

# LM137QML

## 3-Terminal Adjustable Negative Regulators

### General Description

The LM137 are adjustable 3-terminal negative voltage regulators capable of supplying in excess of  $-1.5A$  over an output voltage range of  $-37V$  to  $-1.2V$ . These regulators are exceptionally easy to apply, requiring only 2 external resistors to set the output voltage and 1 output capacitor for frequency compensation. The circuit design has been optimized for excellent regulation and low thermal transients. Further, the LM137 series features internal current limiting, thermal shutdown and safe-area compensation, making them virtually blowout-proof against overloads.

The LM137 serve a wide variety of applications including local on-card regulation, programmable-output voltage regulation or precision current regulation. The LM137 are ideal complements to the LM117 adjustable positive regulators.

### Features

- Output voltage adjustable from  $-37V$  to  $-1.2V$
- 1.5A output current guaranteed,  $-55^{\circ}C$  to  $+150^{\circ}C$
- Line regulation typically 0.01%/V
- Load regulation typically 0.3%
- Excellent thermal regulation, 0.002%/W
- 77 dB ripple rejection
- Excellent rejection of thermal transients
- 50 ppm/ $^{\circ}C$  temperature coefficient
- Temperature-independent current limit
- Internal thermal overload protection
- Standard 3-lead transistor package
- Output is short circuit protected

#### LM137 Series Packages and Power Capability

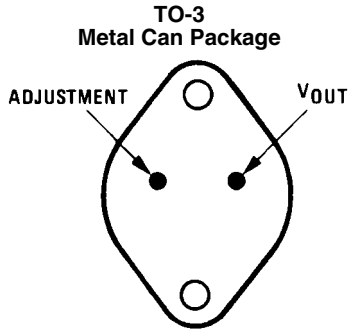
Device	Package	Rated Power Dissipation	Design Load Current
LM137	TO-3 (K)	20W	1.5A
	TO-39 (H)	2W	0.5A

### Ordering Information

NS Part Number	SMD Part Number	NS Package Number	Package Description
LM137K/883		K02C	2LD Low Profile TO-3 Metal Can
LM137H/883		H03A	3LD TO-39 Metal Can
LM137HPQMLV	5962P9951701VXA 30k rd(Si)	H03A	3LD TO-39 Metal Can
LM137H1PQMLV	5962P9951708VXA 30k rd(Si)	H03A	3LD TO-39 Metal Can
LM137H MD8		(Note 1)	Bare Die
LM137KG MD8		(Note 1)	Bare Die

Note 1: FOR ADDITIONAL DIE INFORMATION, PLEASE VISIT THE HI REL WEB SITE AT: [www.national.com/analog/space/level\\_die](http://www.national.com/analog/space/level_die)

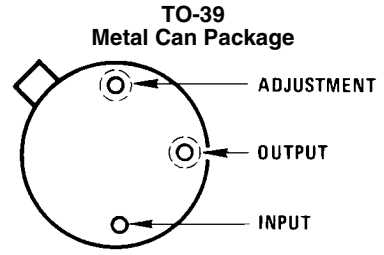
## Connection Diagrams



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Case is Input

Bottom View  
See NS Package Number K02C

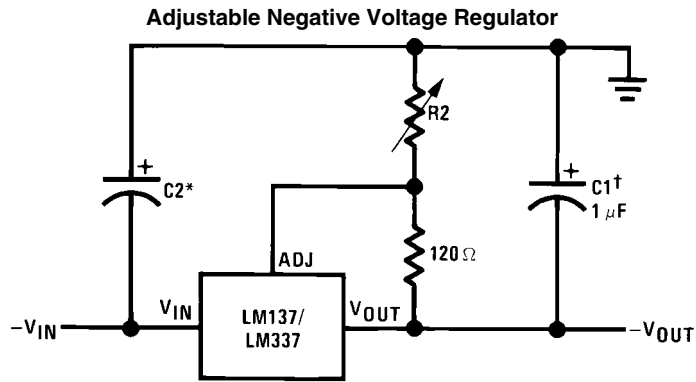


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Case Is Input

Bottom View  
See NS Package Number H03A

## Typical Applications



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Full output current not available at high input-output voltages

$$-V_{OUT} = -1.25V \left( 1 + \frac{R2}{120} \right) + (-I_{ADJ} \times R2)$$

†C1 = 1 μF solid tantalum or 10 μF aluminum electrolytic required for stability

\*C2 = 1 μF solid tantalum is required only if regulator is more than 4 from power-supply filter capacitor

Output capacitors in the range of 1 μF to 1000 μF of aluminum or tantalum electrolytic are commonly used to provide improved output impedance and rejection of transients

## Absolute Maximum Ratings *(Note 2)*

Power Dissipation <i>(Note 3)</i>	Internally Limited
Input-Output Voltage Differential	40V
Operating Ambient Temperature Range	$-55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$
Operating Junction Temperature Range	$-55^{\circ}\text{C} \leq T_J \leq +150^{\circ}\text{C}$
Storage Temperature	$-65^{\circ}\text{C} \leq T_A \leq +150^{\circ}\text{C}$
Maximum Junction Temperature	150°C
Lead Temperature (Soldering, 10 sec.)	300°C
Minimum Input Voltage	-41.25V
Maximum Power Dissipation (@25°C)	
T0-3	28 Watts
T0-39	2.5 Watts
Thermal Resistance	
$\theta_{JA}$	
T0-3 Metal Can (Still Air)	40°C/W
T0-3 Metal Can (500LF/Min Air Flow)	14°C/W
T0-39 Metal Can (Still Air @ 0.5W)	174°C/W
T0-39 Metal Can (500LF/Min Air Flow @ 0.5W)	64°C/W
$\theta_{JC}$	
T0-3	4°C/W
T0-39 Metal Can (@ 1.0W)	15°C/W
Package Weight (typical)	
T0-3	12,750mg
T0-39 Metal Can	955mg
ESD Rating <i>(Note 6)</i>	4000V

