



800mA and 1A Low Dropout Positive Regulator 1.8V, 2.5V, 2.85, 3.3V, 5V, and Adjustable

FEATURES

- FIXED AND ADJUSTABLE VERSIONS
- 2.85V MODEL FOR SCSI-2 ACTIVE TERMINATION
- OUTPUT CURRENT:
REG1117: 800mA max
REG1117A: 1A max
- OUTPUT TOLERANCE: $\pm 1\%$ max
- DROPOUT VOLTAGE:
REG1117: 1.2V max at $I_O = 800\text{mA}$
REG1117A: 1.3V max at $I_O = 1\text{A}$
- INTERNAL CURRENT LIMIT
- THERMAL OVERLOAD PROTECTION
- SOT-223 AND DDPAK SURFACE-MOUNT PACKAGES

APPLICATIONS

- SCSI-2 ACTIVE TERMINATION
- HAND-HELD DATA COLLECTION DEVICES
- HIGH EFFICIENCY LINEAR REGULATORS
- BATTERY-POWERED INSTRUMENTATION
- BATTERY MANAGEMENT CIRCUITS FOR NOTEBOOK AND PALMTOP PCs
- CORE VOLTAGE SUPPLY: FPGA, PLD, DSP, CPU

DESCRIPTION

The REG1117 is a family of easy-to-use three-terminal voltage regulators. The family includes a variety of fixed- and adjustable-voltage versions, two currents (800mA and 1A) and two package types (SOT-223 and DDPAK). See the chart below for available options.

Output voltage of the adjustable versions is set with two external resistors. The REG1117 low dropout voltage allows its use with as little as 1V input-output voltage differential.

Laser trimming assures excellent output voltage accuracy without adjustment. An NPN output stage allows output stage drive to contribute to the load current for maximum efficiency.

VOLTAGE	800mA		1A	
	SOT-223	DDPAK	SOT-223	DDPAK
1.8V			✓	✓
2.5V			✓	✓
2.85V	✓			
3.3V	✓	✓		
5V	✓			✓
Adjustable	✓		✓	✓



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.

All trademarks are the property of their respective owners.

ABSOLUTE MAXIMUM RATINGS⁽¹⁾

Power Dissipation	Internally Limited
Input Voltage	+15V
Operating Junction Temperature Range	–40°C to +125°C
Storage Temperature Range	–65°C to +150°C
Lead Temperature (soldering, 10s) ⁽²⁾	+300°C

(1) Stresses above these ratings may cause permanent damage.

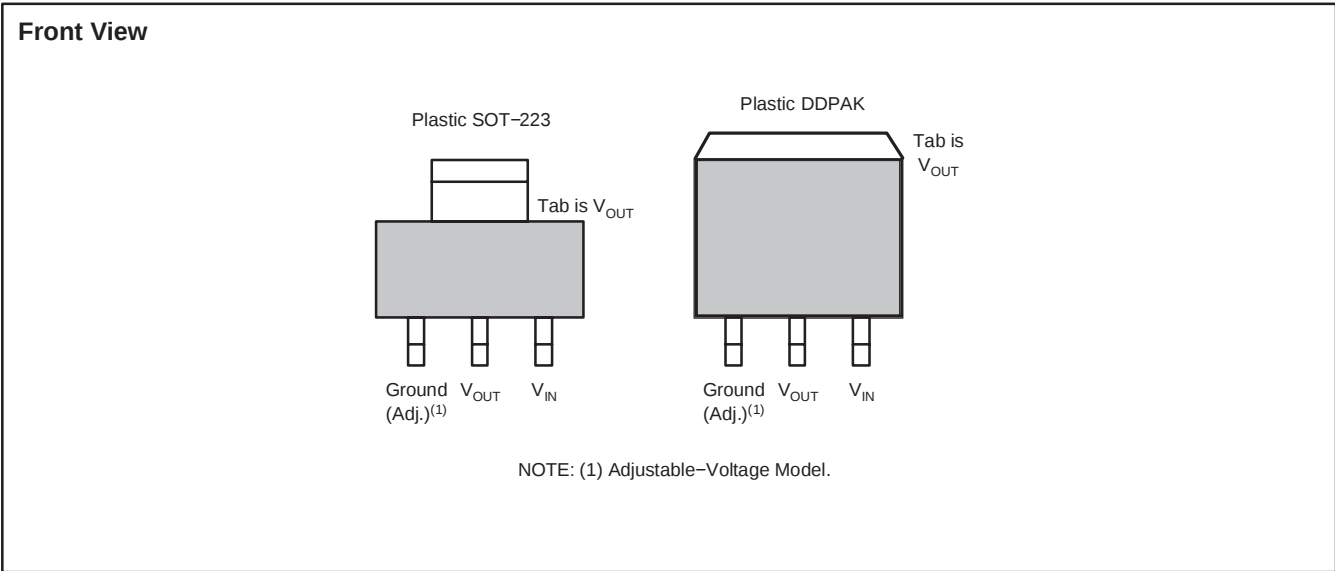
(2) See *Soldering Methods* section.



This integrated circuit can be damaged by ESD. Texas Instruments recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage.

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

CONNECTION DIAGRAM



PACKAGE/ORDERING INFORMATION(1)

PRODUCT	V _O /I _O	PACKAGE-LEAD	PACKAGE DESIGNATOR	OPERATING TEMPERATURE RANGE	PACKAGE MARKING	ORDERING NUMBER	TRANSPORT MEDIA, QUANTITY
REG1117-2.85	2.85/800mA	SOT223-3	DCY	-40°C to +125°C	BB11172	REG1117-2.85	Rails, 80
						REG1117-2.85	Tape and Reel, 2500
REG1117-3.3	3.3/800mA	SOT223-3	DCY	-40°C to +125°C	BB11174	REG1117-3.3	Rails, 80
						REG1117-3.3	Tape and Reel, 2500
REG1117F-3.3	3.3/800mA	DDPAK-3	KTT	-40°C to +125°C	BB1117F4	REG1117F-3.3KTTT	Tape and Reel, 50
						REG1117F-3.3/500	Tape and Reel, 500
REG1117-5	5V/800mA	SOT223-3	DCY	-40°C to +125°C	BB11175	REG1117-5	Rails, 80
						REG1117-5	Tape and Reel, 2500
REG1117	Adj./800mA	SOT223-3	DCY	-40°C to +125°C	BB1117	REG1117	Rails, 80
						REG1117	Tape and Reel, 2500
REG1117A-1.8	1.8V/1A	SOT223-3	DCY	-40°C to +125°C	R111718	REG1117A-1.8	Rails, 80
						REG1117A-1.8	Tape and Reel, 2500
REG1117FA-1.8	1.8/1A	DDPAK-3	KTT	-40°C to +125°C	REG1117FA1.8	REG1117FA-1.8KTTT	Tape and Reel, 50
						REG1117FA-1.8/500	Tape and Reel, 500
REG1117A-2.5	2.5/1A	SOT223-3	DCY	-40°C to +125°C	R111725	REG1117A-2.5	Rails, 80
						REG1117A-2.5	Tape and Reel, 2500
REG1117FA-2.5	2.5/1A	DDPAK-3	KTT	-40°C to +125°C	REG1117FA2.5	REG1117FA-2.5KTTT	Tape and Reel, 50
						REG1117FA-2.5/500	Tape and Reel, 500
REG1117FA-5	5/1A	DDPAK-3	KTT	-40°C to +125°C	BB1117FA5.0	REG1117FA-5/KTTT	Tape and Reel, 50
						REG1117FA-5/500	Tape and Reel, 500
REG1117A	Adj./1A	SOT223-3	DCY	-40°C to +125°C	BB1117A	REG1117A	Rails, 80
						REG1117A	Tape and Reel, 2500
REG1117FA	Adj./1A	DDPAK-3	KTT	-40°C to +125°C	REG1117FA	REG1117FA/KTTT	Tape and Reel, 50
						REG1117FA/500	Tape and Reel, 500

(1) For the most current package and ordering information, see the Package Option Addendum located at the end of this data sheet.

ELECTRICAL CHARACTERISTICS

At $T_J = +25^\circ\text{C}$, unless otherwise noted.

