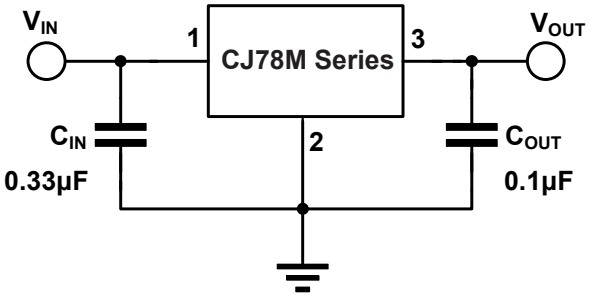
CJ78M Series Three Terminal Positive Voltage Regulators

1 Introduction

The CJ78M series is a group of three terminal positive voltage linear regulators with multiple fixed output voltages. In the case of good heat dissipation, it can provide an output current of 500mA, and has internal short-circuit protection and thermal shutdown protection, which makes it not affected by overload. In addition to being used as fixed voltage regulators, these devices can also be used with external components to obtain adjustable output voltage and current, and can also be used as power transmission elements in precision regulators.

2 Available Packages

PART NUMBER	PACKAGES
CJ78M Series	TO-220-3L
	TO-251-3L
	TO-251S
	TO-252-2L



Fixed Output Voltage Regulator

3 Features

- Output Current:
  up to 500mA at T_J = 25°C
- Available Output Fixed Voltage:
  5.0V, 6.0V, 8.0V, 9.0V and 12V
- Output Voltage Tolerance:
  ±3% at T_J = 25°C
  ±5% over the Operating T_J
- Line Regulation:
  3.0 ~ 10mV (Typ.) at T_J = 25°C
- Load Regulation:
  15 ~ 25mV (Typ.) at T_J = 25°C
- Dropout Voltage: 2.0V@350mA
- Power Supply Rejection Ratio:
  80dB@120Hz (Typ.)
- Operating Junction Temperature:
  -40 ~ 125°C
- Built-in Current Limit
- Short Circuit Protection
- Thermal Shutdown Protection

4 Applications

- Appliances and White Goods
- Building Automation
- Computing & Servers
- Electronic Point-of-sale
- Motor Drives
- On-Card Regulation
- Portable Devices
- Telecommunications
- TVs and Set-top Boxes

5 Orderable Information

MODEL	DEVICE	PACKAGE	OP T_J	ECO PLAN	MSL	PACKING OPTION	SORT
CJ78M-5.0	CJ78M05	TO-220-3L	-40 ~ 125°C	RoHS & Green	Level 3 168 HR	Tube 50 Units / Rail	Active
CJ78M-6.0	CJ78M06	TO-220-3L	-40 ~ 125°C	RoHS & Green	Level 3 168 HR	Tube 50 Units / Rail	Active
CJ78M-8.0	CJ78M08	TO-220-3L	-40 ~ 125°C	RoHS & Green	Level 3 168 HR	Tube 50 Units / Rail	Active
CJ78M-9.0	CJ78M09	TO-220-3L	-40 ~ 125°C	RoHS & Green	Level 3 168 HR	Tube 50 Units / Rail	Active
CJ78M-12	CJ78M12	TO-220-3L	-40 ~ 125°C	RoHS & Green	Level 3 168 HR	Tube 50 Units / Rail	Active
CJ78M-5.0	CJ78M05	TO-251-3L	-40 ~ 125°C	RoHS & Green	Level 3 168 HR	Tube 80 Units / Rail	Active
CJ78M-6.0	CJ78M06	TO-251-3L	-40 ~ 125°C	RoHS & Green	Level 3 168 HR	Tube 80 Units / Rail	Active
CJ78M-8.0	CJ78M08	TO-251-3L	-40 ~ 125°C	RoHS & Green	Level 3 168 HR	Tube 80 Units / Rail	Active
CJ78M-9.0	CJ78M09	TO-251-3L	-40 ~ 125°C	RoHS & Green	Level 3 168 HR	Tube 80 Units / Rail	Active
CJ78M-12	CJ78M12	TO-251-3L	-40 ~ 125°C	RoHS & Green	Level 3 168 HR	Tube 80 Units / Rail	Active
CJ78M-5.0	CJ78M05	TO-251S	-40 ~ 125°C	RoHS & Green	Level 3 168 HR	Tube 80 Units / Rail	Active
CJ78M-5.0	CJ78M05	TO-252-2L	-40 ~ 125°C	RoHS & Green	Level 3 168 HR	Tape and Reel 2500 Units / Rail	Active
CJ78M-6.0	CJ78M06	TO-252-2L	-40 ~ 125°C	RoHS & Green	Level 3 168 HR	Tape and Reel 2500 Units / Rail	Active
CJ78M-8.0	CJ78M08	TO-252-2L	-40 ~ 125°C	RoHS & Green	Level 3 168 HR	Tape and Reel 2500 Units / Rail	Active
CJ78M-9.0	CJ78M09	TO-252-2L	-40 ~ 125°C	RoHS & Green	Level 3 168 HR	Tape and Reel 2500 Units / Rail	Active
CJ78M-12	CJ78M12	TO-252-2L	-40 ~ 125°C	RoHS & Green	Level 3 168 HR	Tape and Reel 2500 Units / Rail	Active
Others	-	-	-	-	-	-	Customized

5 Orderable Information

Note:

ECO PLAN: For the RoHS and Green certification standards of this product, please refer to the official report provided by JSCJ.

MSL: Moisture Sensitivity Level. Determined according to JEDEC industry standard classification.

SORT: Specifically defined as follows:

Active: Recommended for new products;

Customized: Products manufactured to meet the specific needs of customers;

Preview: The device has been released and has not been fully mass produced. The sample may or may not be available;

NoRD: It is not recommended to use the device for new design. The device is only produced for the needs of existing customers;

Obsolete: The device has been discontinued.

6 Pin Configuration and Marking Information

6.1 Pin Configuration and Function

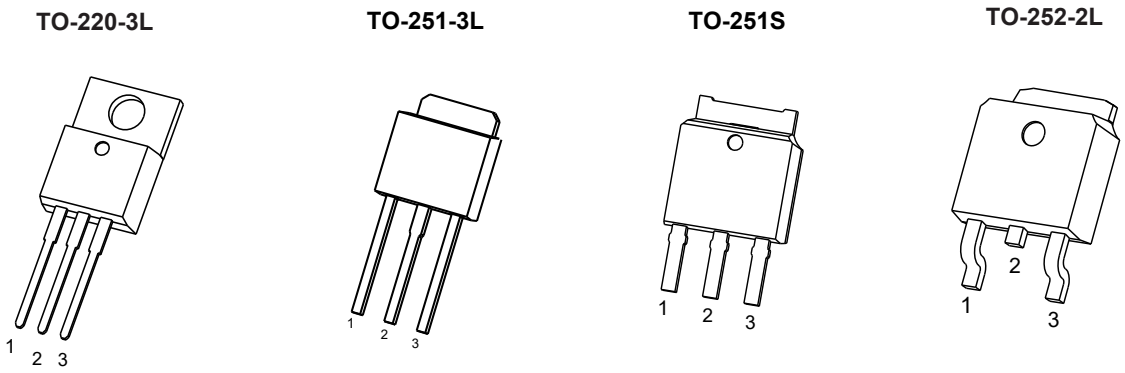
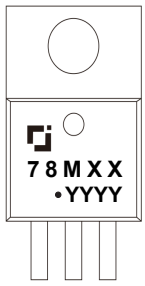
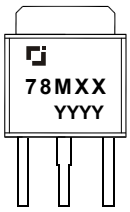
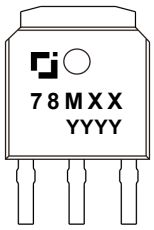
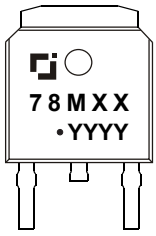


Figure 6-1. CJ78M Series Packages Top View

PIN NAME	CJ78M Series				I / O	DESCRIPTION
	TO-220-3L	TO-251-3L	TO-251S	TO-252-2L		
IN	1	1	1	1	I	Input to the device.
GND	2	2	2	2	-	Regulator ground.
OUT	3	3	3	3	O	Output of the regulator.

6.2 Marking Information

Figure 6-2. CJ78M Series Marking Information

			
TO-220-3L	**TO-251-3L**	**TO-251S**	**TO-252-2L**

"**78MXX**": Device code, the "XX" in the "78MXX" represents the output voltage, for example, if V_{OUT} = 5.0V, the "XX" is "05".

"• " **Solid Dot**: For CJ78M series, in the marking of TO-220-3L and TO-252-2L packages, solid dot represent that the product is a green molding compound device. If none, it means the package is a normal device. It should be noted that this solid dot cannot be used as a basis to distinguish whether other packages of CJ78M series are green molding compound devices.

"**YYYY**": Code.

7 Specifications

7.1 Absolute Maximum Ratings

(over operating free-air temperature range, unless otherwise specified)(1)

CHARACTERISTIC			SYMBOL	VALUE	UNIT
Maximum input voltage(2)			V_{IN}	35	V
Maximum power dissipation	CJ78M Series	TO-220-3L	$P_{D\ Max}$	Internally Limited(3)	W
		TO-251-3L			
		TO-251S			
		TO-252-2L			
Maximum junction temperature			$T_{J\ Max}$	150	°C
Storage temperature			T_{stg}	-65 ~ 150	°C
Soldering temperature & time			T_{solder}	260°C, 10s	-

(1) Stresses beyond those listed under *Absolute Maximum Ratings* may cause permanent damage to the device. These are stress ratings only, which do not imply functional operation of the device at these or any other conditions beyond those indicated under *Recommended Operating Conditions*. Exposure to absolute maximum rated conditions for extended periods may affect device reliability.

(2) All voltages are with respect to network ground terminal.

(3) Refer to *Thermal Information* for details.

7.2 Recommended Operating Conditions

PARAMETER	SYMBOL	MIN.	NOM.	MAX.	UNIT
Operating junction temperature	T_J	-40	-	125	°C
Operating ambient temperature	T_A	-	-(4)	-	°C

(4) It is necessary to ensure that the operating junction temperature of the equipment does not exceed the rated value of the recommended operating conditions when using the device for design.

7 Specifications

7.3 ESD Ratings

ESD RATINGS		SYMBOL	VALUE	UNIT
Electrostatic discharge(5)	Human body model	$V_{ESD-HBM}$	2000	V
	Machine model	V_{ESD-MM}	200	

(6) ESD testing is conducted in accordance with the relevant specifications formulated by the Joint Electronic Equipment Engineering Commission (JEDEC). The human body mode (HBM) electrostatic discharge test is based on the JESD22-114D test standard, using a 100pF capacitor and discharging to each pin of the device through a resistance of 1.5kΩ. The electrostatic discharge test in mechanical mode (MM) is based on the JESD22-A115-A test standard and uses a 200pF capacitor to discharge directly to each pin of the device.

7.4 Thermal Information

THERMAL METRIC(6)	SYMBOL	CJ78M Series				UNIT
		TO-220-3L	TO-251-3L	TO-251S	TO-252-2L	
Junction-to-ambient thermal resistance	$R_{\Theta JA}$	66.7	80.0	80.0	80.0	°C/W
Junction-to-case thermal resistance	$R_{\Theta JC}$	5.5	9.0	9.5	6.0	°C/W
Reference maximum power dissipation	$P_{D\ Ref}$	1.50	1.25	1.25	1.25	W

(6) Thermal metric is measured in still air with T_A = 25°C and installed on a 1 in^2 FR-4 board covered with 2 ounces of copper, the thermal resistance test of TO-220-3L packages did not add additional radiators.

