300mA CMOS Dual LDO Regulator

HALOGEN FREE LEAD FREE™ RoHS Compliance

FEATURES

- **Two outputs with guaranteed 300mA peak output current**
- **Low dropout voltages of 210mV typical at 300mA**
- **Stable with ceramic output capacitors**
- **Independent enable pins**
- **Under voltage lockout**
- **No-load ground current of 100µA typical**
- **Full-load ground current of 160µA typical**
- **±1.0% output voltage initial accuracy**
- **±2.0% accuracy over temperature**
- **"Zero" current shutdown mode**
- **Fold-back current limit and thermal protection**
- **TSOT-23 6-lead, 0.8mm height package**

APPLICATIONS

- **Cellular phones**
- **Battery-powered devices**
- **Consumer Electronics**

DESCRIPTION

The 300mA CMOS Dual LDO CAT6221 combines in a single TSOT-23 6-lead package two low dropout regulators (LDO), each with its own enable pin.

The regulator outputs drive loads up to 300mA. By design, the dual LDO provides fast response time during load current and line voltage changes.

Each LDO is optimized for low noise and high crosstalk isolation. With zero shut down current and a low quiescent current of 100µA, the dual LDO is ideal for battery-operated devices with supply voltage from 2.3V to 5.5V.

The dual LDO offers 1% initial accuracy and very low dropout voltage, typical 210mV at 300mA. Stable operation is provided with small 1µF ceramic output capacitors, reducing required board space and component cost.

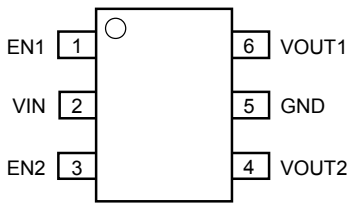
Other features include fold-back current limit and thermal protection.

The dual LDO is available in the tiny 6-lead TSOT-23 package with a maximum height of 0.8mm.

For Ordering Information details, see page 10.

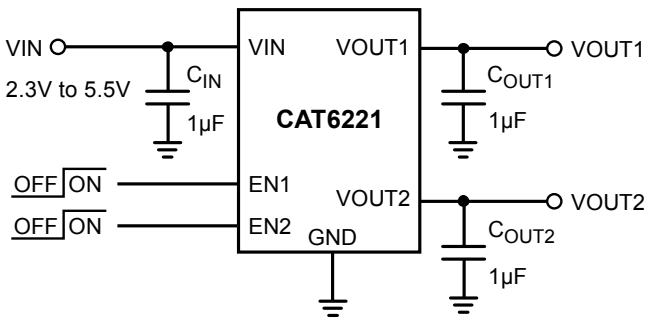
PIN CONFIGURATION

6-Lead TSOT-23
(0.8mm height)



Top View

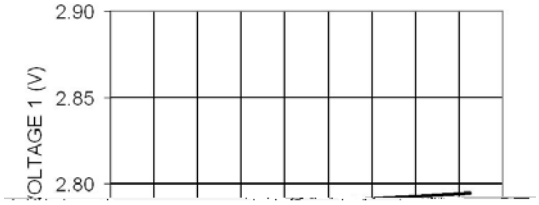
TYPICAL APPLICATION CIRCUIT



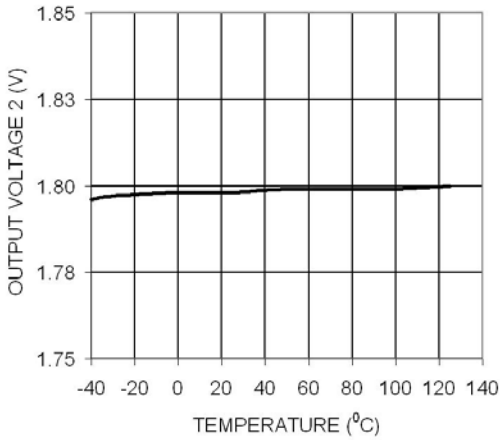
TYPICAL CHARACTERISTICS (shown for 2.8V/1.8V outputs version)

V_{IN} = 3.8V, I_{OUT} = 100µA, EN1 = EN2 = V_{IN}, C_{IN} = C_{OUT} = 1µF, T_A = 25°C unless otherwise specified.