## Recommended Operating Conditions

$T_A$	$-55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$
Input Voltage Range	-41.25V to -4.25V

## Quality Conformance Inspection

Mil-Std-883, Method 5005 — Group A

Subgroup	Description	Temp (°C)
1	Static tests at	+25
2	Static tests at	+125
3	Static tests at	-55
4	Dynamic tests at	+25
5	Dynamic tests at	+125
6	Dynamic tests at	-55
7	Functional tests at	+25
8A	Functional tests at	+125
8B	Functional tests at	-55
9	Switching tests at	+25
10	Switching tests at	+125
11	Switching tests at	-55

## LM137H 883 Electrical Characteristics

### DC Parameters

The following conditions apply, unless otherwise specified.  $V_{IN} = -4.25V$ ,  $I_L = 8mA$ ,  $V_{OUT} = V_{Ref}$

Symbol	Parameter	Conditions	Notes	Min	Max	Units	Sub-groups
$V_{Ref}$	Reference Voltage			-1.275	-1.225	V	1
				-1.3	-1.2	V	2, 3
		$V_{IN} = -42V$		-1.275	-1.225	V	1
		$V_{IN} = -41.3V$		-1.3	-1.2	V	2, 3
$I_Q$	Minimum Load Current	$V_{OUT} = -1.7V$			3.0	mA	1, 2, 3
		$V_{OUT} = -1.7V$ , $V_{IN} = -11.75V$			3.0	mA	1, 2, 3
		$V_{OUT} = -1.7V$ , $V_{IN} = -42V$			5.0	mA	1
		$V_{OUT} = -1.7V$ , $V_{IN} = -41.3V$			5.0	mA	2, 3
$R_{Line}$	Line Regulation	$-42V \leq V_{IN} \leq -4.25V$		-9.0	9.0	mV	1
		$-41.3V \leq V_{IN} \leq -4.25V$		-23	23	mV	2, 3
$R_{Load}$	Load Regulation	$5mA \leq I_L \leq 500mA$ , $V_{IN} = -6.25V$		-25	25	mV	1, 2, 3
		$5mA \leq I_L \leq 500mA$ , $V_{IN} = -14.5V$		-25	25	mV	1
		$5mA \leq I_L \leq 150mA$ , $V_{IN} = -40V$		-25	25	mV	1, 2, 3
$I_{Adj}$	Adjustment Pin Current	$I_L = 5mA$			100	$\mu A$	1, 2, 3
		$V_{IN} = -42V$			100	$\mu A$	1
		$V_{IN} = -41.3V$			100	$\mu A$	2, 3
$\Delta I_{Adj} / V_{Line}$	Adjust Pin Current Change vs. Line Voltage	$-42V \leq V_{IN} \leq -4.25V$ , $I_L = 5mA$		-5.0	5.0	$\mu A$	1
		$-41.3V \leq V_{IN} \leq -4.25V$ , $I_L = 5mA$		-5.0	5.0	$\mu A$	2, 3
$\Delta I_{Adj} / I_{Load}$	Adjust Pin Current Change vs. Load Current	$5mA \leq I_L \leq 500mA$ , $V_{IN} = -6.5V$		-5.0	5.0	$\mu A$	1, 2, 3
$\theta_R$	Thermal Regulation	$V_{IN} = -14.5V$ , $I_L = 500mA$ , $t = 10mS$		-5.0	5.0	mV	1
		$V_{IN} = -14.5V$ , $I_L = 5mA$ , $t = 10mS$		-5.0	5.0	mV	1
$\theta_{JC}$	Thermal Resistance		(Note 7)		15	$^{\circ}C/W$	1
$I_{CL}$	Current Limit	$V_{IN} = -5V$		-1.8	-0.5	A	1, 2, 3
		$V_{IN} = -40V$		-0.65	-0.15	A	1, 2, 3
$V_O$	Output Voltage			-1.28	-1.22	V	1
				-1.3	-1.2	V	2, 3

### AC Parameters

$R_R$	Ripple Rejection Ratio	$V_{IN} = -6.25V$ , $V_{OUT} = V_{Ref}$ , $I_L = 125mA$ , $e_i = 1V_{RMS}$ , $F = 120Hz$	(Note 5, Note 8)	66		dB	4, 5, 6
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## LM137K 883 Electrical Characteristics

### DC Parameters

The following conditions apply, unless otherwise specified.  $V_{IN} = -4.25V$ ,  $I_L = 8mA$ ,  $V_{OUT} = V_{Ref}$

