



LT8705A 80V $V_{\rm IN}$ and $V_{\rm OUT}$ Synchronous 4-Switch Buck-Boost DC/DC Controller

DESCRIPTION

Demonstration circuit 2285A features two high power high performance buck-boost LT®8705A converters operating in master-slave configuration. The circuit can operate with input voltages above, below or equal to the output voltage. The demo board input range is 36V to 75V. The output is optimized for 48V at 18A, with the output current limit set at 20A. The circuit will operate with lower input voltage than 36V if load current is reduced.

The LT8705A controller has integrated input current, input voltage, output current and output voltage regulators. The one regulator that wants to decrease current gets control over the compensation pin V_C . The inductor current is controlled by the V_C signal that is fed into a current comparator together with a ramp compensation signal.

While the current mode control limits the inductor both in normal and in reverse direction, these current limits have some variation as input voltage changes. The input and output current regulators offer more accurate current limits.

The input voltage regulator is typically used in applications with solar panels or high impedance power sources, and will reduce the current if input voltage drops below the set point.

The operating mode of the controller is determined through the MODE pin (jumper JP1) and can be set to discontinuous mode, forced continuous mode and Burst Mode® operation.

The LT8705A is capable of bidirectional current flow when operating in forced continuous operation. It is important to know that additional circuitry is required for controlled reverse current operation, and this additional circuitry can be elaborate in high power applications where tight control of current amplitude is required.

The SYNC inputs are used to synchronize the two LT8705A power stages with 180-degree phase shift. The DC2285A demo board contains a multiphase clock.

The LT8705A has internal series regulators that provide $INTV_{CC}$ voltage (6.3V Typ) from V_{IN} or $EXTV_{CC}$. Especially in high power applications the internal dissipation of these series regulators can be high. The DC2285A demo board includes an LT8631 buck regulator that is configured for 7.8V. By connecting this low voltage to V_{IN} and $EXTV_{CC}$ the power dissipation is reduced. The auxiliary 7.8V can also be used to power external circuitry.

The LT8705A data sheet gives a complete description of the part, operation and application information. The data sheet should be read in conjunction with this quick start guide for demo circuit 2285A. The input voltage range of the LT8705A itself is 2.8V (with external auxiliary voltage > 6.4V) to 80V and the output range is 1.3V to 80V. The DC2285A demo board has an optional signal interface that makes it easy to add potentiometers and switches (or a microcontroller) for accurate external control of the power stages.

The LT8705AEUHF is assembled in a 38-lead (5mm × 7mm) plastic QFN package with a thermal pad underneath the chip. Proper board layout is essential for maximum thermal and electrical performance. The DC2285A circuit board has mounting holes for an optional heat sink and NTC resistor for monitoring heat sink temperature.

Design files for this circuit board are available at http://www.linear.com/demo/DC2285A

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PERFORMANCE SUMMARY Specifications are at $T_A = 25^{\circ}C$

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
V _{IN}	Input Supply Range		36		75	V
V _{OUT}	Output Voltage			48		V
I _{OUT}	Maximum Output Current	(Current limited at 20A)		20		А
F _{SW}	Switching Frequency			120		kHz
EFF	Efficiency	$V_{IN} = 36V I_{OUT} = 18A \text{ (Set FB}_{IN} \text{ to } 3.3V)$ $V_{IN} = 48V I_{OUT} = 18A$ $V_{IN} = 60V I_{OUT} = 18A$ $V_{IN} = 75V I_{OUT} = 18A \text{ (Disable OVP at } 74.6V)$		98.6 98.7 99.0 98.7		% % % %

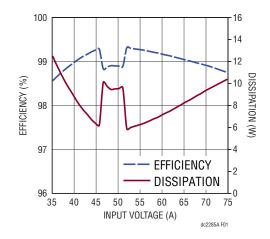


Figure 1. Efficiency and Dissipation at 18A Load

QUICK START PROCEDURE

- Demonstration circuit 2285A is easy to set up to evaluate the performance of the LT8705A. Refer to Figure 2 for proper measurement equipment setup and follow the procedure below. Make sure the configuration jumpers are set correctly.
- 2. With power off, connect the input power supply to V_{IN} (J3) and GND (J4).
- 3. Connect the SHUTDOWN pin (J7:10) to V_{AUX} (J7:12) to disable the board.
- 4. Apply 48V to the input. The power source must have greater than 38A capability if you want to evaluate the board with full load over the input range.
- 5. Open the connection from SHUTDOWN to V_{AUX} to enable the board.
- 6. Note that the demo circuit will operate at V_{IN} down to 32V, as set by the FB_{IN} loop. If operation at this low input voltage is not preferred, increase the value of R67.

- 7. Once the proper output voltage is established, adjust the load and the input voltage within the operating range and observe the output voltage regulation, efficiency and other parameters as needed. When measuring input/output voltages, measure at the input/output terminals of the board to avoid measurement error caused by voltage drops in cables.
- 8. To measure input/output voltage ripple, avoid a long ground lead on the oscilloscope probe. A commonly accepted method is to remove the oscilloscope probe end cap and ground lead and set the 20MHz bandwidth limit on the oscilloscope. Measure the input/output voltage ripple by touching the probe tip directly to the positive terminal of the input or output capacitor. Connect the probe ground terminal to the board's GND plane near the capacitor with a very short wire.

