Ultra Low Current Consumption and Low Dropout Linear Regulator

Features

- **Typically 1μA no-load supply current**
- **Guaranteed 250mA output current (3.0V output @ VIN ≧ VOUT +1V)**
- **Input voltage range: 2.5V~6.5V**
- **1.5V ~ 5.0V output voltage**
- **Dropout Voltage is 150mV @ 100mA Load**
- **Built-in over-current protection**
- **Stable with low cost ceramic capacitors**

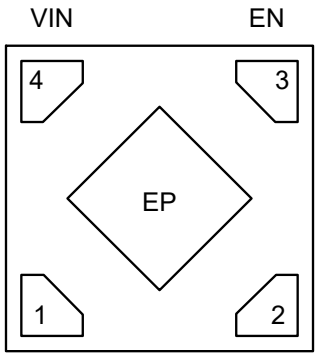
Applications

- **Power supply for battery-powered devices**
- **Cellular phones and other portable devices**

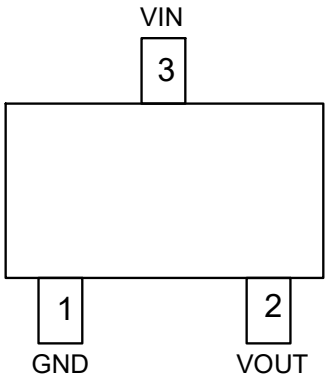
General Description

The G2260 is a low dropout linear regulator with ultra low current consumption and high output voltage accuracy. The supply current at no-load is typically 1μA. The built-in low-on-resistance realizes low dropout voltage and high output current. Minimum output current limit is set at 250mA. The G2260 is designed to employ I/O capacitors are as small as 0.1μF, and comes in space saving SOT-23-3, SOT-23-5, UDFN1X1-4 packages.

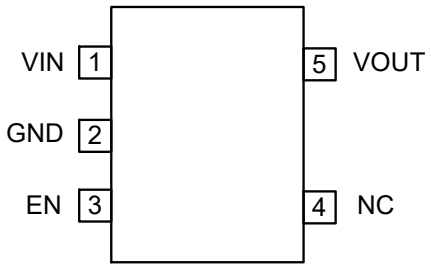
Pin Configuration



G2260 UDFN1X1-4

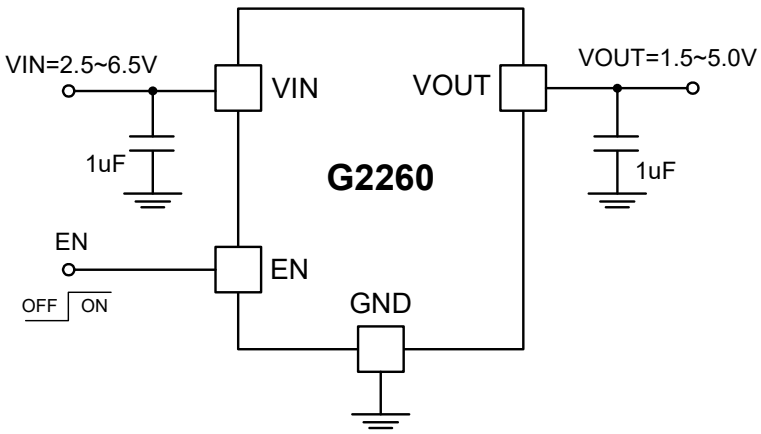


G2260 SOT-23-3



G2260 SOT23-5
(Top View)

Typical Application Circuit



Ordering Information

ORDER NUMBER	TEMP. RANGE	PACKAGE (Green)
G2260-XXXT73U	-40°C to +85°C	SOT-23-3
G2260-XXXT11U	-40°C to +85°C	SOT-23-5
G2260-XXXN61U	-40°C to +85°C	UDFN1X1-4

Note: T7: SOT-23-3; T1: SOT-23-5; N6: UDFN1X1-4

1 & 3: Bonding Code

U: Tape & Reel

Green : Lead Free / Halogen Free

XXX: Specifies the detection voltage (1.5V to 5V, 100mV steps)

Output Voltage	SOT-23-3	MARKING	SOT-23-5	MARKING	UDFN1X1-4	MARKING
1.5V±1.0%	G2260-150T73U		G2260-150T11U		G2260-150N61U	
1.6V±1.0%	G2260-160T73U		G2260-160T11U		G2260-160N61U	
1.7V±1.0%	G2260-170T73U		G2260-170T11U		G2260-170N61U	
1.8V±1.0%	G2260-180T73U		G2260-180T11U		G2260-180N61U	
1.9V±1.0%	G2260-190T73U		G2260-190T11U		G2260-190N61U	
2.0V±1.0%	G2260-200T73U		G2260-200T11U		G2260-200N61U	
2.1V±1.0%	G2260-210T73U		G2260-210T11U		G2260-210N61U	
2.2V±1.0%	G2260-220T73U		G2260-220T11U		G2260-220N61U	
2.3V±1.0%	G2260-230T73U		G2260-230T11U		G2260-230N61U	
2.4V±1.0%	G2260-240T73U		G2260-240T11U		G2260-240N61U	
2.5V±1.0%	G2260-250T73U		G2260-250T11U		G2260-250N61U	
2.6V±1.0%	G2260-260T73U		G2260-260T11U		G2260-260N61U	
2.7V±1.0%	G2260-270T73U		G2260-270T11U		G2260-270N61U	
2.8V±1.0%	G2260-280T73U		G2260-280T11U		G2260-280N61U	
2.9V±1.0%	G2260-290T73U		G2260-290T11U		G2260-290N61U	
3.0V±1.0%	G2260-300T73U		G2260-300T11U		G2260-300N61U	
3.1V±1.0%	G2260-310T73U		G2260-310T11U		G2260-310N61U	
3.2V±1.0%	G2260-320T73U		G2260-320T11U		G2260-320N61U	
3.3V±1.0%	G2260-330T73U	226Jx	G2260-330T11U	226Jx	G2260-330N61U	20 Bx
3.4V±1.0%	G2260-340T73U		G2260-340T11U		G2260-340N61U	
3.5V±1.0%	G2260-350T73U		G2260-350T11U		G2260-350N61U	
3.6V±1.0%	G2260-360T73U		G2260-360T11U		G2260-360N61U	
3.7V±1.0%	G2260-370T73U		G2260-370T11U		G2260-370N61U	
3.8V±1.0%	G2260-380T73U		G2260-380T11U		G2260-380N61U	
3.9V±1.0%	G2260-390T73U		G2260-390T11U		G2260-390N61U	
4.0V±1.0%	G2260-400T73U		G2260-400T11U		G2260-400N61U	
4.1V±1.0%	G2260-410T73U		G2260-410T11U		G2260-410N61U	
4.2V±1.0%	G2260-420T73U		G2260-420T11U		G2260-420N61U	
4.3V±1.0%	G2260-430T73U		G2260-430T11U		G2260-430N61U	
4.4V±1.0%	G2260-440T73U		G2260-440T11U		G2260-440N61U	
4.5V±1.0%	G2260-450T73U		G2260-450T11U		G2260-450N61U	
4.6V±1.0%	G2260-460T73U		G2260-460T11U		G2260-460N61U	
4.7V±1.0%	G2260-470T73U		G2260-470T11U		G2260-470N61U	
4.8V±1.0%	G2260-480T73U		G2260-480T11U		G2260-480N61U	
4.9V±1.0%	G2260-490T73U		G2260-490T11U		G2260-490N61U	
5.0V±1.0%	G2260-500T73U		G2260-500T11U		G2260-500N61U	

