

Rochester Electronics Manufactured Components

Rochester branded components are manufactured using either die/wafers purchased from the original suppliers or Rochester wafers recreated from the original IP. All recreations are done with the approval of the OCM.

Parts are tested using original factory test programs or Rochester developed test solutions to guarantee product meets or exceed the OCM data sheet.

Quality Overview

- ISO-9001
- AS9120 certification
- Qualified Manufacturers List (QML) MIL-PRF-35835
 - Class Q Military
 - Class V Space Level
- Qualified Suppliers List of Distributors (QSLD)
 - Rochester is a critical supplier to DLA and meets all industry and DLA standards.

Rochester Electronics, LLC is committed to supplying products that satisfy customer expectations for quality and are equal to those originally supplied by industry manufacturers.

The original manufacturer's datasheet accompanying this document reflects the performance and specifications of the Rochester manufactured version of this device. Rochester Electronics guarantees the performance of its semiconductor products to the original OEM specifications. 'Typical' values are for reference purposes only. Certain minimum or maximum ratings may be based on product characterization, design, simulation, or sample testing.

μA78M00 SERIES POSITIVE-VOLTAGE REGULATORS

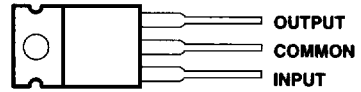
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- 3-Terminal Regulators
- Output Current Up to 500 mA
- No External Components
- Internal Thermal Overload Protection
- High Power Dissipation Capability
- Internal Short-Circuit Current Limiting
- Output Transistor Safe-Area Compensation
- Direct Replacements for Fairchild μA78M00 Series

description

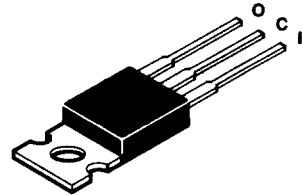
This series of fixed-voltage monolithic integrated-circuit voltage regulators is designed for a wide range of applications. These applications include on-card regulation for elimination of noise and distribution problems associated with single-point regulation. Each of these regulators can deliver up to 500 mA of output current. The internal current limiting and thermal shutdown features of these regulators make them essentially 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 and also as the power pass element in precision regulators.

KC PACKAGE
(TOP VIEW)

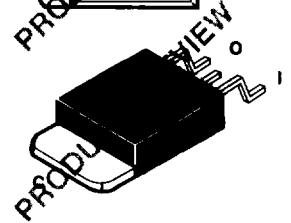


The common terminal is in electrical contact with the mounting base.

TO-220AB



KTP PACKAGE
(TOP VIEW)



AVAILABLE OPTIONS

T _A	V _O (nom) (V)	PACKAGED DEVICES		CHIP FORM (Y)
		HEAT-SINK MOUNTED (KC)	HEAT-SINK MOUNTED† (KTP)	
0°C to 125°C	5	μA78M05CKC	μA78M05CKT	μA78M05Y
	6	μA78M06CKC	μA78M06CKT	μA78M06Y
	8	μA78M08CKC	μA78M08CKT	μA78M08Y
	9	μA78M09CKC	μA78M09CKT	μA78M09Y
	10	μA78M10CKC	μA78M10CKT	μA78M10Y
	12	μA78M12CKC	μA78M12CKT	μA78M12Y
	15	μA78M15CKC	μA78M15CKT	μA78M15Y
	20	μA78M20CKC	μA78M20CKT	μA78M20Y
	24	μA78M24CKC	μA78M24CKT	μA78M24Y

† The KTP package is only available in tape and reel.

UNLESS OTHERWISE NOTED this document contains PRODUCTION DATA information current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

 **TEXAS
INSTRUMENTS**

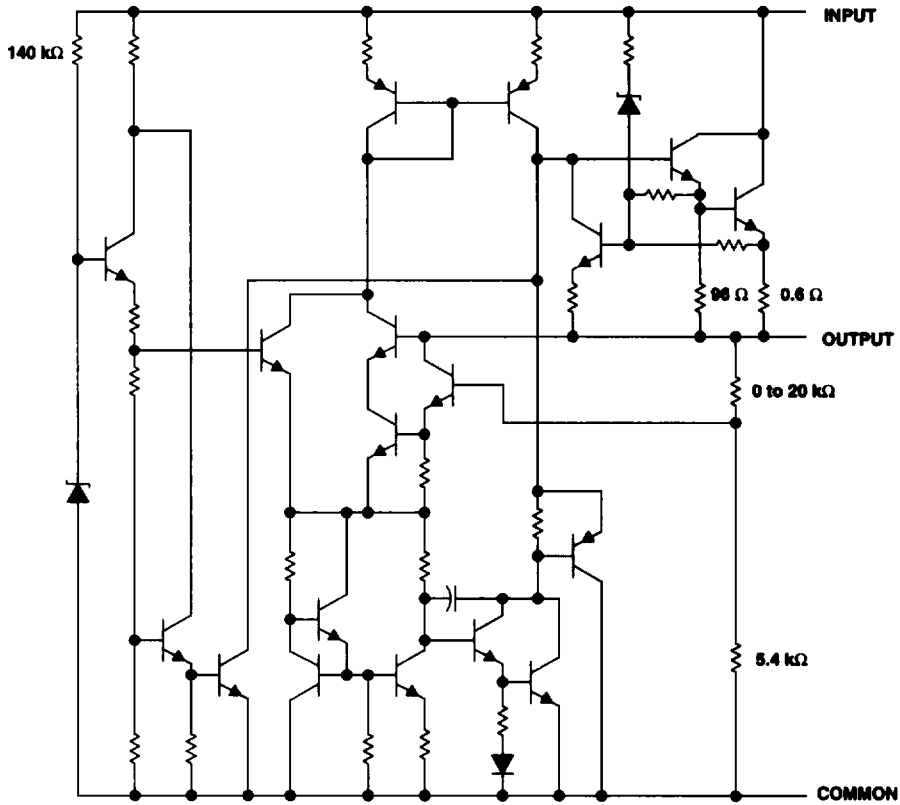
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schematic