Symbol	Parameter	Conditions	Notes	Min	Max	Units	Sub-groups
$V_{Ref}$	Reference Voltage			-1.275	-1.225	V	1
				-1.3	-1.2	V	2, 3
		$V_{IN} = -42V$		-1.275	-1.225	V	1
		$V_{IN} = -41.3V$		-1.3	-1.2	V	2, 3
$I_Q$	Minimum Load Current	$V_{OUT} = -1.7V$			3.0	mA	1, 2, 3
		$V_{OUT} = -1.7V$ , $V_{IN} = -11.75V$			3.0	mA	1, 2, 3
		$V_{OUT} = -1.7V$ , $V_{IN} = -42V$			5.0	mA	1
		$V_{OUT} = -1.7V$ , $V_{IN} = -41.3V$			5.0	mA	2, 3
$R_{Line}$	Line Regulation	$-42V \leq V_{IN} \leq -4.25V$		-9.0	9.0	mV	1
		$-41.3V \leq V_{IN} \leq -4.25V$		-23	23	mV	2, 3
$R_{Load}$	Load Regulation	$V_{IN} = -6.25V$ , $8mA \leq I_L \leq 1.5A$		-25	25	mV	1, 2, 3
		$V_{IN} = -14.5V$ , $8mA \leq I_L \leq 1.5A$		-25	25	mV	1
		$V_{IN} = -40V$ , $8mA \leq I_L \leq 300mA$		-25	25	mV	1
		$V_{IN} = -40V$ , $8mA \leq I_L \leq 250mA$		-25	25	mV	2, 3
$I_{Adj}$	Adjustment Pin Current				100	$\mu A$	1, 2, 3
		$V_{IN} = -42V$			100	$\mu A$	1
		$V_{IN} = -41.3V$			100	$\mu A$	2, 3
$\Delta I_{Adj} / V_{Line}$	Adjust Pin Current Change vs. Line Voltage	$-42V \leq V_{IN} \leq -4.25V$		-5.0	5.0	$\mu A$	1
		$-41.3V \leq V_{IN} \leq -4.25V$		-5.0	5.0	$\mu A$	2, 3
$\Delta I_{Adj} / I_{Load}$	Adjust Pin Current Change vs. Load Current	$8mA \leq I_L \leq 1.5A$ , $V_{IN} = -6.25V$		-5.0	5.0	$\mu A$	1, 2, 3
$V_{Rth}$	Thermal Regulation	$V_{IN} = -14.5V$ , $I_L = 1.5mA$ , $t = 10mS$		-5.0	5.0	mV	1
		$V_{IN} = -14.5V$ , $I_L = 8mA$ , $t = 10mS$		-5.0	5.0	mV	1
$\theta_{JC}$	Thermal Resistance		(Note 7)		4.0	$^{\circ}C/W$	1
$I_{CL}$	Current Limit	$V_{IN} = -5V$		-3.5	-1.5	A	1, 2, 3
		$V_{IN} = -40V$		-1.2	-0.24	A	1, 2, 3

### AC Parameters

Symbol	Parameter	Conditions	Notes	Min	Max	Units	Sub-groups
$R_R$	Ripple Rejection Ratio	$V_{IN} = -6.25V$ , $V_{OUT} = V_{Ref}$ , $f = 120Hz$ , $I_L = 0.5A$ , $e_i = 1V_{RMS}$	(Note 5, Note 8)	66		dB	4, 5, 6

# LM137H RH Electrical Characteristics

## DC Parameters

The following conditions apply, unless otherwise specified. (*Note 14*)

Symbol	Parameter	Conditions	Notes	Min	Max	Units	Sub-groups
$V_{OUT}$	Output Voltage	$V_{IN} = -4.25V, I_L = 5mA$		-1.275	-1.225	V	1
				-1.3	-1.2	V	2, 3
		$V_{IN} = -4.25V, I_L = 500mA$		-1.275	-1.225	V	1
				-1.3	-1.2	V	2, 3
		$V_{IN} = -41.25V, I_L = 5mA$		-1.275	-1.225	V	1
				-1.3	-1.2	V	2, 3
$V_{IN} = -41.25V, I_L = 50mA$		-1.275	-1.225	V	1		
		-1.3	-1.2	V	2, 3		
$V_{R Line}$	Line Regulation	$V_{IN} = -41.25V \text{ to } -4.25V, I_L = 5mA$		-9.0	9.0	mV	1
				-23	23	mV	2, 3
$V_{R Load}$	Load Regulation	$V_{IN} = -6.25V, I_L = 5mA \text{ to } 500mA$		-12	12	mV	1
				-24	24	mV	2, 3
		$V_{IN} = -41.25V, I_L = 5mA \text{ to } 50mA$		-6.0	6.0	mV	1
				-12	12	mV	2, 3
		$V_{IN} = -6.25V, I_L = 5mA \text{ to } 200mA$		-6.0	6.0	mV	1
				-12	12	mV	2, 3
$V_{Rth}$	Thermal Regulation	$V_{IN} = -14.6V, I_L = 500mA$		-5.0	5.0	mV	1
$I_{Adj}$	Adjust Pin Current	$V_{IN} = -4.25V, I_L = 5mA$		25	100	$\mu A$	1, 2, 3
		$V_{IN} = -41.25V, I_L = 5mA$		25	100	$\mu A$	1, 2, 3
$\Delta I_{Adj} / V_{Line}$	Adjust Pin Current Change vs. Line Voltage	$V_{IN} = -41.25V \text{ to } -4.25V, I_L = 5mA$		-5.0	5.0	$\mu A$	1, 2, 3
$\Delta I_{Adj} / I_{Load}$	Adjust Pin Current Change vs. Load Current	$V_{IN} = -6.25V, I_L = 5mA \text{ to } 500mA$		-5.0	5.0	$\mu A$	1, 2, 3
$I_{OS}$	Output Short Circuit Current	$V_{IN} = -4.25V$		0.5	1.8	A	1, 2, 3
		$V_{IN} = -40V$		0.05	0.5	A	1, 2, 3
$V_{OUT Recovery}$	Output Voltage Recovery After Output Short Circuit Current	$V_{IN} = -4.25V$		-1.275	-1.225	V	1
				-1.3	-1.2	V	2, 3
		$V_{IN} = -40V$		-1.275	-1.225	V	1
				-1.3	-1.2	V	2, 3
$I_Q$	Minimum Load Current	$V_{IN} = -4.25V$		0.2	3.0	mA	1, 2, 3
		$V_{IN} = -14.25V$		0.2	3.0	mA	1, 2, 3
		$V_{IN} = -41.25V$		1.0	5.0	mA	1, 2, 3
$V_{Start}$	Voltage Start-up	$V_{IN} = -4.25V, I_L = 500mA$		-1.275	-1.225	V	1
				-1.3	-1.2	V	2, 3
$V_{OUT}$	Output Voltage	$V_{IN} = -6.25V, I_L = 5mA$	( <i>Note 9</i> )	-1.3	-1.2	V	2

## AC Parameters

The following conditions apply, unless otherwise specified.