PARAMETER	CONDITION	REG1117, REG1117A			UNIT
		MIN	TYP	MAX	
OUTPUT VOLTAGE					
REG1117-2.85	$I_O = 10\text{mA}$, $V_{IN} = 4.85\text{V}$	2.820	2.85	2.880	V
See Note 1	$I_O = 0$ to 800mA , $V_{IN} = 4.05\text{V}$ to 10V	2.790	2.85	2.910	V
REG1117-3.3	$I_O = 10\text{mA}$, $V_{IN} = 5.3\text{V}$	3.270	3.30	3.330	V
See Note 1	$I_O = 0$ to 800mA , $V_{IN} = 4.8\text{V}$ to 10V	3.240	3.30	3.360	V
REG1117-5	$I_O = 10\text{mA}$, $V_{IN} = 7\text{V}$	4.950	5.00	5.050	V
See Note 1	$I_O = 0$ to 800mA , $V_{IN} = 6.5\text{V}$ to 10V	4.900	5.00	5.100	V
REG1117A-1.8	$I_O = 10\text{mA}$, $V_{IN} = 3.8\text{V}$	1.782	1.8	1.818	V
See Note 1	$I_O = 0$ to 1A , $V_{IN} = 3.8\text{V}$ to 10V	1.764	1.8	1.836	V
REG1117A-2.5	$I_O = 10\text{mA}$, $V_{IN} = 4.5\text{V}$	2.475	2.5	2.525	V
See Note 1	$I_O = 0$ to 1A , $V_{IN} = 4.5\text{V}$ to 10V	2.450	2.5	2.550	V
REG1117A-5	$I_O = 10\text{mA}$, $V_{IN} = 7\text{V}$	4.950	5.0	5.050	V
See Note 1	$I_O = 0$ to 1A , $V_{IN} = 7\text{V}$ to 10V	4.900	5.0	5.100	V
REFERENCE VOLTAGE					
REG1117 (Adjustable)	$I_O = 10\text{mA}$, $V_{IN} - V_O = 2\text{V}$	1.238	1.250	1.262	V
See Note 1	$I_O = 10$ to 800mA , $V_{IN} - V_O = 1.4$ to 10V	1.225	1.250	1.280	V
REG1117A (Adjustable)	$I_O = 10\text{mA}$, $V_{IN} - V_O = 2\text{V}$	1.238	1.250	1.262	V
See Note 1	$I_O = 10\text{mA}$ to 1A , $V_{IN} - V_O = 1.4$ to 10V	1.225	1.250	1.280	V
LINE REGULATION					
REG1117-2.85 ⁽¹⁾	$I_O = 0$, $V_{IN} = 4.25$ to 10V		1	7	mV
REG1117-3.3 ⁽¹⁾	$I_O = 0$, $V_{IN} = 4.8$ to 10V		2	7	mV
REG1117-5 ⁽¹⁾	$I_O = 0$, $V_{IN} = 6.5$ to 15V		3	10	mV
REG1117 (Adjustable) ⁽¹⁾	$I_O = 10\text{mA}$, $V_{IN} - V_O = 1.5$ to 13.75V		0.1	0.4	%
REG1117A (Adjustable) ⁽¹⁾	$I_O = 10\text{mA}$, $V_{IN} - V_O = 1.5$ to 13.75V		0.1	0.4	%
REG1117A-1.8 ⁽¹⁾	$I_O = 0$, $V_{IN} = 3.8\text{V}$ to 10V		1	7	mV
REG1117A-2.5 ⁽¹⁾	$I_O = 0$, $V_{IN} = 4.5\text{V}$ to 10V		1	7	mV
REG1117A-5.0 ⁽¹⁾	$I_O = 0$, $V_{IN} = 7\text{V}$ to 15V		3	10	mV
LOAD REGULATION					
REG1117-2.85 ⁽¹⁾	$I_O = 0$ to 800mA , $V_{IN} = 4.25\text{V}$		2	10	mV
REG1117-3.3 ⁽¹⁾	$I_O = 0$ to 800mA , $V_{IN} = 4.8\text{V}$		3	12	mV
REG1117-5 ⁽¹⁾	$I_O = 0$ to 800mA , $V_{IN} = 6.5\text{V}$		3	15	mV
REG1117 (Adjustable) ⁽¹⁾⁽²⁾	$I_O = 10$ to 800mA , $V_{IN} - V_O = 3\text{V}$		0.1	0.4	%
REG1117A (Adjustable) ⁽¹⁾⁽²⁾	$I_O = 10\text{mA}$ to 1A , $V_{IN} - V_O = 3\text{V}$		0.1	0.4	%
REG1117A-1.8 ⁽¹⁾	$I_O = 0$ to 1A , $V_{IN} = 3.8\text{V}$		2	10	mV
REG1117A-2.5	$I_O = 0$ to 1A , $V_{IN} = 4.5\text{V}$		2	10	mV
REG1117A-5	$I_O = 0$ to 1A , $V_{IN} = 7.0\text{V}$		3	15	mV
DROPOUT VOLTAGE⁽³⁾					
All Models ⁽¹⁾	$I_O = 100\text{mA}$		1.00	1.10	V
See Note 1	$I_O = 500\text{mA}$		1.05	1.15	V
REG1117 Models ⁽¹⁾	$I_O = 800\text{mA}$		1.10	1.20	V
REG1117A	$I_O = 1\text{A}$		1.2	1.30	V
See Note 1	$I_O = 1\text{A}$		1.2	1.55	V

(1) Specification applies over the full specified junction temperature range, 0°C to $+125^\circ\text{C}$.

(2) REG1117 and REG1117A adjustable versions require a minimum load current for $\pm 3\%$ regulation.

(3) Dropout voltage is the input voltage minus output voltage that produces a 1% decrease in output voltage.

(4) Percentage change in unloaded output voltage before versus after a 30ms power pulse of $I_O = 800\text{mA}$ (REG1117 models), $I_O = 1\text{A}$ (REG1117A), $V_{IN} - V_O = 1.4\text{V}$ (reading taken 10ms after pulse).

ELECTRICAL CHARACTERISTICS (continued)

At $T_J = +25^\circ\text{C}$, unless otherwise noted.

PARAMETER	CONDITION	REG1117, REG1117A			UNIT
		MIN	TYP	MAX	
CURRENT LIMIT					
REG1117 Models	$V_{IN} - V_O = 5\text{V}$	800	950	1200	mA
REG1117A	$V_{IN} - V_O = 5\text{V}$	1000	1250	1600	mA
MINIMUM LOAD CURRENT					
Adjustable Models ⁽¹⁾⁽²⁾	$V_{IN} - V_O = 13.75\text{V}$		1.7	5	mA
QUIESCENT CURRENT					
Fixed-Voltage Models ⁽¹⁾	$V_{IN} - V_O = 5\text{V}$		4	10	mA
ADJUSTABLE PIN CURRENT⁽¹⁾⁽²⁾					
vs Load Current, REG1117 ⁽¹⁾	$I_O = 10\text{mA}$, $V_{IN} - V_O = 1.4$ to 10V		50	120	μA
vs Load Current, REG1117A ⁽¹⁾	$I_O = 10\text{mA}$ to 800mA , $V_{IN} - V_O = 1.4$ to 10V		0.5	5	μA
	$I_O = 10\text{mA}$ to 1A , $V_{IN} - V_O = 1.4$ to 10V		0.5	5	μA
THERMAL REGULATION					
All Models ⁽⁴⁾	30ms Pulse		0.01	0.1	%/W
RIPPLE REJECTION					
All Models	$f = 120\text{Hz}$, $V_{IN} - V_{OUT} = 3\text{V} + 1\text{V}_{PP}$ Ripple		62		dB
TEMPERATURE DRIFT					
Fixed-Voltage Models	$T_J = 0^\circ\text{C}$ to $+125^\circ\text{C}$		0.5		%
Adjustable Models	$T_J = 0^\circ\text{C}$ to $+125^\circ\text{C}$		2		%
LONG-TERM STABILITY					
All Models	$T_A = 125^\circ\text{C}$, 1000Hr		0.3		%
OUTPUT NOISE					
rms Noise, All Models	$f = 10\text{Hz}$ to 10kHz		0.003		%
THERMAL RESISTANCE					
Thermal Resistance, θ_{JC}	(Junction-to-Case at Tab)				
3-Lead SOT-223 Surface-Mount			15		$^\circ\text{C/W}$
3-Lead DDPAK Surface-Mount	$f > 50\text{Hz}$		2		$^\circ\text{C/W}$
	dc		3		$^\circ\text{C/W}$
Thermal Resistance, θ_{JA}	(Junction-to-Case at Tab)				
3-Lead DDPAK Surface-Mount	No Heatsink		65		$^\circ\text{C/W}$

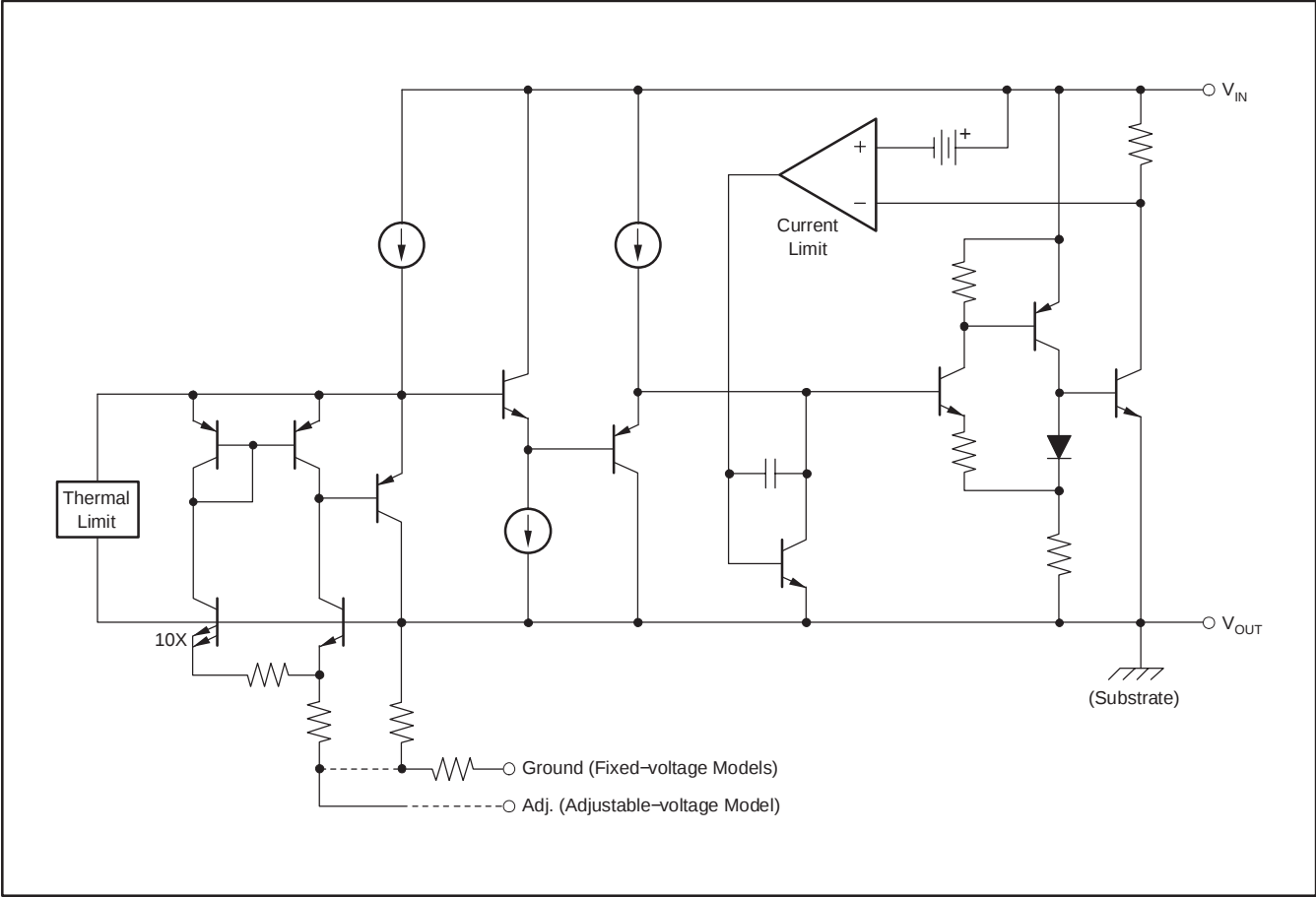
(1) Specification applies over the full specified junction temperature range, 0°C to $+125^\circ\text{C}$.

