

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.

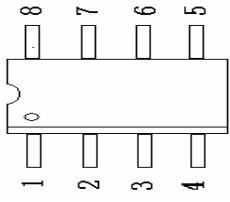
- Lowest Total Cost Solution
- Low Power for Green Environments Protection, as lower as 0.3W
- Current Mode PWM
- Over-Current Protection, Over and Under-voltage Protection
- Emitter Drive of Internal Power Transistor
- 65kHz Switching Frequency

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

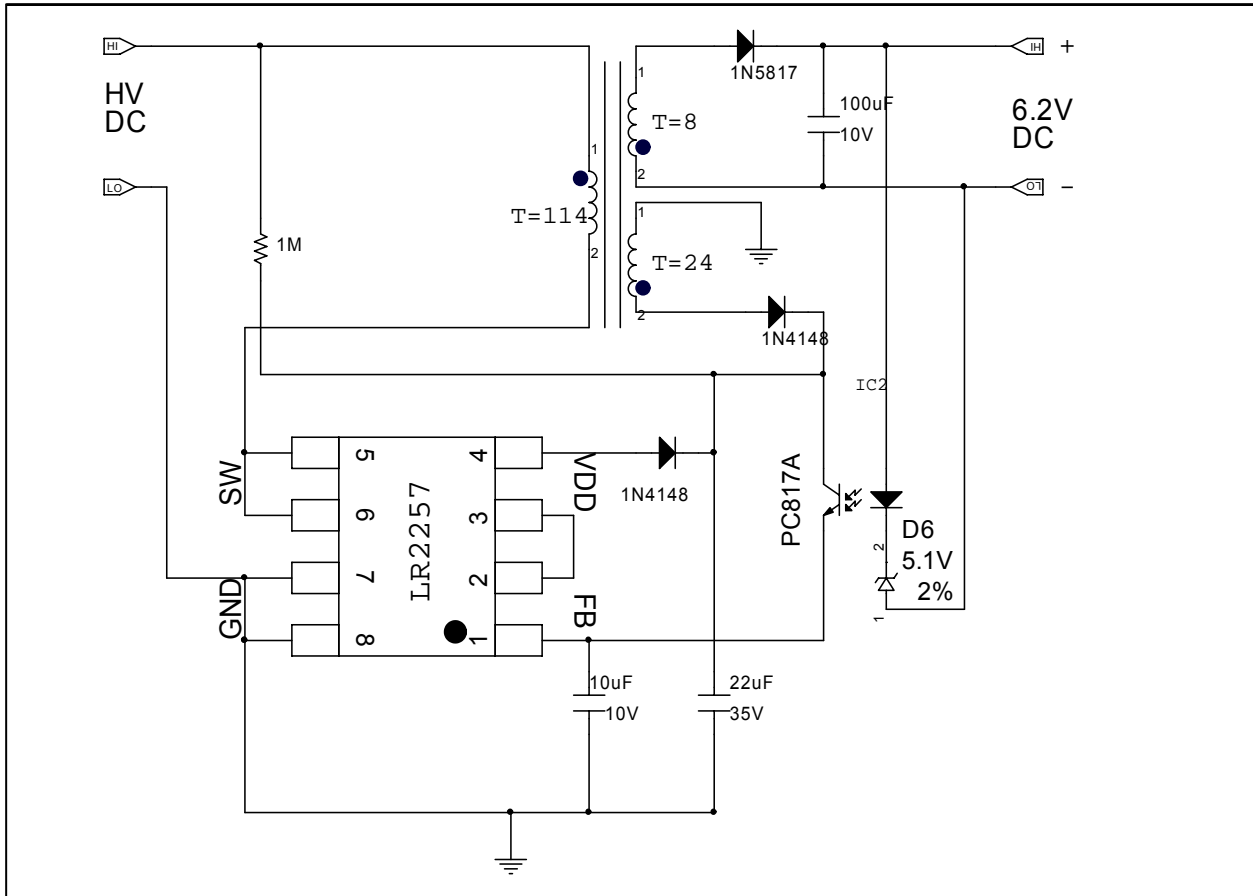
Pin Description

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

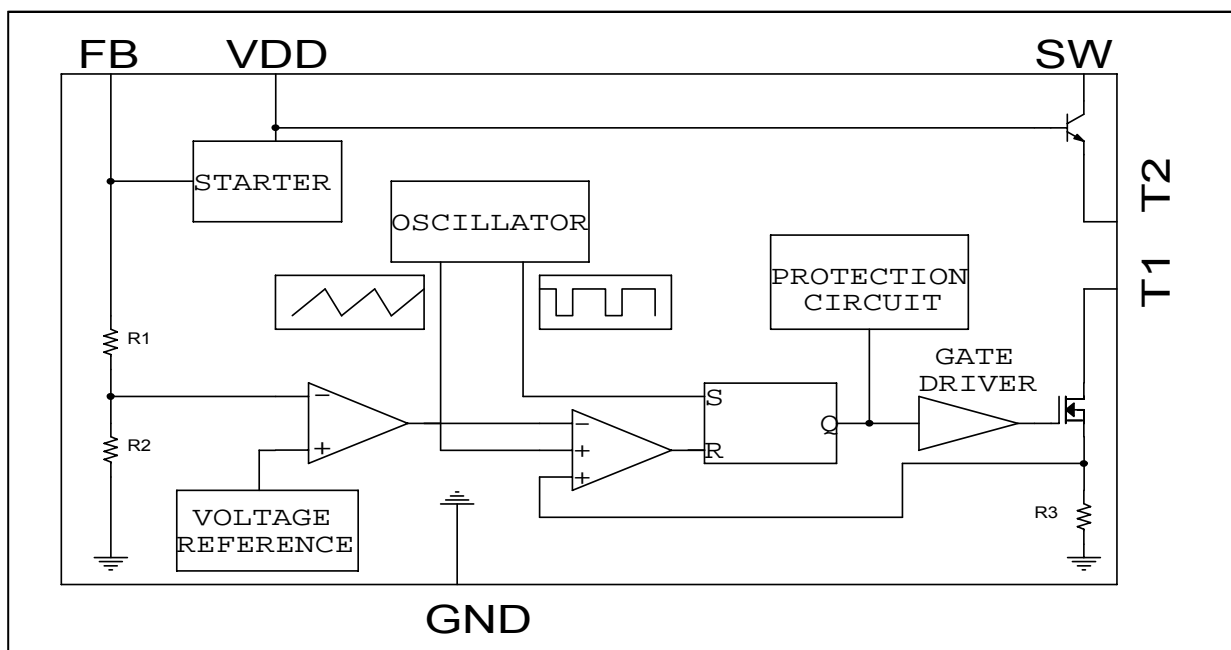
***Note:** Test2 should connect to Test3 while in application

