

2uA Ultra-Low Quiescent Current, 1.2A Output Synchronous BUCK

DESCRIPTION

The ETA3427 is a high-efficiency, DC-to-DC step-down switching regulator, capable of delivering up to 1.2A of output current. It has an ultra-low quiescent current 2uA when there is no load. Running at a fixed frequency of 1.4MHz allows the use of small inductance value and low DCR inductors, thereby achieving higher efficiencies. Other external components, such as ceramic input and output caps, can also be small due to higher switching frequency, while maintaining exceptional low noise output voltages. Internal soft-start control circuitry reduces inrush current. Short-circuit and thermal-overload protection improves design reliability.

ETA3427 is housed in a tiny SOT23-5 and DFN2x2-6 package.

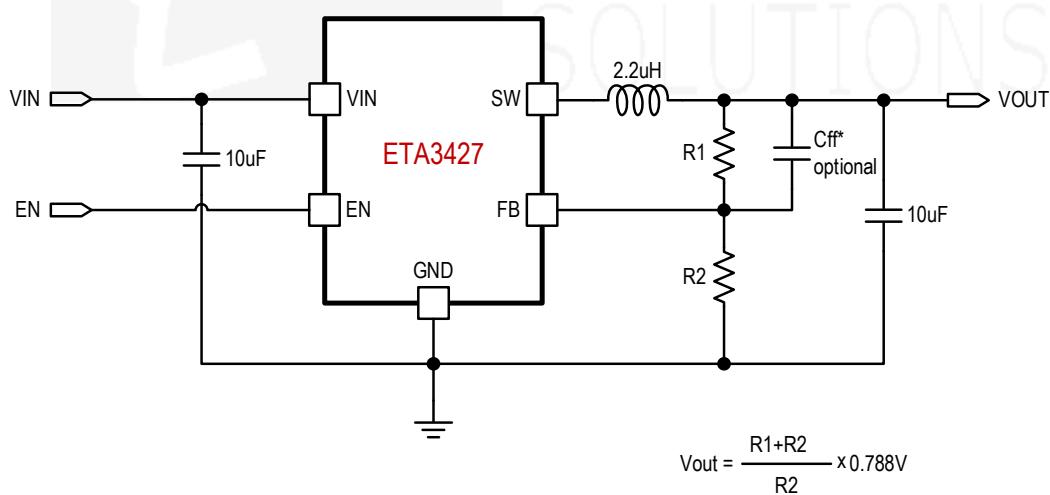
FEATURES

- ◆ 2uA No Switching Standby Current
- ◆ Up to 96% Efficiency
- ◆ Up to 1.2A Max Output Current
- ◆ 1.4MHz Frequency
- ◆ Light Load Operation
- ◆ Internal Compensation
- ◆ Tiny SOT23-5 and DFN2x2-6 Package
- ◆ RoHS Compliant

APPLICATIONS

- ◆ Wearable
- ◆ IOT
- ◆ Energy Harvest
- ◆ Battery Powered Devices

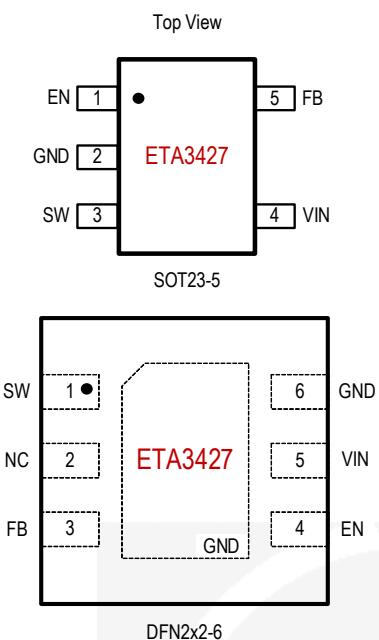
TYPICAL APPLICATION



ORDERING INFORMATION

PART No.	PACKAGE	TOP MARK	Pcs/Reel
ETA3427S2F	SOT23-5	I1YW	3000
ETA3427D2G	DFN2x2-6	IbYW	3000

PIN CONFIGURATION



ABSOLUTE MAXIMUM RATINGS

(Note: Exceeding these limits may damage the device. Exposure to absolute maximum rating conditions for long periods may affect device reliability.)

