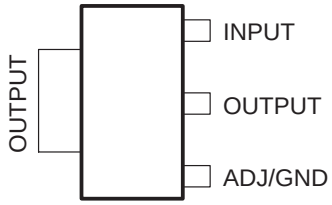
THE DATASHEET OF

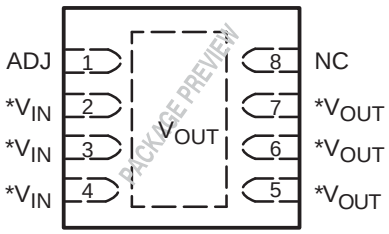
TLV1117-15IDRJR

- **1.5 V, 1.8 V, 2.5 V, 2.85 V, 3.3 V, 5 V, and Adjustable Output Voltage Options**
- **Output Current of 800 mA**
- **Operates Down to 1.1-V Dropout**
- **Specified Dropout Voltage at Multiple Current Levels**
- **0.2% Line Regulation Maximum**
- **0.4% Load Regulation Maximum**
- **Max V_{IN} of 15 V**

DCY (SOT-223) PACKAGE
(TOP VIEW)

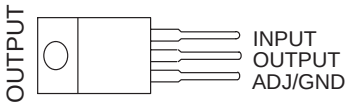


DRJ (QFN) PACKAGE
(TOP VIEW)

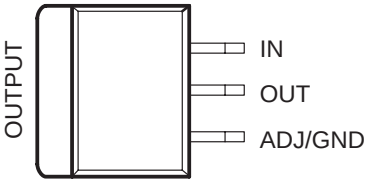


*V_{IN} pins (2, 3, 4) must be connected together;
V_{OUT} pins (5, 6, 7) must be connected together.

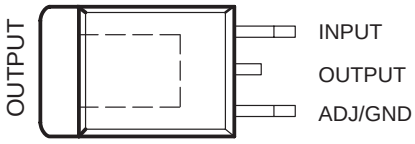
KCS (TO-220) PACKAGE
(TOP VIEW)



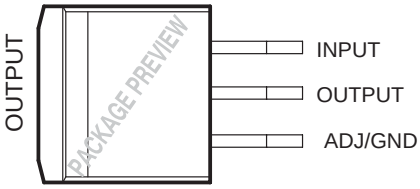
KTE (PowerFLEX™) PACKAGE
(TOP VIEW)



KTP (PowerFLEX™/TO-252) PACKAGE
(TOP VIEW)



KTT (TO-263) PACKAGE
(TOP VIEW)



description/ordering information

The TLV1117 is a positive low-dropout voltage regulator, designed to provide up to 800 mA of output current. The device is available in 1.5 V, 1.8 V, 2.5 V, 2.85 V, 3.3 V, 5 V, and adjustable output voltage options. All internal circuitry is designed to operate down to 1 V input-to-output differential. Dropout voltage is specified at a maximum of 1.3 V at 800 mA, decreasing at lower load currents.

The low-profile surface-mount KTP package allows the device to be used in applications where space is limited. The TLV1117 requires a minimum of 10 μF of output capacitance for stability. Output capacitors of this size or larger normally are included in most regulator designs.

Unlike pnp-type regulators, where up to 10% of the output current is wasted as quiescent current, the quiescent current of the TLV1117 flows into the load, increasing efficiency.

The TLV1117C device is characterized for operation over the virtual junction temperature range of 0°C to 125°C, and the TLV1117I device is characterized for operation over the virtual junction temperature range of −40°C to 125°C.

description/ordering information (continued)

TLV1117C ORDERING INFORMATION

T_J	V_OTYP (V)	PACKAGE†		ORDERABLE PART NUMBER	TOP-SIDE MARKING
0°C to 125°C	1.5 V	PowerFLEX (KTE)	Reel of 2000	TLV1117-15CKTER	
		PowerFLEX/TO-252* (KTP)	Reel of 2000	TLV1117-15CKTPR	
		QFN (DRJ)	Reel of 1000	TLV1117-15CDRJR	
		SOT-223 (DCY)	Tube of 80	TLV1117-15CDCY	
			Reel of 2500	TLV1117-15CDCYR	
		TO-220 (KCS)	Tube of 50	TLV1117-15CKCS	
		TO-263 (KTT)	Tube of	TLV1117-15CKTT	
			Reel of	TLV1117-15CKTTR	
	1.8 V	PowerFLEX (KTE)	Reel of 2000	TLV1117-18CKTER	
		PowerFLEX/TO-252* (KTP)	Reel of 2000	TLV1117-18CKTPR	
		QFN (DRJ)	Reel of 1000	TLV1117-18CDRJR	
		SOT-223 (DCY)	Tube of 80	TLV1117-18CDCY	
			Reel of 2500	TLV1117-18CDCYR	
		TO-220 (KCS)	Tube of 50	TLV1117-18CKCS	
		TO-263 (KTT)	Tube of	TLV1117-18CKTT	
			Reel of	TLV1117-18CKTTR	
	2.5 V	PowerFLEX (KTE)	Reel of 2000	TLV1117-25CKTER	
		PowerFLEX/TO-252* (KTP)	Reel of 2000	TLV1117-25CKTPR	
		QFN (DRJ)	Reel of 1000	TLV1117-25CDRJR	
		SOT-223 (DCY)	Tube of 80	TLV1117-25CDCY	
			Reel of 2500	TLV1117-25CDCYR	
		TO-220 (KCS)	Tube of 50	TLV1117-25CKCS	
		TO-263 (KTT)	Tube of	TLV1117-25CKTT	
			Reel of	TLV1117-25CKTTR	
	2.85 V	PowerFLEX (KTE)	Reel of 2000	TLV1117-285CKTER	
		PowerFLEX/TO-252* (KTP)	Reel of 2000	TLV1117-285CKTPR	
		QFN (DRJ)	Reel of 1000	TLV1117-285CDRJR	
		SOT-223 (DCY)	Tube of 80	TLV1117-285CDCY	
			Reel of 2500	TLV1117-285CDCYR	
		TO-220 (KCS)	Tube of 50	TLV1117-285CKCS	
		TO-263 (KTT)	Tube of	TLV1117-285CKTT	
			Reel of	TLV1117-285CKTTR	
	3.3 V	PowerFLEX (KTE)	Reel of 2000	TLV1117-33CKTER	
		PowerFLEX/TO-252* (KTP)	Reel of 2000	TLV1117-33CKTPR	
		QFN (DRJ)	Reel of 1000	TLV1117-33CDRJR	
		SOT-223 (DCY)	Tube of 80	TLV1117-33CDCY	
			Reel of 2500	TLV1117-33CDCYR	
		TO-220 (KCS)	Tube of 50	TLV1117-33CKCS	
		TO-263 (KTT)	Tube of	TLV1117-33CKTT	
			Reel of	TLV1117-33CKTTR	

*Complies with TO-252, variation AC.
† Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at www.ti.com/sc/package.

