

GENERAL DESCRIPTION

The SGM2031 is a low power, low noise and low dropout voltage RF linear regulator. It is capable of supplying 250mA output current with typical dropout voltage of only 230mV. The operating input voltage range is from 2.5V to 5.5V. The fixed output voltage range is from 1.2V to 3.3V.

Other features include logic-controlled shutdown mode, output current limit and thermal shutdown protection.

The SGM2031 is suitable for application which needs low noise and low power supply, such as MP3 players, palmtop computers, etc.

The SGM2031 is available in a Green UTDFN-1×1-4L package. It operates over an operating temperature range of -40°C to +85°C.

FEATURES

- **Operating Input Voltage Range: 2.5V to 5.5V**
- **Fixed Output Voltages:**
1.2V, 1.5V, 1.8V, 2.5V, 2.6V, 2.8V, 2.85V, 3.0V and 3.3V
- **Output Voltage Accuracy: ±3% at +25°C**
- **Low Output Noise: 140µV_{RMS} (TYP)**
- **Low Dropout Voltage: 230mV (TYP) at 250mA**
- **High PSRR: 72dB (TYP) at 1kHz**
- **Low No Load Supply Current: 95µA (TYP)**
- **Thermal Shutdown Protection**
- **Output Current Limit**
- **Shutdown Current: 0.01µA (TYP)**
- **-40°C to +85°C Operating Temperature Range**
- **Available in a Green UTDFN-1×1-4L Package**

APPLICATIONS

Modems
MP3 Players
Cellular Telephones
PCMCIA Cards
Palmtop Computers
Portable Electronics