Resistor values shown are nominal.

 **TEXAS
INSTRUMENTS**

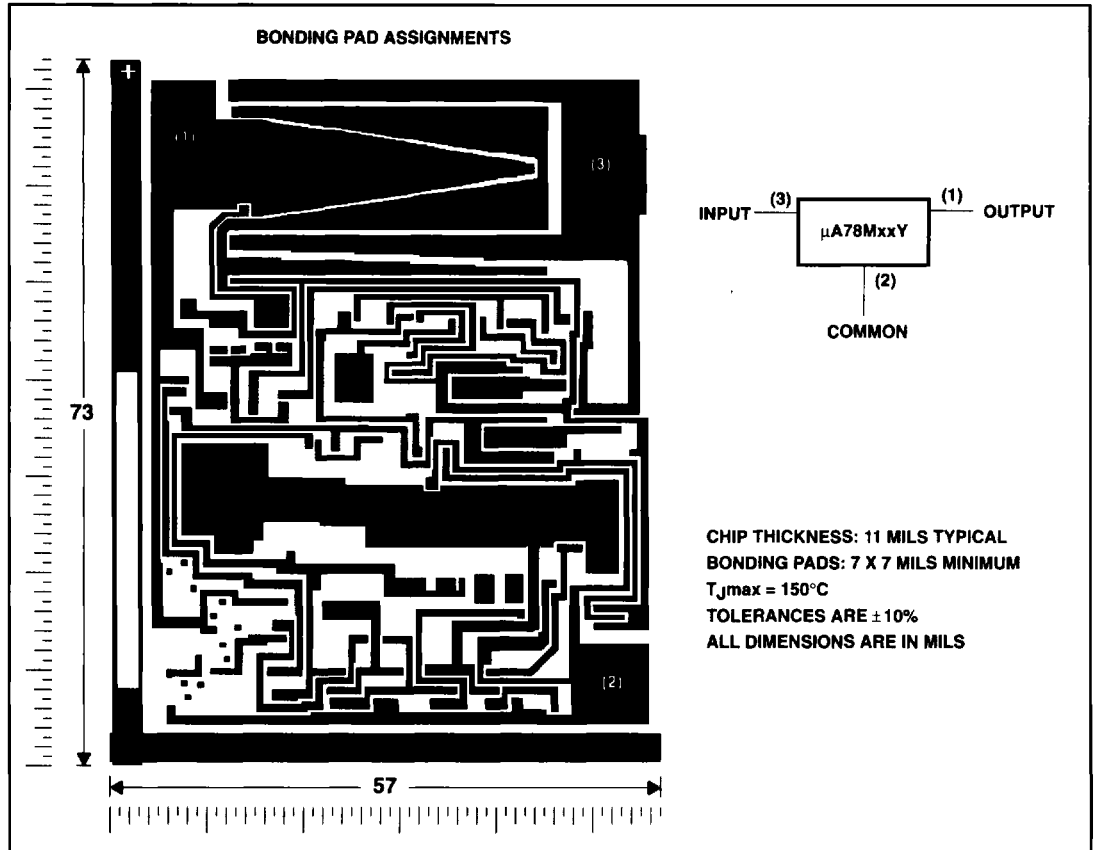
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μ A78M00 SERIES POSITIVE-VOLTAGE REGULATORS

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μ A78MxxY chip information

This chip, when properly assembled, displays characteristics similar to the μ A78MxxC. Thermal compression or ultrasonic bonding can be used on the doped aluminum bonding pads. The chip can be mounted with conductive epoxy or a gold-silicon preform.



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μA78M00 SERIES POSITIVE-VOLTAGE REGULATORS

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absolute maximum ratings over operating temperature range (unless otherwise noted)†

		μA78Mxx	UNIT
Input voltage, V_I	μA78M20, μA78M24	-40	V
	All others	35	
Continuous total power dissipation (see Note 1)		See Dissipation Rating Tables 1 and 2	
Operating free-air (T_A), case (T_C), or virtual junction (T_J) temperature range		0 to 150	°C
Storage temperature range, T_{stg}		-65 to 150	°C
Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds		260	°C

† Stresses beyond those listed under "absolute maximum ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

NOTE 1: To avoid exceeding the design maximum virtual junction temperature, these ratings should not be exceeded. Due to variations in individual device electrical characteristics and thermal resistance, the built-in thermal overload protection may be activated at power levels slightly above or below the rated dissipation.

