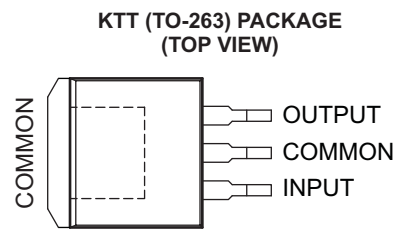
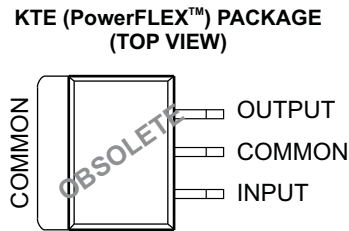
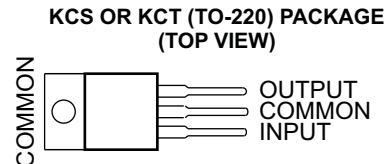
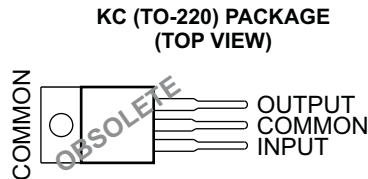


FIXED POSITIVE VOLTAGE REGULATORS

Check for Samples: [μA7800 SERIES](#)

FEATURES

- 3-Terminal Regulators
- Available in fixed 5V/8V/10V/12V/15V/24V options
- Output Current up to 1.5 A
- Internal Thermal-Overload Protection
- High Power-Dissipation Capability
- Internal Short-Circuit Current Limiting
- Output Transistor Safe-Area Compensation



DESCRIPTION/ORDERING INFORMATION

This series of fixed-voltage integrated-circuit voltage regulators is designed for 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 can deliver up to 1.5 A 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 can be used as the power-pass element in precision regulators.



Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

PowerFLEX, PowerPAD are trademarks of Texas Instruments.

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

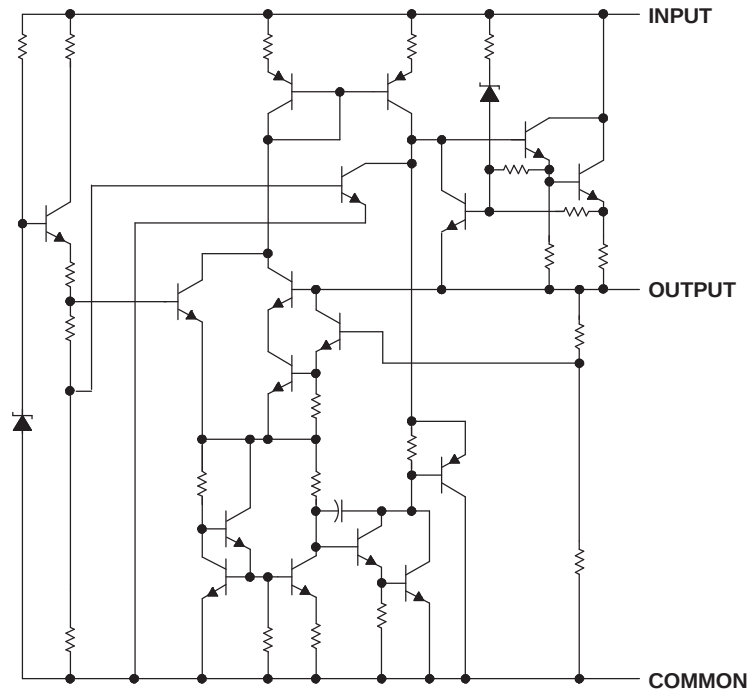
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ORDERING INFORMATION⁽¹⁾

T _J	V _{O(NOM)}	PACKAGE ⁽²⁾		ORDERABLE PART NUMBER	TOP-SIDE MARKING
0°C to 125°C	5 V	TO-220, short shoulder – KCS	Tube of 50	UA7805CKCS	UA7805C
		TO-220, single gauge – KCT	Tube of 50	UA7805CKCT	UA7805C
		TO-263 – KTT	Reel of 500	UA7805CKTTR	UA7805C
		PowerFLEX™ – KTE		OBSOLETE	OBSOLETE
		TO-220 – KC		OBSOLETE	OBSOLETE
	8 V	TO-220, short shoulder – KCS	Tube of 50	UA7808CKCS	UA7808C
		TO-220, single gauge – KCT	Tube of 50	UA7808CKCT	PREVIEW
		TO-263 – KTT	Reel of 500	UA7808CKTTR	UA7808C
		PowerFLEX – KTE		OBSOLETE	OBSOLETE
		TO-220 – KC		OBSOLETE	OBSOLETE
	10 V	TO-220, short shoulder – KCS	Tube of 50	UA7810CKCS	UA7810C
		TO-263 – KTT	Reel of 500	UA7810CKTTR	UA7810C
		PowerFLEX – KTE		OBSOLETE	OBSOLETE
		TO-220 – KC		OBSOLETE	OBSOLETE
	12 V	TO-220, short shoulder – KCS	Tube of 50	UA7812CKCS	UA7812C
		TO-220, single gauge – KCT	Tube of 50	UA7812CKCT	UA7812C
		TO-263 – KTT	Reel of 500	UA7812CKTTR	UA7812C
		PowerFLEX – KTE		OBSOLETE	OBSOLETE
		TO-220 – KC		OBSOLETE	OBSOLETE
	15 V	TO-220, short shoulder – KCS	Tube of 50	UA7815CKCS	UA7815C
		TO-220, single gauge – KCT	Tube of 50	UA7815CKCT	PREVIEW
		TO-263 – KTT	Reel of 500	UA7815CKTTR	UA7815C
		PowerFLEX – KTE		OBSOLETE	OBSOLETE
		TO-220 – KC		OBSOLETE	OBSOLETE
	24 V	TO-220, short shoulder – KCS	Tube of 50	UA7824CKCS	UA7824C
		TO-263 – KTT	Reel of 500	UA7824CKTTR	UA7824C
		PowerFLEX – KTE		OBSOLETE	OBSOLETE
		TO-220 – KC		OBSOLETE	OBSOLETE

- (1) For the most current package and ordering information, see the Package Option Addendum at the end of this document, or see the TI web site at www.ti.com.
- (2) Package drawings, thermal data, and symbolization are available at www.ti.com/packaging.

