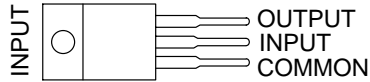


μA79M00 SERIES **NEGATIVE-VOLTAGE REGULATORS**

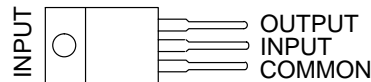
SLVS060J – JUNE 1976 – REVISED MAY 2003

- 3-Terminal Regulators
- Output Current Up To 500 mA
- No External Components
- High Power-Dissipation Capability
- Internal Short-Circuit Current Limiting
- Output Transistor Safe-Area Compensation

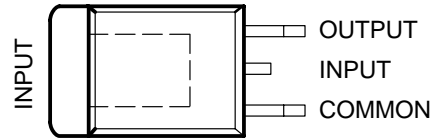
μA79M05 . . . KC (TO-220) PACKAGE
(TOP VIEW)



μA79M05 . . . KCS (TO-220) PACKAGE
(TOP VIEW)



μA79M05, μA79M08 . . . KTP PACKAGE
(TOP VIEW)



description/ordering information

This series of fixed-negative-voltage integrated-circuit voltage regulators is designed to complement the μA78M00 series in a wide range of applications. These applications include on-card regulation for elimination of noise and distribution problems associated with single-point regulation. Each of these regulators delivers up to 500 mA of output current. The internal current-limiting and thermal-shutdown features of these regulators essentially make them immune to overload. In addition to use as fixed-voltage regulators, these devices can be used with external components to obtain adjustable output voltages and currents, and also as the power-pass element in precision regulators.

ORDERING INFORMATION

T _J	V _{O(NOM)} (V)	PACKAGE†		ORDERABLE PART NUMBER	TOP-SIDE MARKING
0°C to 125°C	–5	Power Flex (KTP)	Reel of 3000	μA79M05CKTPR	μA79M05C
		TO-220 (KC)	Tube of 50	μA79M05CKC	μA79M05C
		TO-220, short shoulder (KCS)	Tube of 20	μA79M05CKCS	
	–8	Power Flex (KTP)	Reel of 3000	μA79M08CKTPR	μA79M08C

† Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at www.ti.com/sc/package.



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PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

**TEXAS
INSTRUMENTS**

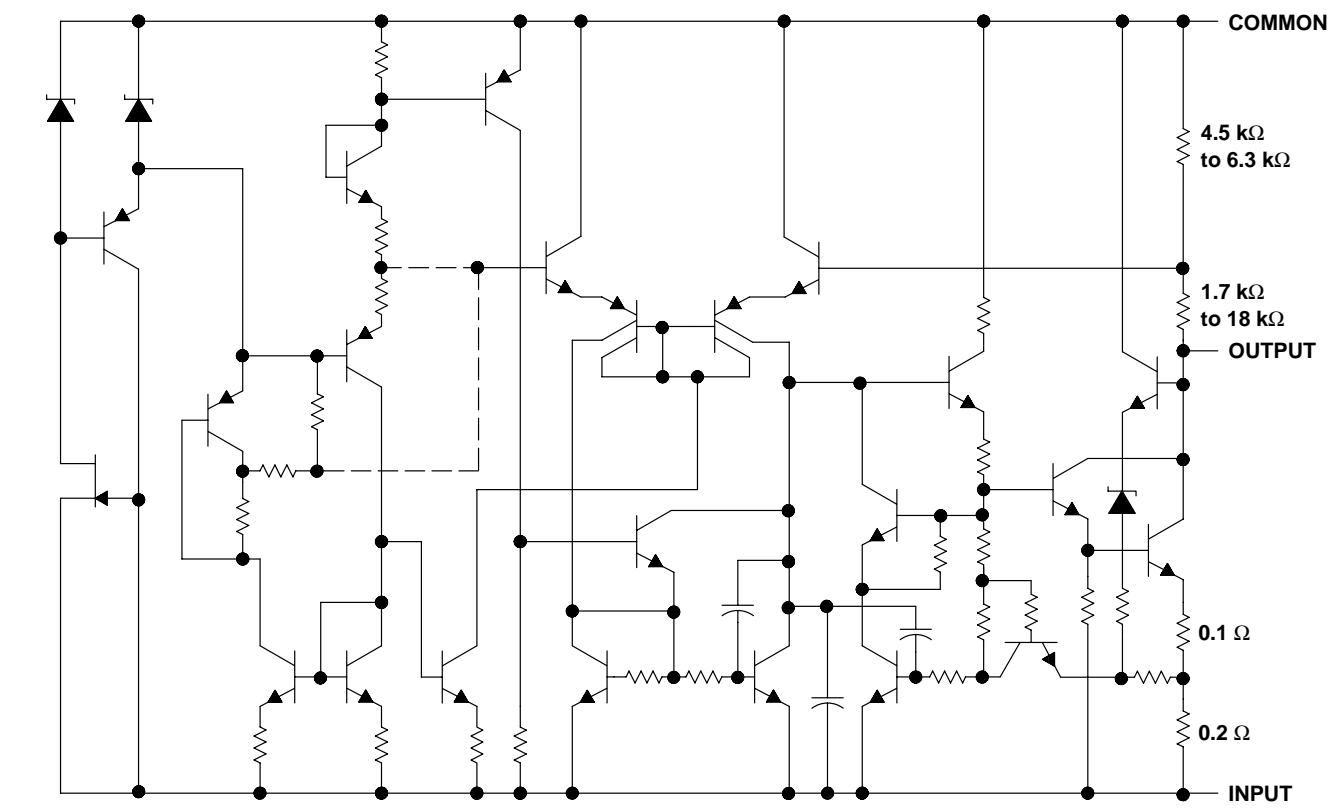
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μA79M00 SERIES
 NEGATIVE-VOLTAGE REGULATORS

