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CB Certificate No.: JQAQ0002-001-T

TESTD PARTS

Fixed capacitor, Fixed resistor, Potentiometer, Varistor, Thermistor,Connector, Relay,Switch, Printed circuit board, Semiconductor Devices, Semiconductor Integrated Circuit and Optical Component

ENVIRONMENTAL TEST

IEC 60068-2-1:2007	Cold
IEC 60068-2-2:2007	Dry heat
IEC 60068-2-11:1981	Salt mist
IEC 60068-2-14:2009	Change of temperature
IEC 60068-2-20:2008	Test methods for solderability and resistance to soldering heat of devices with leads
IEC 60068-2-30:2005	Damp heat, cyclic (12+12-hour cycle)
IEC 60068-2-38:2009	Composite temperature/humidity cyclic test
JIS C 60068-2-42:1993	Sulphur dioxide test for contacts and connections
JIS C 60068-2-43:1993	Hydrogen sulphide test for contacts and connections
IEC 60068-2-45:1980	Immersion in cleaning solvents
JIS C 60068-2-52:2000	Salt mist, cyclic (sodium chloride solution)
IEC 60068-2-54:2006	Soldering. Solderability testing by the wetting balance method
JIS C 60068-2-58:2016	Test methods for solderability, resistance to dissolution of metallization and to soldering heat of SMD
IEC 60068-2-60:2015	Flowing mixed gas corrosion test
IEC 60068-2-66:1994	Damp heat, steady state (unsaturated pressurized vapour)
IEC 60068-2-78:2012	Damp heat, steady state
MIL STD 202H	Test method standard electronic and electrical component parts
MIL STD 883K	Test method standard microcircuts

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MECHANICAL TEST

IEC 60068-2-6:2007	Vibration (sinusoidal)
IEC 60068-2-21:2006	Robustness of terminations and integral mounting devices
IEC 60068-2-27:2008	Shock
IEC 60068-2-31:2008	Rough handling shocks, primarily for equipment-type specimens
IEC 60068-2-53:2010	Tests and Guidance: Combined climatic (temperature/humidity) and dynamic (vibration/shock) tests

STRESS TEST

JEITA ED-4701/302:2013

Environmental and endurance test methods for semiconductor devices (Stress test I-2)

Test method 304A	Human body model electrostatic discharge (HBM/ESD)
Test method 305C	Charged device model electrostatic discharge (CDM/ESD)
Test method 306B	Latch-up

JEITA ED-4701/600:2013

Environmental and endurance test methods for semiconductor devices (Specific test for discrete semiconductors)

Test method 601	Power cycling test (Molding type)
Test method 602	Power cycling test (Non-molding type/short time)
Test method 603	Power cycling test (Non-molding type/long time)

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LED OPTICAL CHARACTERISTIC TEST

JIS C 7801:2009	Measuring methods of lamps for general lighting
JIS C 8152-1:2012	Photometry of white light emitting diode for general lighting － Part 1: LED packages
JIS C 8152-2:2012	Photometry of white light emitting diode for general lighting － Part 2: LED modules and LED light engines
JIS C 8105-5:2011	Luminaires － Part 5: Gonio-photometric method

OTHER TEST

Failure Analysis, Construction Analysis, Elemental Analysis,Thermal Analysis and Internal Gas Analysis of Electronic component, including Electrical Analysis, NDE (Non-destructive Engineering), PhysicalAnalysis, Chemical Analysis and
Sample Preparation (Decap, X-section, etc),