Figure 1. SCHEMATIC



Absolute Maximum Ratings⁽¹⁾

over virtual junction temperature range (unless otherwise noted)

		MIN	MAX	UNIT
V_I Input voltage	μA7824C		40	V
	All others		35	
T_J Operating virtual junction temperature			150	°C
	Lead temperature		260	°C
	1,6 mm (1/16 in) from case for 10 s			
T_{stg} Storage temperature range		–65	150	°C

- (1) 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⁽¹⁾

PACKAGE	BOARD	θ_{JA}	θ_{JC}	θ_{JP} ⁽²⁾
PowerFLEX (KTE) – OBSOLETE	High K, JESD 51-5	23°C/W	3°C/W	2.7°C/W
TO-220 (KCS), (KCT) (KC – OBSOLETE)	High K, JESD 51-5	19°C/W	17°C/W	3°C/W
TO-263 (KTT)	High K, JESD 51-5	25.3°C/W	18°C/W	1.94°C/W

- (1) Maximum power dissipation is a function of $T_{J(max)}$, θ_{JA} , and T_A . The maximum allowable power dissipation at any allowable ambient temperature is $P_D = (T_{J(max)} - T_A)/\theta_{JA}$. Operating at the absolute maximum T_J of 150°C can affect reliability.
- (2) For packages with exposed thermal pads, such as QFN, PowerPAD™, or PowerFLEX, θ_{JP} is defined as the thermal resistance between the die junction and the bottom of the exposed pad.

Recommended Operating Conditions

		MIN	MAX	UNIT
V_I	Input voltage			V
	μA7805	7	25	
	μA7808	10.5	25	
	μA7810	12.5	28	
	μA7812	14.5	30	
	μA7815	17.5	30	
	μA7824	27	38	
I_O	Output current		1.5	A
T_J	Operating virtual junction temperature	0	125	°C

uA7805 Electrical Characteristics

at specified virtual junction temperature, $V_I = 10\text{ V}$, $I_O = 500\text{ mA}$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS	$T_J^{(1)}$	μA7805C			UNIT
			MIN	TYP	MAX	
Output voltage	$I_O = 5\text{ mA to }1\text{ A}$, $V_I = 7\text{ V to }20\text{ V}$, $P_D \leq 15\text{ W}$	25°C	4.8	5	5.2	V
		0°C to 125°C	4.75		5.25	
Input voltage regulation	$V_I = 7\text{ V to }25\text{ V}$	25°C		3	100	mV
	$V_I = 8\text{ V to }12\text{ V}$			1	50	
Ripple rejection ⁽²⁾	$V_I = 8\text{ V to }12\text{ V}$, $f = 120\text{ Hz}$	0°C to 125°C	62	78		dB
	$V_I = 8\text{ V to }12\text{ V}$, $f = 120\text{ Hz (KCT)}$		58	68		
Output voltage regulation	$I_O = 5\text{ mA to }1.5\text{ A}$	25°C		15	100	mV
	$I_O = 250\text{ mA to }750\text{ mA}$			5	50	
Output resistance	$f = 1\text{ kHz}$	0°C to 125°C		0.017		Ω
Temperature coefficient of output voltage	$I_O = 5\text{ mA}$	0°C to 125°C		–1.1		mV/°C
Output noise voltage	$f = 10\text{ Hz to }100\text{ kHz}$	25°C		40		μV
Dropout voltage	$I_O = 1\text{ A}$	25°C		2		V
Bias current		25°C		4.2	8	mA
Bias current change	$V_I = 7\text{ V to }25\text{ V}$	0°C to 125°C			1.3	mA
	$I_O = 5\text{ mA to }1\text{ A}$				0.5	
Short-circuit output current		25°C		750		mA
Peak output current		25°C		2.2		A

(1) Pulse-testing techniques maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output.

(2) This parameter is validated by design and verified during product characterization. It is not tested in production.

uA7808 Electrical Characteristics

at specified virtual junction temperature, $V_I = 14\text{ V}$, $I_O = 500\text{ mA}$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS	$T_J^{(1)}$	μA7808C			UNIT
			MIN	TYP	MAX	
Output voltage	$I_O = 5\text{ mA to }1\text{ A}$, $V_I = 10.5\text{ V to }23\text{ V}$, $P_D \leq 15\text{ W}$	25°C	7.7	8	8.3	V
		0°C to 125°C	7.6		8.4	
Input voltage regulation	$V_I = 10.5\text{ V to }25\text{ V}$	25°C		6	160	mV
	$V_I = 11\text{ V to }17\text{ V}$			2	80	
Ripple rejection ⁽²⁾	$V_I = 11.5\text{ V to }21.5\text{ V}$, $f = 120\text{ Hz}$	0°C to 125°C	55	72		dB
Output voltage regulation	$I_O = 5\text{ mA to }1.5\text{ A}$	25°C		12	160	mV
	$I_O = 250\text{ mA to }750\text{ mA}$			4	80	
Output resistance	$f = 1\text{ kHz}$	0°C to 125°C		0.016		Ω
Temperature coefficient of output voltage	$I_O = 5\text{ mA}$	0°C to 125°C		–0.8		mV/°C
Output noise voltage	$f = 10\text{ Hz to }100\text{ kHz}$	25°C		52		μV
Dropout voltage	$I_O = 1\text{ A}$	25°C		2		V
Bias current		25°C		4.3	8	mA
Bias current change	$V_I = 10.5\text{ V to }25\text{ V}$	0°C to 125°C			1	mA
	$I_O = 5\text{ mA to }1\text{ A}$				0.5	
Short-circuit output current		25°C		450		mA
Peak output current		25°C		2.2		A

(1) Pulse-testing techniques maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output.

