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**AUTOMOTIVE INDUSTRY STANDARD
OF THE PEOPLE'S REPUBLIC OF CHINA**

ICS 43.040.10

T 36

QC/T 198-2014

Replacing QC/T 198-1995

General technical specification for automotive switch

汽车用开关通用技术条件

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2014 No.32

Ministry of Industry and Information Technology approved 1208 industry standards such as the “Stickers label printing press” (standard number, name, main content and the date of implementation are as shown in Appendix 1), including 471 mechanical industry standards, 32 automotive industry standards, 70 ship industry standards, 111 aviation industry standards, 137 chemical industry standards, 69 metallurgy Industry standards, 30 building materials industry standards, 14 petrochemical industry standards, 6 non-ferrous metal industry standards, 89 light industry standards, 49 textile industry standards, 79 ordnance civilian industry standards, 15 nuclear industry standards, 2 electronic industry standards, and 34 communication industry standards. It also approved 39 metallurgical industry standard samples including the “Manganese silicon alloy (FeMn68Si16)” (standard sample catalog and composition content are as shown in Appendix 2).

The above mechanical industry standards are published by the Machinery Industry Publishing House, the automotive industry standards and chemical industry, non-ferrous metal engineering construction industry standards are published by the China Planning Publishing House, the ship industry standards are published by the China Shipbuilding Industry Integrated Technology and Economic Research Institute, the aviation industry standards are published by China Aviation Institute of Integrated Technology Institute, the chemical industry standards are published by the Chemical Publishing House, the metallurgical industry standards are published by the Metallurgical Industry Press, the building materials industry standards are published by the Building Materials Industry Press, the petrochemical industry standards are published by the China Petrochemical Publishing House, the light industry standards are published by the China Light Industry Press, the textile industry standards are published by the China Standard Publishing House, the ordnance civilian industry standards are published by the China Ordnance Industry Standardization Institute, the nuclear industry standards are published by the Institute of Nuclear Industry Standardization Organization, the electronics industry standards are published by the Electronics Industry Standardization Institute of the Ministry of Industry and Information Technology, the communications industry standards are published by the People's Posts and Telecommunications Press, AND the communications engineering construction industry standards are published by the Beijing University of Posts and Telecommunications Press.

Appendix:

Number, name, and date of implementation of 32 automotive industry standards

No.	Standard number	Standard name	Number of standard replaced	Date of implementation
1	QC/T 231-2014	Specification of kick-starter for motorcycles and mopeds	QC/T 231-1997	October 01, 2014
2	QC/T 233-2014	Performance and measurement method for static intensity of motorcycles and mopeds	QC/T 233-1997	October 01, 2014
3	QC/T 66-2014	Wet clutch for moped and motorcycles	QC/T 66-1993	October 01, 2014
4	QC/T 962-2014	Technical specifications for coating of motorcycles and moped		October 01, 2014
5	QC/T 680-2014	General technical specifications for voltage regulators for motorcycles and moped	QC/T 680-2002	October 01, 2014
6	QC/T 963-2014	Drum brakes of motorcycles and mopeds wheels		October 01, 2014
7	QC/T 234-2014	General technical specifications for steering shaft for motorcycles and moped	QC/T 234-1997	October 01, 2014
8	QC/T 964-2014	The strength of plastic seats and their anchorages for city buses		October 01, 2014
9	QC/T 644-2014	Technical specifications for automotive metallic fuel tank	QC/T 644-2000 QC/T 488-2000	October 01, 2014
10	QC/T 965-2014	Driver of electric rear-view mirrors for motor vehicles		October 01, 2014
11	QC/T 966-2014	Technical specifications for automotive plastic parts coatings		October 01, 2014
12	QC/T 459-2014	Truck with loading crane	QC/T 459-2004	October 01, 2014
13	QC/T 29106-2014	Technical specification of automobile wire harness	QC/T 29106-2004	October 01, 2014
14	QC/T 198-2014	General technical specification for automotive switch	QC/T 198-1995	October 01, 2014
15	QC/T 220-2014	Technical specifications for automotive fusible links	QC/T 220-1996	October 01, 2014
16	QC/T 967-2014	Port fuel injector for gasoline engine		October 01, 2014
17	QC/T 968-2014	Determination methods of platinum, palladium and rhodium contents in metallic catalytic converters		October 01, 2014
18	QC/T 969-2014	Interior truck release for compartment of a passenger car		October 01, 2014
19	QC/T 636-2014	Electric window regulator specification for vehicles	QC/T 636-2000	October 01, 2014
20	QC/T 970-2014	Passenger car air filter technical		October 01,

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009 “Directives for standardization – Part 1: Structure and drafting of standards”.

