M5279LXX

FIXED NEGATIVE OUTPUT 3-TERMINAL REGULATOR (WITH PROTECTION CIRCUIT)

DESCRIPTION

M529LXX is a monolithic integrated circuit designed as the 79L series for negative power source 3-pin regulators with the maximum load current of 150mA level.

This IC contains a power supply protection circuit in case of the short circuit, over heat protection circuit, and safe operation area protection circuit in the 3-terminal package.

This IC is best suitable for the wide range of general power source because of its various applicable voltage levels.

FEATURES

- Has the compatibility with other maker's 79L series.
- Small current flows in case of a short circuit because of the adoption of the circuit . . . . . I_{OS} = 30mA
- Various voltage ranks (–5V, –6V, –9V, –12V, –15V)
- Large internal permissible loss . . . . . 900mW (Max.)

APPLICATION

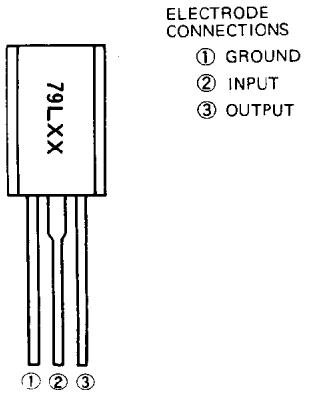
Power source for general electronic devices such as VTRs and CDs

FUNCTION CODE

M5279LXX
└—Output voltage value

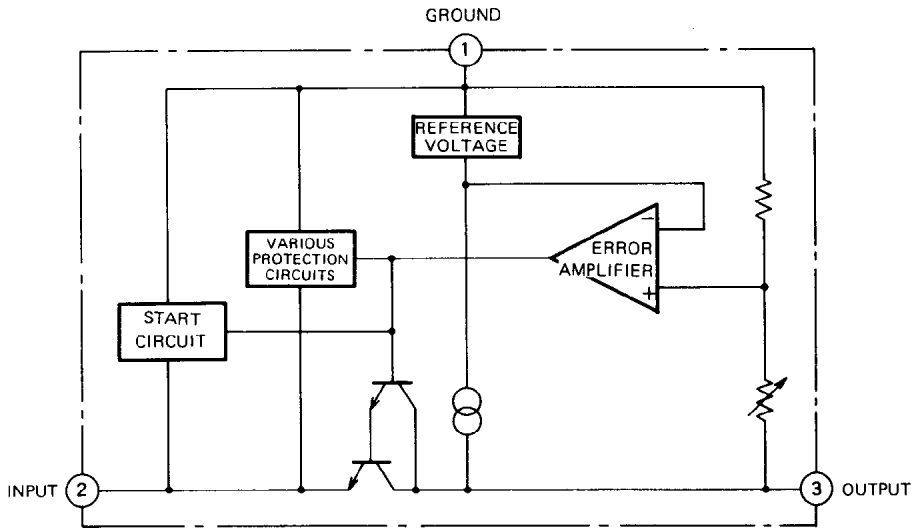
Type	Marking	Output voltage
M5279L05	**79L05**	5V
M5279L06	**79L06**	6V
M5279L09	**79L09**	9V
M5279L12	**79L12**	12V
M5279L15	**79L15**	15V

PIN CONFIGURATION



Outline EIAJ:TO-92L

BLOCK DIAGRAM



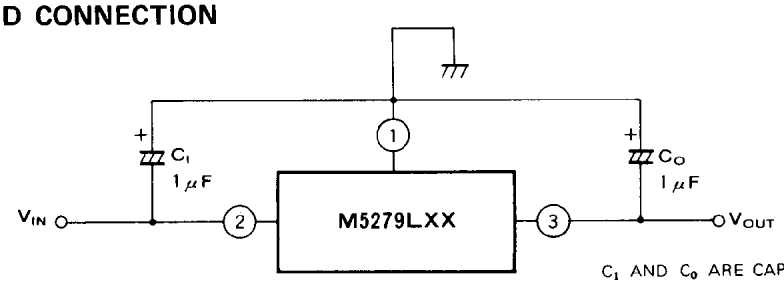
MITSUBISHI ELECTRIC

FIXED NEGATIVE OUTPUT 3-TERMINAL REGULATOR(WITH PROTECTION CIRCUIT)