(Note 14)

Symbol	Parameter	Conditions	Notes	Min	Max	Units	Sub-groups
$\Delta V_{IN} / \Delta V_{OUT}$	Ripple Rejection	$V_{IN} = -6.25V, I_L = 125mA,$ $e_i = 1V_{RMS}$ at 2400Hz		48		dB	9
$V_{NO}$	Output Noise Voltage	$V_{IN} = -6.25V, I_L = 50mA$			120	$\mu V_{RMS}$	9
$\Delta V_{OUT} / \Delta V_{IN}$	Line Transient Response	$V_{IN} = -6.25V, V_{Pulse} = -1V,$ $I_L = 50mA$			80	mV/V	9
$\Delta V_O / \Delta I_L$	Load Transient Response	$V_{IN} = -6.25V, I_L = 50mA,$ $\Delta I_L = 200mA$	(Note 10)		60	mV	9

## DC Parameters Drift Values

The following conditions apply, unless otherwise specified.

(Note 14)

Delta calculations performed on QMLV devices at group B, subgroup 5 only.

Symbol	Parameter	Conditions	Notes	Min	Max	Units	Sub-groups
$V_{OUT}$	Output Voltage	$V_{IN} = -4.25V, I_L = 5mA$		-0.01	0.01	V	1
		$V_{IN} = -4.25V, I_L = 500mA$		-0.01	0.01	V	1
		$V_{IN} = -41.25V, I_L = 5mA$		-0.01	0.01	V	1
		$V_{IN} = -41.25V, I_L = 50mA$		-0.01	0.01	V	1
$V_{R Line}$	Line Regulation	$V_{IN} = -41.25V$ to $-4.25V, I_L = 5mA$		-4.0	4.0	mV	1
$I_{Adj}$	Adjust Pin Current	$V_{IN} = -4.25V, I_L = 5mA$		-10	10	$\mu A$	1
		$V_{IN} = -41.25V, I_L = 5mA$		-10	10	$\mu A$	1

## DC Parameters Post Radiation Limits +25°C 5962P9951701VXA

The following conditions apply, unless otherwise specified.

(Note 14)

Symbol	Parameter	Conditions	Notes	Min	Max	Units	Sub-groups
$\Delta I_{Adj} / V_{Line}$	Adjust Pin Current Change vs. Line Voltage	$V_{IN} = -41.25V$ to $-4.25V,$ $I_L = 5mA$		-20	20	$\mu A$	1

## DC Parameters Post Radiation Limits +25°C 5962P9951708VXA

The following conditions apply, unless otherwise specified.

(Note 14)

Symbol	Parameter	Conditions	Notes	Min	Max	Units	Sub-groups
$V_{OUT}$	Output Voltage	$V_{IN} = -41.25V, I_L = 5mA$		-1.30	-1.225	V	1
		$V_{IN} = -41.25V, I_L = 50mA$		-1.30	-1.225	V	1
$V_{R Line}$	Line Regulation	$V_{IN} = -41.25V$ to $-4.25V,$ $I_L = 5mA$		-9.0	+50	mV	1
$I_{Adj}$	Adjust Pin Current	$V_{IN} = -41.25V, I_L = 5mA$		25	140	$\mu A$	1
$\Delta I_{Adj} / V_{Line}$	Adjust Pin Current Change vs. Line Voltage	$V_{IN} = -41.25V$ to $-4.25V,$ $I_L = 5mA$		-70	+20	$\mu A$	1
$V_{OUT Recovery}$	Output Voltage Recovery After Output Short Circuit Current	$V_{IN} = -4.25V$		-1.30	-1.225	V	1

**Note 2:** Absolute Maximum Ratings indicate limits beyond which damage to the device may occur. Operating Ratings indicate conditions for which the device is functional, but do not guarantee specific performance limits. For guaranteed specifications and test conditions, see the Electrical Characteristics. The guaranteed specifications apply only for the test conditions listed. Some performance characteristics may degrade when the device is not operated under the listed test conditions.

**Note 3:** The maximum power dissipation must be derated at elevated temperatures and is dictated by  $T_{Jmax}$  (maximum junction temperature),  $\theta_{JA}$  (package junction to ambient thermal resistance), and  $T_A$  (ambient temperature). The maximum allowable power dissipation at any temperature is  $P_{Dmax} = (T_{Jmax} - T_A) / \theta_{JA}$  or the number given in the Absolute Maximum Ratings, whichever is lower.