(2) REG1117 and REG1117A adjustable versions require a minimum load current for $\pm 3\%$ regulation.

(3) Dropout voltage is the input voltage minus output voltage that produces a 1% decrease in output voltage.

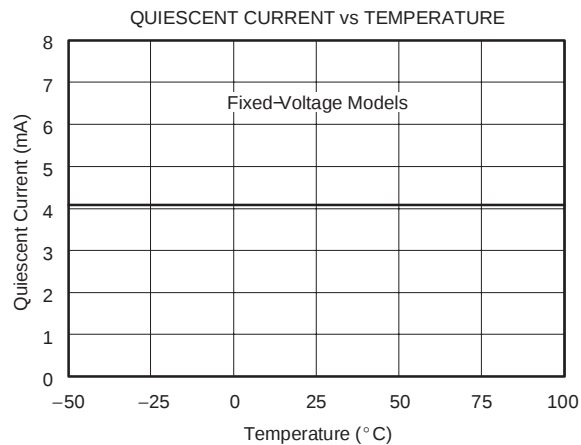
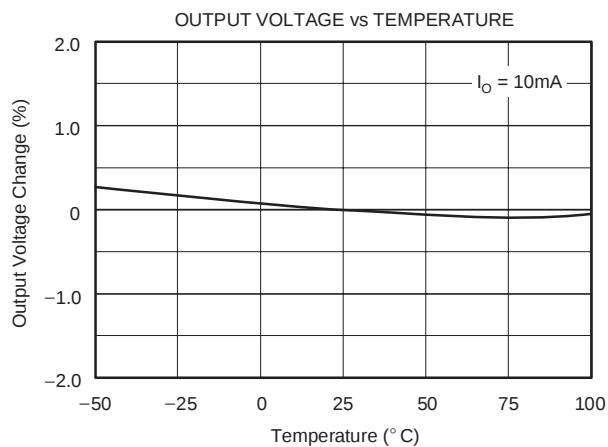
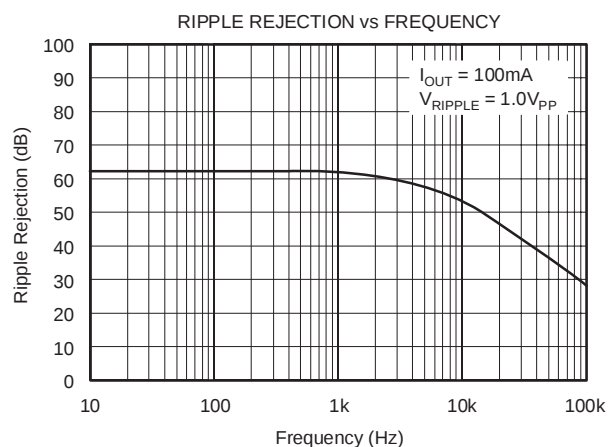
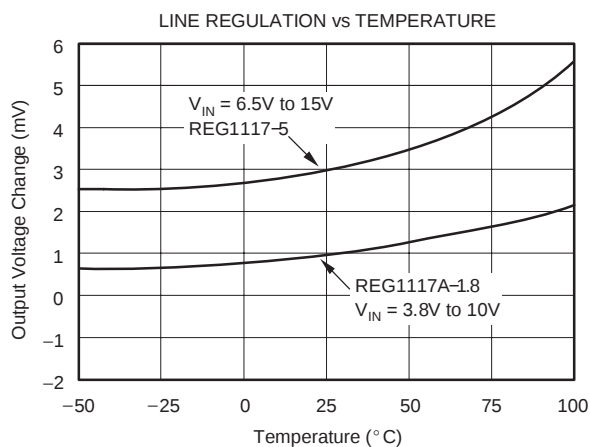
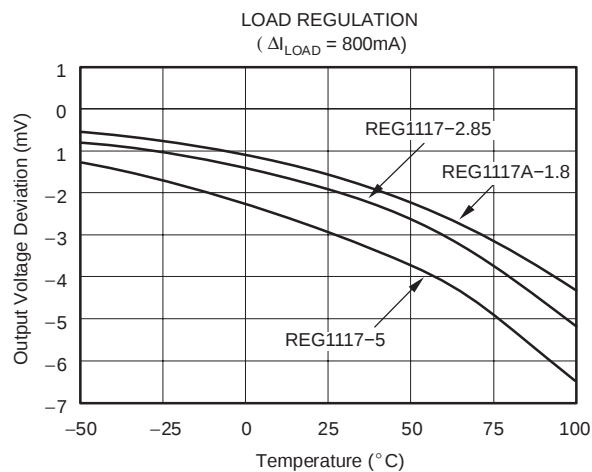
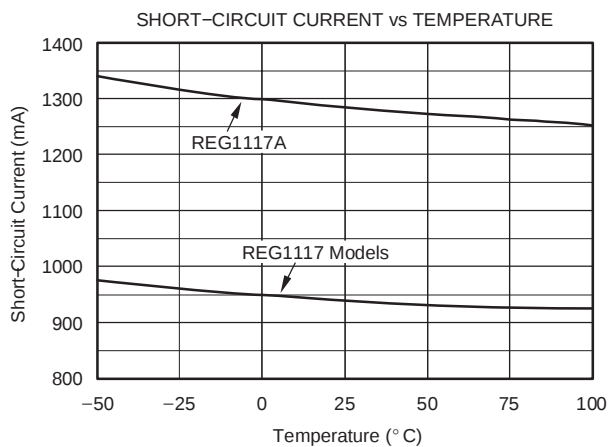
(4) Percentage change in unloaded output voltage before versus after a 30ms power pulse of $I_O = 800\text{mA}$ (REG1117 models), $I_O = 1\text{A}$ (REG1117A), $V_{IN} - V_O = 1.4\text{V}$ (reading taken 10ms after pulse).

SIMPLIFIED SCHEMATIC



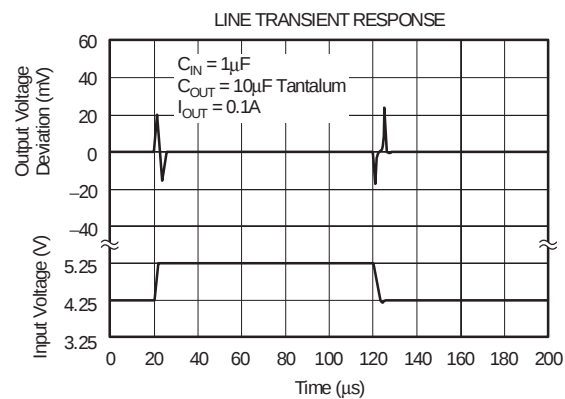
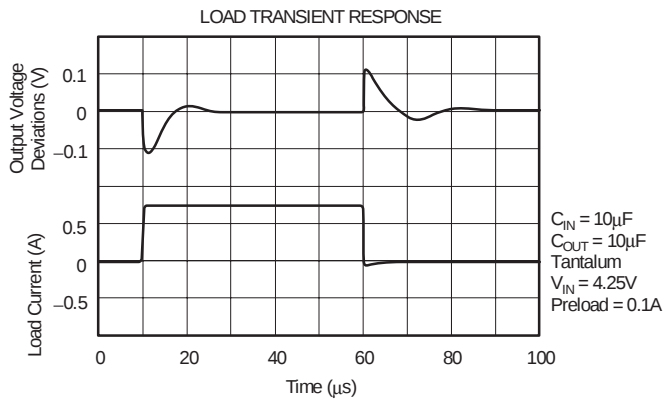
TYPICAL CHARACTERISTICS

At $T_A = +25^\circ\text{C}$, all models, unless otherwise noted.



TYPICAL CHARACTERISTICS (continued)

At $T_A = +25^\circ\text{C}$, all models, unless otherwise noted.



APPLICATIONS INFORMATION

Figure 1 shows the basic hookup diagram for fixed-voltage models. All models require an output capacitor for proper operation, and for improving high-frequency load regulation; a 10μF tantalum capacitor is recommended. Aluminum electrolytic types of 50μF or greater can also be used. A high-quality capacitor should be used to assure that the ESR (Effective Series Resistance) is less than 0.5Ω.

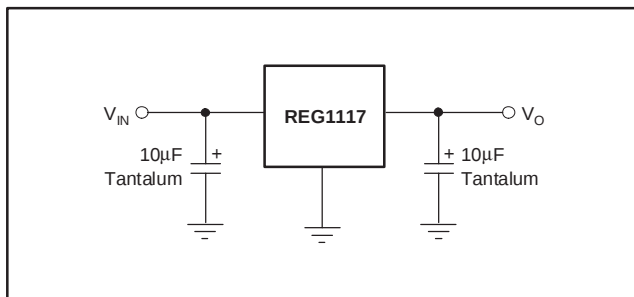


Figure 1. Fixed-Voltage Model—Basic Connections

Figure 2 shows a hookup diagram for the adjustable voltage model. Resistor values are shown for some commonly-used output voltages. Values for other voltages can be calculated from the equation shown in Figure 2. For best load regulation, connect R_1 close to the output pin and R_2 close to the ground side of the load as shown.

THERMAL CONSIDERATIONS

The REG1117 has current limit and thermal shutdown circuits that protect it from overload. The thermal shutdown activates at approximately $T_J = 165^\circ\text{C}$. For continuous operation, however, the junction temperature should not be allowed to exceed 125°C . Any tendency to activate the thermal shutdown in normal use is an indication of an inadequate heat sink or excessive power dissipation. The power dissipation is equal to:

$$P_D = (V_{IN} - V_{OUT}) I_{OUT}$$

The junction temperature can be calculated by:

$$T_J = T_A + P_D (\theta_{JA})$$

where T_A is the ambient temperature, and θ_{JA} is the junction-to-ambient thermal resistance.