Absolute Maximum Ratings

VIN to GND . . . . . -0.3V to +7V
VOUT to GND . . . . . -0.3V to VIN+0.3V
Thermal Resistance Junction to Ambient (θ_{JA})
SOT-23-3 . . . . . 260°C/W
SOT-23-5 . . . . . 260°C/W
UDFN1X1-4 . . . . . 150°C/W
Continuous Power Dissipation (T_A = +25°C)
SOT-23-3. . . . . .520mW
SOT-23-5. . . . . .520mW
UDFN1X1-4 . . . . . 930mW
Operating Temperature Range . . . . . -40°C to 85°C
Junction Temperature . . . . . 150°C
Storage Temperature Range . . . . . -55°C to 150°C
Reflow Temperature (soldering, 10 sec) . . . . . 260°C
EDS Susceptibility (Human Body Mode) 8KV
EDS Susceptibility (Machine Mode) 800V

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 in the operational sections of the specifications are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.
2. Device is ESD sensitive. Handling precaution recommended. The Human Body model is a 100pF capacitor discharged through a 1.5KΩ resistor into each pin.

Electrical characteristics

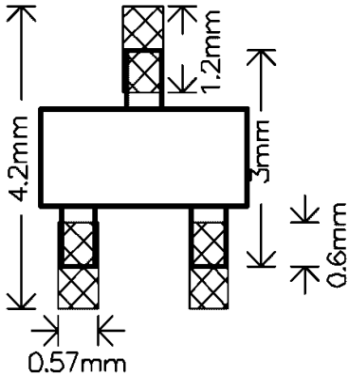
(VIN=VOUT+1V, VIN >2.5V, T_A=25°C)

The device is not guaranteed to function outside its operating conditions. Parameters with MIN and/or MAX limits are 100% tested at +25°C, unless otherwise specified.

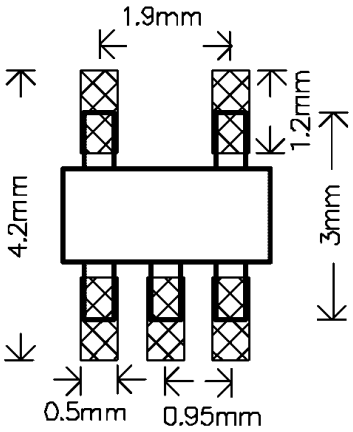
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage	V_{IN}		2.5	---	6.5	V
Output Voltage Accuracy	ΔV_{OUT}	Variation from specified V_{OUT}, V_{IN} = V_{OUT}+1.0V, I_{OUT}=30mA.	-1	---	1	%
Current Limit	I_{LIM}	V_{IN} = 4V	250	400	---	mA
Current consumption during operation	I_Q	V_{IN} = V_{OUT}+1.0V, I_{OUT}=0mA.	---	1.0	2.0	μA
Dropout Voltage	V_{DROP}	I_{OUT} =100mA, V_{OUT} =3V	---	150	---	mV
Line Regulation	V_{LNR}	V_{OUT}+1.0V<V_{IN}<5.5V, I_{OUT}=50mA	---	0.1	0.2	%/V
Load Regulation	V_{LDR}	V_{OUT} < 1.8V, 1mA ≦I_{OUT} ≦100mA	---	---	45	mV
		1.8V ≦V_{OUT} < 2.0V, 1mA ≦I_{OUT} ≦150mA				
		2.0V ≦V_{OUT}, 1mA ≦I_{OUT} ≦250mA				
Ripple Rejection	PSRR	f=100Hz, I_{OUT} =10mA	---	60	---	dB
Output Noise Voltage	V_N	I_{OUT} =30mA, f=100Hz~100kHz	---	400	---	μV_{RMS}
Short-circuit current	I_{SHORT}		---	200	---	mA
Enable Threshold	V_{EN_HI}	Enable High	1.2	---	---	V
	V_{EN_LO}	Enable Low	---	---	0.4	V
Enable Pin Input Current	I_{EN}	V_{EN}=5.5V	---	---	500	nA
Discharge Resistance	R_{DIS_LDO}		---	125	---	Ω