SLVS060J – JUNE 1976 – REVISED MAY 2003

schematic



Resistor values shown are nominal.

absolute maximum ratings over virtual junction temperature range (unless otherwise noted)[†]

Input voltage, V_I	35 V
Operating virtual junction temperature, T_J	150°C
Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds	260°C
Storage temperature range, T_{stg}	–65°C to 150°C

[†] Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

package thermal data (see Note 1)

PACKAGE	BOARD	θ_{JC}	θ_{JA}
POWER-FLEX (KTP)	High K, JESD 51-5	19°C/W	28°C/W
TO-220 (KC/KCS)	High K, JESD 51-5	3°C/W	19°C/W

NOTE 1: Maximum power dissipation is a function of $T_J(\text{max})$, θ_{JA} , and T_A . The maximum allowable power dissipation at any allowable ambient temperature is $P_D = (T_J(\text{max}) - T_A)/\theta_{JA}$. Operating at the absolute maximum T_J of 150°C can affect reliability.

recommended operating conditions

		MIN	MAX	UNIT
V_I Input voltage	μA79M05C	–7	–25	V
	μA79M08C	–10.5	–25	
I_O Output current			500	mA
T_J Operating virtual junction temperature		0	125	°C

electrical characteristics at specified virtual junction temperature, $V_I = -10$ V, $I_O = 350$ mA, $T_J = 25^\circ\text{C}$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS†	μA79M05C			UNIT
		MIN	TYP	MAX	
Output voltage	$V_I = -7$ V to -25 V, $I_O = 5$ mA to 350 mA	–4.8	–5	–5.2	V
	$T_J = 0^\circ\text{C}$ to 125°C	–4.75		–5.25	
Input voltage regulation	$V_I = -7$ V to -25 V		7	50	mV
	$V_I = -8$ V to -18 V		3	30	
Ripple rejection	$V_I = -8$ V to -18 V, $f = 120$ Hz, $I_O = 100$ mA, $T_J = 0^\circ\text{C}$ to 125°C	50			dB
	$I_O = 300$ mA	54	60		
Output voltage regulation	$I_O = 5$ mA to 500 mA		75	100	mV
	$I_O = 5$ mA to 350 mA		50		
Temperature coefficient of output voltage	$I_O = 5$ mA, $T_J = 0^\circ\text{C}$ to 125°C		–0.4		mV/°C
Output noise voltage	$f = 10$ Hz to 100 kHz		125		μV
Dropout voltage			1.1		V
Bias current			1	2	mA
Bias current change	$V_I = -8$ V to -18 V, $T_J = 0^\circ\text{C}$ to 125°C			0.4	mA
	$I_O = 5$ mA to 350 mA, $T_J = 0^\circ\text{C}$ to 125°C			0.4	
Short-circuit output current	$V_I = -30$ V		140		mA
Peak output current			0.65		A

† Pulse-testing techniques maintain T_J as close to T_A as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 2-μF capacitor across the input and a 1-μF capacitor across the output.

