KWB-R5068-P3RGBW-L178-C2

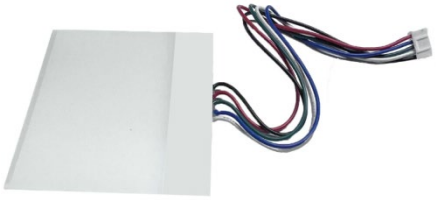
50.58mm×68.58mm, Multi-Color Backlight

LCD Backlight

Technical Data Sheet

Features:

- Low current operation
- Excellent characters appearance
- Large area, uniform, bright light emitting surface.
- RoHS Compliant



Descriptions:

- The KWB-R5068-P3RGBW-L178-C2 is used as a backlight of emitting area 50.58mm×68.58mm.
- The display provides excellent reliability in bright ambient light.

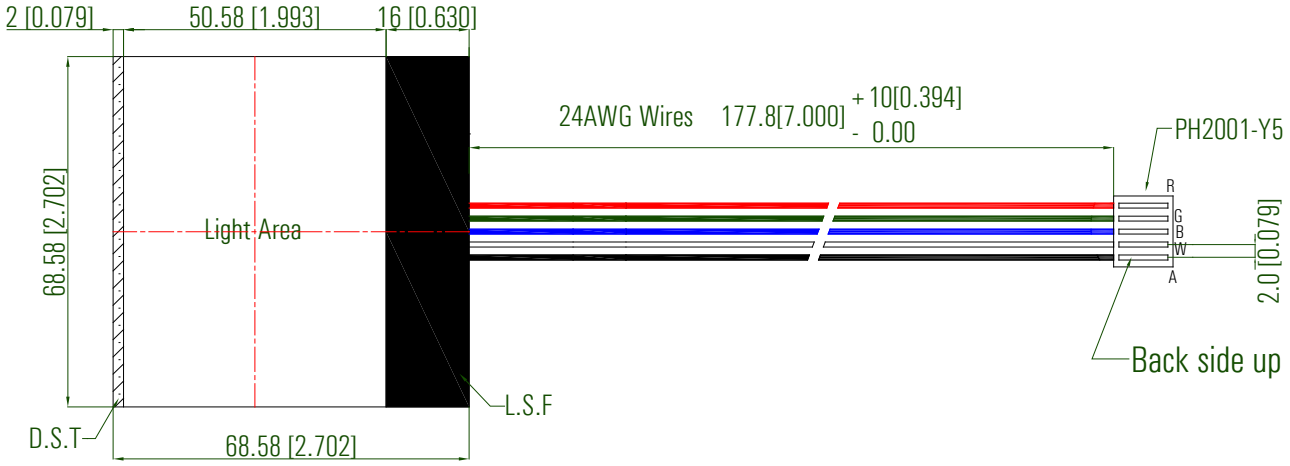
Applications:

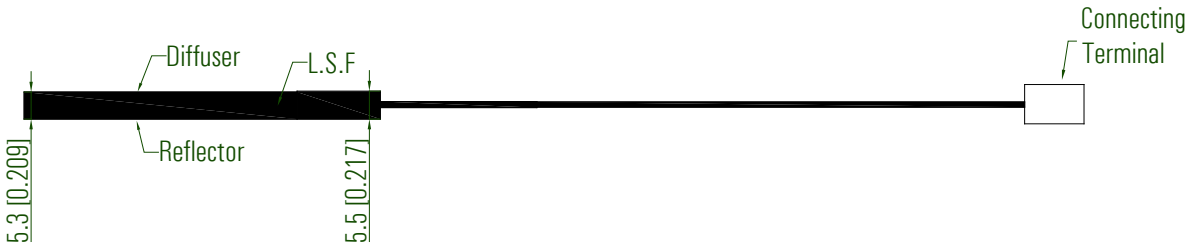
- Flat backlight for LCD, switches and symbols.
- Indicator and backlight in office equipment.
- Indicator and backlight for battery driven equipment.
- Indicator and backlight for audio and video equipment.
- Automotive: Backlighting in dashboards and switches.
- Telecommunication: Indicator and backlighting in telephone and fax.