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MEASUREMENT RANGE

Passive component

Type / Part name	Measurable property value	Measuring range
Fixed capacitor	(1)Voltage endurance (DC)	: AC,DC 0 ~ 5kV
	(2)Insulation resistance	: 5 ×10^5 Ω ~ 10^{14}Ω
	(3)leakage current	: 1×10^{-3} ~ 10 A^{-11}
	(4)Capacitance	: 18pF ~ 1F *
	(5)Dielectric loss tangent(D factor)	: 10^* min
	(6)Impedanc	: 1Ω ~ 10^*MΩ
	(7)Temperature properties and gap of the capacitance.	: Temperature range -40℃ ~ +150℃
	Attention : * The mark varies according to measurement frequency.	
Fixed resistor	(1)Resistance value	:1 Ω ~ 100MΩ
	(2)Resistance temperature properties and gap of the resistance level.	:Temperature range -55℃ ~ +150℃
	(3)Voltage factor	:±0.02%/V
	(4)Insulation resistance	: 5 ×10^5 Ω ~ 2×0^{14}Ω
	(5)Voltage endurance	: AC,DC 0 ~ 5kV
Variable resistor *potentiometer	(1)Resistance value	: 1 Ω ~ 100MΩ
	(2)Mutual deviations	: ±3%
	(3)Resistance temperature properties and gap of the resistance level.	:Temperature range -40℃ ~ +150℃
	(4)Insulation resistance	: 5 ×10^5 Ω ~ 10^{14}Ω
	(5)Voltage endurance	: AC,DC 0 ~ 5kV
	(6)Rotational noise	:Noise voltage 1mV
	(7)Intensive contact resistance	:1 mΩ
Varistor	Voltage at reference current	:1500V(1mA min)
Thermistor	(1)resistance value	:1Ω ~ 1000kΩ
	(2)The thermistor fixed number	:Temperature range -50℃ ~ +300℃

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MEASUREMENT RANGE

Active component part [Individual semiconductor part]

Type / Part name	Measurable property value	Measuring range
Transistor *Bipolar	(1)Collector-base breakdown voltage	:1V ~ 1.5kV
	(2)Collector-emitter breakdown voltage	:1V ~ 1.5kV
	(3)Emitter base breakdown voltage	:100V min
	(4)Collector base interception electric current	:1nA ~ 100mA
	(5)Collector emitter interception electric current	:1nA ~ 100mA
	(6)Emitter base interception electric current	:1nA ~ 100mA
	(7)The collector emitter saturation voltage	:7V min (I_C < 17A)
	(8)DC current gain	:25 ~ 25,000 (I_C < 17A)
Transistor *Field effect form	(1)Gate source breakdown voltage	:1V ~ 1.5kV
	(2)Gate leak electric current	:1pA ~ 100mA
	(3)Drain current	:1nA ~ 1A
	(4)The gate cut-off voltage	: ~ 100V
	(5)The drain source saturation voltage	:7V min (I_D < 17A)
Diode *Small signal *I rectify a small electric current *Constant voltage *Small electric current switching	(1)Forward voltage	:7V min (I_F < 17A)
	(2)Reverse current	:1na ~ 100mA (V_R < 100V)
	(3)Breakdown voltage	:1V ~ 1.5kV
	(4)Zener voltage	:100V min
	(5)Dynamic resistance	:50Ω max
	(6)Temperature coefficient	:Temperature range -55℃ ~ +150℃
Thyristor *3 reverse-blocking terminals *Small electric current	(1)Off electric current	:1mA (V_L < 1kV)
	(2)Reverse current	:1na ~ 1mA (V_L < 1kV)
	(3)ON-state voltage	:7V (I_{TM} < 10A)
	(4)Gate trigger	:1000V min
	(5)Holding current	:10A (V_{TM} < 7V)

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MEASUREMENT RANGE

Active component part Semicondctor Devices [Integrated circuit]