TLV1117C ORDERING INFORMATION (continued)

T_J	V_O TYP (V)	PACKAGE†		ORDERABLE PART NUMBER	TOP-SIDE MARKING
0°C to 125°C	5 V	PowerFLEX (KTE)	Reel of 2000	TLV1117-50CKTER	PREVIEW
		PowerFLEX/TO-252* (KTP)	Reel of 2000	TLV1117-50CKTPR	PREVIEW
		QFN (DRJ)	Reel of 1000	TLV1117-50CDRJR	PREVIEW
		SOT-223 (DCY)	Tube of 80	TLV1117-50CDCY	PREVIEW
			Reel of 2500	TLV1117-50CDCYR	
		TO-220 (KCS)	Tube of 50	TLV1117-50CKCS	PREVIEW
		TO-263 (KTT)	Tube of	TLV1117-50CKTT	PREVIEW
			Reel of	TLV1117-50CKTTR	
	ADJ	PowerFLEX (KTE)	Reel of 2000	TLV1117CKTER	TLV1117C
		PowerFLEX/TO-252* (KTP)	Reel of 2000	TLV1117CKTPR	TV1117
		QFN (DRJ)	Reel of 1000	TLV1117CDRJR	PREVIEW
		SOT-223 (DCY)	Tube of 80	TLV1117CDCY	V4
			Reel of 2500	TLV1117CDCYR	
		TO-220 (KCS)	Tube of 50	TLV1117CKCS	TLV1117C
		TO-263 (KTT)	Tube of	TLV1117CKTT	PREVIEW
			Reel of	TLV1117CKTTR	

*Complies with TO-252, variation AC.
† Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at www.ti.com/sc/package.

TLV1117I ORDERING INFORMATION

T_J	V_O TYP (V)	PACKAGE†		ORDERABLE PART NUMBER	TOP-SIDE MARKING
−40°C to 125°C	1.5 V	PowerFLEX (KTE)	Reel of 2000	TLV1117-15IKTER	
		PowerFLEX/TO-252* (KTP)	Reel of 2000	TLV1117-15IKTPR	
		QFN (DRJ)	Reel of 1000	TLV1117-15IDRJR	
		SOT-223 (DCY)	Tube of 80	TLV1117-15IDCY	
			Reel of 2500	TLV1117-15IDCYR	
		TO-220 (KCS)	Tube of 50	TLV1117-15IKCS	
		TO-263 (KTT)	Tube of	TLV1117-15IKTT	
			Reel of	TLV1117-15IKTTR	
	1.8 V	PowerFLEX (KTE)	Reel of 2000	TLV1117-18IKTER	
		PowerFLEX/TO-252* (KTP)	Reel of 2000	TLV1117-18IKTPR	
		QFN (DRJ)	Reel of 1000	TLV1117-18IDRJR	
		SOT-223 (DCY)	Tube of 80	TLV1117-18IDCY	
			Reel of 2500	TLV1117-18IDCYR	
		TO-220 (KCS)	Tube of 50	TLV1117-18IKCS	
		TO-263 (KTT)	Tube of	TLV1117-18IKTT	
			Reel of	TLV1117-18IKTTR	
	2.5 V	PowerFLEX (KTE)	Reel of 2000	TLV1117-25IKTER	
		PowerFLEX/TO-252* (KTP)	Reel of 2000	TLV1117-25IKTPR	
		QFN (DRJ)	Reel of 1000	TLV1117-25IDRJR	
		SOT-223 (DCY)	Tube of 80	TLV1117-25IDCY	
			Reel of 2500	TLV1117-25IDCYR	
		TO-220 (KCS)	Tube of 50	TLV1117-25IKCS	
		TO-263 (KTT)	Tube of	TLV1117-25IKTT	
			Reel of	TLV1117-25IKTTR	
−40°C to 125°C	2.85 V	PowerFLEX (KTE)	Reel of 2000	TLV1117-285IKTER	
		PowerFLEX/TO-252* (KTP)	Reel of 2000	TLV1117-285IKTPR	
		QFN (DRJ)	Reel of 1000	TLV1117-285IDRJR	
		SOT-223 (DCY)	Tube of 80	TLV1117-285IDCY	
			Reel of 2500	TLV1117-285IDCYR	
		TO-220 (KCS)	Tube of 50	TLV1117-285IKCS	
		TO-263 (KTT)	Tube of	TLV1117-285IKTT	
			Reel of	TLV1117-285IKTTR	
−40°C to 125°C	3.3 V	PowerFLEX (KTE)	Reel of 2000	TLV1117-33IKTER	
		PowerFLEX/TO-252* (KTP)	Reel of 2000	TLV1117-33IKTPR	
		QFN (DRJ)	Reel of 1000	TLV1117-33IDRJR	
		SOT-223 (DCY)	Tube of 80	TLV1117-33IDCY	
		SOT-223 (DCY)	Reel of 2500	TLV1117-33IDCYR	
		TO-220 (KCS)	Tube of 50	TLV1117-33IKCS	
		TO-263 (KTT)	Tube of	TLV1117-33IKTT	
			Reel of	TLV1117-33IKTTR	

*Complies with TO-252, variation AC.
† Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at www.ti.com/sc/package.

description/ordering information (continued)