7 Specifications

7.5 Electrical Characteristics

CJ78M05 (V_{IN} = 10V, I_{OUT} = 350mA, C_{IN} = 0.33μF, C_{OUT} = 0.1μF, T_J = 25°C, unless otherwise specified)

CHARACTERISTIC	SYMBOL	TEST CONDITIONS[7]	MIN.	TYP.[8]	MAX.	UNIT
Output voltage[9]	V_{OUT}	-	4.85	5.00	5.15	V
		V_{IN} = 7 to 20V, I_{OUT} = 5 to 350mA	4.75	5.00	5.25	
Line regulation	LNR	V_{IN} = 7 to 25V, I_{OUT} = 200mA	-	3.0	100	mV
		V_{IN} = 8 to 25V, I_{OUT} = 200mA	-	1.0	50	
Load regulation	LDR	I_{OUT} = 5 to 500mA	-	15	100	mV
		I_{OUT} = 5 to 200mA	-	5.0	50	
Quiescent current	I_Q	-	-	4.2	6.0	mA
Quiescent current change	ΔI_Q	V_{IN} = 8 to 25V, I_{OUT} = 200mA	-	-	0.8	mA
		I_{OUT} = 5 to 350mA	-	-	0.5	
Output noise voltage	V_N	f = 10 to 100kHz	-	40	200	μV
Ripple rejection	RR	V_{IN} = 8 to 18V, I_{OUT} = 300mA, f = 120Hz	62	80	-	dB
Dropout voltage[10]	V_D	I_{OUT} = 350mA	-	2.0	2.5	V
Short circuit current	I_{SC}	V_{IN} = 10V, OUT short to GND	-	300	-	mA
Peak current	I_{Peak}	-	-	0.5	-	A

CJ78M06 (V_{IN} = 11V, I_{OUT} = 350mA, C_{IN} = 0.33μF, C_{OUT} = 0.1μF, T_J = 25°C, unless otherwise specified)

CHARACTERISTIC	SYMBOL	TEST CONDITIONS[7]	MIN.	TYP.[8]	MAX.	UNIT
Output voltage[9]	V_{OUT}	-	5.82	6.00	6.18	V
		V_{IN} = 8 to 21V, I_{OUT} = 5 to 350mA	5.70	6.00	6.30	
Line regulation	LNR	V_{IN} = 8 to 25V, I_{OUT} = 200mA	-	5.0	100	mV
		V_{IN} = 9 to 25V, I_{OUT} = 200mA	-	1.5	50	
Load regulation	LDR	I_{OUT} = 5 to 500mA	-	18	120	mV
		I_{OUT} = 5 to 200mA	-	10	60	
Quiescent current	I_Q	-	-	4.3	6.0	mA
Quiescent current change	ΔI_Q	V_{IN} = 9 to 25V, I_{OUT} = 200mA	-	-	0.8	mA
		I_{OUT} = 5 to 350mA	-	-	0.5	
Output noise voltage	V_N	f = 10 to 100kHz	-	45	-	μV
Ripple rejection	RR	V_{IN} = 9 to 19V, I_{OUT} = 300mA, f = 120Hz	59	80	-	dB
Dropout voltage[10]	V_D	I_{OUT} = 350mA	-	2.0	-	V
Short circuit current	I_{SC}	V_{IN} = 11V, OUT short to GND	-	270	-	mA
Peak current	I_{Peak}	-	-	0.5	-	A

7 Specifications

7.5 Electrical Characteristics (continued)

CJ78M08 (V_{IN} = 14V, I_{OUT} = 350mA, C_{IN} = 0.33μF, C_{OUT} = 0.1μF, T_J = 25°C, unless otherwise specified)

CHARACTERISTIC	SYMBOL	TEST CONDITIONS[7]	MIN.	TYP.[8]	MAX.	UNIT
Output voltage[9]	V_{OUT}	-	7.76	8.00	8.24	V
		V_{IN} = 10.5 to 23V, I_{OUT} = 5 to 350mA	7.60	8.00	8.40	
Line regulation	LNR	V_{IN} = 10.5 to 25V, I_{OUT} = 200mA	-	6.0	100	mV
		V_{IN} = 11 to 25V, I_{OUT} = 200mA	-	2.0	50	
Load regulation	LDR	I_{OUT} = 5 to 500mA	-	20	160	mV
		I_{OUT} = 5 to 200mA	-	10	80	
Quiescent current	I_Q	-	-	4.6	6.0	mA
Quiescent current change	ΔI_Q	V_{IN} = 10.5 to 25V, I_{OUT} = 200mA	-	-	0.8	mA
		I_{OUT} = 5 to 350mA	-	-	0.5	
Output noise voltage	V_N	f = 10 to 100kHz	-	52	-	μV
Ripple rejection	RR	V_{IN} = 11.5 to 21.5V, I_{OUT} = 300mA, f = 120Hz	56	80	-	dB
Dropout voltage[10]	V_D	I_{OUT} = 350mA	-	2.0	-	V
Short circuit current	I_{SC}	V_{IN} = 14V, OUT short to GND	-	250	-	mA
Peak current	I_{Peak}	-	-	0.5	-	A

CJ78M09 (V_{IN} = 16V, I_{OUT} = 350mA, C_{IN} = 0.33μF, C_{OUT} = 0.1μF, T_J = 25°C, unless otherwise specified)

CHARACTERISTIC	SYMBOL	TEST CONDITIONS[7]	MIN.	TYP.[8]	MAX.	UNIT
Output voltage[9]	V_{OUT}	-	8.73	9.00	9.27	V
		V_{IN} = 11.5 to 24V, I_{OUT} = 5 to 350mA	8.55	9.00	9.45	
Line regulation	LNR	V_{IN} = 11.5 to 26V, I_{OUT} = 200mA	-	6.0	100	mV
		V_{IN} = 12 to 26V, I_{OUT} = 200mA	-	2.0	50	
Load regulation	LDR	I_{OUT} = 5 to 500mA	-	20	180	mV
		I_{OUT} = 5 to 200mA	-	10	90	
Quiescent current	I_Q	-	-	4.6	6.0	mA
Quiescent current change	ΔI_Q	V_{IN} = 11.5 to 26V, I_{OUT} = 200mA	-	-	0.8	mA
		I_{OUT} = 5 to 350mA	-	-	0.5	
Output noise voltage	V_N	f = 10 to 100kHz	-	60	-	μV
Ripple rejection	RR	V_{IN} = 13 to 23V, I_{OUT} = 300mA, f = 120Hz	56	80	-	dB
Dropout voltage[10]	V_D	I_{OUT} = 350mA	-	2.0	-	V
Short circuit current	I_{SC}	V_{IN} = 16V, OUT short to GND	-	250	-	mA
Peak current	I_{Peak}	-	-	0.5	-	A

7 Specifications

7.5 Electrical Characteristics (continued)

CJ78M12 (V_{IN} = 19V, I_{OUT} = 350mA, C_{IN} = 0.33μF, C_{OUT} = 0.1μF, T_J = 25°C, unless otherwise specified)

CHARACTERISTIC	SYMBOL	TEST CONDITIONS[7]	MIN.	TYP.[8]	MAX.	UNIT
Output voltage[9]	V_{OUT}	-	11.64	12.00	12.36	V
		V_{IN} = 14.5 to 27V, I_{OUT} = 5 to 350mA	11.40	12.00	12.60	
Line regulation	LNR	V_{IN} = 14.5 to 30V, I_{OUT} = 200mA	-	10	100	mV
		V_{IN} = 16 to 30V, I_{OUT} = 200mA	-	3.0	50	
Load regulation	LDR	I_{OUT} = 5 to 500mA	-	25	240	mV
		I_{OUT} = 5 to 200mA	-	10	120	
Quiescent current	I_Q	-	-	4.6	6.0	mA
Quiescent current change	ΔI_Q	V_{IN} = 14.5 to 30V, I_{OUT} = 200mA	-	-	0.8	mA
		I_{OUT} = 5 to 350mA	-	-	0.5	
Output noise voltage	V_N	f = 10 to 100kHz	-	75	-	μV
Ripple rejection	RR	V_{IN} = 15 to 25V, I_{OUT} = 300mA, f = 120Hz	55	80	-	dB
Dropout voltage[10]	V_D	I_{OUT} = 350mA	-	2.0	-	V
Short circuit current	I_{SC}	V_{IN} = 19V, OUT short to GND	-	240	-	mA
Peak current	I_{Peak}	-	-	0.7	-	A

Note:

(8) Pulse test technology is used to make T_J as close to T_A as possible. Thermal effects must be considered separately.

(9) Typical numbers are at 25°C (T_J) and represent the most likely norm.

(10) This specification only applies to the DC power consumption allowed by the absolute maximum rating.

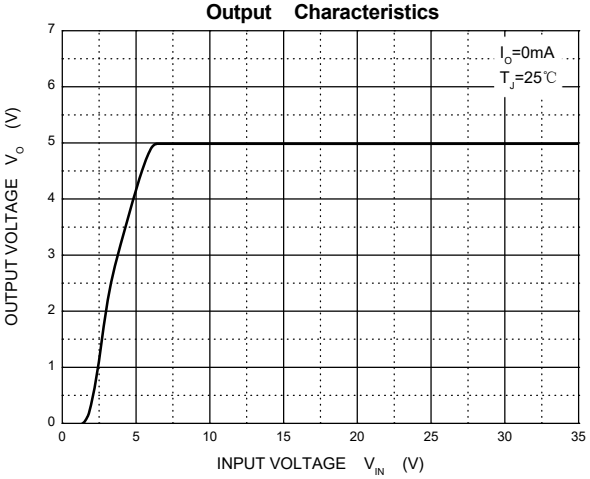
(11) The difference of output voltage and input voltage when input voltage is decreased gradually till output voltage equals to 95% of V_{OUT}.

7 Specifications

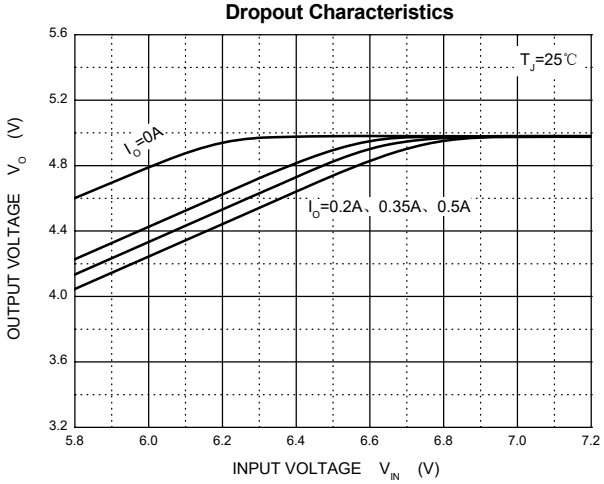
7.6 Typical Characteristics

CJ78M05 (C_{IN} = 0.33μF, C_{OUT} = 0.1μF, T_J = 25°C, unless otherwise specified)

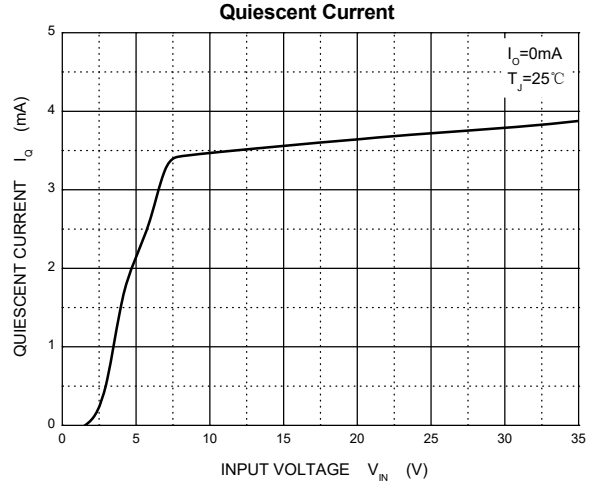
Output Characteristics



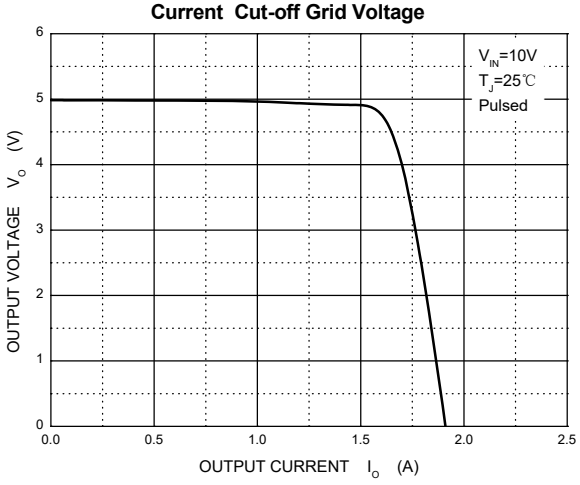
Dropout Characteristics



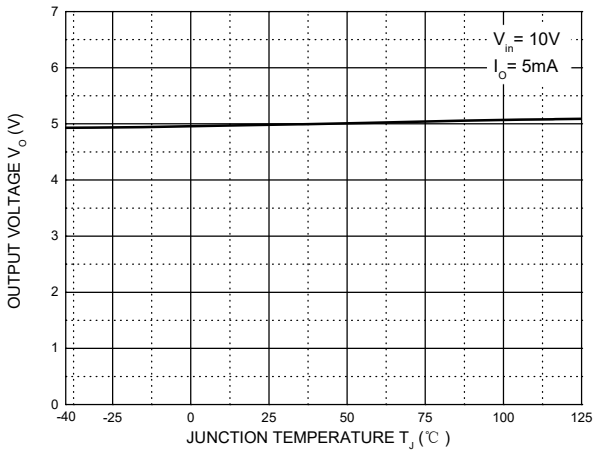
Quiescent Current



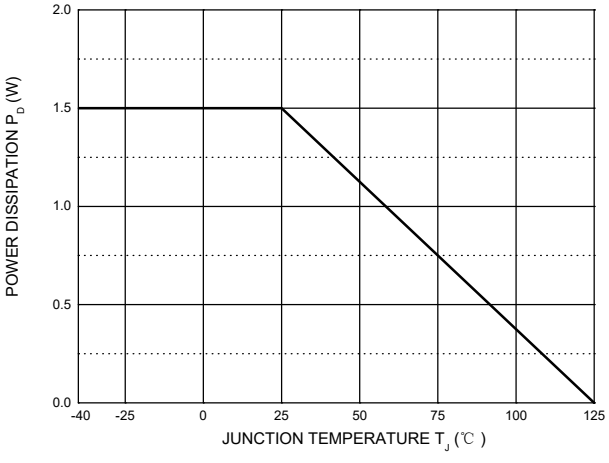
Current Cut-off Grid Voltage



Output Voltage vs Junction Temperature



Power Derating Curve

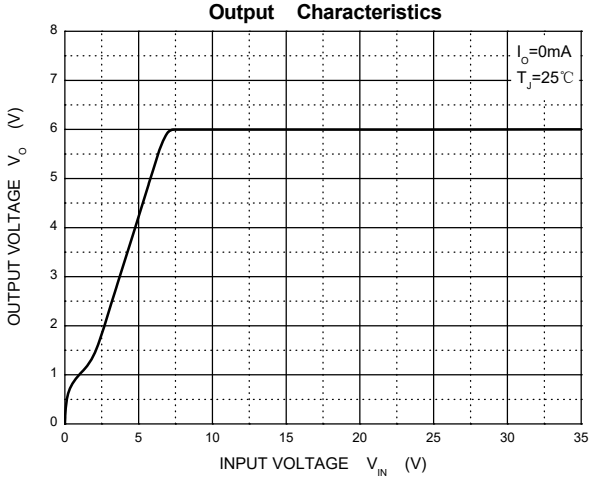


7 Specifications

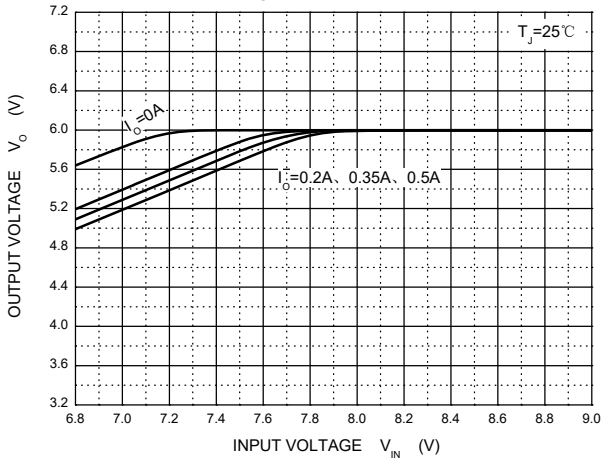
7.6 Typical Characteristics (continued)

