

MC79L00, MC79L00A Series

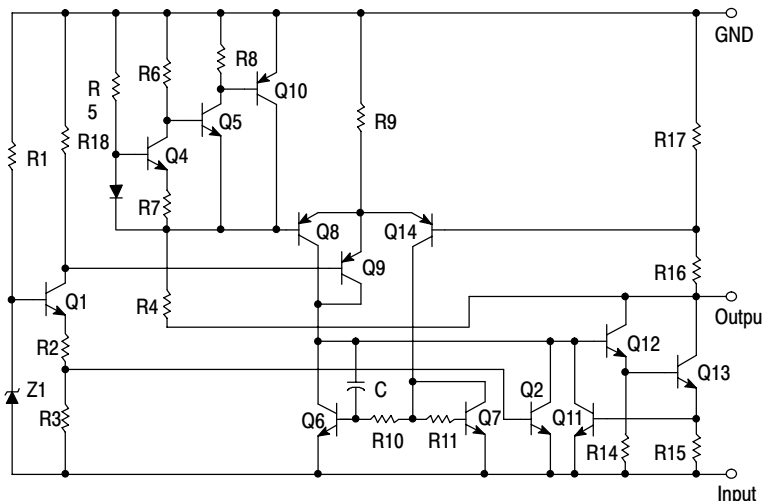
100 mA Negative Voltage Regulators

The MC79L00, A Series negative voltage regulators are inexpensive, easy-to-use devices suitable for numerous applications requiring up to 100 mA. Like the higher powered MC7900 Series negative regulators, this series features thermal shutdown and current limiting, making them remarkably rugged. In most applications, no external components are required for operation.

The MC79L00 devices are useful for on-card regulation or any other application where a regulated negative voltage at a modest current level is needed. These regulators offer substantial advantage over the common resistor/Zener diode approach.

Features

- No External Components Required
- Internal Short Circuit Current Limiting
- Internal Thermal Overload Protection
- Low Cost
- Complementary Positive Regulators Offered (MC78L00 Series)
- Pb-Free Packages are Available



* Automotive temperature range selections are available with special test conditions and additional tests in 5, 12 and 15 V devices. Contact your local ON Semiconductor sales office for information.

Figure 1. Representative Schematic Diagram



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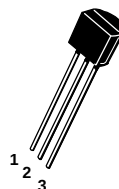
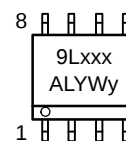
THREE-TERMINAL LOW CURRENT NEGATIVE FIXED VOLTAGE REGULATORS

MARKING DIAGRAMS



**SOIC-8
D SUFFIX
CASE 751**

- Pin 1. V_{out}
2. V_{in}
3. V_{in}
4. NC
5. GND
6. V_{in}
7. V_{in}
8. NC



**TO-92
P SUFFIX
CASE 29**

- Pin 1. Ground
2. Input
3. Output



xxx = Specific Device Code
A = Assembly Location
L = Wafer Lot
Y = Year
WW, W = Work Week
y = B or C

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 7 of this data sheet.

MC79L00, MC79L00A Series

MAXIMUM RATINGS ($T_A = +25^\circ\text{C}$, unless otherwise noted.)

Rating	Symbol	Value	Unit
Input Voltage (–5 V) (–12, –15, –18 V) (–24 V)	V_I	–30 –35 –40	Vdc
Power Dissipation Case 29 (TO–92 Type) $T_A = 25^\circ\text{C}$ Thermal Resistance, Junction–to–Ambient Thermal Resistance, Junction–to–Case Case 751 (SOIC–8 Type) (Note 1) $T_A = 25^\circ\text{C}$ Thermal Resistance, Junction–to–Ambient Thermal Resistance, Junction–to–Case	PD $R_{\theta JA}$ $R_{\theta JC}$ PD $R_{\theta JA}$ $R_{\theta JC}$	Internally Limited 160 83 Internally Limited 180 45	W $^\circ\text{C/W}$ $^\circ\text{C/W}$ W $^\circ\text{C/W}$ $^\circ\text{C/W}$
Storage Temperature Range	T_{stg}	–65 to +150	$^\circ\text{C}$
Junction Temperature	T_J	+150	$^\circ\text{C}$

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

1. SOIC–8 Junction–to–Ambient Thermal Resistance is for minimum recommended pad size. Refer to Figure 9 for Thermal Resistance variation versus pad size.

