LR2257 AC/DC Current Mode PWM

power management controller

The LR2257 AC—DC is a high efficiency current-mode PWM power supply controller that drives an internal NPN transistor for high voltage switching. Apply with BiCMOS technology, the device consist of Bandgap reference voltage, Oscillator, High voltage switching transistor and build in safety features of over current and over voltage protection mechanisms

Delivering up to 3W yet consumes, the typical application of the device will include:

- Battery Charger, such as handset phone
- Power Adapter
- Offline Power Generator
- Etc.

➤ Lowest Total Cost Solution

➤ Low Power for Green Environments Protection, as lower as 0.3W

➤ Current Mode PWM

➤ Over-Current Protection, Over and Under-voltage Protection

➤ Emitter Drive of Internal Power Transistor

➤ 65kHz Switching Frequency

Absolute Maxim Ratings

Item	Symbol	Typical	Unit
Power Supply	VDD	9～12	V
FB Start Voltage	Vs	5	V
FB Under-voltage Threshold	Vu	3.5	V
FB Clamp Voltage	Vo	5.5	V
FB input current	I_{FB}	<1	mA
Switching Frequency	Fs	65	KHz
Maximum Duty Cycle	D_{MAX}	75	％
FB－SW Current Gain	G_F	0.3	A/V
Current Limit	I_{LIM}	400	mA
SW Break Down Voltage	Vsw	>400	V
Stand By Current	P_S	<0.3W	W
System Efficiency (Full Load)	η	>70	%

LR2257

Pin Name
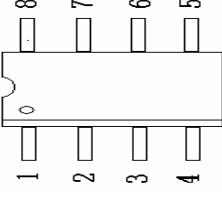
1：Feedback ： FB	5：Power Output : SW
2：Test Pin ： NC	6：Power Output : SW
3：Test Pin ： NC	7：Ground : Gnd
4：Power ： V_{DD}	8：Ground: Gnd

Pin Description

| Pin	Symbol	Pin Description
1	FB	Feedback input
2,3	NC	Test Pin *
4	VDD	Power Supply
5,6	SW	Power Transistor output
7,8	GND	Ground

