

LR1937S White LED Step-Up Converter

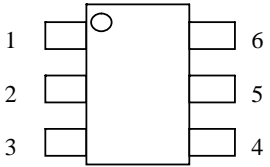
LR1937S is a step-up DC/DC converter specifically designed to drive white LED with a constant current. It can drive two, three, or four LEDs. It switches at 1.2MHz and use tiny external components. The output capacitor can be as small as 0.22uF, which can save space and cost versus alternative solutions. Feedback voltage is as low as 273mV. Built-in OverVoltage, UVLO function.

- OverVoltage, UVLO Function
- Fast 1.2MHz Switching Frequency
- Requires Only 0.22uF Output Capacitor
- Inherently Matched LED Current
- High Efficiency: 85% Typical
- 2.5V to 10V V_{IN} ranges
- Drives Up to Four series LEDs with a Li-Ion cell
- Uses Very Tiny Inductors
- TSOP-6 Package

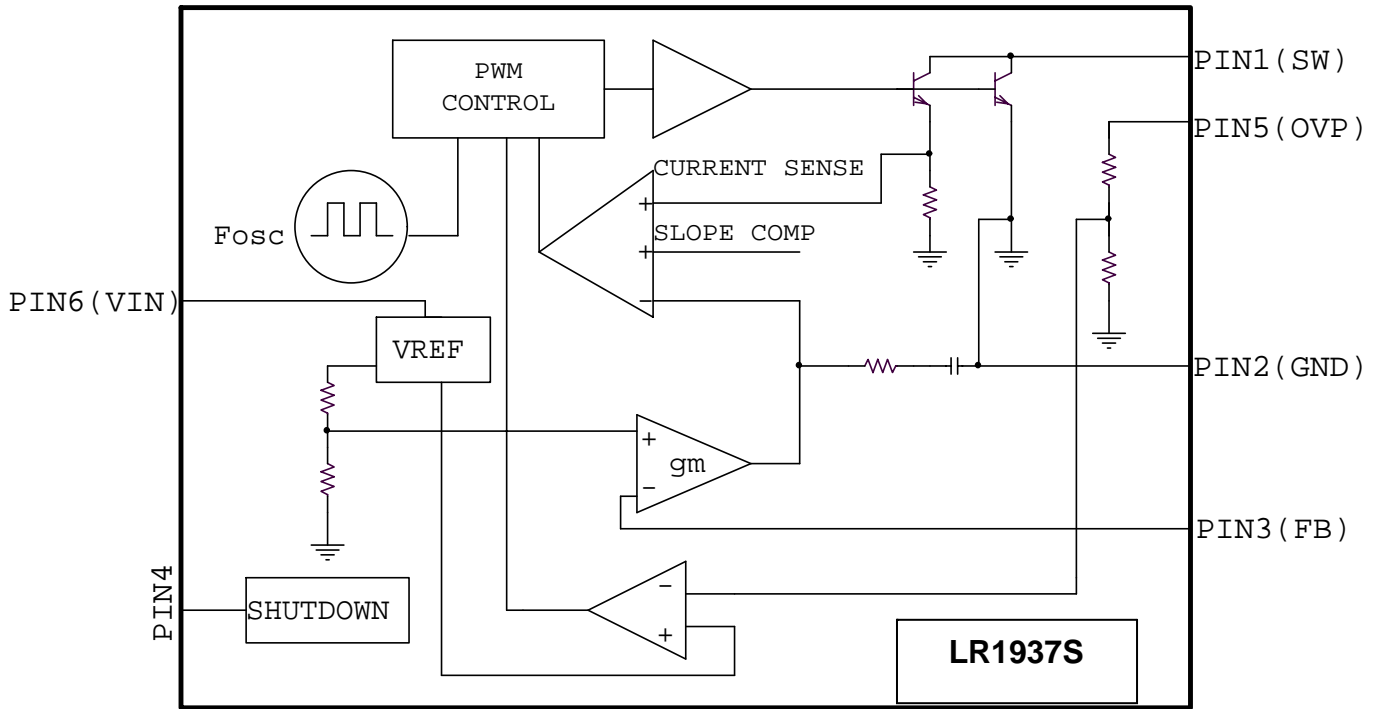
Absolute maximum ratings

Parameter	symbol	value	unit
Supply Voltage	V_{IN}	10	V
Feedback Voltage	FB	10	V
Switch Voltage	SW	30	V
CE Voltage	V_{CE}	10	V
Operating temperature range	T_{opr}	-25 to +70	
Storage temperature range	R_{stg}	-65 to +150	
Junction temperature	T_j	125	

Pin name

	Description	Symbol	Description	Symbol
	1 : Switch	SW	6 :Supply Voltage	V_{IN}
	2 : GND	GND	5 :Over Voltage	OVP
	3 : Feedback	FB	4 : Start-Up	CE