TYPICAL APPLICATION

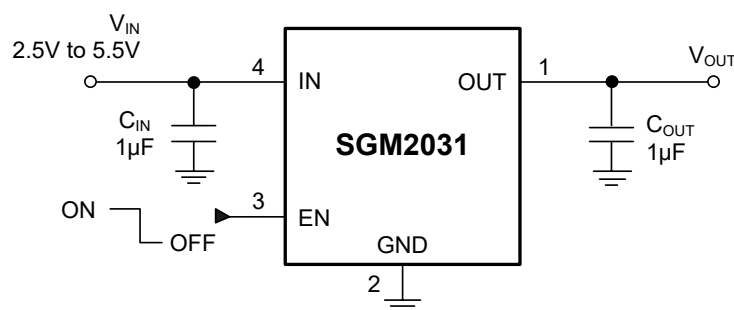


Figure 1. Typical Application Circuit

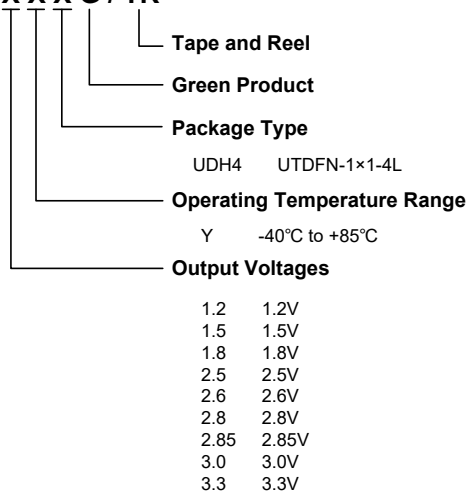
PACKAGE/ORDERING INFORMATION

MODEL	V _{OUT} (V)	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGM2031-1.2	1.2	UTDFN-1×1-4L	-40°C to +85°C	SGM2031-1.2YUDH4G/TR	64	Tape and Reel, 10000
SGM2031-1.5	1.5	UTDFN-1×1-4L	-40°C to +85°C	SGM2031-1.5YUDH4G/TR	9F	Tape and Reel, 10000
SGM2031-1.8	1.8	UTDFN-1×1-4L	-40°C to +85°C	SGM2031-1.8YUDH4G/TR	51	Tape and Reel, 10000
SGM2031-2.5	2.5	UTDFN-1×1-4L	-40°C to +85°C	SGM2031-2.5YUDH4G/TR	A0	Tape and Reel, 10000
SGM2031-2.6	2.6	UTDFN-1×1-4L	-40°C to +85°C	SGM2031-2.6YUDH4G/TR	B8	Tape and Reel, 10000
SGM2031-2.8	2.8	UTDFN-1×1-4L	-40°C to +85°C	SGM2031-2.8YUDH4G/TR	52	Tape and Reel, 10000
SGM2031-2.85	2.85	UTDFN-1×1-4L	-40°C to +85°C	SGM2031-2.85YUDH4G/TR	B9	Tape and Reel, 10000
SGM2031-3.0	3.0	UTDFN-1×1-4L	-40°C to +85°C	SGM2031-3.0YUDH4G/TR	53	Tape and Reel, 10000
SGM2031-3.3	3.3	UTDFN-1×1-4L	-40°C to +85°C	SGM2031-3.3YUDH4G/TR	57	Tape and Reel, 10000

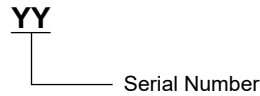
Green (RoHS & HSF): SG Micro Corp defines "Green" to mean Pb-Free (RoHS compatible) and free of halogen substances. If you have additional comments or questions, please contact your SGMICRO representative directly.

ORDER NUMBER

SGM2031 - X X X G / TR



MARKING INFORMATION



SGM2031

ABSOLUTE MAXIMUM RATINGS

IN to GND	-0.3V to 6V
Output Short-Circuit Duration.....	Infinite
EN to GND.....	-0.3V to V_{IN}
OUT to GND	-0.3V to $(V_{IN} + 0.3V)$
Power Dissipation, P_D @ $T_A = +25^\circ C$	
UTDFN-1×1-4L	400mW
Package Thermal Resistance	
UTDFN-1×1-4L, θ_{JA}	280°C/W
Junction Temperature.....	+150°C
Storage Temperature Range	-65°C to +150°C
Lead Temperature (Soldering, 10s).....	+260°C
ESD Susceptibility	
HBM.....	4000V
MM.....	400V

RECOMMENDED OPERATING CONDITIONS

Input Voltage Range	2.5V to 5.5V
Operating Temperature Range	-40°C to +85°C

OVERSTRESS CAUTION

Stresses beyond those listed in Absolute Maximum Ratings may cause permanent damage to the device. Exposure to absolute maximum rating conditions for extended periods may affect reliability. Functional operation of the device at any conditions beyond those indicated in the Recommended Operating Conditions section is not implied.

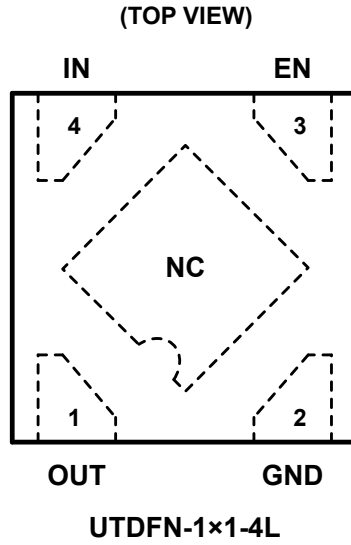
ESD SENSITIVITY CAUTION

This integrated circuit can be damaged if ESD protections are not considered carefully. SGMICRO 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 even small parametric changes could cause the device not to meet the published specifications.

DISCLAIMER

SG Micro Corp reserves the right to make any change in circuit design, or specifications without prior notice.

PIN CONFIGURATION



PIN DESCRIPTION

PIN	NAME	FUNCTION
1	OUT	Regulator Output Pin. It is recommended to use 1μF or larger ceramic output capacitor from OUT pin to ground. The capacitor should be located very close to this pin.
2	GND	Ground.
3	EN	Enable Pin. Drive EN high to turn on the regulator. Drive EN low to turn off the regulator.
4	IN	Input Voltage Supply Pin. It is recommended to use a 1μF or larger ceramic capacitor from IN pin to ground.
Exposed Pad	NC	No Connection.