CJ78M06 (C_{IN} = 0.33μF, C_{OUT} = 0.1μF, T_J = 25°C, unless otherwise specified)

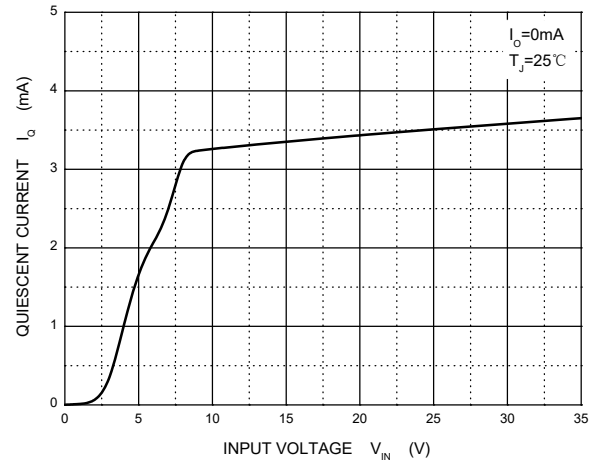
Output Characteristics



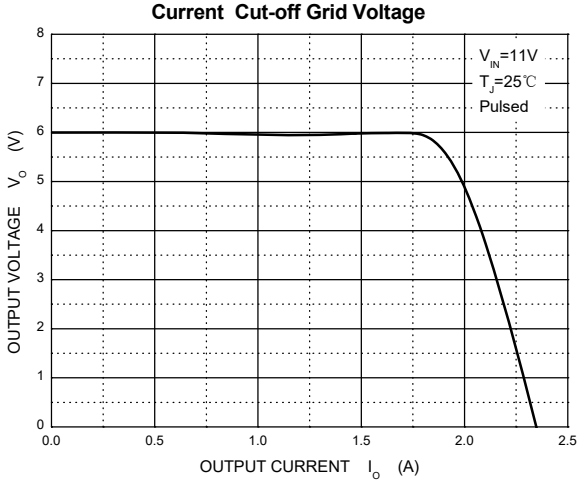
Dropout Characteristics



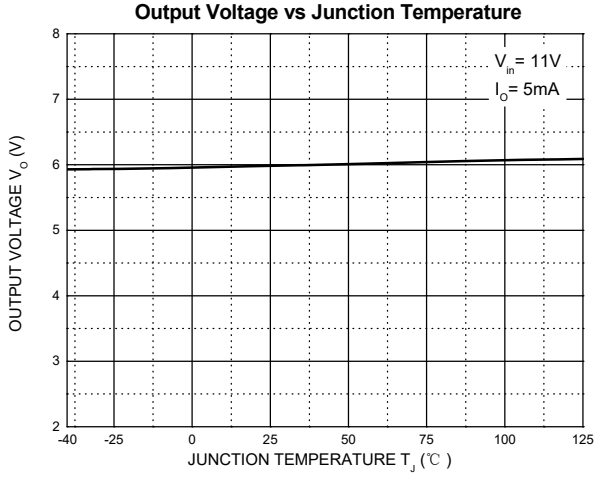
Quiescent Current



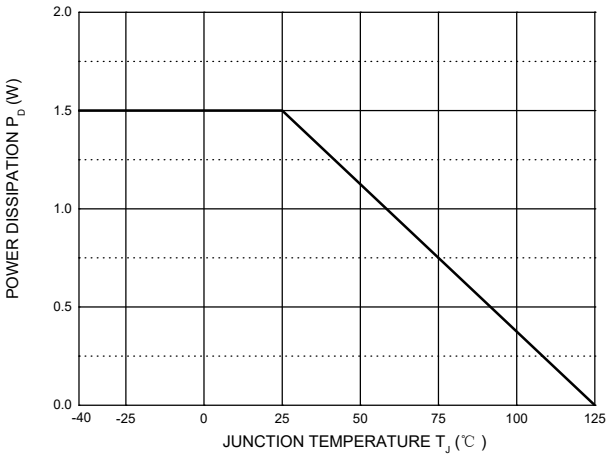
Current Cut-off Grid Voltage



Output Voltage vs Junction Temperature



Power Derating Curve

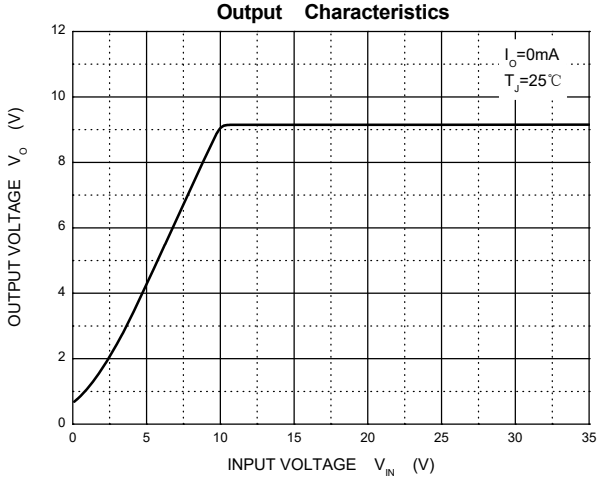


7 Specifications

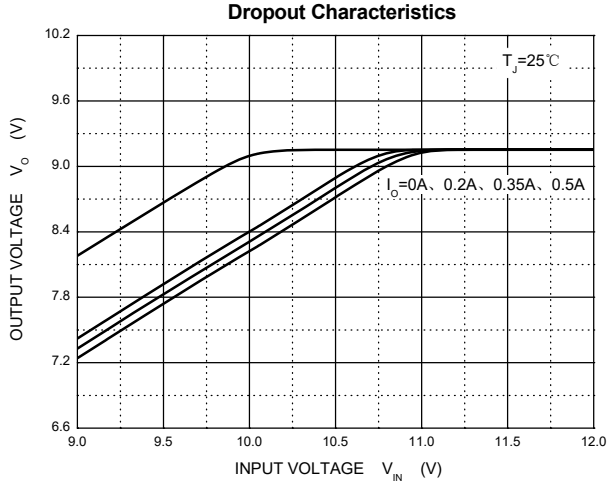
7.6 Typical Characteristics (continued)

CJ78M08 (C_{IN} = 0.33μF, C_{OUT} = 0.1μF, T_J = 25°C, unless otherwise specified)

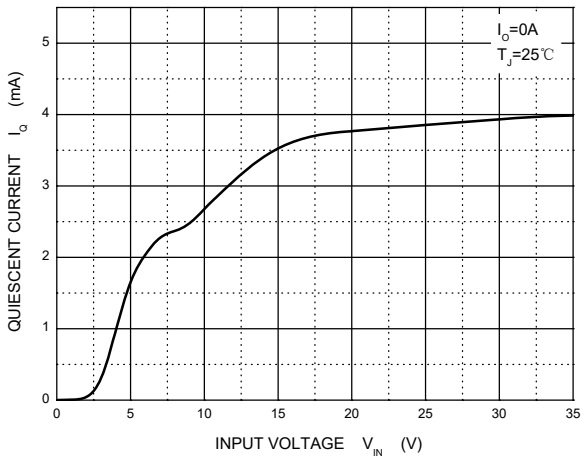
Output Characteristics



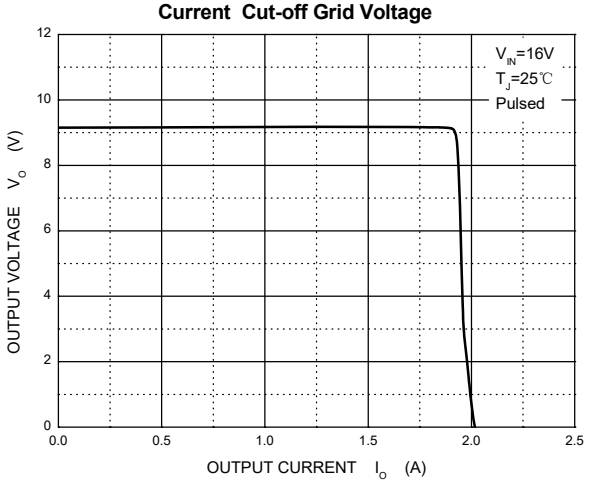
Dropout Characteristics



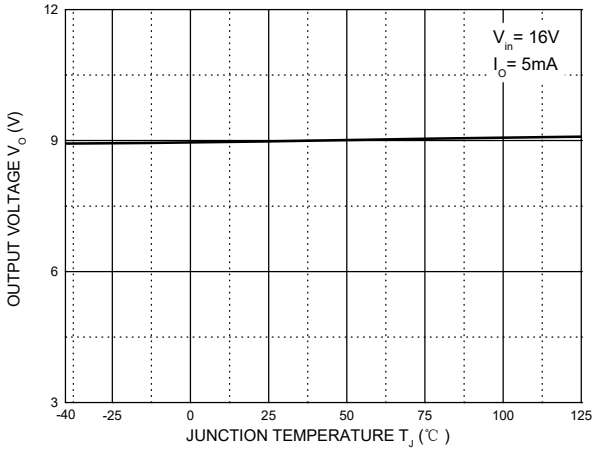
Quiescent Current



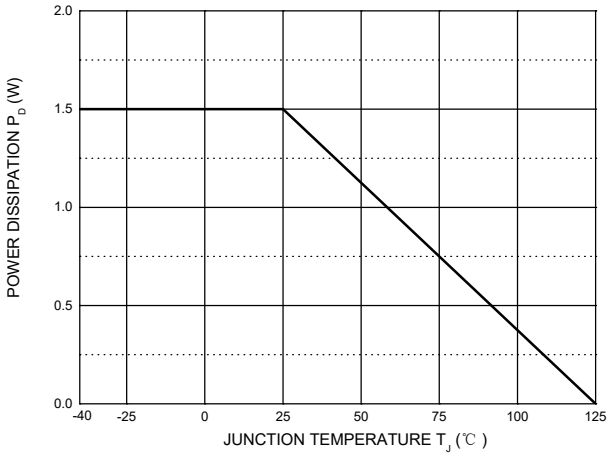
Current Cut-off Grid Voltage



Output Voltage vs Junction Temperature



Power Derating Curve

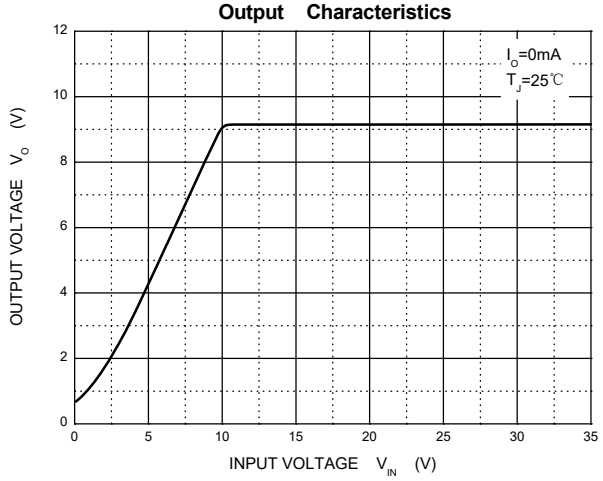


7 Specifications

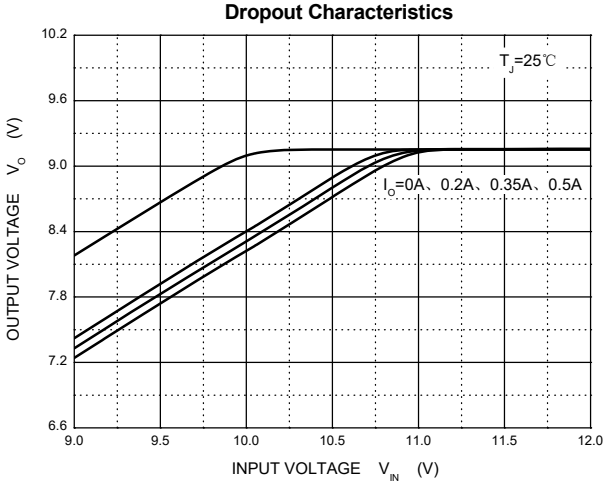
7.6 Typical Characteristics (continued)