QUICK START PROCEDURE

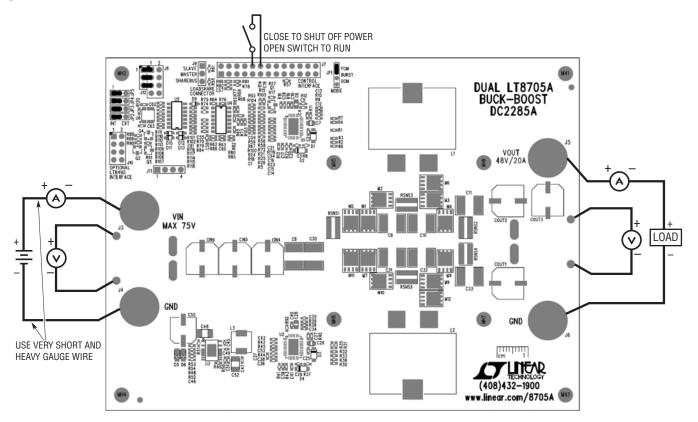


Figure 2. Proper Measurement Equipment Setup

PARTS LIST

Required Circuit Components	ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER	
2 3 COUTT, COUTZ, COUT3 CAP, ALUM., 56μF, 63V, 20% SUN ELEC., 63HVH56M 3 3 C1, C53, C56 CAP, CER., 100000F, XTR, 25V, 10%, 0603 MURATA, GRM188R71E103KA01D 5 2 C4, C27 CAP, CER., 0.1μF, XTR, 16V, 10%, 0603 MURATA, GRM188R71C104KA01D 6 1 C5 CAP, CER., 0.47μF, XTR, 16V, 10%, 0603 MURATA, GRM188R71C104KA01D 7 4 C6, C7, C28, C29 CAP, CER., 1μF, XTR, 16V, 10%, 0603 MURATA, GRM188R71C105KA01L 8 C8, C9, C10, C11, C30-C33 CAP, CER., 1μF, XTR, 16V, 10%, 0603 MURATA, GRM188R71E102KA01D 9 4 C12, C13, C34, C35 CAP, CER., 1μF, XTR, 16V, 10%, 0603 MURATA, GRM188R71E102KA01D 10 2 C14, C36 CAP, CER., 1μF, XTR, 16V, 10%, 0603 MURATA, GRM188R71E102KA01D 11 1 C15 CAP, CER., 20pF, NPO, 25V, 10%, 0603 MURATA, GRM188R71E02KA01D 12 2 C14, C36 CAP, CER., 20pF, NPO, 25V, 10%, 0603 MURATA, GRM188R71E02KA01D 12 2 C16, C38 CAP, CER., 20pF, NPO, 25V, 10%, 0603 MURATA, GRM188T71E02KA01D 12 2	Require	ed Circi	uit Components			
3 C1, C53, C56 CAP, CER., 10000pF, X7R, 25V, 10%, 0603 MURATA, GRM188R7/1E103KA01D d 4 4 C2, C3, C25, C26 CAP, CER., 0.22µF, X7R, 16V, 10%, 0603 TDK, C1608X7R1C224K08DAC CAP, CER., 0.1µF, X7R, 16V, 10%, 0603 TDK, C1608X7R1C224K08DAC CAP, CER., 0.1µF, X7R, 16V, 10%, 0603 MURATA, GRM188R7/1C104KA01D CAP, CER., 0.1µF, X7R, 16V, 10%, 0603 MURATA, GRM188R7/1C104KA01D CAP, CER., 0.1µF, X7R, 16V, 10%, 0603 MURATA, GRM188R7/1C104KA01D CAP, CER., 10µF, X7R, 16V, 10%, 0603 MURATA, GRM188R7/1C105KA01L CAP, CER., 10µF, X7R, 10V, 10%, 0603 MURATA, GRM218R7/1C105KA01L CAP, CER., 10µF, X7R, 10V, 10%, 0603 MURATA, GRM218R7/1C105KA01L CAP, CER., 10µF, X7R, 25V, 10%, 0603 MURATA, GRM188R7/1E102KA01D CAP, CER., 10µF, X7R, 25V, 10%, 0603 MURATA, GRM188R7/1E102KA01D CAP, CER., 10µF, X7R, 25V, 10%, 0603 MURATA, GRM188R7/1E102KA01D CAP, CER., 10µF, X7R, 25V, 10%, 0603 MURATA, GRM188R7/1E102KA01D CAP, CER., 10µF, X7R, 25V, 10%, 0603 MURATA, GRM188R7/1E08KA01D CAP, CER., 10µF, X7R, 25V, 10%, 0603 MURATA, GRM188R7/1E682KA01D CAP, CER., 10µF, X7R, 15V, 10%, 0603 MURATA, GRM188R7/1E682KA01D CAP, CER., 470µF, K7R, 15V, 10%, 0603 MURATA, GRM188R7/1E682KA01D CAP, CER., 470µF, K7R, 15V, 10%, 0603 MURATA, GRM188R7/1E08KA01D CAP, CER., 470µF, K7R, 15V, 10%, 0603 MURATA, GRM188R7/1E08KA01D CAP, CER., 470µF, K7R, 15V, 10%, 0603 MURATA, GRM188SCH1472JA01D CAP, CER., 470µF, K7R, 15V, 10%, 0603 MURATA, GRM188SCH1472JA01D CAP, CER., 470µF, K7R, 15V, 15V, 0603 MURATA, GRM188SCH1472JA01D CAP, CER., 470µF, K7R, 15V, 15V, 0603 MURATA, GRM188SCH1472JA01D CAP, CER., 470µF, K7R, 15V, 15V, 0603 MURATA, GRM188SCH1472JA01D CAP, CER., 470µF, K7R, 15V, 15V, 0603 MURATA, GRM188SCH1472JA01D CAP, CER., 470µF, K7R, 15V, 15V, 0603 MURATA, GRM188SCH1472JA01D CAP, CER., 470µF, K7R, 15V, 15V, 15V, 15V, 15V, 15V, 15V, 15V	1	3	CIN4, CIN5, CIN6	CAP., ALUM., 33µF, 80V, 20%	PANASONIC, EEHZA1K330P	
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10 2 C14, C36 CAP, CER., 1μF, X7R, 16V, 10%, 0603 MURATA, GRM188R71C105KA12D 11 1 C15 CAP, CER., 6800pF, X7R, 25V, 10%, 0603 MURATA, GRM188R71E682KA01D 12 2 C16, C38 CAP, CER., 220pF, NPO, 25V, 10%, 0603 AVX, 06033A221KAT2A 13 6 C19, C20, C21, C40, C41, C42 CAP, CER., 47pF, X5R, 16V, 10%, 0603 TDK, C1608X5R1C475K080AC 14 1 C37 CAP, CER., 47pF, X5R, 16V, 10%, 0603 MURATA, GRM1885C1H472JA01D 15 4 D1, D2, D3, D4 DIDDE, 200V, 1A, SOD123F CENTRAL SEMIL, CMMR1U-02 16 2 L1, L2 IND., PWR., HIGH CURRENT, 15µH, ±10% COILCRAFT, SER2918H-153KL 17 4 M1, M4, M7, M8 XSTR., MOSPET, N-CH, 80V, 100A, PG-TDSON-8 INFINEON, BSC040N08N55 18 4 M2, M3, M9, M10 XSTR., MOSPET, N-CH, 80V, PG-TDSON-8 INFINEON, BSC040N08N55 19 1 RSNS1 RES, CHIP, SENSE, 0.00402, 3W., 1%, WIDE 2512 SUSUMU, KRL6432E-M-R003-F-T1 20 2 RSNS2, RSNS4 RES, CHIP, SENSE, 0.00602, 3W., 1%, WIDE 2512 SUSUMU, KRL6432E-M-R003-F-T1	8	8	C8, C9, C10, C11, C30-C33	CAP, CER., 10µF, X7S, 100V, 20%, 2220	TDK, CKG57KX7S2A106M335JH	