ELECTRICAL CHARACTERISTICS

(V_{IN} = V_{OUT (NOMINAL)} + 0.5V⁽¹⁾, Full = -40°C to +85°C, unless otherwise noted.)

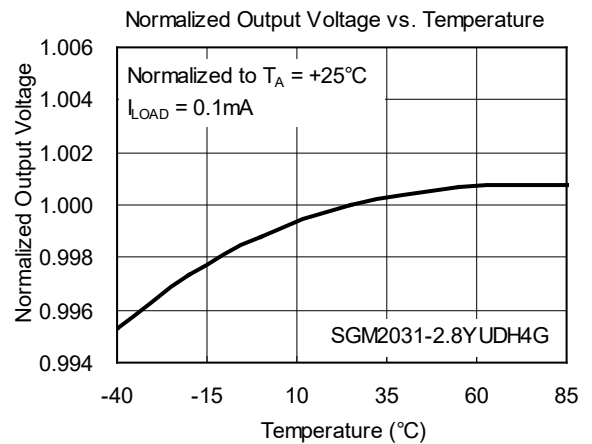
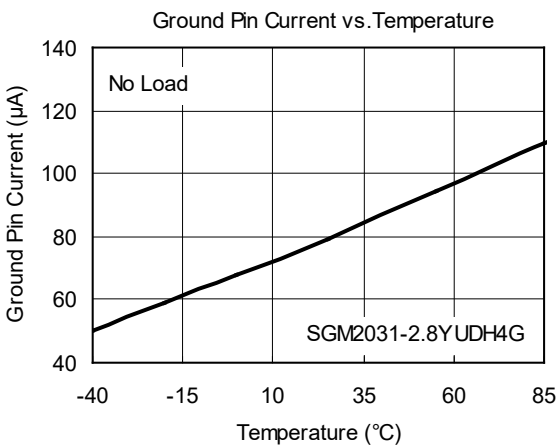
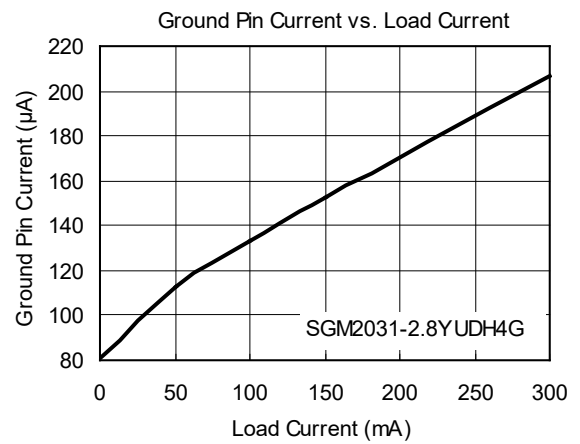
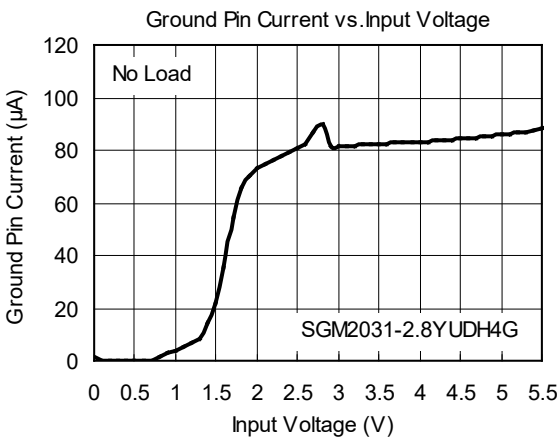
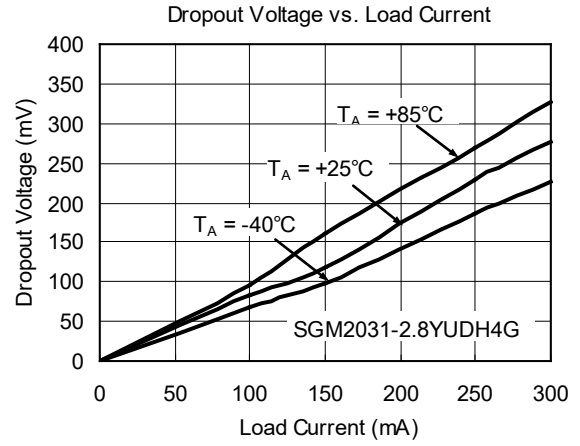
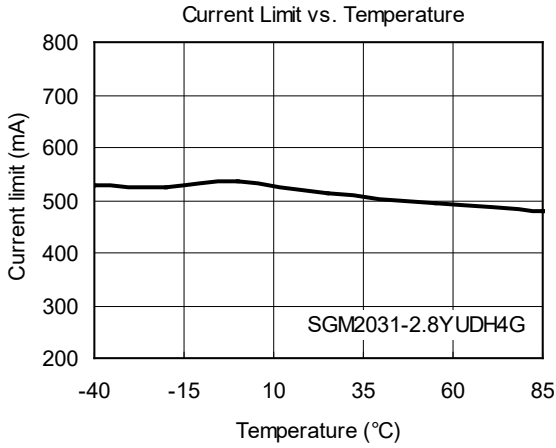
PARAMETER	SYMBOL	CONDITIONS	TEMP	MIN	TYP	MAX	UNITS	
Input Voltage	V _{IN}		+25°C	2.5		5.5	V	
Output Voltage Accuracy ⁽¹⁾		I _{OUT} = 0.1mA	+25°C	-3		+3	%	
Maximum Output Current ^{(1), (5)}			+25°C	250			mA	
Current Limit ⁽¹⁾	I _{LIM}		+25°C	260			mA	
Ground Pin Current	I _Q	No Load, EN = 2V	+25°C		95	200	μA	
Dropout Voltage ⁽²⁾		I _{OUT} = 1mA	+25°C		0.9		mV	
		I _{OUT} = 250mA			230	400		
Line Regulation ⁽¹⁾	ΔV _{LNR}	V _{IN} = 2.5V or (V _{OUT} + 0.5V) to 5.5V, I _{OUT} = 1mA	+25°C		0.02	0.05	%/V	
Load Regulation	ΔV _{LDR}	I _{OUT} = 0.1mA to 250mA, C _{OUT} = 1μF, V _{OUT} > 2V	+25°C		0.002	0.005	%/mA	
		I _{OUT} = 0.1mA to 250mA, C _{OUT} = 1μF, V _{OUT} ≤ 2V			0.004	0.008		
Output Voltage Noise	e _n	f = 10Hz to 100kHz, C _{OUT} = 10μF	+25°C		140		μV _{RMS}	