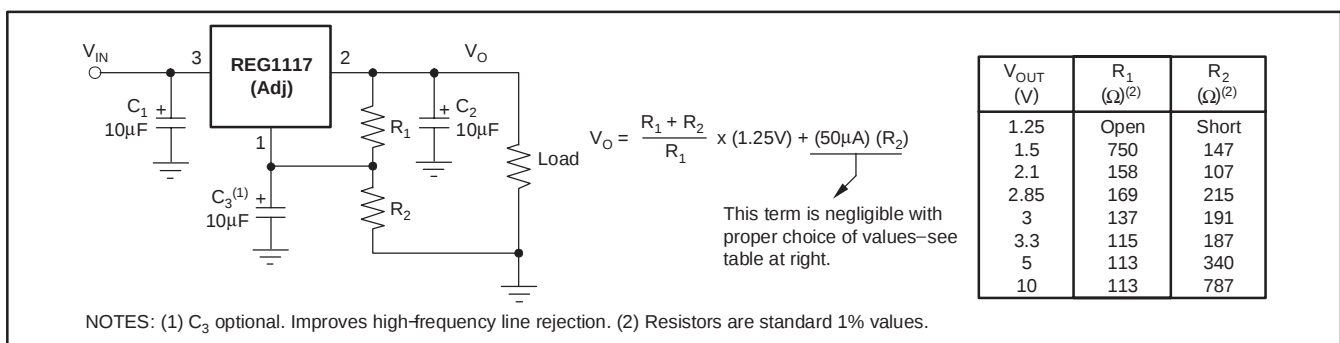


Figure 2. Adjustable-Voltage Model—Basic Connections

A simple experiment will determine whether the maximum recommended junction temperature is exceeded in an actual circuit board and mounting configuration: Increase the ambient temperature above that expected in normal operation until the device's thermal shutdown is activated. If this occurs at more than 40°C above the maximum expected ambient temperature, then T_J will be less than 125°C during normal operation.

The internal protection circuitry of the REG1117 was designed to protect against overload conditions. It was not intended to replace proper heat sinking. Continuously running the REG1117 into thermal shutdown will degrade reliability.

LAYOUT CONSIDERATIONS

The DDPAK (REG1117F-3.3 and REG1117FA) is a surface-mount power package that has excellent thermal characteristics. For best thermal performance, the mounting tab should be soldered directly to a circuit board copper area, as shown in Figure 3. Increasing the copper area improves heat dissipation. Figure 4 shows typical thermal resistance from junction-to-ambient as a function of the copper area.

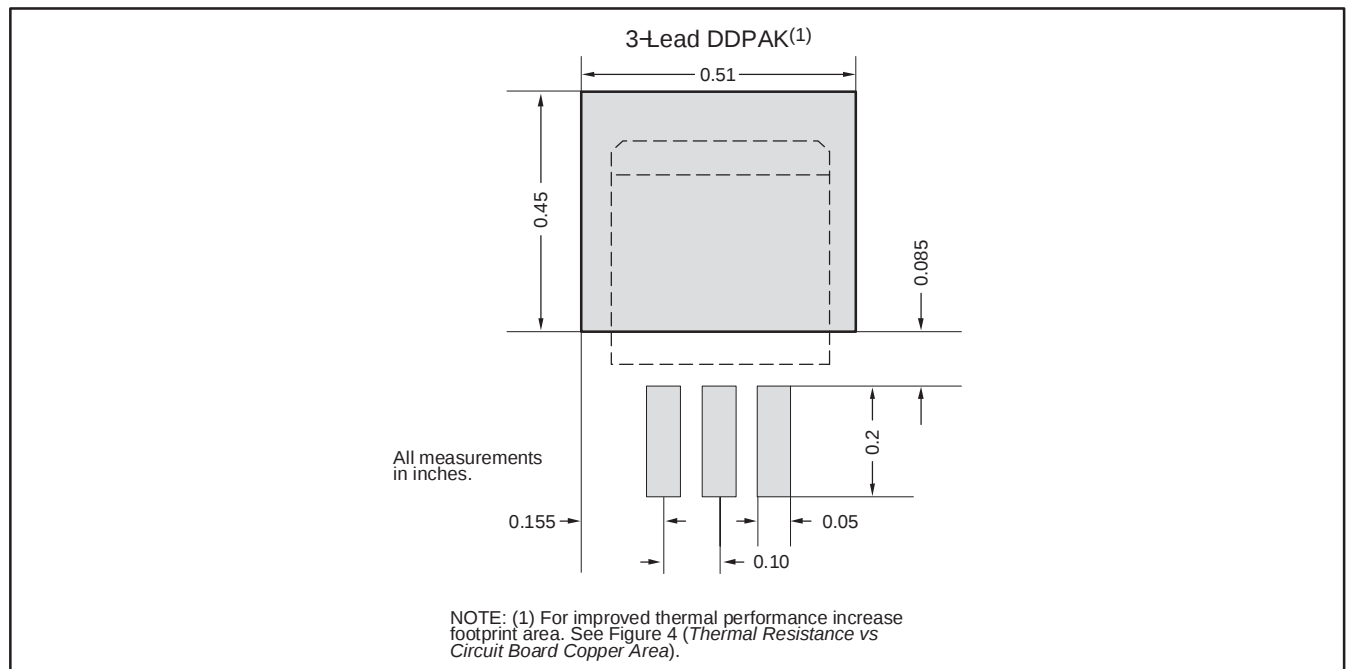


Figure 3. DDPAK Footprint

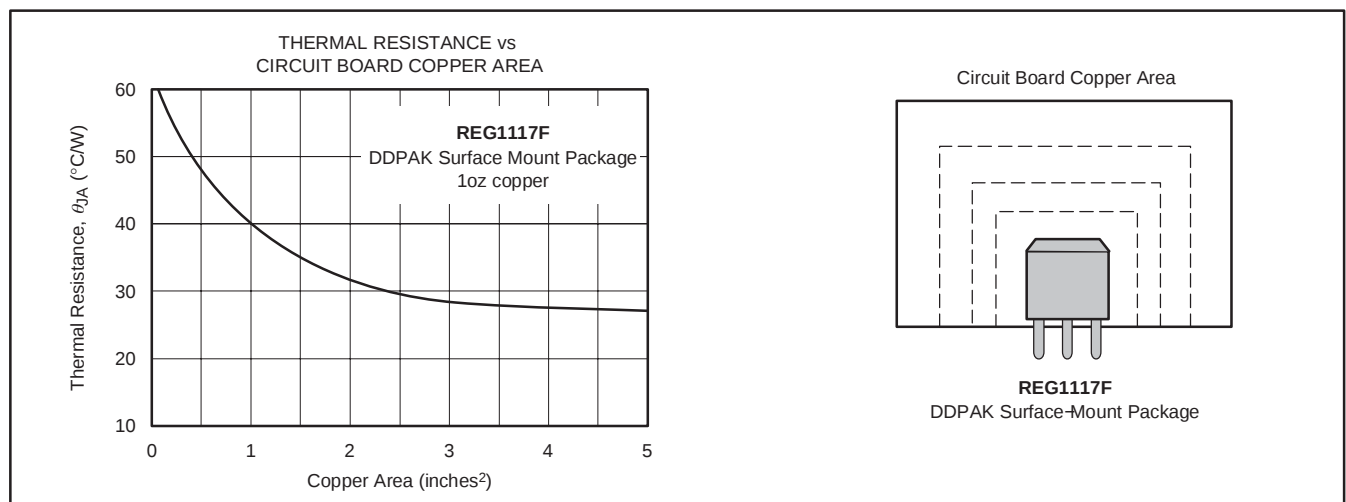


Figure 4. DDPAK Thermal Resistance versus Circuit Board Copper Area

The SOT-223 package derives heat sinking from conduction through its copper leads, especially the large mounting tab. These must be soldered to a circuit board with a substantial amount of copper remaining, as shown in Figure 5. Circuit board traces connecting the tab and the leads should be made as large as practical. The mounting tab of both packages is electrically connected to V_{OUT} .

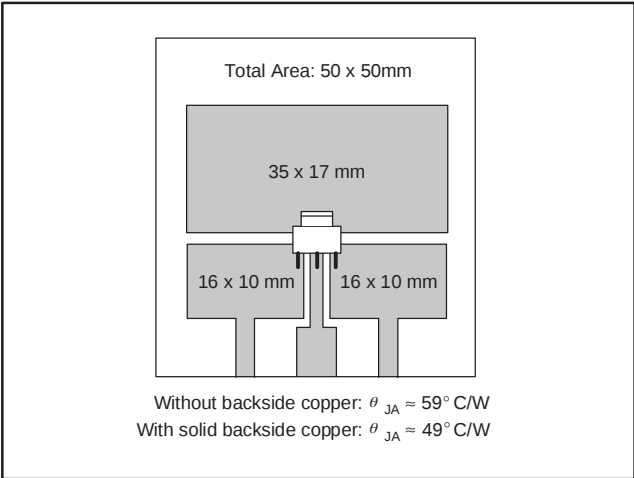


Figure 5. SOT-223 Circuit Board Layout Example

Other nearby circuit traces, including those on the back side of the circuit board, help conduct heat away from the device, even though they may not be electrically connected. Make all nearby copper traces as wide as possible and leave only narrow gaps between traces.

Table 1 shows approximate values of θ_{JA} for various circuit board and copper areas for the SOT-223 package. Nearby heat dissipating components, circuit board mounting conditions, and ventilation can dramatically affect the actual θ_{JA} . Proper heat sinking significantly increases the maximum power dissipation at a given ambient temperature, as shown in Figure 6.

Table 1. SOT-223 θ_{JA} for Various Board Configurations

TOTAL PC BOARD AREA	TOPSIDE(1) COPPER AREA	BACKSIDE COPPER AREA	SOT-223 THERMAL RESISTANCE JUNCTION-TO-AMBIENT
2500mm ²	2500mm ²	2500mm ²	46°C/W
2500mm ²	1250mm ²	2500mm ²	47°C/W
2500mm ²	950mm ²	2500mm ²	49°C/W
2500mm ²	2500mm ²	0	51°C/W
2500mm ²	1800mm ²	0	53°C/W
1600mm ²	600mm ²	1600mm ²	55°C/W
2500mm ²	1250mm ²	0	58°C/W
2500mm ²	915mm ²	0	59°C/W
1600mm ²	600mm ²	0	67°C/W
900mm ²	340mm ²	900mm ²	72°C/W
900mm ²	340mm ²	0	85°C/W

(1) Tab is attached to the topside copper.

SOLDERING METHODS

Both REG1117 packages are suitable for infrared reflow and vapor-phase reflow soldering techniques. The high rate of temperature change that occurs with wave soldering or hand soldering can damage the REG1117.