11 1 C15 CAP, CER., 6800pF, X7R, 25V, 10%, 0603 MURATA, GRM188R71E682KA01D 12 2 C16, C38 CAP, CER., 220pF, NP0, 25V, 10%, 0603 AVX, 06033A221KAT2A 13 6 C19, C20, C21, C40, C41, C42 CAP, CER., 47µF, XSR, 18V, 10%, 0603 TDK, C1608XSR1C475X080AC 14 1 C37 CAP, CER., 47µF, XSR, 18V, 10%, 0603 MURATA, GRM1885C1H472JA01D 15 4 D1, D2, D3, D4 DIODE, 200V, 1A, S0D123F CENTRAL SEMI., CMMR1U-02 16 2 L1, L2 IND., PWR., HIGH CURRENT, 15µH, ±10% COILCRAFT, SER2918H-153KL 17 4 M1, M4, M7, M8 XSTR., MOSFET, N-CH, 80V, 100A, PG-TDSON-8 INFINEON, BSC040N08NS5 18 4 M2, M3, M9, M10 XSTR., MOSFET, N-CH, 80V, PG-TDSON-8 INFINEON, BSC117N08NS5 19 1 RSNS1 RES, CHIP, SENSE, 0.003α2, 3W, 1%, WIDE 2512 SUSUMU, KRL6432E-M-R003-F-T1 20 2 RSNS3, RSNS4 RES, CHIP, SENSE, 0.0042, 3W, 1%, WIDE 2512 SUSUMU, KRL6432E-M-R006-F-T1 21 2 RSNS3, RSNS5 RES, CHIP, SENSE, 0.00602, 3W, 1%, WIDE 2512 SUSUMU, KRL6432E-M-R006-F-T1	9	4	C12, C13, C34, C35	CAP, CER., 1000pF, X7R, 25V, 10%, 0603	MURATA, GRM188R71E102KA01D	
12 2 C16, C38 CAP, CER., 220pF, NPO, 25V, 10%, 0603 AVX, 06033A221KAT2A 13 6 C19, C20, C21, C40, C41, C42 CAP, CER., 4.7µF, X5R, 16V, 10%, 0603 TDK, C1608X5R1C475K080AC 14 1 C37 CAP, CER., 4700pF, NPO, 50V, 5%, 0603 MURATA, GRM1885C1H472JA01D 15 4 D1, D2, D3, D4 D10DE, 200V, 1A, S0D123F CENTRAL SEMI., CMMR1U-02 16 2 L1, L2 IND., PWR., HIGH CURRENT, 15µH, ±10% COILCRAFT, SER2918H-153KL 17 4 M1, M4, M7, M8 XSTR., MOSFET, N-CH, 80V, 100A, PG-TDSON-8 INFINEON, BSC040N08NS5 18 4 M2, M3, M9, M10 XSTR., MOSFET, N-CH, 80V, 100A, PG-TDSON-8 INFINEON, BSC117N08NS5 19 1 RSNS1 RES, CHIP, SENSE, 0.003Ω, 3W, 1%, WIDE 2512 SUSUMU, KRI.6432E-M-R003-F-T1 20 2 RSNS2, RSNS4 RES, CHIP, SENSE, 0.003Ω, 3W, 1%, WIDE 2512 SUSUMU, KRI.6432E-M-R004-F-T1 21 2 RSNS3, RSNS5 RES, CHIP, SENSE, 0.006Ω, 3W, 1%, WIDE 2512 SUSUMU, KRI.6432E-M-R006-F-T1 22 2 RS, RS37 RES, CHIP, 20, 1/10W, 1%, 0603 VISHAY, CRCW06031R00FKEA	10	2	C14, C36	CAP, CER., 1µF, X7R, 16V, 10%, 0603	MURATA, GRM188R71C105KA12D	
13 6 C19, C20, C21, C40, C41, C42 CAP, CER., 4.7µF, X5R, 16V, 10%, 0603 TDK, C1608X5R1C475K080AC 14 1 C37 CAP, CER., 4700pF, NPO, 50V, 5%, 0603 MURATA, GRM1885C1H47ZJA01D 15 4 D1, D2, D3, D4 D10DE, 200V, 1A, S0D123F CENTRAL SEMI., CMMR1U-02 16 2 L1, L2 IND., PWR, HIGH CURRENT, 15µH, ±10% C01LCRAFT, SER2918H-153KL 17 4 M1, M4, M7, M8 XSTR., MOSFET, N-CH, 80V, 100A, PG-TDSON-8 INFINEON, BSC040N08NS5 18 4 M2, M3, M9, M10 XSTR., MOSFET, N-CH, 80V, PG-TDSON-8 INFINEON, BSC117N08NS5 19 1 RSNS1 RES, CHIP, SENSE, 0.003Ω, 3W, 1%, WIDE 2512 SUSUMU, KRI.6432E-M-R003-F-T1 20 2 RSNS2, RSNS4 RES, CHIP, SENSE, 0.006Ω, 3W, 1%, WIDE 2512 SUSUMU, KRI.6432E-M-R004-F-T1 21 2 RSNS3, RSNS5 RES, CHIP, ESNSE, 0.006Ω, 3W, 1%, WIDE 2512 SUSUMU, KRI.6432E-M-R006-F-T1 22 8 R1-R4, R30-R33 RES, CHIP, 10Ω, 1/10W, 1%, 0603 VISHAY, CRCW06031R00FKEA 23 2 R8, R37 RES, CHIP, 10Ω, 1/10W, 1%, 0603 VISHAY, CRCW060310R0FKEA	11	1	C15	CAP., CER., 6800pF, X7R, 25V, 10%, 0603	MURATA, GRM188R71E682KA01D	
14 1 C37 CAP, CER., 4700pF, NP0, 50V, 5%, 0603 MURATA, GRM1885C1H472JA01D 15 4 D1, D2, D3, D4 DIODE, 200V, 1A, SOD123F CENTRAL SEMI., CMMR1U-02 16 2 L1, L2 IND., PWR., HIGH CURRENT, 15µH, ±10% COILCRAFT, SER2918H-153KL 17 4 M1, M4, M7, M8 XSTR., MOSFET, N-CH, 80V, 100A, PG-TDSON-8 INFINEON, BSC040N08MS5 18 4 M2, M3, M9, M10 XSTR., MOSFET, N-CH, 80V, PG-TDSON-8 INFINEON, BSC117N08MS5 19 1 RSNS1 RES, CHIP, SENSE, 0.003Ω, 3W, 1%, WIDE 2512 SUSUMU, KRL6432E-M-R003-F-T1 20 2 RSNS2, RSNS4 RES, CHIP, SENSE, 0.006Ω, 3W, 1%, WIDE 2512 SUSUMU, KRL6432E-M-R004-F-T1 21 2 RSNS3, RSNS5 RES, CHIP, SENSE, 0.006Ω, 3W, 1%, WIDE 2512 SUSUMU, KRL6432E-M-R006-F-T1 22 8 R1-R4, R30-R33 RES, CHIP, SENSE, 0.006Ω, 3W, 1%, WIDE 2512 SUSUMU, KRL6432E-M-R006-F-T1 23 2 R8, R37 RES, CHIP, SENSE, 0.0060, 3W, 1%, WIDE 2512 SUSUMU, KRL6432E-M-R006-F-T1 24 4 R9, R10, R38, R39 RES, CHIP, 10W, 1710W, 1%, 0603 VISHAY, CRCW06033R0FKEA	12	2	C16, C38	CAP, CER., 220pF, NPO, 25V, 10%, 0603	AVX, 06033A221KAT2A	