DISSIPATION RATING TABLE 1 – FREE-AIR TEMPERATURE

PACKAGE	$T_A \leq 25^\circ\text{C}$ POWER RATING	DERATING FACTOR ABOVE $T_A = 25^\circ\text{C}$	$T_A = 70^\circ\text{C}$ POWER RATING
KC	2000 mW	16 mW/°C	1280 mW
KTP†			

† The KTP package is product preview only and derating information is not yet available.

DISSIPATION RATING TABLE 2 – CASE TEMPERATURE

PACKAGE	$T_C \leq 50^\circ\text{C}$ POWER RATING	DERATING FACTOR ABOVE $T_C = 50^\circ\text{C}$	$T_C = 125^\circ\text{C}$ POWER RATING
KC	20 W	200 mW/°C	5 W
KTP†			

† The KTP package is product preview only and derating information is not yet available.

recommended operating conditions

		MIN	MAX	UNIT
Input voltage, V_I	μA78M05	7	25	V
	μA78M06	8	25	
	μA78M08	10.5	25	
	μA78M09	11.5	26	
	μA78M10	12.5	28	
	μA78M12	14.5	30	
	μA78M15	17.5	30	
	μA78M20	23	35	
	μA78M24	27	38	
Output current, I_O			500	mA
Operating virtual junction temperature, T_J		0	125	°C



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electrical characteristics at specified virtual junction temperature, $V_I = 10\text{ V}$, $I_O = 350\text{ mA}$, $T_J = 25^\circ\text{C}$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS†	μA78M05C			UNIT
		MIN	TYP	MAX	
Output voltage ‡		4.8	5	5.2	V
	$V_I = 7\text{ V to }20\text{ V}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$	4.75		5.25	
Input voltage regulation	$I_O = 200\text{ mA}$	$V_I = 7\text{ V to }25\text{ V}$	3	100	mV
		$V_I = 8\text{ V to }20\text{ V}$			
		$V_I = 8\text{ V to }25\text{ V}$	1	50	
Ripple rejection	$V_I = 8\text{ V to }18\text{ V}$, $f = 120\text{ Hz}$	$I_O = 100\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$	62		dB
		$I_O = 300\text{ mA}$	62	80	
Output voltage regulation	$I_O = 5\text{ mA to }500\text{ mA}$	20	100	mV	
	$I_O = 5\text{ mA to }200\text{ mA}$	10	50		
Temperature coefficient of output voltage	$I_O = 5\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$	-1		mV/°C	
Output noise voltage	$f = 10\text{ Hz to }100\text{ kHz}$	40	200	μV	
Dropout voltage		2	2.5	V	
Bias current		4.5	6	mA	
Bias current change	$I_O = 200\text{ mA}$, $V_I = 8\text{ V to }25\text{ V}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$			0.8	mA
	$I_O = 5\text{ mA to }350\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$			0.5	
Short-circuit output current	$V_I = 35\text{ V}$	300		mA	
Peak output current		0.7		A	

† All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output. Pulse-testing techniques maintain T_J as close to T_A as possible. Thermal effects must be taken into account separately.

‡ This specification applies only for dc power dissipation permitted by absolute maximum ratings.

electrical characteristics at specified virtual junction temperature, $V_I = 11\text{ V}$, $I_O = 350\text{ mA}$, $T_J = 25^\circ\text{C}$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS†	μA78M06C			UNIT
		MIN	TYP	MAX	
Output voltage ‡		5.75	6	6.25	V
	$I_O = 5\text{ mA to }350\text{ mA}$, $V_I = 8\text{ V to }21\text{ V}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$	5.7		6.3	
Input voltage regulation	$I_O = 200\text{ mA}$	$V_I = 8\text{ V to }25\text{ V}$	5	100	mV
		$V_I = 9\text{ V to }25\text{ V}$	1.5	50	
Ripple rejection	$V_I = 9\text{ V to }19\text{ V}$, $f = 120\text{ Hz}$	$I_O = 100\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$	59		dB
		$I_O = 300\text{ mA}$	59	80	
Output voltage regulation	$I_O = 5\text{ mA to }500\text{ mA}$	20	120	mV	
	$I_O = 5\text{ mA to }200\text{ mA}$	10	60		
Temperature coefficient of output voltage	$I_O = 5\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$	-1		mV/°C	
Output noise voltage	$f = 10\text{ Hz to }100\text{ kHz}$	45		μV	
Dropout voltage		2		V	
Bias current		4.5	6	mA	
Bias current change	$V_I = 9\text{ V to }25\text{ V}$, $I_O = 200\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$			0.8	mA
	$I_O = 5\text{ mA to }350\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$			0.5	
Short-circuit output current	$V_I = 35\text{ V}$	270		mA	
Peak output current		0.7		A	

† All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output. Pulse-testing techniques maintain T_J as close to T_A as possible. Thermal effects must be taken into account separately.