(2) This parameter is validated by design and verified during product characterization. It is not tested in production.

uA7810 Electrical Characteristics

at specified virtual junction temperature, $V_I = 17\text{ V}$, $I_O = 500\text{ mA}$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS	$T_J^{(1)}$	μA7810C			UNIT
			MIN	TYP	MAX	
Output voltage	$I_O = 5\text{ mA to }1\text{ A}$, $V_I = 12.5\text{ V to }25\text{ V}$, $P_D \leq 15\text{ W}$	25°C	9.6	10	10.4	V
		0°C to 125°C	9.5		10.5	
Input voltage regulation	$V_I = 12.5\text{ V to }28\text{ V}$	25°C		7	200	mV
	$V_I = 14\text{ V to }20\text{ V}$			2	100	
Ripple rejection ⁽²⁾	$V_I = 13\text{ V to }23\text{ V}$, $f = 120\text{ Hz}$	0°C to 125°C	55	71		dB
Output voltage regulation	$I_O = 5\text{ mA to }1.5\text{ A}$	25°C		12	200	mV
	$I_O = 250\text{ mA to }750\text{ mA}$			4	100	
Output resistance	$f = 1\text{ kHz}$	0°C to 125°C		0.018		Ω
Temperature coefficient of output voltage	$I_O = 5\text{ mA}$	0°C to 125°C		–1		mV/°C
Output noise voltage	$f = 10\text{ Hz to }100\text{ kHz}$	25°C		70		μV
Dropout voltage	$I_O = 1\text{ A}$	25°C		2		V
Bias current		25°C		4.3	8	mA
Bias current change	$V_I = 12.5\text{ V to }28\text{ V}$	0°C to 125°C			1	mA
	$I_O = 5\text{ mA to }1\text{ A}$				0.5	
Short-circuit output current		25°C		400		mA
Peak output current		25°C		2.2		A

- (1) Pulse-testing techniques maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output.
- (2) This parameter is validated by design and verified during product characterization. It is not tested in production.

uA7812 Electrical Characteristics

at specified virtual junction temperature, $V_I = 19\text{ V}$, $I_O = 500\text{ mA}$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS	$T_J^{(1)}$	μA7812C			UNIT
			MIN	TYP	MAX	
Output voltage	$I_O = 5\text{ mA to }1\text{ A}$, $V_I = 14.5\text{ V to }27\text{ V}$, $P_D \leq 15\text{ W}$	25°C	11.5	12	12.5	V
		0°C to 125°C	11.4		12.6	
Input voltage regulation	$V_I = 14.5\text{ V to }30\text{ V}$	25°C		10	240	mV
	$V_I = 16\text{ V to }22\text{ V}$			3	120	
Ripple rejection ⁽²⁾	$V_I = 15\text{ V to }25\text{ V}$, $f = 120\text{ Hz}$	0°C to 125°C	55	71		dB
	$V_I = 15\text{ V to }25\text{ V}$, $f = 120\text{ Hz (KCT)}$		51	61		
Output voltage regulation	$I_O = 5\text{ mA to }1.5\text{ A}$	25°C		12	240	mV
	$I_O = 250\text{ mA to }750\text{ mA}$			4	120	
Output resistance	$f = 1\text{ kHz}$	0°C to 125°C		0.018		Ω
Temperature coefficient of output voltage	$I_O = 5\text{ mA}$	0°C to 125°C		–1		mV/°C
Output noise voltage	$f = 10\text{ Hz to }100\text{ kHz}$	25°C		75		μV
Dropout voltage	$I_O = 1\text{ A}$	25°C		2		V
Bias current		25°C		4.3	8	mA
Bias current change	$V_I = 14.5\text{ V to }30\text{ V}$	0°C to 125°C			1	mA
	$I_O = 5\text{ mA to }1\text{ A}$				0.5	
Short-circuit output current		25°C		350		mA
Peak output current		25°C		2.2		A

- (1) Pulse-testing techniques maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output.
- (2) This parameter is validated by design and verified during product characterization. It is not tested in production.

uA7815 Electrical Characteristics

at specified virtual junction temperature, $V_I = 23\text{ V}$, $I_O = 500\text{ mA}$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS	T_J ⁽¹⁾	μA7815C			UNIT
			MIN	TYP	MAX	
Output voltage	$I_O = 5\text{ mA to }1\text{ A}$, $V_I = 17.5\text{ V to }30\text{ V}$, $P_D \leq 15\text{ W}$	25°C	14.4	15	15.6	V
		0°C to 125°C	14.25		15.75	
Input voltage regulation	$V_I = 17.5\text{ V to }30\text{ V}$	25°C		11	300	mV
	$V_I = 20\text{ V to }26\text{ V}$			3	150	
Ripple rejection ⁽²⁾	$V_I = 18.5\text{ V to }28.5\text{ V}$, $f = 120\text{ Hz}$	0°C to 125°C	54	70		dB
Output voltage regulation	$I_O = 5\text{ mA to }1.5\text{ A}$	25°C		12	300	mV
	$I_O = 250\text{ mA to }750\text{ mA}$			4	150	
Output resistance	$f = 1\text{ kHz}$	0°C to 125°C		0.019		Ω
Temperature coefficient of output voltage	$I_O = 5\text{ mA}$	0°C to 125°C		–1		mV/°C
Output noise voltage	$f = 10\text{ Hz to }100\text{ kHz}$	25°C		90		μV
Dropout voltage	$I_O = 1\text{ A}$	25°C		2		V
Bias current		25°C		4.4	8	mA
Bias current change	$V_I = 17.5\text{ V to }30\text{ V}$	0°C to 125°C			1	mA
	$I_O = 5\text{ mA to }1\text{ A}$				0.5	
Short-circuit output current		25°C		230		mA
Peak output current		25°C		2.1		A

- (1) Pulse-testing techniques maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output.
- (2) This parameter is validated by design and verified during product characterization. It is not tested in production.