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electrical characteristics at specified virtual junction temperature, $V_I = -19\text{ V}$, $I_O = 350\text{ mA}$, $T_J = 25^\circ\text{C}$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS†	μA79M08C			UNIT
		MIN	TYP	MAX	
Output voltage	$V_I = -10.5\text{ V to }-25\text{ V}$, $I_O = 5\text{ mA to }350\text{ mA}$ $T_J = 0^\circ\text{C to }125^\circ\text{C}$	-7.7	-8	-8.3	V
Input voltage regulation	$V_I = -10.5\text{ V to }-25\text{ V}$		8	80	mV
	$V_I = -11\text{ V to }-21\text{ V}$		4	50	
Ripple rejection	$V_I = -11.5\text{ V to }-21.5\text{ V}$, $f = 120\text{ Hz}$, $I_O = 100\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$	50			dB
	$I_O = 300\text{ mA}$	54	59		
Output voltage regulation	$I_O = 5\text{ mA to }500\text{ mA}$		90	160	mV
	$I_O = 5\text{ mA to }350\text{ mA}$		60		
Temperature coefficient of output voltage	$I_O = 5\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$		-0.6		mV/°C
Output noise voltage	$f = 10\text{ Hz to }100\text{ kHz}$		200		μV
Dropout voltage	$I_O = 5\text{ mA}$		1.1		V
Bias current			1	2	mA
Bias current change	$V_I = -10.5\text{ V to }-25\text{ V}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$			0.4	mA
	$I_O = 5\text{ mA to }350\text{ mA}$, $T_J = 0^\circ\text{C to }125^\circ\text{C}$			0.4	
Short-circuit output current	$V_I = -30\text{ V}$		140		mA
Peak output current			0.65		A

† Pulse-testing techniques maintain T_J as close to T_A as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 2-μF capacitor across the input and a 1-μF capacitor across the output.

PACKAGING INFORMATION

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/Ball Finish	MSL Peak Temp ⁽³⁾
7704001HA	OBSOLETE	CFP	U	10		None	Call TI	Call TI
UA79M05CKC	ACTIVE	TO-220	KC	3	50	None	Call TI	Level-1-220C-UNLIM
UA79M05CKCS	ACTIVE	TO-220	KCS	3	50	None	Call TI	Level-NC-NC-NC
UA79M05CKTPR	ACTIVE	PFM	KTP	2	3000	None	Call TI	Level-1-220C-UNLIM
UA79M05MUB	OBSOLETE	CFP	U	10		None	Call TI	Call TI
UA79M06CKTPR	OBSOLETE	PFM	KTP	2		None	Call TI	Call TI
UA79M08CKC	OBSOLETE	TO-220	KC	3		None	Call TI	Call TI
UA79M08CKTPR	ACTIVE	PFM	KTP	2	3000	None	Call TI	Level-1-220C-UNLIM
UA79M12CKC	OBSOLETE	TO-220	KC	3		None	Call TI	Call TI
UA79M12CKTPR	OBSOLETE	PFM	KTP	2		None	Call TI	Call TI
UA79M15CKC	OBSOLETE	TO-220	KC	3		None	Call TI	Call TI
UA79M15CKTPR	OBSOLETE	PFM	KTP	2		None	Call TI	Call TI
UA79M20CKTPR	OBSOLETE	PFM	KTP	2		None	Call TI	Call TI
UA79M24CKTPR	OBSOLETE	PFM	KTP	2		None	Call TI	Call TI

⁽¹⁾ The marketing status values are defined as follows:

ACTIVE: Product device recommended for new designs.

LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

PREVIEW: Device has been announced but is not in production. Samples may or may not be available.

OBSOLETE: TI has discontinued the production of the device.

⁽²⁾ Eco Plan - May not be currently available - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

None: Not yet available Lead (Pb-Free).

Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

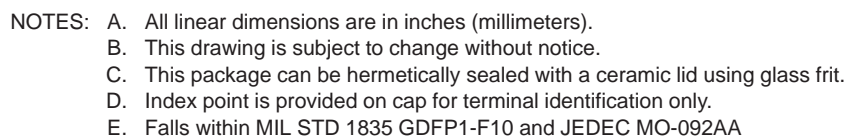
Green (RoHS & no Sb/Br): TI defines "Green" to mean "Pb-Free" and in addition, uses package materials that do not contain halogens, including bromine (Br) or antimony (Sb) above 0.1% of total product weight.