LR2257

Working Principle



Block Diagram



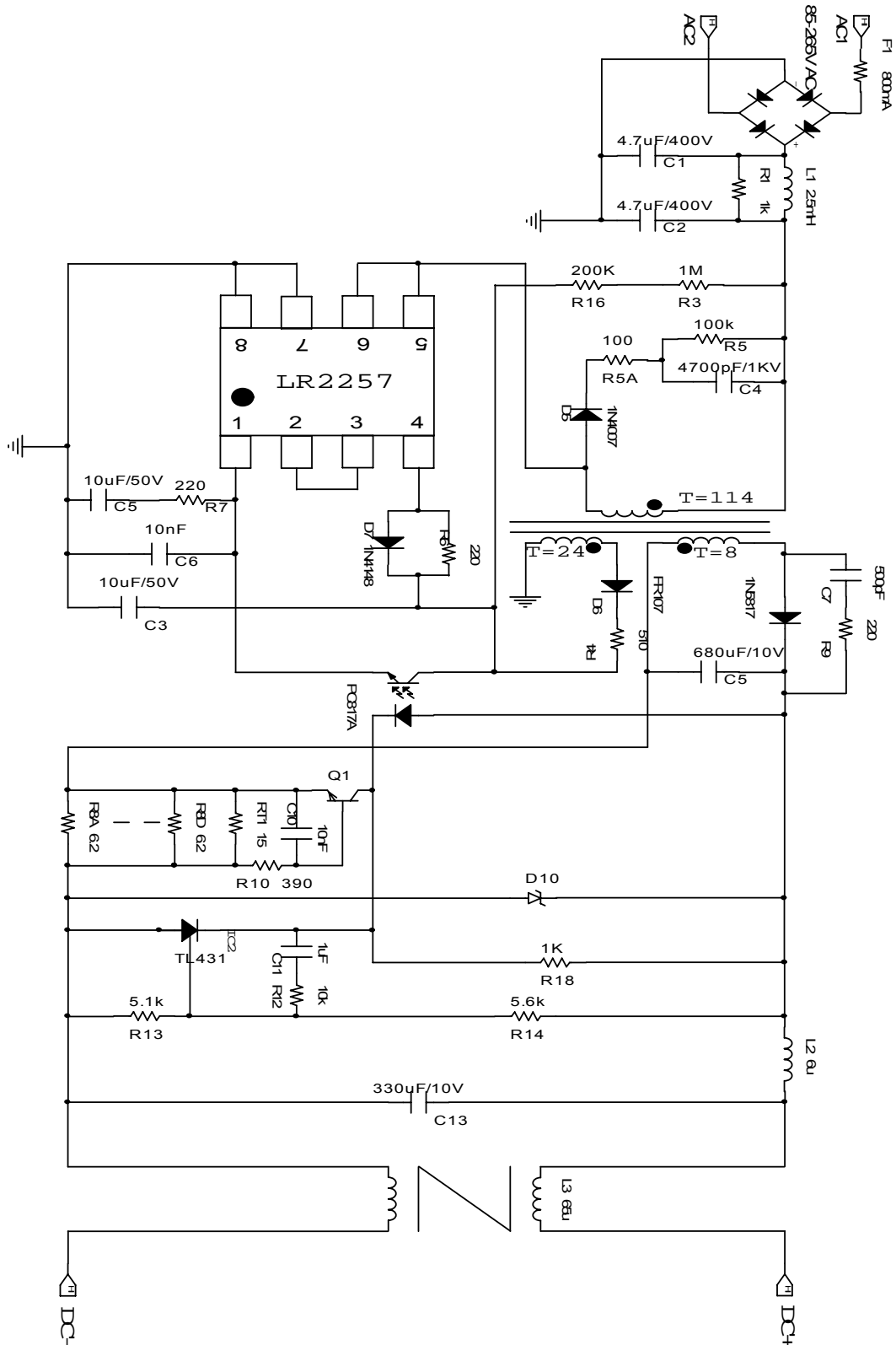
LR2257

Electrical Characteristics (Test condition: $T_A=25^{\circ}\text{C}$, $V_{\text{FB}}=4\text{V}$)