*This device series contains ESD protection and exceeds the following tests:

Human Body Model 2000 V per MIL_STD_883, Method 3015

Machine Model Method 200 V.

ELECTRICAL CHARACTERISTICS ($V_I = -10\text{ V}$, $I_O = 40\text{ mA}$, $C_I = 0.33\text{ }\mu\text{F}$, $C_O = 0.1\text{ }\mu\text{F}$, $-40^\circ\text{C} < T_J < +125^\circ\text{C}$ (for MC79LXXAB), $0^\circ\text{C} < T_J < +125^\circ\text{C}$ (for MC79LXXAC)).

Characteristics	Symbol	MC79L05C, AB			MC79L05AC, AB			Unit
		Min	Typ	Max	Min	Typ	Max	
Output Voltage ($T_J = +25^\circ\text{C}$)	V_O	–4.6	–5.0	–5.4	–4.8	–5.0	–5.2	Vdc
Input Regulation ($T_J = +25^\circ\text{C}$) –7.0 Vdc $\geq V_I \geq$ –20 Vdc –8.0 Vdc $\geq V_I \geq$ –20 Vdc	Reg_{line}	– –	– –	200 150	– –	– –	150 100	mV
Load Regulation $T_J = +25^\circ\text{C}$, $1.0\text{ mA} \leq I_O \leq 100\text{ mA}$ $1.0\text{ mA} \leq I_O \leq 40\text{ mA}$	Reg_{load}	– –	– –	60 30	– –	– –	60 30	mV
Output Voltage –7.0 Vdc $\geq V_I \geq$ –20 Vdc, $1.0\text{ mA} \leq I_O \leq 40\text{ mA}$ $V_I = -10\text{ Vdc}$, $1.0\text{ mA} \leq I_O \leq 70\text{ mA}$	V_O	–4.5 –4.5	– –	–5.5 –5.5	–4.75 –4.75	– –	–5.25 –5.25	Vdc
Input Bias Current ($T_J = +25^\circ\text{C}$) ($T_J = +125^\circ\text{C}$)	I_{IB}	– –	– –	6.0 5.5	– –	– –	6.0 5.5	mA
Input Bias Current Change –8.0 Vdc $\geq V_I \geq$ –20 Vdc $1.0\text{ mA} \leq I_O \leq 40\text{ mA}$	I_{IB}	– –	– –	1.5 0.2	– –	– –	1.5 0.1	mA
Output Noise Voltage ($T_A = +25^\circ\text{C}$, $10\text{ Hz} \leq f \leq 100\text{ kHz}$)	V_n	–	40	–	–	40	–	μV
Ripple Rejection (–8.0 $\geq V_I \geq$ –18 Vdc, $f = 120\text{ Hz}$, $T_J = +25^\circ\text{C}$)	RR	40	49	–	41	49	–	dB
Dropout Voltage ($I_O = 40\text{ mA}$, $T_J = +25^\circ\text{C}$)	$ V_I - V_O $	–	1.7	–	–	1.7	–	Vdc

MC79L00, MC79L00A Series

ELECTRICAL CHARACTERISTICS ($V_I = -19\text{ V}$, $I_O = 40\text{ mA}$, $C_I = 0.33\text{ }\mu\text{F}$, $C_O = 0.1\text{ }\mu\text{F}$, $-40^\circ\text{C} < T_J + 125^\circ\text{C}$ (for MC79LXXAC), $0^\circ\text{C} < T_J < +125^\circ\text{C}$ (for MC79LXXAB)).