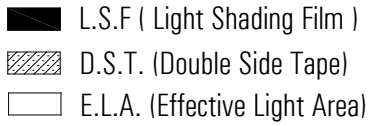
Device Selection Guide:

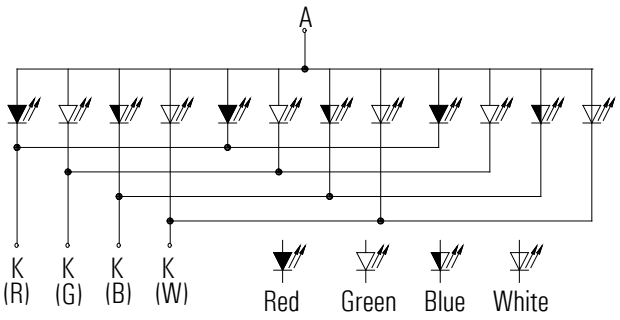
Part No.	Emitting Color	Face Color
KWB-R5068-P3RGBW-L178-C2	Red	White
	Pure Green	
	Blue	
	White	

Package Dimension:









Notes:

1. *All dimensions are in millimeters (inches).*
2. *Tolerance is ± 0.25mm (.010") unless otherwise noted.*
3. *The specifications, characteristics and technical data described in the datasheet are subject to change without prior notice.*

Absolute Maximum Ratings at Ta=25℃

Parameters	Symbol	White	Red	Pure Green	Blue	Unit
Power Dissipation (Per LED)	P_D	144	108	144	144	mW
Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width)	I_{FP}	90	90	90	90	mA
Forward Current	I_F	45	45	45	45	mA
Reverse Voltage (Per LED)	V_R	5	5	5	5	V
Operating Temperature Range	T_{opr}	-20℃ to +70℃				
Storage Temperature Range	T_{stg}	-25℃ to +75℃				
Soldering Temperature	T_{sld}	260℃ for 5 Seconds				

Electrical Optical Characteristics at Ta=25℃（White）

Parameters	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Average Luminous Intensity	Iv	250	500	---	cd/m²	IF=30mA (Note a)
Luminous Uniformity		---	75%	---		IF=30mA
Peak Emission Wavelength	λp	---	0.30	---		IF=30mA (Note b)
Dominant Wavelength	λd	---	0.31	---		IF=30mA (Note b)
Forward Voltage	V_F	---	3.0	3.2	V	IF=30mA (Note c)
Reverse Current	I_R	---	---	50	μA	VR=5V

Notes:

a. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE eye-response curve.
Tolerance of Luminous Intensity: ± 10%.

b. The chromaticity coordinates (x, y) is derived from the 1931 CIE chromaticity diagram.

c. Tolerance of Forward Voltage: ± 0.1V.

Electrical Optical Characteristics at Ta=25℃（Red、Pure Green、Blue）

Parameters	Symbol	Color	Min.	Typ.	Max.	Unit	Test Condition
Average Luminous Intensity	Iv	Red	100	200	---	cd/m²	IF=30mA (Note a)
		Pure Green	240	480	---		
		Blue	125	250			
Luminous Uniformity			---	75%	---		IF=30mA
Peak Emission Wavelength	λp	Red	---	632	---	nm	IF=30mA
		Pure Green	---	520	---		
		Blue	---	468	---		
Dominant Wavelength	λd	Red	---	624	---	nm	IF=30mA (Note b)
		Pure Green	---	525	---		
		Blue	---	470	---		
Spectral Line Half-Width	△λ		---	20	---	nm	IF=30mA
Forward Voltage	VF	Red	---	2.0	2.4	V	IF=30mA (Note c)
		Pure Green		3.0	3.2		
		Blue		3.0	3.2		
Reverse Current	I_R		---	---	50	μA	VR=5V

Notes:

a. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE eye-response curve.