uA7824 Electrical Characteristics

at specified virtual junction temperature, $V_I = 33\text{ V}$, $I_O = 500\text{ mA}$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS	T_J ⁽¹⁾	μA7824C			UNIT
			MIN	TYP	MAX	
Output voltage	$I_O = 5\text{ mA to }1\text{ A}$, $V_I = 27\text{ V to }38\text{ V}$, $P_D \leq 15\text{ W}$	25°C	23	24	25	V
		0°C to 125°C	22.8		25.2	
Input voltage regulation	$V_I = 27\text{ V to }38\text{ V}$	25°C		18	480	mV
	$V_I = 30\text{ V to }36\text{ V}$			6	240	
Ripple rejection ⁽²⁾	$V_I = 28\text{ V to }38\text{ V}$, $f = 120\text{ Hz}$	0°C to 125°C	50	66		dB
Output voltage regulation	$I_O = 5\text{ mA to }1.5\text{ A}$	25°C		12	480	mV
	$I_O = 250\text{ mA to }750\text{ mA}$			4	240	
Output resistance	$f = 1\text{ kHz}$	0°C to 125°C		0.028		Ω
Temperature coefficient of output voltage	$I_O = 5\text{ mA}$	0°C to 125°C		–1.5		mV/°C
Output noise voltage	$f = 10\text{ Hz to }100\text{ kHz}$	25°C		170		μV
Dropout voltage	$I_O = 1\text{ A}$	25°C		2		V
Bias current		25°C		4.6	8	mA
Bias current change	$V_I = 27\text{ V to }38\text{ V}$	0°C to 125°C			1	mA
	$I_O = 5\text{ mA to }1\text{ A}$				0.5	
Short-circuit output current		25°C		150		mA
Peak output current		25°C		2.1		A

- (1) Pulse-testing techniques maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 0.33-μF capacitor across the input and a 0.1-μF capacitor across the output.
- (2) This parameter is validated by design and verified during product characterization. It is not tested in production.

APPLICATION INFORMATION

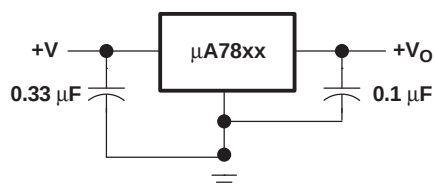


Figure 2. Fixed-Output Regulator

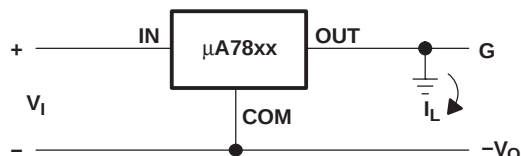
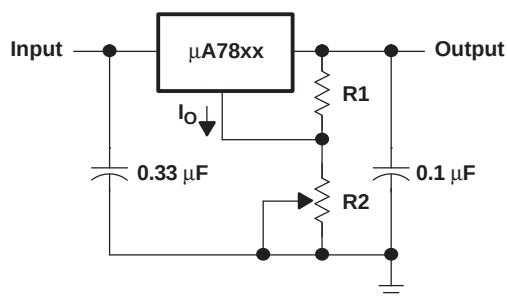


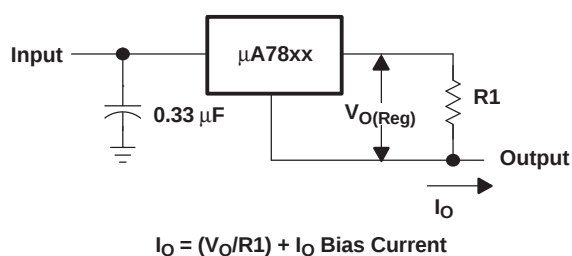
Figure 3. Positive Regulator in Negative Configuration (V_I Must Float)



A: The following formula is used when V_{xx} is the nominal output voltage (output to common) of the fixed regulator:

$$V_O = V_{xx} + \left(\frac{V_{xx}}{R1} + I_Q \right) R2$$

Figure 4. Adjustable-Output Regulator



$$I_O = (V_O/R1) + I_O \text{ Bias Current}$$

Figure 5. Current Regulator

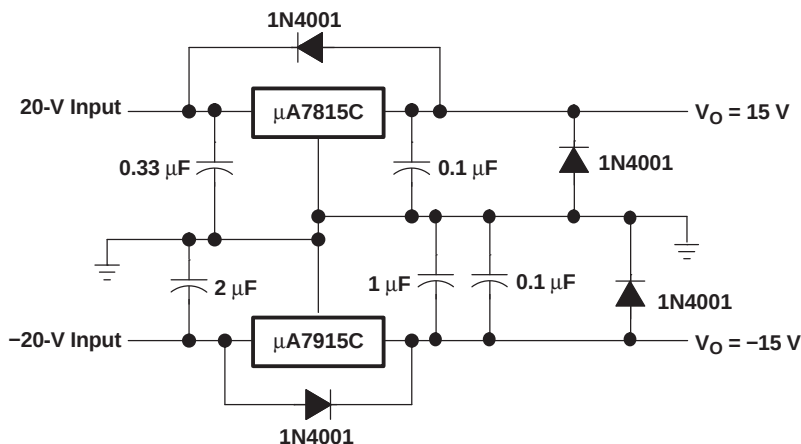


Figure 6. Regulated Dual Supply

Operation With a Load Common to a Voltage of Opposite Polarity

In many cases, a regulator powers a load that is not connected to ground but, instead, is connected to a voltage source of opposite polarity (e.g., operational amplifiers, level-shifting circuits, etc.). In these cases, a clamp diode should be connected to the regulator output as shown in Figure 7. This protects the regulator from output polarity reversals during startup and short-circuit operation.