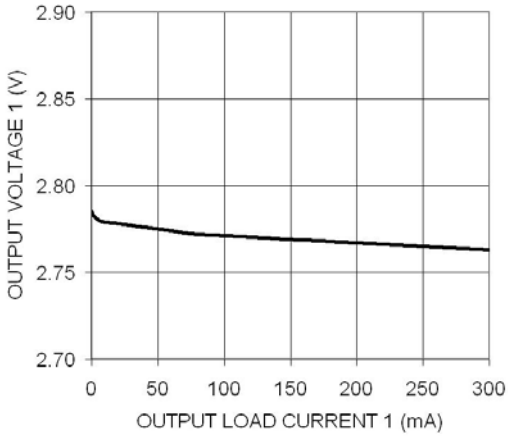
Output Voltage 1 vs. Temperature



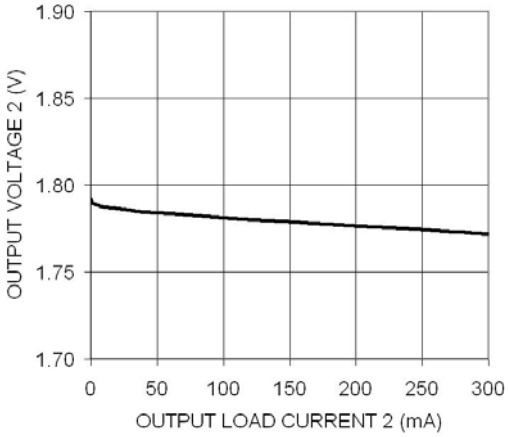
Output Voltage 2 vs. Temperature



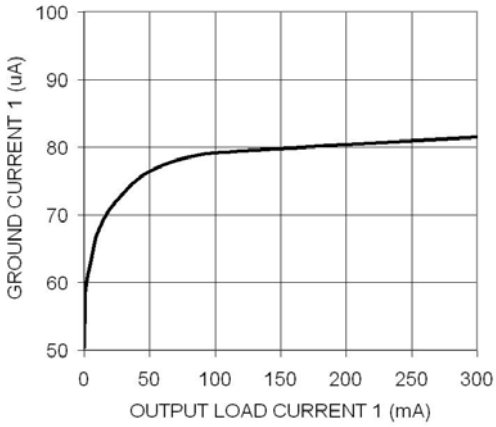
Load Regulation VOUT1



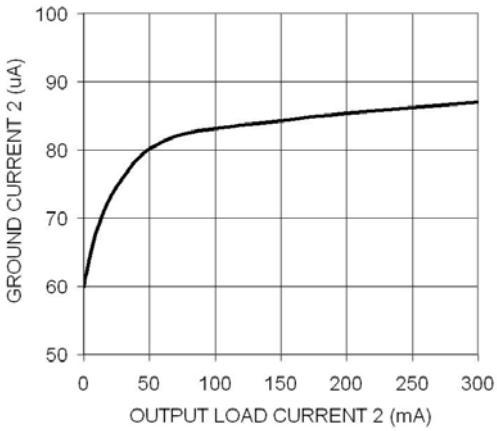
Load Regulation VOUT2



Ground Current (EN2 = GND)



Ground Current (EN1 = GND)