‡ This specification applies only for dc power dissipation permitted by absolute maximum ratings.



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μA78M00 SERIES POSITIVE-VOLTAGE REGULATORS

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**electrical characteristics at specified virtual junction temperature, $V_I = 14\text{ V}$, $I_O = 350\text{ mA}$, $T_J = 25^\circ\text{C}$
(unless otherwise noted)**

PARAMETER	TEST CONDITIONS†	μA78M00C			UNIT
		MIN	TYP	MAX	
Output voltage‡		7.7	8	8.3	V
	$V_I = 10.5\text{ V to }23\text{ V}$, $I_O = 5\text{ mA to }350\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$	7.6		8.4	
Input voltage regulation	$I_O = 200\text{ mA}$	$V_I = 10.5\text{ V to }25\text{ V}$	6	100	mV
		$V_I = 11\text{ V to }25\text{ V}$	2	50	
Ripple rejection	$V_I = 11.5\text{ V to }21.5\text{ V}$, $f = 120\text{ Hz}$	$I_O = 100\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$	56		dB
		$I_O = 300\text{ mA}$	56	80	
Output voltage regulation	$I_O = 5\text{ mA to }500\text{ mA}$		25	160	mV
	$I_O = 5\text{ mA to }200\text{ mA}$		10	80	
Temperature coefficient of output voltage	$I_O = 5\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$		-1		mV/°C
Output noise voltage	$f = 10\text{ Hz to }100\text{ kHz}$		52		μV
Dropout voltage			2		V
Bias current			4.6	6	mA
Bias current change	$V_I = 10.5\text{ V to }25\text{ V}$, $I_O = 200\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$			0.8	mA
	$I_O = 5\text{ mA to }350\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$			0.5	
Short-circuit output current	$V_I = 35\text{ V}$		250		mA
Peak output current			0.7		A

† All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output. Pulse-testing techniques maintain T_J as close to T_A as possible. Thermal effects must be taken into account separately.

‡ This specification applies only for dc power dissipation permitted by absolute maximum ratings.

**electrical characteristics at specified virtual junction temperature, $V_I = 16\text{ V}$, $I_O = 350\text{ mA}$, $T_J = 25^\circ\text{C}$
(unless otherwise noted)**

PARAMETER	TEST CONDITIONS†	μA78M00C			UNIT
		MIN	TYP	MAX	
Output voltage‡		8.6	9	9.4	V
	$V_I = 11.5\text{ V to }24\text{ V}$, $I_O = 5\text{ mA to }350\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$	8.5		9.5	
Input voltage regulation	$I_O = 200\text{ mA}$	$V_I = 11.5\text{ V to }26\text{ V}$	6	100	mV
		$V_I = 12\text{ V to }26\text{ V}$	2	50	
Ripple rejection	$V_I = 13\text{ V to }23\text{ V}$, $f = 120\text{ Hz}$	$I_O = 100\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$	56		dB
		$I_O = 300\text{ mA}$	56	80	
Output voltage regulation	$I_O = 5\text{ mA to }500\text{ mA}$		25	180	mV
	$I_O = 5\text{ mA to }200\text{ mA}$		10	90	
Temperature coefficient of output voltage	$I_O = 5\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$		-1		mV/°C
Output noise voltage	$f = 10\text{ Hz to }100\text{ kHz}$		58		μV
Dropout voltage			2		V
Bias current			4.6	6	mA
Bias current change	$V_I = 11.5\text{ V to }26\text{ V}$, $I_O = 200\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$			0.8	mA
	$I_O = 5\text{ mA to }350\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$			0.5	
Short-circuit output current	$V_I = 35\text{ V}$		250		mA
Peak output current			0.7		A

† All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output. Pulse-testing techniques maintain T_J as close to T_A as possible. Thermal effects must be taken into account separately.

‡ This specification applies only for dc power dissipation permitted by absolute maximum ratings.



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electrical characteristics at specified virtual junction temperature, $V_I = 17\text{ V}$, $I_O = 350\text{ mA}$, $T_J = 25^\circ\text{C}$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS†	μA78M10C			UNIT
		MIN	TYP	MAX	
Output voltage‡		9.6	10	10.4	V
	$V_I = 12.5\text{ V to }25\text{ V}$, $I_O = 5\text{ mA to }350\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$	9.5		10.5	
Input voltage regulation	$I_O = 200\text{ mA}$	$V_I = 12.5\text{ V to }28\text{ V}$	7	100	mV
		$V_I = 14\text{ V to }28\text{ V}$	2	50	
Ripple rejection	$V_I = 15\text{ V to }25\text{ V}$, $f = 120\text{ Hz}$	$I_O = 100\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$	59		dB
		$I_O = 300\text{ mA}$	55	80	
Output voltage regulation	$I_O = 5\text{ mA to }500\text{ mA}$		25	200	mV
	$I_O = 5\text{ mA to }200\text{ mA}$		10	100	
Temperature coefficient of output voltage	$I_O = 5\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$		-1		mV/°C
Output noise voltage	$f = 10\text{ Hz to }100\text{ kHz}$		64		μV
Dropout voltage			2		V
Bias current			4.7	6	mA
Bias current change	$V_I = 12.5\text{ V to }28\text{ V}$, $I_O = 200\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$			0.8	mA
	$I_O = 5\text{ mA to }350\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$			0.5	
Short-circuit output current	$V_I = 35\text{ V}$		245		mA
Peak output current			0.7		A

† All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output. Pulse-testing techniques maintain T_J as close to T_A as possible. Thermal effects must be taken into account separately.