CJ78M09 (C_{IN} = 0.33μF, C_{OUT} = 0.1μF, T_J = 25°C, unless otherwise specified)

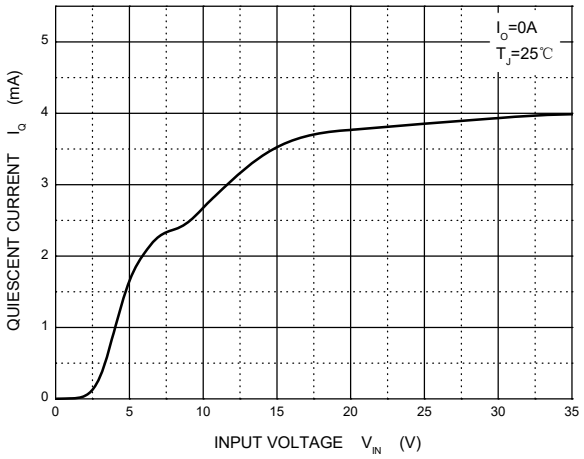
Output Characteristics



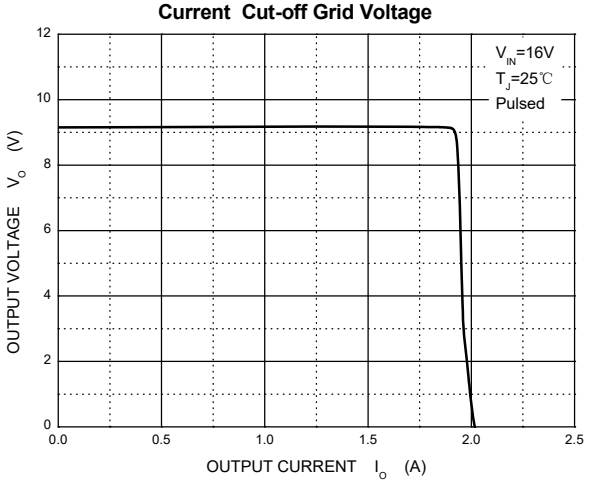
Dropout Characteristics



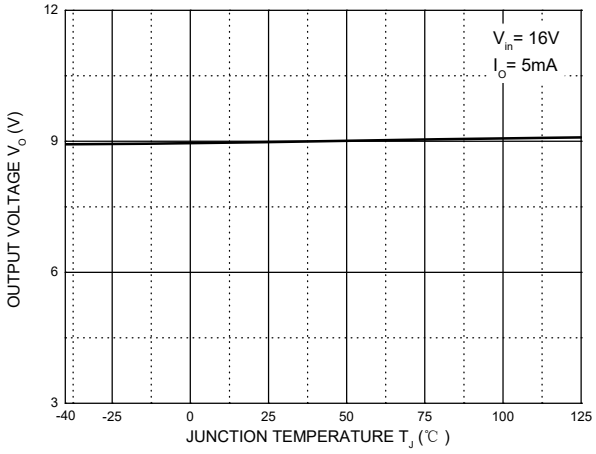
Quiescent Current



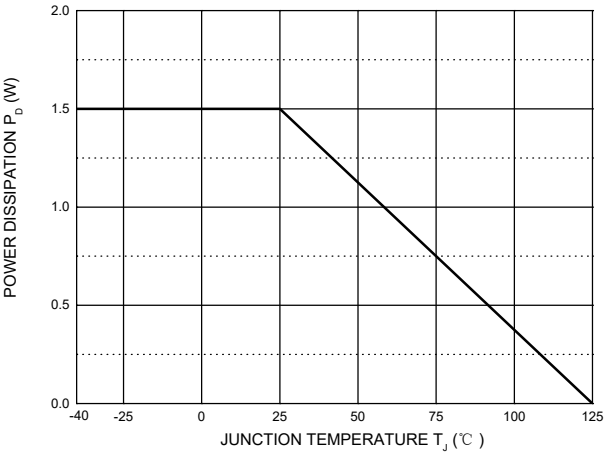
Current Cut-off Grid Voltage



Output Voltage vs Junction Temperature



Power Derating Curve

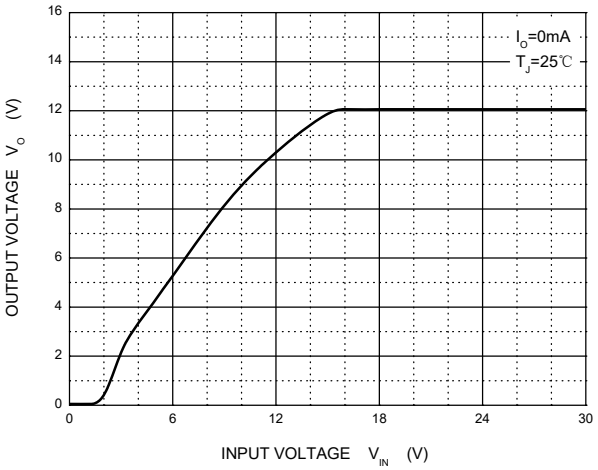


7 Specifications

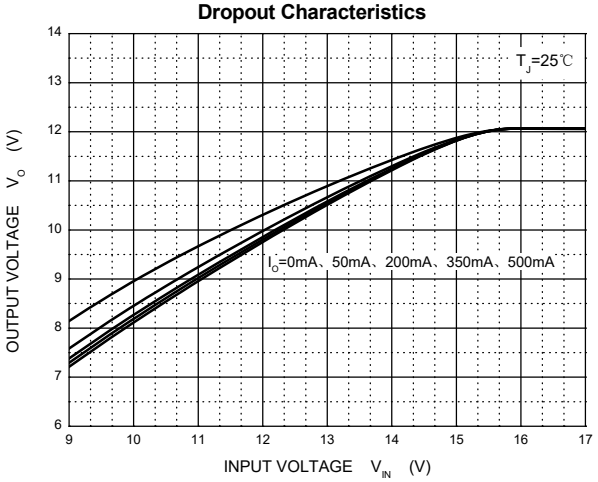
7.6 Typical Characteristics (continued)

CJ78M12 (C_{IN} = 0.33μF, C_{OUT} = 0.1μF, T_J = 25°C, unless otherwise specified)

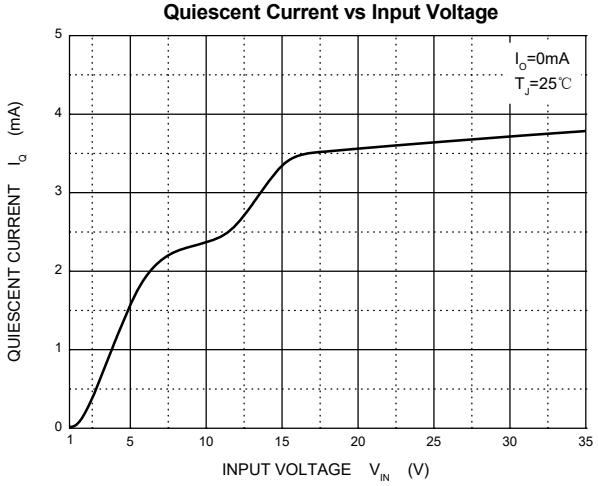
Output Characteristics



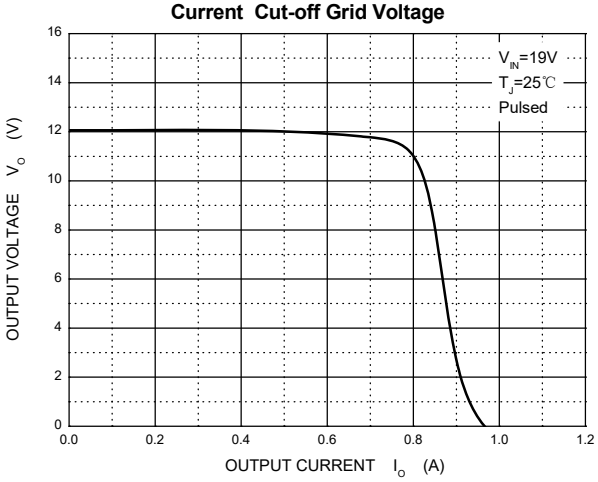
Dropout Characteristics



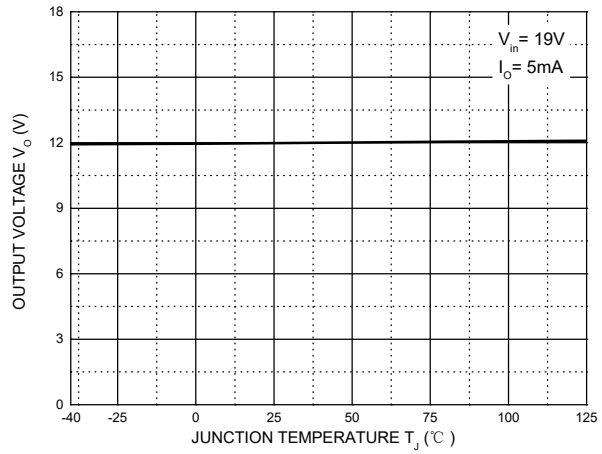
Quiescent Current vs Input Voltage



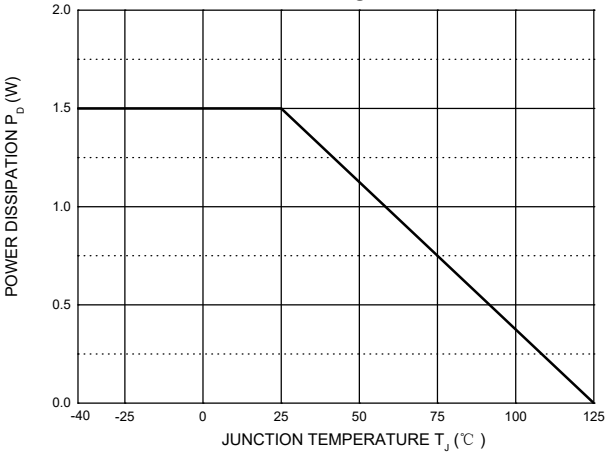
Current Cut-off Grid Voltage



Output Voltage vs Junction Temperature



Power Derating Curve

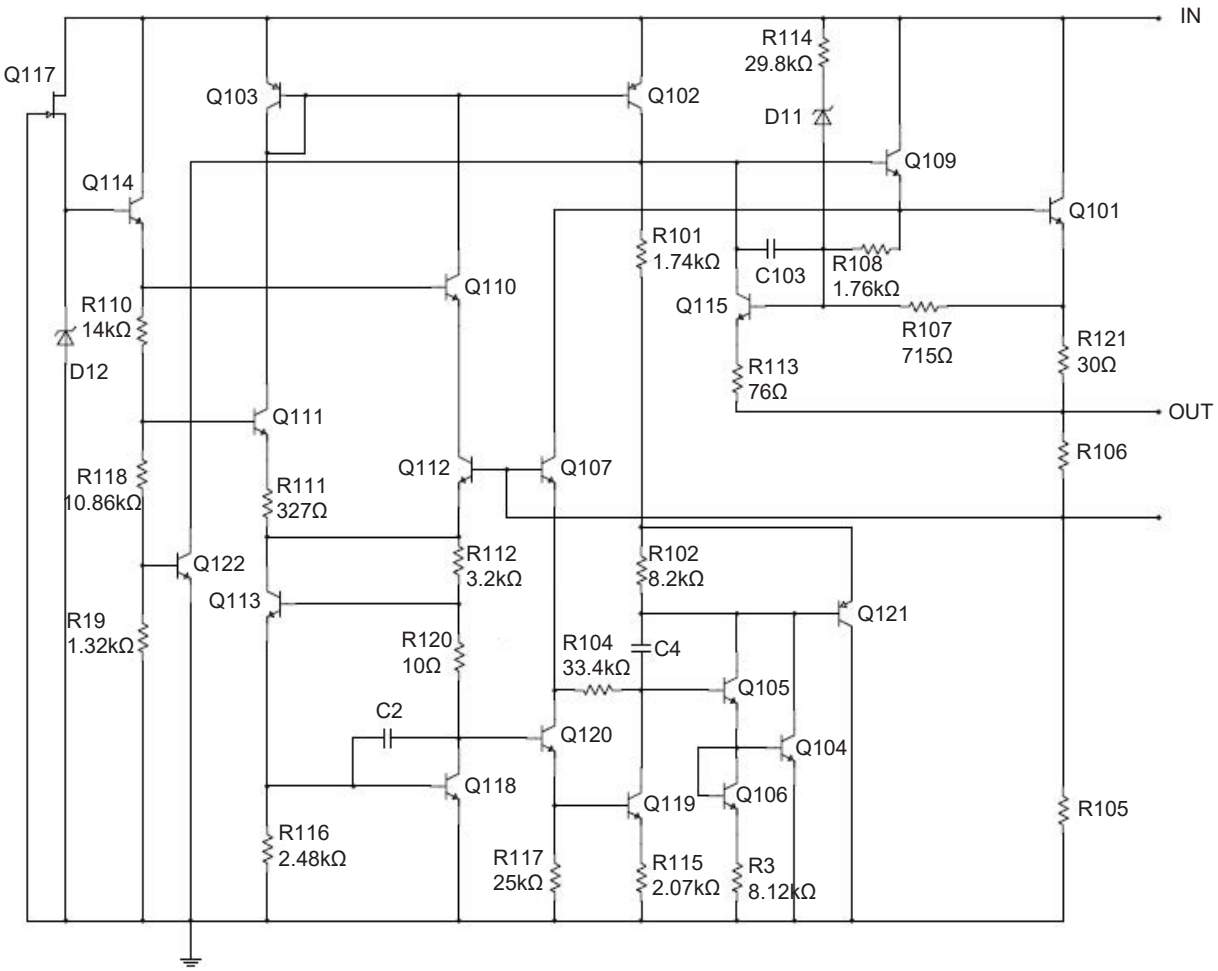


8 Detailed Description

8.1 Description

This series of fixed-voltage integrated-circuit voltage regulators is designed for a wide range of applications. The applications include on-card regulation for elimination of noise and distribution problems associated with single-point regulation. Each of these regulators can deliver up to 500mA of output current. The internal current-limiting and thermal-shutdown features of these regulators essentially make them immune to overload. In addition to use as fixed-voltage regulators, these devices can be used with external components to obtain adjustable output voltages and currents (not both) and also as the power-pass element in precision regulators.