Characteristics	Symbol	MC79L12C, AB			MC79L12AC, AB			Unit
		Min	Typ	Max	Min	Typ	Max	
Output Voltage ($T_J = +25^\circ\text{C}$)	V_O	-11.1	-12	-12.9	-11.5	-12	-12.5	Vdc
Input Regulation ($T_J = +25^\circ\text{C}$) -14.5 Vdc $\geq V_I \geq -27\text{ Vdc}$ -16 Vdc $\geq V_I \geq -27\text{ Vdc}$	Reg_{line}	-	-	250 200	-	-	250 200	mV
Load Regulation $T_J = +25^\circ\text{C}$, $1.0\text{ mA} \leq I_O \leq 100\text{ mA}$ $1.0\text{ mA} \leq I_O \leq 40\text{ mA}$	Reg_{load}	-	-	100 50	-	-	100 50	mV
Output Voltage -14.5 Vdc $\geq V_I \geq -27\text{ Vdc}$, $1.0\text{ mA} \leq I_O \leq 40\text{ mA}$ $V_I = -19\text{ Vdc}$, $1.0\text{ mA} \leq I_O \leq 70\text{ mA}$	V_O	-10.8 -10.8	-	-13.2 -13.2	-11.4 -11.4	-	-12.6 -12.6	Vdc
Input Bias Current ($T_J = +25^\circ\text{C}$) ($T_J = +125^\circ\text{C}$)	I_{IB}	-	-	6.5 6.0	-	-	6.5 6.0	mA
Input Bias Current Change -16 Vdc $\geq V_I \geq -27\text{ Vdc}$ $1.0\text{ mA} \leq I_O \leq 40\text{ mA}$	I_{IB}	-	-	1.5 0.2	-	-	1.5 0.2	mA
Output Noise Voltage ($T_A = +25^\circ\text{C}$, $10\text{ Hz} \leq f \leq 100\text{ kHz}$)	V_n	-	80	-	-	80	-	μV
Ripple Rejection ($-15 \leq V_I \leq -25\text{ Vdc}$, $f = 120\text{ Hz}$, $T_J = +25^\circ\text{C}$)	RR	36	42	-	37	42	-	dB
Dropout Voltage ($I_O = 40\text{ mA}$, $T_J = +25^\circ\text{C}$)	$ V_I - V_O $	-	1.7	-	-	1.7	-	Vdc

ELECTRICAL CHARACTERISTICS ($V_I = -23\text{ V}$, $I_O = 40\text{ mA}$, $C_I = 0.33\text{ }\mu\text{F}$, $C_O = 0.1\text{ }\mu\text{F}$, $-40^\circ\text{C} < T_J + 125^\circ\text{C}$ (for MC79LXXAB), $0^\circ\text{C} < T_J < +125^\circ\text{C}$ (for MC79LXXAC)).

Characteristics	Symbol	MC79L15C			MC79L15AC, AB			Unit
		Min	Typ	Max	Min	Typ	Max	
Output Voltage ($T_J = +25^\circ\text{C}$)	V_O	-13.8	-15	-16.2	-14.4	-15	-15.6	Vdc
Input Regulation ($T_J = +25^\circ\text{C}$) -17.5 Vdc $\geq V_I \geq -30\text{ Vdc}$ -20 Vdc $\geq V_I \geq -30\text{ Vdc}$	Reg_{line}	-	-	300 250	-	-	300 250	mV
Load Regulation $T_J = +25^\circ\text{C}$, $1.0\text{ mA} \leq I_O \leq 100\text{ mA}$ $1.0\text{ mA} \leq I_O \leq 40\text{ mA}$	Reg_{load}	-	-	150 75	-	-	150 75	mV
Output Voltage -17.5 Vdc $\geq V_I \geq -V_{dc}$, $1.0\text{ mA} \leq I_O \leq 40\text{ mA}$ $V_I = -23\text{ Vdc}$, $1.0\text{ mA} \leq I_O \leq 70\text{ mA}$	V_O	-13.5 -13.5	-	-16.5 -16.5	-14.25 -14.25	-	-15.75 -15.75	Vdc
Input Bias Current ($T_J = +25^\circ\text{C}$) ($T_J = +125^\circ\text{C}$)	I_{IB}	-	-	6.5 6.0	-	-	6.5 6.0	mA
Input Bias Current Change -20 Vdc $\geq V_I \geq -30\text{ Vdc}$ $1.0\text{ mA} \leq I_O \leq 40\text{ mA}$	ΔI_{IB}	-	-	1.5 0.2	-	-	1.5 0.1	mA
Output Noise Voltage ($T_A = +25^\circ\text{C}$, $10\text{ Hz} \leq f \leq 100\text{ kHz}$)	V_n	-	90	-	-	90	-	μV
Ripple Rejection ($-18.5 \leq V_I \leq -28.5\text{ Vdc}$, $f = 120\text{ Hz}$)	RR	33	39	-	34	39	-	dB
Dropout Voltage $I_O = 40\text{ mA}$, $T_J = +25^\circ\text{C}$	$ V_I - V_O $	-	1.7	-	-	1.7	-	Vdc