‡ This specification applies only for dc power dissipation permitted by absolute maximum ratings.

electrical characteristics at specified virtual junction temperature, $V_I = 9\text{ V}$, $I_O = 350\text{ mA}$, $T_J = 25^\circ\text{C}$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS†	μA78M12C			UNIT
		MIN	TYP	MAX	
Output voltage‡		11.5	12	12.5	V
	$V_I = 14.5\text{ V to }27\text{ V}$, $I_O = 5\text{ mA to }350\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$	11.4		12.6	
Input voltage regulation	$I_O = 200\text{ mA}$	$V_I = 14.5\text{ V to }30\text{ V}$	8	100	mV
		$V_I = 16\text{ V to }30\text{ V}$	2	50	
Ripple rejection	$V_I = 15\text{ V to }25\text{ V}$, $f = 120\text{ Hz}$	$I_O = 100\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$	55		dB
		$I_O = 300\text{ mA}$	55	80	
Output voltage regulation	$I_O = 5\text{ mA to }500\text{ mA}$		25	240	mV
	$I_O = 5\text{ mA to }200\text{ mA}$		10	120	
Temperature coefficient of output voltage	$I_O = 5\text{ mA}$		-1		mV/°C
Output noise voltage	$f = 10\text{ Hz to }100\text{ kHz}$		75		μV
Dropout voltage			2		V
Bias current			4.8	6	mA
Bias current change	$V_I = 14.5\text{ V to }30\text{ V}$, $I_O = 200\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$			0.8	mA
	$I_O = 5\text{ mA to }350\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$			0.5	
Short-circuit output current	$V_I = 35\text{ V}$		240		mA
Peak output current			0.7		A

† All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output. Pulse-testing techniques maintain T_J as close to T_A as possible. Thermal effects must be taken into account separately.

‡ This specification applies only for dc power dissipation permitted by absolute maximum ratings.



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electrical characteristics at specified virtual junction temperature, $V_I = 23\text{ V}$, $I_O = 350\text{ mA}$, $T_J = 25^\circ\text{C}$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS†	μA78M15C			UNIT
		MIN	TYP	MAX	
Output voltage‡	$V_I = 17.5\text{ V to }30\text{ V}$, $I_O = 5\text{ mA to }350\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$	14.4	15	15.6	V
		14.25		15.75	
Input voltage regulation	$I_O = 200\text{ mA}$	$V_I = 17.5\text{ V to }30\text{ V}$	10	100	mV
		$V_I = 20\text{ V to }30\text{ V}$	3	50	
Ripple rejection	$V_I = 18.5\text{ V to }28.5\text{ V}$, $f = 120\text{ Hz}$	$I_O = 100\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$	54		dB
		$I_O = 300\text{ mA}$	54	70	
Output voltage regulation	$I_O = 5\text{ mA to }500\text{ mA}$		25	300	mV
	$I_O = 5\text{ mA to }200\text{ mA}$		10	150	
Temperature coefficient of output voltage	$I_O = 5\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$		-1		mV/°C
Output noise voltage	$f = 10\text{ Hz to }100\text{ kHz}$		90		μV
Dropout voltage			2		V
Bias current			4.8	6	mA
Bias current change	$V_I = 17.5\text{ V to }30\text{ V}$, $I_O = 200\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$			0.8	mA
	$I_O = 5\text{ mA to }350\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$			0.5	
Short-circuit output current	$V_I = 35\text{ V}$		240		mA
Peak output current			0.7		A

† All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output. Pulse-testing techniques maintain T_J as close to T_A as possible. Thermal effects must be taken into account separately.

‡ This specification applies only for dc power dissipation permitted by absolute maximum ratings.