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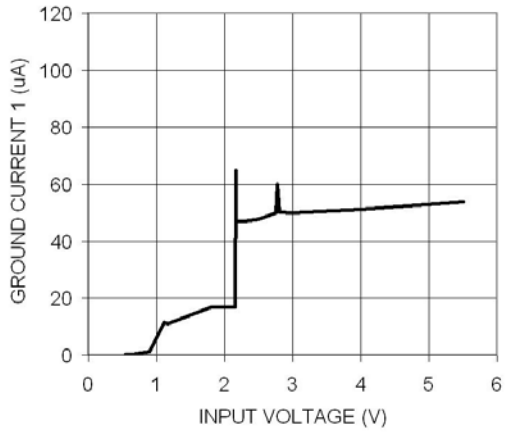
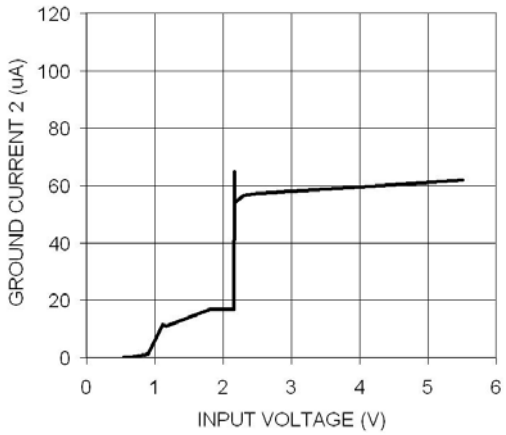
TYPICAL CHARACTERISTICS (shown for 2.8V/1.8V outputs option)

V_{IN} = 3.8V, I_{OUT} = 100µA, EN1 = EN2 = V_{IN}, C_{IN} = C_{OUT} = 1µF, T_A = 25°C unless otherwise specified.

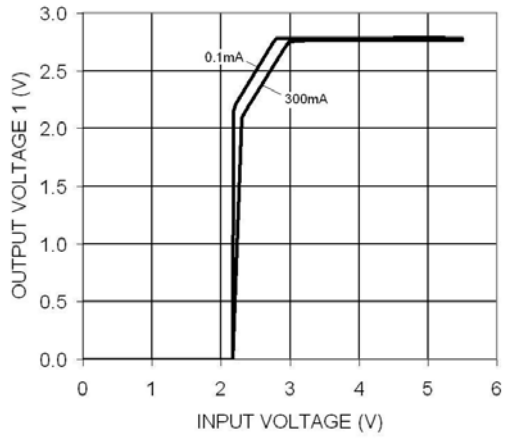
Ground Current (EN2 = GND)



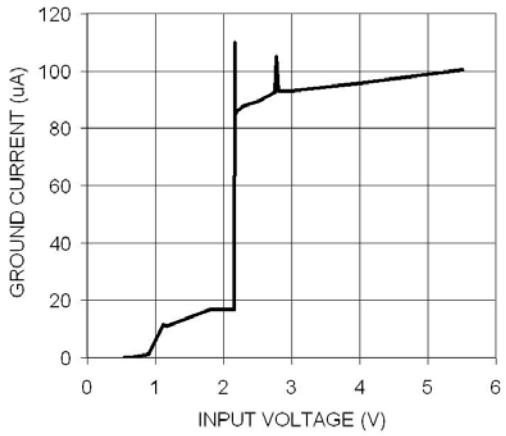
Ground Current (EN1 = GND)



