



78M05/78M12

Description

The 78MXX series of three-terminal positive regulators are available in TO-252 package. Each type employs internal current limiting, thermal shut-down and safe area protection, making it essentially indestructible. If adequate heat sinking is provided, It can deliver over 0.5A output current, Although designed as fixed voltage regulators, It can be used with external components to obtain adjustable voltage and currents.

Features

- Output current up to 0.5A
- Thermal overload protection
- Short circuit protection
- Output Transistor SOA protection

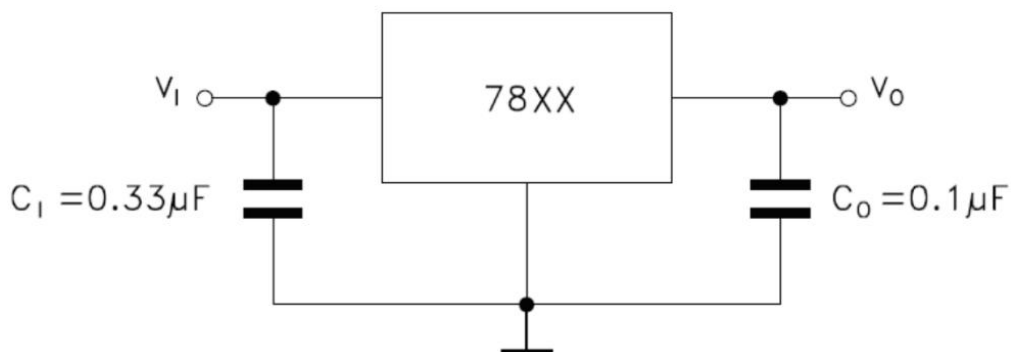
Pin Configuration(TO-252)		
Pin NO.	Pin Name	Function
1	VIN	Input voltage pin
2	GND	GND pin
3	VOUT	Output voltage pin

TO-252

Absolute Maximum Ratings($T_A=25^{\circ}\text{C}$, unless otherwise specified)

Parameter	Symbol	Value	Unit
Input Voltage	V_{IN}	36	V
Output Current	I_{OUT}	500	mA
Total Power Dissipation	P_D	1	W
Operation Temperature	T_{OPR}	$-40\sim+125$	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	$-55\sim+150$	$^{\circ}\text{C}$
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	100	$^{\circ}\text{C/W}$

Test schematic diagram





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78M05 Electrical Characteristics($T_A=25^{\circ}\text{C}$, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Max	Unit
Output voltage	V_{OUT}	$V_{\text{IN}}=10\text{V}, I_{\text{OUT}}=250\text{mA}$	4.85	5.15	V
Line regulation	ΔV_{OUT}	$V_{\text{IN}}=7\text{V}\sim 11\text{V}, I_{\text{OUT}}=250\text{mA}$	-25	25	mV
Load regulation	ΔV_{OUT}	$V_{\text{IN}}=10\text{V}, I_{\text{OUT}}=5\text{mA}\sim 250\text{mA}$	-40	40	mV
Load regulation		$V_{\text{IN}}=10\text{V}, I_{\text{OUT}}=5\text{mA}\sim 500\text{mA}$	-80	80	mV
Quiescent Current	I_{Q}	$V_{\text{IN}}=10\text{V}, I_{\text{OUT}}=5\text{mA}$	1	5	mA
Quiescent Current	ΔI_{Q}	$V_{\text{IN}}=7\text{V}, I_{\text{OUT}}=5\sim 250\text{mA}$	-0.4	0.4	mA
Quiescent Current		$V_{\text{IN}}=7\text{V}\sim 26\text{V}, I_{\text{OUT}}=50\text{mA}$	-0.7	0.7	mA
Supply Current	I_{CC}	$V_{\text{IN}}=36\text{V}, I_{\text{OUT}}=0\text{mA}$		9	mA

78M12 Electrical Characteristics($T_A=25^{\circ}\text{C}$, unless otherwise specified)