⁽³⁾ MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

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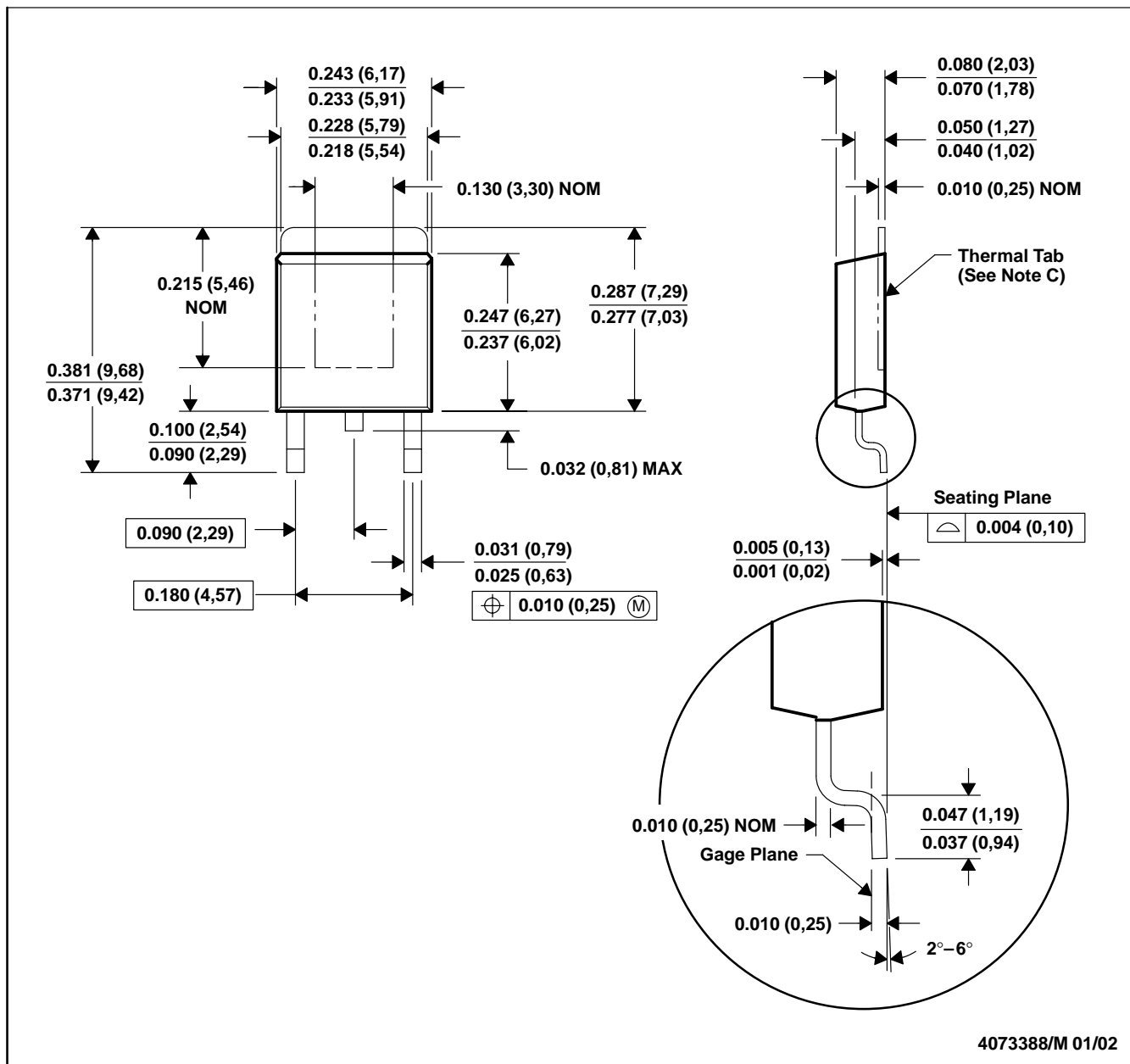
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CERAMIC DUAL FLATPACK



KTP (R-PSFM-G2)