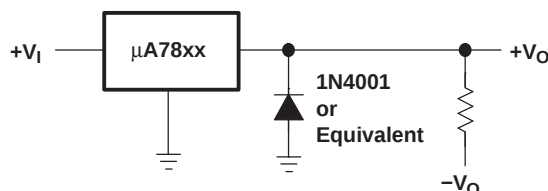


Figure 7. Output Polarity-Reversal-Protection Circuit

Reverse-Bias Protection

Occasionally, the input voltage to the regulator can collapse faster than the output voltage. This can occur, for example, when the input supply is crowbarred during an output overvoltage condition. If the output voltage is greater than approximately 7 V, the emitter-base junction of the series-pass element (internal or external) could break down and be damaged. To prevent this, a diode shunt can be used as shown in Figure 8.

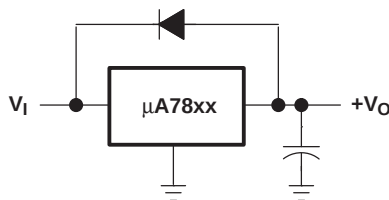


Figure 8. Reverse-Bias-Protection Circuit

REVISION HISTORY

Changes from Revision M (January 2009) to Revision N	Page
Added KCT package and orderable part number to the ORDERING INFORMATION table.	2

PACKAGING INFORMATION

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/ Ball Finish	MSL Peak Temp ⁽³⁾	Samples (Requires Login)
UA7805CKC	OBSOLETE	TO-220	KC	3		TBD	Call TI	Call TI	
UA7805CKCE3	OBSOLETE	TO-220	KC	3		TBD	Call TI	Call TI	
UA7805CKCS	ACTIVE	TO-220	KCS	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type	
UA7805CKCSE3	ACTIVE	TO-220	KCS	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type	
UA7805CKCT	PREVIEW	TO-220	KCT	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type	
UA7805CKTER	OBSOLETE	PFM	KTE	3		TBD	Call TI	Call TI	
UA7805CKTTR	ACTIVE	DDPAK/ TO-263	KT	3	500	Green (RoHS & no Sb/Br)	CU SN	Level-3-245C-168 HR	
UA7805CKTTRG3	ACTIVE	DDPAK/ TO-263	KT	3	500	Green (RoHS & no Sb/Br)	CU SN	Level-3-245C-168 HR	
UA7805QKC	OBSOLETE	TO-220	KC	3		TBD	Call TI	Call TI	
UA7805QKTE	OBSOLETE	PFM	KTE	3		TBD	Call TI	Call TI	
UA7808CKC	OBSOLETE	TO-220	KC	3		TBD	Call TI	Call TI	
UA7808CKCE3	OBSOLETE	TO-220	KC	3		TBD	Call TI	Call TI	
UA7808CKCS	ACTIVE	TO-220	KCS	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type	
UA7808CKCSE3	ACTIVE	TO-220	KCS	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type	
UA7808CKCT	PREVIEW	TO-220	KCT	3	50	TBD	Call TI	Call TI	
UA7808CKTER	OBSOLETE	PFM	KTE	3		TBD	Call TI	Call TI	
UA7808CKTTR	ACTIVE	DDPAK/ TO-263	KT	3	500	Green (RoHS & no Sb/Br)	CU SN	Level-3-245C-168 HR	
UA7808CKTTRG3	ACTIVE	DDPAK/ TO-263	KT	3	500	Green (RoHS & no Sb/Br)	CU SN	Level-3-245C-168 HR	
UA7808QKTE	OBSOLETE	PFM	KTE	3		TBD	Call TI	Call TI	
UA7810CKC	OBSOLETE	TO-220	KC	3		TBD	Call TI	Call TI	
UA7810CKCE3	OBSOLETE	TO-220	KC	3		TBD	Call TI	Call TI	
UA7810CKCS	ACTIVE	TO-220	KCS	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type	
UA7810CKCSE3	ACTIVE	TO-220	KCS	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type	
UA7810CKTER	OBSOLETE	PFM	KTE	3		TBD	Call TI	Call TI	
UA7810CKTTR	ACTIVE	DDPAK/ TO-263	KT	3	500	Green (RoHS & no Sb/Br)	CU SN	Level-3-245C-168 HR	

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/ Ball Finish	MSL Peak Temp ⁽³⁾	Samples (Requires Login)
UA7810CKTTRG3	ACTIVE	DDPAK/ TO-263	KT T	3	500	Green (RoHS & no Sb/Br)	CU SN	Level-3-245C-168 HR	
UA7810QKTE	OBSOLETE	PFM	KTE	3		TBD	Call TI	Call TI	
UA7812CKC	OBSOLETE	TO-220	KC	3		TBD	Call TI	Call TI	
UA7812CKCE3	OBSOLETE	TO-220	KC	3		TBD	Call TI	Call TI	
UA7812CKCS	ACTIVE	TO-220	KCS	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type	
UA7812CKCSE3	ACTIVE	TO-220	KCS	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type	
UA7812CKCT	PREVIEW	TO-220	KCT	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type	
UA7812CKTER	OBSOLETE	PFM	KTE	3		TBD	Call TI	Call TI	
UA7812CKTTR	ACTIVE	DDPAK/ TO-263	KT T	3	500	Green (RoHS & no Sb/Br)	CU SN	Level-3-245C-168 HR	
UA7812CKTTRG3	ACTIVE	DDPAK/ TO-263	KT T	3	500	Green (RoHS & no Sb/Br)	CU SN	Level-3-245C-168 HR	
UA7812QKTE	OBSOLETE	PFM	KTE	3		TBD	Call TI	Call TI	
UA7815CKC	OBSOLETE	TO-220	KC	3		TBD	Call TI	Call TI	
UA7815CKCS	ACTIVE	TO-220	KCS	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type	
UA7815CKCSE3	ACTIVE	TO-220	KCS	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type	
UA7815CKTER	OBSOLETE	PFM	KTE	3		TBD	Call TI	Call TI	
UA7815CKTTR	ACTIVE	DDPAK/ TO-263	KT T	3	500	Green (RoHS & no Sb/Br)	CU SN	Level-3-245C-168 HR	
UA7815CKTTRG3	ACTIVE	DDPAK/ TO-263	KT T	3	500	Green (RoHS & no Sb/Br)	CU SN	Level-3-245C-168 HR	
UA7815QKTE	OBSOLETE	PFM	KTE	3		TBD	Call TI	Call TI	
UA7824CKC	OBSOLETE	TO-220	KC	3		TBD	Call TI	Call TI	
UA7824CKCE3	OBSOLETE	TO-220	KC	3		TBD	Call TI	Call TI	
UA7824CKCS	ACTIVE	TO-220	KCS	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type	
UA7824CKCSE3	ACTIVE	TO-220	KCS	3	50	Pb-Free (RoHS)	CU SN	N / A for Pkg Type	
UA7824CKTER	OBSOLETE	PFM	KTE	3		TBD	Call TI	Call TI	
UA7824CKTTR	ACTIVE	DDPAK/ TO-263	KT T	3	500	Green (RoHS & no Sb/Br)	CU SN	Level-3-245C-168 HR	
UA7824CKTTRG3	ACTIVE	DDPAK/ TO-263	KT T	3	500	Green (RoHS & no Sb/Br)	CU SN	Level-3-245C-168 HR	
UA7885CKC	OBSOLETE	TO-220	KC	3		TBD	Call TI	Call TI	

