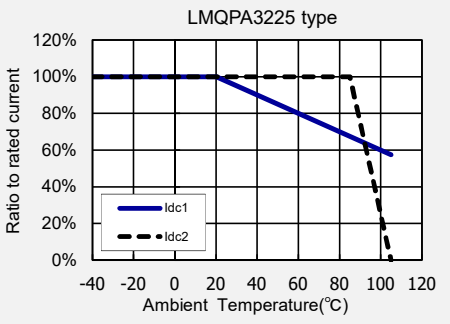












Derating of Rated Current

LMQM series

Derating of current is necessary for LMQM series depending on ambient temperature.
Please refer to the chart shown below for appropriate derating of current.