8.2 Representative Schematic Diagram



8 Detailed Description

8.3 Feature Description

Input Voltage

When the input voltage is lower than the rated range of the data sheet, the device will lose the regulation function of stabilizing the output voltage, that is, it is unable to maintain the output voltage within the rated range. When the input voltage is higher than the rated range of the data sheet, the device may cause irreversible damage or failure due to exceeding the maximum rated range of electrical stress.

Built-in Current Limit & Short Circuit Protection

The CJ78M series has built-in current limit and short circuit protection mechanism. When the output current of the device is too high, the output of the device will be shut down. When the output of the device is short circuited to ground, the output of the device will also be shut down and the output current will be maintained within a certain range.

Thermal Shutdown Protection

The CJ78M series has thermal shutdown protection mechanism. If the junction temperature is allowed to rise to 145°C, the device will enter the thermal shutdown state. At this time, the output voltage of the device will be reduced to prevent catastrophic damage to the chip due to accidental heat. When the junction temperature decreases and no longer remains too high, the device will release the thermal shutdown and output normally. To ensure reliable operation, please limit the junction temperature to the specified range of *Recommended Operating Conditions* in the data sheet. Applications that exceed the recommended temperature range may cause the equipment to exceed its operating specifications.

Although the internal protection circuitry of the device is designed to protect against thermal overall conditions, this circuitry is not intended to replace proper heat sinking. Continuously running the device into thermal shutdown or above the maximum recommended junction temperature reduces long-term reliability.

Output Current

Due to the internal integration of thermal shutdown protection, in the case of large output current, the device may enter the thermal shutdown state because the junction temperature is higher than the rated value in the data sheet. Therefore, the appropriate package should be selected for circuit design according to the heat dissipation power consumption of the package and the effective connection thermal resistance with the environment, so as to make the device emit more heat energy, so as to ensure the maximum load current capacity of the device. If the circuit design is appropriate and the device has good heat dissipation conditions, the CJ78M series can output a current of up to 500mA.

9 Application and Implementation

9.1 Risk Alert and Precautions

The CJ78M series is designed for thermal shutdown protection, built-in current limit and output short circuit protection. However, like any IC regulator, precautions are necessary to reduce the possibility of accidental damage to the regulator. The following describes the possible causes of unit damage or failure:

Electrostatic Discharge (ESD)

Electrostatic discharge (ESD) is a common near-field hazard source. It comes from many sources, such as human body, mechanical equipment and electronic components themselves. ESD can cause phenomena such as high voltage and instantaneous high current in a very short time, resulting in damage or failure of the device due to electric shock.

Instantaneous Electrical Surge

In some applications, a short duration but high energy spike may occur in the circuit, including peak voltage and surge current. They may cause unstable operation of the regulator, accelerated aging and potential hazards, and even damage or malfunction of the regulator. These peaks are usually more likely to occur in hot-plug, switch inductance, heavy-load, and other types of circuits.

Precautions for ESD and Electrical Surge

In the practical application of the circuit, adopting the following suggestions can reduce the possibility of device failure due to the above reasons to a certain extent.

1. Place a TVS between the IN and GND of the voltage regulator to absorb the peak voltage that may be generated due to ESD or other reasons. As shown in Figure 9-1;
2. Place a resistor with appropriate resistance in series before the IN of the voltage regulator, which can help the voltage regulator share part of the energy in case of surge. The resistance value of the resistance should not be too large. The specific resistance value depends on the application of the circuit. Generally, the resistance value of this resistance does not exceed 20Ω. As shown in Figure 9-2.

For the CJ78M series, it is recommended that the input voltage should not exceed 17V and the peak voltage should not exceed 35V. **When the input voltage is greater than 17V, or the peak voltage that may be greater than 35V may appear in the practical circuit, it is recommended to adopt the circuit layout shown in Figure 9-2 in the circuit design.**

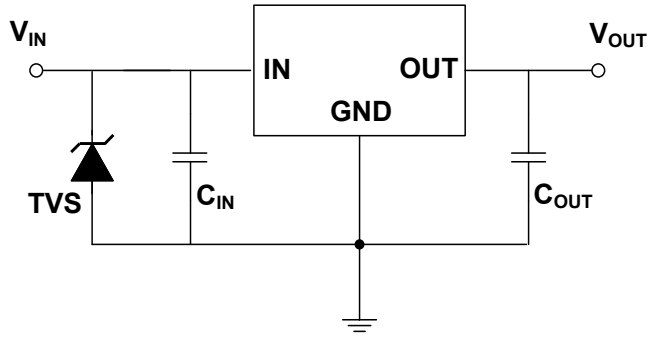


Figure 9-1. TVS is used at IN

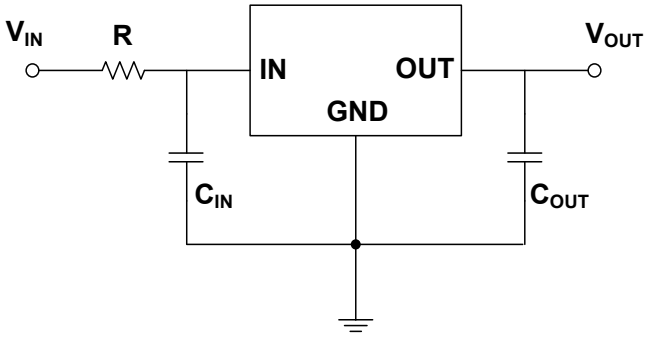


Figure 9-2. Resistance is used at IN

9 Application and Implementation

9.1 Risk Alert and Precautions (continued)

Large Output Capacitance

The CJ78M series can obtain better transient response with the help of output capacitance. However, if the output capacitor is relatively large, the surge current generated by the charging of the output capacitor will also be large at the moment of power on of the regulator, and the large surge current passing through the regulator may damage the internal circuit. When the output capacitance is large, adopting the circuit design shown in Figure 9-2 will reduce the possibility of damage to the device due to large surge current to a certain extent. It is recommended that the selection of output capacitor should not exceed 20μF. **If the selection of output capacitor exceeds 20μF, it is recommended to adopt the circuit design in Figure 9-2 to reduce the possibility of accidental failure of the device due to large surge current during power on.**

9.2 Bypass Capacitance Selection

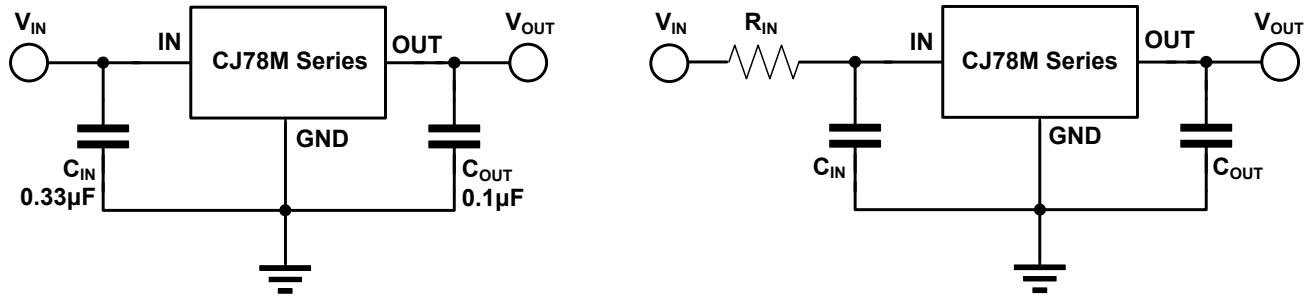
A capacitance between IN and GND (C_{IN}) is required if the regulator is located far from the power supply filter. It is recommended to use a 0.33μF capacitor for C_{IN}, and the capacitor (C_{IN}) should be placed as close to the device IN pin and GND pin as possible.

It is recommended to use a 0.1μF capacitor between OUT and GND (C_{OUT}), and the capacitor should be placed as close as possible between OUT and GND. The output capacitance can limit the high-frequency noise and help the device obtain the best stability and transient response.

The tolerance and temperature coefficient of the input and output capacitor (C_{IN} and C_{OUT}) must be considered to ensure that the capacitor can work normally within the rated working ambient temperature and rated working conditions of the equipment.

It is recommended that the output capacitor (C_{OUT}) should not exceed 20μF. When the output capacitor (C_{OUT}) exceeds 20μF, it is recommended to use the circuit layout shown in Figure 9-2. See *Large Output Capacitance* for more details.

9.3 System Example



(1) Conventional Circuit

Used for the normal form of circuit

(2) Resistance are used at IN

Used for circuits that may have large electrical surges or use large capacitors

Figure 9-3. Fixed Output Regulator

9 Application and Implementation

9.4 Design Requirements and Procedure

The CJ78M series is mainly used to provide fixed output voltage regulation, the output voltage is selected based on the device variant, which is available in 5.0V, 6.0V, 8.0V, 9.0V and 12V regulator options, and it requires a very small number of equipment components. Some layout guidelines must be followed to ensure proper regulation of the output voltage with minimum noise:

- If the device is more than 4 inches from the power filter capacitor, it is recommended to use any type of input bypass capacitor 0.1μF or larger, and use the bypass capacitor to bypass the input terminal to ground. The optimum placement is closest to the input terminal of the device and the system GND;
- Take care to minimize the loop area formed by the bypass-capacitor connection, the input terminal, and the system GND;
- Traces carrying the load current must be wide to reduce the amount of parasitic trace inductance;
- In cases when V_{IN} shorts to ground, an external diode must be placed from OUT to IN to divert the surge current from the output capacitor and protect the IC. This diode must be placed close to the corresponding IC pins to increase their effectiveness.

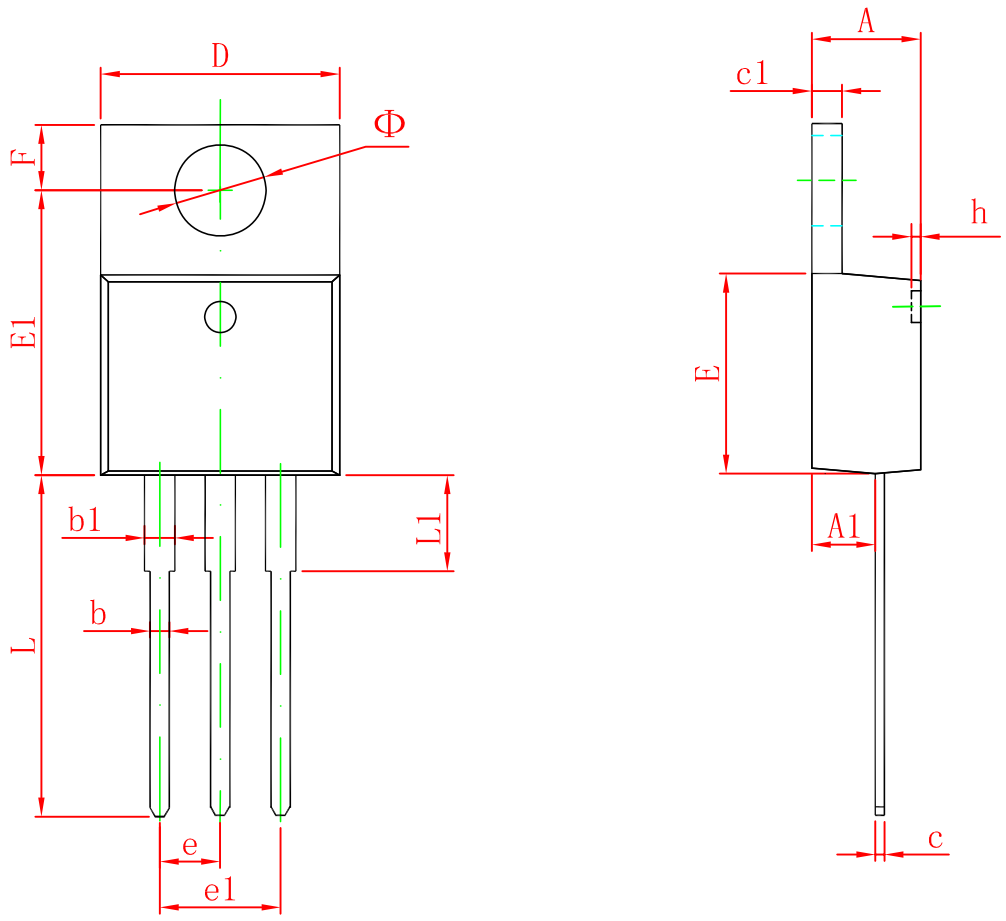
NOTE

The application information in this section is not part of the data sheet component specification, and JSCJ makes no commitment or statement to guarantee its accuracy or completeness. Customers are responsible for determining the rationality of corresponding components in their circuit design and making tests and verifications to ensure the normal realization of their circuit design.