Block Diagram

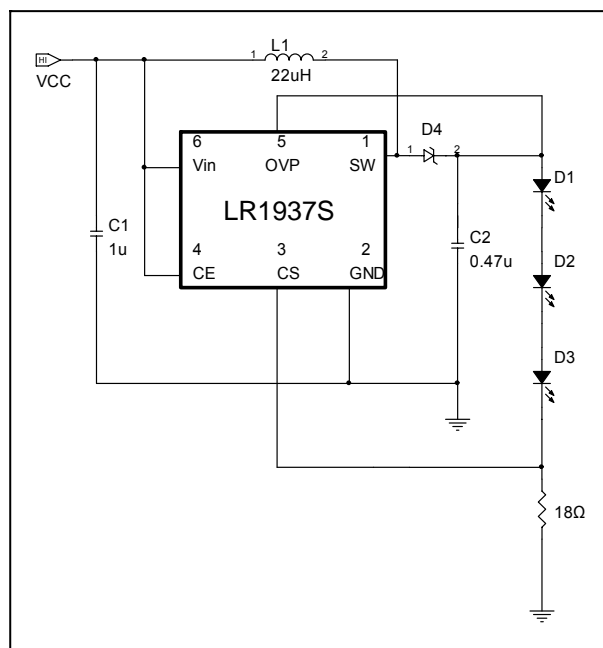


Electrical Characteristics

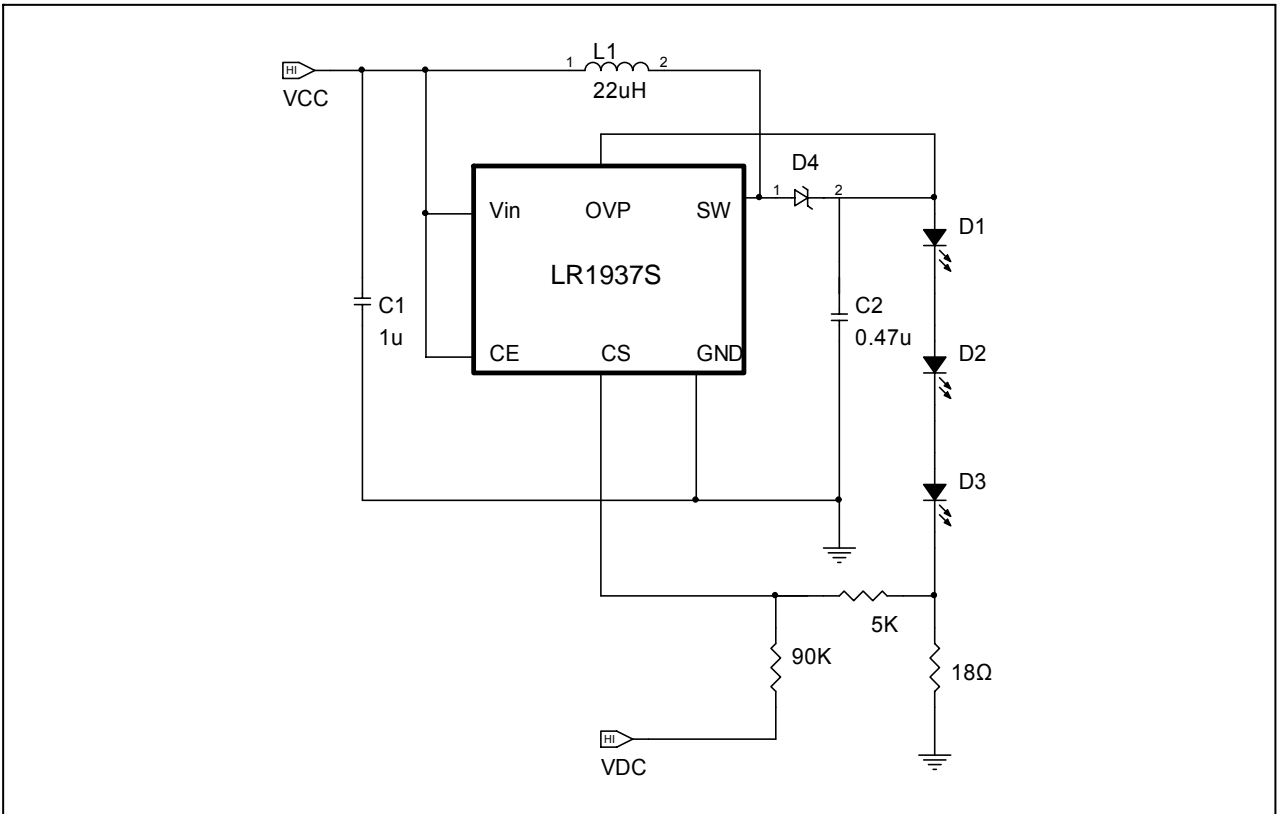
$T_{amb} = 25$, $V_{IN}=3V$, $V_{CE}=3V$, unless otherwise specified.

Parameter	Test Conditions / Pins	Min	Type	Max	Unit
Minimum Operating Voltage		2.5			V
Maximum Operating Voltage				10	V
Feedback Voltage	$I_{SW}=100mA$, Duty Cycle=66%	250	270	290	mV
FB Pin Bias Current		50	100	200	nA
Supply Current	$V_{CE}=0V$		1.9 0.1	2.5 1	mA uA
Switching Frequency		0.8	1.2	1.6	MHz
Maximum Duty Cycle		85	90		%
OVP Protection		27	30	33	V
Switch Current Limit			320		mA
Switch V_{CESAT}	$I_{SW} = 250mA$		350		mV
Switch Leakage Current	$V_{SW}=5V$		0.01	5	uA
CE Voltage High		1.5			V
CE Voltage Low				0.4	V
CE Pin Bias Current		60	120	180	uA