Minimum Footprint PCB Layout Section

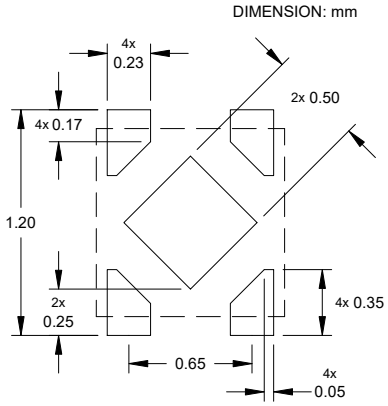
SOT-23-3



SOT-23-5



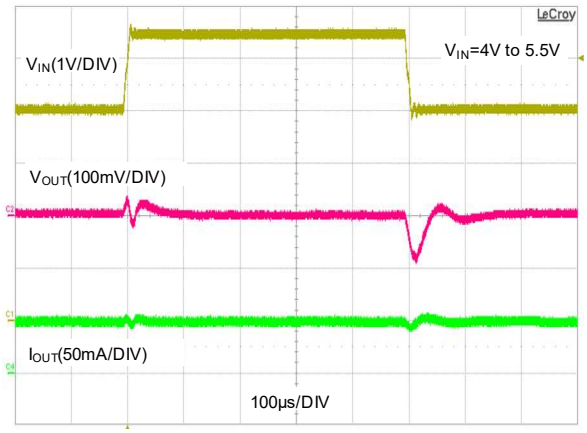
UDFN1X1-4



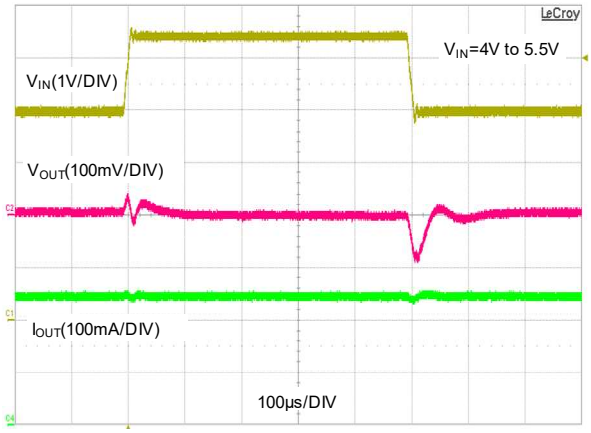
Typical Performance Characteristics

V_{IN}=V_{OUT}+1V, V_{IN}>2.5V C_{IN}=1μF, C_{OUT}=1μF,T_A=25°C, unless otherwise noted.

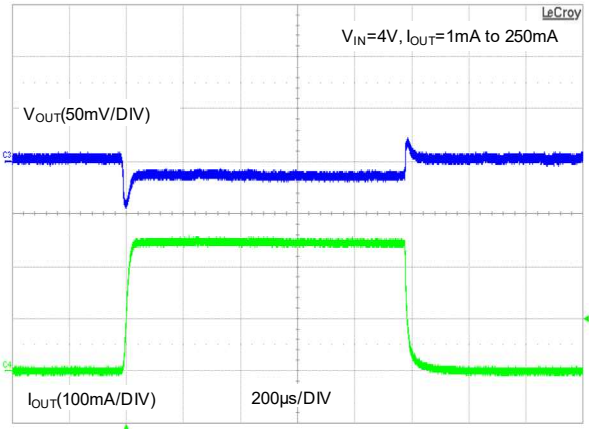
Line Transient Response



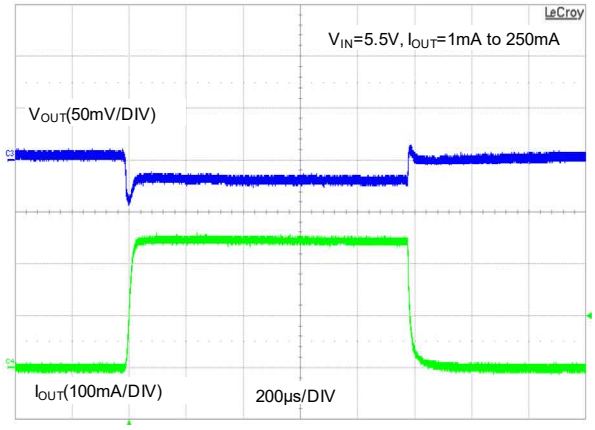
Line Transient Response



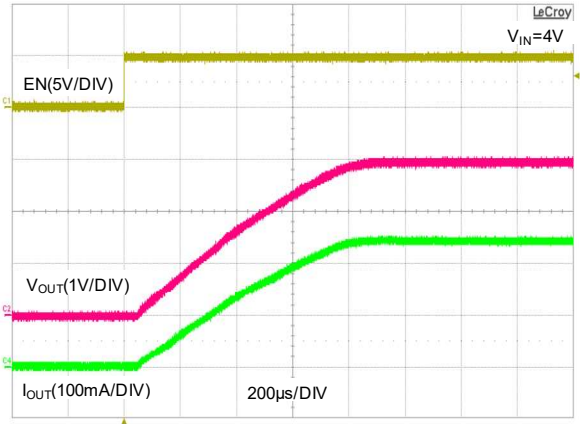
Load Transient Response



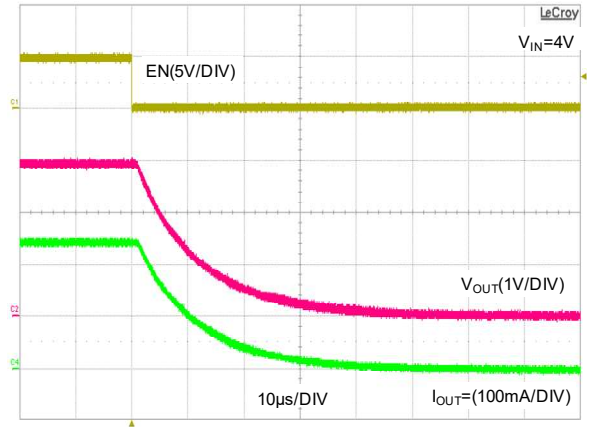
Load Transient Response



Power On from EN

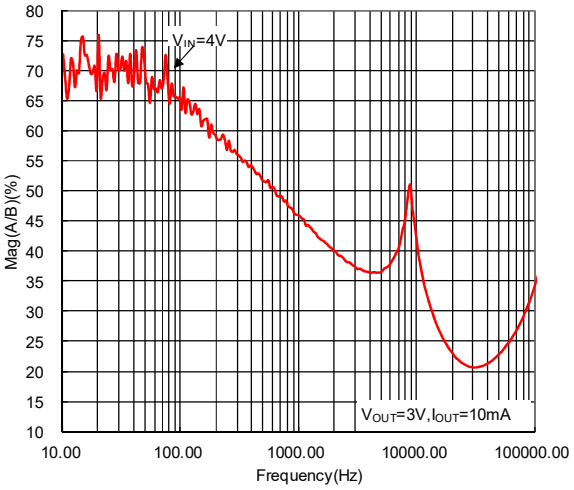


Power Off from EN

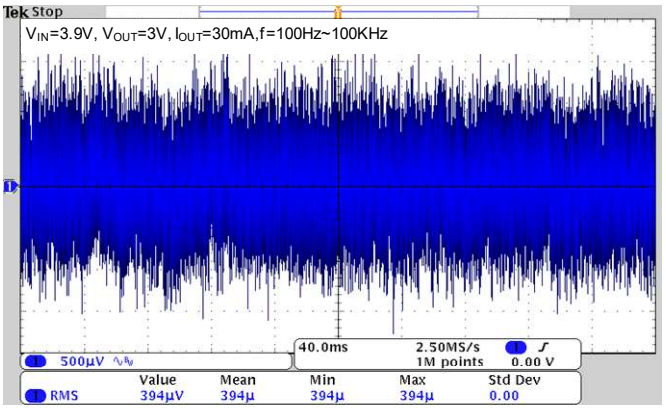


Typical Performance Characteristics (continued)