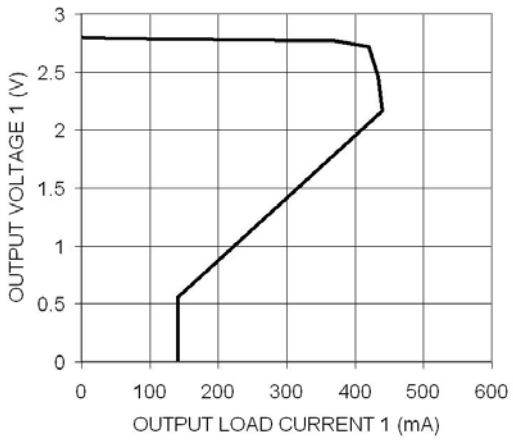
Output 1 Dropout Characteristics



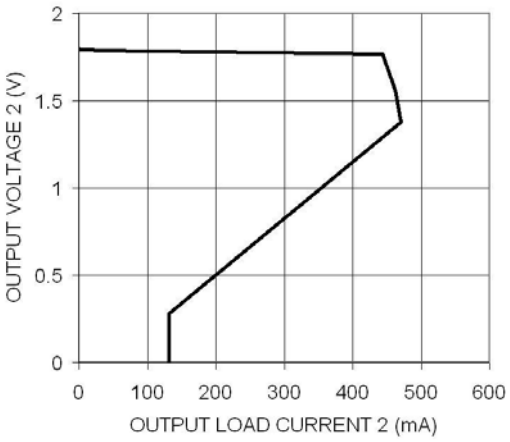
Ground Current vs. Input Voltage



Output Voltage 1 vs. Load Current 1



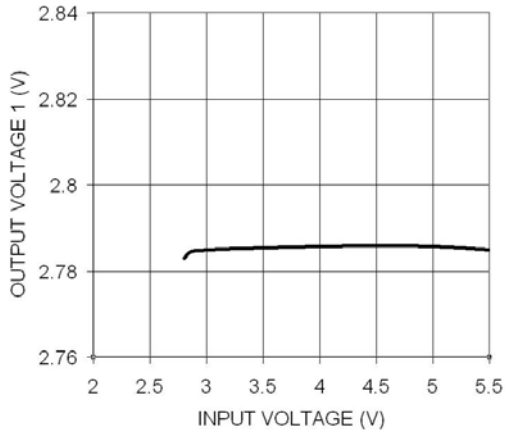
Output Voltage 2 vs. Load Current 2



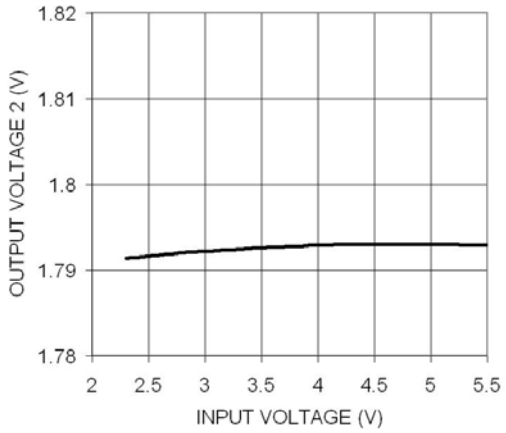
TYPICAL CHARACTERISTICS (shown for 2.8V/1.8V outputs option)

V_{IN} = 3.8V, I_{OUT} = 100µA, EN1 = EN2 = V_{IN}, C_{IN} = C_{OUT} = 1µF, T_A = 25°C unless otherwise specified.

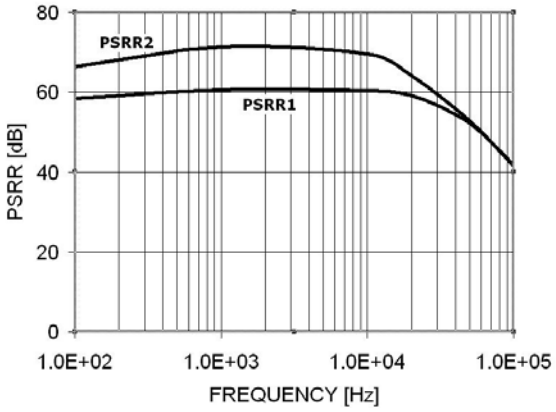
Line Regulation VOUT1



Line Regulation VOUT2



PSRR 1 & 2 vs. Frequency (30mA Load)



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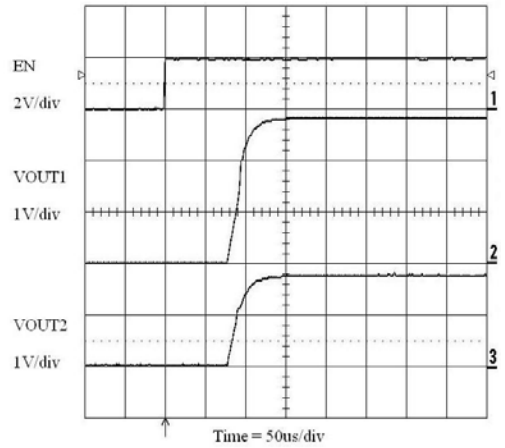
TRANSIENT CHARACTERISTICS (shown for 2.8V/1.8V outputs option)