ABSOLUTE MAXIMUM RATINGS (Ta=25℃, unless otherwise noted)

Symbol	Parameter	Ratings	Unit
V_{IN}	Input voltage	−36	V
I_L	Load current	150	mA
Pd	Power dissipation	900	mW
Topr	Operating temperature	−20～+75	℃
Tstg	Storage temperature	−55～+150	℃

STANDARD CONNECTION



C_1 AND C_o ARE CAPACITORS TO PREVENT OSCILLATIONS. MAKE CONNECTIONS AS CLOSE TO THE IC AS POSSIBLE.

ELECTRICAL CHARACTERISTICS

M5279L05 (V_I=−10V, I_L=40mA, Ta=25℃, C_I=0.33μF, C_O=0.1μF unless otherwith noted)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
V_O	Output voltage		−5.20	−5.0	−4.80	V
Reg-in	Input regulation	−20V≦V_I≦−7V			200	mV
		−20V≦V_I≦−8V			150	
Reg-L	Load regulation	1mA≦I_L≦150mA			60	mV
		1mA≦I_L≦40mA			30	
V_O	Output voltage	−20V≦V_I≦−7V, 1mA≦I_L≦40mA	−5.25		−4.75	V
		V_I=−10V, 1mA≦I_L≦70mA	−5.25		−4.75	
I_B	Bias current	I_L=0		2.6	5.0	mA
$\triangle I_B$	Bias current variability	−20V≦V_I≦−8V, I_L=40mA		0.1	1.5	mA
		V_I=−10V, 1mA≦I_L≦40mA			0.2	
V_{NO}	Output noise voltage	BW : 10Hz～100kHz		40		μVrms
RR	Ripple rejection ratio	f=120Hz, V_I=0dBm	41	49		dB
V_{DIF}	Minimum input/output voltage difference			1.0		V
I_{LP}	Peak load current		150			mA
I_{OS}	Output short holding current			30		mA

M5279L06 (V_I=−11V, I_L=40mA, Ta=25℃, C_I=0.33μF, C_O=0.1μF unless otherwise noted)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
V_O	Output voltage		−6.24	−6.0	−5.76	V
Reg-in	Input regulation	−21V≦V_I≦−8V			200	mV
		−21V≦V_I≦−9V			150	
Reg-L	Load regulation	1mA≦I_L≦150mA			60	mV
		1mA≦I_L≦40mA			30	
V_O	Output voltage	−21V≦V_I≦−8V, 1mA≦I_L≦40mA	−6.3		−5.7	V
		V_I=−11V, 1mA≦I_L≦70mA	−6.3		−5.7	
I_B	Bias current	I_L=0		2.6	5.0	mA
$\triangle I_B$	Bias current variability	−21V≦V_I≦−9V I_L=40mA		0.1	1.5	mA
		V_I=−11V, 1mA≦I_L≦40mA			0.2	
V_{NO}	Output noise voltage	BW : 10Hz～100kHz		40		μVrms
RR	Ripple rejection ratio	f=120Hz, V_I=0dBm	39	47		dB
V_{DIF}	Minimum input/output voltage difference			1.0		V
I_{LP}	Peak load current		150			mA
I_{OS}	Output short holding current			30		mA

FIXED NEGATIVE OUTPUT 3-TERMINAL REGULATOR(WITH PROTECTION CIRCUIT)