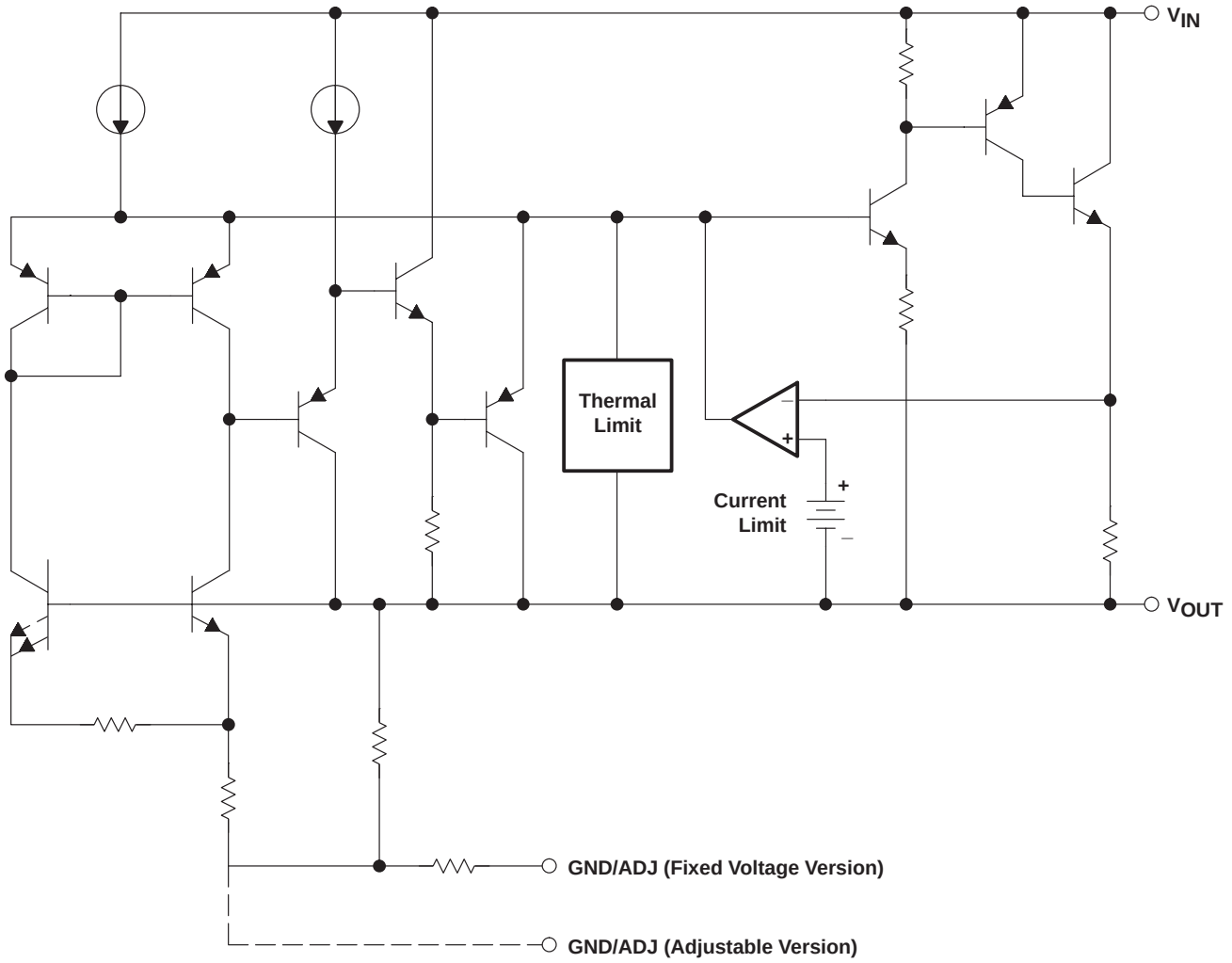
TLV1117I ORDERING INFORMATION (continued)

T_J	V_O TYP (V)	PACKAGE†		ORDERABLE PART NUMBER	TOP-SIDE MARKING
−40°C to 125°C	5 V	PowerFLEX (KTE)	Reel of 2000	TLV1117-50IKTER	PREVIEW
		PowerFLEX/TO-252* (KTP)	Reel of 2000	TLV1117-50IKTPR	PREVIEW
		QFN (DRJ)	Reel of 1000	TLV1117-50DRJR	PREVIEW
		SOT-223 (DCY)	Tube of 80	TLV1117-50IDCY	PREVIEW
			Reel of 2500	TLV1117-50IDCYR	
		TO-220 (KCS)	Tube of 50	TLV1117-50IKCS	PREVIEW
		TO-263 (KTT)	Tube of	TLV1117-50IKTT	PREVIEW
			Reel of	TLV1117-50IKTTR	
	ADJ	PowerFLEX (KTE)	Reel of 2000	TLV1117IKTER	TLV1117I
		PowerFLEX/TO-252* (KTP)	Reel of 2000	TLV1117IKTPR	TY1117
		QFN (DRJ)	Reel of 1000	TLV1117IDRJR	PREVIEW
		SOT-223 (DCY)	Tube of 80	TLV1117IDCY	V2
			Reel of 2500	TLV1117IDCYR	
		TO-220 (KCS)	Tube of 50	TLV1117IKCS	TLV1117I
		TO-263 (KTT)	Tube of	TLV1117IKTT	PREVIEW
			Reel of	TLV1117IKTTR	

*Complies with TO-252, variation AC.
† Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at www.ti.com/sc/package.

DEVICE COMPONENT COUNT	
Transistors	
Diodes	
Resistors	
Capacitors	
JFET	
Tunnels (emitter R)	

functional block diagram



absolute maximum ratings over operating free-air temperature range (unless otherwise noted)†

Continuous input voltage . . . . . 15 V
Operating virtual junction temperature . . . . . 150°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_{JP}*	θ_{JC}	θ_{JA}
PowerFLEX (KTE)	High K, JESD 51-5	2.7°C/W		23°C/W
PowerFLEX/TO-252 (KTP)	High K, JESD 51-5	3°C/W		28°C/W
QFN (DRJ)	High K, JESD 51-5	TBD		TBD
SOT (DCY)	High K, JESD 51-7		4°C/W	53°C/W
TO-263 (KTT)	High K, JESD 51-5	TBD		TBD
TO-220 (KCS)	High K, JESD 51-5	3°C/W		19°C/W

*For packages with exposed thermal pads, such as QFN, PowerPAD, and PowerFLEX, θ_{JP} is defined as the thermal resistance between the die junction and the bottom of the exposed pad.

NOTE 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.

recommended operating conditions

			MIN†	MAX	UNIT
V_{IN}	Input voltage	TLV1117	2.7	15	V
		TLV1117-15	2.9	15	
		TLV1117-18	3.2	15	
		TLV1117-25	3.9	15	
		TLV1117-285	4.25	15	
		TLV1117-33	4.7	15	
		TLV1117-50	6.4	15	
I_{OUT}	Output current			0.8	A
T_J	Operating virtual junction temperature range	TLV1117C	0	125	°C
		TLV1117I	−40	125	

† The input-to-output differential across the regulator should provide for some margin against regulator operation at the maximum dropout (for a particular current value). This margin is needed to account for tolerances in both the input voltage (lower limit) and the output voltage (upper limit). The absolute minimum V_{IN} for a desired maximum output current can be calculated by the following:

$$V_{IN(min)} = V_{OUT(max)} + V_{DO(max\ @\ rated\ current)}$$

TLV1117C electrical characteristics, T_J = 0°C to 125°C, all typical values are at T_J = 25°C (unless otherwise noted)