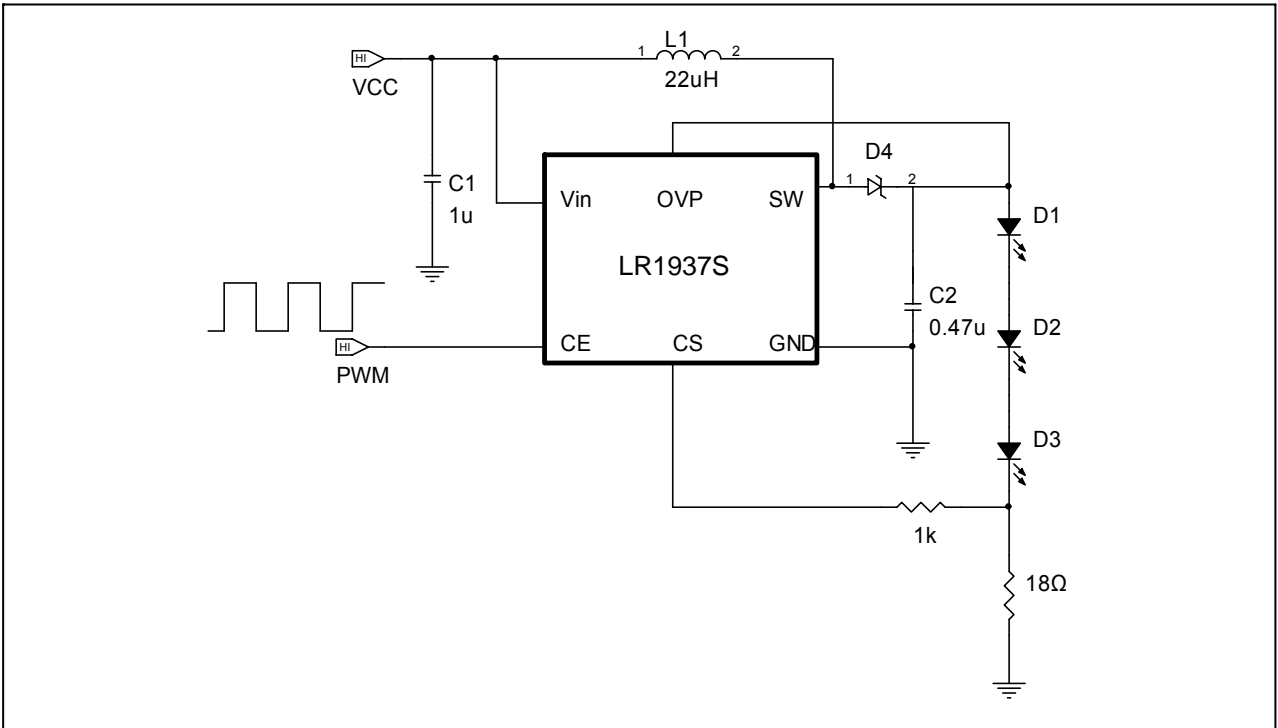
Typical Application



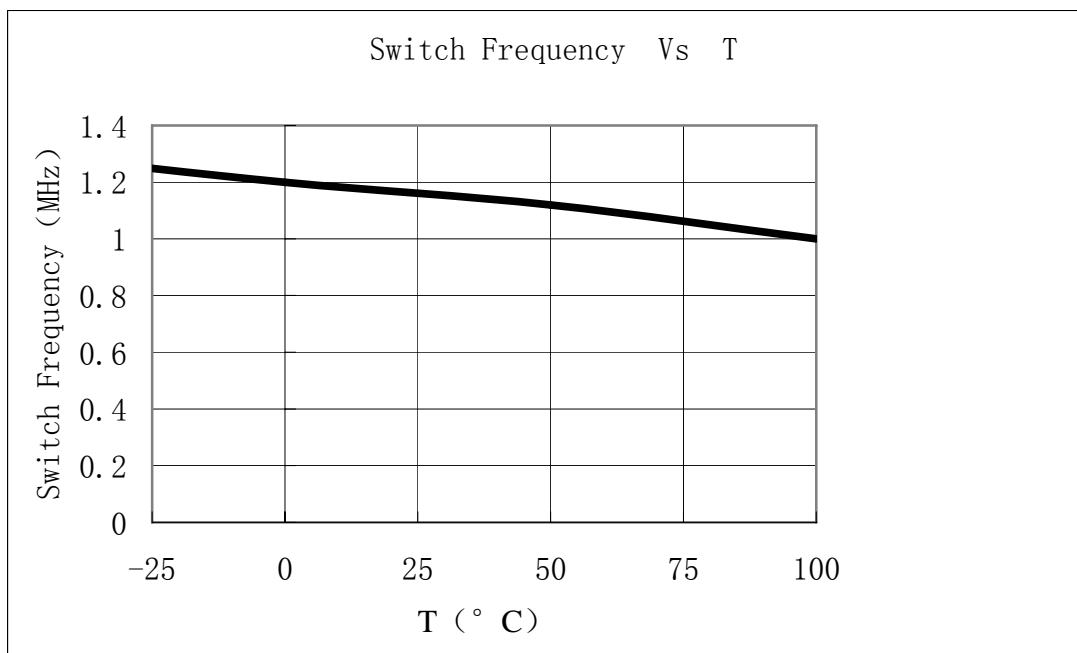