M5279L09 ($V_I = -15V$, $I_L = 40mA$, $Ta = 25℃$, $C_I = 0.33\mu F$, $C_O = 0.1\mu F$ unless otherwise noted)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
V_O	Output voltage		−9.36	−9.0	−8.64	V
Reg-in	Input regulation	$-24V \leqq V_I \leqq -11.5V$			225	mV
		$-24V \leqq V_I \leqq -12V$			170	
Reg-L	Load regulation	$1mA \leqq I_L \leqq 150mA$			90	mV
		$1mA \leqq I_L \leqq 40mA$			40	
V_O	Output voltage	$-24V \leqq V_I \leqq -11.5V$, $1mA \leqq I_L \leqq 40mA$	−9.45		−8.55	V
		$V_I = -15V$, $1mA \leqq I_L \leqq 70mA$	−9.45		−8.55	
I_B	Bias current	$I_L = 0$		2.6	5.0	mA
$\triangle I_B$	Bias current variability	$-24V \leqq V_I \leqq -12V$, $I_L = 40mA$		0.1	1.5	mA
		$V_I = -15V$, $1mA \leqq I_L \leqq 40mA$			0.2	
V_{NO}	Output noise voltage	BW : 10Hz ~ 100kHz		65		μVrms
RR	Ripple rejection ratio	f = 120Hz, V_I = 0dBm	37	45		dB
V_{DIF}	Minimum input/output voltage difference			1.0		V
I_{LP}	Peak load current		150			mA
I_{OS}	Output short holding current			30		mA

M5279L12 ($V_I = -19V$, $I_L = 40mA$, $Ta = 25℃$, $C_I = 0.33\mu F$, $C_O = 0.1\mu F$ unless otherwise noted)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
V_O	Output voltage		−12.48	−12.0	−11.52	V
Reg-in	Input regulation	$-27V \leqq V_I \leqq -14.5V$			250	mV
		$-27V \leqq V_I \leqq -16V$			200	
Reg-L	Load regulation	$1mA \leqq I_L \leqq 150mA$			100	mV
		$1mA \leqq I_L \leqq 40mA$			50	
V_O	Output voltage	$-27V \leqq V_I \leqq -14.5V$, $1mA \leqq I_L \leqq 40mA$	−12.6		−11.4	V
		$V_I = -19V$, $1mA \leqq I_L \leqq 70mA$	−12.6		−11.4	
I_B	Bias current	$I_L = 0$		2.6	5.0	mA
$\triangle I_B$	Bias current variability	$-27V \leqq V_I \leqq -16V$, $I_L = 40mA$		0.1	1.5	mA
		$V_I = -19V$, $1mA \leqq I_L \leqq 40mA$			0.2	
V_{NO}	Output noise voltage	BW : 10Hz ~ 100kHz		80		μVrms
RR	Ripple rejection ratio	f = 120Hz, V_I = 0dBm	37	42		dB
V_{DIF}	Minimum input/output voltage difference			1.0		V
I_{LP}	Peak load current		150			mA
I_{OS}	Output short holding current			30		mA

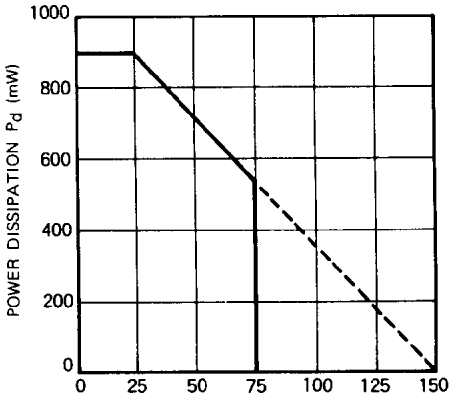
M5279L15 ($V_I = -23V$, $I_L = 40mA$, $Ta = 25℃$, $C_I = 0.33\mu F$, $C_O = 0.1\mu F$ unless otherwise noted)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
V_O	Output voltage		−15.6	−15.0	−14.4	V
Reg-in	Input regulation	$-30V \leqq V_I \leqq -17.5V$			300	mV
		$-30V \leqq V_I \leqq -20V$			250	
Reg-L	Load regulation	$1mA \leqq I_L \leqq 150mA$			150	mV
		$1mA \leqq I_L \leqq 40mA$			75	
V_O	Output voltage	$-30V \leqq V_I \leqq -17.5V$, $1mA \leqq I_L \leqq 40mA$	−15.75		−14.25	V
		$V_I = -23V$, $1mA \leqq I_L \leqq 70mA$	−15.75		−14.25	
I_B	Bias current	$I_L = 0$		2.6	5.0	mA
$\triangle I_B$	Bias current variability	$-30V \leqq V_I \leqq -20V$, $I_L = 40mA$		0.1	1.5	mA
		$V_I = -23V$, $1mA \leqq I_L \leqq 40mA$			0.2	
V_{NO}	Output noise voltage	BW : 10Hz ~ 100kHz		90		μVrms
RR	Ripple rejection ratio	f = 120Hz, V_I = 0dBm	34	39		dB
V_{DIF}	Minimum input/output voltage difference			1.0		V
I_{LP}	Peak load current		150			mA
I_{OS}	Output short holding current			30		mA