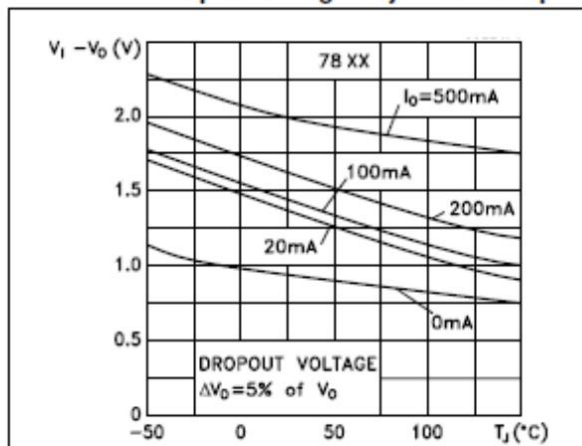
Parameter	Symbol	Test Conditions	Min	Max	Unit
Output voltage	V_{OUT}	$V_{\text{IN}}=19\text{V}, I_{\text{OUT}}=250\text{mA}$	11.64	12.36	V
Line regulation	ΔV_{OUT}	$V_{\text{IN}}=16\text{V}\sim 20\text{V}, I_{\text{OUT}}=250\text{mA}$	-25	25	mV
Load regulation	ΔV_{OUT}	$V_{\text{IN}}=19\text{V}, I_{\text{OUT}}=5\text{mA}\sim 250\text{mA}$	-40	40	mV
Load regulation		$V_{\text{IN}}=19\text{V}, I_{\text{OUT}}=5\text{mA}\sim 500\text{mA}$	-80	80	mV
Quiescent Current	I_{Q}	$V_{\text{IN}}=19\text{V}, I_{\text{OUT}}=5\text{mA}$	1	5	mA
Quiescent Current	ΔI_{Q}	$V_{\text{IN}}=16\text{V}, I_{\text{OUT}}=5\sim 250\text{mA}$	-0.4	0.4	mA
Quiescent Current		$V_{\text{IN}}=16\text{V}\sim 26\text{V}, I_{\text{OUT}}=50\text{mA}$	-0.7	0.7	mA
Supply Current	I_{CC}	$V_{\text{IN}}=36\text{V}, I_{\text{OUT}}=0\text{mA}$		9	mA



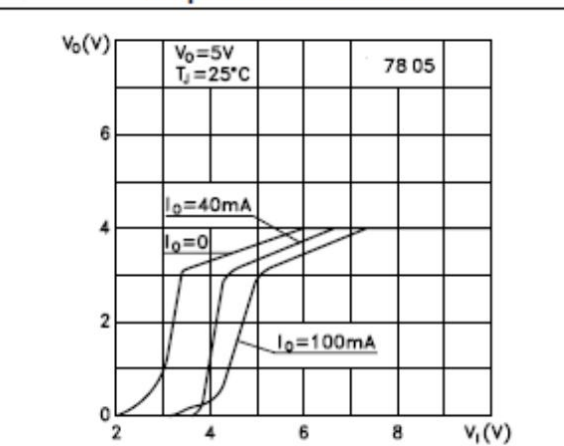
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Typical Characteristics

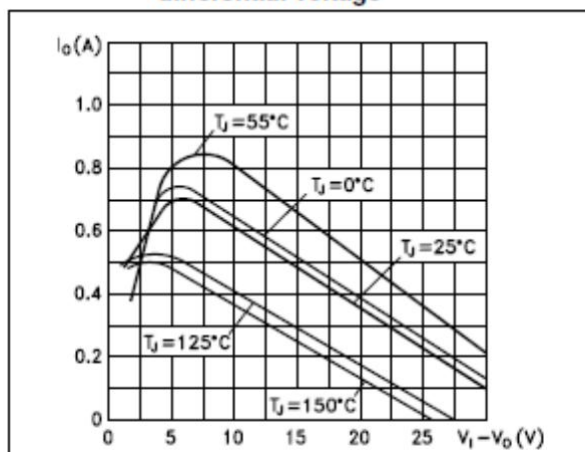
Dropout voltage vs junction temp.