15 4 D1, D2, D3, D4 DIODE, 200V, 1A, SOD123F CENTRAL SEMI., CMMR1U-02 16 2 L1, L2 IND., PWR., HIGH CURRENT, 15μH, ±10% COILCRAFT, SER2918H-153KL 17 4 M1, M4, M7, M8 XSTR., MOSFET, N-CH, 80V, 100A, PG-TDSON-8 INFINEON, BSC040N08NS5 18 4 M2, M3, M9, M10 XSTR., MOSFET, N-CH, 80V, PG-TDSON-8 INFINEON, BSC117708NS5 19 1 RSNS1 RES, CHIP, SENSE, 0.0032Ω, 3W, 1%, WIDE 2512 SUSUMU, KRL6432E-M-R003-F-T1 20 2 RSNS2, RSNS4 RES, CHIP, SENSE, 0.004Ω, 3W, 1%, WIDE 2512 SUSUMU, KRL6432E-M-R004-F-T1 21 2 RSNS3, RSNS5 RES, CHIP, SENSE, 0.006Ω, 3W, 1%, WIDE 2512 SUSUMU, KRL6432E-M-R004-F-T1 22 8 R1-R4, R30-R33 RES, CHIP, 102, 1/10W, 1%, 0603 VISHAY, CRCW06031R00FKEA 23 2 R8, R37 RES, CHIP, 102, 1/10W, 1%, 0603 VISHAY, CRCW06031R00FKEA 24 4 R9, R10, R38, R39 RES, CHIP, 102, 1/10W, 1%, 0603 VISHAY, CRCW060310R0FKEA 25 2 R11, R40 RES, CHIP, 100, 1/10W, 1%, 0603 VISHAY, CRCW060329R0FKEA 2	13	6	C19, C20, C21, C40, C41, C42	CAP, CER., 4.7µF, X5R, 16V, 10%, 0603	TDK, C1608X5R1C475K080AC	
16 2 L1, L2 IND., PWR., HIGH CURRENT, 15μH, ±10% COILCRAFT, SER2918H-153KL 17 4 M1, M4, M7, M8 XSTR., MOSFET, N-CH, 80V, 100A, PG-TDSON-8 INFINEON, BSC040N08NS5 18 4 M2, M3, M9, M10 XSTR., MOSFET, N-CH, 80V, PG-TDSON-8 INFINEON, BSC117N08NS5 19 1 RSNS1 RES, CHIP, SENSE, 0.003Ω, 3W, 1%, WIDE 2512 SUSUMU, KRL6432E-M-R003-F-T1 20 2 RSNS2, RSNS4 RES, CHIP, SENSE, 0.004Ω, 3W, 1%, WIDE 2512 SUSUMU, KRL6432E-M-R004-F-T1 21 2 RSNS3, RSNS5 RES, CHIP, SENSE, 0.006Ω, 3W, 1%, WIDE 2512 SUSUMU, KRL6432E-M-R004-F-T1 22 8 R1-R4, R30-R33 RES, CHIP, SENSE, 0.006Ω, 3W, 1%, WIDE 2512 SUSUMU, KRL6432E-M-R006-F-T1 23 2 R8, R37 RES, CHIP, 3.Ω, 1/10W, 1%, 0603 VISHAY, CRCW06031R00FKEA 24 4 R9, R10, R38, R39 RES, CHIP, 10Ω, 1/10W, 1%, 0603 VISHAY, CRCW06031R00FKEA 25 2 R11, R40 RES, CHIP, 22.1Ω, 1/10W, 1%, 0603 VISHAY, CRCW060349R9FKEA 27 1 R16 RES, CHIP, 20L, 1/10W, 1%, 0603 VISHAY, CRCW060310K0FKEA	14	1	C37	CAP, CER., 4700pF, NP0, 50V, 5%, 0603	MURATA, GRM1885C1H472JA01D	
17 4 M1, M4, M7, M8 XSTR., MOSFET, N-CH, 80V, 100A, PG-TDSON-8 INFINEON, BSC040N08NS5 18 4 M2, M3, M9, M10 XSTR., MOSFET, N-CH, 80V, PG-TDSON-8 INFINEON, BSC117N08NS5 19 1 RSNS1 RES, CHIP, SENSE, 0.003Ω, 3W, 1%, WIDE 2512 SUSUMU, KRL6432E-M-R003-F-T1 20 2 RSNS2, RSNS4 RES, CHIP, SENSE, 0.006Ω, 3W, 1%, WIDE 2512 SUSUMU, KRL6432E-M-R004-F-T1 21 2 RSNS3, RSNS5 RES, CHIP, SENSE, 0.006Ω, 3W, 1%, WIDE 2512 SUSUMU, KRL6432E-M-R004-F-T1 22 8 R1-R4, R30-R33 RES, CHIP, SENSE, 0.006Ω, 3W, 1%, WIDE 2512 SUSUMU, KRL6432E-M-R004-F-T1 23 2 R8, R37 RES, CHIP, 20.1/10W, 1%, 0603 VISHAY, CRCW06031R0FKEA 24 4 R9, R10, R38, R39 RES, CHIP, 10Ω, 1/10W, 1%, 0603 VISHAY, CRCW060322R1FKEA 25 2 R11, R40 RES, CHIP, 21Ω, 1/10W, 1%, 0603 VISHAY, CRCW060322R1FKEA 26 1 R12 RES, CHIP, 29Ω, 1/10W, 1%, 0603 VISHAY, CRCW0603100KFKEA 28 1 R65 RES, CHIP, 100K, 1/10W, 1%, 0603 VISHAY, CRCW060310KFKEA 30	15	4	D1, D2, D3, D4	DIODE, 200V, 1A, SOD123F	CENTRAL SEMI., CMMR1U-02	
18 4 M2, M3, M9, M10 XSTR., MOSFET, N-CH, 80V, PG-TDSON-8 INFINEON, BSC117N08NS5 19 1 RSNS1 RES, CHIP, SENSE, 0.003Ω, 3W, 1%, WIDE 2512 SUSUMU, KRL6432E-M-R003-F-T1 20 2 RSNS2, RSNS4 RES, CHIP, SENSE, 0.004Ω, 3W, 1%, WIDE 2512 SUSUMU, KRL6432E-M-R004-F-T1 21 2 RSNS3, RSNS5 RES, CHIP, SENSE, 0.006Ω, 3W, 1%, WIDE 2512 SUSUMU, KRL6432E-M-R006-F-T1 22 8 R1-R4, R30-R33 RES, CHIP, 1Ω, 1/10W, 1%, 0603 VISHAY, CRCW06031R00FKEA 23 2 R8, R37 RES, CHIP, 3.3Ω, 1/10W, 1%, 0603 VISHAY, CRCW06033R30FKEA 24 4 R9, R10, R38, R39 RES, CHIP, 10Ω, 1/10W, 1%, 0603 VISHAY, CRCW060310R0FKEA 25 2 R11, R40 RES, CHIP, 22.1Ω, 1/10W, 1%, 0603 VISHAY, CRCW060322R1FKEA 26 1 R12 RES, CHIP, 49.9Ω, 1/10W, 1%, 0603 VISHAY, CRCW060349R9FKEA 27 1 R16 RES, CHIP, 10k, 1/10W, 1%, 0603 VISHAY, CRCW060310K0FKEA 28 1 R65 RES, CHIP, 20k, 1/10W, 1%, 0603 VISHAY, CRCW060328K7FKEA 30 2	16	2	L1, L2	IND., PWR., HIGH CURRENT, 15µH, ±10%	<u>'</u>	
19 1 RSNS1 RES, CHIR, SENSE, 0.003Ω, 3W, 1%, WIDE 2512 SUSUMU, KRL6432E-M-R003-F-T1 20 2 RSNS2, RSNS4 RES, CHIR, SENSE, 0.004Ω, 3W, 1%, WIDE 2512 SUSUMU, KRL6432E-M-R004-F-T1 21 2 RSNS3, RSNS5 RES, CHIR, SENSE, 0.006Ω, 3W, 1%, WIDE 2512 SUSUMU, KRL6432E-M-R006-F-T1 22 8 R1-R4, R30-R33 RES, CHIR, 1Ω, 1/10W, 1%, 0603 VISHAY, CRCW06031R00FKEA 23 2 R8, R37 RES, CHIR, 1Ω, 1/10W, 1%, 0603 VISHAY, CRCW06033R30FKEA 24 4 R9, R10, R38, R39 RES, CHIR, 10Ω, 1/10W, 1%, 0603 VISHAY, CRCW060310R0FKEA 25 2 R11, R40 RES, CHIR, 22.1Ω, 1/10W, 1%, 0603 VISHAY, CRCW060322R1FKEA 26 1 R12 RES, CHIR, 49.9Ω, 1/10W, 1%, 0603 VISHAY, CRCW060349R9FKEA 27 1 R16 RES, CHIR, 100k, 1/10W, 1%, 0603 VISHAY, CRCW060310K9FKEA 28 1 R65 RES, CHIR, 10k, 1/10W, 1%, 0603 VISHAY, CRCW060310K9FKEA 29 1 R21 RES, CHIR, 20k, 1/10W, 1%, 0603 VISHAY, CRCW060326KFKEA 30 2 R22, R43<	17	4	M1, M4, M7, M8	XSTR., MOSFET, N-CH, 80V, 100A, PG-TDSON-8	INFINEON, BSC040N08NS5	