Note: Test2 should connect to Test3 while in application

Working Principle
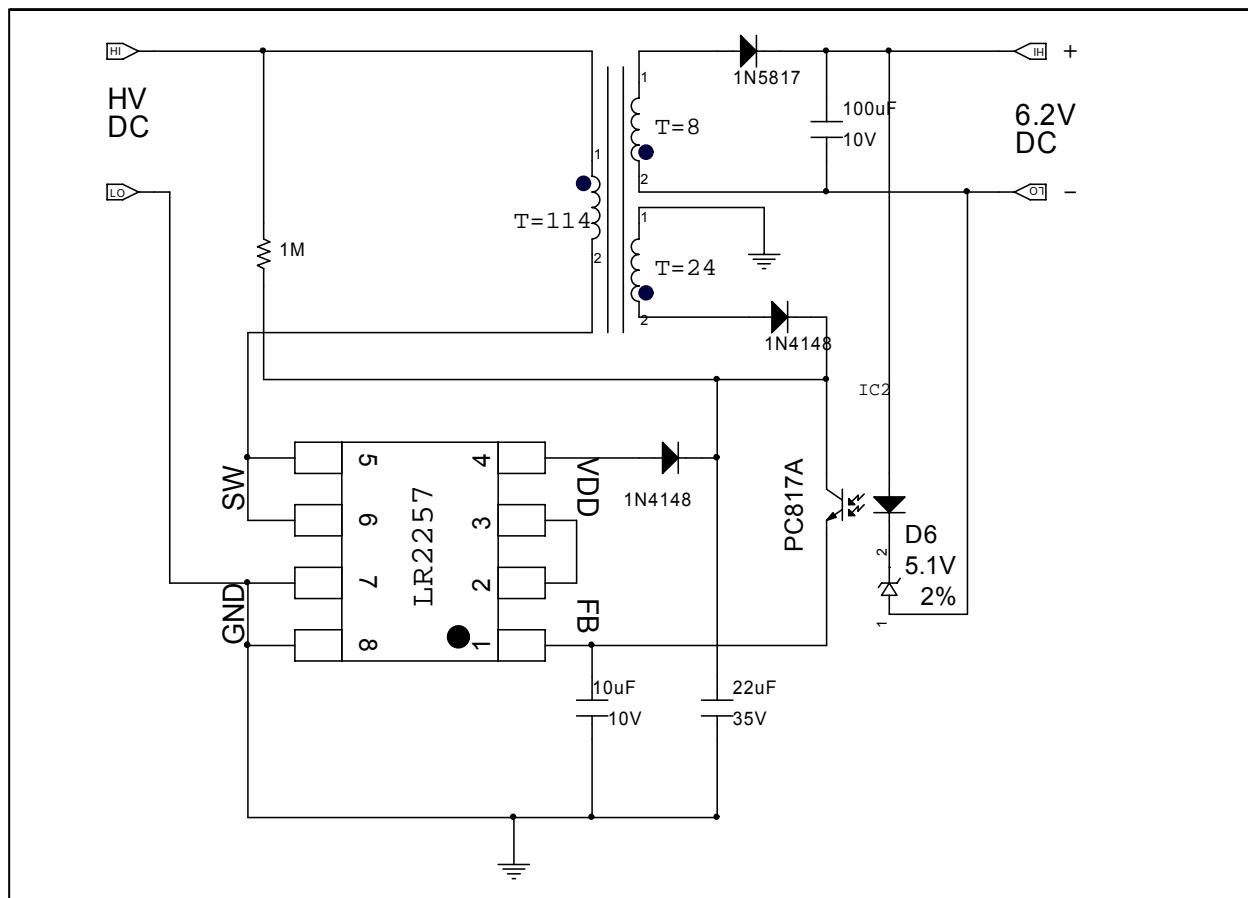
Block Diagram
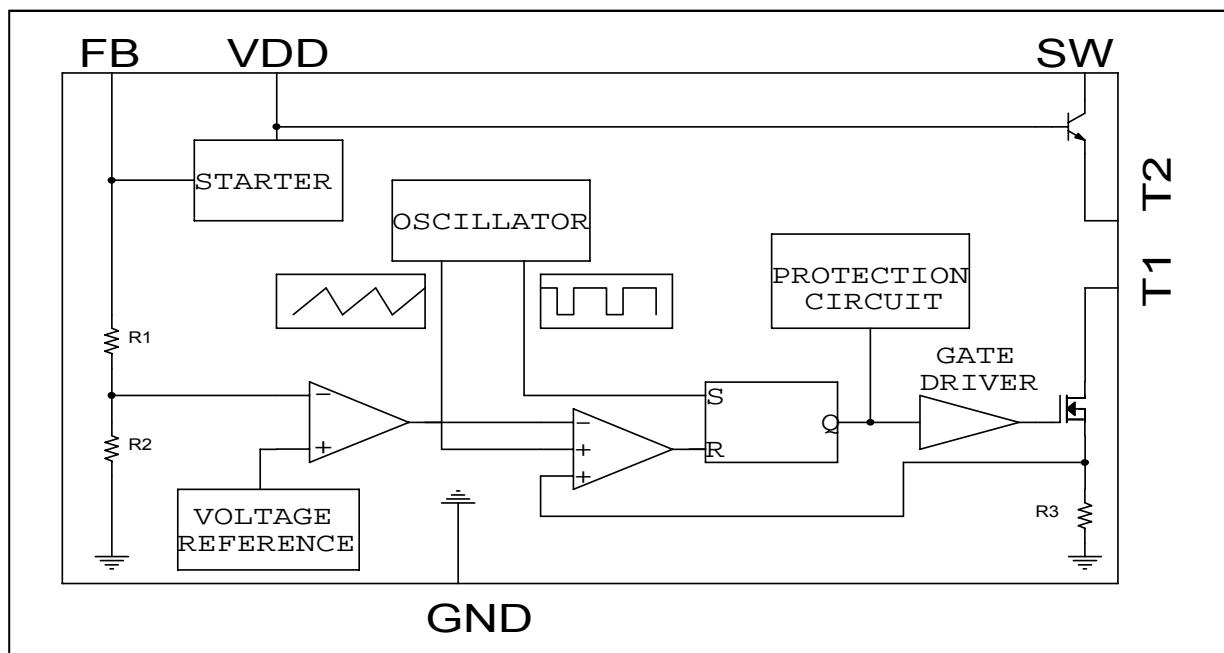
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Electrical Characteristics（Test condition：T_A=25C,V_{FB}＝4V ）