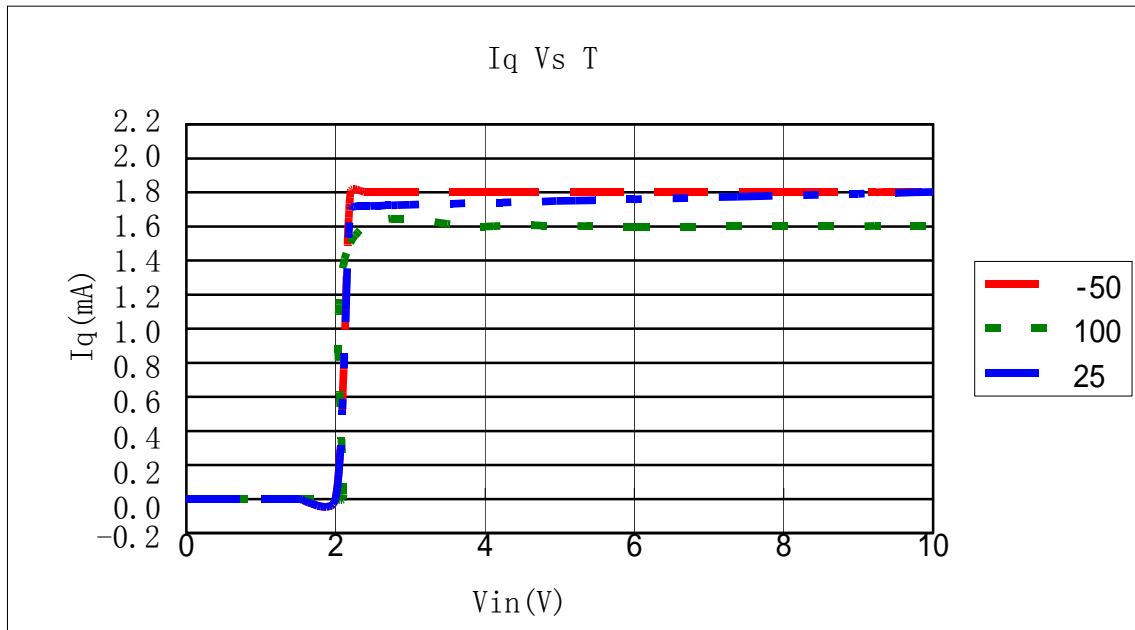
Analog Voltage Light Control

