

BILL OF MATERIALS FOR 5V DC-DC BUCK REGULATOR					
S.No	Component	Value / Rating	Part Number	Qty	Key Ratings / Notes
1	Buck Regulator IC	5V, 3A	LM2596S-5.0	1	Wide input voltage (6 V-40 V) support with 150 kHz switching frequency
2	TVS Diode (Unidirectional)	26 V, 1850 W	DSN1608-2	1	Protects input lines from ESD events and voltage transients
3	Schottky Diode	5A, 40V	SS54	1	Low forward voltage drop and fast switching diode to reduce power loss and improve efficiency
4	Resistor	1kΩ, 0.25W	Generic	1	Resistor used for LED current control
5	Inductor	33µH	MSS1278H-333M	1	High current capability with sufficient saturation margin
6	Input Capacitor	220µF, 35V	SMD Electrolytic	1	Smooths input voltage and supplies transient current to stabilize regulator operation
7	Ceramic Capacitor	0.1µF, 50V	X7R	2	Used for filtering high-frequency switching noise
8	Output Capacitor	330µF, 10V	AVX TPS Series	1	Maintains output voltage stability and minimizes ripple under dynamic load conditions
9	Screw Terminal	2-pin	01 x 02 Type, Generic	2	Terminals provided for power input and regulated output
10	Mounting Hole	M3	KiCad Std	4	Mechanical mounting support for PCB fixation