10 Mechanical Information

10.1 TO-220-3L Mechanical Information

TO-220-3L Outline Dimensions

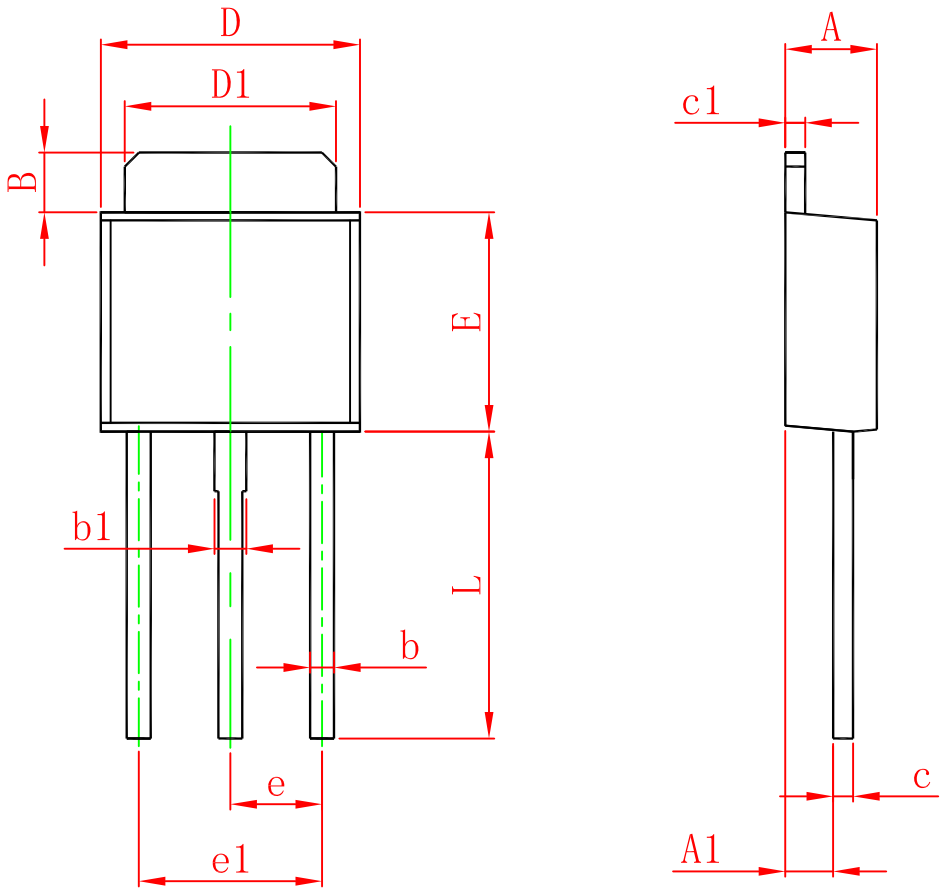


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.470	4.670	0.176	0.184
A1	2.520	2.820	0.099	0.111
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
E1	12.060	12.460	0.475	0.491
e	2.540 TYP		0.100 TYP	
e1	4.980	5.180	0.196	0.204
F	2.590	2.890	0.102	0.114
h	0.000	0.300	0.000	0.012
L	13.400	13.800	0.528	0.543
L1	3.560	3.960	0.140	0.156
Φ	3.735	3.935	0.147	0.155

10 Mechanical Information

10.2 TO-251-3L Mechanical Information

TO-251-3L Outline Dimensions

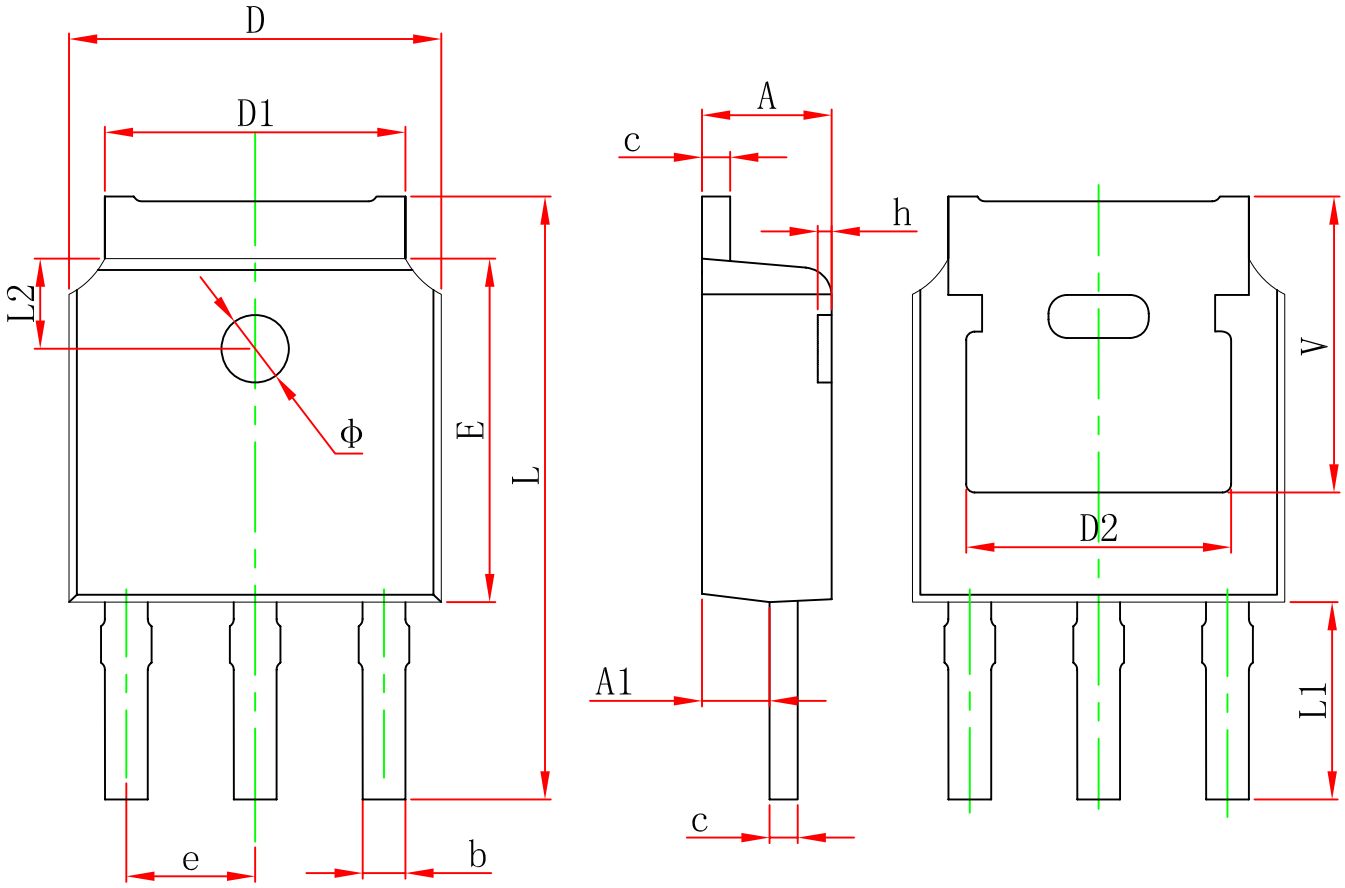


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	1.050	1.350	0.042	0.054
B	1.350	1.650	0.053	0.065
b	0.500	0.700	0.020	0.028
b1	0.700	0.900	0.028	0.035
c	0.430	0.580	0.017	0.023
c1	0.430	0.580	0.017	0.023
D	6.350	6.650	0.250	0.262
D1	5.200	5.400	0.205	0.213
E	5.400	5.700	0.213	0.224
e	2.300 TYP.		0.091 TYP.	
e1	4.500	4.700	0.177	0.185
L	7.500	7.900	0.295	0.311

10 Mechanical Information

10.3 TO-251S Mechanical Information

TO-251S Outline Dimensions

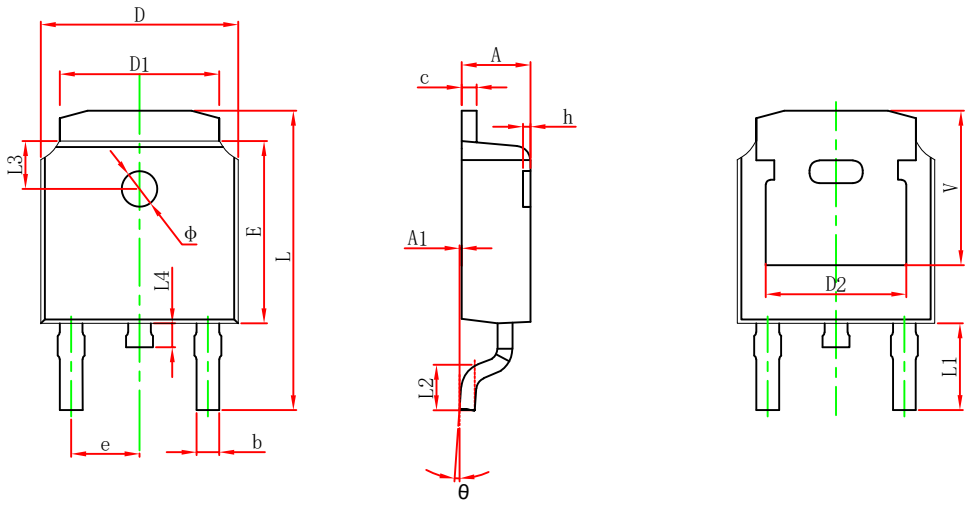


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.860	1.160	0.034	0.046
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	10.400	11.000	0.409	0.433
L1	3.300	3.700	0.130	0.146
L2	1.600 REF.		0.063 REF.	
Φ	1.100	1.300	0.043	0.051
h	0.000	0.300	0.000	0.012
V	5.350 REF.		0.211 REF.	

10 Mechanical Information

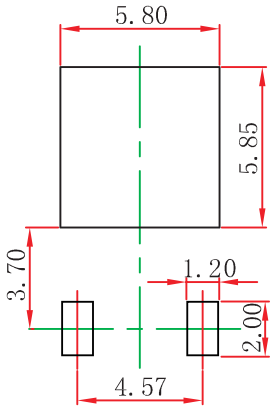
10.4 TO-252-2L Mechanical Information

TO-252-2L Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.635	0.770	0.025	0.030
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.712	10.312	0.382	0.406
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.250 REF.		0.207 REF.	

TO-252-2L Suggest Pad Layout



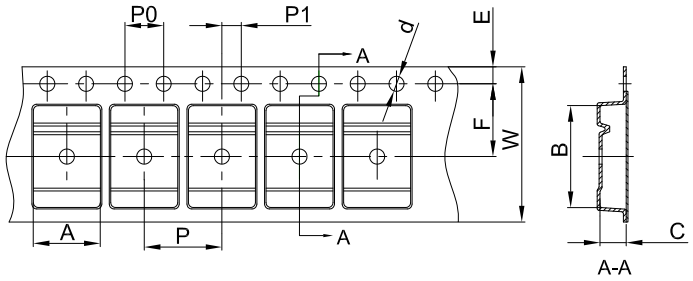
NOTE:

1. Controlling dimension: in millimeters.
2. General tolerance: ±0.05mm.
3. The pad layout is for reference purposes only.