VIN, SW, OUT, EN Voltage	-0.3V to 7.5V
SW to ground current.....	Internally limited
Operating Temperature Range	-40°C to 85°C
Storage Temperature Range	-55°C to 150°C
Thermal Resistance θ_{JA}	θ_{JC}
SOT23-5.....	190..... 90 °C /W
DFN2x2-6.....	165..... 45 °C /W
Lead Temperature (Soldering, 10sec)	260°C
ESD HBM (Human Body Mode)	3KV

ELECTRICAL CHARACTERISTICS

($V_{IN} = 5V$, unless otherwise specified. Typical values are at $TA = 25^\circ C$.)

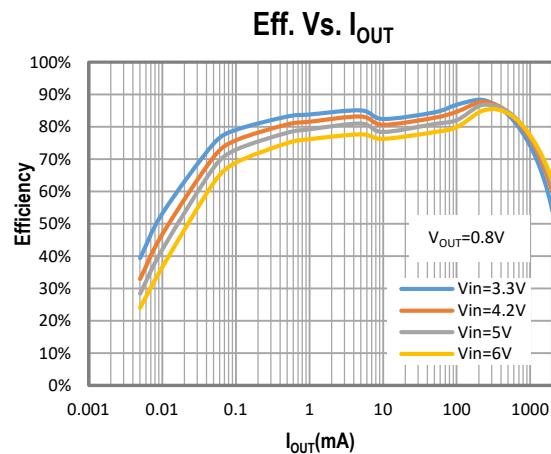
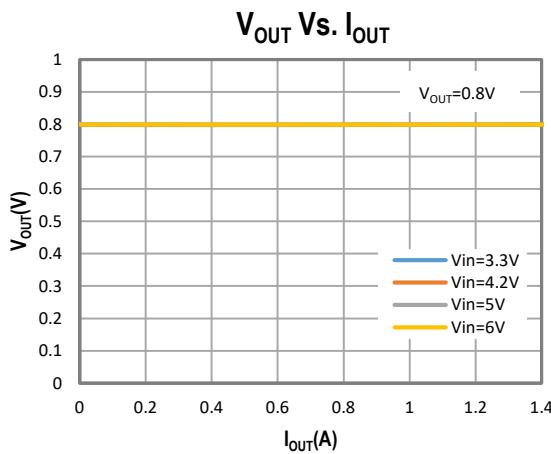
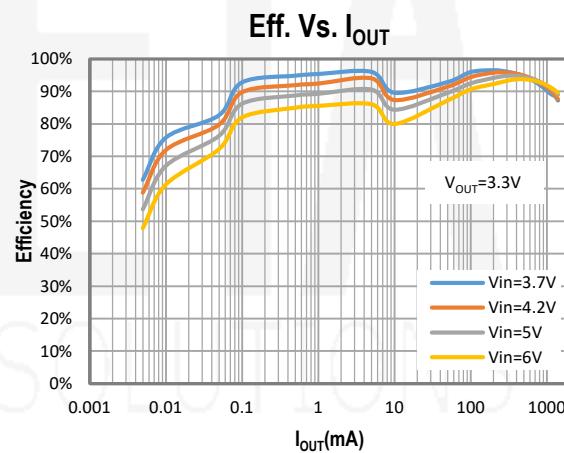
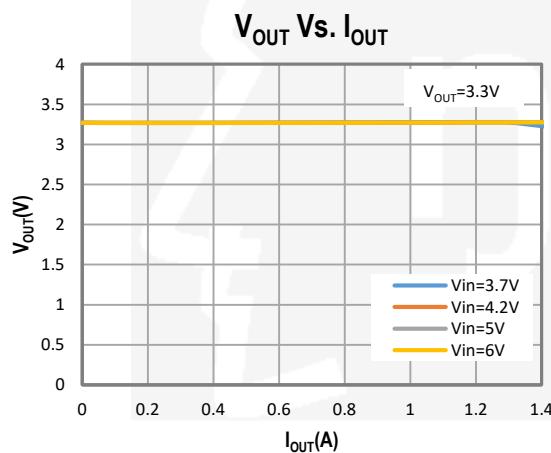
PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Input Voltage Range		2.6		7	V
Input UVLO	Rising, Hysteresis=300mV		2.45		V
Input Supply Current	No Switching	2	3		μA
Input Shutdown Current		0.1			μA
FB Voltage		0.778	0.788	0.798	V
Load Regulation	$V_{IN} = 5V, I_{OUT}=0A$ to $1A$	0.3			%/A
Line Regulation	$V_{IN} = 2.7$ to $5.5V$, $I_{OUT}=0.5A$		0.05		%/V
Switching Frequency		1.05	1.4	1.75	MHz
NMOS Switch On Resistance	$I_{SW} = 200mA$	120			$m\Omega$
PMOS Switch On Resistance	$I_{SW} = 200mA$	250			$m\Omega$
PMOS Switch Current Limit		1.7			A
SW Leakage Current	$V_{OUT}=7V, V_{SW}=0$ or $7V$, $EN= GND$		1		μA
EN Input Current	$V_{EN}=V_{IN}$ or $0V$		1		μA
EN Input Low Voltage			0.4		V
EN Input High Voltage		1.5			V
Thermal Shutdown	Rising, Hysteresis= $30^\circ C$	150			$^\circ C$