**Note 4:** Group "A" sample only, test at all temps.

**Note 5:** Bench test, refer to (SG)RPI-3-362.

**Note 6:** Human body model, 100pF discharged through 1.5K $\Omega$

**Note 7:** Guaranteed parameter, not tested.

**Note 8:** Test at +25°C, guaranteed but not tested at +125°C and -55°C

**Note 9:** Tested at +125°C ; correlated to +150°C

**Note 10:** Limit of 0.3mV/mA is equivalent to 60mV

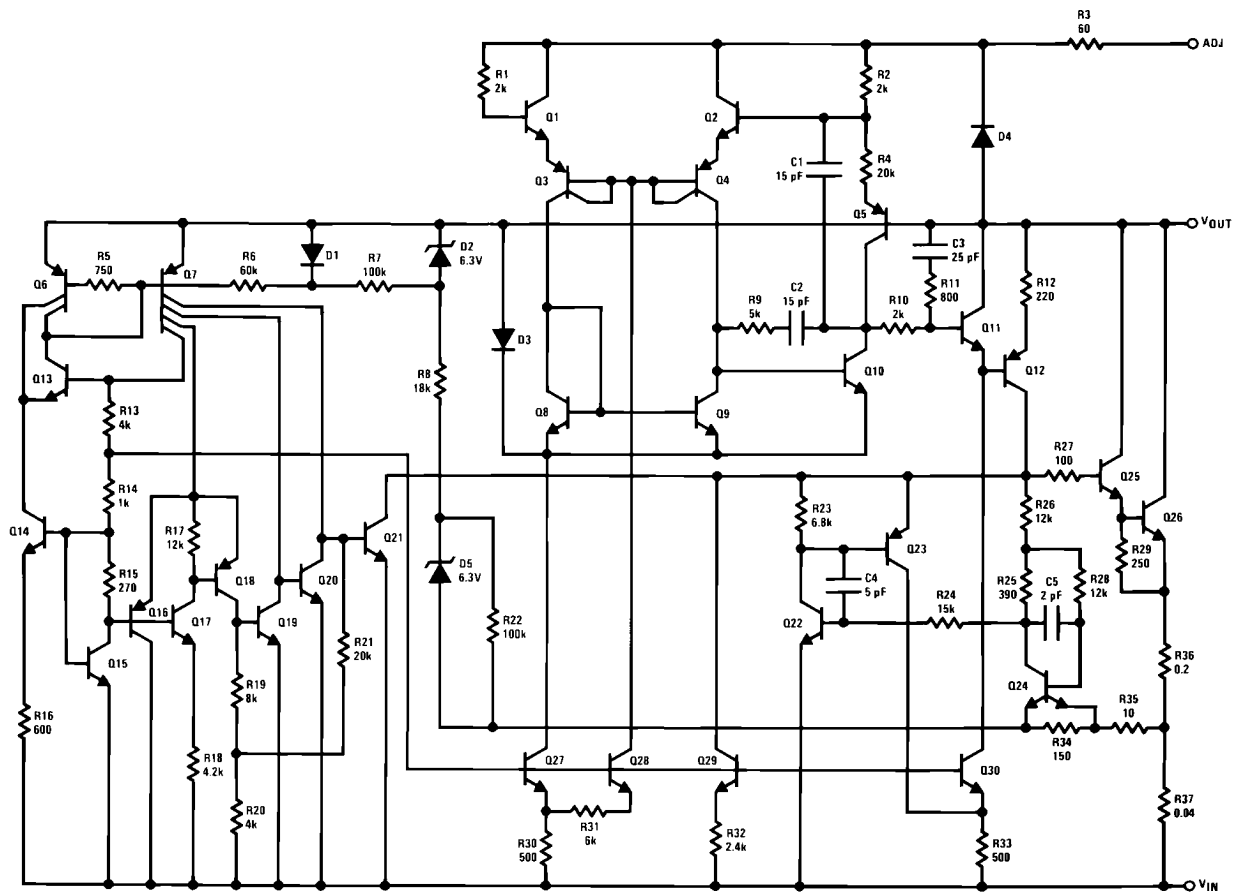
**Note 11:**  $V_{IN} = -41.3V$  at +125°C and -55°C

**Note 12:**  $-41.3V \leq V_{IN} \leq -4.25V$  at +125°C and -55°C

**Note 13:** Pre Burn-In stress test per RPI-5-025.

**Note 14:** Pre and post irradiation limits are identical to those listed under AC and DC electrical characteristics except as listed in the Post Radiation Limits Table. These parts may be dose rate sensitive in a space environment and demonstrate enhanced low dose rate effect. Radiation end point limits for the noted parameters are guaranteed only for the conditions as specified in Mil-Std-883, Method 1019.5, Condition A.

## Schematic Diagram



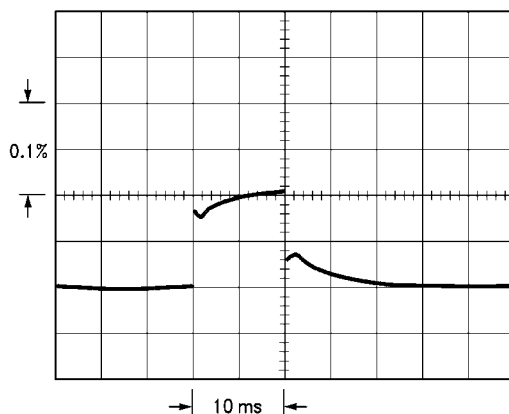
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## Thermal Regulation

When power is dissipated in an IC, a temperature gradient occurs across the IC chip affecting the individual IC circuit components. With an IC regulator, this gradient can be especially severe since power dissipation is large. Thermal regulation is the effect of these temperature gradients on output voltage (in percentage output change) per Watt of power

change in a specified time. Thermal regulation error is independent of electrical regulation or temperature coefficient, and occurs within 5 ms to 50 ms after a change in power dissipation. Thermal regulation depends on IC layout as well as electrical design. The thermal regulation of a voltage regulator is defined as the percentage change of  $V_{OUT}$ , per Watt, within the first 10 ms after a step of power is applied. The LM137's specification is 0.02%/W, max.



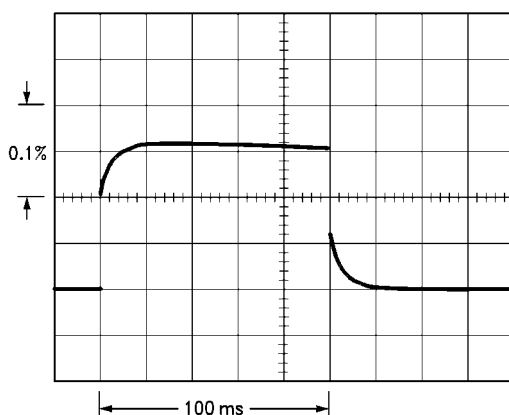
20122403

LM137,  $V_{OUT} = -10V$   
 $V_{IN} - V_{OUT} = -40V$   
 $I_{IL} = 0A \rightarrow 0.25A \rightarrow 0A$   
 Vertical sensitivity, 5 mV/div

FIGURE 1.

In [Figure 1](#), a typical LM137's output drifts only 3 mV (or 0.03% of  $V_{OUT} = -10V$ ) when a 10W pulse is applied for 10 ms. This performance is thus well inside the specification limit of  $0.02\%/W \times 10W = 0.2\%$  max. When the 10W pulse is ended, the thermal regulation again shows a 3 mV step as the

LM137 chip cools off. Note that the load regulation error of about 8 mV (0.08%) is additional to the thermal regulation error. In [Figure 2](#), when the 10W pulse is applied for 100 ms, the output drifts only slightly beyond the drift in the first 10 ms, and the thermal error stays well within 0.1% (10 mV).