PSRR

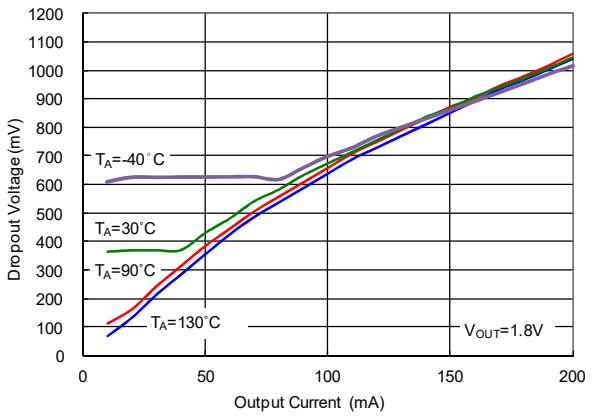


Output Noise

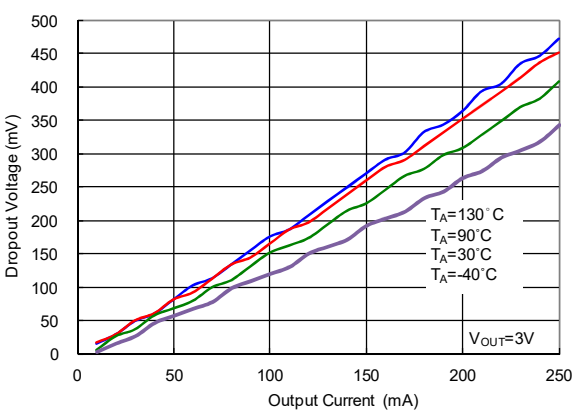


Typical Performance Characteristics (continued)

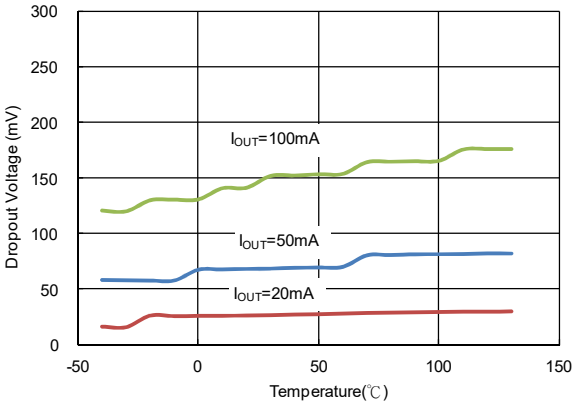
Dropout Voltage vs. Output Current



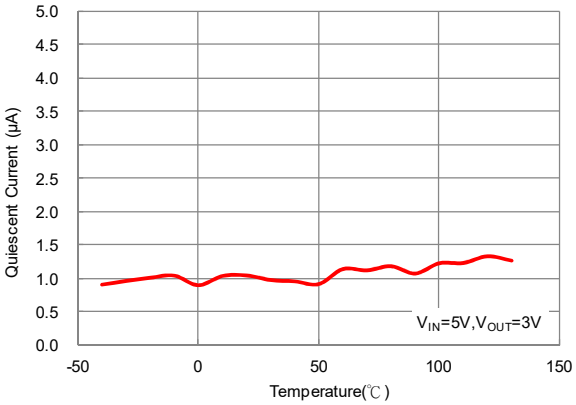
Dropout Voltage vs. Output Current



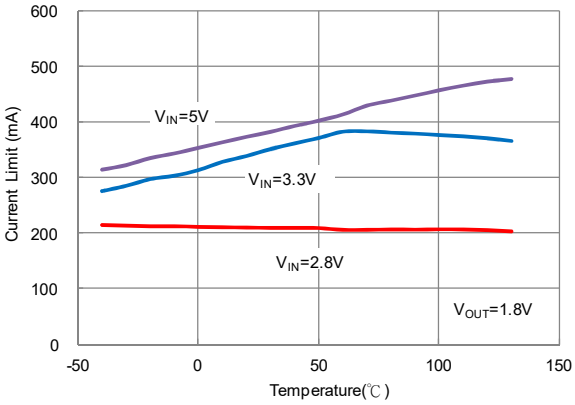
Dropout Voltage vs. Temperature



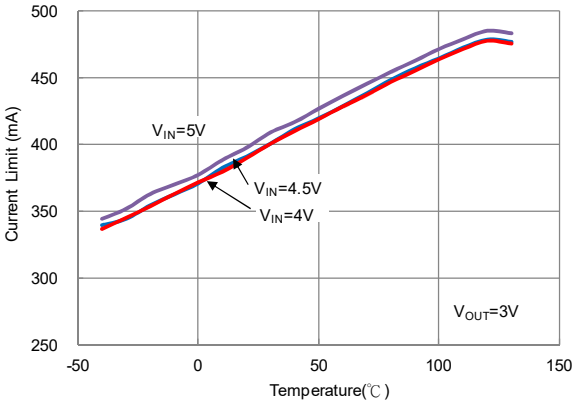
Quiescent Current vs. Temperature



Current Limit vs. Temperature

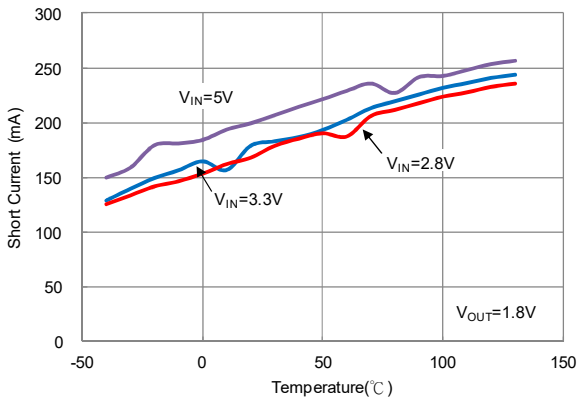


Current Limit vs. Temperature

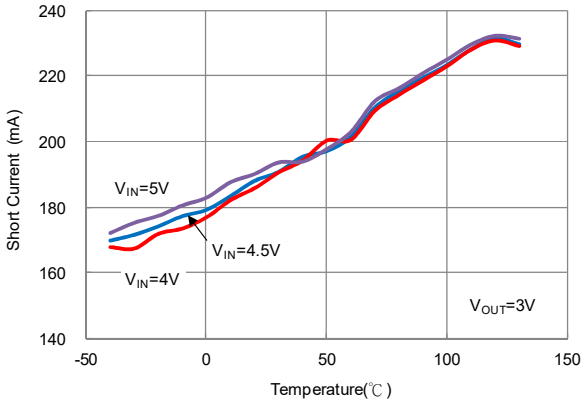


Typical Performance Characteristics (continued)