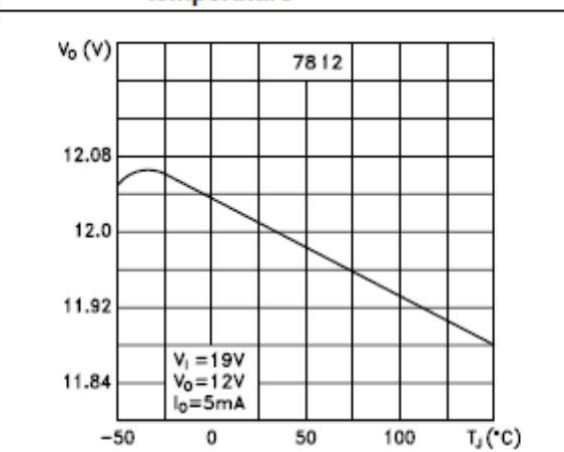
Dropout characteristics



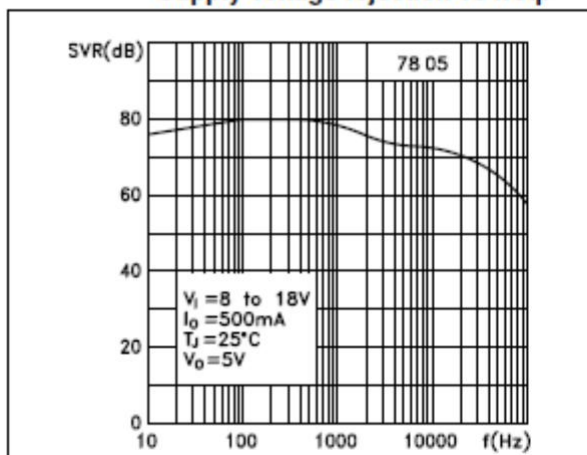
Peak output current vs input-output differential voltage



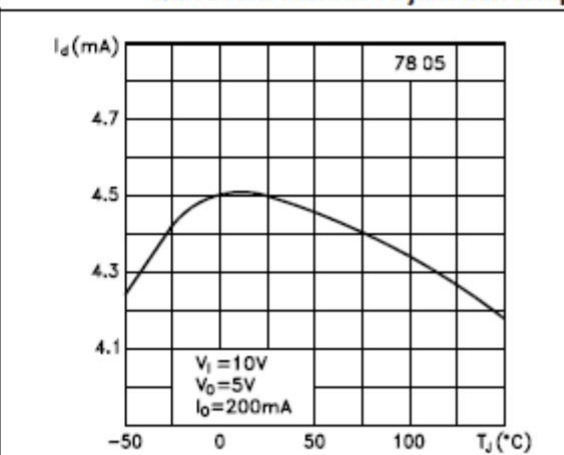
Output voltage vs junction temperature



Supply voltage rejection vs freq.



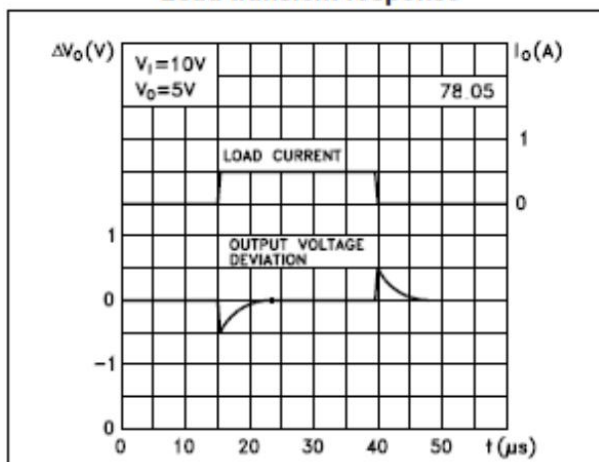
Quiescent current vs junction temp.