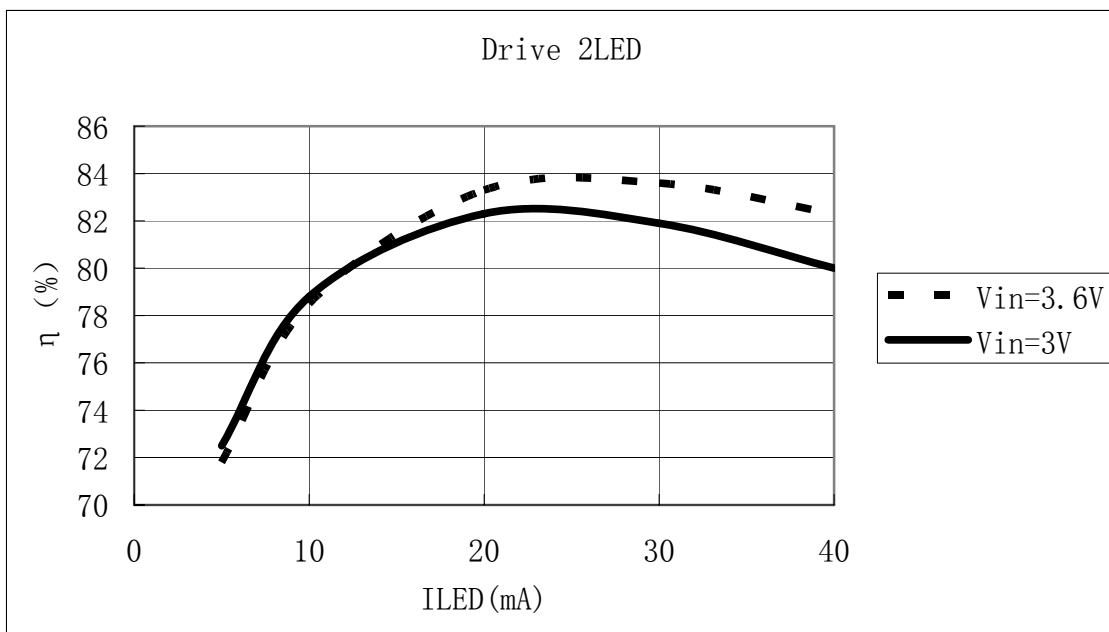
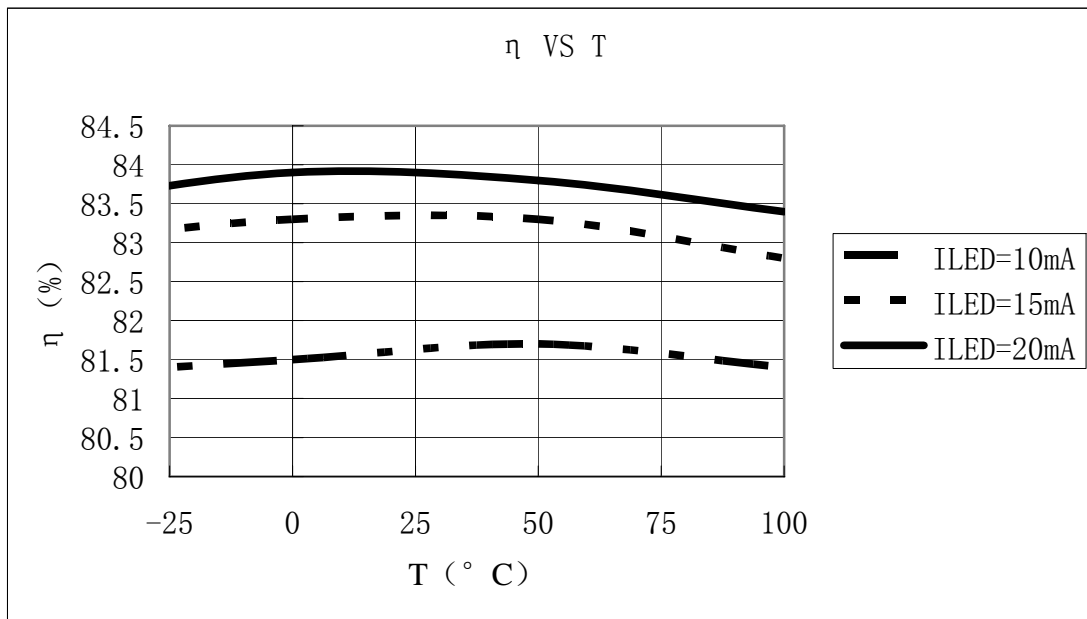