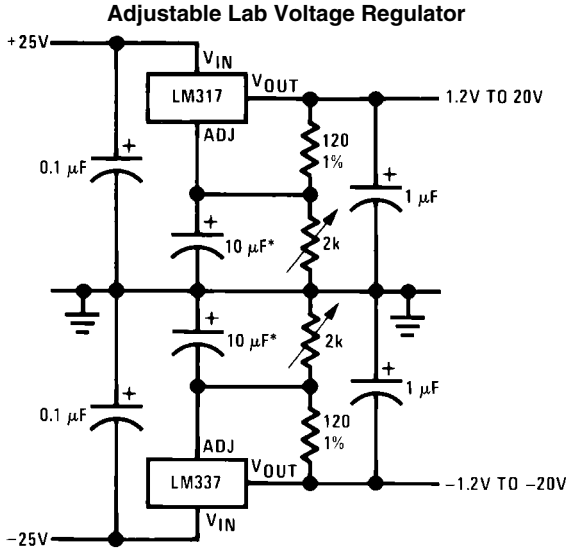


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LM137,  $V_{OUT} = -10V$   
 $V_{IN} - V_{OUT} = -40V$   
 $I_L = 0A \rightarrow 0.25A \rightarrow 0A$   
 Horizontal sensitivity, 20 ms/div

FIGURE 2.

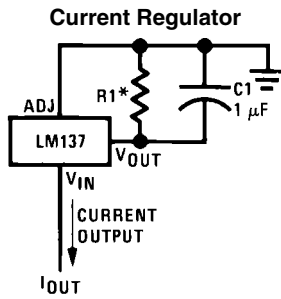
# Typical Applications



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Full output current not available at high input-output voltages

\*The 10 μF capacitors are optional to improve ripple rejection

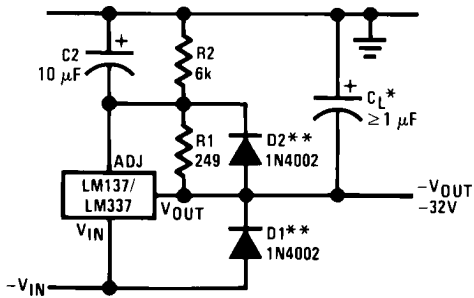


20122411

$$I_{OUT} = \frac{1.250V}{R1}$$

\*0.8Ω ≤ R1 ≤ 120Ω

### Negative Regulator with Protection Diodes

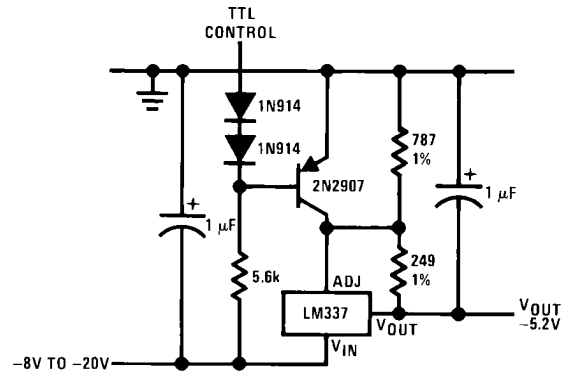


20122413

\*When CL is larger than 20 μF, D1 protects the LM137 in case the input supply is shorted

\*\*When C2 is larger than 10 μF and -VOUT is larger than -25V, D2 protects the LM137 in case the output is shorted

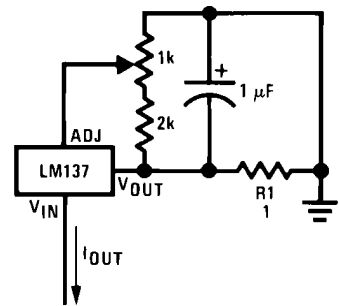
### -5.2V Regulator with Electronic Shutdown\*



20122410

\*Minimum output -1.3V when control input is low

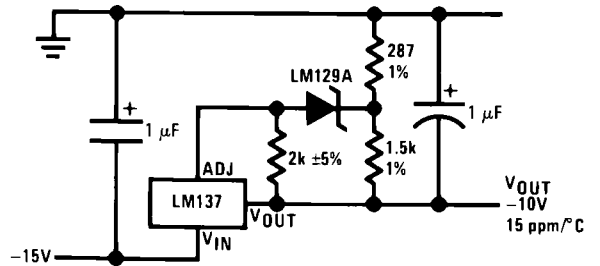
### Adjustable Current Regulator



20122412

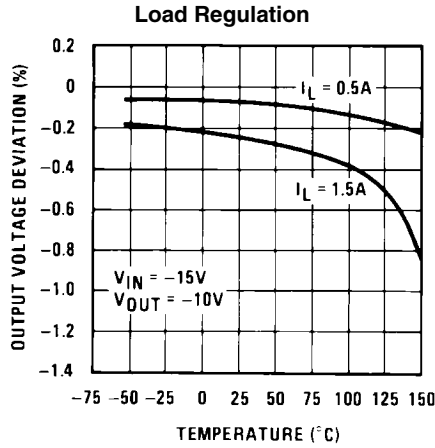
$$I_{OUT} = \left( \frac{1.5V}{R1} \right) \pm 15\% \text{ adjustable}$$

### High Stability -10V Regulator

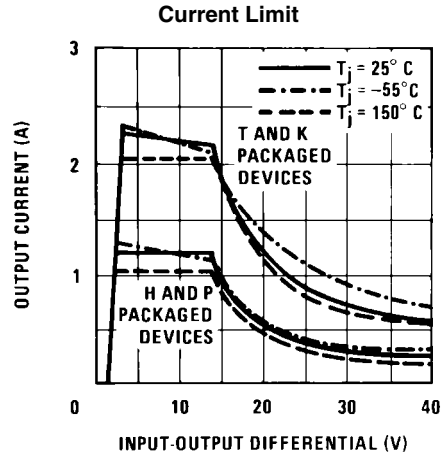


20122414

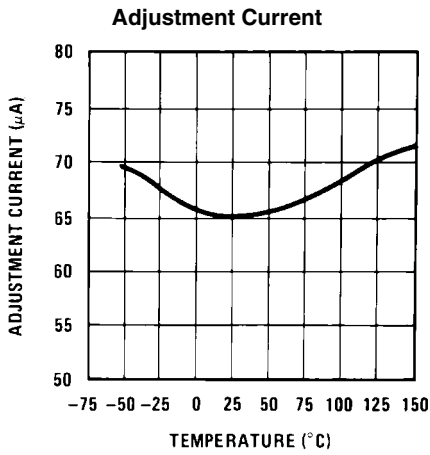
# Typical Performance Characteristics (H & K Packages)