PIN DESCRIPTION

SOT23-5 PIN #	DFN2x2-6 PIN #	NAME	DESCRIPTION
1	4	EN	Enable Pin. Pull high to enable, pull low to disable.
2	6, 7	GND	Ground
3	1	SW	Inductor Connection. Connect a 2.2uH inductor between SW and the regulator output.
4	5	VIN	Supply Voltage. Bypass with a 10µF ceramic capacitor to GND
5	3	FB	FB Voltage Pin. Connect an external resistor divider from the output to FB and GND to set the output voltage.
	2	NC	Not Connected

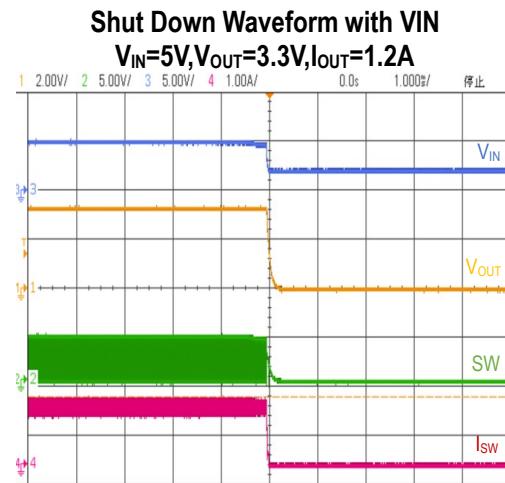
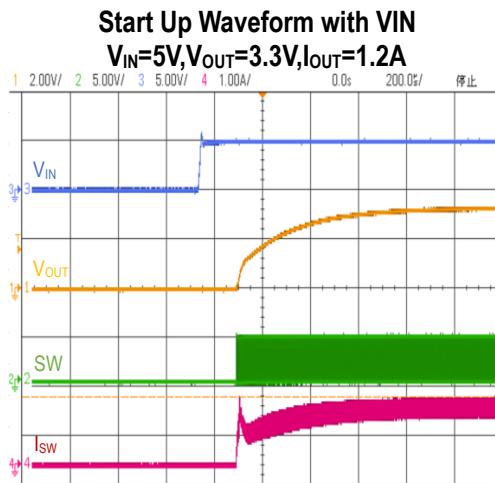
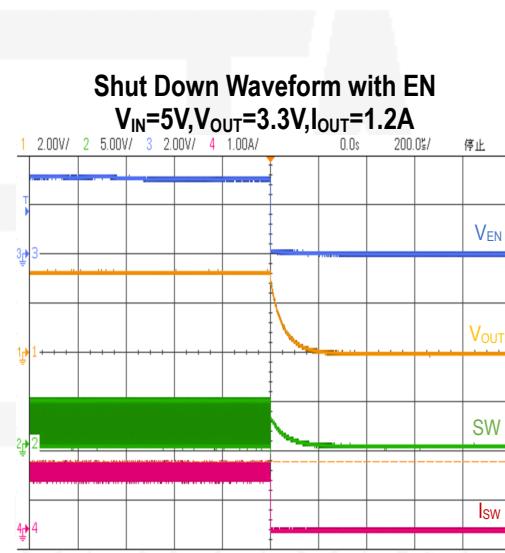
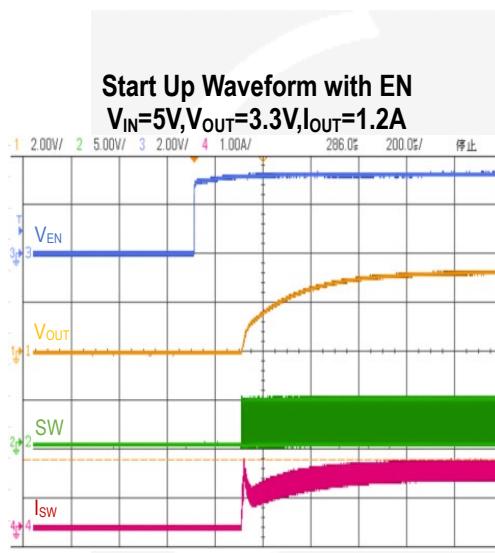
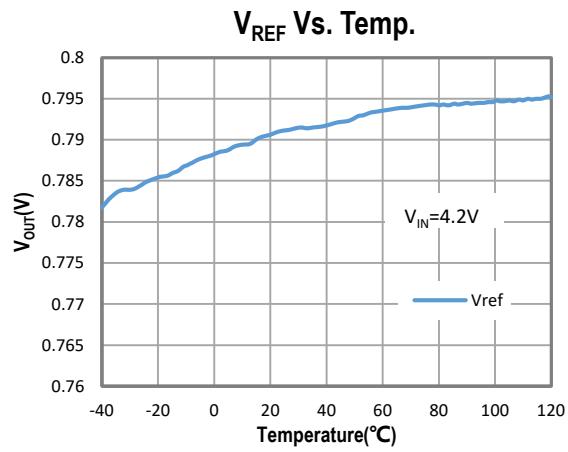
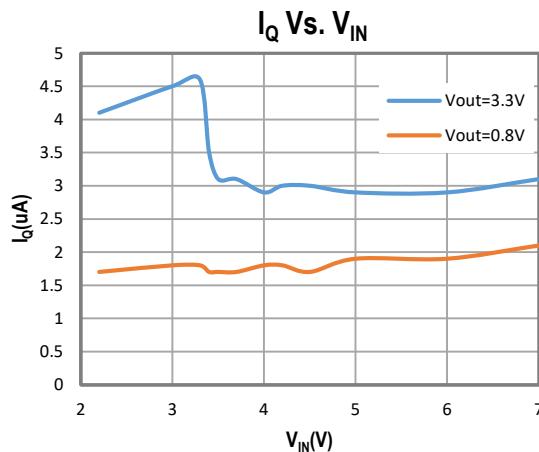
TYPICAL CHARACTERISTICS

(Typical values are at $T_A = 25^\circ\text{C}$ unless otherwise specified.)