INSPEC Abstract Number: B91007604, C91012627. Kelly, E.G. "Thermal Characteristics of Surface 5WK9Ω Packages." *The Proceedings of SMTCON*. Surface Mount Technology Conference and Exposition: Competitive Surface Mount Technology, April 3–6, 1990, Atlantic City, NJ, USA. Abstract Publisher: IC Manage, 1990, Chicago, IL, USA.

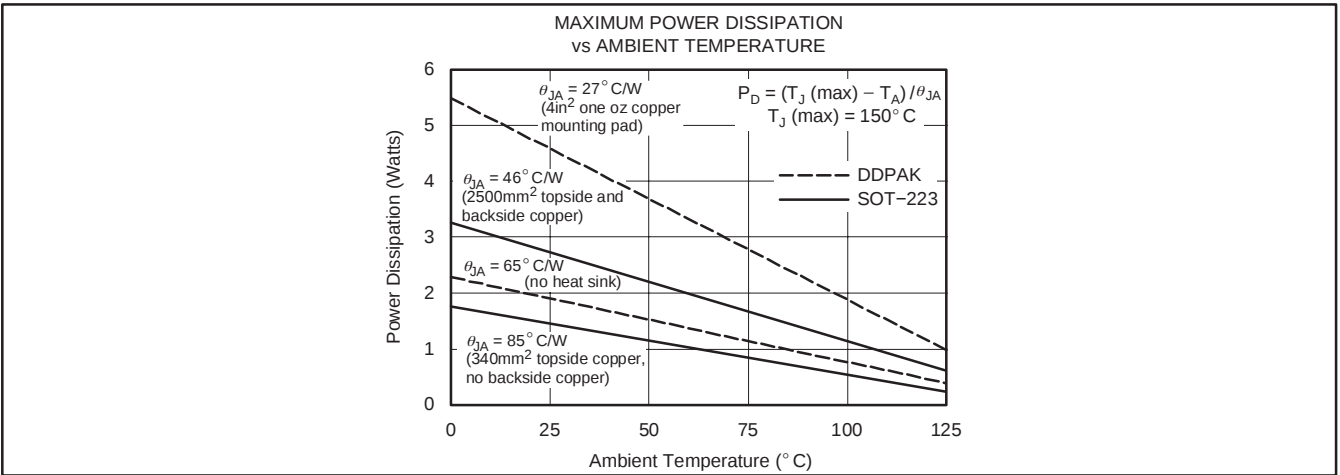


Figure 6. Maximum Power Dissipation versus Ambient Temperature

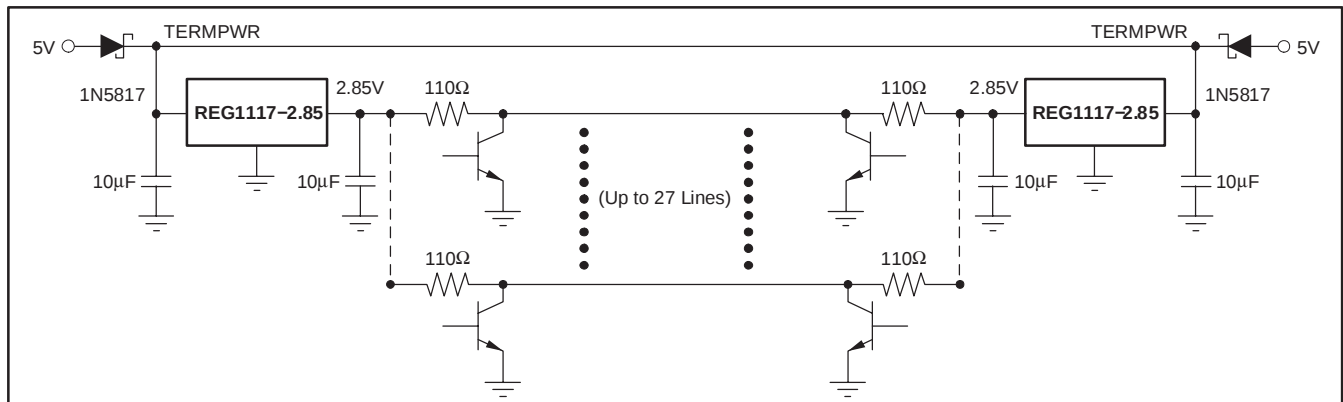


Figure 7. SCSI Active Termination Configuration

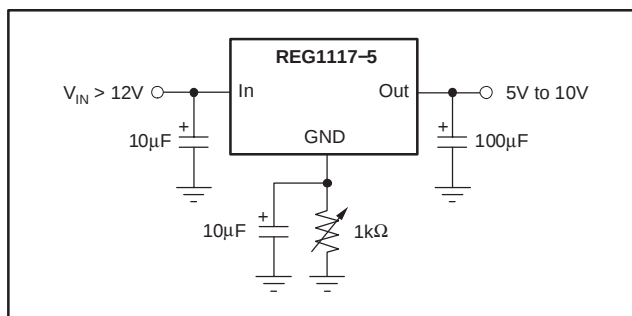


Figure 8. Adjusting Output of Fixed Voltage Models

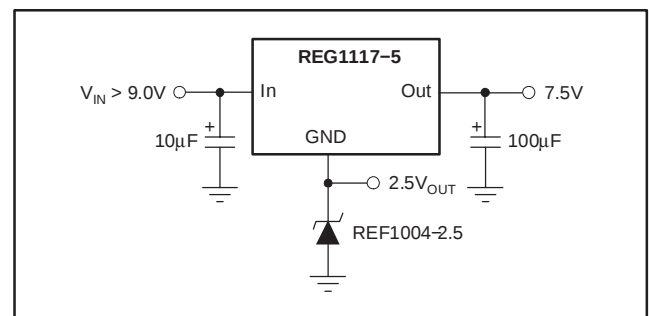


Figure 9. Regulator with Reference

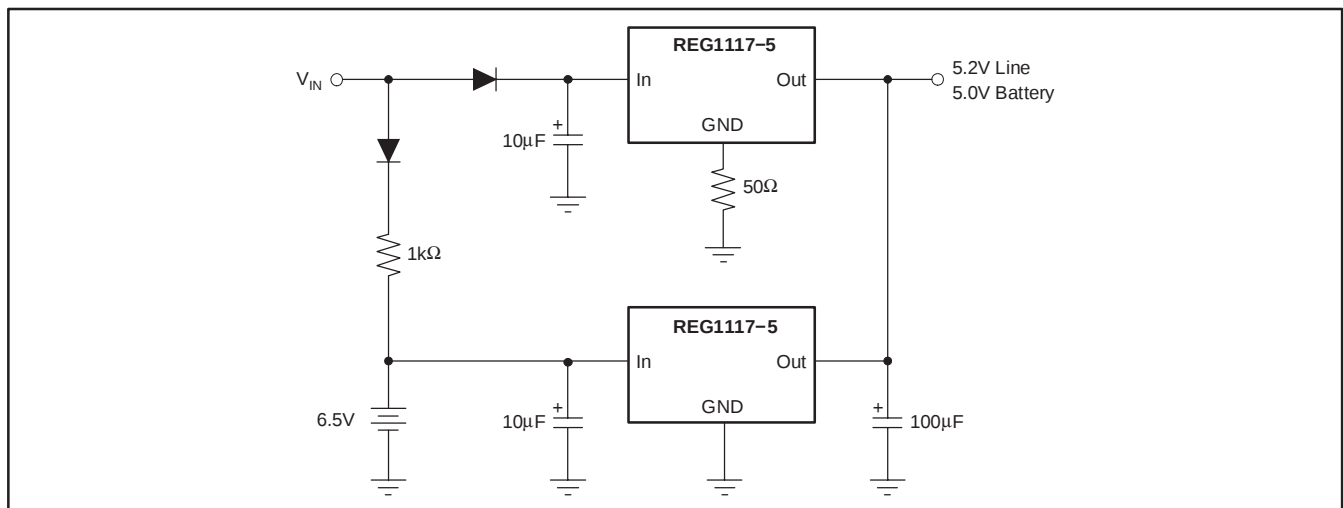


Figure 10. Battery Backed-Up Regulated Supply

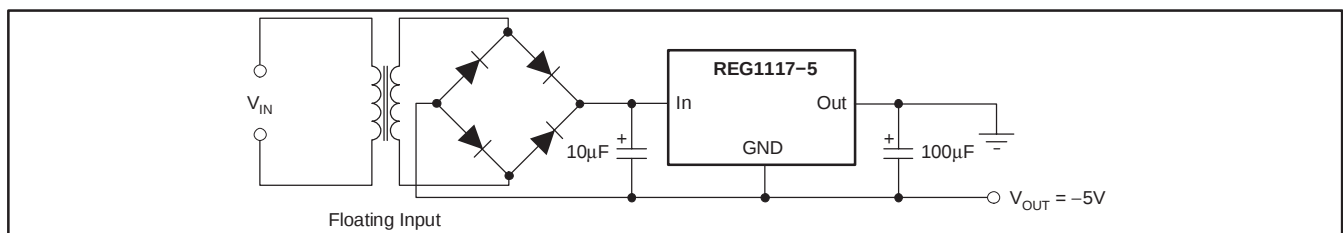


Figure 11. Low Dropout Negative Supply

PACKAGING INFORMATION

Orderable part number	Status (1)	Material type (2)	Package Pins	Package qty Carrier	RoHS (3)	Lead finish/ Ball material (4)	MSL rating/ Peak reflow (5)	Op temp (°C)	Part marking (6)
REG1117	Active	Production	SOT-223 (DCY) 4	80 TUBE	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	BB1117
REG1117-2.85	Active	Production	SOT-223 (DCY) 4	80 TUBE	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	BB11172
REG1117-2.85.A	Active	Production	SOT-223 (DCY) 4	80 TUBE	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	BB11172
REG1117-2.85/2K5	Active	Production	SOT-223 (DCY) 4	2500 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	BB11172
REG1117-2.85/2K5.A	Active	Production	SOT-223 (DCY) 4	2500 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	BB11172
REG1117-3.3	Active	Production	SOT-223 (DCY) 4	80 TUBE	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	BB11174
REG1117-3.3.A	Active	Production	SOT-223 (DCY) 4	80 TUBE	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	BB11174
REG1117-3.3/2K5	NRND	Production	SOT-223 (DCY) 4	2500 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	BB11174
REG1117-3.3/2K5.A	NRND	Production	SOT-223 (DCY) 4	2500 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	BB11174
REG1117-3.3/2K5G4.A	Active	Production	SOT-223 (DCY) 4	2500 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	BB11174
REG1117-3.3G4	Active	Production	SOT-223 (DCY) 4	80 TUBE	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	BB11174
REG1117-5	Active	Production	SOT-223 (DCY) 4	80 TUBE	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	BB11175
REG1117-5.A	Active	Production	SOT-223 (DCY) 4	80 TUBE	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	BB11175
REG1117-5/2K5	Active	Production	SOT-223 (DCY) 4	2500 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	BB11175
REG1117-5/2K5.A	Active	Production	SOT-223 (DCY) 4	2500 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	BB11175
REG1117-5/2K5G4	Active	Production	SOT-223 (DCY) 4	2500 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	BB11175
REG1117-5/2K5G4.A	Active	Production	SOT-223 (DCY) 4	2500 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	BB11175
REG1117-5G4	Active	Production	SOT-223 (DCY) 4	80 TUBE	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	BB11175
REG1117.A	Active	Production	SOT-223 (DCY) 4	80 TUBE	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	BB1117
REG1117/2K5	Active	Production	SOT-223 (DCY) 4	2500 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	BB1117
REG1117/2K5.A	Active	Production	SOT-223 (DCY) 4	2500 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	BB1117
REG1117/2K5G4	Active	Production	SOT-223 (DCY) 4	2500 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	BB1117
REG1117A	Active	Production	SOT-223 (DCY) 4	80 TUBE	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	BB1117A
REG1117A-1.8	Active	Production	SOT-223 (DCY) 4	80 TUBE	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	R111718
REG1117A-1.8.A	Active	Production	SOT-223 (DCY) 4	80 TUBE	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	R111718
REG1117A-1.8/2K5	Active	Production	SOT-223 (DCY) 4	2500 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	R111718
REG1117A-1.8/2K5.A	Active	Production	SOT-223 (DCY) 4	2500 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	R111718
REG1117A-2.5	Active	Production	SOT-223 (DCY) 4	80 TUBE	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	R111725
REG1117A-2.5.A	Active	Production	SOT-223 (DCY) 4	80 TUBE	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	R111725

Orderable part number	Status (1)	Material type (2)	Package Pins	Package qty Carrier	RoHS (3)	Lead finish/ Ball material (4)	MSL rating/ Peak reflow (5)	Op temp (°C)	Part marking (6)
REG1117A-2.5/2K5	Active	Production	SOT-223 (DCY) 4	2500 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	R111725
REG1117A-2.5/2K5.A	Active	Production	SOT-223 (DCY) 4	2500 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	R111725