Power Supply Rejection Ratio	PSRR	I _{OUT} = 50mA, C _{OUT} = 1μF, V _{IN} = V _{OUT} + 1V	f = 217Hz	+25°C		72		dB
			f = 1kHz	+25°C		72		dB
Shutdown⁽³⁾								
EN Input Threshold	V _{IH}	V _{IN} = 2.5V to 5.5V, V _{EN} = -0.3V to V _{IN}	Full		1.5		V	
	V _{IL}		Full			0.3		
EN Input Bias Current	I _{B(SHDN)}	EN = 0V and EN = 5.5V	+25°C		0.01	1	μA	
			Full		0.01			
Shutdown Supply Current	I _{Q(SHDN)}	EN = 0.4V	+25°C		0.01	1	μA	
			Full		0.01			
Shutdown Exit Delay ⁽⁴⁾		C _{OUT} = 1μF, No Load	+25°C		10		μs	
Thermal Protection								
Thermal Shutdown Temperature	T _{SHDN}				150		°C	
Thermal Shutdown Hysteresis	ΔT _{SHDN}				15		°C	

NOTES:

- V_{IN} = V_{OUT (NOMINAL)} + 0.5V or 2.5V, whichever is greater.
- The dropout voltage is defined as V_{IN} - V_{OUT}, when V_{OUT} is 100mV below the value of V_{OUT} for V_{IN} = V_{OUT} + 0.5V. (Only applicable for V_{OUT} = +2.5V to +5.0V.)
- V_{EN} = -0.3V to V_{IN}
- Time needed for V_{OUT} to reach 90% of final value.
- Maximum output current is affected by PCB layout, size of metal trace, the thermal conduction path between metal layers, operating temperature and the other environment factor of system.