PARAMETER	TEST CONDITIONS†		MIN	TYP	MAX	UNIT
Output voltage, V_{OUT}	V_{IN} − V_{OUT} = 2 V, I_{OUT} = 10 mA, T_J = 25°C	TLV1117	1.238	1.250	1.262	V
	I_{OUT} = 10 mA to 800 mA, V_{IN} − V_{OUT} = 1.4 V to 10 V		1.225	1.250	1.270	
	V_{IN} = 3.5 V, I_{OUT} = 10 mA, T_J = 25°C	TLV1117-15	1.485	1.500	1.515	
	V_{IN} = 2.9 V to 10 V, I_{OUT} = 0 to 800 mA		1.470	1.500	1.530	
	V_{IN} = 3.8 V, I_{OUT} = 10 mA, T_J = 25°C	TLV1117-18	1.782	1.800	1.818	
	V_{IN} = 3.2 V to 10 V, I_{OUT} = 0 to 800 mA		1.764	1.800	1.836	
	V_{IN} = 4.5 V, I_{OUT} = 10 mA, T_J = 25°C	TLV1117-25	2.475	2.500	2.525	
	V_{IN} = 3.9 V to 10 V, I_{OUT} = 0 to 800 mA		2.450	2.500	2.550	
	V_{IN} = 4.85 V, I_{OUT} = 10 mA, T_J = 25°C	TLV1117-285	2.820	2.850	2.880	
	V_{IN} = 4.25 V to 10 V, I_{OUT} = 0 to 800 mA		2.790	2.850	2.910	
	V_{IN} = 4.1 V, I_{OUT} = 0 to 500 mA		2.790	2.850	2.910	
	V_{IN} = 5 V, I_{OUT} = 10 mA, T_J = 25°C	TLV1117-33	3.267	3.300	3.333	
	V_{IN} = 4.75 V to 10 V, I_{OUT} = 0 to 800 mA		3.235	3.300	3.365	
	V_{IN} = 7 V, I_{OUT} = 10 mA, T_J = 25°C	TLV1117-50	4.950	5.000	5.050	
	V_{IN} = 6.5 V to 12 V, I_{OUT} = 0 to 800 mA		4.900	5.000	5.100	
Line regulation	I_{OUT} = 10 mA, V_{IN} − V_{OUT} = 1.5 V to 13.75 V	TLV1117		0.035	0.2	%
	I_{OUT} = 0 mA, V_{IN} = 2.9 V to 10 V	TLV1117-15		1	6	mV
	I_{OUT} = 0 mA, V_{IN} = 3.2 V to 10 V	TLV1117-18		1	6	
	I_{OUT} = 0 mA, V_{IN} = 3.9 V to 10 V	TLV1117-25		1	6	
	I_{OUT} = 0 mA, V_{IN} = 4.25 V to 10 V	TLV1117-285		1	6	
	I_{OUT} = 0 mA, V_{IN} = 4.75 V to 15 V	TLV1117-33		1	6	
	I_{OUT} = 0 mA, V_{IN} = 6.5 V to 15 V	TLV1117-50		1	10	
Load regulation	I_{OUT} = 10 mA to 800 mA, V_{IN} − V_{OUT} = 3 V	TLV1117		0.2	0.4	%
	I_{OUT} = 0 to 800 mA, V_{IN} = 2.9 V	TLV1117-15		1	10	mV
	I_{OUT} = 0 to 800 mA, V_{IN} = 3.2 V	TLV1117-18		1	10	
	I_{OUT} = 0 to 800 mA, V_{IN} = 3.9 V	TLV1117-25		1	10	
	I_{OUT} = 0 to 800 mA, V_{IN} = 4.25 V	TLV1117-285		1	10	
	I_{OUT} = 0 to 800 mA, V_{IN} = 4.75 V	TLV1117-33		1	10	
	I_{OUT} = 0 to 800 mA, V_{IN} = 6.5 V	TLV1117-50		1	15	
Dropout voltage, V_{DO} (see Note 2)	I_{OUT} = 100 mA			1.1	1.20	V
	I_{OUT} = 500 mA			1.15	1.25	
	I_{OUT} = 800 mA			1.2	1.3	
Current limit	V_{IN} − V_{OUT} = 5 V, T_J = 25°C		0.8	1.2	1.5	A
Minimum load current	V_{IN} = 15 V	TLV1117		1.7	5	mA
Quiescent current	V_{IN} ≤ 15 V	All fixed voltage options		5	10	mA
Thermal regulation	30 ms pulse,	T_A = 25°C		0.01	0.1	%/W
Ripple rejection	V_{IN} − V_{OUT} = 3 V, V_{ripple} = 1 V_{pp}	f = 120 Hz	60	78		dB

† All characteristics are measured with a 10-µF capacitor across the input and a 10-µF capacitor across the output. Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible.

NOTE 2: Dropout is defined as the V_{IN} to V_{OUT} differential at which V_{OUT} drops 100 mV below the value of V_{OUT}, measured at V_{IN} = $V_{OUT(nom)}$ + 1.5 V.

TLV1117C electrical characteristics, T_J = 0°C to 125°C, all typical values are at T_J = 25°C (unless otherwise noted) (continued)

PARAMETER	TEST CONDITIONS†	MIN	TYP	MAX	UNIT
ADJUSTMENT pin current			80	120	μA
Change in ADJUSTMENT pin current	I_{OUT} = 10 mA to 800 mA, $V_{IN} - V_{OUT}$ = 1.4 V to 10 V		0.2	5	μA
Temperature stability	T_J = full range		0.5		%
Long-term stability	1000 hrs, no load T_A = 125°C		0.3		%
Output noise voltage (% of V_{OUT})	f = 10 Hz to 100 kHz,		0.003		%

† All characteristics are measured with a 10-μF capacitor across the input and a 10-μF capacitor across the output. Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible.

TLV1117I electrical characteristics, T_J = -40°C to 125°C, all typical values are at T_J = 25°C (unless otherwise noted)