REG1117A.A	Active	Production	SOT-223 (DCY) 4	80 TUBE	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	BB1117A
REG1117A/2K5	Active	Production	SOT-223 (DCY) 4	2500 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	BB1117A
REG1117A/2K5.A	Active	Production	SOT-223 (DCY) 4	2500 LARGE T&R	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 125	BB1117A
REG1117F-3.3/500	Active	Production	DDPAK/ TO-263 (KTT) 3	500 LARGE T&R	Yes	SN	Level-2-260C-1 YEAR	-40 to 125	REG1117F4
REG1117F-3.3/500.A	Active	Production	DDPAK/ TO-263 (KTT) 3	500 LARGE T&R	Yes	SN	Level-2-260C-1 YEAR	-40 to 125	REG1117F4
REG1117FA-1.8KTTT	Active	Production	DDPAK/ TO-263 (KTT) 3	50 TUBE	Yes	SN	Level-2-260C-1 YEAR	-40 to 125	REG 1117FA1.8
REG1117FA-1.8KTTT.A	Active	Production	DDPAK/ TO-263 (KTT) 3	50 TUBE	Yes	SN	Level-2-260C-1 YEAR	-40 to 125	REG 1117FA1.8
REG1117FA-2.5/500	Active	Production	DDPAK/ TO-263 (KTT) 3	500 LARGE T&R	Yes	SN	Level-2-260C-1 YEAR	-40 to 125	REG 1117FA2.5
REG1117FA-2.5/500.A	Active	Production	DDPAK/ TO-263 (KTT) 3	500 LARGE T&R	Yes	SN	Level-2-260C-1 YEAR	-40 to 125	REG 1117FA2.5
REG1117FA-5.0/500	Active	Production	DDPAK/ TO-263 (KTT) 3	500 LARGE T&R	Yes	SN	Level-2-260C-1 YEAR	-40 to 125	REG 1117FA5.0
REG1117FA-5.0/500.A	Active	Production	DDPAK/ TO-263 (KTT) 3	500 LARGE T&R	Yes	SN	Level-2-260C-1 YEAR	-40 to 125	REG 1117FA5.0
REG1117FA/500	Active	Production	DDPAK/ TO-263 (KTT) 3	500 LARGE T&R	Yes	SN	Level-2-260C-1 YEAR	-40 to 125	REG1117FA
REG1117FA/500.A	Active	Production	DDPAK/ TO-263 (KTT) 3	500 LARGE T&R	Yes	SN	Level-2-260C-1 YEAR	-40 to 125	REG1117FA
REG1117FA1.8KTTTG3	Active	Production	DDPAK/ TO-263 (KTT) 3	50 TUBE	Yes	SN	Level-2-260C-1 YEAR	-40 to 125	REG 1117FA1.8

⁽¹⁾ **Status:** For more details on status, see our [product life cycle](#).

⁽²⁾ **Material type:** When designated, preproduction parts are prototypes/experimental devices, and are not yet approved or released for full production. Testing and final process, including without limitation quality assurance, reliability performance testing, and/or process qualification, may not yet be complete, and this item is subject to further changes or possible discontinuation. If available for ordering, purchases will be subject to an additional waiver at checkout, and are intended for early internal evaluation purposes only. These items are sold without warranties of any kind.

⁽³⁾ **RoHS values:** Yes, No, RoHS Exempt. See the [TI RoHS Statement](#) for additional information and value definition.

⁽⁴⁾ **Lead finish/Ball material:** Parts may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead finish/Ball material values may wrap to two lines if the finish value exceeds the maximum column width.

⁽⁵⁾ **MSL rating/Peak reflow:** The moisture sensitivity level ratings and peak solder (reflow) temperatures. In the event that a part has multiple moisture sensitivity ratings, only the lowest level per JEDEC standards is shown. Refer to the shipping label for the actual reflow temperature that will be used to mount the part to the printed circuit board.

⁽⁶⁾ **Part marking:** There may be an additional marking, which relates to the logo, the lot trace code information, or the environmental category of the part.

Multiple part markings will be inside parentheses. Only one part marking contained in parentheses and separated by a "~" will appear on a part. If a line is indented then it is a continuation of the previous line and the two combined represent the entire part marking for that device.

Important Information and Disclaimer: The information provided on this page represents TI's knowledge and belief as of the date that it is provided. TI bases its knowledge and belief on information provided by third parties, and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. TI has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. TI and TI suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

TAPE AND REEL INFORMATION



*All dimensions are nominal

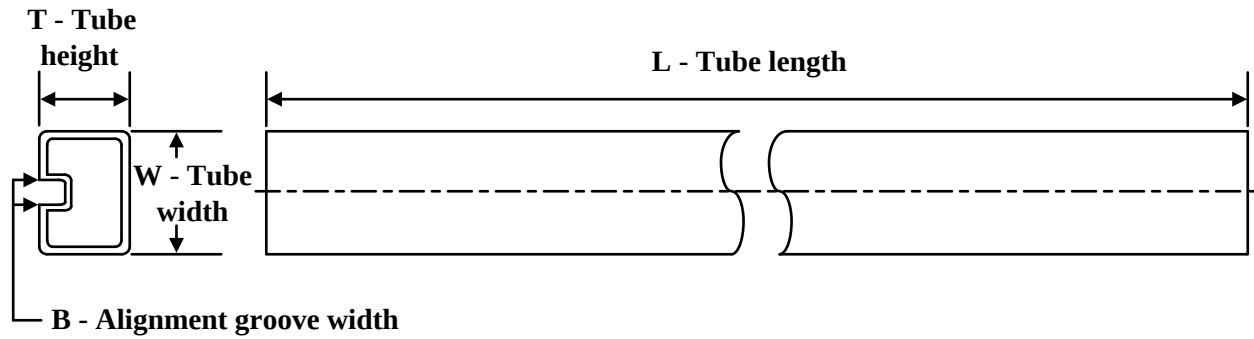
Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
REG1117-2.85/2K5	SOT-223	DCY	4	2500	330.0	12.4	7.1	7.45	1.88	8.0	12.0	Q3
REG1117-3.3/2K5	SOT-223	DCY	4	2500	330.0	12.4	7.1	7.45	1.88	8.0	12.0	Q3
REG1117-5/2K5	SOT-223	DCY	4	2500	330.0	12.4	7.1	7.45	1.88	8.0	12.0	Q3
REG1117-5/2K5G4	SOT-223	DCY	4	2500	330.0	12.4	7.1	7.45	1.88	8.0	12.0	Q3
REG1117/2K5	SOT-223	DCY	4	2500	330.0	12.4	7.1	7.45	1.88	8.0	12.0	Q3
REG1117A-1.8/2K5	SOT-223	DCY	4	2500	330.0	12.4	7.1	7.45	1.88	8.0	12.0	Q3
REG1117A-2.5/2K5	SOT-223	DCY	4	2500	330.0	12.4	7.1	7.45	1.88	8.0	12.0	Q3
REG1117A/2K5	SOT-223	DCY	4	2500	330.0	12.4	7.1	7.45	1.88	8.0	12.0	Q3
REG1117F-3.3/500	DDPAK/ TO-263	KTT	3	500	330.0	24.4	10.9	16.1	4.9	16.0	24.0	Q2
REG1117FA-2.5/500	DDPAK/ TO-263	KTT	3	500	330.0	24.4	10.9	16.1	4.9	16.0	24.0	Q2
REG1117FA-5.0/500	DDPAK/ TO-263	KTT	3	500	330.0	24.4	10.9	16.1	4.9	16.0	24.0	Q2
REG1117FA/500	DDPAK/ TO-263	KTT	3	500	330.0	24.4	10.9	16.1	4.9	16.0	24.0	Q2