This standard shall, from the date of implementation, replace QC/T 198-1995. As compared with QC/T 198-1995, the main changes of this standard are as follows:

- DELETE the interchangeability test in clause 4.16 of the original version.
- ADD the definition of mechanical switches and electronic switches (chapter 3 of this version).
- ADD the lighting feature requirements (clause 4.1.1 of this version).
- ADD the identification requirements (clause 4.1.2 of this version).
- MODIFY the switch ambient temperature range (clause 3.10 of original version; clause 4.3 of this version).
- MODIFY the enclosure protection degree (clause 3.9 of original version; clause 4.4 of this version).
- MODIFY the main contact-point voltage drop (clause 3.22 of original version; clause 4.6 of this version).
- ADD the mechanical strength requirements for switch (clause 4.7 of this version).
- ADD the contact-point vibration time test (clause 4.8 of this version).
- MODIFY the switch surface paint adhesion requirements (clause 3.15 of original version; clause 4.9 of this version).
- ADD the noise performance test (clause 4.10 of this version).
- ADD the electromagnetic compatibility requirements (clause 4.11 of this version).
- ADD the abnormal voltage resistance requirements (clause 4.12 of this version).
- MODIFY the voltage withstanding performance test (clause 3.21 of original version; clause 4.13 of this version).

General technical specification for automotive switch

1 Scope

This standard specifies the definition, requirements, test methods, inspection rules, marking, packaging, transportation and storage of automotive switches.

This standard applies to the automotive switches having a nominal voltage of 12V and 24V (hereinafter referred to as switch).

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable to this Standard.

GB/T 2423.8 Environmental testing for electric and electronic products – Part 2: Test methods – Test Ed: Free fall

GB/T 2828.1 Sampling procedures for inspection by attributes – Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection

GB/T 4094 Automobile – Symbols for controls, indicators and tell-tales

GB/T 4094.2 Electric vehicles - Symbols for controls, indicators and tell-tales

GB 8410 Flammability of automotive interior materials

GB/T 9286 Paints and varnishes – Cross cut test for films

GB/T 30038-2013 Road vehicles – Degrees of protection (IP-code) – Protection of electrical equipment against foreign objects, water, and access

GB/T 16422.2 Plastics – Methods of exposure to laboratory light sources – Part 2: Xenon-arc sources

GB 18655 Limits and methods of measurement of radio disturbance characteristics for the protection of receivers used on board vehicles

It shall comply with the level 3 above requirements of clause 8.3 in GB/T 9286.

4.10 Noise performance

When operating the switch, the switch shall be free from abnormal noise, AND the noise shall be less than or equal to 60dB (or in accordance with the drawing requirements).

4.11 Electromagnetic compatibility (for electronic switches)

4.11.1 Electromagnetic immunity

4.11.1.1 The electromagnetic radiation immunity test of the product shall be in accordance with the state I requirements in A3.1 of Appendix A in ISO 11452-1, AND it shall be in the normal working state during and after the test at 0.01MHz-18000MHz.

4.11.1.2 The electrical transient conduction immunity shall comply with the function state level B above requirements in A.4 of Appendix A of GB/T 21437.2, OR be in accordance with the requirements as approved by both parties in consultation with the user.

4.11.2 Electromagnetic interference

The electromagnetic interference of the product shall comply with the requirements of the level 5 in the power line interference limit table AND the level 5 in the control/signal line interference limit table in clause 12.1 of GB 18655.