20 2 RSNS2, RSNS4 RES, CHIP, SENSE, 0.004Ω, 3W, 1%, WIDE 2512 SUSUMU, KRL6432E-M-R004-F-T1 21 2 RSNS3, RSNS5 RES, CHIP, SENSE, 0.006Ω, 3W, 1%, WIDE 2512 SUSUMU, KRL6432E-M-R006-F-T1 22 8 R1-R4, R30-R33 RES, CHIP, 1Ω, 1/10W, 1%, 0603 VISHAY, CRCW06031R00FKEA 23 2 R8, R37 RES, CHIP, 1Ω, 1/10W, 1%, 0603 VISHAY, CRCW06033R30FKEA 24 4 R9, R10, R38, R39 RES, CHIP, 10Ω, 1/10W, 1%, 0603 VISHAY, CRCW060310R0FKEA 25 2 R11, R40 RES, CHIP, 22.1Ω, 1/10W, 1%, 0603 VISHAY, CRCW060322R1FKEA 26 1 R12 RES, CHIP, 49.9Ω, 1/10W, 1%, 0603 VISHAY, CRCW060349R9FKEA 27 1 R16 RES, CHIP, 100k, 1/10W, 1%, 0603 VISHAY, CRCW060310KFKEA 28 1 R65 RES, CHIP, 23.7k, 1/10W, 1%, 0603 VISHAY, CRCW060328XFFKEA 30 2 R22, R43 RES, CHIP, 23.7k, 1/10W, 1%, 0603 VISHAY, CRCW060336KFKEA 31 1 R23 RES, CHIP, 20k, 1/10W, 1%, 0603 VISHAY, CRCW060320K0FKEA 32 1 R26 <t< td=""><td>18</td><td>4</td><td>M2, M3, M9, M10</td><td>XSTR., MOSFET, N-CH, 80V, PG-TDSON-8</td><td>INFINEON, BSC117N08NS5</td></t<>	18	4	M2, M3, M9, M10	XSTR., MOSFET, N-CH, 80V, PG-TDSON-8	INFINEON, BSC117N08NS5	
21 2 RSNS3, RSNS5 RES, CHIP, SENSE, 0.006Ω, 3W, 1%, WIDE 2512 SUSUMU, KRL6432E-M-R006-F-T1 22 8 R1-R4, R30-R33 RES, CHIP, 1Ω, 1/10W, 1%, 0603 VISHAY, CRCW06031R00FKEA 23 2 R8, R37 RES, CHIP, 3.3Ω, 1/10W, 1%, 0603 VISHAY, CRCW060310R0FKEA 24 4 R9, R10, R38, R39 RES, CHIP, 10Ω, 1/10W, 1%, 0603 VISHAY, CRCW060310R0FKEA 25 2 R11, R40 RES, CHIP, 22.1Ω, 1/10W, 1%, 0603 VISHAY, CRCW060322R1FKEA 26 1 R12 RES, CHIP, 49.9Ω, 1/10W, 1%, 0603 VISHAY, CRCW060349R9FKEA 27 1 R16 RES, CHIP, 100k, 1/10W, 1%, 0603 VISHAY, CRCW060310K0FKEA 28 1 R65 RES, CHIP, 10k, 1/10W, 1%, 0603 VISHAY, CRCW060310K0FKEA 29 1 R21 RES, CHIP, 23.7k, 1/10W, 1%, 0603 VISHAY, CRCW060323K7FKEA 30 2 R22, R43 RES, CHIP, 20k, 1/10W, 1%, 0603 VISHAY, CRCW060326K0FKEA 31 1 R23 RES, CHIP, 20k, 1/10W, 1%, 0603 VISHAY, CRCW0603750KFKEA 32 1 R26 RES, CHIP, 12.1k, 1/10W, 1%, 0603 VISHAY, CRCW060312K1FKEA 34 1 </td <td>19</td> <td>1</td> <td>RSNS1</td> <td>RES, CHIP, SENSE, 0.003Ω, 3W, 1%, WIDE 2512</td> <td>SUSUMU, KRL6432E-M-R003-F-T1</td>	19	1	RSNS1	RES, CHIP, SENSE, 0.003Ω, 3W, 1%, WIDE 2512	SUSUMU, KRL6432E-M-R003-F-T1	
22 8 R1-R4, R30-R33 RES, CHIP, 1Ω, 1/10W, 1%, 0603 VISHAY, CRCW06031R00FKEA 23 2 R8, R37 RES, CHIP, 3.3Ω, 1/10W, 1%, 0603 VISHAY, CRCW06033R30FKEA 24 4 R9, R10, R38, R39 RES, CHIP, 10Ω, 1/10W, 1%, 0603 VISHAY, CRCW060310R0FKEA 25 2 R11, R40 RES, CHIP, 22.1Ω, 1/10W, 1%, 0603 VISHAY, CRCW060322R1FKEA 26 1 R12 RES, CHIP, 49.9Ω, 1/10W, 1%, 0603 VISHAY, CRCW060349R9FKEA 27 1 R16 RES, CHIP, 100k, 1/10W, 1%, 0603 VISHAY, CRCW060310KFKEA 28 1 R65 RES, CHIP, 10k, 1/10W, 1%, 0603 VISHAY, CRCW060310KFKEA 29 1 R21 RES, CHIP, 23.7k, 1/10W, 1%, 0603 VISHAY, CRCW060323K7FKEA 30 2 R22, R43 RES, CHIP, 365k, 1/10W, 1%, 0603 VISHAY, CRCW0603365KFKEA 31 1 R23 RES, CHIP, 750k, 1/10W, 1%, 0603 VISHAY, CRCW0603750KFKEA 32 1 R26 RES, CHIP, 750k, 1/10W, 1%, 0603 VISHAY, CRCW060312K1FKEA 34 1 R42 RES, CHIP, 590k, 1/10W, 1%, 0603 VISHAY, CRCW060312K1FKEA 35 1 R44	20	2	RSNS2, RSNS4	RES, CHIP, SENSE, 0.004Ω, 3W, 1%, WIDE 2512	SUSUMU, KRL6432E-M-R004-F-T1	
23 2 R8, R37 RES, CHIP, 3.3Ω, 1/10W, 1%, 0603 VISHAY, CRCW06033R30FKEA 24 4 R9, R10, R38, R39 RES, CHIP, 10Ω, 1/10W, 1%, 0603 VISHAY, CRCW060310R0FKEA 25 2 R11, R40 RES, CHIP, 22.1Ω, 1/10W, 1%, 0603 VISHAY, CRCW060322R1FKEA 26 1 R12 RES, CHIP, 49.9Ω, 1/10W, 1%, 0603 VISHAY, CRCW060349R9FKEA 27 1 R16 RES, CHIP, 100k, 1/10W, 1%, 0603 VISHAY, CRCW0603100KFKEA 28 1 R65 RES, CHIP, 10k, 1/10W, 1%, 0603 VISHAY, CRCW060310K0FKEA 29 1 R21 RES, CHIP, 23.7k, 1/10W, 1%, 0603 VISHAY, CRCW060323K7FKEA 30 2 R22, R43 RES, CHIP, 365k, 1/10W, 1%, 0603 VISHAY, CRCW0603365KFKEA 31 1 R23 RES, CHIP, 20k, 1/10W, 1%, 0603 VISHAY, CRCW060320K0FKEA 32 1 R26 RES, CHIP, 750k, 1/10W, 1%, 0603 VISHAY, CRCW0603750KFKEA 34 1 R42 RES, CHIP, 12.1k, 1/10W, 1%, 0603 VISHAY, CRCW060312K1FKEA 35 1 R44 RES, CHIP, 950k, 1/10W, 1%, 0603 VI	21	2	RSNS3, RSNS5	RES, CHIP, SENSE, 0.006Ω, 3W, 1%, WIDE 2512	SUSUMU, KRL6432E-M-R006-F-T1	