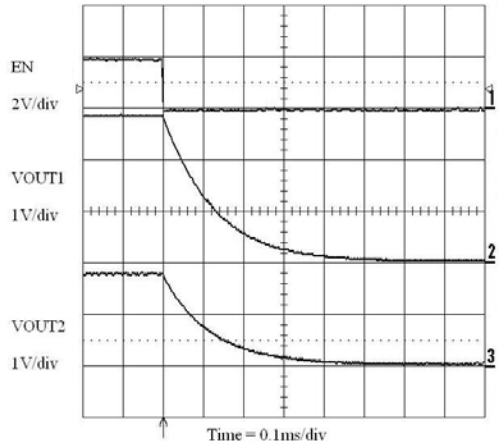
V_{IN} = 3.8V, I_{OUT} = 100µA, EN1 = EN2 = V_{IN}, C_{IN} = C_{OUT} = 1µF, T_A = 25°C unless otherwise specified.

Note: All transient characteristics are generated using the evaluation board CAT6221EVAL1.

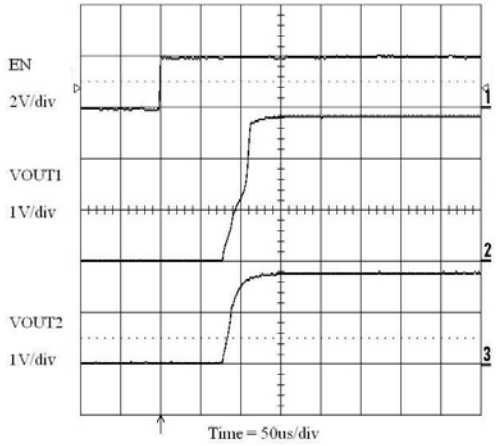
Enable Turn-On (100µA Loads)



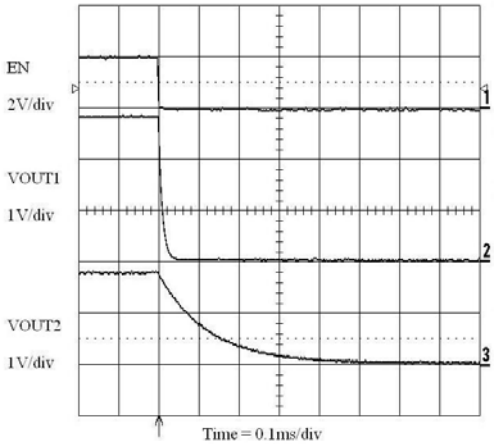
Enable Turn-Off (100µA Loads)



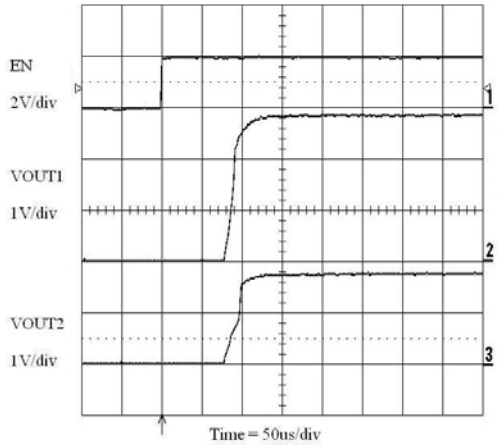
Enable Turn-On (300mA/100µA Loads)