TAPE AND REEL BOX DIMENSIONS



*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
REG1117-2.85/2K5	SOT-223	DCY	4	2500	358.0	335.0	35.0
REG1117-3.3/2K5	SOT-223	DCY	4	2500	358.0	335.0	35.0
REG1117-5/2K5	SOT-223	DCY	4	2500	358.0	335.0	35.0
REG1117-5/2K5G4	SOT-223	DCY	4	2500	358.0	335.0	35.0
REG1117/2K5	SOT-223	DCY	4	2500	358.0	335.0	35.0
REG1117A-1.8/2K5	SOT-223	DCY	4	2500	358.0	335.0	35.0
REG1117A-2.5/2K5	SOT-223	DCY	4	2500	358.0	335.0	35.0
REG1117A/2K5	SOT-223	DCY	4	2500	358.0	335.0	35.0
REG1117F-3.3/500	DDPAK/TO-263	KTT	3	500	356.0	356.0	45.0
REG1117FA-2.5/500	DDPAK/TO-263	KTT	3	500	356.0	356.0	45.0
REG1117FA-5.0/500	DDPAK/TO-263	KTT	3	500	356.0	356.0	45.0
REG1117FA/500	DDPAK/TO-263	KTT	3	500	356.0	356.0	45.0

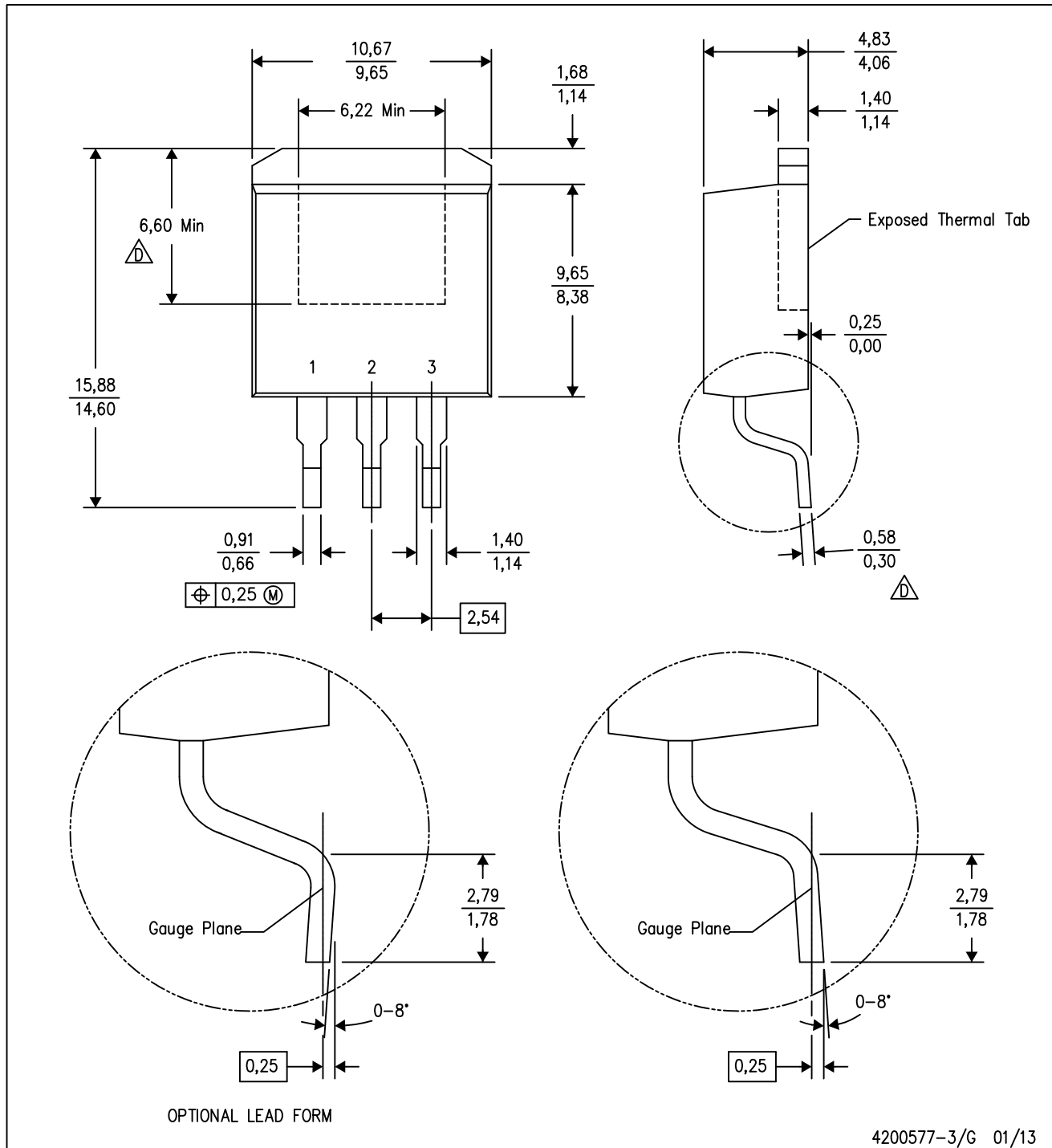
TUBE


*All dimensions are nominal

Device	Package Name	Package Type	Pins	SPQ	L (mm)	W (mm)	T (μm)	B (mm)
REG1117	DCY	SOT-223	4	80	542.9	8.6	3606	2.67
REG1117-2.85	DCY	SOT-223	4	80	542.9	8.6	3606	2.67
REG1117-2.85.A	DCY	SOT-223	4	80	542.9	8.6	3606	2.67
REG1117-3.3	DCY	SOT-223	4	80	542.9	8.6	3606	2.67
REG1117-3.3.A	DCY	SOT-223	4	80	542.9	8.6	3606	2.67
REG1117-3.3G4	DCY	SOT-223	4	80	542.9	8.6	3606	2.67
REG1117-5	DCY	SOT-223	4	80	542.9	8.6	3606	2.67
REG1117-5.A	DCY	SOT-223	4	80	542.9	8.6	3606	2.67
REG1117-5G4	DCY	SOT-223	4	80	542.9	8.6	3606	2.67
REG1117.A	DCY	SOT-223	4	80	542.9	8.6	3606	2.67
REG1117A	DCY	SOT-223	4	80	542.9	8.6	3606	2.67
REG1117A-1.8	DCY	SOT-223	4	80	542.9	8.6	3606	2.67
REG1117A-1.8.A	DCY	SOT-223	4	80	542.9	8.6	3606	2.67
REG1117A-2.5	DCY	SOT-223	4	80	542.9	8.6	3606	2.67
REG1117A-2.5.A	DCY	SOT-223	4	80	542.9	8.6	3606	2.67
REG1117A.A	DCY	SOT-223	4	80	542.9	8.6	3606	2.67

KTT (R-PSFM-G3)

PLASTIC FLANGE-MOUNT PACKAGE

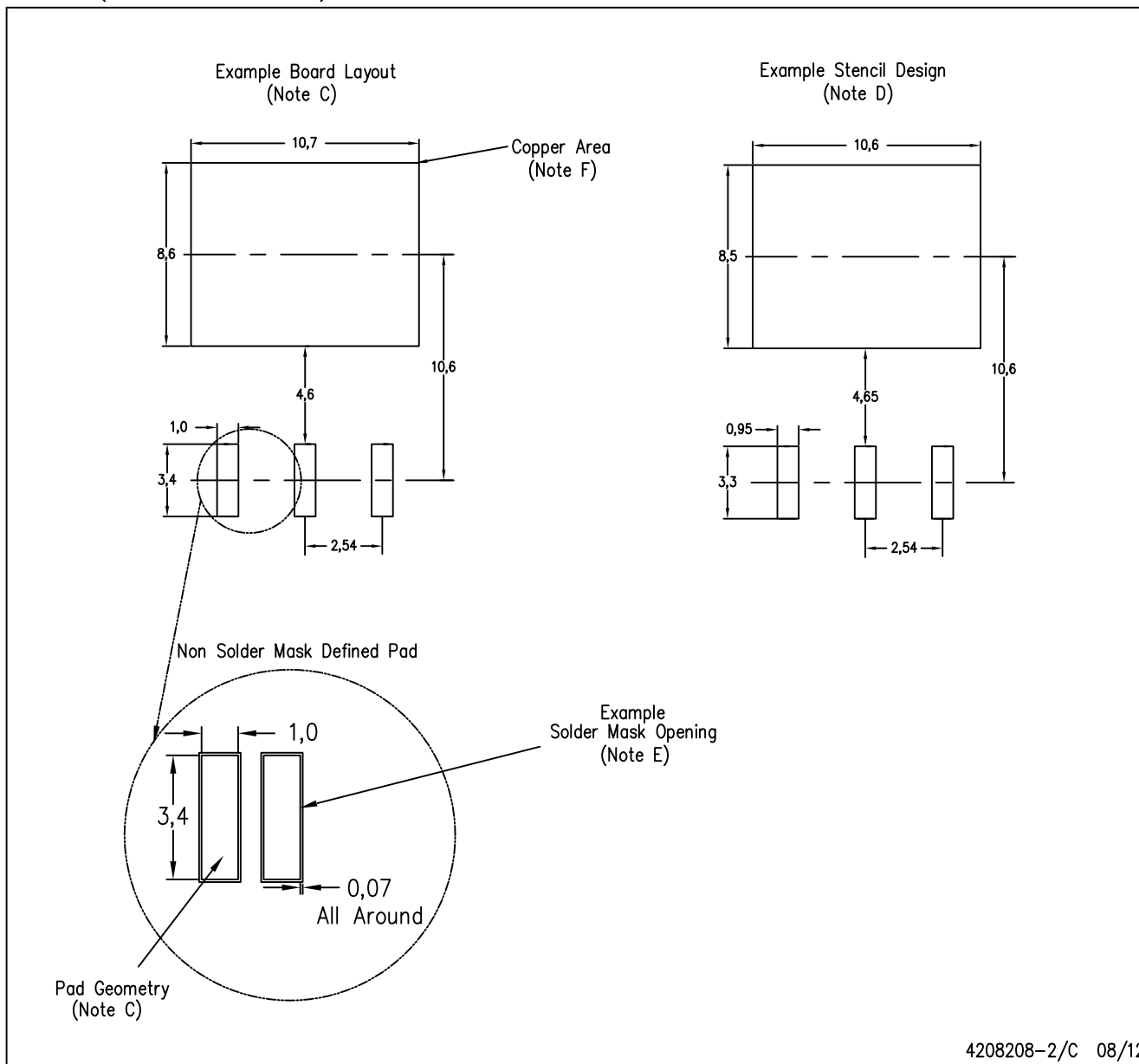


4200577-3/G 01/13

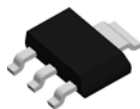
- NOTES:
- A. All linear dimensions are in millimeters.
 - B. This drawing is subject to change without notice.
 - C. Body dimensions do not include mold flash or protrusion. Mold flash or protrusion not to exceed 0.005 (0,13) per side.
- Falls within JEDEC TO-263 variation AA, except minimum lead thickness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

KTT (R-PSFM-G3)

PLASTIC FLANGE-MOUNT PACKAGE



- NOTES:
- All linear dimensions are in millimeters.
 - This drawing is subject to change without notice.
 - Publication IPC-SM-782 is recommended for alternate designs.
 - Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Refer to IPC-7525.
 - Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.
 - This package is designed to be soldered to a thermal pad on the board. Refer to the Product Datasheet for specific thermal information, via requirements, and recommended thermal pad size. For thermal pad sizes larger than shown a solder mask defined pad is recommended in order to maintain the solderable pad geometry while increasing copper area.