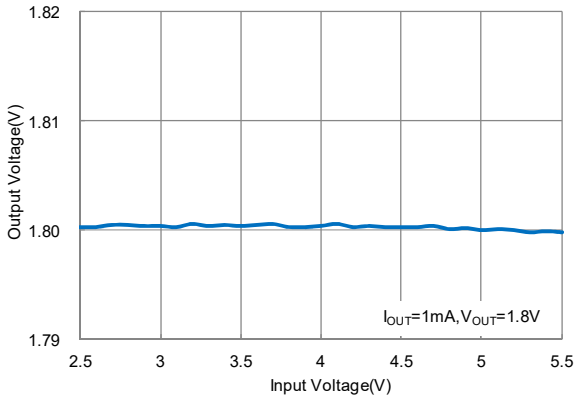
Short Current vs. Temperature



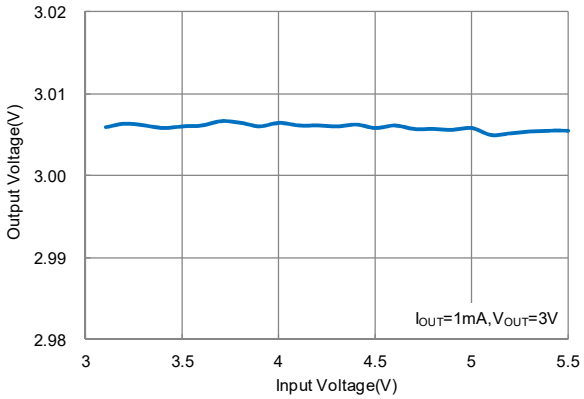
Short Current vs. Temperature



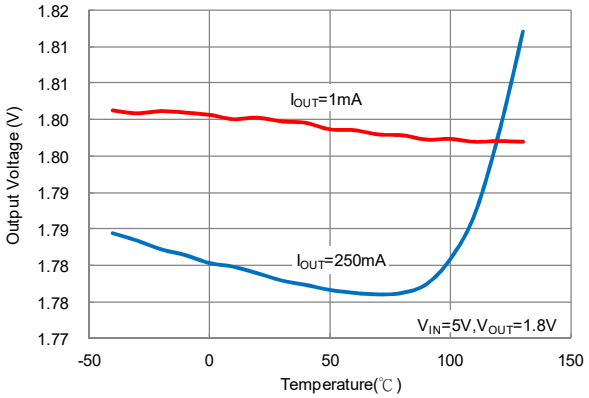
Output Voltage vs. Input Voltage



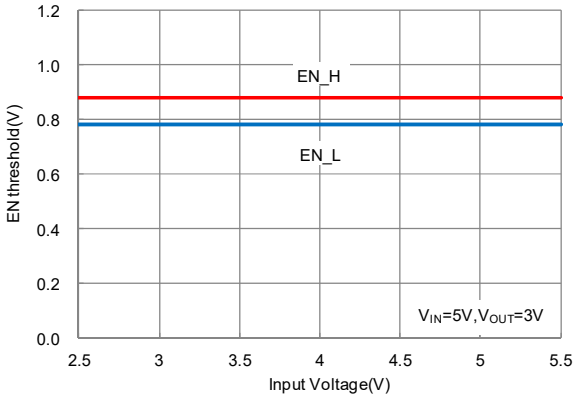
Output Voltage vs. Input Voltage



Output Voltage vs. Temperature

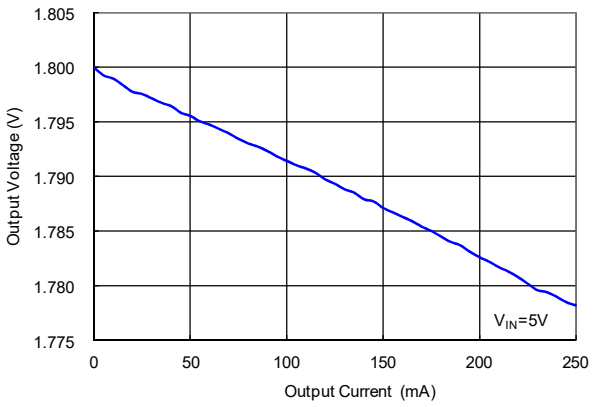


EN threshold vs. Input Voltage

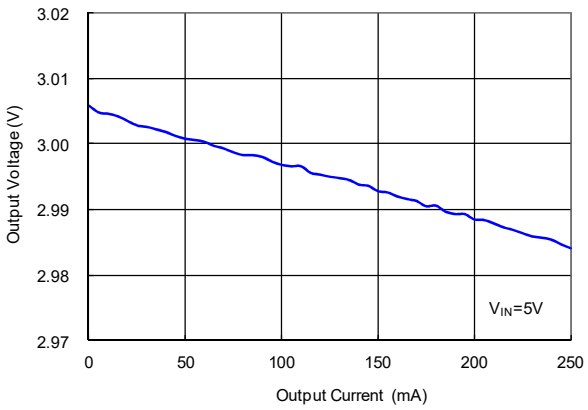


Typical Performance Characteristics (continued)