Parameter	Symbol	Test condition	Min	Typ	Max	Unit
Power Supply	V_{DD}			8.5	12	V
FB Start Voltage	Vs			5		V
FB Under-voltage Threshold	Vu		3.25	3.5	3.65	
FB Clamp Voltage	Vo	10mA	5.2	5.5	5.8	V
FB input current	I_{FB}	-	-	0.7	1	mA
Switching Frequency	Fs	-	-	70	-	KHz
Maximum Duty Cycle	D_{MAX}	V_{FB} =4V, I_{SW}=10mA	70	75	80	%
Minimum Duty Cycle	D_{MIN}	V_{FB}=4.6V, I_{SW}=100mA		3.5	5.5	%
Current Limit	I_{LIM}	V_{FB}=V_{UV}+0.1V	-	400	-	mA
FB to SW Current Gain	G_{FB}		-	-0.29	-	A/V
FB Dynamic Impedance	R_{FB}/V_{FB}		-	9	-	KΩ
SW Break Down Voltage	Vsw			>400		V
Stand By Power	P_S			<0.3		W
System Efficiency (Full Load)	η			74		%

Application

Characteristics Curve

η VS Po (VAC=110V)

η VS Po (VAC=220V)

EMI

dBuV

80	
70	
60	
50	**EN55022A**
40	
30	
20	
10	

150KHz   1MHz   10MHz   30MHz
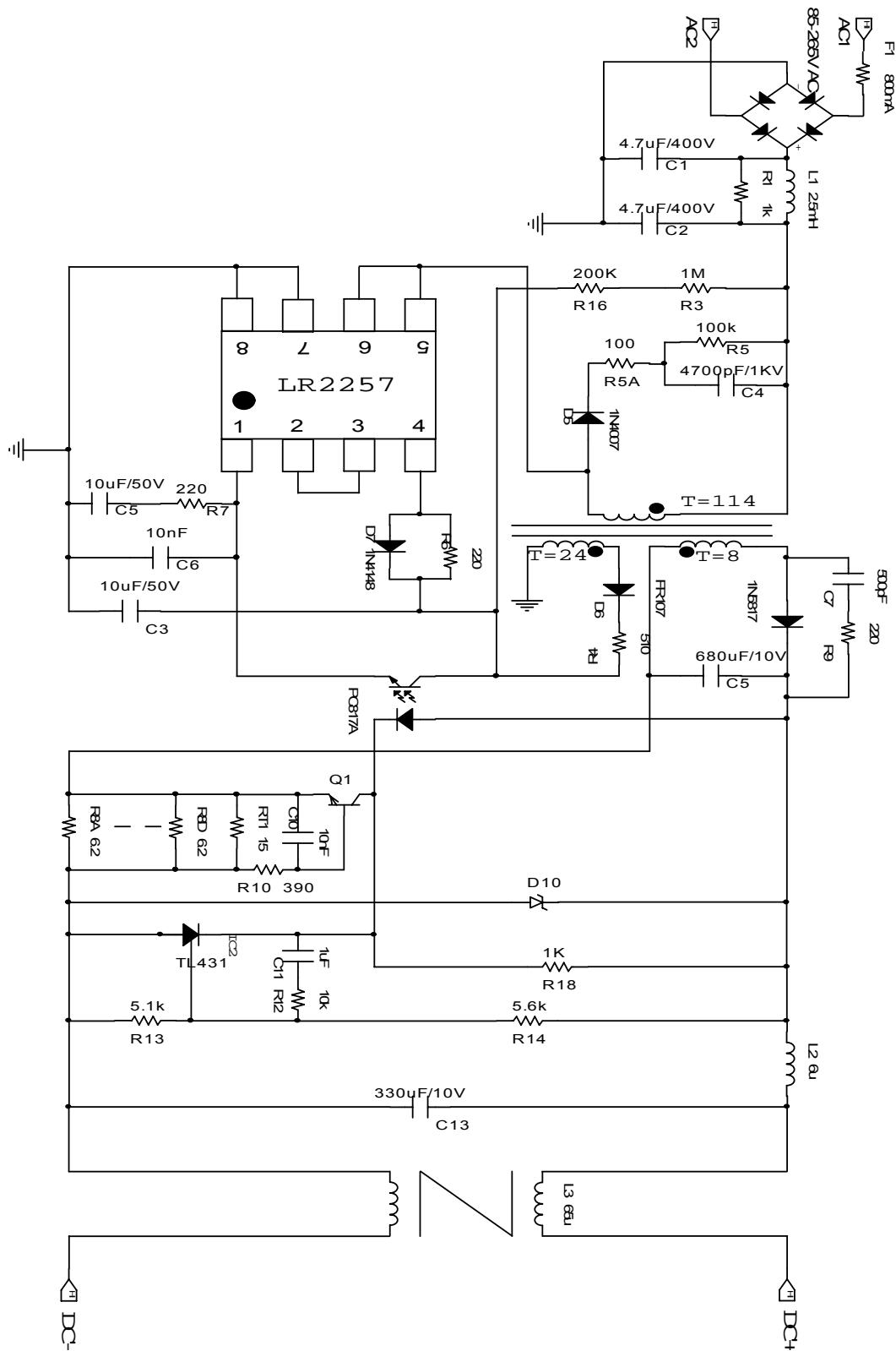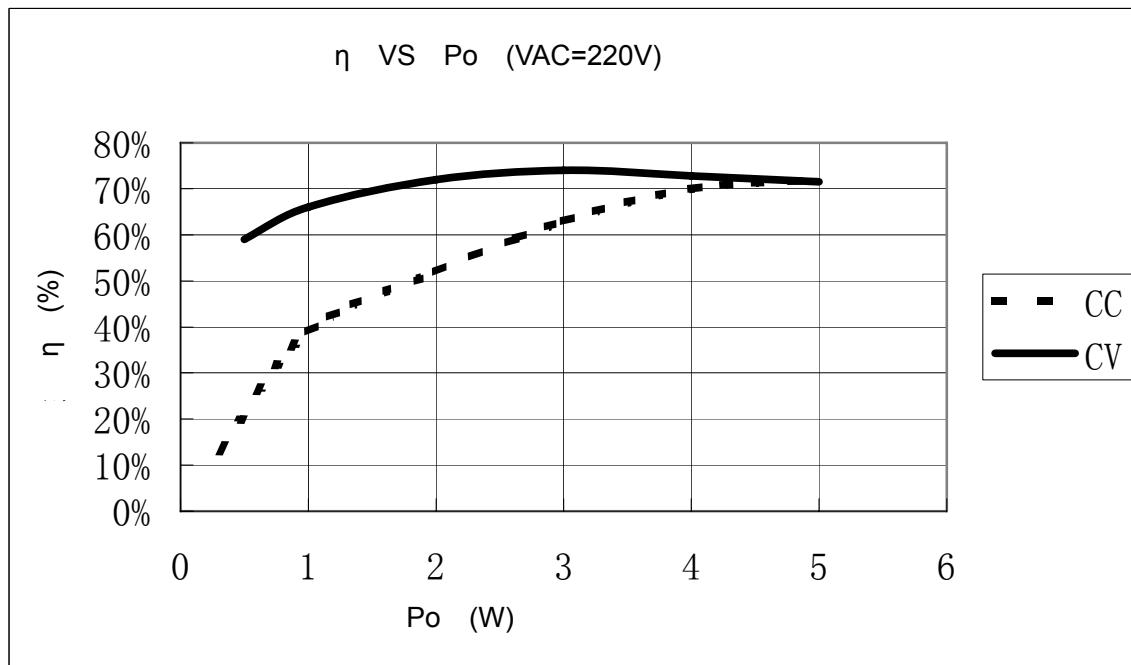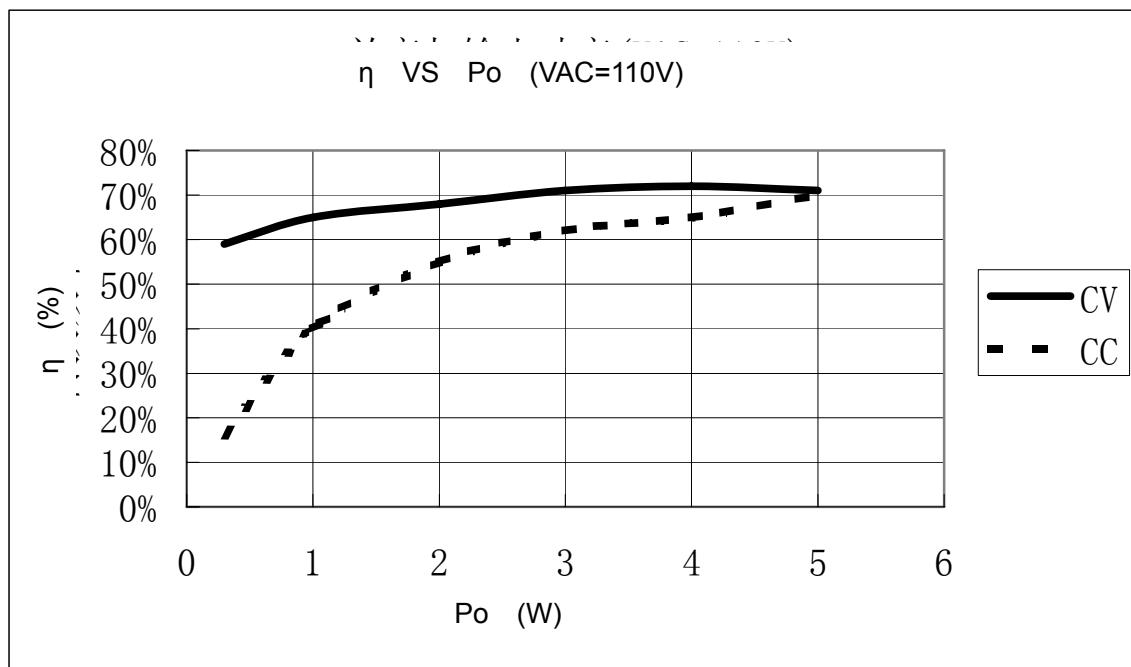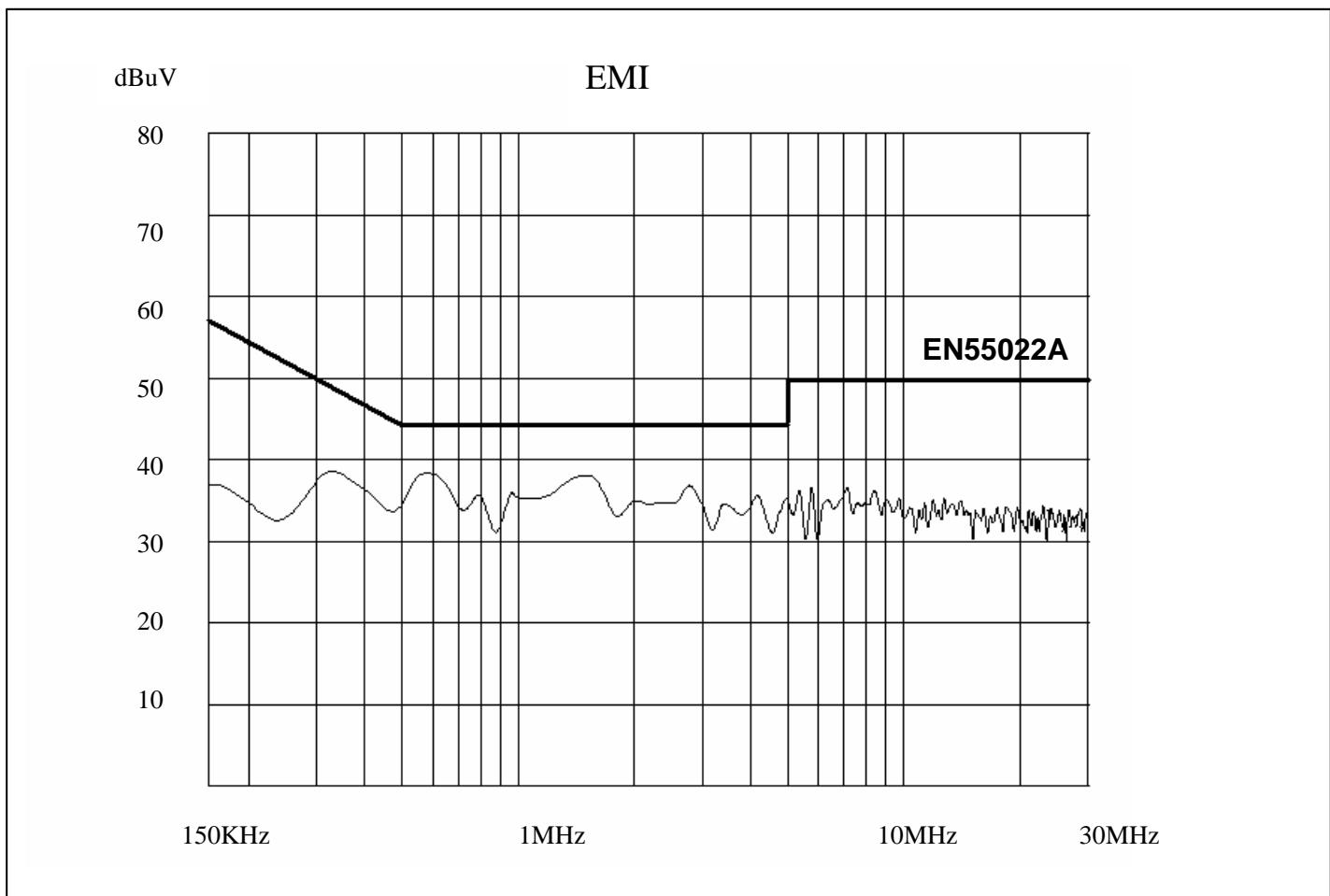
