Pin-out Configuration

Pin #	Pin Symbol	I/O/P	Description
1	GND	P	Ground
2	VOUT	O	Regulated Output Voltage
3	N/C		No Connect
4	N/C		No Connect
5	N/C		No Connect
6	FB	I	Feedback Voltage
7	VIN	P	Input Voltage
8	EN	I	ENABLE Input

Absolute Maximum Ratings

Over operating free–air temperature range unless otherwise noted(1,2)

		Unit
VIN	-0.3 to 18 (TS31023) -0.3 to 40 (TS31223)	V
VOUT	-0.3 to 18 (TS31023) -0.3 to 40 (TS31223)	V
EN, FB	-0.3 to 6.0	V
Electrostatic Discharge – Human Body Model	2	kV
Maximum junction temperature, TJ	150	^{O}C
Storage temperature range, Tstg	-65 to 150	^{O}C
Lead Temperature (soldering, 10 seconds)	260	^{O}C

Note 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.

Note 2: All voltage values are with respect to network ground terminal.

Thermal Characteristics

Package DFN	θ_{JA} (^{O}C/W) (See Note 4)	θ_{JC} (^{O}C/W) (See Note 5)
8 pin	73.1	10.7

Note 4: This assumes a FR4 board only.
Note 5: This assumes a 1oz. Copper JEDEC standard board with thermal vias. See Exposed Pad section and application note for more information.

Recommended Operating Conditions

Parameter	Min	Max	Units
Unregulated Supply Input Voltage (VIN)	5	16 (TS31023) 36 (TS31223)	V
Enable Input (EN)	0	5	V
Regulated Supply Output Voltage (VOUT)	1.25	VIN - $V_{dropout}$	V
Operating Junction Temperature, T_J	-40	125	^{O}C

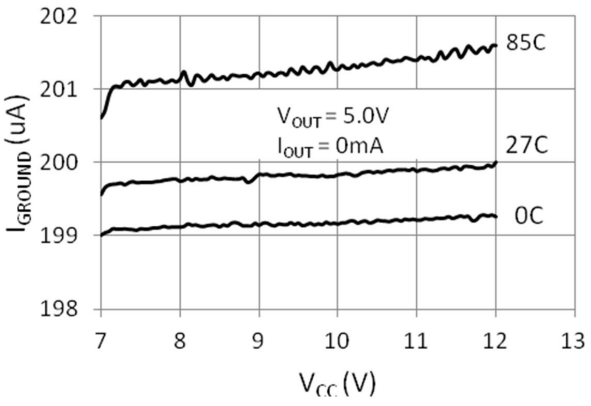
Electrical Characteristics (T=25^{O}C unless otherwise specified)

Electrical characteristics, VIN = 12V, T_J = 25C, unless otherwise noted

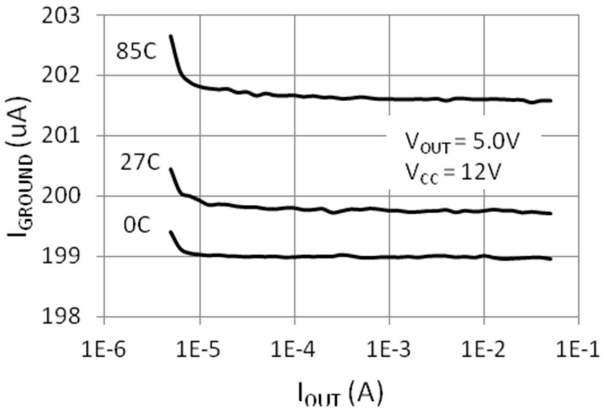
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Input Supply Voltage	VIN	TS31023	5		16	V
		TS31223	5		36	V
Output Voltage	VOUT		1.25		VIN - $V_{dropout}$	V
Feedback Voltage	FB	V_{IN} = 12V	1.10	1.20	1.30	V
Output Bypass Capacitor	C_{OUT}		1	2.2	4.7	uF
Disabled Current	$I_{off(VIN)}$	EN=0V, V_{IN}=12V		1		uA
Quiescent Current	$I_{qq(VIN)}$	EN=5V, I_{OUT} = 0		220		uA
Load Capability	I_{OUT}				60	mA
DC Line Regulation (TS31023)	V_{Line}	V_{IN} = 5.5V to 16V, V_{OUT}=5.0V, I_{OUT} = 5mA		0.1	0.6	%
DC Line Regulation (TS31223)		V_{IN} = 5.5V to 36V, V_{OUT}=5.0V, I_{OUT} = 5mA		0.1	0.6	%
DC Load Regulation (TS31023)	V_{Load}	V_{IN} = 12V, V_{OUT}=5.0V, I_{OUT} = 1mA to 60mA		0.02	0.35	%
		V_{IN} = 6V, Vout=5.0V, I_{OUT} = 1mA to 60mA		0.02	0.15	%
Current Limit	I_{Limit}	V_{IN} =12V		100		mA