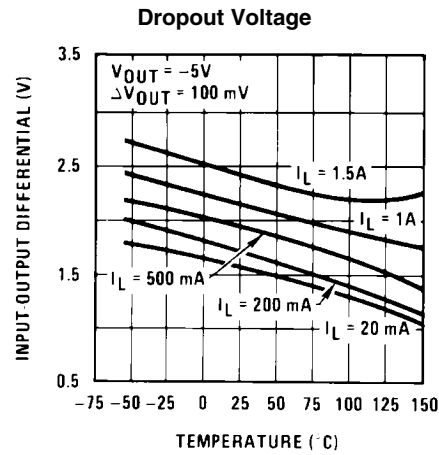
20122416



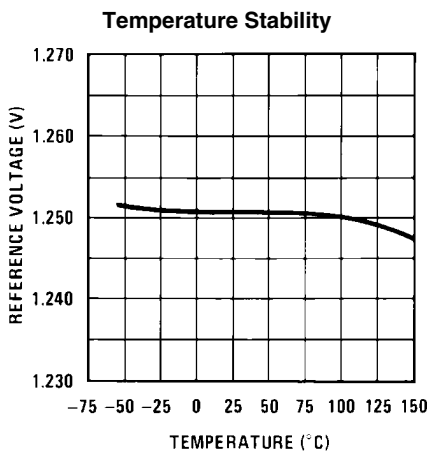
20122417



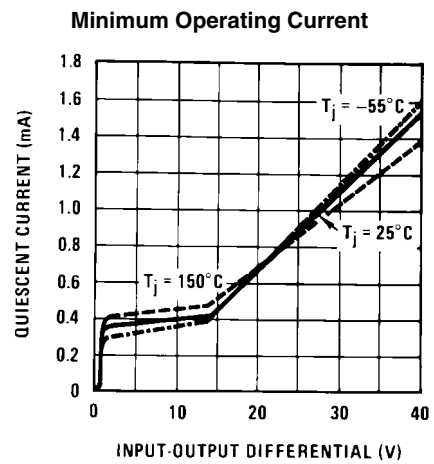
20122418



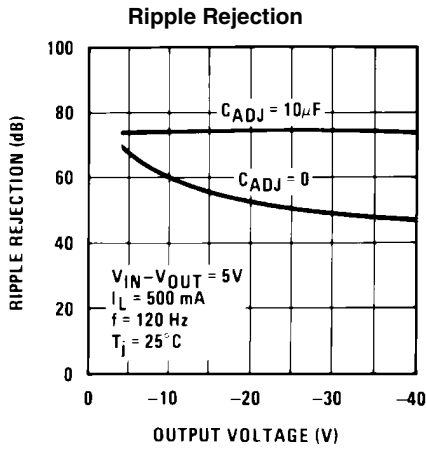
20122419



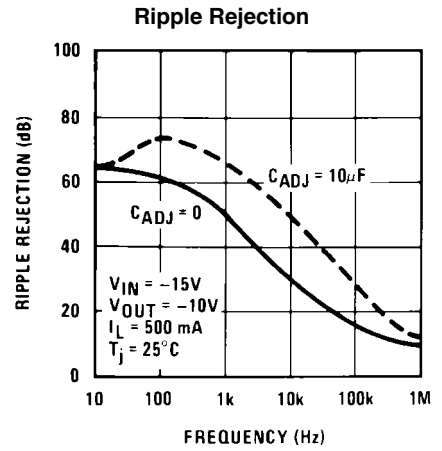
20122420



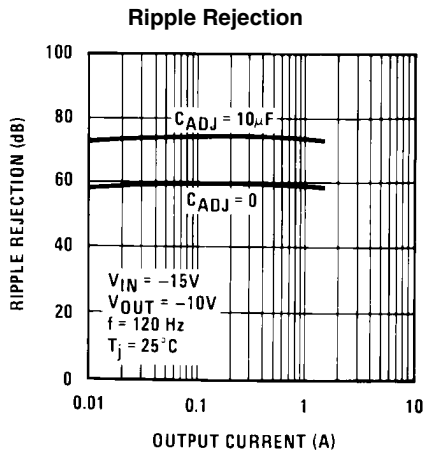
20122421



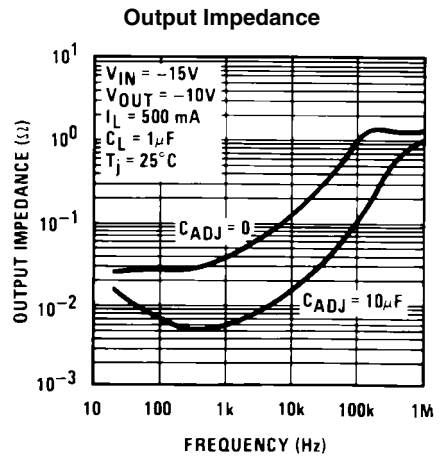
20122422



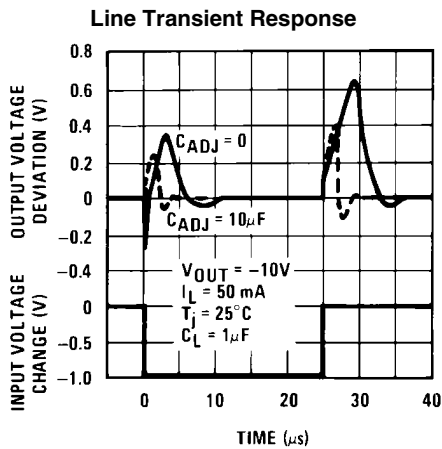
20122423



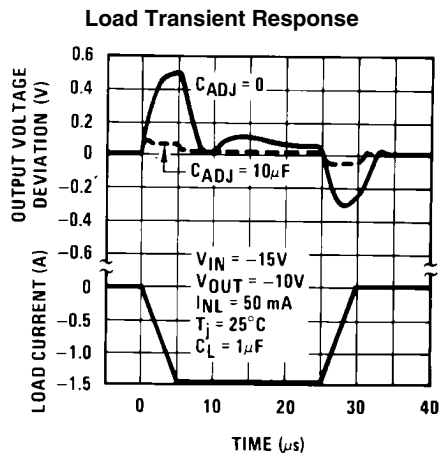
20122424



20122425



20122426

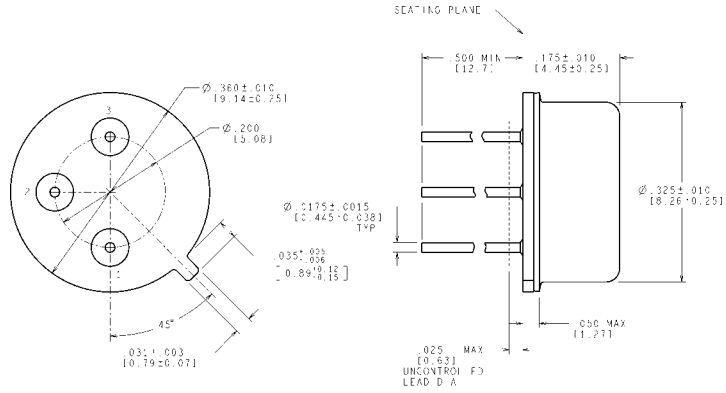


20122427

## Revision History

Date Released	Revision	Section	Changes
12/08/2010	A	New Release, Corporate format	3 MDS data sheets converted into one Corp. data sheet format. MNLM137-X, Rev. 0B1, MNLM137-K Rev. 0A0, and MRLM137-X-RH Rev. 2A0. MDS data sheets will be archived.
03/16/2012	B	Ordering Information, LM137K 883 Electrical Characteristics DC Parameters., LM137H RH Electrical Characteristics DC Parameters., DC Parameters Post