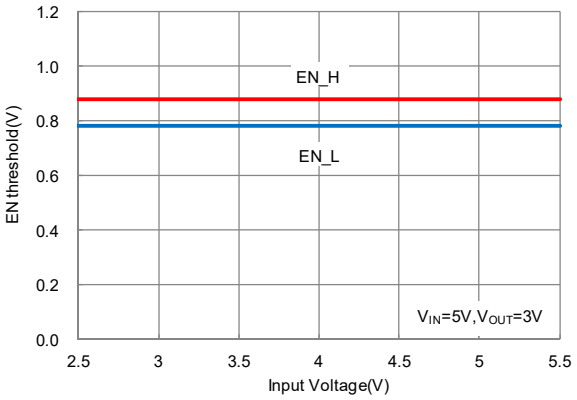
Output Voltage vs. Output Current



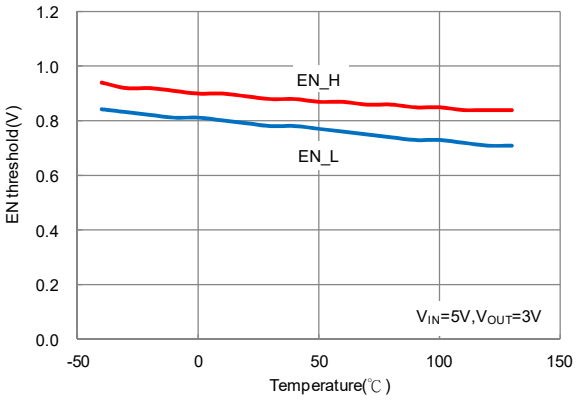
Output Voltage vs. Output Current



EN threshold vs. Input Voltage



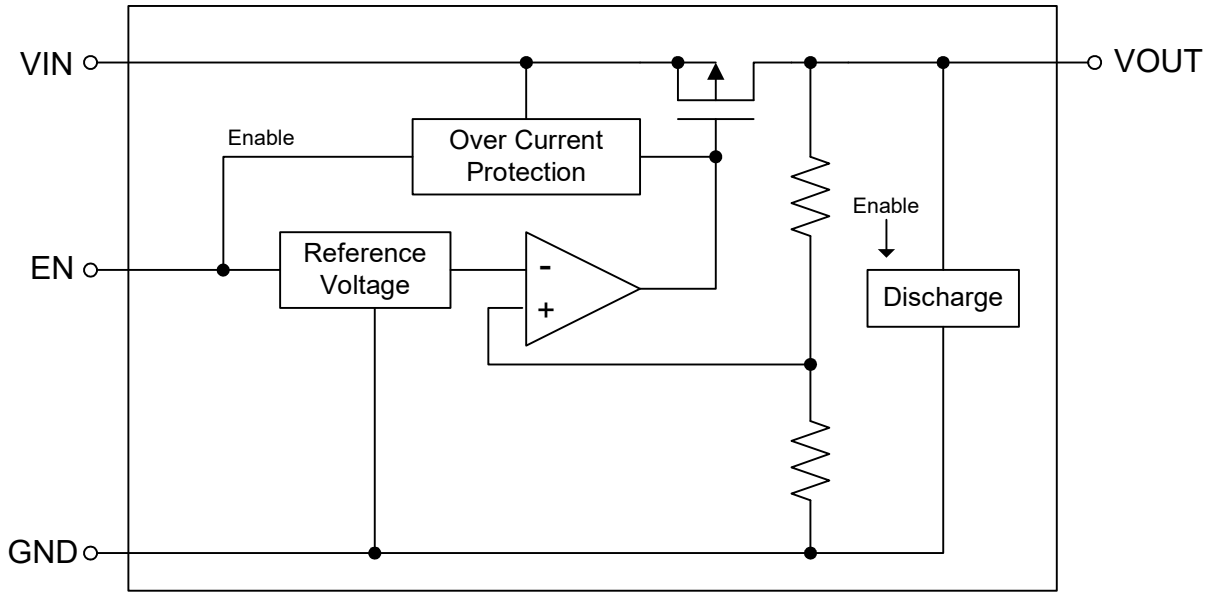
EN threshold vs. Temperature



Pin Descriptions

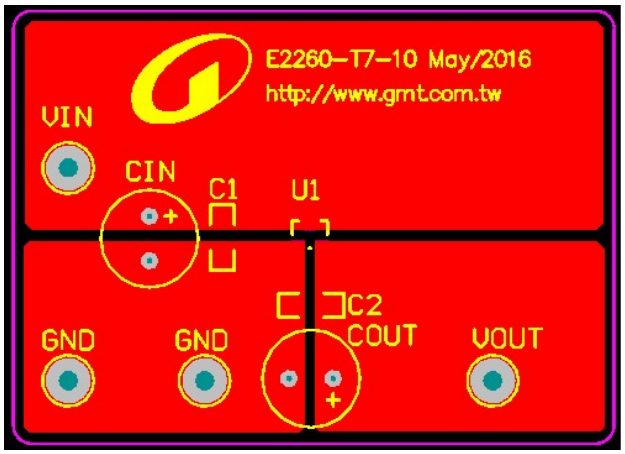
PIN NUMBER			PIN NAME	FUNCTION
SOT23-3	SOT23-5	UDFN1X1-4		
1	2	2,EP	GND	GND
2	5	1	VOUT	Output
3	1	4	VIN	Power Supply Input
---	3	3	EN	Enable