MC79L00, MC79L00A Series

ELECTRICAL CHARACTERISTICS ($V_I = -27\text{ V}$, $I_O = 40\text{ mA}$, $C_I = 0.33\text{ }\mu\text{F}$, $C_O = 0.1\text{ }\mu\text{F}$, $0^\circ\text{C} < T_J < +125^\circ\text{C}$, unless otherwise noted).

Characteristics	Symbol	MC79L18C			MC79L18AC			Unit
		Min	Typ	Max	Min	Typ	Max	
Output Voltage ($T_J = +25^\circ\text{C}$)	V_O	-16.6	-18	-19.4	-17.3	-18	-18.7	Vdc
Input Regulation ($T_J = +25^\circ\text{C}$) -20.7 Vdc $\geq V_I \geq -33\text{ Vdc}$ -21.4 Vdc $\geq V_I \geq -33\text{ Vdc}$ -22 Vdc $\geq V_I \geq -33\text{ Vdc}$ -21 Vdc $\geq V_I \geq -33\text{ Vdc}$	Reg_{line}	-	-	-	-	-	325	mV
		-	-	325	-	-	-	
		-	-	275	-	-	-	
		-	-	-	-	-	275	
Load Regulation $T_J = +25^\circ\text{C}$, $1.0\text{ mA} \leq I_O \leq 100\text{ mA}$ $1.0\text{ mA} \leq I_O \leq 40\text{ mA}$	Reg_{load}	-	-	170	-	-	170	mV
		-	-	85	-	-	85	
Output Voltage -20.7 Vdc $\geq V_I \geq -33\text{ Vdc}$, $1.0\text{ mA} \leq I_O \leq 40\text{ mA}$ -21.4 Vdc $\geq V_I \geq -33\text{ Vdc}$, $1.0\text{ mA} \leq I_O \leq 40\text{ mA}$ $V_I = -27\text{ Vdc}$, $1.0\text{ mA} \leq I_O \leq 70\text{ mA}$	V_O	-	-	-	-17.1	-	-18.9	Vdc
		-16.2	-	-19.8	-	-	-	
		-16.2	-	-19.8	-17.1	-	-18.9	
Input Bias Current ($T_J = +25^\circ\text{C}$) ($T_J = +125^\circ\text{C}$)	I_{IB}	-	-	6.5	-	-	6.5	mA
		-	-	6.0	-	-	6.0	
Input Bias Current Change -21 Vdc $\geq V_I \geq -33\text{ Vdc}$ -27 Vdc $\geq V_I \geq -33\text{ Vdc}$ $1.0\text{ mA} \leq I_O \leq 40\text{ mA}$	I_{IB}	-	-	-	-	-	1.5	mA
		-	-	1.5	-	-	-	
		-	-	0.2	-	-	0.1	
Output Noise Voltage ($T_A = +25^\circ\text{C}$, $10\text{ Hz} \leq f \leq 100\text{ kHz}$)	V_n	-	150	-	-	150	-	μV
Ripple Rejection ($-23 \leq V_I \leq -33\text{ Vdc}$, $f = 120\text{ Hz}$, $T_J = +25^\circ\text{C}$)	RR	32	46	-	33	48	-	dB
Dropout Voltage $I_O = 40\text{ mA}$, $T_J = +25^\circ\text{C}$	$ V_I - V_O $	-	1.7	-	-	1.7	-	Vdc