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

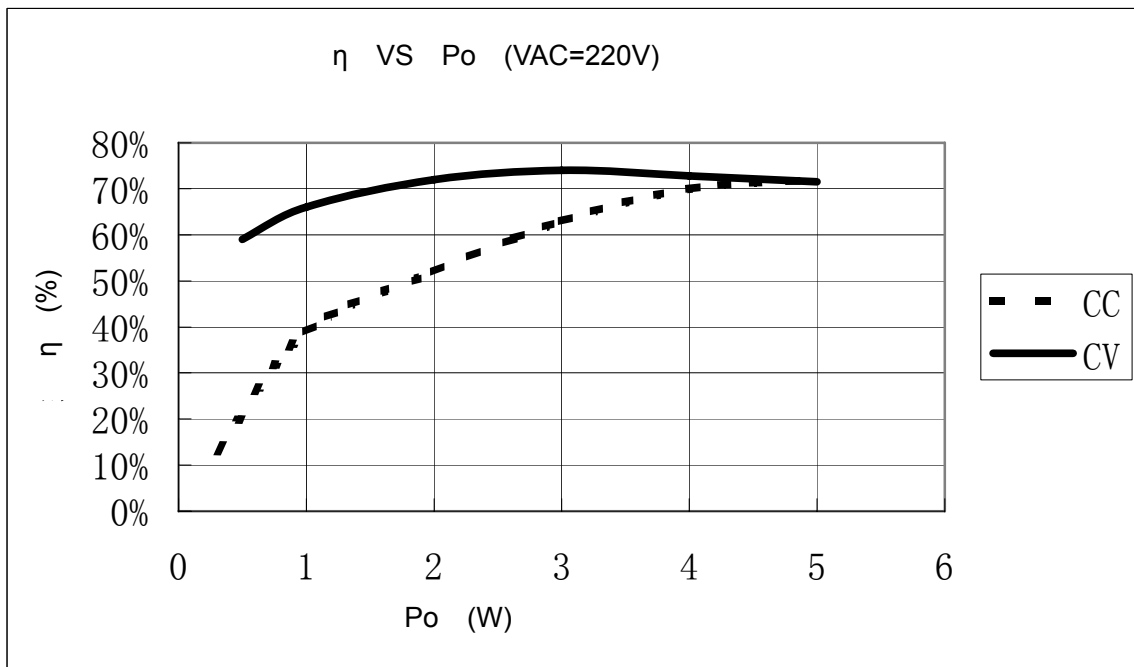
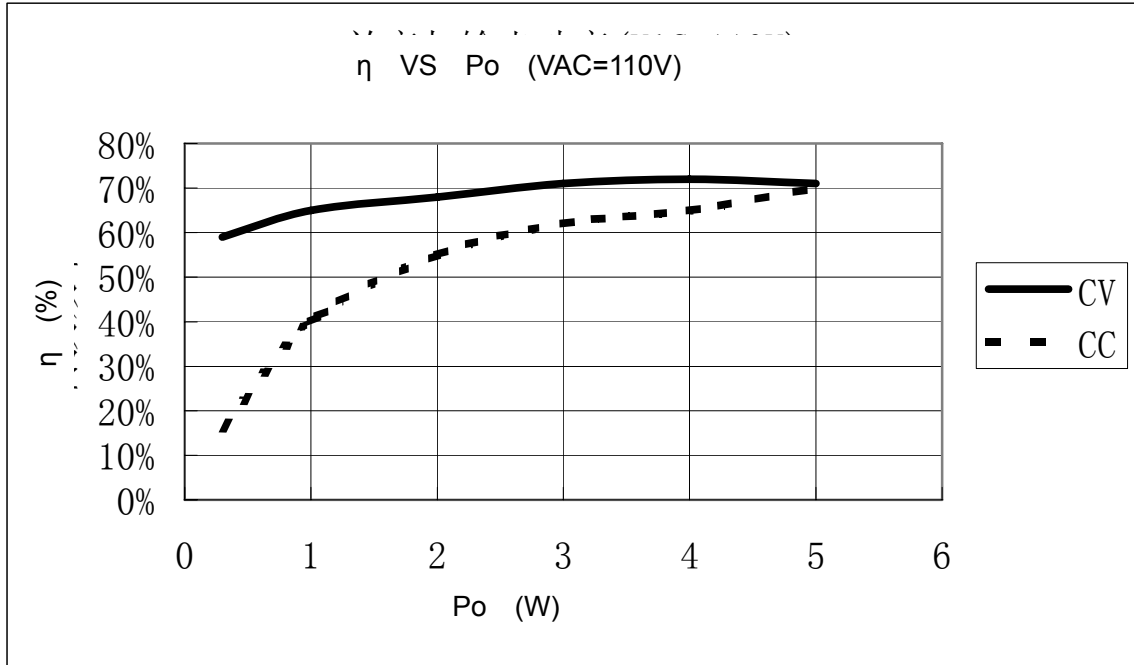
Application