Block Diagram

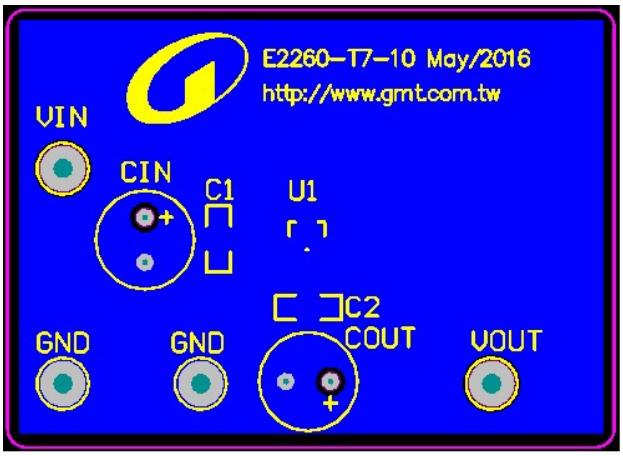


Board Layout

TOP EV G2260-T7-10

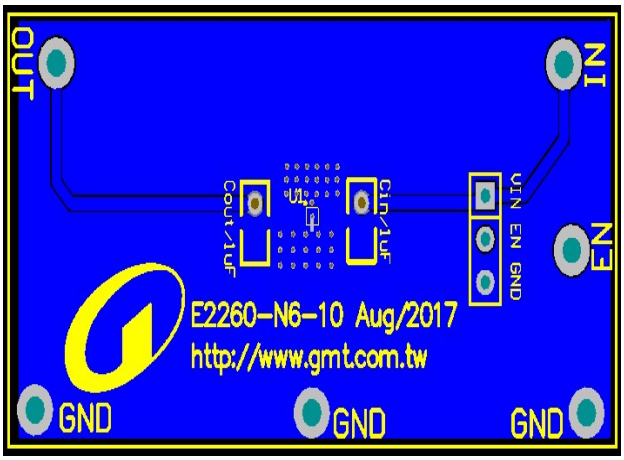


BOTTOM EV G2260-T7-10



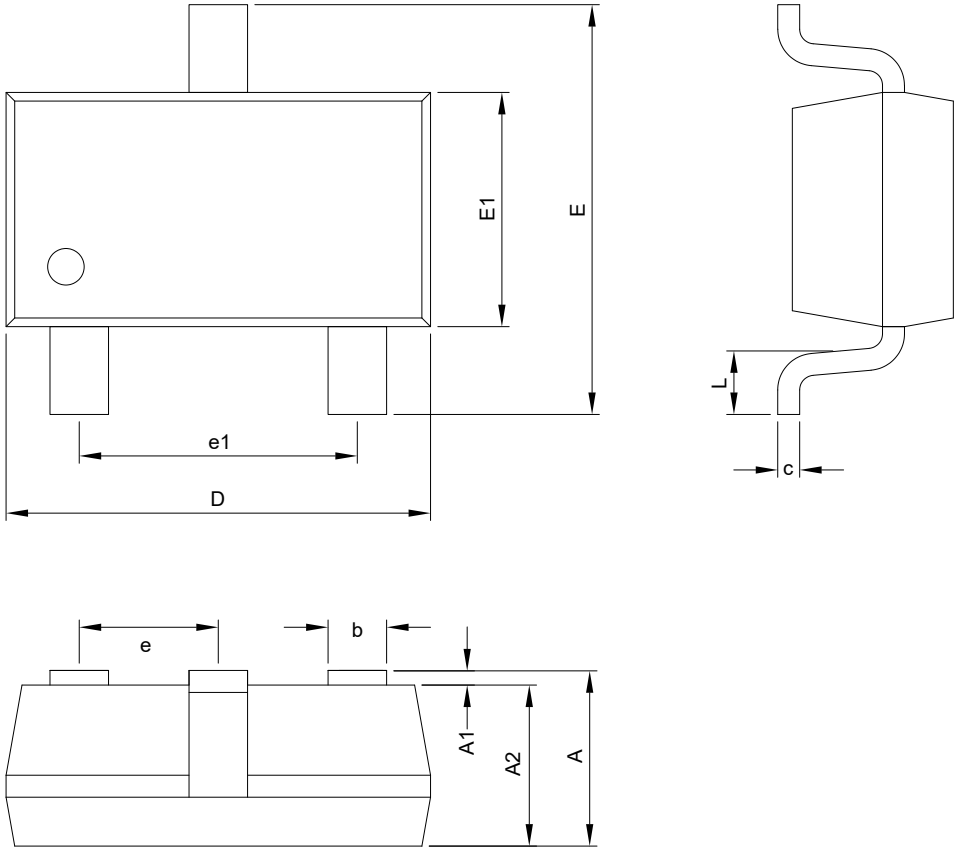
TOP EV G2260-N6-10

BOTTOM EV G2260-N6-10



Information	Board
Board Material	FR4
Size	50mmx34mm(SOT-23-3) 50mmx25mm(UDFN1*1-4)
Board Thickness	1.6mm
Layers	2
Copper Thickness	1 oz

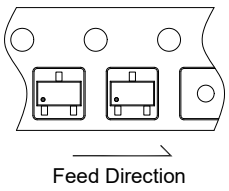
Package Information



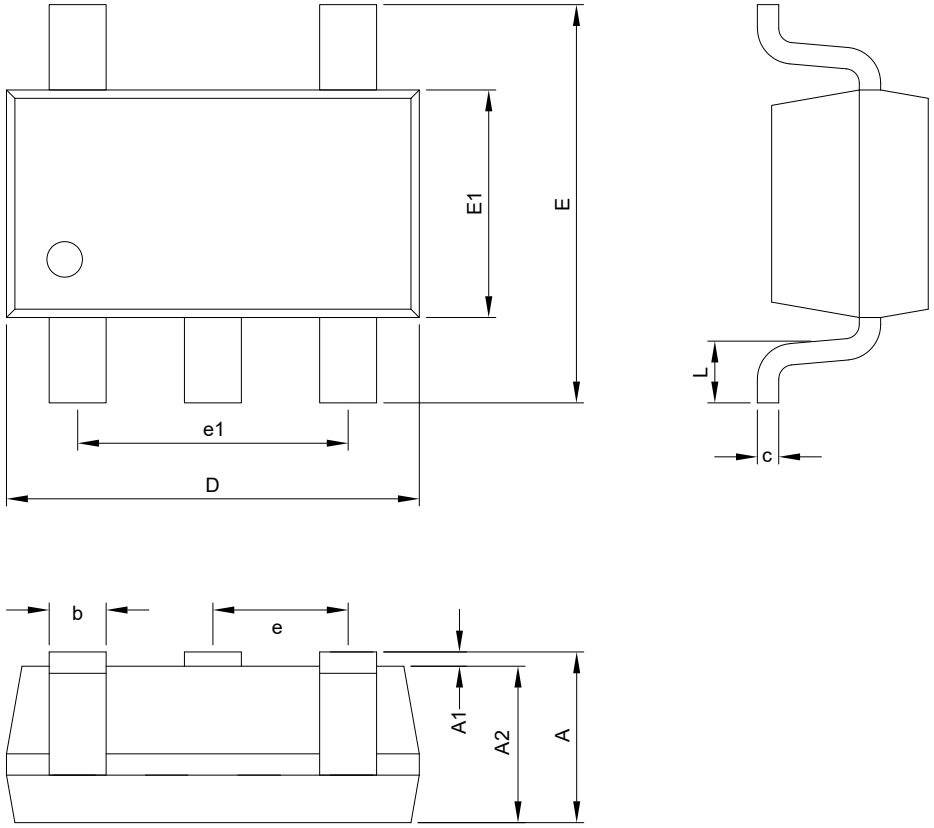
SOT-23-3 Package

Symbol	DIMENSION IN MM			DIMENSION IN INCH		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	0.95	1.10	1.45	0.037	0.043	0.057
A1	0.00	- - -	0.15	0.000	- - -	0.006
A2	0.90	1.10	1.30	0.035	0.043	0.051
D	2.70	2.90	3.10	0.106	0.114	0.122
E	2.60	2.80	3.00	0.102	0.110	0.118
E1	1.50	1.60	1.70	0.059	0.063	0.067
c	0.08	0.15	0.25	0.003	0.006	0.010
b	0.30	0.40	0.50	0.012	0.016	0.020
e	0.95 BSC			0.037 BSC		
e1	1.90 BSC			0.075 BSC		
L	0.30	0.45	0.60	0.012	0.018	0.024