24 4 R9, R10, R38, R39 RES, CHIP, 10Ω, 1/10W, 1%, 0603 VISHAY, CRCW060310R0FKEA 25 2 R11, R40 RES, CHIP, 22.1Ω, 1/10W, 1%, 0603 VISHAY, CRCW060322R1FKEA 26 1 R12 RES, CHIP, 49.9Ω, 1/10W, 1%, 0603 VISHAY, CRCW060349R9FKEA 27 1 R16 RES, CHIP, 100k, 1/10W, 1%, 0603 VISHAY, CRCW0603100KFKEA 28 1 R65 RES, CHIP, 10k, 1/10W, 1%, 0603 VISHAY, CRCW060310K0FKEA 29 1 R21 RES, CHIP, 23.7k, 1/10W, 1%, 0603 VISHAY, CRCW060323K7FKEA 30 2 R22, R43 RES, CHIP, 365k, 1/10W, 1%, 0603 VISHAY, CRCW0603365KFKEA 31 1 R23 RES, CHIP, 20k, 1/10W, 1%, 0603 VISHAY, CRCW060320K0FKEA 32 1 R26 RES, CHIP, 750k, 1/10W, 1%, 0603 VISHAY, CRCW0603750KFKEA 33 1 R42 RES, CHIP, 12.1k, 1/10W, 1%, 0603 VISHAY, CRCW060312K1FKEA 34 1 R45 RES, CHIP, 16.9k, 1/10W, 1%, 0603 VISHAY, CRCW060316K9FKEA 35 1 R44 RES, CHIP, 16.9k, 1/10W, 1%, 0603 VISH	22	8	R1-R4, R30-R33	RES, CHIP, 1Ω, 1/10W, 1%, 0603	VISHAY, CRCW06031R00FKEA	
25 2 R11, R40 RES, CHIP, 22.1Ω, 1/10W, 1%, 0603 VISHAY, CRCW060322R1FKEA 26 1 R12 RES, CHIP, 49.9Ω, 1/10W, 1%, 0603 VISHAY, CRCW060349R9FKEA 27 1 R16 RES, CHIP, 100k, 1/10W, 1%, 0603 VISHAY, CRCW0603100KFKEA 28 1 R65 RES, CHIP, 10k, 1/10W, 1%, 0603 VISHAY, CRCW060310K0FKEA 29 1 R21 RES, CHIP, 23.7k, 1/10W, 1%, 0603 VISHAY, CRCW060323K7FKEA 30 2 R22, R43 RES, CHIP, 365k, 1/10W, 1%, 0603 VISHAY, CRCW0603365KFKEA 31 1 R23 RES, CHIP, 20k, 1/10W, 1%, 0603 VISHAY, CRCW060320K0FKEA 32 1 R26 RES, CHIP, 750k, 1/10W, 1%, 0603 VISHAY, CRCW0603750KFKEA 33 1 R42 RES, CHIP, 12.1k, 1/10W, 1%, 0603 VISHAY, CRCW060312K1FKEA 34 1 R45 RES, CHIP, 590k, 1/10W, 1%, 0603 VISHAY, CRCW0603590KFKEA 35 1 R44 RES, CHIP, 34.8k, 1/10W, 1%, 0603 VISHAY, CRCW060334K8FKEA 36 1 R73 RES, CHIP, 36.5k, 1/10W, 1%, 0603 VISHAY, CRCW06033	23	2	R8, R37	RES, CHIP, 3.3Ω, 1/10W, 1%, 0603	VISHAY, CRCW06033R30FKEA	
26 1 R12 RES, CHIP, 49.9Ω, 1/10W, 1%, 0603 VISHAY, CRCW060349R9FKEA 27 1 R16 RES, CHIP, 100k, 1/10W, 1%, 0603 VISHAY, CRCW0603100KFKEA 28 1 R65 RES, CHIP, 10k, 1/10W, 1%, 0603 VISHAY, CRCW060310K0FKEA 29 1 R21 RES, CHIP, 23.7k, 1/10W, 1%, 0603 VISHAY, CRCW060323K7FKEA 30 2 R22, R43 RES, CHIP, 365k, 1/10W, 1%, 0603 VISHAY, CRCW0603365KFKEA 31 1 R23 RES, CHIP, 20k, 1/10W, 1%, 0603 VISHAY, CRCW060320K0FKEA 32 1 R26 RES, CHIP, 750k, 1/10W, 1%, 0603 VISHAY, CRCW0603750KFKEA 33 1 R42 RES, CHIP, 12.1k, 1/10W, 1%, 0603 VISHAY, CRCW060312K1FKEA 34 1 R45 RES, CHIP, 590k, 1/10W, 1%, 0603 VISHAY, CRCW0603590KFKEA 35 1 R44 RES, CHIP, 16.9k, 1/10W, 1%, 0603 VISHAY, CRCW060336K9FKEA 36 1 R73 RES, CHIP, 34.8k, 1/10W, 1%, 0603 VISHAY, CRCW060336K5FKEA 37 1 R75 RES, CHIP, 36.5k, 1/10W, 1%, 0603 VISHAY, CRCW060336K5FKEA	24	4	R9, R10, R38, R39	RES, CHIP, 10Ω, 1/10W, 1%, 0603	VISHAY, CRCW060310R0FKEA	
27 1 R16 RES, CHIP, 100k, 1/10W, 1%, 0603 VISHAY, CRCW0603100KFKEA 28 1 R65 RES, CHIP, 10k, 1/10W, 1%, 0603 VISHAY, CRCW060310K0FKEA 29 1 R21 RES, CHIP, 23.7k, 1/10W, 1%, 0603 VISHAY, CRCW060323K7FKEA 30 2 R22, R43 RES, CHIP, 365k, 1/10W, 1%, 0603 VISHAY, CRCW0603365KFKEA 31 1 R23 RES, CHIP, 20k, 1/10W, 1%, 0603 VISHAY, CRCW060320K0FKEA 32 1 R26 RES, CHIP, 750k, 1/10W, 1%, 0603 VISHAY, CRCW0603750KFKEA 33 1 R42 RES, CHIP, 12.1k, 1/10W, 1%, 0603 VISHAY, CRCW060312K1FKEA 34 1 R45 RES, CHIP, 590k, 1/10W, 1%, 0603 VISHAY, CRCW0603590KFKEA 35 1 R44 RES, CHIP, 16.9k, 1/10W, 1%, 0603 VISHAY, CRCW060316K9FKEA 36 1 R73 RES, CHIP, 34.8k, 1/10W, 1%, 0603 VISHAY, CRCW060334K8FKEA 37 1 R75 RES, CHIP, 36.5k, 1/10W, 1%, 0603 VISHAY, CRCW060336K5FKEA	25	2	R11, R40	RES, CHIP, 22.1Ω, 1/10W, 1%, 0603	VISHAY, CRCW060322R1FKEA	
28 1 R65 RES, CHIP, 10k, 1/10W, 1%, 0603 VISHAY, CRCW060310K0FKEA 29 1 R21 RES, CHIP, 23.7k, 1/10W, 1%, 0603 VISHAY, CRCW060323K7FKEA 30 2 R22, R43 RES, CHIP, 365k, 1/10W, 1%, 0603 VISHAY, CRCW0603365KFKEA 31 1 R23 RES, CHIP, 20k, 1/10W, 1%, 0603 VISHAY, CRCW060320K0FKEA 32 1 R26 RES, CHIP, 750k, 1/10W, 1%, 0603 VISHAY, CRCW0603750KFKEA 33 1 R42 RES, CHIP, 12.1k, 1/10W, 1%, 0603 VISHAY, CRCW060312K1FKEA 34 1 R45 RES, CHIP, 590k, 1/10W, 1%, 0603 VISHAY, CRCW0603590KFKEA 35 1 R44 RES, CHIP, 16.9k, 1/10W, 1%, 0603 VISHAY, CRCW060316K9FKEA 36 1 R73 RES, CHIP, 34.8k, 1/10W, 1%, 0603 VISHAY, CRCW060334K8FKEA 37 1 R75 RES, CHIP, 36.5k, 1/10W, 1%, 0603 VISHAY, CRCW060336K5FKEA	26	1	R12	RES, CHIP, 49.9Ω, 1/10W, 1%, 0603	VISHAY, CRCW060349R9FKEA	