11 Packaging Information

TO-252-2L Tape and Reel Information

TO-252-2L Embossed Carrier Tape

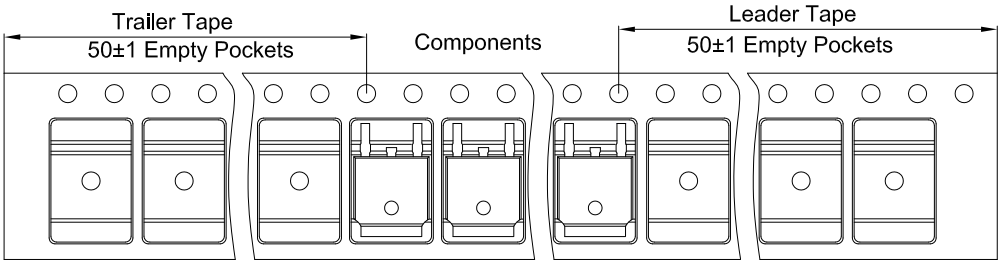


Packaging Description:

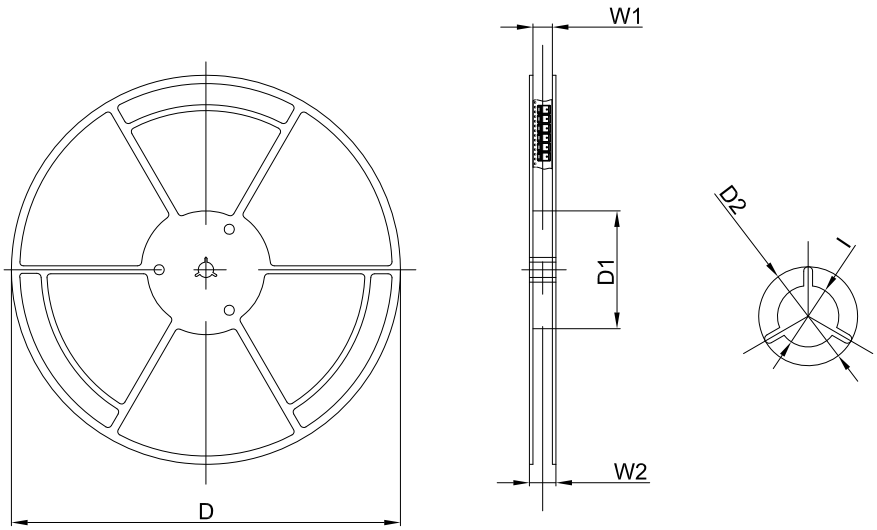
TO-252 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 25,00 units per 13" or 33.0 cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
TO-252	6.90	10.50	2.70	Ø1.55	1.75	7.50	4.00	8.00	2.00	16.00

TO-252-2L Tape Leader and Trailer



TO-252-2L Reel



Dimensions are in millimeter						
Reel Option	D	D1	D2	W1	W2	I
13"Dia	330.00	100.00	Ø21.00	16.40	21.00	Ø13.00

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
2,500 pcs	13inch	2,500 pcs	340×336×29	25,000 pcs	353×346×365	

12 Notes and Revision History

12.1 Associated Product Family and Others

To view other products of the same type or IC products of other types, please click the official website of JSCJ -- ***https: www.jscj-elec.com*** for more details.

12.2 Notes

Electrostatic Discharge Caution

This IC may be damaged by ESD. Relevant personnel shall comply with correct installation and use specifications to avoid ESD damage to the IC. If appropriate measures are not taken to prevent ESD damage, the hazards caused by ESD include but are not limited to degradation of integrated circuit performance or complete damage of integrated circuit. For some precision integrated circuits, a very small parameter change may cause the whole device to be inconsistent with its published specifications.

12.3 Revision History

October, 2023: changed from rev - 3.0 to rev - 3.1:

- Page 6, Thermal Information, added the $R_{\Theta JC}$.

September, 2022: released CJ78M series rev - 3.0:

- Assembled CJ78M05, CJ78M06, CJ78M08, CJ78M09, CJ78M12 devices into the CJ78M series;
- Added Introduction, Available Package, Applications, Pin Configuration and Marking Information, Recommended Operating Conditions, ESD Ratings, Thermal Information, Detailed Description, Application and Implementation and Notes and Revision History section;
- Deleted obsolete CJ78M15 device from the data sheet.

DISCLAIMER

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Official Website: www.jscj-elec.com

深圳市致新科科技有限公司
Shenzhen Zhixinke Technology Co., Ltd.

阻容器件

插件电解电容	贴片铝电解电容	贴片电容 MLCC	钽电容	薄膜电容
贴片电阻	热敏电阻	压敏电阻	碳膜电阻	金属膜电阻

高压MOS(N-400V N-500V N-600V N-650V N-700V N-800V N-900V / 电流：0.5A～26A区间 电压电流选型）

2N65 650V 2A TO-252	7N60 600V 7A TO-252	8N65 650V 8A TO-251	10N50 500V 10A TO-220F	15N50 500V 15A TO-220F
4N65 650V 4A TO-220F	7N65 650V 7A TO-220F	8N65 650V 8A TO-252	12N65 650V 12A TO-220F	15N65 650V 15A TO-220F
5N60 600V 5A TO-220F	7N65 650V 7A TO-252	8N65 650V 8A TO-252	12N70 700V 12A TO-220F	15N70 700V 10A TO-220F
5N65 650V 5A TO-252	7N70 700V 7A TO-220F	9N70 700V 9A TO-252	13N50 500V 13A TO-220F	20N50 500V 20A TO-220F

低压MOS（电流：-160A～300A区间选型）

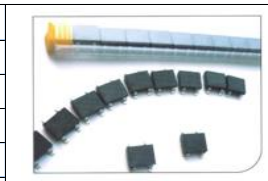
N+P 20V	P -100V	Dual N 30V	N 30V	N 75V
N+P 30V	P -12V	Dual N 100V	N 40V	N 85V
N+P 40V	P -16V	Dual N 20V	N 55V	N 100V
Dual P -30V	P -20V	Dual N 40V	N 60V	N 150V
Dual P -60V	P -40V	N 20V	N 68V	N 200V

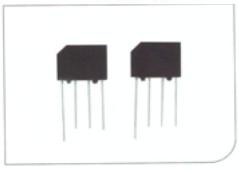
二极管专业制造商（定制产品，需要一周～二周时间）参数查看选型表

超低正向肖特基整流二极管	肖特基整流二极管	普通整流二极管	快恢复整流二极管	高效整流二极管
超快恢复整流二极管	双向触发二极管	瞬变电压抑制二极管	稳压二极管	桥式整流器
小信号肖特基二极管	小信号开关二极管	光伏二极管	汽车整流器	高压触发管

桥式整流器专业制造（定制产品，需要一周～二周时间）

型号	芯片尺寸/类别		型号	芯片尺寸/类别
DB107S	50MIL DBS		GBU606-GBU610	88MIL GBU
DB157S	60MIL DBS		GBU806-GBU810	95MIL GBU
DB207S	60MIL DBS		GBU1006-GBU1010	100MIL GBU
DB307S	70MIL DBS		GBU1506-GBU1510	110MIL GBU
DB107	50MIL DB		GBU2506-GBU2510	130MIL GBU
DB157	60MIL DB		GBJ406-410	84MIL 4GBJ
DB207	60MIL DB		GBJ606-610	88MIL 4GBJ
DB307	70MIL DB		GBJ806-810	95MIL 4GBJ
KBP201-KBP210	50MIL KBP		GBJ1006-1010	100MIL 4GBJ
KBP301-KBP310	60MIL KBP		GBJ1506-1510	110MIL 4GBJ
KBP401-KBP410	70MIL KBP		GBJ2506-2510	130MIL 4GBJ
GBP2	50MIL GBP短脚		GBJ1506-1510	110MIL 6GBJ
GBP3	60MIL GBP短脚		GBJ1506-1510	120MIL 6GBJ
GBP3	70MIL GBP短脚		GBJ2506-2510	130MIL 6GBJ
GBP4	84MIL GBP短脚		GBJ3506-3510	140MIL 6GBJ
GBP6	88MIL GBP短脚		GBJ3506-3510	160MIL 6GBJ
GBP2	50MIL GBP长脚		KBJ406-410	84MIL KBJ(4GBJ)
GBP3	60MIL GBP长脚		KBJ606-610	88MIL KBJ(4GBJ)
GBP3	70MIL GBP长脚		KBJ806-810	95MIL KBJ(4GBJ)
GBP4	84MIL GBP长脚		KBJ1006-1010	100MIL KBJ(4GBJ)
GBP6	88MIL GBP长脚		KBJ1506-1510	110MIL KBJ(4GBJ)
D3K 2A	60MIL D3K		KBJ2506-2510	130MIL KBJ(4GBJ)
D3K 3A	70MIL D3K		MB6S-10S	46MIL MBS
D3K 4A	84MIL D3K		MB6S-10S	50MIL MBS
KBL406-410	70MIL KBL		MB6F-10F	46MIL MBF
KBL406-410	84MIL KBL		MB6F-10F	50MIL MBF
KBL606-610	88MIL KBL		ABS6-ABS10	46MIL ABS
GBU406-GBU410	70MIL GBU		ABS6-ABS10	50MIL ABS
GBU406-GBU410	84MIL GBU		ABS6-ABS10	60MIL ABS


DB-S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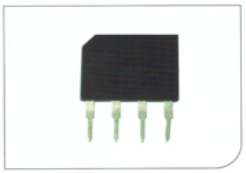
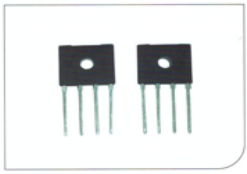
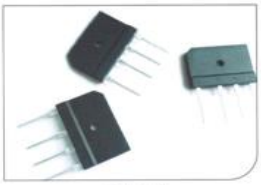

GBP


D3K

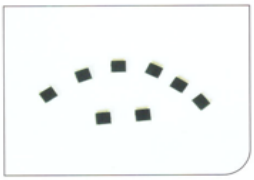

KBL


GBU


GBJ


KBJ


MDB-S


ABS

光耦 红外对射

EL0631	EL814	LTV-217	KAQY212	MOC3022
EL1018	EL817	LTV-247	KMOC3021	MOC3023
EL1019	ELM440A	LTV-3063	KMOC3022	MOC3042
EL2501	ELM453	LTV-3223	KMOC3023	MOC3052
EL3041	ELM611	LTV-356	KMOC3041	MOC3063
EL3063	ELQ3H4	LTV-357	KMOC3042	MOC3043
EL354	ELQ3H7	LTV-814	KMOC3043	HS0038BD
EL357	ELR3223	LTV-816	KMOC3063	IR204C-A-L
EL3H4	ELS3120	LTV-817	KMOC3083	IR333C-A
EL3H7	ELS3150	CT3043	FOD814	ITR1100
EL406A	ELS680	CT3063	6N137	ITR8102
EL6N137	CT3023	CTT3223	MOC3021	ITR8402

长晶 JSCJ（原名长电）

1N4148WS	SOD323	BC547	TO92	BZT52C3V6	SOD123	CJ431	SOT-23	MMBT3904	SOT23
2N5551	TO-92	BC548	TO92	BZT52C3V9	SOD123	CJ7812	TO220-3L	MMBT540	SOT23
2SA1013	SOT89-3L	BCX56-16	SOT89-3L	BZT52C5V1	SOD123	CJ7815	TO252-2L	MMBTA44	SOT-23
2SB1386	SOT89	BD237	TO126	BZT52C6V2	SOD123	CJ78L05	SOT89	MMBTA94	SOT23
2SC1623	SOT23	BSS123	SOT23	BZT52C6V8S	SOD323	CJ78L08	SOT89	MMSZ4689	SOD123
2SC1815	TO92	BU406	TO220-3L	BZT52C8V2	SOD123	CJ78L12	SOT89	RS3M	SMBG
2SC2712	SOT-23	BZT52C10	SOD123	BZX84C15	SOT23	CJ78M05	TO252	S8050	SOT23
2SD1724	TO-126	BZT52C12	SOD123	C1815	TO92F	CJ78M06	TO252	S8550	SOT23
2SD965A	SOT89	BZT52C15	SOD123	CJ2301	SOT23	CJ78M12	TO252	S9012	SOT23
B0530WS	SOD323	BZT52C18	SOD123	CJ2302	SOT23-3	CJ79L05	TO92	S9013	SOT23
B5819W	SOD123	BZT52C22S	SOD323	CJ2304	SOT-23	D882	TO126	S9014	SOT23
BAT54	SOT23-3	BZT52C24V	SOD123	CJ2306	SOT23	ES2J	SMAG	S9015	SOT23
BAV99	SOT23	BZT52C30	SOD123	CJ2310	SOT23	LM317	SOT223	SD103AW	SOD123
BC546B	TO92	BZT52C3V3	SOD123	CJ3415	SOT23-3	MCR100-8	TO92	TIP122	TO126

圣邦微（SGMICRO）

SGM2019	SGM3110-5.0YN6/TR	SGM4056-6.8YPS8G/TR	SGM6232YPS8G/TR	SGM809
SGM2021	SGM3132YDE8G/TR	SGM4056-6.8YTDE8G/TR	SGM6603	SGM810
SGM2032	SGM3157YC6/TR	SGM4062YDE8G/TR	SGM6609YTDF12G/TR	SGM8272YS8G/TR
SGM2033	SGM3206YN5G/TR	SGM4064YDE8G/TR	SGM706	SGM8522XS/TR
SGM2036	SGM321YN5/TR	SGM44599YTQ16/TR	SGM721XN5/TR	SGM8582XS8G/TR
SGM2200	SGM324YS14/TR	SGM4582YTS16G/TR	SGM7222YMS10/TR	SGM8632XMS/TR
SGM2203	SGM330A-YQS/TR	SGM4807YTDE8G/TR	SGM7222YWQ10/TR	SGM8632XS/TR
SGM2268YWQ10/TR	SGM331A-YQS16G/TR	SGM4871YPS8/TR	SGM7227YMS10G/TR	SGM8634XS14/TR
SGM2549YN6G/TR	SGM358YMS/TR	SGM4890YMS/TR	SGM7227YUWQ10G/TR	SGM89000YTS14G/TR
SGM2551AYN5G/TR	SGM358YS/TR	SGM4891YDE8G/TR	SGM7228YWQ10G/TR	SGM8903YTS14G/TR
SGM2554AYN5G/TR	SGM3700YTQ16G/TR	SGM4917AYTQ16G/TR	SGM722XMS/TR	SGM8904YMS10G/TR
SGM2571ADYG/TR	SGM3732YTN6G/TR	SGM4918AYD10G/TR	SGM722XS/TR	SGM9111YC5/TR
SGM2576YN5G/TR	SGM3733BYTDI6G/TR	SGM4996YMS8G/TR	SGM8051XN5/TR	SGM9114YN6G/TR
SGM2578YG/TR	SGM3752YTN6G/TR	SGM6012	SGM8054XS/TR	SGM9116XS/TR