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/ Ball Finish	MSL Peak Temp ⁽³⁾	Samples (Requires Login)
UA7885CKTER	OBSOLETE	PFM	KTE	3		TBD	Call TI	Call TI	
UA7885QKTE	OBSOLETE	PFM	KTE	3		TBD	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 - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

TBD: The Pb-Free/Green conversion plan has not been defined.

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.

Pb-Free (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

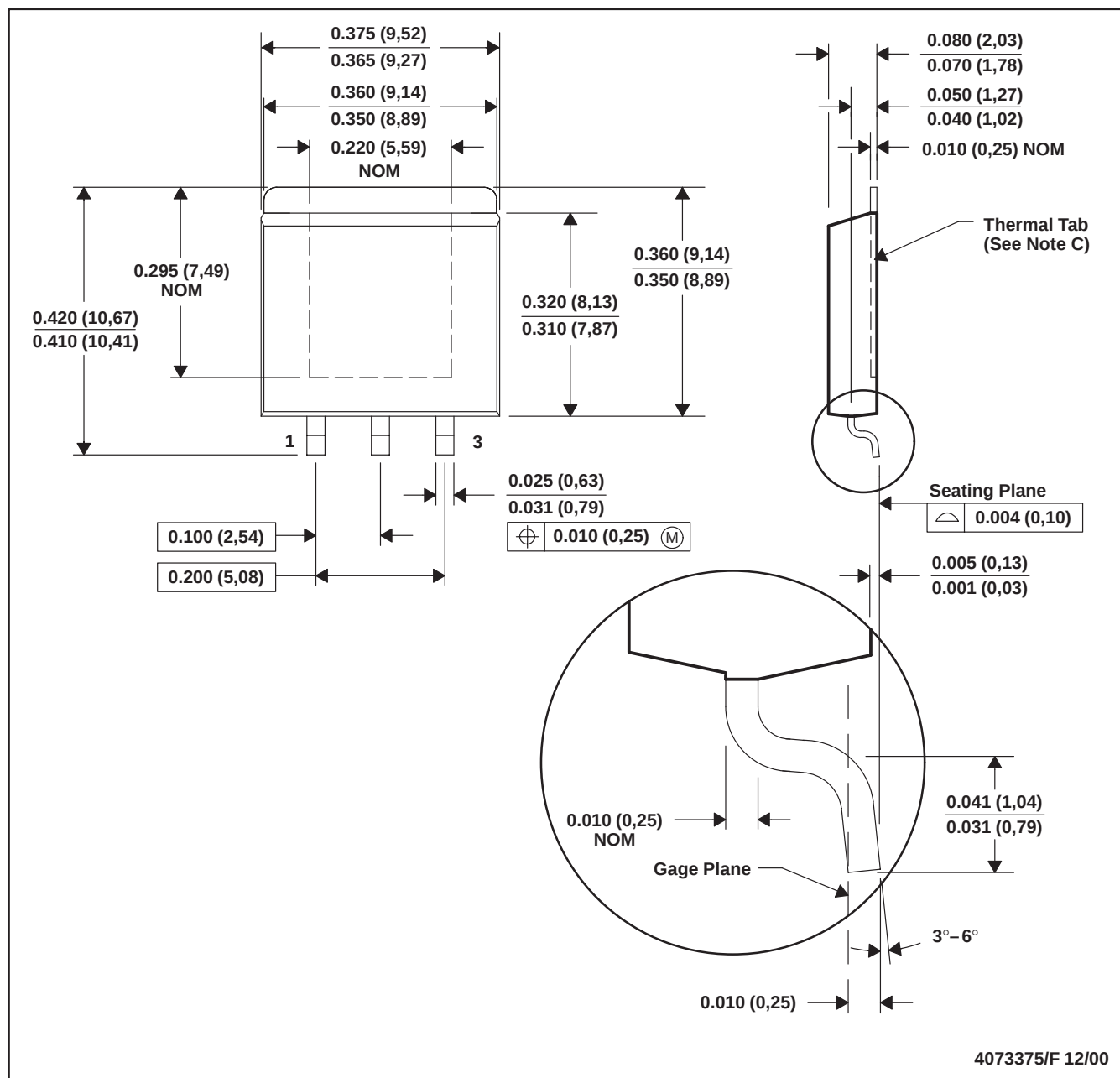
⁽³⁾ MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

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KTE (R-PSFM-G3)