Typical Performance Characteristics

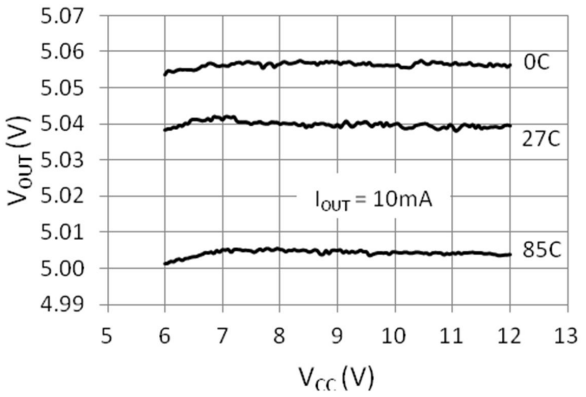
I_{qq} Performance vs. Supply Voltage



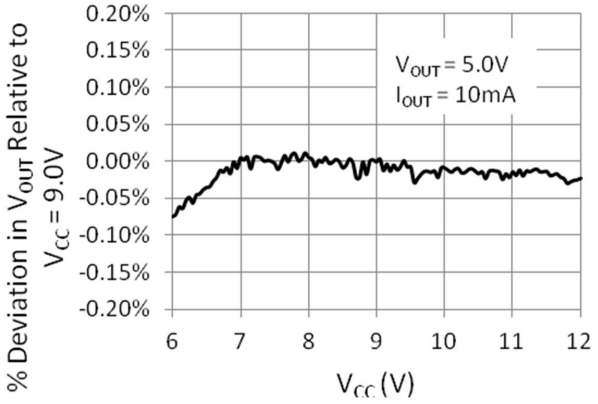
I_{qq} Performance vs. Load Current



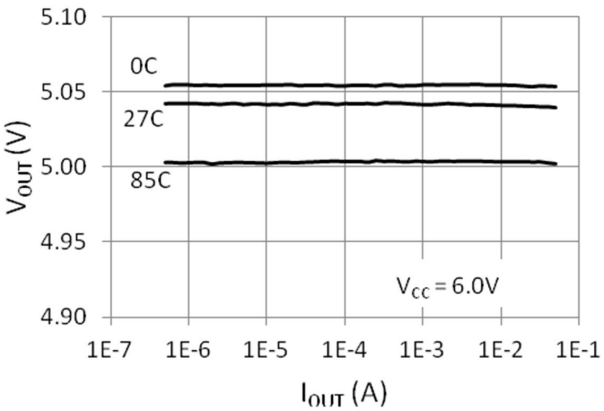
V_{OUT} Performance vs. V_{CC}



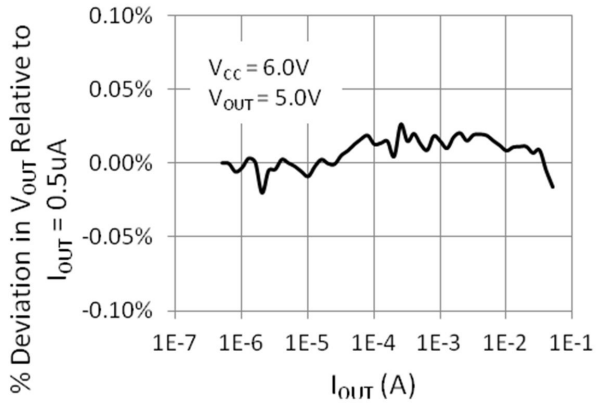
Line Regulation Performance



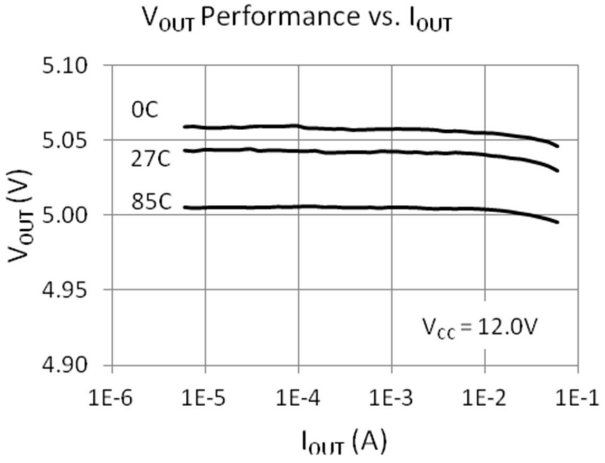
V_{OUT} Performance vs. I_{OUT}

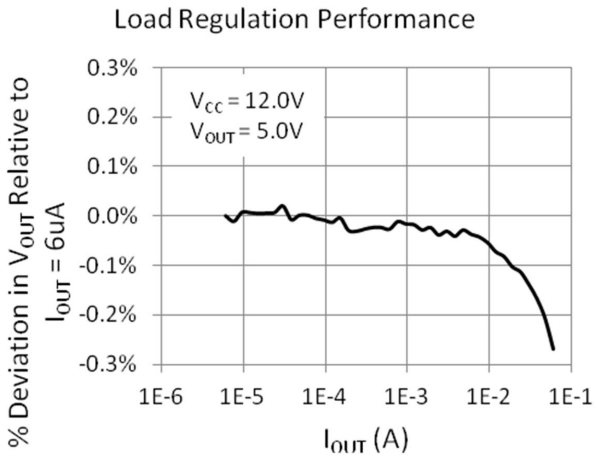


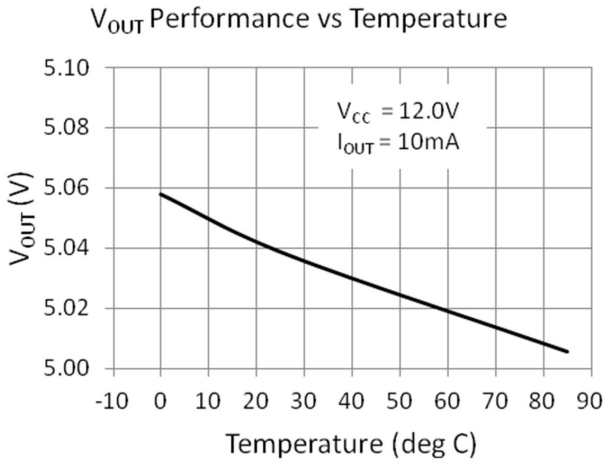
Load Regulation Performance

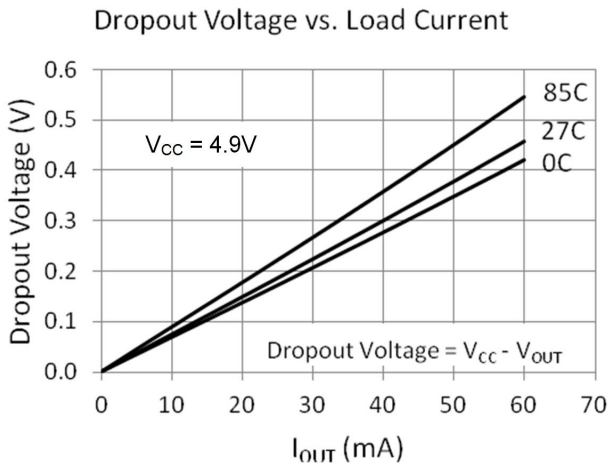