DIODES(美台) PAM 百利通(pericom)

AL1666S-13	AL8863SP-13	APT17NTR-G1	PAM2861ABR	PAM8403DR-H
AL1692-30BS7-13	AP1084D25G-13	AS78L05RTR-E1	PAM2861CBR	PAM8404KGR
AL1692S-13	AP1084D33G-13	AZ1117	PAM2863ECR	PAM8406DR
AL1697-40DS7-13	AP1501-50K5G-13	AZ34063UMTR-G1	PAM8003DR	PAM8610TR
AL17050WT-7	AP1501-K5G-13	AZ431AN-ATRE1	PAM8004DR	PAM8620TR
AL3353S-13	AP1603WG-7	PAM2301CAABADJ	PAM8006ATR	PAM8902HKER
AL5812MP-13	AP2127K-ADJTRG1	PAM2305AABADJ	PAM8007NHR	PAM8904JER
AL8805W5-7	AP2204K-3.3TRG1	PAM2305CGFADJ	PAM8106TVR	PAM8908JER
AL8807W5-7	AP2204K-5.0TRG1	PAM2312AABADJ	PAM8124RHR	PAM8908JER
AL8808WT-7	AP2204K-ADJTRG1	PAM2401SCADJ	PAM8301AAF	PAM8945PJR
AL8843SP-13	AP2210N-3.3TRG1	PAM2421AECADJR	PAM8302AADCR	SMAJ5.0A-13-F
AL8860MP-13	AP3012KTR-G1	PAM2423AECADJR	PAM8302AASCR	ZXMP10A13FTA
AL8860WT-7	AP4310AMTR-G1	PAM2803AAF095	PAM8303DBSC	PT7C4302WEX
AL8861WT-7	AP4313KTR-G1	PAM2804AAB010	PAM8304ASR	PT7C4337UEX
AL8861Y-13	AP7333-33SAG-7	PAM2808BLBR	PAM8320RDR	PT7C4337WEX

微盟（Microne）

ME1117 MET1117	ME3116AM6G	ME431BXG	ME6210	ME8115BD7G
ME1502CM5G	ME321AM5G	ME6118A33B3G	ME6211	ME8115D7G
ME2107A50M5G	ME358ASG	ME6119C33M5G	ME6212	ME8125AS6G
ME2108	ME4054BM5G	ME6203A50M3G	ME6213C33M5G	ME8165GD8G
ME2188	ME4055AM6G	ME6206	ME6214C18M5G	ME8202SG
ME2214AM6G	ME4056SPG	ME6206A33M3G	ME6215C25M5G	ME8321AS7G
ME2807A30M3G	ME4074AM5G	ME6208	ME6216A30XG	ME8327BS7G-N
ME3102BM5G	ME4211AM6G	ME6209	ME6228	MEL7135PG-N
ME3110AM6G	ME4313CM6G	ME6209A50M3G	ME6230	MEL7136AP5G

恩智浦(NXP) 安世半导体(NXPERIA)

2N7002	74HC238PW	74HC574D	BCX51-16	HEF4094BT
74HC00D	74HC245D	74HC595D	BT137-800E	HEF4511BT
74HC04D	74HC245DB	74HC595N	BT139-800E	PCF8563T
74HC08D	74HC245N	74HC74D	BT151-500R	PCF8563T/5
74HC125D	74HC245PW	74HC86D	HEF4001BP	PCF8563TS/5
74HC138D	74HC257D	74HCT164D	HEF40106BP	PMBT3904
74HC138PW	74HC373N	74HCU04D	HEF4011BP	PMBT3906
74HC14D	74HC393D	BA591	HEF4011BT	PRTR5V0U2X
74HC154D	74HC4051D	BAT54	HEF4012BP	TJA1021T
74HC157D	74HC4051PW	BAV199	HEF4013BP	TJA1027T
74HC164D	74HC4066D	BAV99	HEF4013BT	TJA1040T
74HC164PW	74HC4316D	BC817-40	HEF4051BT	TJA1042T
74HC165D	74HC4538D	BC846B	HEF4069UBT	TJA1044T
74HC238D	74HC573D	BC858B	HEF4093BP	TJA1050T

德州仪器(TIS)

CD14538BE	LM2576S	NE5532	SN74HC273	TLV75718PDBVR
CD4001BE	LM258DGKR	OP07CDR	SN74HC595	TLV75728PDBVR
CD40106BE	LM2596SX	OP07CP	SN74LVC1G08DCKR	TPA3116D2
CD4011BE	LM2901	PCA9306DCUR	SN74LVC1G175DCKR	TPS23881RTQR
CD4012BE	LM2902	SN65C1168ERGYR	SN74LVC1G3157DBVR	TPS2412PWR
CD4013BE	LM2903	SN65HVD230DR	SN74LVC1G32DRLR	TPS54331DDAR
CD4017BM96	LM2904	SN65HVD231DR	SN74LVC2G07DBVR	TPS54620RGYR
CD4026BE	LM317	SN65LBC184	SN74LVC2T45DCUR	TPS62291DRVR
CD4050	LM321	SN74AHC1G08DBVR	TL081CP	TPS62410DRCR
CD4051	LM324	SN74AHC1G86DCK	TL082BCDR	TPS63000DRCR
CD4052	LM339	SN74AHC1GU04DRLR	TL084CN	TPS63020DSJR
CD4053	LM358	SN74AVC16T245DGGR	TL431	TPS76330DBVR
CD4069UBE	LM393	SN74HC04	TL494CDR	TSS721ADR
CD4081BE	LMV321IDBVR	SN74HC138	TLC272CDR	TXS0102DCUR
CD74HC221M96	LMV324ID	SN74HC14	TLC274CD	UCC28070PWR
DRV8837DSGR	MAX202	SN74HC148	TLV272CDR	UCC28180
L298N	MAX232	SN74HC165	TLV62569DBVR	ULN2003
LM224DR	MAX3232	SN74HC244	TLV70033DDCR	ULN2004

意法半导体(STM)

BTA08-600CRG	L78L05ACUTR	M24C64-RMN6TP	STM32F207ZET6	STM8S103F3P6
BTA08-800CRG	L78M05CDT	ST1S10PHR	STM32F401CEU6	STM8S103K3T6C
BTB04-600SL	L78M08ABDT	STM32F030C6T6	STM32F405RGT6	STM8S105C6T6
HCF4052M013TR	LM258AD	STM32F030C8T6	STM32F407VET6	STM8S105K4T6C
L298N	LM2903	STM32F030F4P6	STM32F407VGT6	STM8S105S4T6C
L6562DTR	LM2904	STM32F030K6T6	STM32F407ZET6	STM8S105S6T6
L6599ATDTR	LM293	STM32F051C8T6	STM32F407ZGT6	STM8S207RBT6
L7805CDT	LM317T	STM32F071VBT6	STM32F429IET6	TDA2030AV
L7805CV	LM324	STM32F103C8T6	STM32G070RBT6	TDA7265
L7806CV	LM335	STM32F103R8T6	STM32L475VET6	TDA7851L
L7809CV	LM339	STM32F103RCT6	STM8L051F3P6	TIP122
L7812CV	LM358	STM32F103VCT6	STM8L052C6T6	VIPER12ADIP-E
L7815CD2T-TR	LM393	STM32F105RBT6	STM8S003F3P6	VIPER17LN
L78L05ABUTR	M24C02-WMN6TP	STM32F107VCT6	STM8S005K6T6C	VIPER22ASTR

安森美(ONS) 仙童(FAIRCHILD)

6N137	LM339DR2G	MC33063ADR2G	MC78M08CDTRKG	MMBT3906LT1G
LM2902DR2G	LM393DR2G	MC34063ADR2G	MC7915CD2TR4G	MMBT8550LT1G
LM2903DR2G	LM358DR2G	MC7805	MC7915CTG	SG3525ANG
LM2904DR2G	MBR20100CTG	MC7812CDTRKG	MC79M05BDTRKG	UC2843BNG
LM317LBDR2G	MBRS340T3G	MC7815CTG	MC79M15CDTRKG	UC2844BD1R2G
LM324DR2G	MBRS540T3G	MC78L05ACDR2G	MMBT3904LT1G	UC3845BNG

MAXLINEAR 艾科嘉(EXAR) 西伯斯(SIPEX)

SP202EEN-L/TR	SP3222EEA-L/TR	SP3243EUEA-L/TR	SP485EEN-L/TR	SPX5205M5-L-3.3/TR
SP232EEN-L/TR	SP3232EBEA-L/TR	SP336EEY-L/TR	SPX29302T5-L/TR	SPX5205M5-L-5.0/TR
SP3220EEY-L/TR	SP3232EEY-L/TR	SP3485EN-L/TR	SPX3819M5-L-3-3/TR	SPX1117

新日本无线(JRC)

NJM2035M	NJM2370U33	NJM2831F33	NJM3414AM	NJM78M05DL1A
NJM2274R	NJM2567V	NJM3404AV	NJM4558M	NJM79M05DL1A

美信(MAXIM) 达拉斯(DALLAS)

DS1302	DS1337	MAX232AEPE	MAX232CSE	MAX3232IPWR
DS1307	MAX17126ETM	MAX232AEPE	MAX232ESE	MAX485ESA
DS1338Z	MAX1771CSA	MAX232AESE	MAX232N	MAX6701BAUT30
DS2431P	MAX202CPW	MAX232CPE	MAX3088ESA	MAX9722AETE

微芯(MICROCHIP) 爱特梅尔(ATMEL)

AT24C02C-SSHM-T	AT24C64D-SSHM-T	PIC16F1936-I/SO	PIC16F505-I/SL	PIC16F723A-I/SS
AT24C04C-SSHM-T	PIC12F1822-I/SN	PIC16F1938-I/SO	PIC16F54-I/SO	PIC16F723-I/SO
AT24C16C-SSHM-T	PIC12F508-I/P	PIC16F1938-I/SS	PIC16F676-I/SL	PIC16F883-I/SS
AT24C256C-SSHL-T	PIC16F1826-I/SO	PIC16F1947-I/PT	PIC16F722A-I/SS	PIC16F914-I/PT

STC

STC15W4K32S4	STC12C5A32S2	STC15W204S	STC8A8K48D4	STC8H1K08
STC8H3K64S4	STC12C5A32S2	STC15W404AS	STC8A8K64D4	STC8H3K32S2
STC11L32XE	STC12C5A56S2	STC15W4K32S4	STC8A8K64S4A12	STC8H3K48S
STC11L60XE	STC15F2K08S2	STC15W4K48S4	STC8F1K08S2	STC8H3K48S4
STC12C5604AD	STC15L204EA	STC89C55RD	STC8F2K16S2	STC8H8K48U
STC12C5A08AD	STC15W104	STC8A8K32S4A12	STC8G1K08A	STC8H8K64U

华邦(WINBOND)

W25Q128FVSIG	W25Q128JVSIQ	W25Q128JWPIQ	W25Q16JVSSIQ	W25Q32JWSNIQ

美国芯源(MPS)

MP1471AGJ-Z	MP1653GTF-Z	MP2303ADN-LF-Z	MP2636GR-Z	MP8756GD-Z
MP1482DS-LF-Z	MP1657GTF-Z	MP2359DJ-LF-Z	MP3202DJ-LF-Z	MP9447GL-Z
MP1484EN-LF-Z	MP1658GTF-Z	MP2374DS-LF-Z	MP3426DL-LF-Z	MP9495DJ-LF-Z
MP1494DJ-LF-Z	MP2015AGG-33-Z	MP24943DN-LF-Z	MP5013AGJ-Z	MP9518GJS
MP1601GTF-Z	MP2122GJ-Z	MP26029GTF	MP6650GJS	NB679GD-Z
MP1605GTF-Z	MP2144GJ-Z	MP2603EJ-LF-Z	MP8126DF-LF-Z	NB680GD-Z

昂宝电子(On-Bright)

OB3635	OB2222MCP	OB2263MP	OB2281MP	OB2535CPA
OB2212AP	OB2263AP	OB2273AMP	OB2356LCPA	OB3636MP

电池芯片 马达驱动器

4054 SOT23-5	CW1053	HP4011	LN8238A	TC118
4056 ESOP8	DW02R	HY2213	FM8002A	TC618CS
CW1051	DW06D	IP5305	TC117HS	TMI8118S

其它IC

RTL8201CP-VD-LF	IT7C4337WEX	IT8563UEX	HYM8563	TH10CA061
RTL8201F-VB-CG	IT8563WEX	BM8563	AiP8563	TH11CA031

我司本着“质量为第一”的理念，通过正规渠道采购物料，专业采购师对采购物料要求严格，保证质量，在业界获得好评，货源优秀，港深两地常备原装现货。买原装正品IC，找致新科。