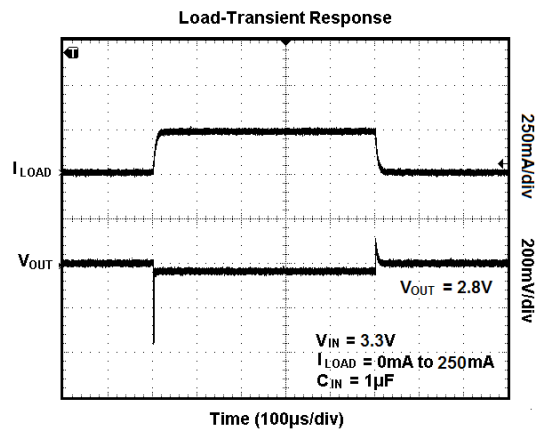
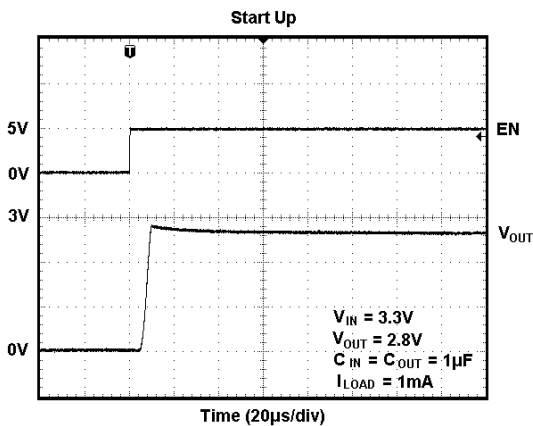
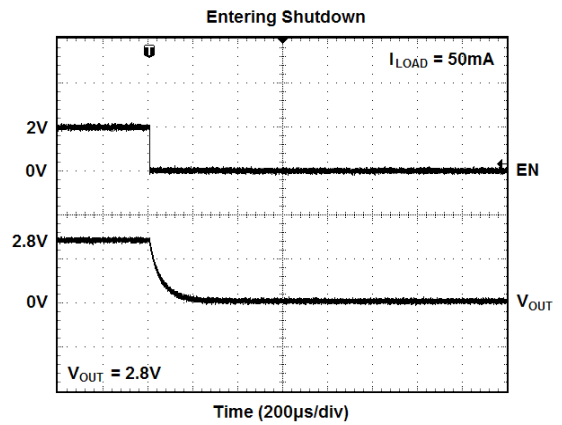
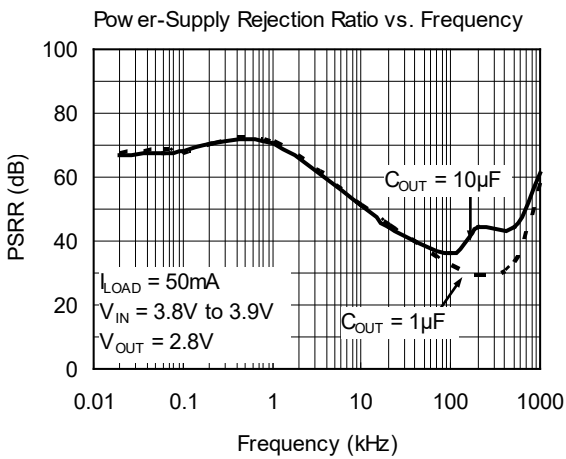
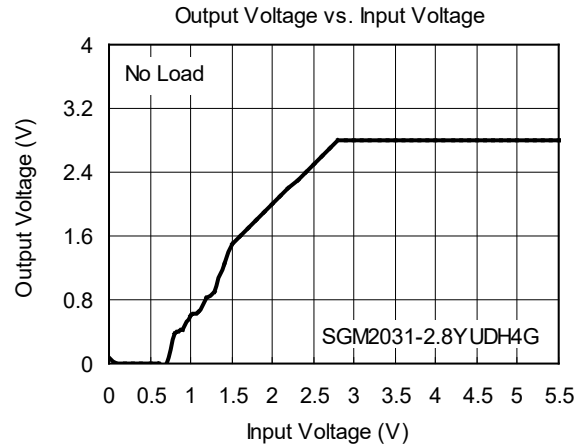
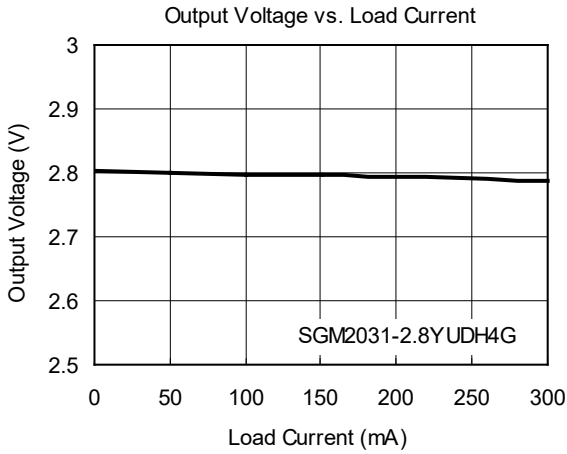
TYPICAL PERFORMANCE CHARACTERISTICS