PARAMETER	TEST CONDITIONS†		MIN	TYP	MAX	UNIT
Output voltage, V_{OUT}	V_{IN} − V_{OUT} = 2 V, I_{OUT} = 10 mA, T_J = 25°C	TLV1117	1.238	1.250	1.262	V
	I_{OUT} = 10 mA to 800 mA, V_{IN} − V_{OUT} = 1.4 V to 10 V		1.200	1.250	1.290	
	V_{IN} = 3.5 V, I_{OUT} = 10 mA, T_J = 25°C	TLV1117-15	1.485	1.500	1.515	
	V_{IN} = 2.9 V to 10 V, I_{OUT} = 0 to 800 mA		1.440	1.500	1.560	
	V_{IN} = 3.8 V, I_{OUT} = 10 mA, T_J = 25°C	TLV1117-18	1.782	1.800	1.818	
	V_{IN} = 3.2 V to 10 V, I_{OUT} = 0 to 800 mA		1.728	1.800	1.872	
	V_{IN} = 4.5 V, I_{OUT} = 10 mA, T_J = 25°C	TLV1117-25	2.475	2.500	2.525	
	V_{IN} = 3.9 V to 10 V, I_{OUT} = 0 to 800 mA		2.400	2.500	2.600	
	V_{IN} = 4.85 V, I_{OUT} = 10 mA, T_J = 25°C	TLV1117-285	2.820	2.850	2.880	
	V_{IN} = 4.25 V to 10 V, I_{OUT} = 0 to 800 mA		2.736	2.850	2.964	
	V_{IN} = 5 V, I_{OUT} = 10 mA, T_J = 25°C	TLV1117-33	3.267	3.300	3.333	
	V_{IN} = 4.75 V to 10 V, I_{OUT} = 0 to 800 mA		3.168	3.300	3.432	
	V_{IN} = 7 V, I_{OUT} = 10 mA, T_J = 25°C	TLV1117-50	4.950	5.000	5.050	
	V_{IN} = 6.5 V to 12 V, I_{OUT} = 0 to 800 mA		4.800	5.000	5.200	
Line regulation	I_{OUT} = 10 mA, V_{IN} − V_{OUT} = 1.5 V to 13.75 V	TLV1117		0.035	0.3	%
	I_{OUT} = 0 mA, V_{IN} = 2.9 V to 10 V	TLV1117-15		1	4.5	mV
	I_{OUT} = 0 mA, V_{IN} = 3.2 V to 10 V	TLV1117-18		1	5.5	
	I_{OUT} = 0 mA, V_{IN} = 3.9 V to 10 V	TLV1117-25		1	7.5	
	I_{OUT} = 0 mA, V_{IN} = 4.25 V to 10 V	TLV1117-285		1	8.5	
	I_{OUT} = 0 mA, V_{IN} = 4.75 V to 15 V	TLV1117-33		1	10	
	I_{OUT} = 0 mA, V_{IN} = 6.5 V to 15 V	TLV1117-50		1	15	
Load regulation	I_{OUT} = 10 mA to 800 mA, V_{IN} − V_{OUT} = 3 V	TLV1117		0.2	0.5	%
	I_{OUT} = 0 to 800 mA, V_{IN} = 2.9 V	TLV1117-15		1	7.5	mV
	I_{OUT} = 0 to 800 mA, V_{IN} = 3.2 V	TLV1117-18		1	9	
	I_{OUT} = 0 to 800 mA, V_{IN} = 3.9 V	TLV1117-25		1	12.5	
	I_{OUT} = 0 to 800 mA, V_{IN} = 4.25 V	TLV1117-285		1	14.5	
	I_{OUT} = 0 to 800 mA, V_{IN} = 4.75 V	TLV1117-33		1	15	
	I_{OUT} = 0 to 800 mA, V_{IN} = 6.5 V	TLV1117-50		1	20	
Dropout voltage, V_{DO} (see Note 2)	I_{OUT} = 100 mA			1.10	1.30	V
	I_{OUT} = 500 mA			1.15	1.35	
	I_{OUT} = 800 mA			1.20	1.40	
Current limit	V_{IN} − V_{OUT} = 5 V, T_J = 25°C		0.8	1.2	1.5	A
Minimum load current	V_{IN} = 15 V	TLV1117		1.7	5	mA
Quiescent current	V_{IN} ≤ 15 V	All fixed-voltage options		5	15	mA
Thermal regulation	30-ms pulse,	T_A = 25°C		0.01	0.1	%/W
Ripple rejection	V_{IN} − V_{OUT} = 3 V, V_{ripple} = 1 V_{pp}	f = 120 Hz	60	75		dB

† All characteristics are measured with a 10-µF capacitor across the input and a 10-µF capacitor across the output. Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible.

NOTE 2: Dropout is defined as the V_{IN} to V_{OUT} differential at which V_{OUT} drops 100 mV below the value of V_{OUT}, measured at V_{IN} = $V_{OUT(nom)}$ + 1.5 V.

TLV1117I electrical characteristics, T_J = 40°C to 125°C, all typical values are at T_J = 25°C (unless otherwise noted) (continued)

PARAMETER	TEST CONDITIONS†	MIN	TYP	MAX	UNIT
ADJUSTMENT pin current			80	120	μA
Change in ADJUSTMENT pin current	I_{OUT} = 10 mA to 800 mA, $V_{IN} - V_{OUT}$ = 1.4 V to 10 V		0.2	10	μA
Temperature stability	T_J = full range		0.5		%
Long-term stability	1000 hrs, no load T_A = 125°C		0.3		%
Output noise voltage (% of V_{OUT})	f = 10 Hz to 100 kHz,		0.003		%

† All characteristics are measured with a 10-μF capacitor across the input and a 10-μF capacitor across the output. Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible.

GRAPHS (PREVIEW):

Figure 1. Short-Circuit Current vs (V_{IN}–V_{OUT})

Figure 2. Load Regulation vs Temperature

Figure 3. Ripple Rejection vs Frequency (ADJ Version)

Figure 4. Ripple Rejection vs Current (ADJ Version)

Figure 5. Temperature Stability

Figure 6. ADJ Pin Current vs Temperature

Figure 7. TLV1117−25 Load Transient Response

Figure 8. TLV1117−25 Line Transient Response

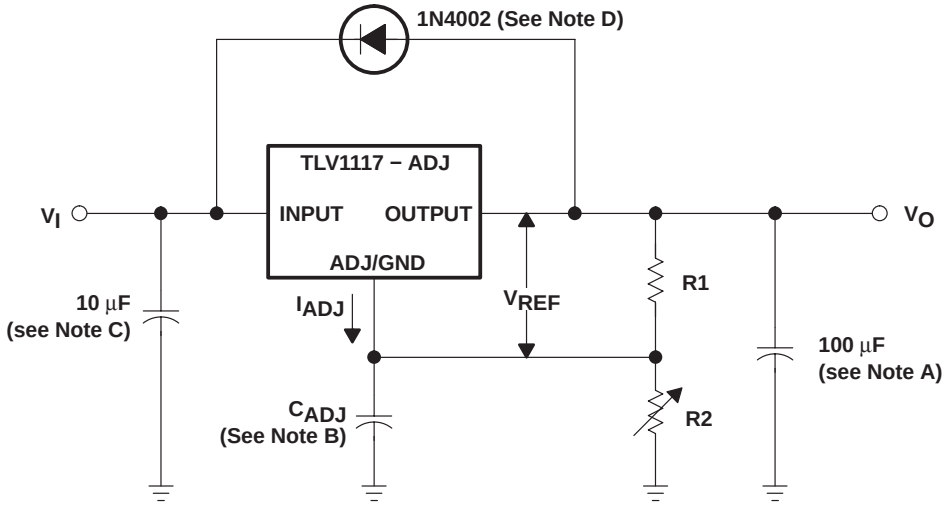
Figure 9. TLV1117−285 Load Transient Response

Figure 10. TLV1117-285 Line Transient Response

Figure 11. TLV1117−33 Load Transient Response

Figure 12. TLV1117-33 Line Transient Response

APPLICATION INFORMATION



V_{OUT} is calculated as:

$$V_{OUT} = V_{REF}\left(1 + \frac{R2}{R1}\right) + (I_{ADJ} \times R2)$$

Since I_{ADJ} typically is 55 μA, it is negligible in most applications.

NOTES: A. Output capacitor selection is critical for regulator stability. The recommended minimum is 10-μF tantalum or 50-μF aluminum electrolytic, with either one having an ESR between 0.3 Ω and 22 Ω. Larger C_{OUT} values benefit the regulator by improving transient response and loop stability.

B. C_{ADJ} can be used to improve ripple rejection. Ensure that the impedance of C_{ADJ} $\left(X_{CADJ} = \frac{1}{2\pi f_{ripple} C_{ADJ}}\right)$ is < R1 to prevent the ripple from being amplified. If C_{ADJ} is used, then a larger C_{OUT} is required (22-μF tantalum or 150-μF aluminum electrolytic).