Typical Performance Characteristics continued

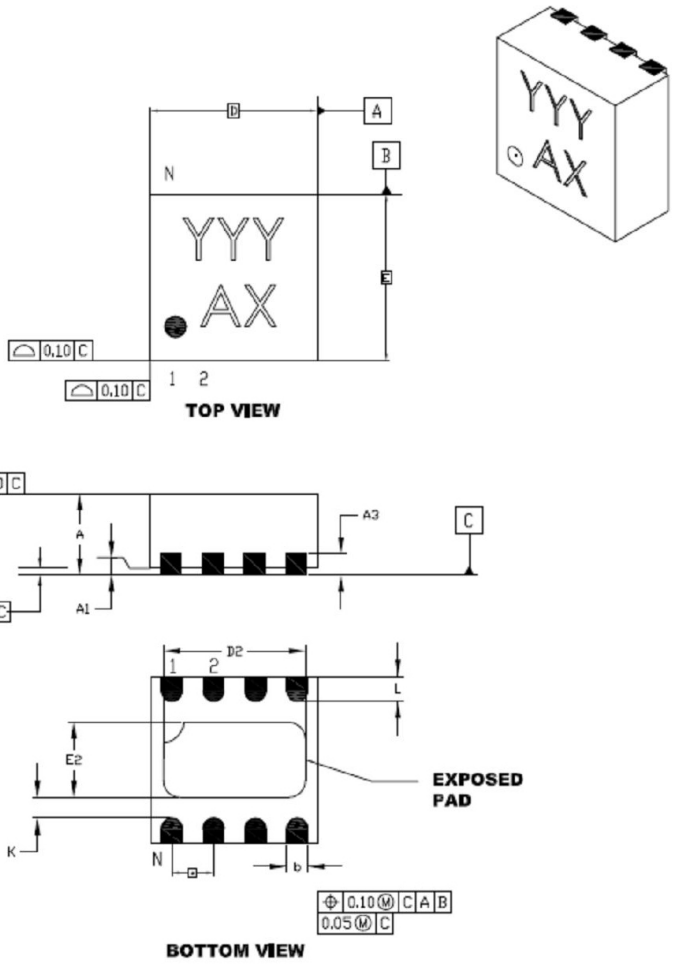






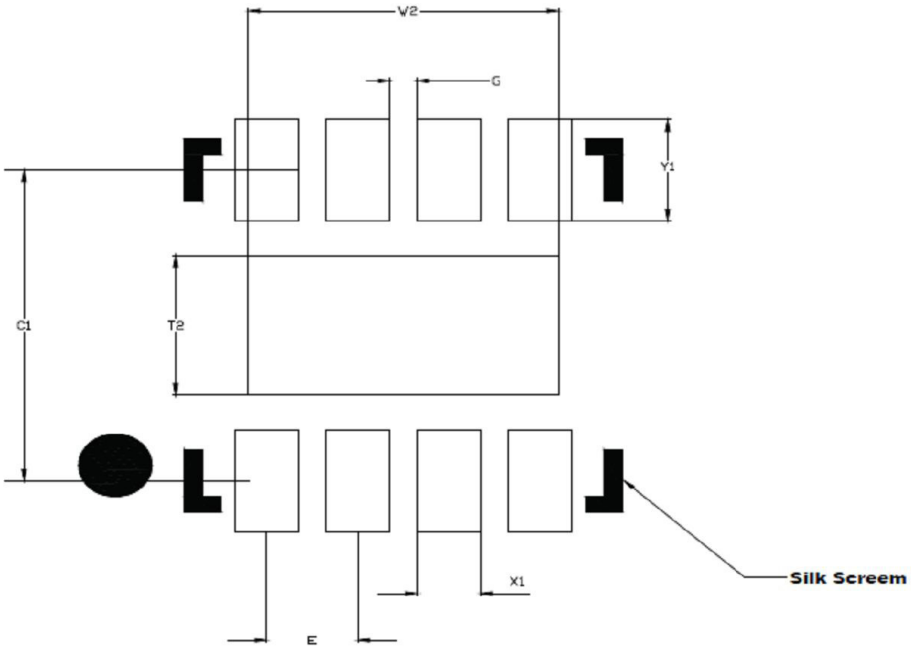


Package Mechanical Drawings (all dimensions in mm)



Units		Millimeters		
Dimensions Limits		MIN	NOM	MAX
Number of Pins	N		8	
Pitch	e		0.50 BSC	
Overall Height	A	0.80	0.90	1.00
Standoff	A1	0.00	0.02	0.05
Contact Thickness	A3		0.20 REF	
Overall Length	D		2.00 BSC	
Exposed Pad Width	E2	0.75	0.90	1.00
Overall Width	E		2.00 BSC	
Exposed Pad Length	D2	1.55	1.70	1.80
Contact Width	b	0.18	0.25	0.30
Contact Length	L	0.20	0.30	0.40
Contact-to-Exposed Pad	K	0.20	-	-

Recommended PCB Land Pattern



RECOMMENDED
LAND PATTERN

Units		Millimeters		
Dimensions Limits		MIN	NOM	MAX
Contact Pitch	E		0.50 BSC	
Optional Center Pad Width	W2	–	–	1.70
Optional Center Pad Length	T2	–	–	0.90
Contact Pad Spacing	C1	–	2.00	–
Contact Pad Width (X8)	X1	–	–	0.35
Contact Pad Length (X8)	Y1	–	–	0.65
Distance Between Pads	G	0.15	–	–

Ordering Information

Part Number:

TS31023-QFNR

TS31223-QFNR

Contact Information

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