electrical characteristics at specified virtual junction temperature, $V_I = 29\text{ V}$, $I_O = 350\text{ mA}$, $T_J = 25^\circ\text{C}$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS†	μA78M20C			UNIT
		MIN	TYP	MAX	
Output voltage‡	$V_I = 23\text{ V to }35\text{ V}$, $I_O = 5\text{ mA to }350\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$	19.2	20	20.8	V
		19		21	
Input voltage regulation	$I_O = 200\text{ mA}$	$V_I = 23\text{ V to }35\text{ V}$	10	100	mV
		$V_I = 24\text{ V to }35\text{ V}$	5	50	
Ripple rejection	$V_I = 24\text{ V to }34\text{ V}$, $f = 120\text{ Hz}$	$I_O = 100\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$	53		dB
		$I_O = 300\text{ mA}$	53	70	
Output voltage regulation	$I_O = 5\text{ mA to }500\text{ mA}$		30	400	mV
	$I_O = 5\text{ mA to }200\text{ mA}$		10	200	
Temperature coefficient of output voltage	$I_O = 5\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$		-1.1		mV/°C
Output noise voltage	$f = 10\text{ Hz to }100\text{ kHz}$		110		μV
Dropout voltage			2		V
Bias current			4.9	6	mA
Bias current change	$V_I = 23\text{ V to }35\text{ V}$, $I_O = 200\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$			0.8	mA
	$I_O = 5\text{ mA to }350\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$			0.5	
Short-circuit output current	$V_I = 35\text{ V}$		240		mA
Peak output current			0.7		A

† All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output. Pulse-testing techniques maintain T_J as close to T_A as possible. Thermal effects must be taken into account separately.

‡ This specification applies only for dc power dissipation permitted by absolute maximum ratings.



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electrical characteristics at specified virtual junction temperature, $V_I = 33$ V, $I_O = 350$ mA, $T_J = 25^\circ\text{C}$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS†	μA78M24C			UNIT
		MIN	TYP	MAX	
Output voltage ‡	$V_I = 27$ V to 38 V, $I_O = 5$ mA to 350 mA, $T_J = 0^\circ\text{C}$ to 125°C	23	24	25	V
		22.8		25.2	
Input voltage regulation	$I_O = 200$ mA	$V_I = 27$ V to 38 V	10	100	mV
		$V_I = 28$ V to 38 V	5	50	
Ripple rejection	$V_I = 28$ V to 38 V, $f = 120$ Hz	$I_O = 100$ mA, $T_J = 0^\circ\text{C}$ to 125°C	50		dB
		$I_O = 300$ mA	50	70	
Output voltage regulation	$I_O = 5$ mA to 500 mA		30	480	mV
	$I_O = 5$ mA to 200 mA		10	240	
Temperature coefficient of output voltage	$I_O = 5$ mA, $T_J = 0^\circ\text{C}$ to 125°C		-1.2		mV/°C
Output noise voltage	$f = 10$ Hz to 100 kHz		170		μV
Dropout voltage			2		V
Bias current			5	6	mA
Bias current change	$V_I = 27$ V to 38 V, $I_O = 200$ mA, $T_J = 0^\circ\text{C}$ to 125°C			0.8	mA
	$I_O = 5$ mA to 350 mA, $T_J = 0^\circ\text{C}$ to 125°C			0.5	
Short-circuit output current	$V_I = 35$ V		240		mA
Peak output current				0.7	A

† All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output. Pulse-testing techniques maintain T_J as close to T_A as possible. Thermal effects must be taken into account separately.

‡ This specification applies only for dc power dissipation permitted by absolute maximum ratings.



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**electrical characteristics at specified virtual junction temperature, $V_I = 10\text{ V}$, $I_O = 350\text{ mA}$, $T_J = 25^\circ\text{C}$
(unless otherwise noted)**

PARAMETER	TEST CONDITIONS†	μA78M05Y			UNIT
		MIN	TYP	MAX	
Output voltage‡			5		V
Input voltage regulation	$I_O = 200\text{ mA}$	$V_I = 7\text{ V to }25\text{ V}$	3		mV
		$V_I = 8\text{ V to }25\text{ V}$	1		
Ripple rejection	$V_I = 8\text{ V to }18\text{ V}$, $I_O = 300\text{ mA}$, $f = 120\text{ Hz}$		80		dB
Output voltage regulation	$I_O = 5\text{ mA to }500\text{ mA}$		20		mV
	$I_O = 5\text{ mA to }200\text{ mA}$		10		
Temperature coefficient of output voltage	$I_O = 5\text{ mA}$		-1		mV/°C
Output noise voltage	$f = 10\text{ Hz to }100\text{ kHz}$		40		μV
Dropout voltage			2		V
Bias current			4.5		mA
Short-circuit output current	$V_I = 35\text{ V}$		300		mA
Peak output current			0.7		A

† All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output. Pulse-testing techniques maintain T_J as close to T_A as possible. Thermal effects must be taken into account separately.

‡ This specification applies only for dc power dissipation permitted by absolute maximum ratings.

**electrical characteristics at specified virtual junction temperature, $V_I = 11\text{ V}$, $I_O = 350\text{ mA}$, $T_J = 25^\circ\text{C}$
(unless otherwise noted)**

PARAMETER	TEST CONDITIONS†	μA78M06Y			UNIT
		MIN	TYP	MAX	
Output voltage‡			6		V
Input voltage regulation	$I_O = 200\text{ mA}$	$V_I = 8\text{ V to }25\text{ V}$	5		mV
		$V_I = 9\text{ V to }25\text{ V}$	1.5		
Ripple rejection	$V_I = 9\text{ V to }19\text{ V}$, $I_O = 300\text{ mA}$, $f = 120\text{ Hz}$		80		dB
Output voltage regulation	$I_O = 5\text{ mA to }500\text{ mA}$		20		mV
	$I_O = 5\text{ mA to }200\text{ mA}$		10		
Temperature coefficient of output voltage	$I_O = 5\text{ mA}$		-1		mV/°C
Output noise voltage	$f = 10\text{ Hz to }100\text{ kHz}$		45		μV
Dropout voltage			2		V
Bias current			4.5		mA
Short-circuit output current	$V_I = 35\text{ V}$		270		mA
Peak output current			0.7		A

† All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output. Pulse-testing techniques maintain T_J as close to T_A as possible. Thermal effects must be taken into account separately.