Type / Part name	Measurable property value	Measuring range
TTL IC	(1)The high-level output voltage	:±30V
	(2)The low-level output voltage	:±30V
	(3)The input clamp voltage	:±30V
	(4)High-level input electric current	:±300mA
	(5)Low-level input electric current	:±300mA
	(6)Output short circuit current	:±300mA
	(7)High-level power supply electric current	:±300mA
	(8)Low-level power supply electric current	:±300mA
CMOS IC	(1)The high-level output voltage	:±30V
	(2)The low-level output voltage	:±30V
	(3)The high-level input voltage	:±20V
	(4)Low-level input electric current	:±20V
	(5)High-level output electric current	:±300mA
	(6)Low-level output electric current	:±300mA
	(7)Static consumption electric current	:±300mA
	(8)Input current	:±300mA
Analog semiconductor integrated circuit *Monolithic op-amp	(1)Input-offset voltage	:10μV ~ 128mV
	(2)Input offset current	:20pA ~ 16μA
	(3)Input bias current	:20pA ~ 16μA
	(4)Open loop voltage gain	:0.1V/mV ~ 1.2V/μV
	(5)The max power voltage	:10mV ~ 50V
	(6)Power consumption	:5mW ~ 6.4W
	(7)Common mode rejection ratio	:38 ~ 116dB
	(8)Supply voltage rejection ratio	:38 ~ 116dB
	(9)Aspect input voltage range	:100mV ~ 25V
	(10)Slew rate	:0.1 ~ 125V/μS

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MEASUREMENT RANGE

Mechanical device

Type / Part name	Measurable property value	Measuring range
Connector (Electronic equipment use)	(1)Insulationresistanc (2)Withstand voltage (3)Contact resistance under low voltage, the low electric current (4)Chattering of the contact.	:5× $10^5\Omega \sim 2\times10^{14}\Omega$:AC,DC 0 ~ 5kV :1mΩ ~ 100Ω :1μsec max
Relay (Small form for control)	(1)Withstand voltage (2)Insulation resistance (3)Direct current resistance of the coil (4)Contact resistance (5)Operating voltage (6)Must-release voltage (7)Operation time (8)Recovery time (9)Bounces of the point of contact (10)Chattering of the point of contact	:AC,DC 0 ~ 5kV :5× $10^5\Omega \sim 2\times10^{14}\Omega$:1Ω ~ 10kΩ :1mΩ ~ 100Ω :1V max :1V max :1msec max :1msec max :1μsec max :1μsec max
Switch (Electronic equipment use)	(1)Contact resistance (2)Insulation resistance (3)Withstand voltage (4)Electrostatic capacity (5)Change of the contact resistance	:1mΩ ~ 100Ω :$5\times10^5\Omega \sim 2\times10^{14}\Omega$: AC,DC 0 ~ 5kV :18pF ~ 1F :1mΩ max
Printed circuit board	(1)Resistance of the plating part of the conductor and through hall part. (2)Withstand voltage (3)Insulation resistance	:1mΩ ~ 1000Ω : AC,DC 0 ~ 5kV : $5\times10^5\Omega \sim 10^{14}\Omega$

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MEASUREMENT RANGE

Optical component

Type / Part name	Measurable property value Measuring range
Luminescent diode (It is for indication.)	(1)Forward voltage :7V min (2)Reverse current :1mA min (3)Luminous intensity(Relative value) :----
LED (It is for illumination.)	1.Integrating sphere (1)Total luminous flux[lm] :Measurable wavelength range 350nm ~ 1000nm In sunshine: min 32lm ~ (2)Color temperature[K] :---- (3)Chromaticity coordinate :---- (4)The number of the color rendering evaluations :Ra,R1 ~ R14 2.The light distribution measurement. (1)Light distribution curve :Measurable wavelength range 360nm ~ 830nm :Photometric distance 2m ~ 12m, (2)Light intensity(Reference) :Photometric distance Luminous intensity :2.0m: 9 ~ 3,680,000[cd] :3.0m: 20 ~ 8,200,000[cd] :6.0m: 83 ~ 33,000,000[cd] :12m : 330 ~ 132,000,000[cd] (3)Color temperature : ---- (4)Chromaticity coordinate :---- (5)The number of the color rendering evaluations : Ra,R1 ~ R14

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