LR2257

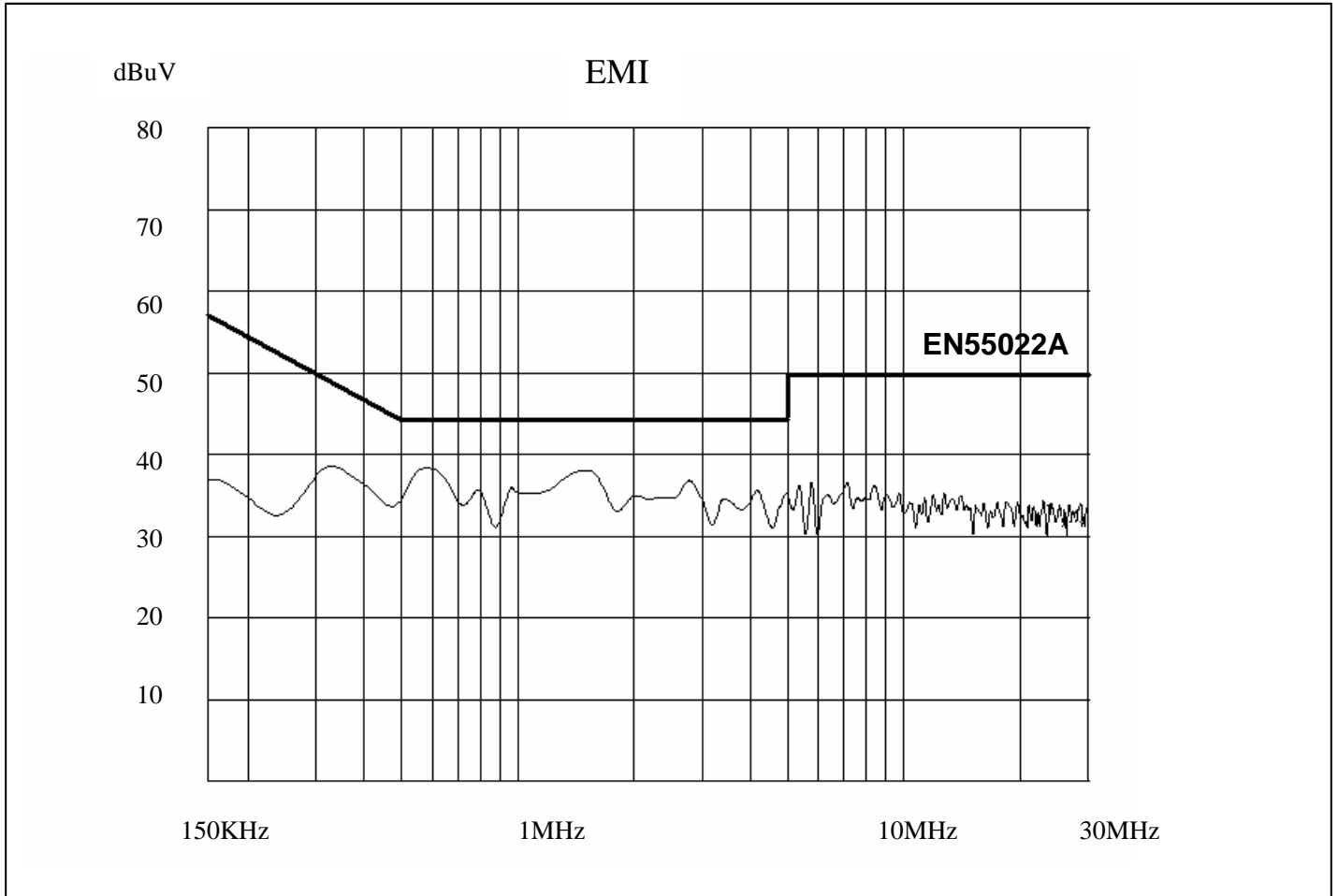


LR2257

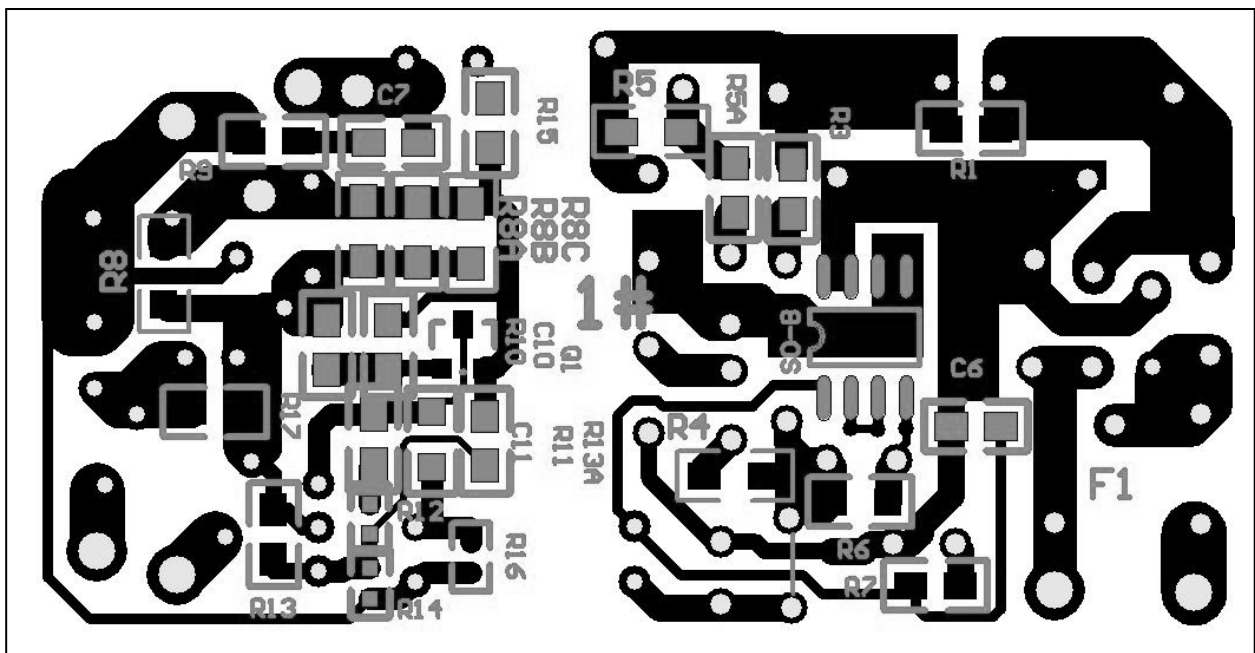
Characteristics Curve



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