ELECTRICAL CHARACTERISTICS ($V_I = -33\text{ V}$, $I_O = 40\text{ mA}$, $C_I = 0.33\text{ }\mu\text{F}$, $C_O = 0.1\text{ }\mu\text{F}$, $0^\circ\text{C} < T_J < +125^\circ\text{C}$, unless otherwise noted).

Characteristics	Symbol	MC79L24C			MC79L24AC			Unit
		Min	Typ	Max	Min	Typ	Max	
Output Voltage ($T_J = +25^\circ\text{C}$)	V_O	-22.1	-24	-25.9	-23	-24	-25	Vdc
Input Regulation ($T_J = +25^\circ\text{C}$) -27 Vdc $\geq V_I \geq -38\text{ Vdc}$ -27.5 Vdc $\geq V_I \geq -38\text{ Vdc}$ -28 Vdc $\geq V_I \geq -38\text{ Vdc}$	Reg_{line}	-	-	-	-	-	350	mV
		-	-	350	-	-	-	
		-	-	300	-	-	300	
Load Regulation $T_J = +25^\circ\text{C}$, $1.0\text{ mA} \leq I_O \leq 100\text{ mA}$ $1.0\text{ mA} \leq I_O \leq 40\text{ mA}$	Reg_{load}	-	-	200	-	-	200	mV
		-	-	100	-	-	100	
Output Voltage -27 Vdc $\geq V_I \geq -38\text{ V}$, $1.0\text{ mA} \leq I_O \leq 40\text{ mA}$ -28 Vdc $\geq V_I \geq -38\text{ Vdc}$, $1.0\text{ mA} \leq I_O \leq 40\text{ mA}$ $V_I = -33\text{ Vdc}$, $1.0\text{ mA} \leq I_O \leq 70\text{ mA}$	V_O	-	-	-	-22.8	-	-25.2	Vdc
		-21.4	-	-26.4	-	-	-	
		-21.4	-	-26.4	-22.8	-	-25.2	
Input Bias Current ($T_J = +25^\circ\text{C}$) ($T_J = +125^\circ\text{C}$)	I_{IB}	-	-	6.5	-	-	6.5	mA
		-	-	6.0	-	-	6.0	
Input Bias Current Change -28 Vdc $\geq V_I \geq -38\text{ Vdc}$ $1.0\text{ mA} \leq I_O \leq 40\text{ mA}$	ΔI_{IB}	-	-	1.5	-	-	1.5	mA
		-	-	0.2	-	-	0.1	
Output Noise Voltage ($T_A = +25^\circ\text{C}$, $10\text{ Hz} \leq f \leq 100\text{ kHz}$)	V_n	-	200	-	-	200	-	μV
Ripple Rejection ($-29 \leq V_I \leq -35\text{ Vdc}$, $f = 120\text{ Hz}$, $T_J = +25^\circ\text{C}$)	RR	30	43	-	31	47	-	dB
Dropout Voltage $I_O = 40\text{ mA}$, $T_J = +25^\circ\text{C}$	$ V_I - V_O $	-	1.7	-	-	1.7	-	Vdc

MC79L00, MC79L00A Series

APPLICATIONS INFORMATION

Design Considerations

The MC79L00, A Series of fixed voltage regulators are designed with Thermal Overload Protections that shuts down the circuit when subjected to an excessive power overload condition, Internal Short Circuit Protection that limits the maximum current the circuit will pass.