29 1 R21 RES, CHIP, 23.7k, 1/10W, 1%, 0603 VISHAY, CRCW060323K7FKEA 30 2 R22, R43 RES, CHIP, 365k, 1/10W, 1%, 0603 VISHAY, CRCW0603365KFKEA 31 1 R23 RES, CHIP, 20k, 1/10W, 1%, 0603 VISHAY, CRCW060320K0FKEA 32 1 R26 RES, CHIP, 750k, 1/10W, 1%, 0603 VISHAY, CRCW0603750KFKEA 33 1 R42 RES, CHIP, 12.1k, 1/10W, 1%, 0603 VISHAY, CRCW060312K1FKEA 34 1 R45 RES, CHIP, 590k, 1/10W, 1%, 0603 VISHAY, CRCW0603590KFKEA 35 1 R44 RES, CHIP, 16.9k, 1/10W, 1%, 0603 VISHAY, CRCW060316K9FKEA 36 1 R73 RES, CHIP, 34.8k, 1/10W, 1%, 0603 VISHAY, CRCW060334K8FKEA 37 1 R75 RES, CHIP, 36.5k, 1/10W, 1%, 0603 VISHAY, CRCW060336K5FKEA	27	1	R16	RES, CHIP, 100k, 1/10W, 1%, 0603	VISHAY, CRCW0603100KFKEA	
30 2 R22, R43 RES, CHIP, 365k, 1/10W, 1%, 0603 VISHAY, CRCW0603365KFKEA 31 1 R23 RES, CHIP, 20k, 1/10W, 1%, 0603 VISHAY, CRCW060320K0FKEA 32 1 R26 RES, CHIP, 750k, 1/10W, 1%, 0603 VISHAY, CRCW0603750KFKEA 33 1 R42 RES, CHIP, 12.1k, 1/10W, 1%, 0603 VISHAY, CRCW060312K1FKEA 34 1 R45 RES, CHIP, 590k, 1/10W, 1%, 0603 VISHAY, CRCW0603590KFKEA 35 1 R44 RES, CHIP, 16.9k, 1/10W, 1%, 0603 VISHAY, CRCW060316K9FKEA 36 1 R73 RES, CHIP, 34.8k, 1/10W, 1%, 0603 VISHAY, CRCW060334K8FKEA 37 1 R75 RES, CHIP, 36.5k, 1/10W, 1%, 0603 VISHAY, CRCW060336K5FKEA	28	1	R65	RES, CHIP, 10k, 1/10W, 1%, 0603	VISHAY, CRCW060310K0FKEA	
31 1 R23 RES, CHIP, 20k, 1/10W, 1%, 0603 VISHAY, CRCW060320K0FKEA 32 1 R26 RES, CHIP, 750k, 1/10W, 1%, 0603 VISHAY, CRCW0603750KFKEA 33 1 R42 RES, CHIP, 12.1k, 1/10W, 1%, 0603 VISHAY, CRCW060312K1FKEA 34 1 R45 RES, CHIP, 590k, 1/10W, 1%, 0603 VISHAY, CRCW0603590KFKEA 35 1 R44 RES, CHIP, 16.9k, 1/10W, 1%, 0603 VISHAY, CRCW060316K9FKEA 36 1 R73 RES, CHIP, 34.8k, 1/10W, 1%, 0603 VISHAY, CRCW060334K8FKEA 37 1 R75 RES, CHIP, 36.5k, 1/10W, 1%, 0603 VISHAY, CRCW060336K5FKEA	29	1	R21	RES, CHIP, 23.7k, 1/10W, 1%, 0603	VISHAY, CRCW060323K7FKEA	
32 1 R26 RES, CHIP, 750k, 1/10W, 1%, 0603 VISHAY, CRCW0603750KFKEA 33 1 R42 RES, CHIP, 12.1k, 1/10W, 1%, 0603 VISHAY, CRCW060312K1FKEA 34 1 R45 RES, CHIP, 590k, 1/10W, 1%, 0603 VISHAY, CRCW0603590KFKEA 35 1 R44 RES, CHIP, 16.9k, 1/10W, 1%, 0603 VISHAY, CRCW060316K9FKEA 36 1 R73 RES, CHIP, 34.8k, 1/10W, 1%, 0603 VISHAY, CRCW060334K8FKEA 37 1 R75 RES, CHIP, 36.5k, 1/10W, 1%, 0603 VISHAY, CRCW060336K5FKEA	30	2	R22, R43	RES, CHIP, 365k, 1/10W, 1%, 0603	VISHAY, CRCW0603365KFKEA	
33 1 R42 RES, CHIP, 12.1k, 1/10W, 1%, 0603 VISHAY, CRCW060312K1FKEA 34 1 R45 RES, CHIP, 590k, 1/10W, 1%, 0603 VISHAY, CRCW0603590KFKEA 35 1 R44 RES, CHIP, 16.9k, 1/10W, 1%, 0603 VISHAY, CRCW060316K9FKEA 36 1 R73 RES, CHIP, 34.8k, 1/10W, 1%, 0603 VISHAY, CRCW060334K8FKEA 37 1 R75 RES, CHIP, 36.5k, 1/10W, 1%, 0603 VISHAY, CRCW060336K5FKEA	31	1	R23	RES, CHIP, 20k, 1/10W, 1%, 0603	VISHAY, CRCW060320K0FKEA	
34 1 R45 RES, CHIP, 590k, 1/10W, 1%, 0603 VISHAY, CRCW0603590KFKEA 35 1 R44 RES, CHIP, 16.9k, 1/10W, 1%, 0603 VISHAY, CRCW060316K9FKEA 36 1 R73 RES, CHIP, 34.8k, 1/10W, 1%, 0603 VISHAY, CRCW060334K8FKEA 37 1 R75 RES, CHIP, 36.5k, 1/10W, 1%, 0603 VISHAY, CRCW060336K5FKEA	32	1	R26	RES, CHIP, 750k, 1/10W, 1%, 0603	VISHAY, CRCW0603750KFKEA	
35 1 R44 RES, CHIP, 16.9k, 1/10W, 1%, 0603 VISHAY, CRCW060316K9FKEA 36 1 R73 RES, CHIP, 34.8k, 1/10W, 1%, 0603 VISHAY, CRCW060334K8FKEA 37 1 R75 RES, CHIP, 36.5k, 1/10W, 1%, 0603 VISHAY, CRCW060336K5FKEA	33	1	R42	RES, CHIP, 12.1k, 1/10W, 1%, 0603	VISHAY, CRCW060312K1FKEA	
36 1 R73 RES, CHIP, 34.8k, 1/10W, 1%, 0603 VISHAY, CRCW060334K8FKEA 37 1 R75 RES, CHIP, 36.5k, 1/10W, 1%, 0603 VISHAY, CRCW060336K5FKEA	34	1	R45	RES, CHIP, 590k, 1/10W, 1%, 0603	VISHAY, CRCW0603590KFKEA	
37 1 R75 RES, CHIP, 36.5k, 1/10W, 1%, 0603 VISHAY, CRCW060336K5FKEA	35	1	R44	RES, CHIP, 16.9k, 1/10W, 1%, 0603	VISHAY, CRCW060316K9FKEA	
37 1 R75 RES, CHIP, 36.5k, 1/10W, 1%, 0603 VISHAY, CRCW060336K5FKEA	36	1	R73	RES, CHIP, 34.8k, 1/10W, 1%, 0603	VISHAY, CRCW060334K8FKEA	
38 2 R79, R80 RES, CHIP, 38.3k, 1/10W, 1%, 0603 VISHAY, CRCW060338K3FKEA	37	1	R75	RES, CHIP, 36.5k, 1/10W, 1%, 0603	VISHAY, CRCW060336K5FKEA	
	38	2	R79, R80	RES, CHIP, 38.3k, 1/10W, 1%, 0603	VISHAY, CRCW060338K3FKEA	