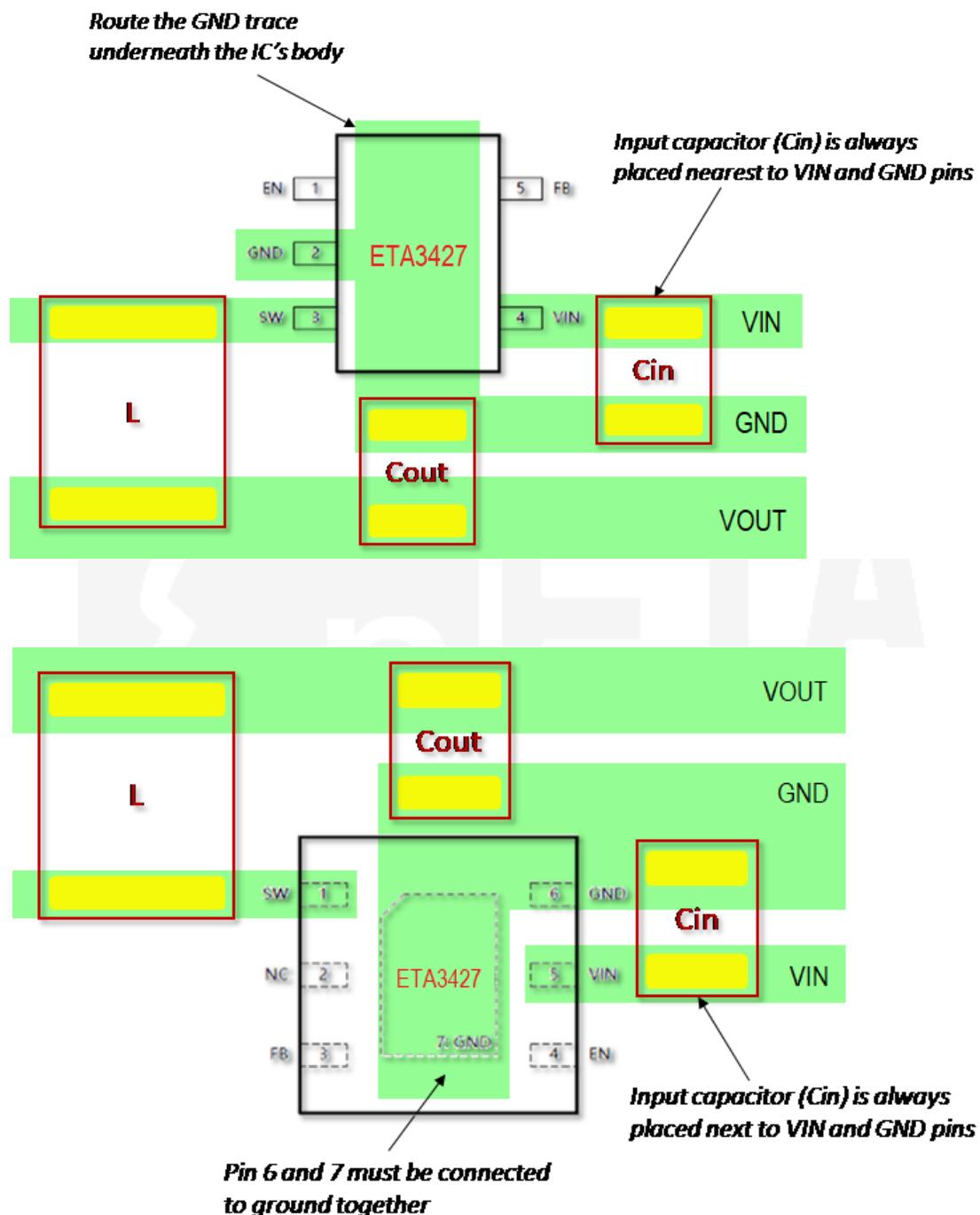


TYPICAL CHARACTERISTICS cont'

(Typical values are at $T_A = 25^\circ\text{C}$ unless otherwise specified.)