Taping Specification



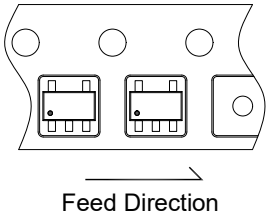
PACKAGE	Q'TY/REEL
SOT-23-3	3,000 ea



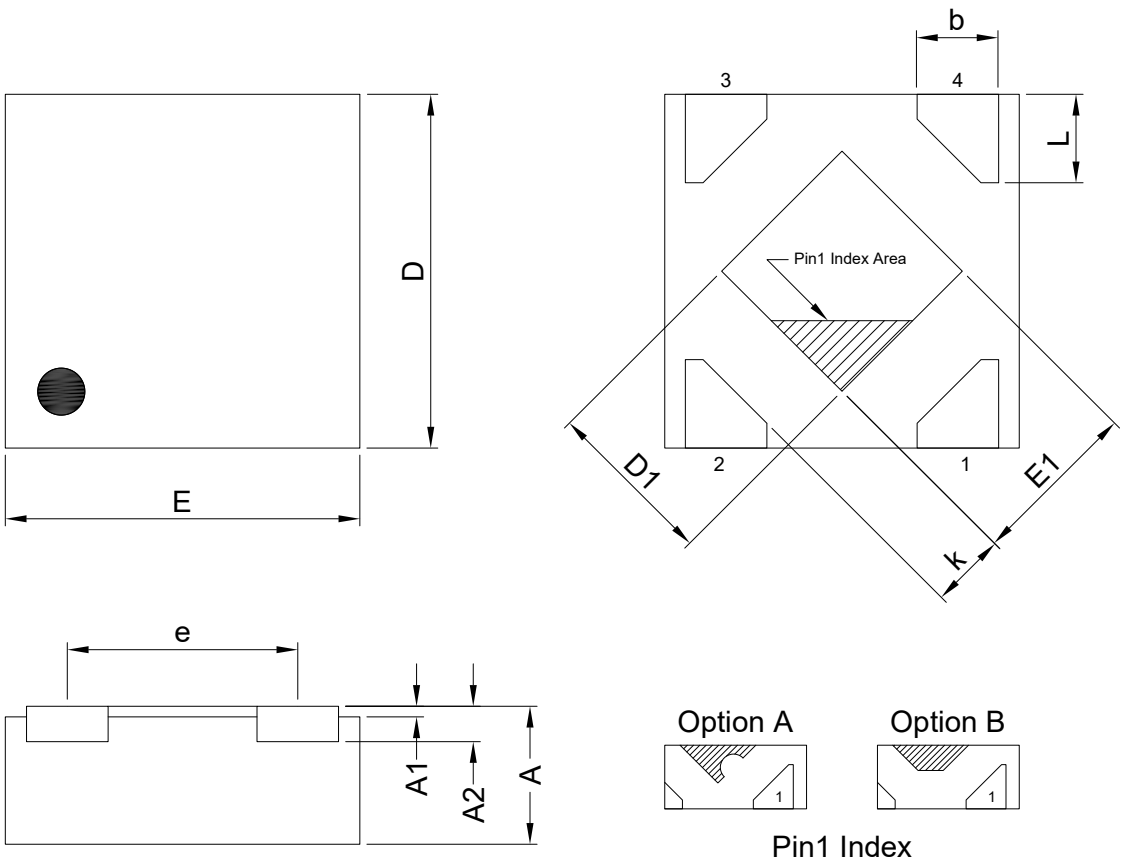
SOT-23-5 Package

Symbol	DIMENSION IN MM			DIMENSION IN INCH		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	0.95	1.10	1.45	0.037	0.043	0.057
A1	0.00	- - -	0.15	0.000	- - -	0.006
A2	0.90	1.10	1.30	0.035	0.043	0.051
D	2.70	2.90	3.10	0.106	0.114	0.122
E	2.60	2.80	3.00	0.102	0.110	0.118
E1	1.50	1.60	1.70	0.059	0.063	0.067
c	0.08	0.15	0.25	0.003	0.006	0.010
b	0.30	0.40	0.50	0.012	0.016	0.020
e	0.95 BSC			0.037 BSC		
e1	1.90 BSC			0.075 BSC		
L	0.30	0.45	0.60	0.012	0.018	0.024

Taping Specification



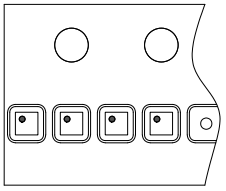
PACKAGE	Q'TY/REEL
SOT-23-5	3,000 ea



UDFN1X1-4 Package

Symbol	DIMENSION IN MM			DIMENSION IN INCH		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	0.32	0.37	0.42	0.0126	0.0146	0.0165
A1	0.00	- - -	0.05	0.0000	- - -	0.0020
A2	0.10 REF			0.0039 REF		
D	0.95	1.00	1.05	0.0374	0.0393	0.0413
E	0.95	1.00	1.05	0.0374	0.0393	0.0413
D1	0.43	0.48	0.53	0.0169	0.0189	0.0209
E1	0.43	0.48	0.53	0.0169	0.0189	0.0209
b	0.16	0.23	0.28	0.0063	0.0091	0.0110
e	0.65 BSC			0.0256 BSC		
L	0.17	0.25	0.33	0.0067	0.0098	0.0130
k	0.17	- - -	- - -	0.0067	- - -	- - -

Taping Specification



Feed Direction

PACKAGE	Q'TY/REEL
UDFN1X1-4	5,000 ea