

• The implementation of standards:

Seven post-secondary level:(Enterprise standard number:Q/PS QZJ07-2004) QZJ840+15 " Seven special " Technical conditions

Prussians level: (Enterprise standard number:Q/PS 005-2004)

GB4589. 1-89 (IIClass) GB/T12750-91

Industrial Grade: (Enterprise standard number: Q/PS 005-2004)

GB4589. 1-89 (IClass) GB/T12750-91

• Main purposes:

The role of regulator and protection for a variety of electrical appliances, electronic equipment, regulator circuit

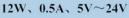
#### Maximum Ratings

Parame	eter	Symbol	Ratings	Unit
Input voltage	V.		35	V
(T <sub>A</sub> =25℃)	78M18~78M24	v <sub>I</sub>	40	v
Output current		$I_{O}$	0.5	A
Total power dissipati	$(T_A=25^{\circ}C)^{1}$	$P_D$	1.3	W
Ambient temperature	$(T_C=25^{\circ}C)^{2^{\circ}}$	$P_{D}$	12	W
Work (tube shell) ten	nperature	$T_{OP}$	-40~125	$^{\circ}$
Storage temperature		$T_{stg}$	-55~150	$^{\circ}$
T 11 .11 .11				

In a well-ventilated

When the device is installed in  $T_{\rm C}{>}25^{\circ}\!{\rm C}$  the radiator should be a derating

# Three-terminal fixed output voltage regulator





 $78M05 \ \ \textbf{Electrical characteristics} \quad \text{(Unless otherwise specified } 0 \leqslant T_{J} \leqslant +125 \, ^{\circ}\text{C} \, , \quad V_{i} = 10 \text{V}, \quad I_{0} = 350 \text{mA}, \quad C_{i} = 0. \quad 33 \mu\text{F}, \quad C_{0} = 0. \quad 1 \mu\text{F})$ 

Parameter name	Symbol	Test	Condition	Min	Тур	Max	Unit
Output Voltage	V	T <sub>J</sub> =25℃		4.8	5	5.2	V
output vortage	$V_{0}$	$5\text{mA} \leq I_{O} \leq 350\text{mA}$	$7V \leqslant V_I \leqslant 20V$	4.75	5	5.25	v
Voltage Depulation	S	T <sub>J</sub> =25℃	7V≤V <sub>I</sub> ≤25V	_	_	100	mV
Voltage Regulation	Sv	$S_V$ $I_O=200 \text{mA}$	$8V \leq V_I \leq 25V$	_	_	50	mV
Current Regulation	$S_{\rm I}$	T₁=25°C	5mA≤I <sub>0</sub> ≤500mA		1	100	mV
Current Regulation	SI	1j-23 C	$5mA \leq I_0 \leq 200mA$ ,	_	_	50	III V
Quiescent Current	$I_Q$	T <sub>J</sub> =25℃		_	_	6	mA
0.1	ΛI	$5\text{mA} \leq I_{O} \leq 350\text{mA}$		_	-	0.5	mA
Quiescent Current Change	$\triangle I_Q$	I <sub>O</sub> =200mA, 8V≤V	$I_O=200$ mA, $8V \le V_I \le 25$ V		_	0.8	ША
Input - output differential pressure	$V_{I}$ - $V_{O}$	$T_J=25$ °C, $I_O=500$ mA			2	_	V
Ripple Rejection Ratio	Srip	I <sub>O</sub> =300mA, 8V≤V	ï≤18V, f=120Hz	_	78		dB

78M06 Electrical characteristics (Unless otherwise specified  $0 \le T_{\downarrow} \le +125^{\circ}C$ ,  $V_1 = 11V$ ,  $I_0 = 350$ mA,  $C_1 = 0$ .  $33\mu$ F,  $C_0 = 0$ .  $1\mu$ F)