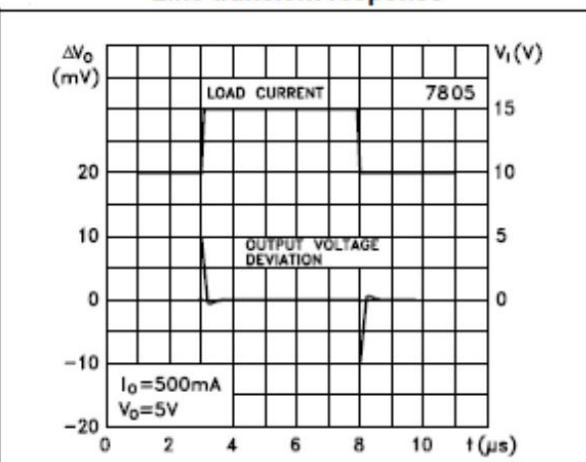


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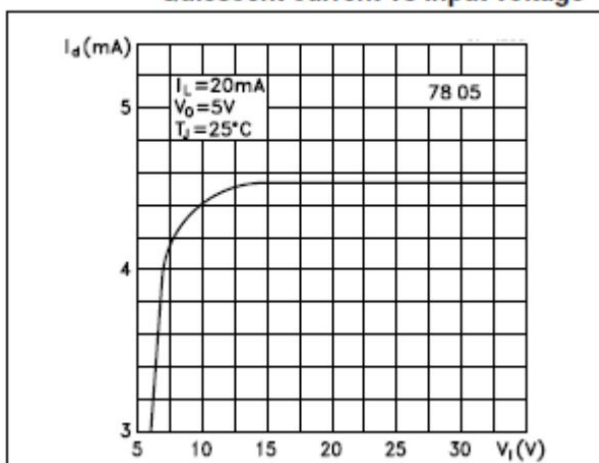
Load transient response



Line transient response



Quiescent current vs input voltage



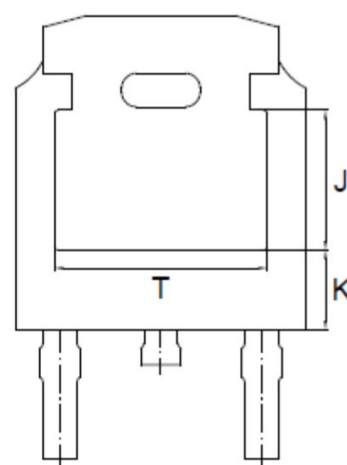
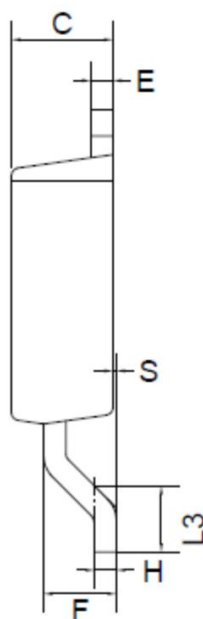
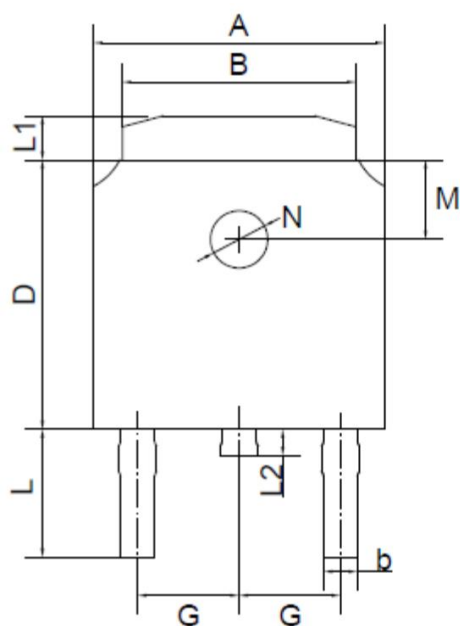


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Package Information

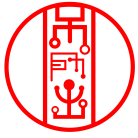
TO-252

Dimensions in mm



TO-252(D-PAK) mechanical data

UNIT		A	B	b	C	D	E	F	G	H	L	L1	L2	L3	S	M	N	J	K	T
mm	max	6.7	5.5	0.8	2.5	6.3	0.6	1.8	2.29	0.55	3.1	1.2	1.0	1.75	0.1	1.8	1.3	3.16	1.80	4.83
	min	6.3	5.1	0.3	2.1	5.9	0.4	1.3	TYPICAL	0.45	2.7	0.8	0.6	1.40	0.0	TYPICAL	TYPICAL	ref.	ref.	ref.
mil	max	264	217	31	98	248	24	71	90	22	122	47	39	69	4	71	51	124	71	190
	min	248	201	12	83	232	16	51	TYPICAL	18	106	31	24	55	0	TYPICAL	TYPICAL	ref.	ref.	ref.



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