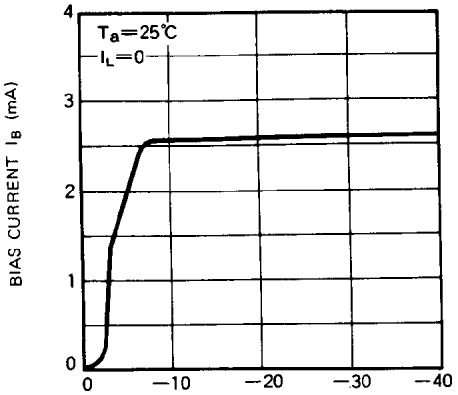
FIXED NEGATIVE OUTPUT 3-TERMINAL REGULATOR(WITH PROTECTION CIRCUIT)

TYPICAL CHARACTERISTICS

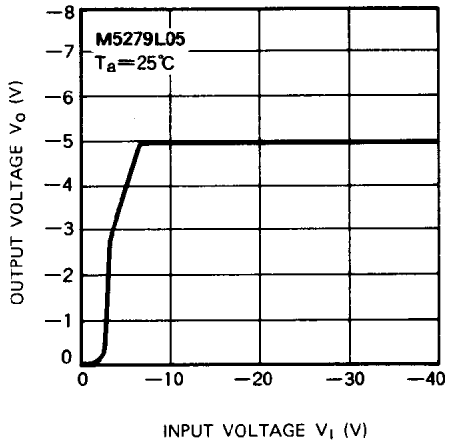
THERMAL DERATING



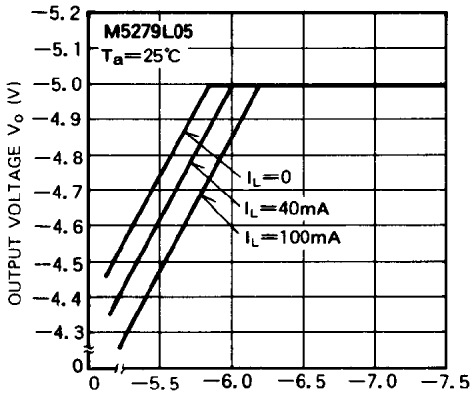
BIAS CURRENT VS. INPUT VOLTAGE



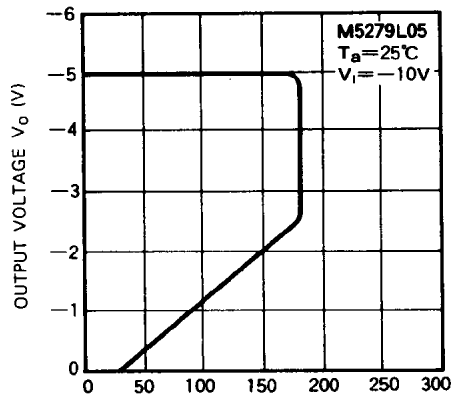
OUTPUT VOLTAGE VS. INPUT VOLTAGE



OUTPUT VOLTAGE VS. INPUT VOLTAGE



OUTPUT VOLTAGE VS. LOAD CURRENT



PEAK LOAD CURRENT VS. INPUT VOLTAGE