Parameter name	Symbol	Tes	st Condition	Min	Тур	Max	Unit
Output Voltage	$V_{0}$	T <sub>J</sub> =25℃		5.75	6	6.25	v
output vortage	<b>v</b> <sub>0</sub>	$5\text{mA} \leq I_0 \leq 350\text{mA}$	, 8V≤V <sub>I</sub> ≤21V	5.7	6	6.3	v
Voltage Regulation	S	T <sub>J</sub> =25℃	8V≤V <sub>I</sub> ≤25V	1	I	100	mV
vortage Regulation	Voltage Regulation S <sub>V</sub>	I <sub>O</sub> =200mA	9V≤V <sub>I</sub> ≤25 V	_		50	mv
Current Regulation	$S_{I}$	T₁=25°C	5mA≤I <sub>0</sub> ≤500mA	_		120	mV
current Regulation	SI	1 j-23 C	$5\text{mA} \leq I_0 \leq 200\text{mA}$	_		60	III V
Quiescent Current	$I_Q$	T <sub>J</sub> =25℃		_		6	mA
Quiescent Current Change	$\triangle I_Q$	$5\text{mA} \leq I_0 \leq 350\text{mA}$	1	_	-	0.5	mA
Quiescent current change	∠lQ	I <sub>O</sub> =200mA, 9V≤	$I_0=200 \text{mA}, 9V \leq V_1 \leq 25V$		_	0.8	IIIA
Input - output differential pressure	V <sub>I</sub> - V <sub>O</sub>	$T_J=25$ °C, $I_O=500$ mA		_	2	-	V
Ripple Rejection Ratio	Srip	I <sub>O</sub> =300mA, 9V≤	V <sub>I</sub> ≤19V, f=120Hz		75	_	dB

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78M08 Electrical characteristics (Unless otherwise specified  $0 \leqslant T_{J} \leqslant +125 ^{\circ}\text{C}$ ,  $V_{i} = 14V$ ,  $I_{0} = 350 \text{mA}$ ,  $C_{i} = 0.33 \mu\text{F}$ ,  $C_{0} = 0.1 \mu\text{F}$ )

Parameter name	Symbol	16	Test Condition	Min	Тур	Max	Unit
Out out Valtage	V	T <sub>J</sub> =25℃		7.7	8	8.3	V
Output Voltage	$V_{O}$	5mA≤I <sub>O</sub> ≤3501	mA, 10.5V≤V <sub>1</sub> ≤23V	7.6	8	8.4	v
V-14 D1-4:	c	T <sub>J</sub> =25℃	10.5V≤V <sub>I</sub> ≤25V	=	_	100	V
Voltage Regulation	$S_V$	I <sub>O</sub> =200mA	11V≤V <sub>1</sub> ≤25V	_	_	50	mV
Consent Beauleties	c	T-25°C	5mA≤I <sub>0</sub> ≤500mA	=	=	160	mV
Current Regulation	$S_{I}$	T <sub>J</sub> =25℃	$5mA \leq I_0 \leq 200mA$ ,	-	-	80	
Quiescent Current	$I_Q$	T <sub>J</sub> =25℃	A.		_	6	mA
	^ I	5mA≤I <sub>O</sub> ≤350i	mA	_	_	0.5	A
Quiescent Current Change	$\triangle I_Q$	I <sub>O</sub> =200mA, 10	$I_{O}=200 \text{mA}, 10.5 \text{V} \leq V_{I} \leq 25 \text{V}$		_	0.8	mA
Input - output differential pressure	V <sub>I</sub> - V <sub>O</sub>	$T_J=25$ °C, $I_O=500$ mA		_	2	_	V
Ripple Rejection Ratio	Srip	I <sub>O</sub> =300mA, 9V	′≤V <sub>I</sub> ≤19V, f=120Hz	_	73	_	dB

