DCDC_LinkSwitchTN2-Automotive-Buck_082422; Rev.2.1; Copyright Power Integrations 2022	INPUT	INFO	OUTPUT	UNIT	DCDC LinkSwitchTN2-Automotive Buck
APPLICATION VARIABLES					Design Title
VDCMIN	60.00		60.00	V	Minimum DC voltage
VDCMAX			550.00	V	Maximum DC input voltage
VOUT	5.00		5.00	V	Output voltage
IOUT			0.320	A	Average output current
EFFICIENCY_ESTIMATED			0.80		Efficiency estimate at output terminals
EFFICIENCY_CALCULATED			0.57		Calculated efficiency based on real components and operating point
POUT			1.60	W	Continuous output power
INPUT STAGE RESISTANCE			10	Ohms	Input stage resistance in ohms (includes thermistor, filtering components, etc)
PLOSS_INPUTSTAGE			0.011	W	Maximum input stage loss
CONTROLLER VARIABLES					
OPERATION MODE			MCM		Mostly continuous mode of operation
CURRENT LIMIT MODE	STD		STD		Choose 'RED' for reduced current limit or 'STD' for standard current limit
PACKAGE			SMD-8C		Select the device package
DEVICE SERIES	LNK3206		LNK3206		Generic LinkSwitch-TN2 device
DEVICE CODE			LNK3206GQ		Required LinkSwitch-TN2 device
ILIMITMIN			0.450	A	Minimum current limit of the device
ILIMITTYP			0.483	A	Typical current limit of the device
ILIMITMAX			0.515	A	Maximum current limit of the device
RDSON			15.50	ohms	Primary switch on-time drain to source resistance at 125degC
FSMIN			62000	Hz	Minimum switching frequency
FSTYP			66000	Hz	Typical switching frequency
FSMAX			70000	Hz	Maximum switching frequency
BVDSS			750	V	Device breakdown voltage
PRIMARY SWITCH PARAMETERS					
VDSON			2.00	V	Primary switch on-time drain to source voltage estimate
VDSOFF			578	V	Primary switch off-time drain-to-source voltage stress
DUTY			0.123		Maximum duty cycle
TIME_ON_MIN			0.824	us	Primary switch minimum on-time
IPED_PRIMARYSWITCH			0.197	A	Maximum primary switch pedestal current
IRMS_PRIMARYSWITCH			0.118	A	Maximum primary switch RMS current
PLOSS_PRIMARYSWITCH			0.229	W	Maximum primary switch loss
BUCK INDUCTOR PARAMETERS					
INDUCTANCE_MIN			1350	uH	Minimum design inductance required for current delivery. Note that the chosen inductor must be AEC-Q200 compliant

INDUCTANCE_TYP	1500		1500	uH	Typical design inductance required for current delivery. Note that the chosen inductor must be AEC-Q200 compliant
INDUCTANCE_MAX			1650	uH	Maximum design inductance required for current delivery. Note that the chosen inductor must be AEC-Q200 compliant
TOLERANCE_INDUCTANCE			10	%	Tolerance of the design inductance
DC RESISTANCE OF INDUCTOR			2.0	ohms	DC resistance of the buck inductor
FACTOR_KLOSS			0.50		Factor that accounts for "off-state" power loss to be supplied by inductor (usually between 50% to 66%)
IRMS_INDUCTOR			0.357	A	Maximum inductor RMS current
PLOSS_INDUCTOR			0.255	W	Maximum inductor losses
FREEWHEELING DIODE PARAMETERS					
VF_FREEWHEELING			2.40	V	Forward voltage drop across the two freewheeling diodes in series
PIV_RATING			600.00	V	Peak inverse voltage rating of each freewheeling diode
TRR			16	ns	Reverse recovery time of each freewheeling diode
PIV_CALCULATED			578	V	Computed peak inverse voltage across the freewheeling diodes
IRMS_DIODE			0.355	A	Maximum diode RMS current
PLOSS_DIODE			0.796	W	Maximum loss across both freewheeling diodes
RECOMMENDED DIODE	RFN2LAM6STF		RFN2LAM 6STF		Recommended freewheeling diode. Two of this diode in series must be implemented to pass 80% voltage derating and thermal requirements
BIAS/FEEDBACK PARAMETERS					
VF_BIAS			0.70	V	Forward voltage drop of the bias diode
RBIAS			2490	Ohms	Bias resistor
CBP			0.1	uF	BP pin capacitor
RFB			5490	Ohms	Feedback resistor
CFB			10	uF	Feedback capacitor
C_SOFTSTART				uF	No soft-start capacitor required
PLOSS_FEEDBACK			0.003	W	Maximum feedback component losses
OUTPUT CAPACITOR					
OUTPUT VOLTAGE RIPPLE			100	mV	Desired output voltage ripple
IRMS_COUT			0.159	A	Maximum output capacitor RMS current
PLOSS_COUT			0.010	W	Maximum output capacitor power loss
ESR_COUT			408	mOhms	ESR of the output capacitor