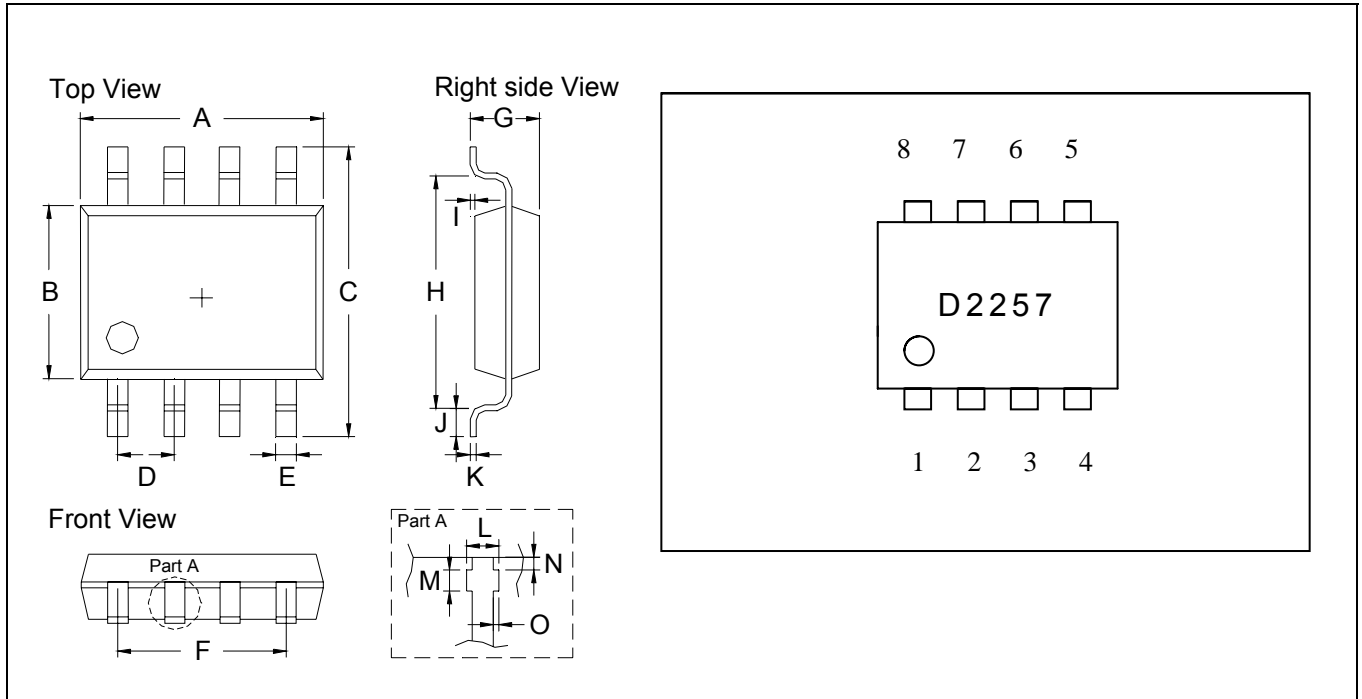


Recommended PCB LAYOUT



LR2257

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					