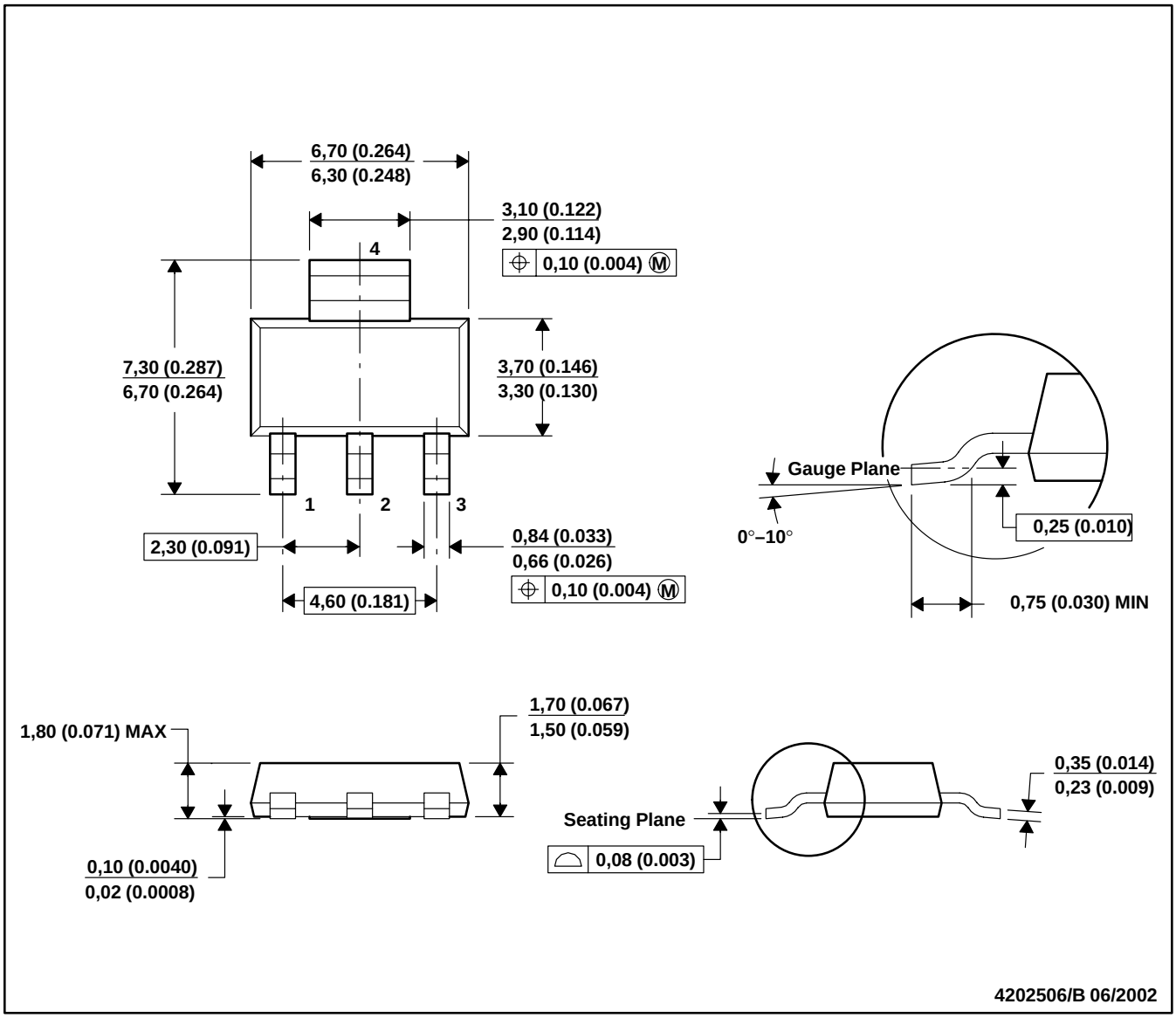
C. C_{IN} is recommended if TLV1117 is not located near the power-supply filter.

D. An external diode is recommended to protect the regulator if the input instantaneously is shorted to GND.

Figure 13. Basic Adjustable Regulator

MPDS094A – APRIL 2001 – REVISED JUNE 2002

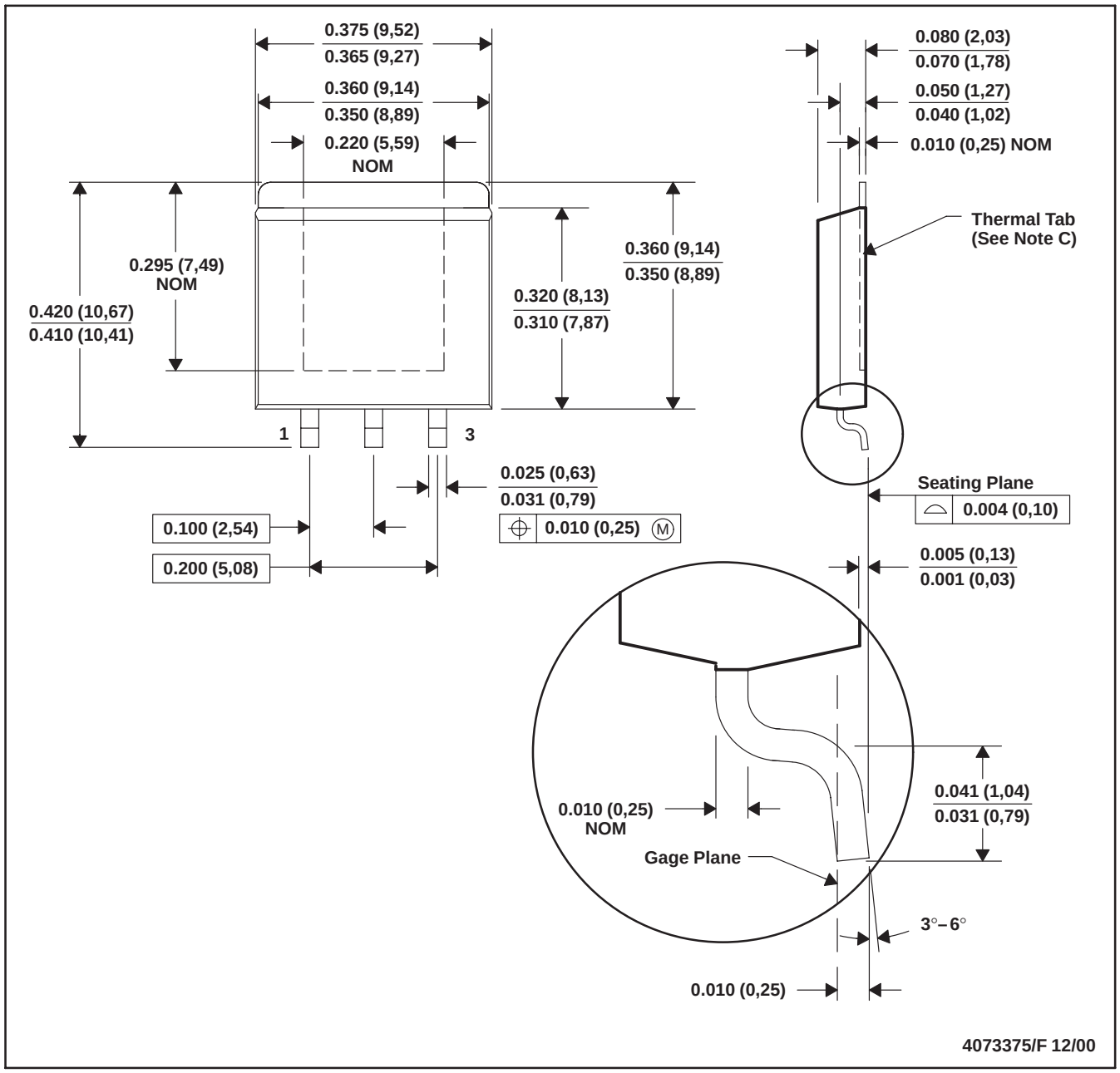
DCY (R-PDSO-G4) **PLASTIC SMALL-OUTLINE**