78M09 Electrical characteristics (Unless otherwise specified  $0 \leqslant T_{\text{J}} \leqslant +125\,^{\circ}\text{C}$ ,  $V_{\text{i}} = 15\text{V}$ ,  $I_{\text{0}} = 350\text{mA}$ ,  $C_{\text{i}} = 0.33\mu\text{F}$ ,  $C_{\text{0}} = 0.1\mu\text{F}$ )

Parameter name	Symbol	Test C	Condition	Min	Тур	Max	Unit
V		T <sub>J</sub> =25°C		8.6	9	9.4	v
Output Voltage	$V_{O}$	$5\text{mA} \leq I_{\text{O}} \leq 350\text{mA}$	, 11.5V≤V <sub>I</sub> ≤24V	8.55	9	9.45	v
Voltage Regulation	$S_V$	T <sub>J</sub> =25℃	$11.5V \leqslant V_I \leqslant 25V$		I	100	mV
vortage Regulation	30	I <sub>O</sub> =200mA	$12V \leqslant V_I \leqslant 25V$		I	50	III V
Current Regulation	$S_{\rm I}$	T₁=25°C	5mA≤I <sub>0</sub> ≤500mA	_	1	180	mV
Current Regulation	3]	1]-23 C	$5mA \leq I_0 \leq 200mA$ ,	_		90	
Quiescent Current	$I_Q$	T <sub>J</sub> =25℃		Ι	Ţ	6	mA
Quiescent Current Change	$\triangle I_Q$	$5\text{mA} \leq I_{\text{O}} \leq 350\text{mA}$			I	0.5	mA
Quiescent current change	ΔIQ	I <sub>O</sub> =200mA, 11.5V	$I_0 = 200 \text{mA}, 11.5 \text{V} \le V_1 \le 25 \text{V}$		ĺ	0.8	IIIA
Input - output differential pressure	$V_{I}$ - $V_{O}$	$T_J=25$ °C, $I_O=500$ mA			2	_	V
Ripple Rejection Ratio	Srip	I <sub>O</sub> =300mA, 12.5V	≤V <sub>I</sub> ≤23V, f=120Hz		71		dB

78M10 Electrical characteristics (Unless otherwise specified  $0 \le T_{\cup} \le +125 \,^{\circ}\text{C}$ ,  $V_{1} = 17V$ ,  $I_{0} = 350 \,\text{mA}$ ,  $C_{1} = 0$ .  $33 \,\mu\text{F}$ ,  $C_{0} = 0$ .  $1 \,\mu\text{F}$ )

Parameter name	Symbol		Test Condition	Min	Тур	Мах	Unit
Output Voltage	V	T <sub>J</sub> =25 ℃		9.6	10	10.4	V
output vortage	$V_{O}$	5mA≤I <sub>O</sub> ≤350n	mA, 12.5V≤V <sub>I</sub> ≤25V	9.5	10	10.5	v
Valtaga Pagulation	e Regulation S <sub>V</sub>	T <sub>J</sub> =25°C	12.5V≤V <sub>I</sub> ≤25V		_	100	mV
vortage Regulation		S <sub>V</sub> I <sub>O</sub>	I <sub>O</sub> =200mA	13V≤V <sub>I</sub> ≤25V	_		50
Current Regulation	Sı	T₁=25°C	5mA≤I <sub>0</sub> ≤500mA	\—.	_	200	mV
current Regulation	SI	1 1 - 23 C	$5mA \leq I_0 \leq 200mA$ ,	_	_	100	III V
Quiescent Current	$I_Q$	T <sub>J</sub> =25℃	3	_	-	6	mA
0	^ I	5mA≤I <sub>O</sub> ≤350n	mA	_	_	0.5	А
Quiescent Current Change	$\triangle I_Q$	I <sub>O</sub> =200mA, 12.	$I_0 = 200 \text{mA}, 12.5 \text{V} \le V_1 \le 25 \text{V}$		5—A	0.8	mA
Input - output differential pressure	V <sub>I</sub> - V <sub>O</sub>	$T_J=25$ °C, $I_O=500$ mA		S:	2	-	V
Ripple Rejection Ratio	Srip	I <sub>O</sub> =300mA, 13	V≤V <sub>I</sub> ≤23V, f=120Hz	_	71	_	dB