$V_{IN} = V_{OUT (NOMINAL)} + 0.5V$ or $2.5V$ (whichever is greater), $C_{IN} = 1\mu F$, $C_{OUT} = 1\mu F$, $T_A = +25^\circ C$, unless otherwise noted.



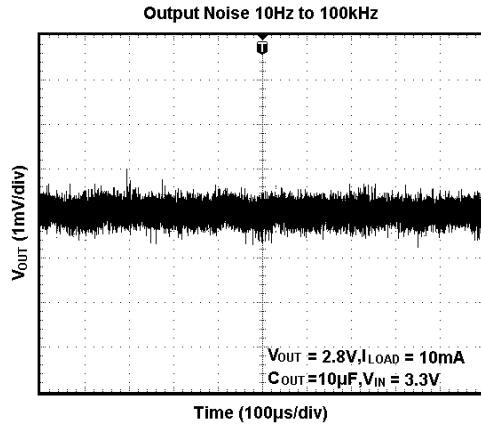
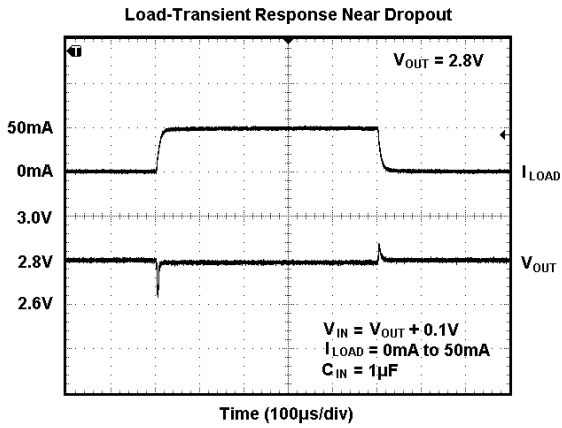
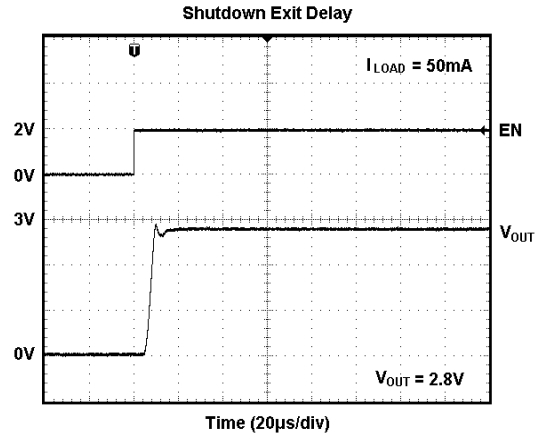
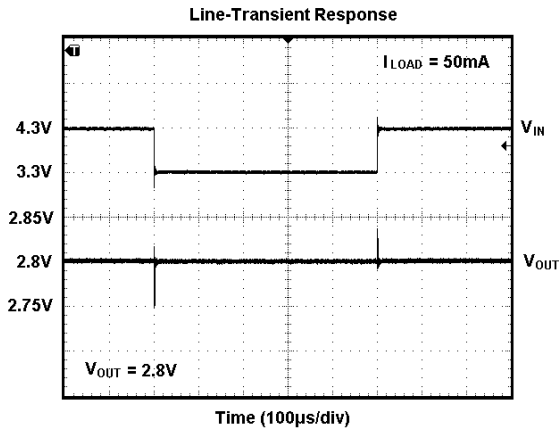
TYPICAL PERFORMANCE CHARACTERISTICS (continued)