Radiation Limits +25 Deg. C for 701VXA., DC Parameters Post Radiation Limits +25 Deg. C for 708VXA	Ordering Info — Added new LM137H1PQMLV., For the DC Parameters of LM137K 883 and LM137 RH, widened columns to accommodate correct limits. Added to the HEADER of DC Parameters — Post Radiation Limits 5962P9951701VXA. Added the HEADER and TABLE of DC Parameters — Post Radiation Limits 5962P9951708VXA. Rev A will be archived.

**Physical Dimensions** inches (millimeters) unless otherwise noted

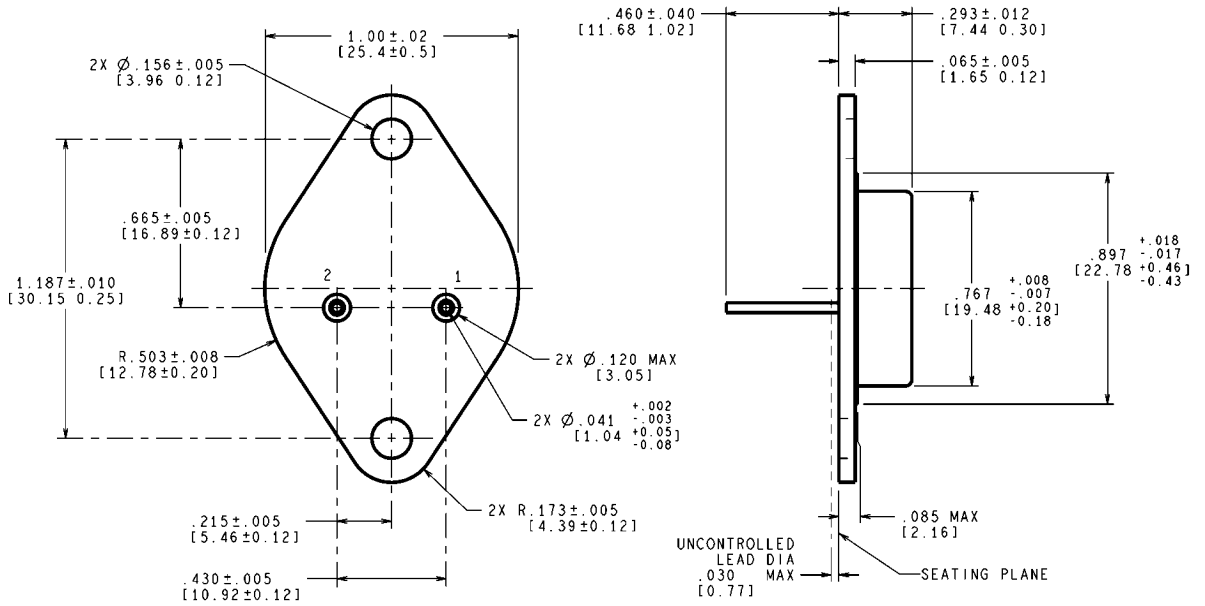


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VALUES IN [ ] ARE MILLIMETERS

MIL-PRF-38535  
CONFIGURATION CONTROL

H03A (Rev D)

**Metal Can Package (H)**  
**NS Package Number H03A**



CONTROLLING DIMENSION IS INCH  
VALUES IN [ ] ARE MILLIMETERS

MIL-PRF-38535  
CONFIGURATION CONTROL

K02C (Rev E)

**Metal Can Package (K)**  
**NS Package Number K02C**

# Notes

**Notes**



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