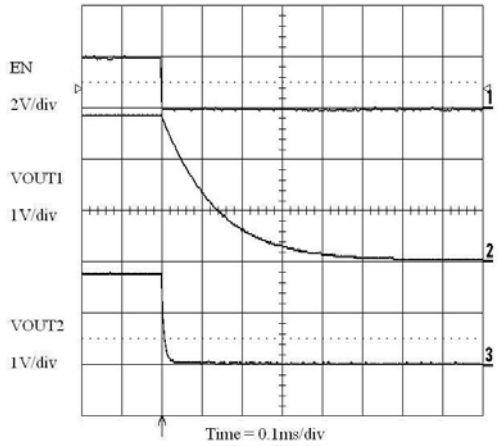
Enable Turn-Off (300mA/100µA Loads)



Enable Turn-On (100µA/300mA Loads)



Enable Turn-Off (100µA/300mA Loads)

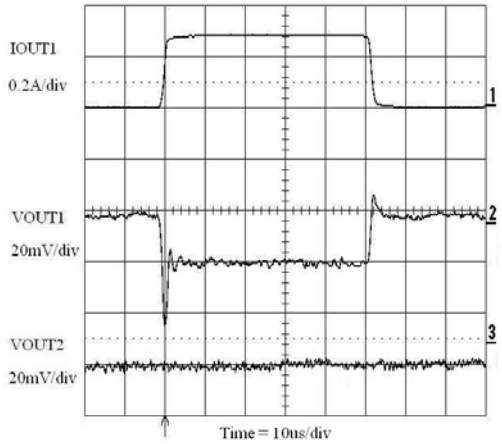


TRANSIENT CHARACTERISTICS (shown for 2.8V/1.8V outputs option)

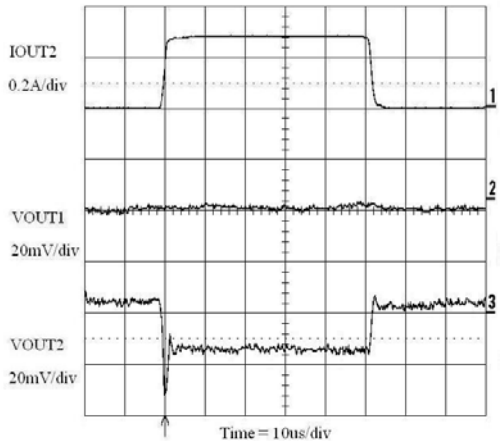
V_{IN} = 3.8V, I_{OUT} = 100µA, EN1 = EN2 = V_{IN}, C_{IN} = C_{OUT} = 1µF, T_A = 25°C unless otherwise specified.

Note: All transient characteristics are generated using the evaluation board CAT6221EVAL1.

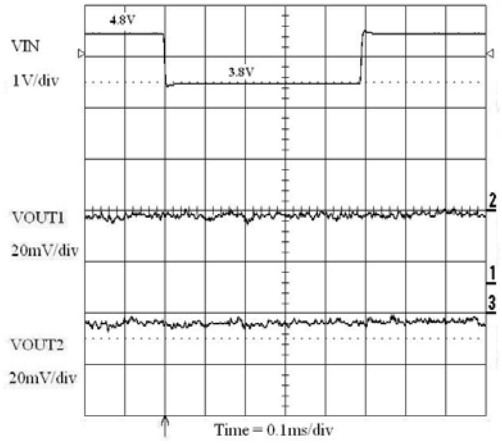
VOUT1 Load Transient Response (0.1 to 300mA)



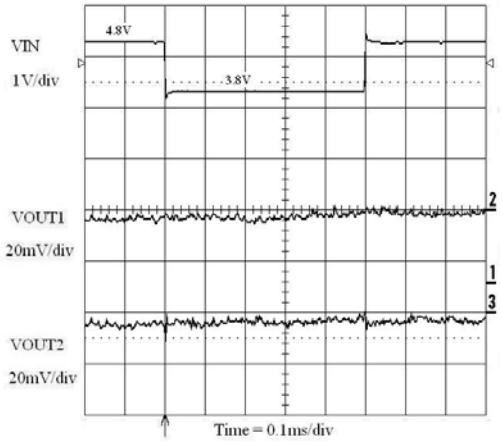
VOUT2 Load Transient Response (0.1 to 300mA)