$V_{IN} = V_{OUT (NOMINAL)} + 0.5V$ or $2.5V$ (whichever is greater), $C_{IN} = 1\mu F$, $C_{OUT} = 1\mu F$, $T_A = +25^\circ C$, unless otherwise noted.



TYPICAL PERFORMANCE CHARACTERISTICS (continued)

$V_{IN} = V_{OUT (NOMINAL)} + 0.5V$ or $2.5V$ (whichever is greater), $C_{IN} = 1\mu F$, $C_{OUT} = 1\mu F$, $T_A = +25^\circ C$, unless otherwise noted.



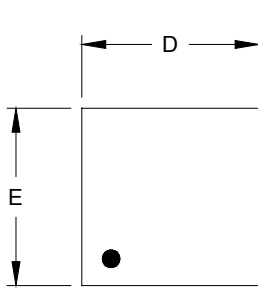
REVISION HISTORY

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

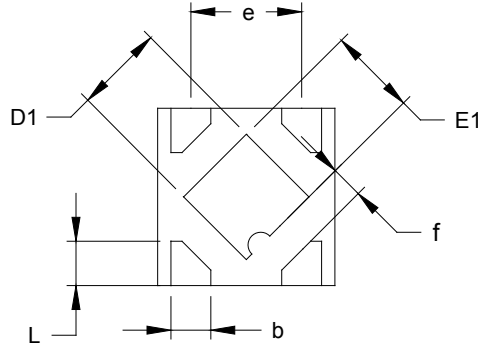
MAY 2016 – REV.B.1 to REV.B.2	Page
Changed Normalized Output Voltage vs. Temperature.....	6
<hr/>	
OCTOBER 2014 – REV.B to REV.B.1	Page
Changed Typical Performance Characteristics section	7
Changed entering shutdown as same as SGM2019	7
<hr/>	
APRIL 2014 – REV.A.4 to REV.B	Page
Changed Electrical Characteristics section	5
Changed Maximum Output Current	5
Added Absolute Maximum Ratings	3
Changed Package Thermal Resistance.....	3
Changed Electrical Characteristics section	5
Added note 5.....	5