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78M12 Electrical characteristics (Unless otherwise specified  $0 \le T_{\cup} \le +125\,^{\circ}\text{C}$ ,  $V_{i} = 19V$ ,  $I_{0} = 350\text{mA}$ ,  $C_{i} = 0$ .  $33\mu\text{F}$ ,  $C_{0} = 0$ .  $1\mu\text{F}$ )

Parameter name	Symbol	Test	Condition	Min	Тур	Max	Unit
Out out Walter	$V_{\rm o}$	T <sub>J</sub> =25℃		11.5	12	12.5	V
Output Voltage	<b>v</b> <sub>0</sub>	$5\text{mA} \leq I_0 \leq 350\text{mA}$	14.5V≤V <sub>I</sub> ≤27V	11.5	12	12.6	V
Welters Desclotion	c	T <sub>J</sub> =25°C	14.5V≤V <sub>1</sub> ≤30V	-	_	100	mV
Voltage Regulation	$S_V$	I <sub>O</sub> =200mA	16V≤V <sub>I</sub> ≤30V	-	_	50	m v
O	c	T <sub>1</sub> =25°C	5mA≤I <sub>0</sub> ≤500mA	2—	_	240	mV
Current Regulation	$S_{I}$	1 <sub>3</sub> =23 C	$5\text{mA} \leq I_0 \leq 200\text{mA}$ ,	_	_	120	
Quiescent Current	$I_Q$	T <sub>J</sub> =25℃		-	_	6	mA
0.:	ΛI	$5\text{mA} \leq I_{O} \leq 350\text{mA}$		_	_	0.5	mA
Quiescent Current Change	$\triangle I_Q$	$I_0 = 200 \text{mA}, 14.5 \text{V} \le V_1 \le 30 \text{V}$		_	_	0.8	ША
Input - output differential pressure	V <sub>I</sub> - V <sub>O</sub>	$T_J=25$ °C, $I_O=500$ mA		_	2	_	V
Ripple Rejection Ratio	Srip	I <sub>O</sub> =300mA, 15V≤	V <sub>I</sub> ≤25V, f=120Hz	_	71	_	dB

78M15 Electrical characteristics (Unless otherwise specified  $0 \le T_{\nu} \le +125 \,^{\circ}\text{C}$ ,  $V_{i} = 23V$ ,  $I_{0} = 350 \,\text{mA}$ ,  $C_{i} = 0$ .  $33 \,\mu\text{F}$ ,  $C_{0} = 0$ .  $1 \,\mu\text{F}$ )

Parameter name	Symbol	Test (	Condition	Min	Тур	Max	Unit
Output Voltage	V	T <sub>J</sub> =25°C		14.4	15	15.6	V
output voltage	$V_{O}$	$5\text{mA} \leq I_{\text{O}} \leq 350\text{mA}$	$17.5V \leq V_I \leq 30V$	14.25	15	15.75	V
Voltage Regulation	c	T <sub>J</sub> =25℃	17.5V≤V <sub>I</sub> ≤30V	_	_	100	mV
vortage Regulation	$S_V$	I <sub>O</sub> =200mA	$20V \leqslant V_I \leqslant 30V$	_	_	50	III V
Current Regulation	c	T₁=25°C	5mA≤I <sub>0</sub> ≤500mA	_	_	300	V
Current Regulation	$S_{I}$	1 j=23 C	$5\text{mA} \leq I_0 \leq 200\text{mA}$ ,	_	_	150	mV
Quiescent Current	$I_Q$	T <sub>J</sub> =25℃		_	_	6	mA
Outros Channel Channel	^ I	5mA≤I <sub>O</sub> ≤350mA		_	_	0.5	A
Quiescent Current Change	$\triangle I_Q$	I <sub>O</sub> =200mA, 17.5V≤	$I_{O}=200 \text{mA}$ , $17.5 \text{V} \leq V_{I} \leq 30 \text{V}$		_	0.8	mA
Input - output differential pressure	V <sub>I</sub> - V <sub>O</sub>	$T_J=25$ °C, $I_O=500$ mA		_	2	_	V
Ripple Rejection Ratio	Srip	I <sub>O</sub> =300mA, 18.5V	≤V <sub>I</sub> ≤28.5V, f=120Hz	_	70		dB