In many low current applications, compensation capacitors are not required. However, it is recommended that the regulator input be bypassed with a capacitor if the regulator is connected to the power supply filter with long wire length, or if the output load capacitance is large. An input bypass capacitor should be selected to provide good

high-frequency characteristics to insure stable operation under all load conditions. A $0.33\ \mu\text{F}$ or larger tantalum, mylar, or other capacitor having low internal impedance at high frequencies should be chosen. The bypass capacitor should be mounted with the shortest possible leads directly across the regulator's input terminals. Normally good construction techniques should be used to minimize ground loops and lead resistance drops since the regulator has no external sense lead. Bypassing the output is also recommended.

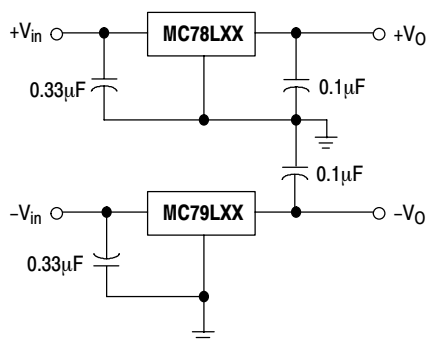
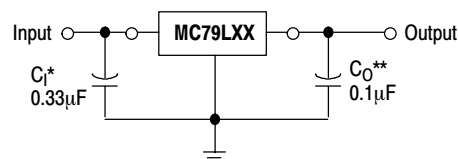


Figure 2. Positive and Negative Regulator



A common ground is required between the input and the output voltages. The input voltage must remain typically 2.0 V above the output voltage even during the low point on the ripple voltage.

* C_I is required if regulator is located an appreciable distance from the power supply filter

** C_O improves stability and transient response.

Figure 3. Standard Application

MC79L00, MC79L00A Series

ORDERING INFORMATION

Device	Nominal Voltage	Operating Temperature Range	Package	Shipping [†]
MC79L05ABD	-5.0 V	TJ = -40° to +125°C	SOIC-8	98 Units / Rail
MC79L05ABDG			SOIC-8 (Pb-Free)	98 Units / Rail
MC79L05ABDR2			SOIC-8	2500 / Tape & Reel
MC79L05ABDR2G			SOIC-8 (Pb-Free)	2500 / Tape & Reel
MC79L05ABP			TO-92	2000 Units / Bag
MC79L05ABPG			TO-92 (Pb-Free)	2000 Units / Bag
MC79L05ABPRA			TO-92	2000 / Tape & Reel
MC79L05ABPRAG			TO-92 (Pb-Free)	2000 / Tape & Reel
MC79L05ACD		TJ = 0° to +125°C	SOIC-8	98 Units / Rail
MC79L05ACDG			SOIC-8 (Pb-Free)	98 Units / Rail
MC79L05ACDR2			SOIC-8	2500 / Tape & Reel
MC79L05ACDR2G			SOIC-8 (Pb-Free)	2500 / Tape & Reel
MC79L05ACP			TO-92	2000 Units / Bag
MC79L05ACPG			TO-92 (Pb-Free)	2000 Units / Bag
MC79L05ACPRA			TO-92	2000 / Tape & Reel
MC79L05ACPRAG			TO-92 (Pb-Free)	2000 / Tape & Reel
MC79L05ACPRM			TO-92	2000 / Tape & Ammo Box
MC79L05ACPRMG			TO-92 (Pb-Free)	2000 / Tape & Ammo Box
MC79L05ACPRP			TO-92	2000 / Tape & Ammo Box
MC79L05ACPRPG			TO-92 (Pb-Free)	2000 / Tape & Ammo Box
MC79L12ABD		TJ = -40° to +125°C	SOIC-8	98 Units / Rail
MC79L12ABDG			SOIC-8 (Pb-Free)	98 Units / Rail
MC79L12ABDR2			SOIC-8	2500 / Tape & Reel
MC79L12ABDR2G			SOIC-8 (Pb-Free)	2500 / Tape & Reel
MC79L12ABP			TO-92	2000 Units / Bag
MC79L12ABPG			TO-92 (Pb-Free)	2000 Units / Bag
MC79L12ABPRA			TO-92	2000 / Tape & Reel
MC79L12ABPRAG			TO-92 (Pb-Free)	2000 / Tape & Reel
MC79L12ACD		TJ = 0° to +125°C	SOIC-8	98 Units / Rail
MC79L12ACDG			SOIC-8 (Pb-Free)	98 Units / Rail
MC79L12ACDR2			SOIC-8	2500 / Tape & Reel
MC79L12ACDR2G			SOIC-8 (Pb-Free)	2500 / Tape & Reel
MC79L12ACP			TO-92	2000 Units / Bag
MC79L12ACPG			TO-92 (Pb-Free)	2000 Units / Bag
MC79L12ACPRA			TO-92	2000 / Tape & Reel
MC79L12ACPRAG			TO-92 (Pb-Free)	2000 / Tape & Reel
MC79L12ACPRP			TO-92	2000 / Tape & Ammo Box
MC79L12ACPRPG			TO-92 (Pb-Free)	2000 / Tape & Ammo Box