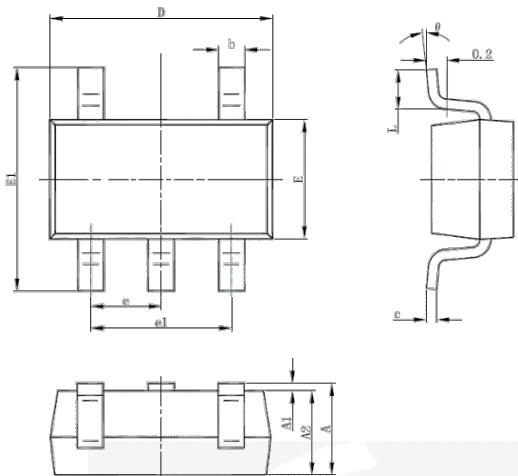


PCB GUIDELINES



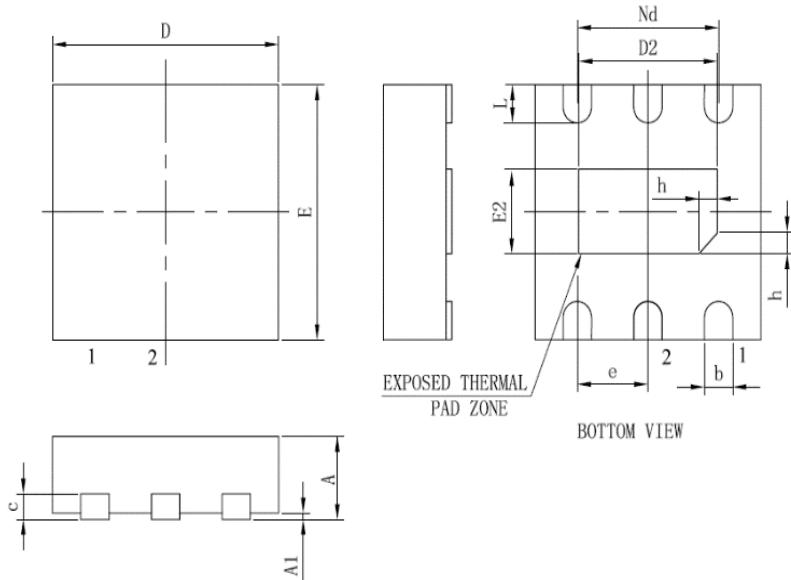
PACKAGE OUTLINE

Package: SOT23-5



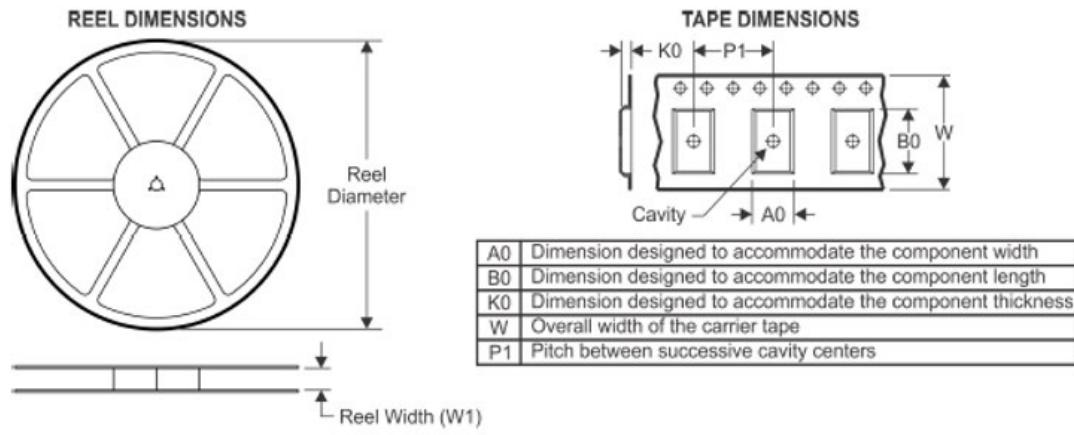
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

Package: DFN2x2-6

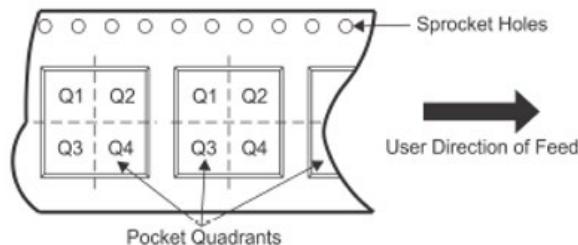


SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.70	0.75	0.80
A1	—	0.02	0.05
b	0.25	0.30	0.35
c	0.18	0.20	0.25
D	1.95	2.00	2.05
D2	1.00	1.23	1.45
e	0.65BSC		
Nd	1.30BSC		
E	1.95	2.00	2.05
E2	0.50	0.68	0.85
L	0.25	0.30	0.40
h	0.10	0.15	0.20

TAPE AND REEL INFORMATION



QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



Device	Package Type	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
ETA3427S2F	SOT23-5	5	3000	180	9.5	3.17	3.23	1.37	4	8	Q3
ETA3427D2G	DFN2x2-6	6	3000	180	9.5	2.3	2.3	1.1	4	8	Q1