‡ This specification applies only for dc power dissipation permitted by absolute maximum ratings.



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electrical characteristics at specified virtual junction temperature, $V_I = 14\text{ V}$, $I_O = 350\text{ mA}$, $T_J = 25^\circ\text{C}$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS†	μA78M08Y			UNIT
		MIN	TYP	MAX	
Output voltage‡			8		V
Input voltage regulation	$I_O = 200\text{ mA}$	$V_I = 10.5\text{ V to }25\text{ V}$	6		mV
		$V_I = 11\text{ V to }25\text{ V}$	2		
Ripple rejection	$V_I = 11.5\text{ V to }21.5\text{ V}$, $I_O = 300\text{ mA}$, $f = 120\text{ Hz}$		80		dB
Output voltage regulation	$I_O = 5\text{ mA to }500\text{ mA}$		25		mV
	$I_O = 5\text{ mA to }200\text{ mA}$		10		
Temperature coefficient of output voltage	$I_O = 5\text{ mA}$		-1		mV/°C
Output noise voltage	$f = 10\text{ Hz to }100\text{ kHz}$		52		μV
Dropout voltage			2		V
Bias current			4.6		mA
Short-circuit output current	$V_I = 35\text{ V}$		250		mA
Peak output current			0.7		A

† All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output. Pulse-testing techniques maintain T_J as close to T_A as possible. Thermal effects must be taken into account separately.

‡ This specification applies only for dc power dissipation permitted by absolute maximum ratings.

electrical characteristics at specified virtual junction temperature, $V_I = 16\text{ V}$, $I_O = 350\text{ mA}$, $T_J = 25^\circ\text{C}$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS†	μA78M09Y			UNIT
		MIN	TYP	MAX	
Output voltage‡			9		V
Input voltage regulation	$I_O = 200\text{ mA}$	$V_I = 11.5\text{ V to }26\text{ V}$	6		mV
		$V_I = 12\text{ V to }26\text{ V}$	2		
Ripple rejection	$V_I = 13\text{ V to }23\text{ V}$, $I_O = 300\text{ mA}$, $f = 120\text{ Hz}$		80		dB
Output voltage regulation	$I_O = 5\text{ mA to }500\text{ mA}$		25		mV
	$I_O = 5\text{ mA to }200\text{ mA}$		10		
Temperature coefficient of output voltage	$I_O = 5\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$		-1		mV/°C
Output noise voltage	$f = 10\text{ Hz to }100\text{ kHz}$		58		μV
Dropout voltage			2		V
Bias current			4.6		mA
Short-circuit output current	$V_I = 35\text{ V}$		250		mA
Peak output current			0.7		A

† All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output. Pulse-testing techniques maintain T_J as close to T_A as possible. Thermal effects must be taken into account separately.

‡ This specification applies only for dc power dissipation permitted by absolute maximum ratings.



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electrical characteristics at specified virtual junction temperature, $V_I = 17\text{ V}$, $I_O = 350\text{ mA}$, $T_J = 25^\circ\text{C}$
(unless otherwise noted)

PARAMETER	TEST CONDITIONS†	μA78M10Y			UNIT
		MIN	TYP	MAX	
Output voltage‡			10		V
Input voltage regulation	$I_O = 200\text{ mA}$	$V_I = 12.5\text{ V to }28\text{ V}$	7		mV
		$V_I = 14\text{ V to }28\text{ V}$	2		
Ripple rejection	$V_I = 15\text{ V to }25\text{ V}$, $I_O = 300\text{ mA}$, $f = 120\text{ Hz}$		80		dB
Output voltage regulation	$I_O = 5\text{ mA to }500\text{ mA}$		25		mV
	$I_O = 5\text{ mA to }200\text{ mA}$		10		
Temperature coefficient of output voltage	$I_O = 5\text{ mA}$		-1		mV/°C
Output noise voltage	$f = 10\text{ Hz to }100\text{ kHz}$		64		μV
Dropout voltage			2		V
Bias current			4.7		mA
Short-circuit output current	$V_I = 35\text{ V}$		245		mA
Peak output current			0.7		A

† All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output. Pulse-testing techniques maintain T_J as close to T_A as possible. Thermal effects must be taken into account separately.