4.12 Resistance to abnormal voltage (electronic products)

4.12.1 High/low voltage test shall be conducted in accordance with clause 4.2 of GB/T 28046.2; AND after the test, it shall comply with the requirements of clause 4.5 of this standard.

4.12.2 The overvoltage test shall be conducted in accordance with clause 4.3 of GB/T 28046.2; AND after the test, it shall comply with the requirements of clause 4.5 of this standard.

4.12.3 The reverse voltage test shall be conducted in accordance with clause 4.7 of GB/T 28046.2; AND after the test, it shall comply with the requirements of clause 4.5 of this standard.

4.13 Withstand voltage performance

The withstand voltage performance of the product shall comply with the requirements of 4.11.3 of GB/T 28046.2, AND it shall not be subject to

Temperature and humidity cyclic change resistance shall comply with the requirements of clause 5.6.2.4 of GB/T 28046.4. During the test, it does not work at the low temperature range and high temperature range. After the product is restored to normal temperature, its performance shall comply with the requirements of clause 4.5, 4.6 and 4.14 in this standard.

4.20 Vibration resistance of switch

The vibration resistance of the product shall comply with the provisions of clause 4.1 of GB/T 28046.3. After the test, the appearance and basic performance shall comply with the requirements of 4.1.3 and 4.5 of this standard.

4.21 Dust/water proof performance

The switch shall comply with the requirements of clause 8.3.3.1 and 8.4.2 of GB/T 30038-2013, AND the degree of protection shall be in accordance with the requirements of clause 4.4 of this standard. After the test, CHECK the basic performance and insulation resistance, which shall be in accordance with the provisions of clause 4.5 and 4.14 in this standard.

4.22 Beverage/chemical resistance (only for switches mounted on the passenger compartment surface)

4.22.1 Beverage resistance

The switch is subjected to a beverage surface test as required. After the test, the switch performance is good and free from jamming or significant fading, AND it shall be free from deformation which affects use, AND the identification symbol has no damage.

4.22.2 Chemical resistance

Switch is subjected to the chemical reagent surface test in accordance with chapter 5 of GB/T 28046.5. After the test, the switch performance is good and free from jamming or significant fading, AND it shall be free from deformation which affects use, AND the identification symbol has no damage.

4.23 Salt mist resistance

Switch is subjected to test in accordance with clause 5.5 of GB/T 28046.4. The test duration is 48h. After completion of test and the switch is restored to normal temperature, CHECK the basic performance, voltage resistance, and insulation resistance, AND it shall be in line with the provisions of clause 4.5, 4.13, and 4.14 of this standard.

- Unleaded gasoline;
- Alcohol, washing liquid, diesel oil, brake fluid, artificial sweat.

5.22 Salt mist test

The switch is installed in the salt mist test chamber in accordance with the vehicle assembly method, in the non-working state in accordance with the requirements of clause 5.5.1.2 of GB/T 28046.4.

5.23 Flame retardancy test

It shall be in accordance with the provisions of chapter 4 of GB 8410.

5.24 Light resistance test

It shall be performed in the xenon lamp chamber, in accordance with the requirements of chapter 6 and chapter 7 in GB/T 16422.2.

5.25 Flow mixed gas corrosion resistance test

It shall be in accordance with the requirements of clause 5.8.2 in GB/T 28046.2.

5.26 Durability test

The switch is mounted on the test bench in accordance with the vehicle assembly method, at the test voltage:

- a) In accordance with the load type, APPLY the rated current; connecting and disconnecting the rated current form a working cycle; REPEAT continuously at the rate of connection 2s and disconnection 2s (test interruption is allowed, BUT each continuous working hour shall not be less than 4h);
- b) FOLLOW the following ambient temperature and the number of tests:

MAKE the switch be subjected to the test of 20% of total test number at the high temperature as determined at $-40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and the working area of Table 1, AND 60% of total test number at $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$.

In accordance with the high temperature order as determined at $-40^{\circ}\text{C} \pm 2^{\circ}\text{C}$, $23^{\circ}\text{C} \pm 2^{\circ}\text{C}$, and the working area of Table 1.

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