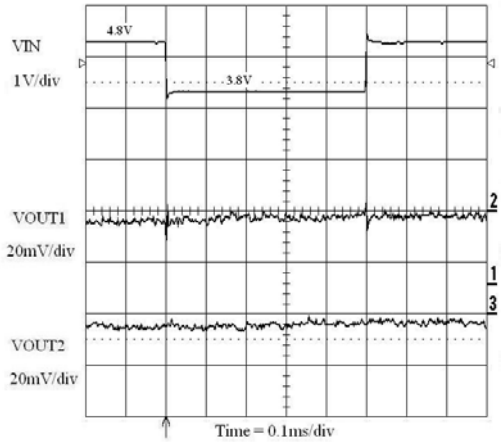
Line Transient Response (0.1mA Loads)



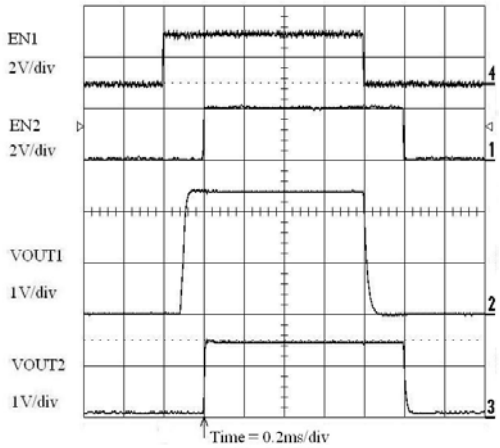
Line Transient Response (0.1/100mA Loads)



Line Transient Response (100/0.1mA Loads)



Separate Enable Operation (100mA Loads)



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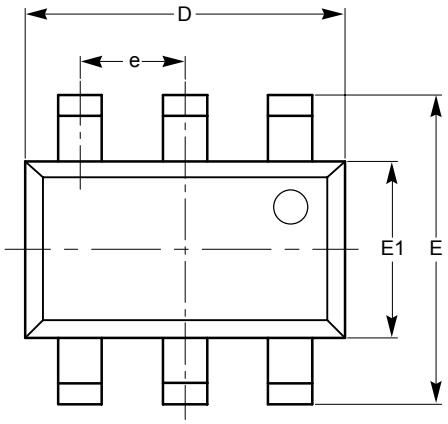
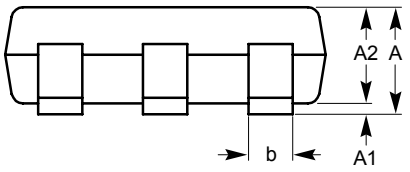
PACKAGE OUTLINE DRAWING

TSOT-23 6-Lead 0.8mm (TD)[1][2]

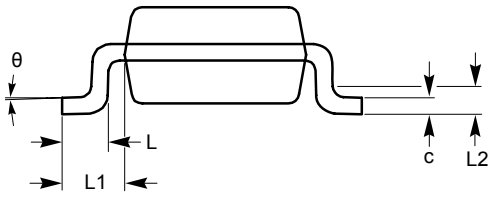


TOP VIEW

SYMBOL	MIN	NOM	MAX
A			1.00
A1	0.01	0.05	0.10
A2	0.80	0.87	0.90
b	0.30		0.45
c	0.12	0.15	0.20
D		2.90 BSC	
E		2.80 BSC	
E1		1.60 BSC	
e		0.95 TYP	
L	0.30	0.40	0.50
L1		0.60 REF	
L2		0.25 BSC	
θ	0°		8°



SIDE VIEW



END VIEW

For current Tape and Reel information, download the PDF file from: http://www.catsemi.com/documents/tapeandreel.pdf.

Notes:
(1) All dimensions are in millimeters, angles in degrees.
(2) Complies with JEDEC standard MO-193.