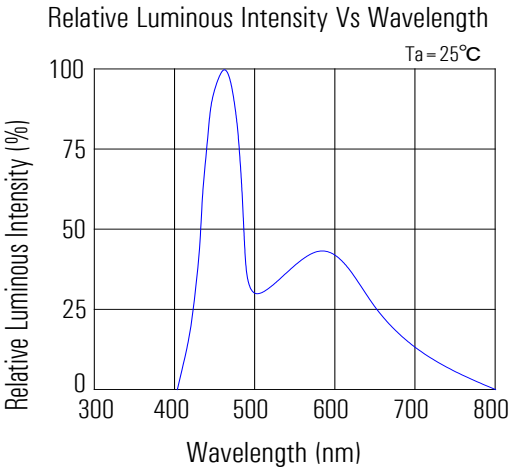
Tolerance of Luminous Intensity: ± 10%.

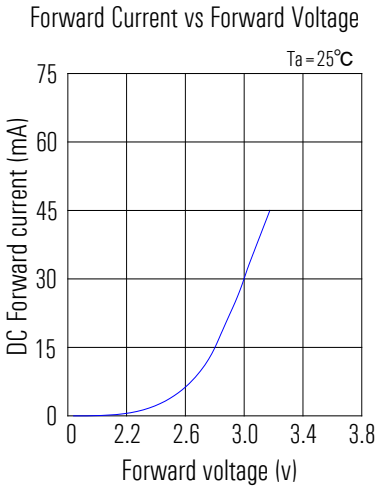
b. The dominant wavelength (λd) is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.

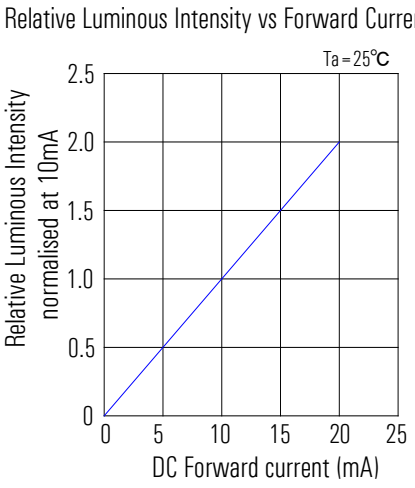
c. Tolerance of Forward Voltage: ± 0.1V.

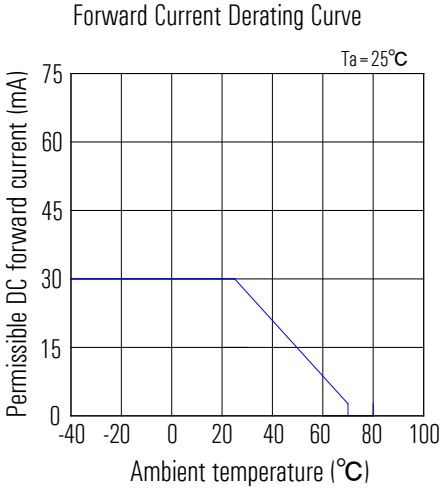
Typical Electrical/Optical Characteristics Curves（White）

(25℃ Ambient Temperature Unless Otherwise Noted)