PowerFLEX™ PLASTIC FLANGE-MOUNT PACKAGE

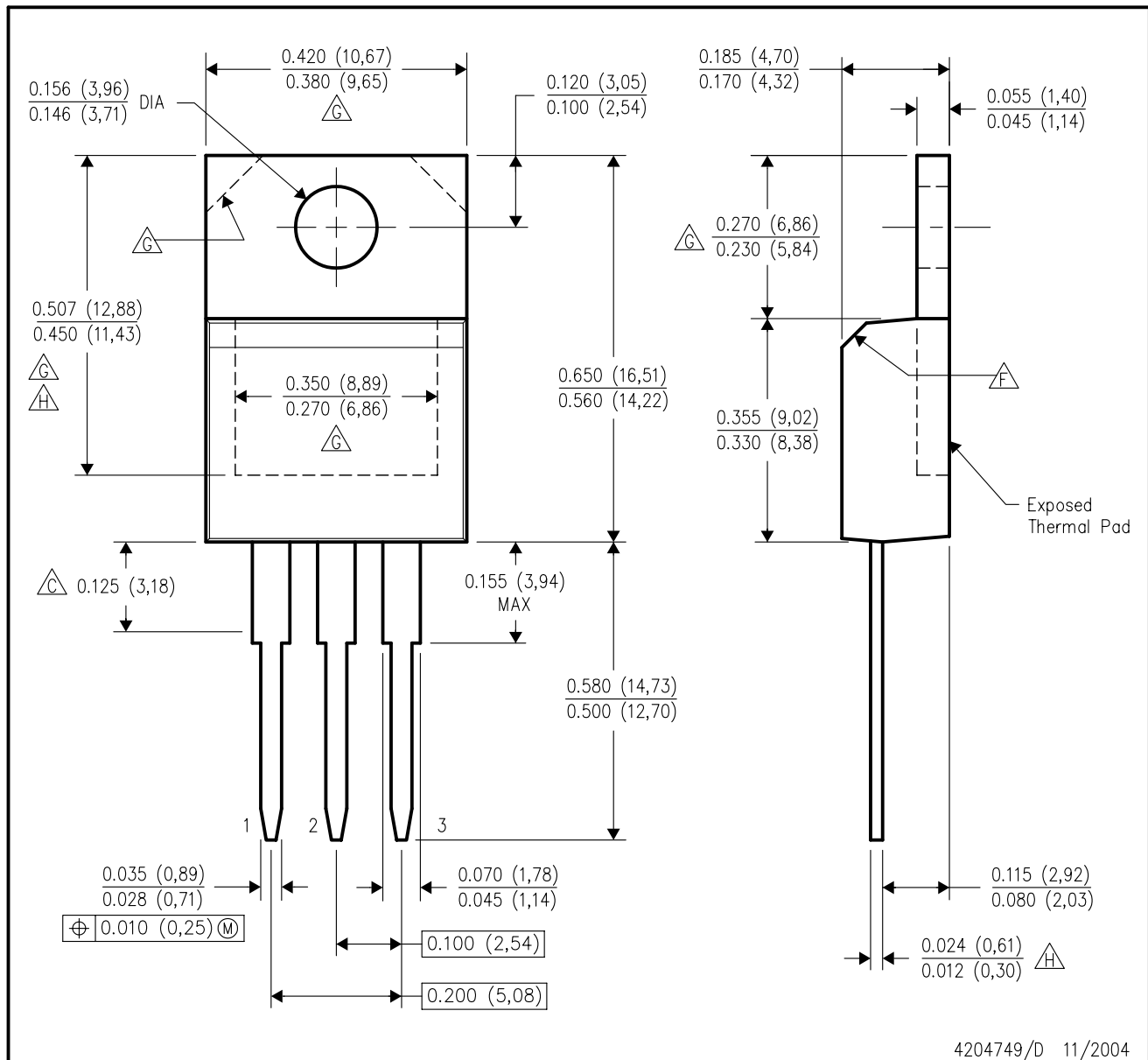


- NOTES:
- All linear dimensions are in inches (millimeters).
 - This drawing is subject to change without notice.
 - The center lead is in electrical contact with the thermal tab.
 - Dimensions do not include mold protrusions, not to exceed 0.006 (0,15).
 - Falls within JEDEC TO-252 variation AC.

PowerFLEX is a trademark of Texas Instruments.