Recommended   PCB LAYOUT
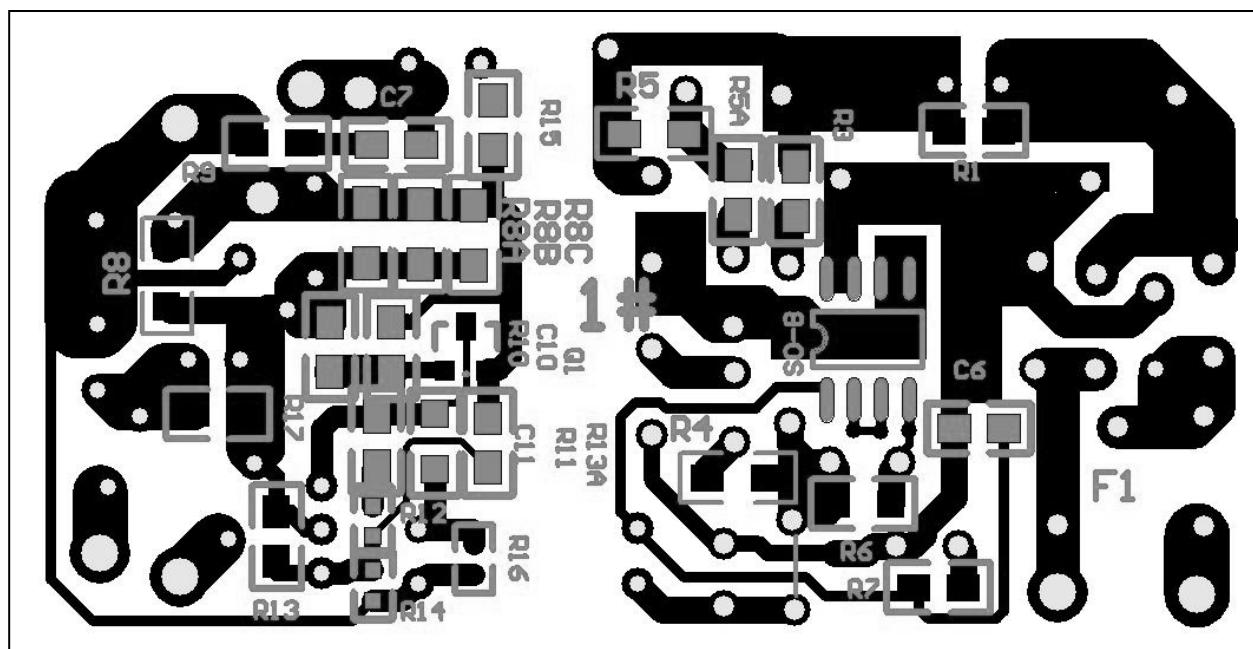
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SO-8 Dimension
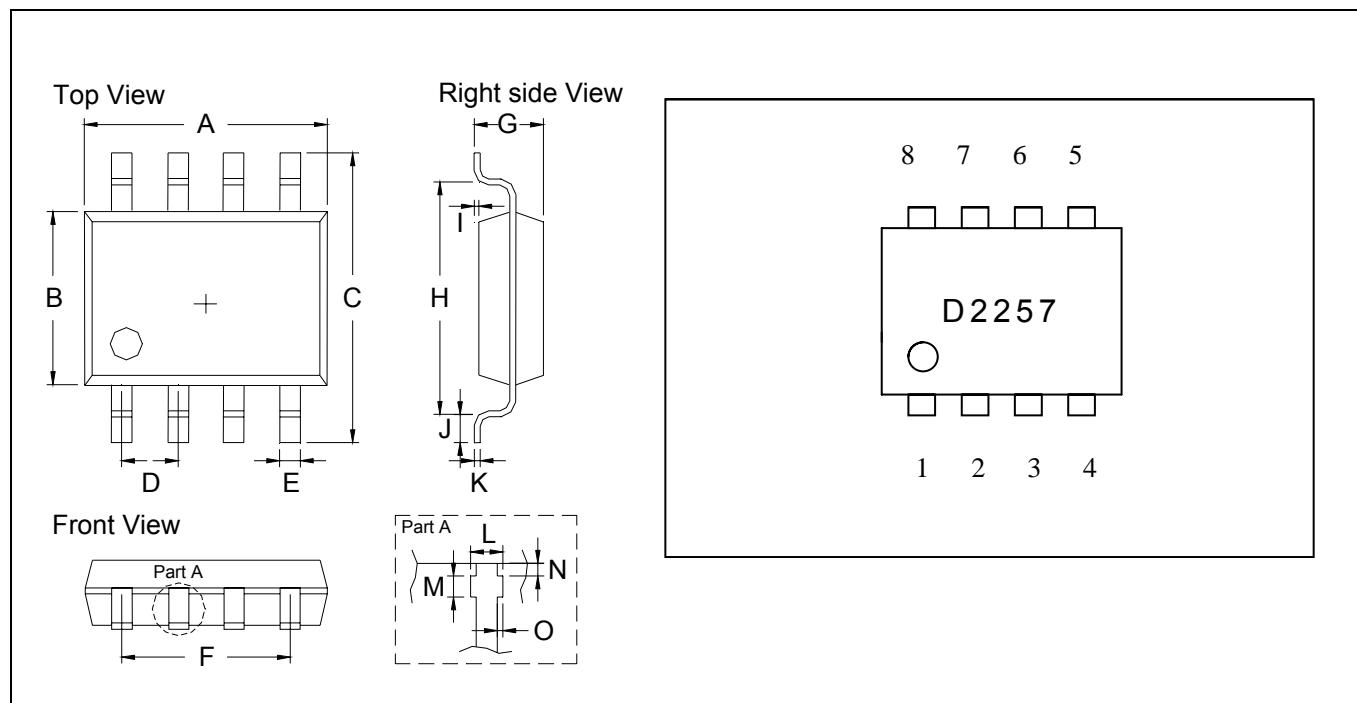
*Typical

DIM	inch		mm		DIM	inch		mm	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1909	0.2007	4.85	5.10	I	0.0019	0.0078	0.05	0.20
B	0.1515	0.1555	3.85	3.95	J	0.0118	0.0275	0.30	0.70
C	0.2283	0.2441	5.80	6.20	K	0.0074	0.0098	0.19	0.25
D	0.0480	0.0519	1.22	1.32	L	0.0145	0.0204	0.37	0.52
E	0.0145	0.0185	0.37	0.47	M	0.0118	0.0197	0.30	0.50
F	0.1472	0.1527	3.74	3.88	N	0.0031	0.0051	0.08	0.13
G	0.0570	0.0649	1.45	1.65	O	0.0000	0.0059	0.00	0.15
H	0.1889	0.2007	4.80	5.10					