PACKAGE OUTLINE DIMENSIONS

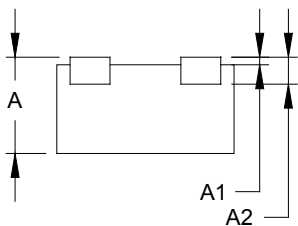
UTDFN-1×1-4L



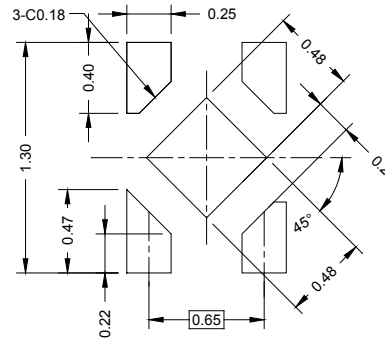
TOP VIEW



BOTTOM VIEW



SIDE VIEW

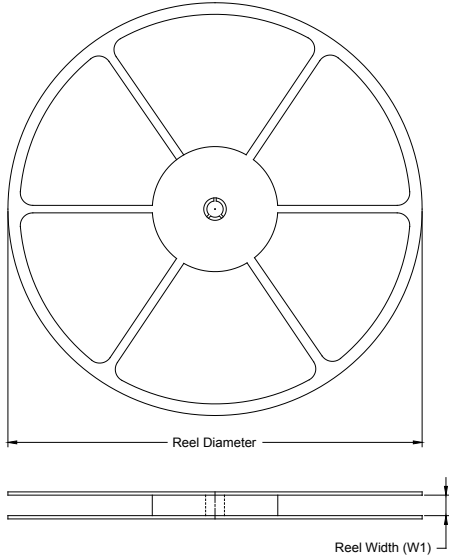


RECOMMENDED LAND PATTERN (Unit: mm)

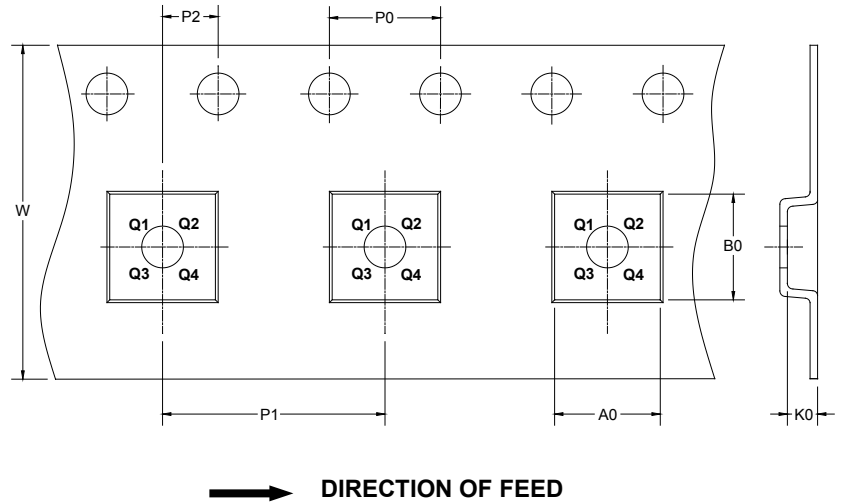
Symbol	Dimensions In Millimeters		
	MIN	MOD	MAX
A	0.500	0.550	0.600
A1	0.000		0.050
A2	0.152 REF		
D	0.950	1.000	1.050
D1	0.450	0.500	0.550
E	0.950	1.000	1.050
E1	0.450	0.500	0.550
b	0.175	0.225	0.275
e	0.625 BSC		
f	0.195 REF		
L	0.200	0.250	0.300

TAPE AND REEL INFORMATION

REEL DIMENSIONS



TAPE DIMENSIONS



NOTE: The picture is only for reference. Please make the object as the standard.

KEY PARAMETER LIST OF TAPE AND REEL

Package Type	Reel Diameter	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P0 (mm)	P1 (mm)	P2 (mm)	W (mm)	Pin1 Quadrant
UTDFN-1×1-4L	7"	9.0	1.20	1.20	0.60	4.0	2.0	2.0	8.0	Q1

000001

PACKAGE INFORMATION

CARTON BOX DIMENSIONS



NOTE: The picture is only for reference. Please make the object as the standard.

KEY PARAMETER LIST OF CARTON BOX

Reel Type	Length (mm)	Width (mm)	Height (mm)	Pizza/Carton
7" (Option)	368	227	224	8
7"	442	410	224	18

DD0002

单击下面可查看定价，库存，交付和生命周期等信息

[>>SGMICRO\(圣邦微电子\)](#)