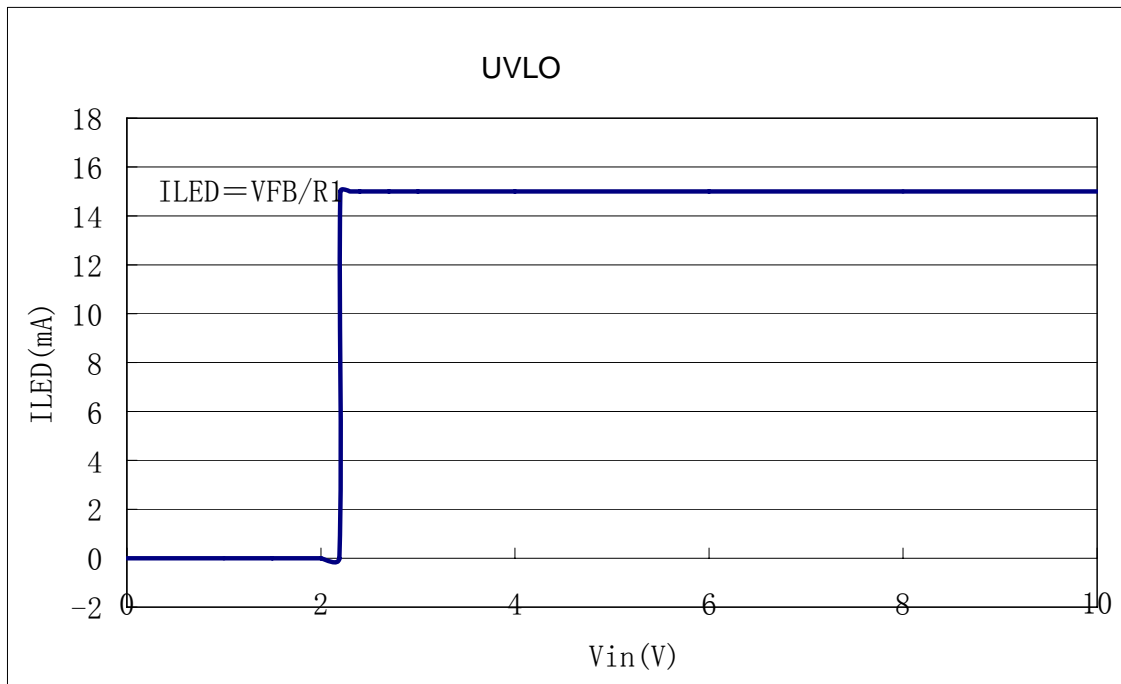
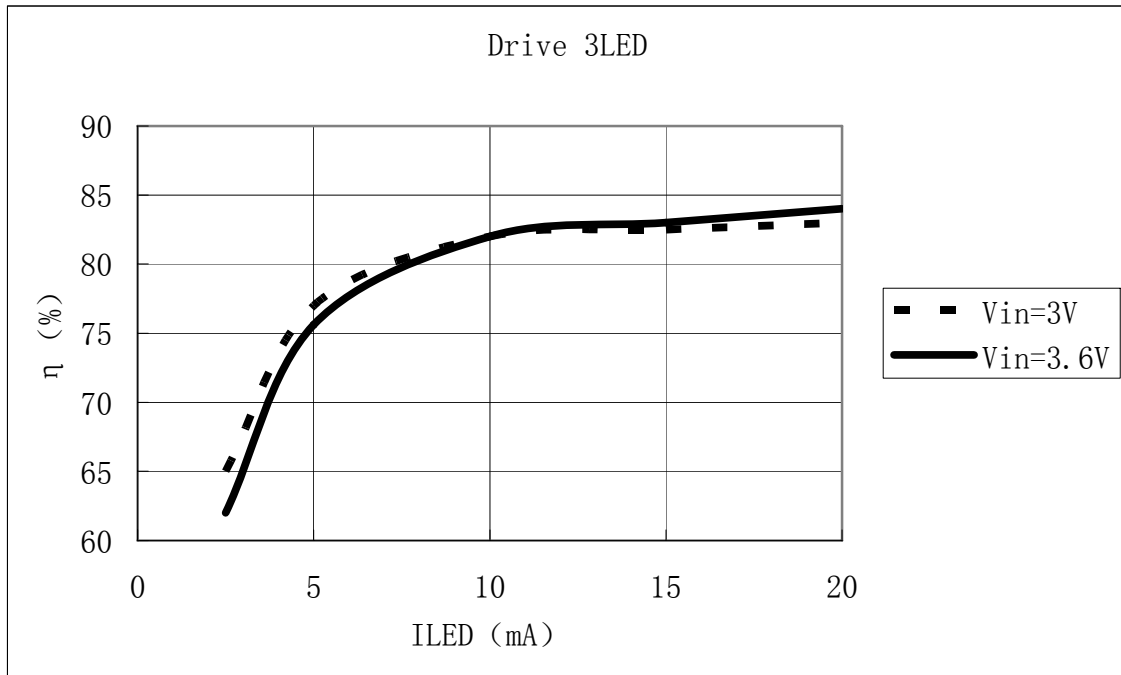
Logic Voltage Light Control