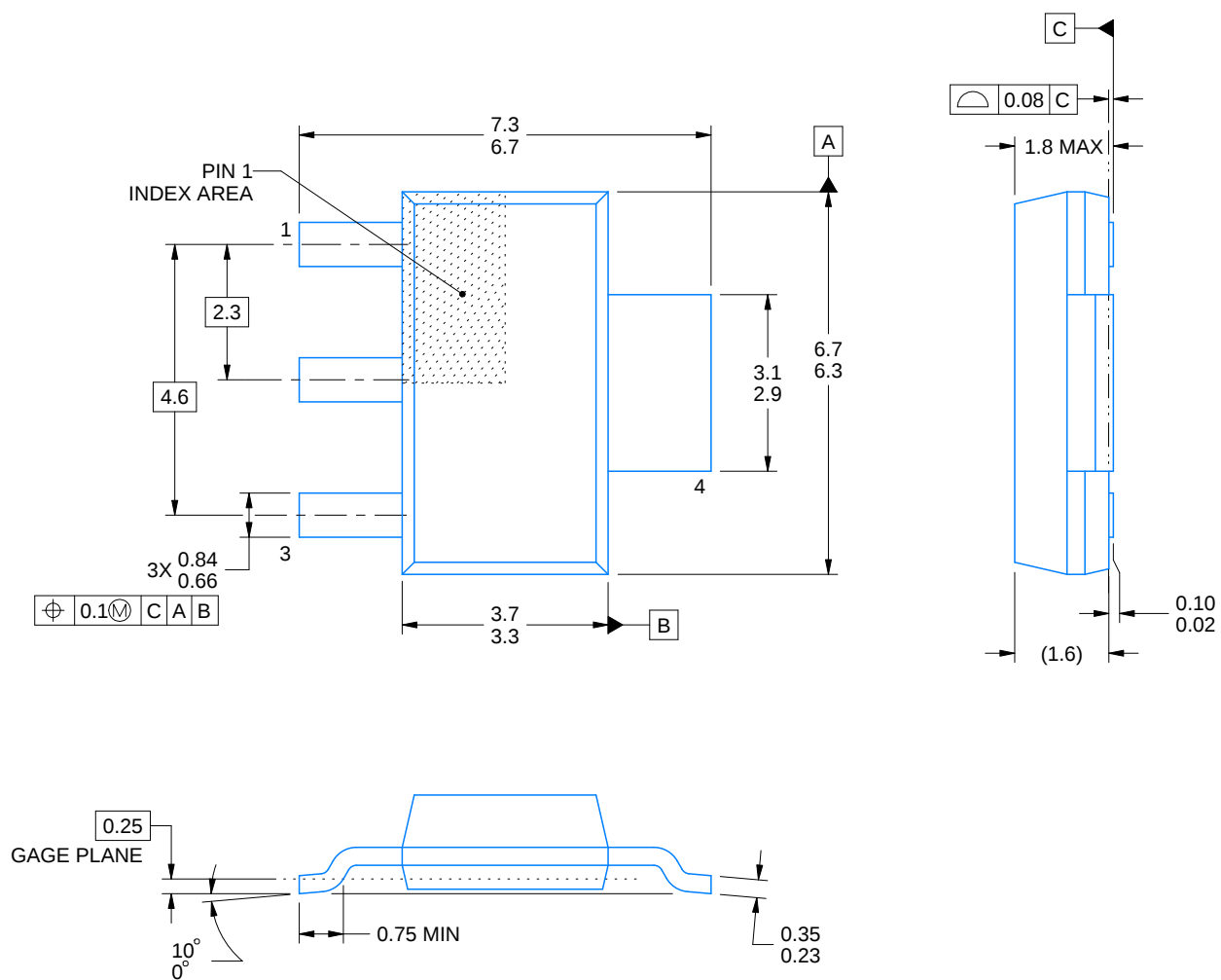


DCY0004A

PACKAGE OUTLINE

SOT-223 - 1.8 mm max height

PLASTIC SMALL OUTLINE



4214843/C 05/2026

NOTES:

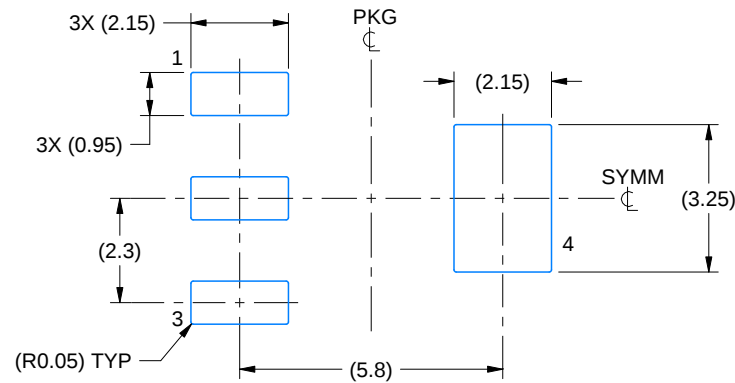
1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. Reference JEDEC TO-261.

EXAMPLE BOARD LAYOUT

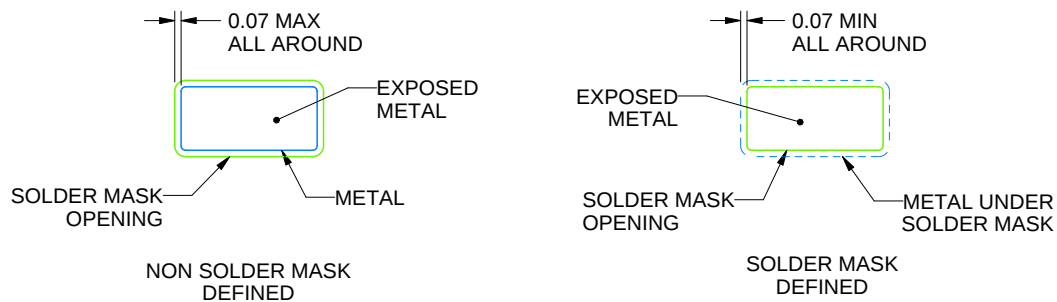
DCY0004A

SOT-223 - 1.8 mm max height

PLASTIC SMALL OUTLINE



LAND PATTERN EXAMPLE
EXPOSED METAL SHOWN
SCALE:6X



SOLDER MASK DETAILS

4214843/C 05/2026

NOTES: (continued)

4. Publication IPC-7351 may have alternate designs.

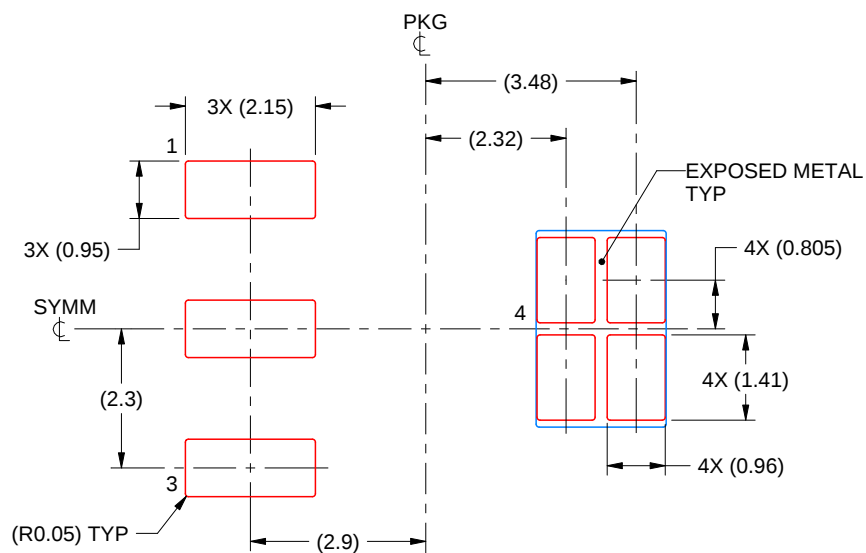
5. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

EXAMPLE STENCIL DESIGN

DCY0004A

SOT-223 - 1.8 mm max height

PLASTIC SMALL OUTLINE



SOLDER PASTE EXAMPLE
BASED ON 0.125 mm THICK STENCIL
SCALE:8X

4214843/C 05/2026

IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES "AS IS" AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, regulatory or other requirements.

These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you fully indemnify TI and its representatives against any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI's products are provided subject to [TI's Terms of Sale](#), [TI's General Quality Guidelines](#), or other applicable terms available either on [ti.com](#) or provided in conjunction with such TI products. TI's provision of these resources does not expand or otherwise alter TI's applicable warranties or warranty disclaimers for TI products. Unless TI explicitly designates a product as custom or customer-specified, TI products are standard, catalog, general purpose devices.

TI objects to and rejects any additional or different terms you may propose.

Copyright © 2026, Texas Instruments Incorporated

Last updated 10/2025