‡ This specification applies only for dc power dissipation permitted by absolute maximum ratings.

electrical characteristics at specified virtual junction temperature, $V_I = 9\text{ V}$, $I_O = 350\text{ mA}$, $T_J = 25^\circ\text{C}$
(unless otherwise noted)

PARAMETER	TEST CONDITIONS†	μA78M12Y			UNIT
		MIN	TYP	MAX	
Output voltage‡			12		V
Input voltage regulation	$I_O = 200\text{ mA}$	$V_I = 14.5\text{ V to }30\text{ V}$	8		mV
		$V_I = 18\text{ V to }30\text{ V}$	2		
Ripple rejection	$V_I = 15\text{ V to }25\text{ V}$, $I_O = 300\text{ mA}$, $f = 120\text{ Hz}$		80		dB
Output voltage regulation	$I_O = 5\text{ mA to }500\text{ mA}$		25		mV
	$I_O = 5\text{ mA to }200\text{ mA}$		10		
Temperature coefficient of output voltage	$I_O = 5\text{ mA}$		-1		mV/°C
Output noise voltage	$f = 10\text{ Hz to }100\text{ kHz}$		75		μV
Dropout voltage			2		V
Bias current			4.8		mA
Short-circuit output current	$V_I = 35\text{ V}$		240		mA
Peak output current			0.7		A

† All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output. Pulse-testing techniques maintain T_J as close to T_A as possible. Thermal effects must be taken into account separately.

‡ This specification applies only for dc power dissipation permitted by absolute maximum ratings.



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electrical characteristics at specified virtual junction temperature, $V_I = 23$ V, $I_O = 350$ mA, $T_J = 25^\circ$ C (unless otherwise noted)

PARAMETER	TEST CONDITIONS†	μA78M15C			UNIT
		MIN	TYP	MAX	
Output voltage‡		15			V
Input voltage regulation	$I_O = 200$ mA	$V_I = 17.5$ V to 30 V			10
		$V_I = 20$ V to 30 V			3
Ripple rejection	$V_I = 18.5$ V to 28.5 V, $I_O = 300$ mA, $f = 120$ Hz	70			dB
Output voltage regulation	$I_O = 5$ mA to 500 mA	25			mV
	$I_O = 5$ mA to 200 mA	10			
Temperature coefficient of output voltage	$I_O = 5$ mA	-1			mV/°C
Output noise voltage	$f = 10$ Hz to 100 kHz	90			μV
Dropout voltage		2			V
Bias current		4.8			mA
Short-circuit output current	$V_I = 35$ V	240			mA
Peak output current		0.7			A

† All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output. Pulse-testing techniques maintain T_J as close to T_A as possible. Thermal effects must be taken into account separately.

‡ This specification applies only for dc power dissipation permitted by absolute maximum ratings.

electrical characteristics at specified virtual junction temperature, $V_I = 29$ V, $I_O = 350$ mA, $T_J = 25^\circ$ C (unless otherwise noted)

PARAMETER	TEST CONDITIONS†	μA78M20C			UNIT
		MIN	TYP	MAX	
Output voltage‡		20			V
Input voltage regulation	$I_O = 200$ mA	$V_I = 23$ V to 35 V			10
		$V_I = 24$ V to 35 V			5
Ripple rejection	$V_I = 24$ V to 34 V, $f = 120$ Hz, $I_O = 300$ mA	70			dB
Output voltage regulation	$I_O = 5$ mA to 500 mA	30			mV
	$I_O = 5$ mA to 200 mA	10			
Temperature coefficient of output voltage	$I_O = 5$ mA	-1.1			mV/°C
Output noise voltage	$f = 10$ Hz to 100 kHz	110			μV
Dropout voltage		2			V
Bias current		4.9			mA
Short-circuit output current	$V_I = 35$ V	240			mA
Peak output current		0.7			A

† All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output. Pulse-testing techniques maintain T_J as close to T_A as possible. Thermal effects must be taken into account separately.

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electrical characteristics at specified virtual junction temperature, $V_I = 33\text{ V}$, $I_O = 350\text{ mA}$, $T_J = 25^\circ\text{C}$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS†	μA78M24Y			UNIT
		MIN	TYP	MAX	
Output voltage‡			24		V
Input voltage regulation	$I_O = 200\text{ mA}$	$V_I = 27\text{ V to }38\text{ V}$	10		mV
		$V_I = 28\text{ V to }38\text{ V}$	5		
Ripple rejection	$V_I = 28\text{ V to }38\text{ V}$, $I_O = 300\text{ mA}$, $f = 120\text{ Hz}$		70		dB
Output voltage regulation	$I_O = 5\text{ mA to }500\text{ mA}$		30		mV
	$I_O = 5\text{ mA to }200\text{ mA}$		10		
Temperature coefficient of output voltage	$I_O = 5\text{ mA}$		-1.2		mV/°C
Output noise voltage	$f = 10\text{ Hz to }100\text{ kHz}$		170		μV
Dropout voltage			2		V
Bias current			5		mA
Short-circuit output current	$V_I = 35\text{ V}$		240		mA
Peak output current			0.7		A

† All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output. Pulse-testing techniques maintain T_J as close to T_A as possible. Thermal effects must be taken into account separately.

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