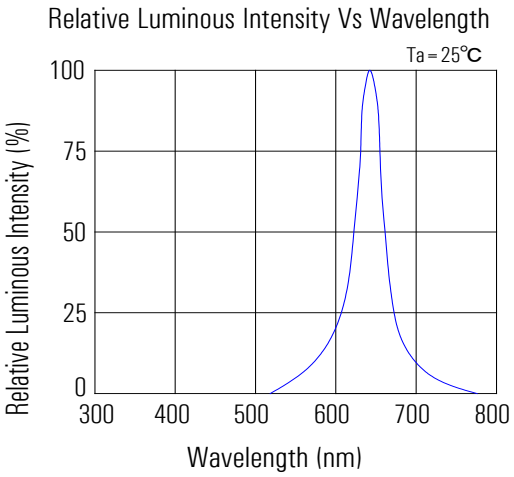


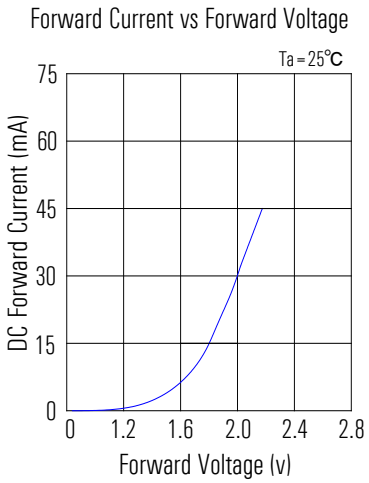


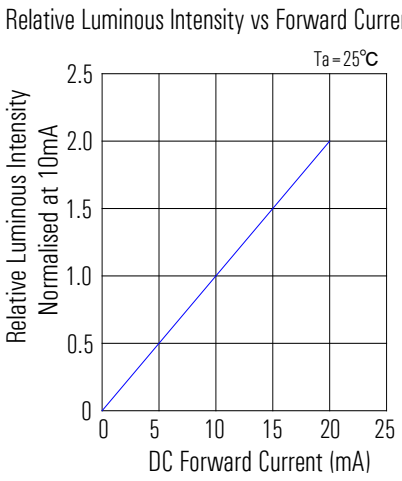


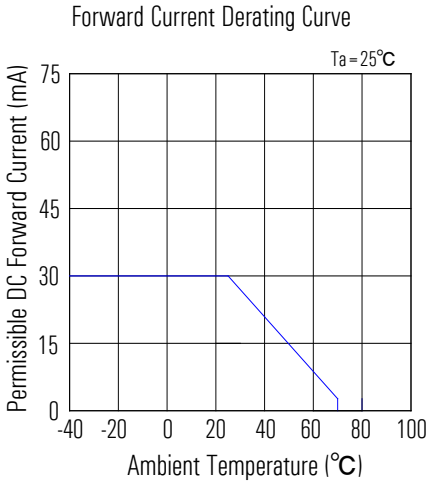
Typical Electrical/Optical Characteristics Curves（Red）

(25℃ Ambient Temperature Unless Otherwise)





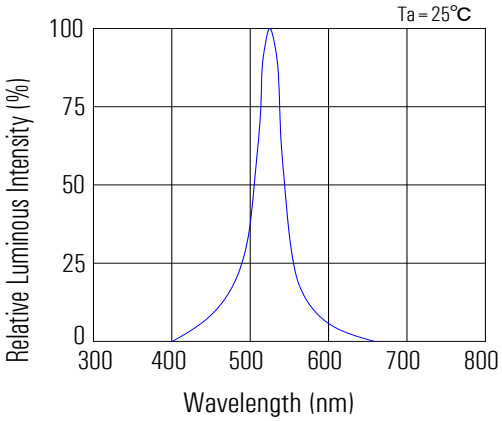




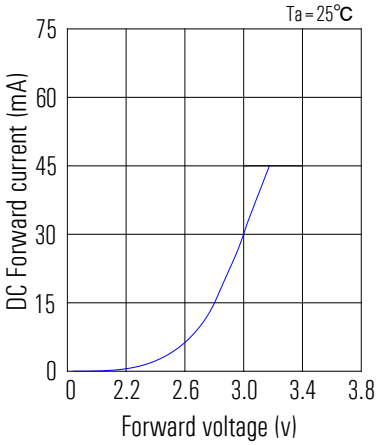
Typical Electrical/Optical Characteristics Curves（Pure Green）

(25℃ Ambient Temperature Unless Otherwise)

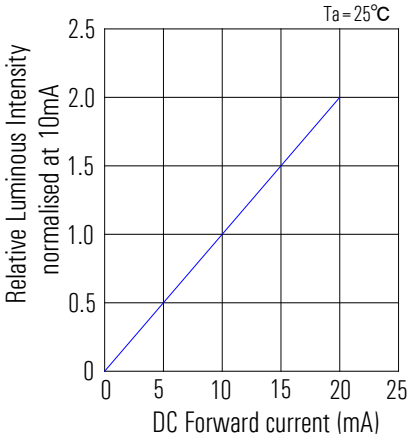
Relative Luminous Intensity Vs Wavelength