NOTES: A. All linear dimensions are in millimeters (inches).
B. This drawing is subject to change without notice.
C. Body dimensions do not include mold flash or protrusion.
D. Falls within JEDEC TO-261 Variation AA.

MPFM001E – OCTOBER 1994 – REVISED JANUARY 2001

KTE (R-PSFM-G3) **PowerFLEX™ PLASTIC FLANGE-MOUNT**

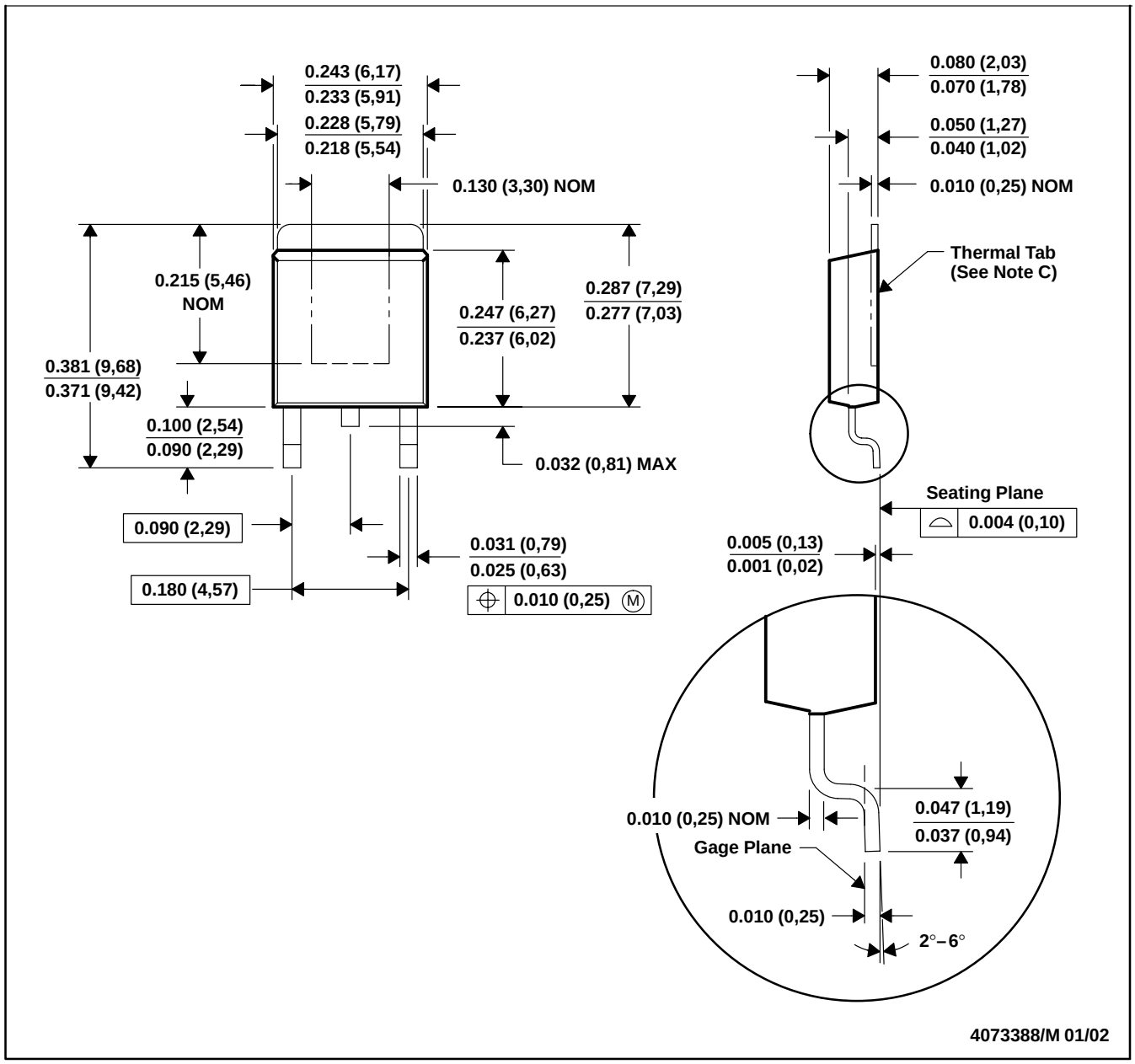


NOTES: A. All linear dimensions are in inches (millimeters).
B. This drawing is subject to change without notice.
C. The center lead is in electrical contact with the thermal tab.
D. Dimensions do not include mold protrusions, not to exceed 0.006 (0,15).
E. Falls within JEDEC MO-169

PowerFLEX is a trademark of Texas Instruments.