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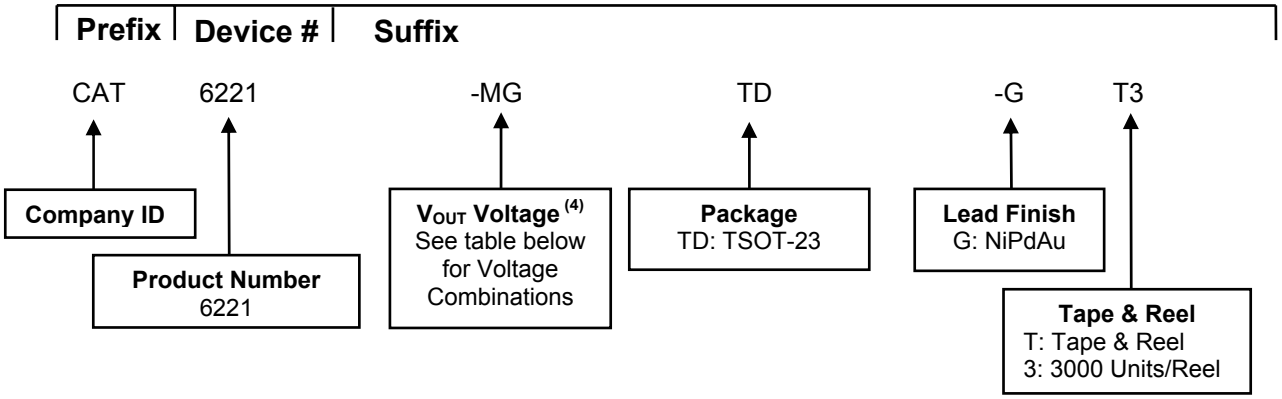
EXAMPLE OF ORDERING INFORMATION



Part Number	V_{OUT} Voltage Combination(4)	Package	Quantity per Reel
CAT6221-JFTD-G	2.5V / 1.5V	TSOT-23	3000
CAT6221-JGTD-G	2.5V / 1.8V	TSOT-23	3000
CAT6221-JLTD-G	2.5V / 2.7V	TSOT-23	3000
CAT6221-JPTD-G	2.5V / 3.0V	TSOT-23	3000
CAT6221-MFTD-G	2.8V / 1.5V	TSOT-23	3000
CAT6221-MGTD-G	2.8V / 1.8V	TSOT-23	3000
CAT6221-MLTD-G	2.8V / 2.7V	TSOT-23	3000
CAT6221-MPTD-G	2.8V / 3.0V	TSOT-23	3000
CAT6221-PFTD-G	3.0V / 1.5V	TSOT-23	3000
CAT6221-PGTD-G	3.0V / 1.8V	TSOT-23	3000
CAT6221-PLTD-G	3.0V / 2.7V	TSOT-23	3000
CAT6221-PPTD-G	3.0V / 3.0V	TSOT-23	3000
CAT6221-SFTD-G	3.3V / 1.5V	TSOT-23	3000
CAT6221-SGTD-G	3.3V / 1.8V	TSOT-23	3000
CAT6221-SLTD-G	3.3V / 2.7V	TSOT-23	3000
CAT6221-SPTD-G	3.3V / 3.0V	TSOT-23	3000

Notes:

(1) All packages are RoHS-compliant (Lead-free, Halogen-free).

(2) The standard lead finish is NiPdAu pre-plated (PPF) lead frames.

(3) The device used in the above example is a CAT6221-MGTD-GT3 (V_{OUT1} = 2.8V, V_{OUT2} = 1.8V, in a TSOT-23 package, NiPdAu, Tape and Reel).

(4) For other voltage combinations, please contact your nearest Catalyst Semiconductor Sales office.

(5) Top marking for CAT6221 is T3YM (Y = Year, M = Month).

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REVISION HISTORY

Date	Rev.	Reason
10/10/2007	A	Initial Release

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Catalyst Semiconductor, Inc.
Corporate Headquarters
2975 Stender Way
Santa Clara, CA 95054
Phone: 408.542.1000
Fax: 408.542.1200
www.catsemi.com

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