 $78M18 \ \ \textbf{Electrical characteristics} \quad \text{(Unless otherwise specified } 0 \leqslant T_{\text{\tiny J}} \leqslant +125\,^{\circ}\text{C} \,, \quad V_{\text{\tiny I}} = 26V, \quad I_{\text{\tiny 0}} = 350\text{mA}, \quad C_{\text{\tiny I}} = 0. \quad 33\mu\text{F}, \quad C_{\text{\tiny 0}} = 0. \quad 1\mu\text{F} \,\, \text{)}$ 

Parameter name	Symbol	Te	Test Condition		Тур	Max	Unit
Output Voltage	V	T <sub>J</sub> =25°C		17.3	18	18.7	V
output voltage	$V_{O}$	5mA≤I <sub>O</sub> ≤350n	mA, 20.5V≤V <sub>I</sub> ≤33V	17.1	18	18.9	Y
	c	T <sub>J</sub> =25℃	21V≤V <sub>I</sub> ≤33V	_	_	100	mV
Voltage Regulation	$S_V$	I <sub>O</sub> =200mA	24V≤V <sub>I</sub> ≤33V	_	_	50	mV
	Sı	T₁=25°C	5mA≤I <sub>0</sub> ≤500mA	5 <del></del> 6	s===	360	mV
Current Regulation	SI	1,-23 C	$5\text{mA} \leq I_0 \leq 200\text{mA}$	_	-	180	
Quiescent Current	$I_Q$	T <sub>J</sub> =25°C	•	-	-	6	mA
0.1	Λ1	5mA≤I <sub>O</sub> ≤350r	mA	_	-	0.5	A
Quiescent Current Change	$\triangle I_Q$	I <sub>O</sub> =200mA, 21	I <sub>O</sub> =200mA, 21V≤V <sub>I</sub> ≤33V		::	0.8	mA
Input - output differential pressure	V <sub>I</sub> - V <sub>O</sub>	T <sub>J</sub> =25°C, I <sub>O</sub> =500mA		-	2		V
Ripple Rejection Ratio	Srip	I <sub>O</sub> =300mA, 22	V≤V <sub>I</sub> ≤32V, f=120Hz	_	69		dB

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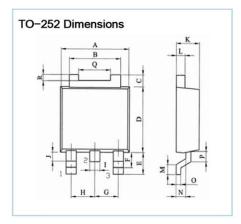


78M20 Electrical characteristics (Unless otherwise specified  $0 \le T_{\downarrow} \le +125 ^{\circ}C$ ,  $V_{i}=29V$ ,  $I_{0}=350 \text{mA}$ ,  $C_{i}=0$ .  $33 \mu\text{F}$ ,  $C_{0}=0$ .  $1 \mu\text{F}$ 