MPSF001F – JANUARY 1996 – REVISED JANUARY 2002

KTP (R-PSFM-G2) **PowerFLEX™ PLASTIC FLANGE-MOUNT PACKAGE**



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

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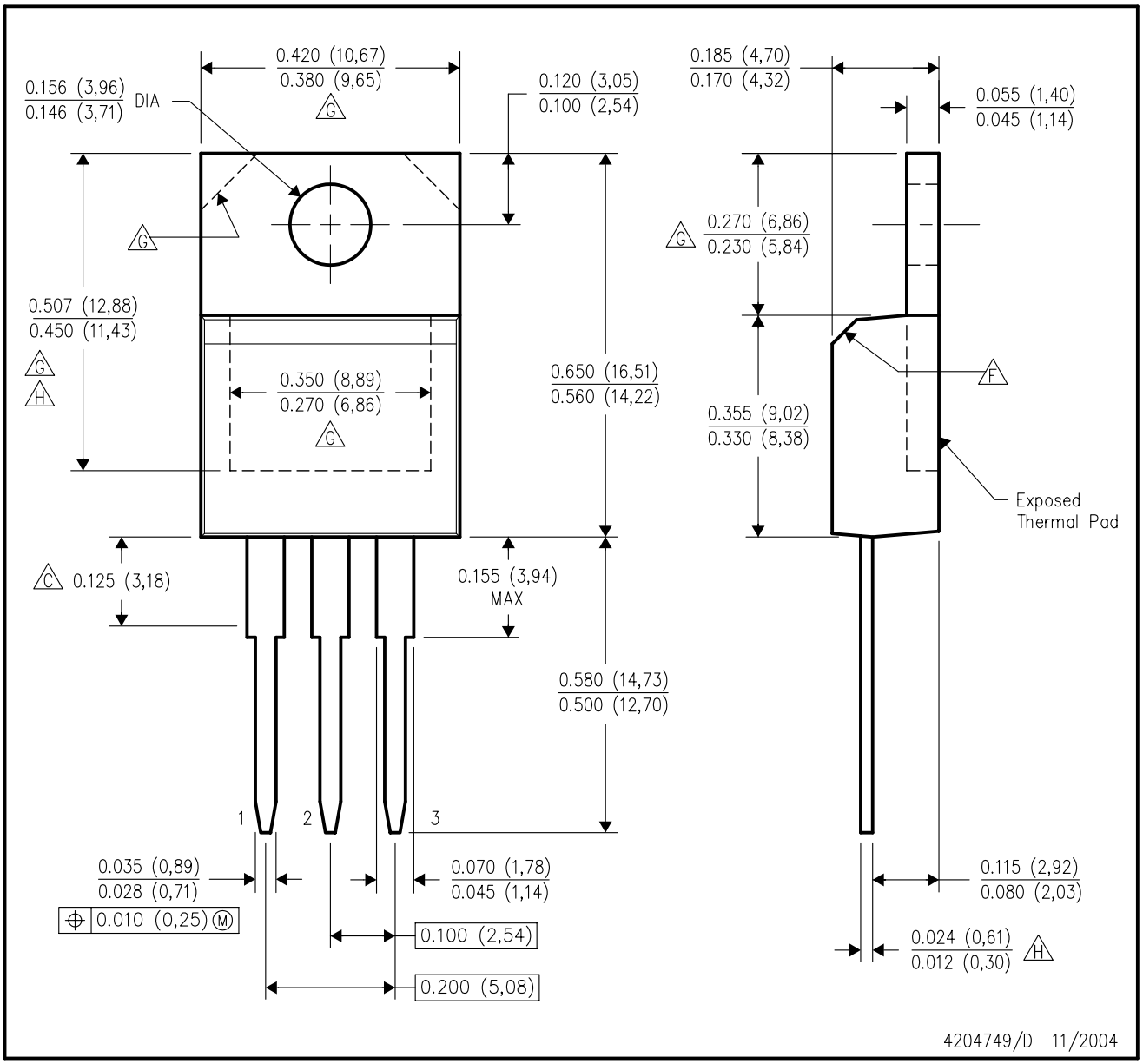
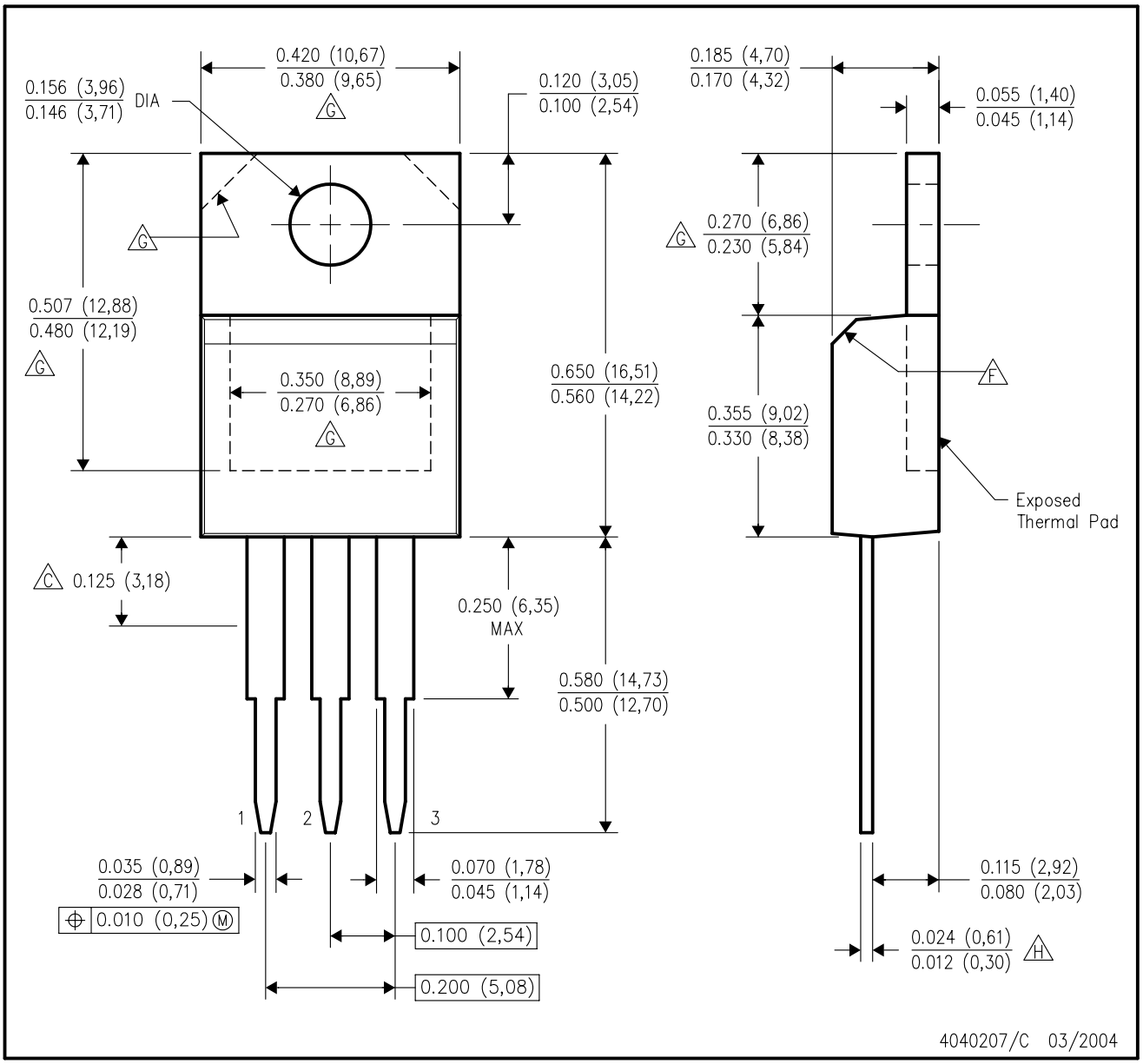
KCS (R–PSFM–T3) PLASTIC FLANGE–MOUNT PACKAGE



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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