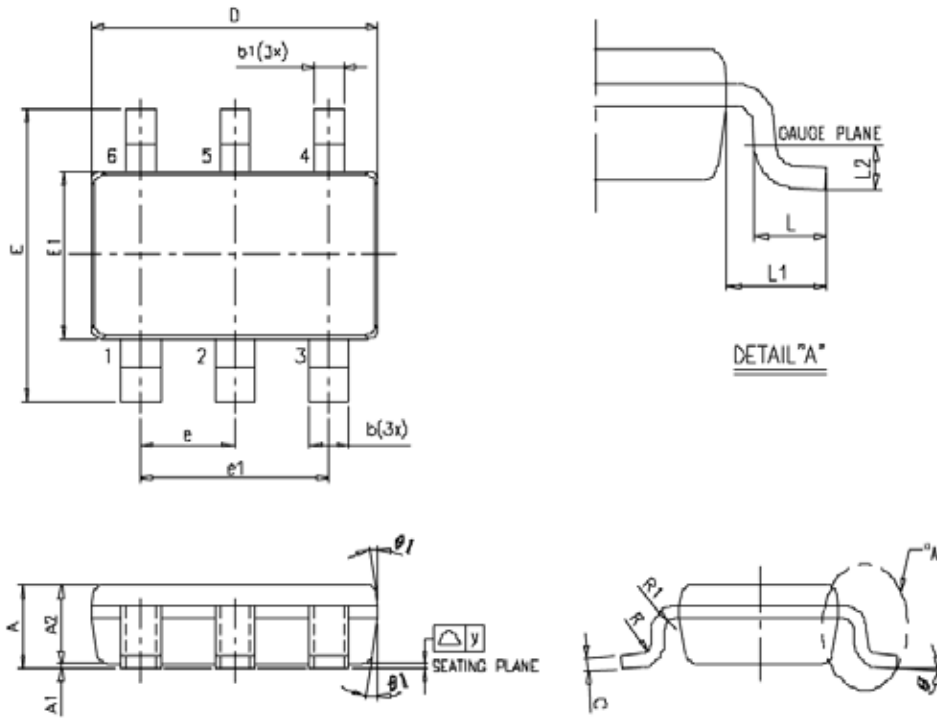
Characteristics Curve







TSOP-6 Dimension



Symbol	Dimensions In Millimeters		
	Min	TYP	Max
A	0.75	-----	0.9
A1	0	-----	0.1
A2	0.7	0.75	0.8
b	0.4	-----	0.5
c	0.08	-----	0.2
D	2.8	2.9	3
E	2.6	2.8	3
E1	1.5	1.6	1.7
e	0.95 BSC		
e1	1.90 BSC		
L	0.3	0.45	0.6
L1	0.60 REF		
L2	0.25 BSC		
R	0.1	-----	-----
R1	0.1	-----	0.25
θ	0°	4°	8°
θ1	4°	10°	12°