PowerFLEX™ PLASTIC FLANGE-MOUNT



- 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 MO-169

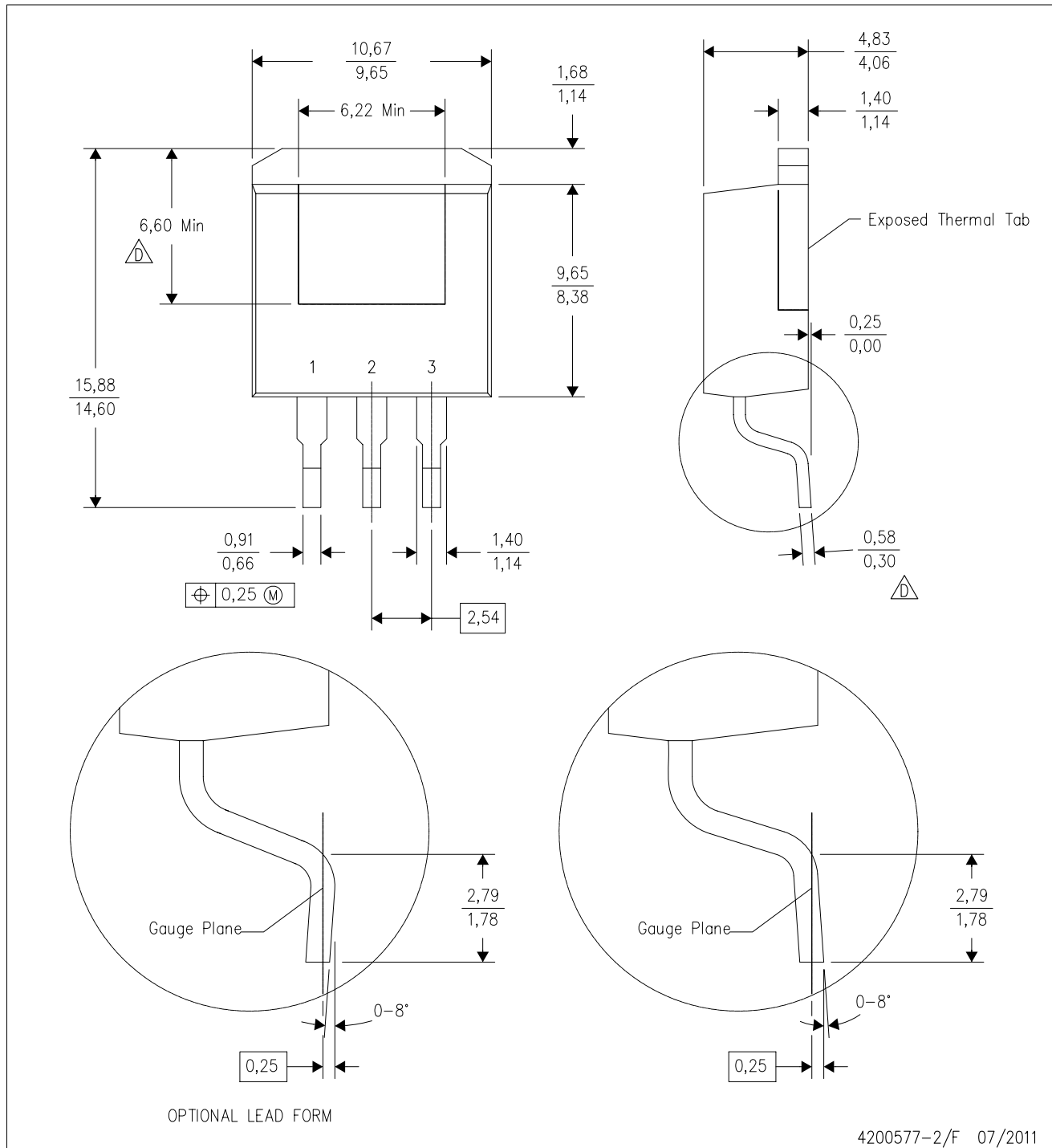
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KTT (R-PSFM-G3)