KCS (R-PSFM-T3)

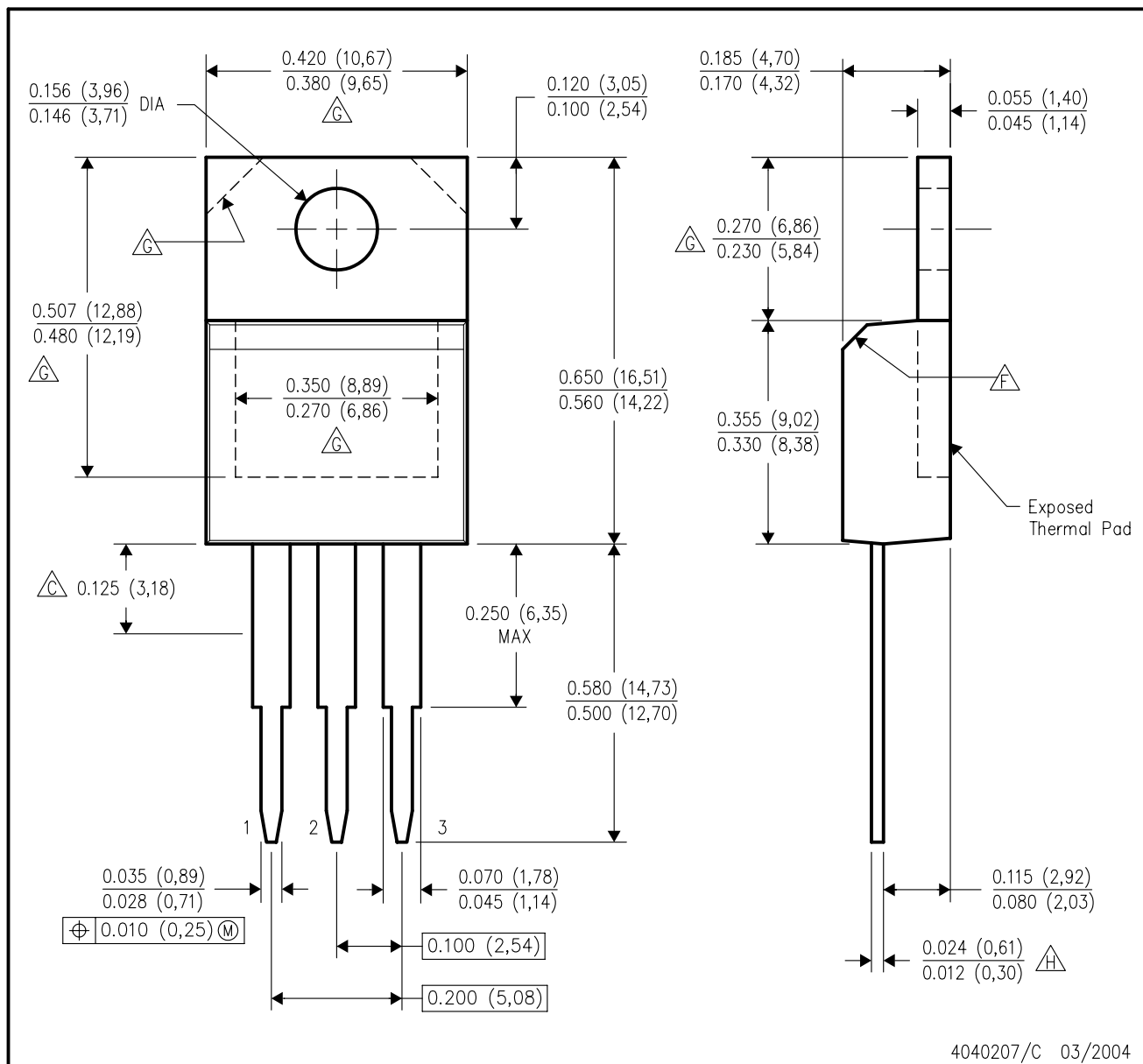
PLASTIC FLANGE-MOUNT PACKAGE



- NOTES:
- A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - C. Lead dimensions are not controlled within this area.
 - D. All lead dimensions apply before solder dip.
 - E. The center lead is in electrical contact with the mounting tab.
 - F. The chamfer is optional.
 - G. Thermal pad contour optional within these dimensions.
 - H. Falls within JEDEC TO-220 variation AB, except minimum lead thickness and minimum exposed pad length.

KC (R-PSFM-T3)

PLASTIC FLANGE-MOUNT PACKAGE



NOTES:

- A. All linear dimensions are in inches (millimeters).
- B. This drawing is subject to change without notice.
- C. Lead dimensions are not controlled within this area.
- D. All lead dimensions apply before solder dip.
- E. The center lead is in electrical contact with the mounting tab.
- F. The chamfer is optional.
- G. Thermal pad contour optional within these dimensions.
- H. Falls within JEDEC TO-220 variation AB, except minimum lead thickness.

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