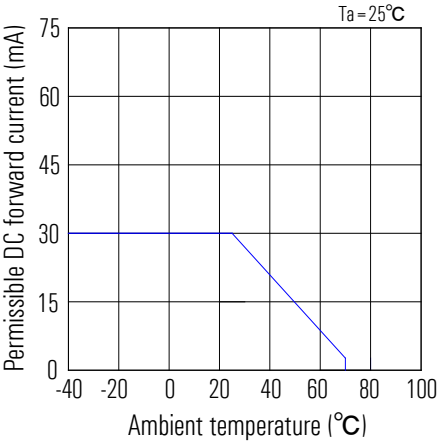
Forward Current vs Forward Voltage



Relative Luminous Intensity vs Forward Current



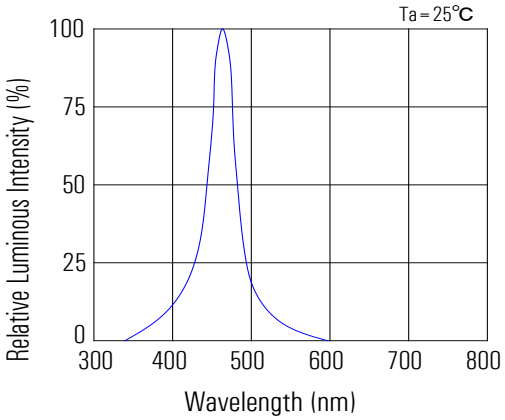
Forward Current Derating Curve



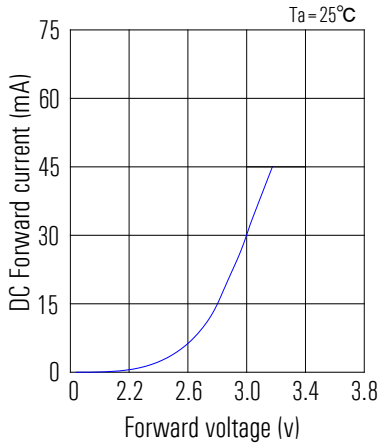
Typical Electrical/Optical Characteristics Curves （Blue）

(25℃ Ambient Temperature Unless Otherwise)

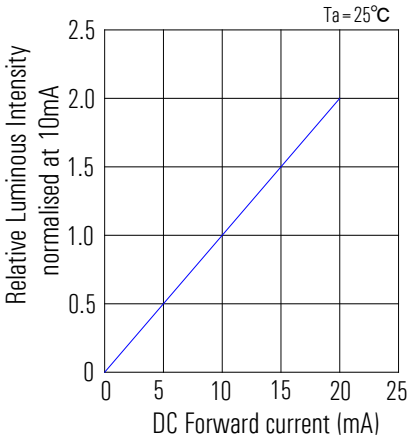
Relative Luminous Intensity Vs Wavelength



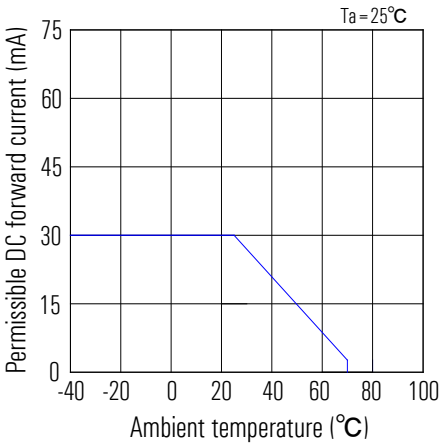
Forward Current vs Forward Voltage



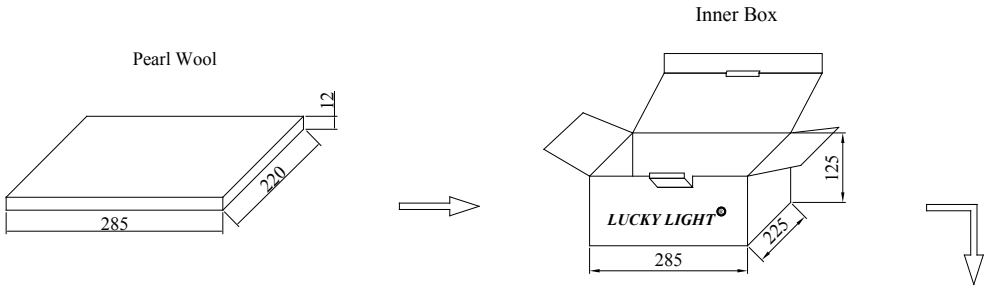
Relative Luminous Intensity vs Forward Current