PLASTIC FLANGE-MOUNT PACKAGE

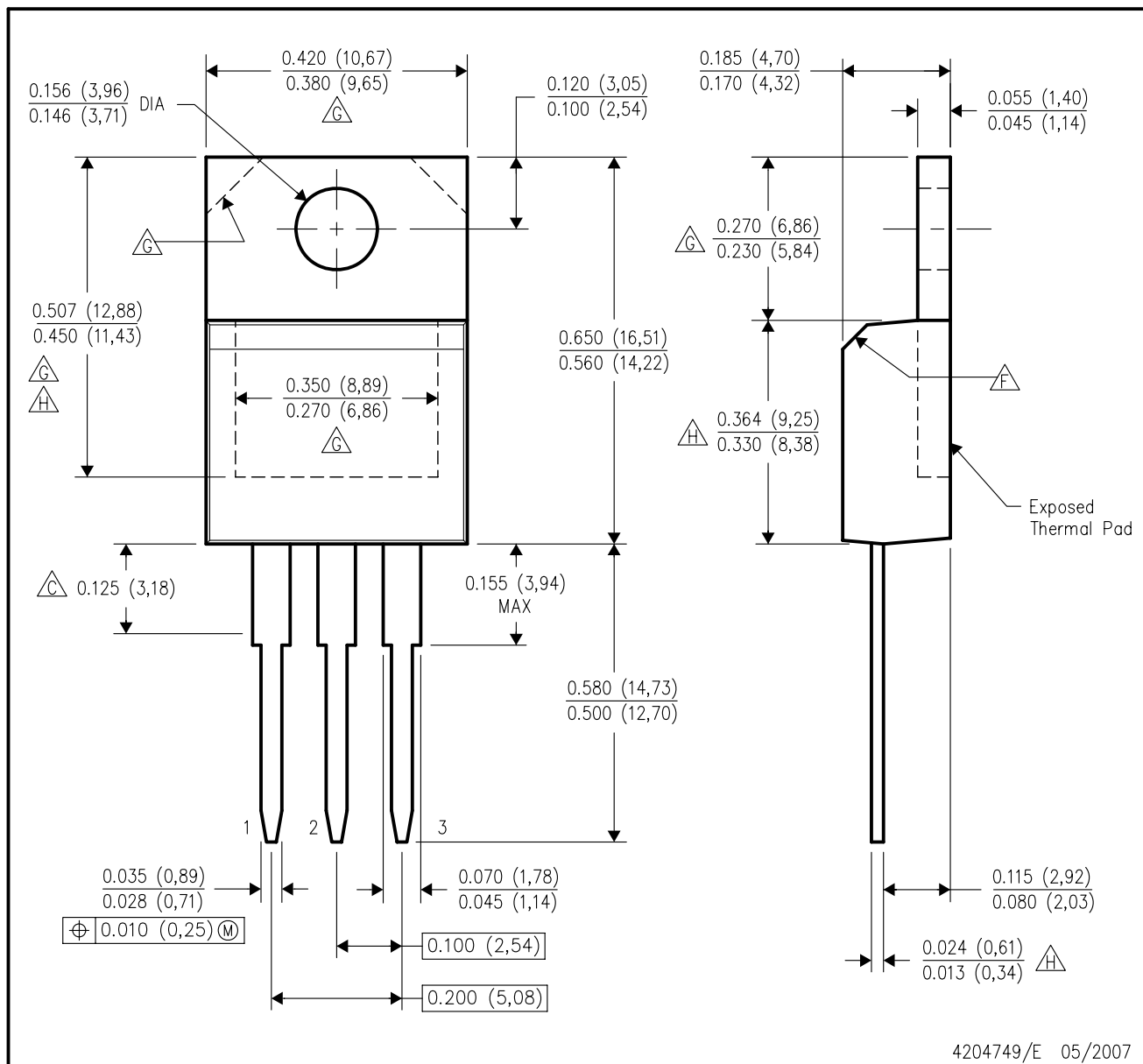


4200577-2/F 07/2011

- NOTES:
- A. All linear dimensions are in millimeters.
 - B. This drawing is subject to change without notice.
 - C. Body dimensions do not include mold flash or protrusion. Mold flash or protrusion not to exceed 0.005 (0,13) per side.
- Falls within JEDEC TO-263 variation AA, except minimum lead thickness and minimum exposed pad length.

KCS (R-PSFM-T3)

PLASTIC FLANGE-MOUNT PACKAGE



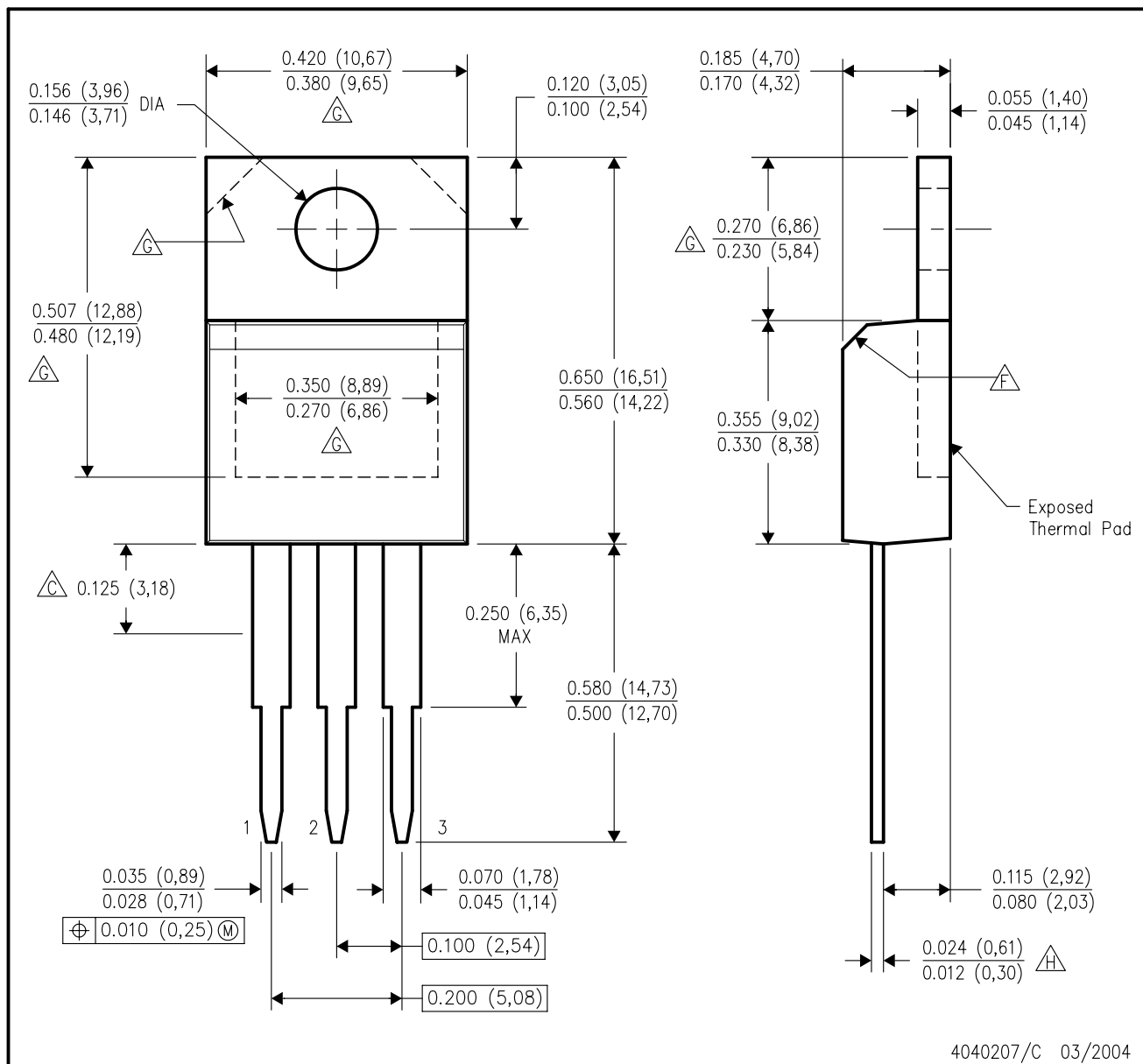
4204749/E 05/2007

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, minimum exposed pad length, and maximum body length.

KC (R-PSFM-T3)

PLASTIC FLANGE-MOUNT PACKAGE



4040207/C 03/2004

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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