MC79L00, MC79L00A Series

ORDERING INFORMATION

Device	Nominal Voltage	Operating Temperature Range	Package	Shipping [†]
MC79L15ABD	-15 V	TJ = -40° to +125°C	SOIC-8	98 Units / Rail
MC79L15ABDG			SOIC-8 (Pb-Free)	98 Units / Rail
MC79L15ABDR2			SOIC-8	2500 / Tape & Reel
MC79L15ABDR2G			SOIC-8 (Pb-Free)	2500 / Tape & Reel
MC79L15ABP			TO-92	2000 Units / Bag
MC79L15ABPG			TO-92 (Pb-Free)	2000 Units / Bag
MC79L15ABPRP			TO-92	2000 / Tape & Ammo Box
MC79L15ABPRPG			TO-92 (Pb-Free)	2000 / Tape & Ammo Box
MC79L15ACD		TJ = 0° to +125°C	SOIC-8	98 Units / Rail
MC79L15ACDG			SOIC-8 (Pb-Free)	98 Units / Rail
MC79L15ACDR2			SOIC-8	2500 / Tape & Reel
MC79L15ACDR2G			SOIC-8 (Pb-Free)	2500 / Tape & Reel
MC79L15ACP			TO-92	2000 Units / Bag
MC79L15ACPG			TO-92 (Pb-Free)	2000 Units / Bag
MC79L15ACPRA			TO-92	2000 / Tape & Reel
MC79L15ACPRAG			TO-92 (Pb-Free)	2000 / Tape & Reel
MC79L15ACPRE			TO-92	2000 / Tape & Reel
MC79L15ACPREG			TO-92 (Pb-Free)	2000 / Tape & Reel
MC79L15ACPRP			TO-92	2000 / Tape & Ammo Box
MC79L15ACPRPG			TO-92 (Pb-Free)	2000 / Tape & Ammo Box
MC79L18ABPRP	-18 V	TJ = -40° to +125°C	TO-92	2000 / Tape & Ammo Box
MC79L18ABPRPG			TO-92 (Pb-Free)	2000 / Tape & Ammo Box
MC79L18ACP		TJ = 0° to +125°C	TO-92	2000 Units / Bag
MC79L18ACPG			TO-92 (Pb-Free)	2000 Units / Bag
MC79L24ABP	-24 V	TJ = -40° to +125°C	TO-92	2000 Units / Bag
MC79L24ABPG			TO-92 (Pb-Free)	2000 Units / Bag
MC79L24ACP		TJ = 0° to +125°C	TO-92	2000 Units / Bag
MC79L24ACPG			TO-92 (Pb-Free)	2000 Units / Bag
MC79L24ACPRM			TO-92	2000 / Tape & Ammo Box
MC79L24ACPRMG			TO-92 (Pb-Free)	2000 / Tape & Ammo Box
MC79L24ACPRP			TO-92	2000 / Tape & Ammo Box
MC79L24ACPRPG			TO-92 (Pb-Free)	2000 / Tape & Ammo Box

[†]For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.