Parameter name	Symbol	, S	Test Condition	Min	Тур	Max	Unit
Output Voltage	X7	T <sub>J</sub> =25 ℃		19.2	20	20.8	V
Output Voltage $V_{ m O}$		5mA≤I <sub>O</sub> ≤350ı	mA, 23V≤V <sub>I</sub> ≤35V	19	20	21	V
Voltage Regulation	6	T <sub>J</sub> =25℃	23V≤V <sub>I</sub> ≤35V	_	_	100	
Voltage Regulation	$S_V$	I <sub>O</sub> =200mA	24V≤V <sub>I</sub> ≤35V	_	_	50	mV
Current Regulation	C	T-25%	5mA≤I <sub>0</sub> ≤500mA		_	400	V
Current Reguration	$S_{I}$	T <sub>J</sub> =25℃	$5mA \leq I_0 \leq 200mA$ ,	_		200	mV
Quiescent Current	$I_Q$	T <sub>J</sub> =25℃		_	_	6	mA
Outros Channel Channel	Δ.1	5mA≤I <sub>O</sub> ≤350n	mA	_	_	0.5	mA
Quiescent Current Change	$\triangle I_Q$	I <sub>O</sub> =200mA, 23	$I_{O} = 200 \text{mA}, 23 \text{V} \leq V_{I} \leq 35 \text{V}$		_	0.8	
Input - output differential pressure	$V_{I}$ - $V_{O}$	T <sub>J</sub> =25℃, I <sub>O</sub> =500mA		_	2		V
Ripple Rejection Ratio	Srip	I <sub>O</sub> =300mA, 24	V≤V <sub>I</sub> ≤34V, f=120Hz		69		dB

78M24 Electrical characteristics (Unless otherwise specified  $0 \le T_{J} \le +125 \,^{\circ}\text{C}$ ,  $V_{I} = 33V$ ,  $I_{0} = 350 \text{mA}$ ,  $C_{I} = 0.33 \,\mu\text{F}$ ,  $C_{0} = 0.1 \,\mu\text{F}$ )

Parameter name	Symbol	Te	st Condition	Min	Тур	Max	Unit
Output Voltage	V	T <sub>J</sub> =25 °C		23	24	25	V
output vortage	$V_{O}$	$5\text{mA} \leq I_{O} \leq 350\text{mA}$	, 27V≤V <sub>I</sub> ≤38V	22.8	24	25.2	V
		T₁=25°C	$27V \leq V_I \leq 38V$	_	l	100	
Voltage Regulation	$S_V$	I <sub>O</sub> =200mA	$28V \leq V_I \leq 38V$	_		50	mV
G P . 1 . 1	C	T-25°C	5mA≤I <sub>0</sub> ≤500mA	_	_	480	
Current Regulation	$S_{I}$	$T_J=25$ °C	$5mA \leq I_0 \leq 200mA$ ,	_	_	240	mV
Quiescent Current	$I_Q$	T <sub>J</sub> =25 °C		_	_	6	mA
	Λ.	$5\text{mA} \leq I_0 \leq 350\text{mA}$		_	-	0.5	4
Quiescent Current Change	$\triangle I_Q$	I <sub>O</sub> =200mA, 27V≤	$_{O}$ =200mA, 27V $\leq$ V $_{I}$ $\leq$ 38V		_	0.8	.8 mA
Input - output differential pressure	V <sub>I</sub> - V <sub>O</sub>	T <sub>J</sub> =25℃, I <sub>O</sub> =500mA		_	2	_	V
Ripple Rejection Ratio	Srip	I <sub>O</sub> =300mA, 28V≤	V <sub>I</sub> ≤38V; f=120Hz	_	67	_	dB



	TO	252		TO	Unit : mr
Size Symbol	min	-252 max	Size	min	-252 max
Α	6.4	6.8	J	0.6	0.95
В	4.8	5.53	K	2.1	2.5
С	0.9	1.3	L	0.4	0.6
D	5.9	6.3	M	0.80	1.4
Е	2.3	2.9	N	0.9	1.1
F	1.8	2.2	0	0.4	0.6
G	2.2	2.4	P	0.81	1.01
Н	2.2	2.4	Q	3.6	4.0
I	0.66	0.92	R	0.4	0.6

1 IN 2 GND 3 OUT 4 GND

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