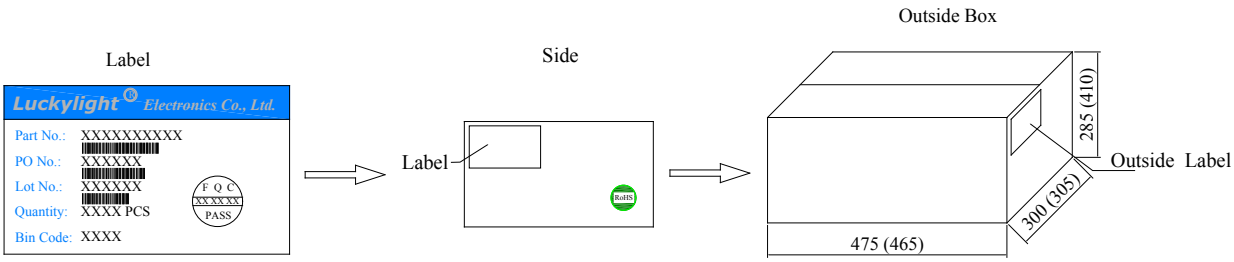


Forward Current Derating Curve



Packing & Label Specifications





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c. When using the products referenced in this document, please make sure the product is being operated within the environmental and electrical limits specified in the datasheet. If customer usage exceeds the specified limits, Luckylight will not be responsible for any subsequent issues.

d. The information in this document applies to typical usage in consumer electronics applications. If customer's application has special reliability requirements or have life-threatening liabilities, such as automotive or medical usage, please consult with Luckylight representative for further assistance.

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f. Over-current-proof

Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change (Burn out will happen).

g. Storage

1) Before opening the package, the LEDs should be kept at 30℃ or less and 80%RH or less.

2) The LEDs should be used within a year.

3) After opening the package, the LEDs should be kept at 30℃ or less and 60%RH or less.

h. ESD (Electrostatic Discharge)

Static Electricity or power surge will damage the LED. Suggestions to prevent ESD damage:

1) Use of a conductive wrist band or anti-electrostatic glove when handling these LEDs.

2) All devices, equipment, and machinery must be properly grounded.

3) Work tables, storage racks, etc. should be properly grounded.

Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 260℃for 5 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

Soldering

1. When soldering, for Lamp without stopper type and must be leave a minimum of 3mm clearance from the base of the lens to the soldering point.
2. When soldering, for Lamp without stopper type and must be leave a minimum of 3mm clearance from the base of the lens to the soldering point.
3. To avoided the Epoxy climb up on lead frame and was impact to non-soldering problem, dipping the lens into the solder must be avoided.
4. Do not apply any external stress to the lead frame during soldering while the LED is at high temperature.

Recommended soldering conditions:

Soldering Iron	
Temperature	300℃ Max.
Soldering Time	3 sec. Max. (one time only)

Note: Excessive soldering temperature and / or time might result in deformation of the LED lens or catastrophic failure of the LED.

Soldering General Notes:

1. Through-hole displays are incompatible with reflow soldering.
2. If components will undergo multiple soldering processes, or other processes where the components may be subjected to intense heat, please check with Luckylight for compatibility.

Cleaning:

1. Mild “no-clean” fluxes are recommended for use in soldering.
2. If cleaning is required, Luckylight recommends to wash components with water only.
   Do not use harsh organic solvents for cleaning because they may damage the plastic parts.
3. The cleaning process should take place at room temperature and the devices should not be washed for more than one minute.
4. When water is used in the cleaning process, immediately remove excess moisture from the component with forced-air drying afterwards.

Circuit Design Notes:

1. Protective current-limiting resistors may be necessary to operate the LEDs within the specified range.
2. LEDs mounted in parallel should each be placed in series with its own current-limiting resistor.

3. The driving circuit should be designed to protect the LED against reverse voltages and transient voltage spikes when the circuit is powered up or shut down.
4. The safe operating current should be chosen after considering the maximum ambient temperature of the operating environment.
5. Prolonged reverse bias should be avoided, as it could cause metal migration, leading to an increase in leakage current or causing a short circuit.