DEMO MANUAL DC2285A

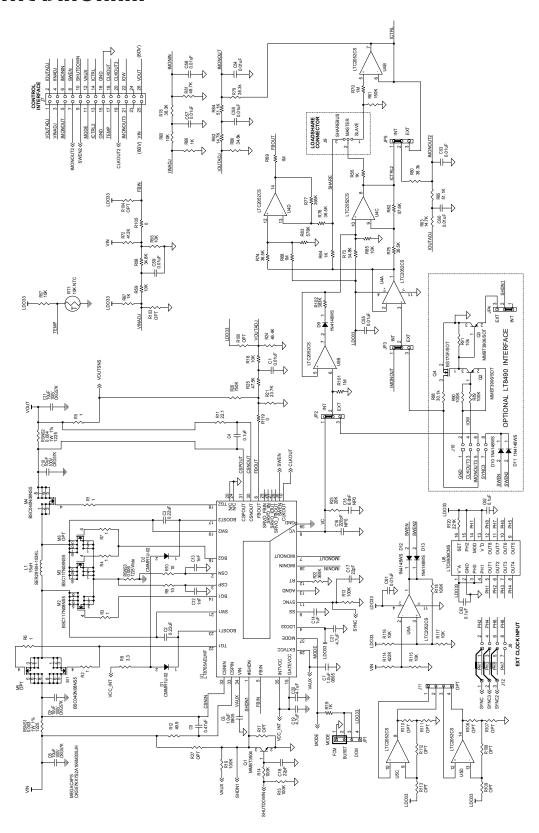
PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER	
39	1	R81	RES, CHIP, 48.7k, 1/10W, 1%, 0603	VISHAY, CRCW060348K7FKEA	
40	1	R82	RES, CHIP, 60.4k, 1/10W, 1%, 0603	VISHAY, CRCW060360K4FKEA	
41	2	U1, U2	I.C., BUCK BOOST DC/DC CONTROLLER, 38-QFN	LINEAR TECH., LT8705AEUHF#PBF	
42	1	U4	I.C., OP AMP, S014	LINEAR TECH., LTC2052CS#PBF	
Additio	nal Dei	no Board Circuit Components			
1	7	C1, C55, C57, C58, C59, C60, C61	CAP, CER., 10000pF, X7R, 25V, 10%, 0603	MURATA, GRM188R71E103KA01D	
2	1	C46	CAP, CER., 0.1µF, X7R, 16V, 10%, 0603	MURATA, GRM188R71C104KA01D	
3	1	C47	CAP, CER., 1µF, X7R, 16V, 10%, 0603	MURATA, GRM188R71C105KA12D	
4	3	C17, C18, C39	CAP, CER., 22pF, NPO, 25V, 5%, 0603	AVX, 06033A220JAT2A	
5	1	C45	CAP, CER., 0.1µF, X7R, 10V, 10%, 0402	MURATA, GRM155R71A104KA01D	
6	1	C48	CAP, CER., 1µF, X7R, 100V, 10%, 1210	AVX, 12101C105KAT2A	
7	1	C49	CAP, CER., 2.2µF, X5R, 10V, 10%, 0402	MURATA, GRM155R61A225KE95D	
8	1	C50	CAP, ALUM., 22µF, 100V, 20%	SUNCON, 100CE22BS	
9	1	C51	CAP, CER., 4.7pF, NP0, 50V, ±0.25pF, 0603	MURATA, GRM1885C1H4R7CA01D	
10	1	C52	CAP, CER., 47µF, X5R, 10V, 10%, 1210	MURATA, GRM32ER61A476KE20K	
11	2	D5, D6	DIODE, SCHOTTKY, 100V, POWERDI123	DIODES INC., DFLS1100-7	
12	5	D9, D10, D11, D12, D13	DIODE, 75V, 150mA, SOD-323	VISHAY, 1N4148WS-E3-08	
13	1	JP1	HEADER 4-PIN 0.079 SINGLE ROW	WURTH ELEKTRONIK, 62000411121	
14	4	JP2, JP3, JP4, JP5	HEADER 3-PIN 0.079 SINGLE ROW	WURTH ELEKTRONIK, 62000311121	
15	4	XJP1, XJP2, XJP3, XJP4	SHUNT, 2mm	WURTH ELEKTRONIK, 60800213421	
16	0	J1, J2 (OPT)	RIGHT ANGLE CONTACT, 45A	ANDERSON POWER, 1336G1	
17	0	J1, J2 (OPT)	HOUSING, +PIN, RED	ANDERSON POWER, 1327-BK	
18	0	J1, J2 (OPT)	HOUSING, -PIN, BLACK	ANDERSON POWER, 1327G6-BK	
19	0	J1, J2 (OPT)	STAPLES FOR PCB ASSY.	ANDERSON POWER, 114555P2	
20	1	J7	HEADER 13-PIN 0.100 DOUBLE ROW	WURTH ELEKTRONIK, 61302621121	
21	1	J8	HEADER 4-PIN 0.100 SINGLE ROW	WURTH ELEKTRONIK, 61300411121	
22	1	J9	HEADER 3-PIN 0.100 SINGLE ROW	WURTH ELEKTRONIK, 61300311121	
23	1	J10	HEADER 4-PIN 0.100 DOUBLE ROW	WURTH ELEKTRONIK, 61300821121	
24	0	J11 (0PT)	HEADER 4-PIN , OPTION		
25	1	L3	IND., PWR., 22µH	VISHAY, IHLP2525CZER220M11	
26	0	M5, M6, M11, M12 (OPT)	XSTR., MOSFET, OPTION, PG-TDSON-8		
27	1	Q1	TRANS, NPN, 40V, 0.6A, SOT-23	FAIRCHILD SEMI., MMBT3904	
28	2	Q2, Q3	TRANS, PNP, 40V, 0.2A , SOT-23	FAIRCHILD SEMI., MMBT3906	
29	1	Q4	XSTR., MOSFET, N-CH, 60V, 150MA, SOT-23	DIODES INC., BS170FTA	
30	1	RT1	THERMISTOR, 10k, NTC, 0603	MURATA, NCU18XH103J6SRB	
31	5	R5, R6, R7, R35, R36	RES, CHIP, 1Ω, 1/10W, 1%, 0603	VISHAY, CRCW06031R00FKEA	
32	8	R13, R14, R15, R41, R89, R90, R92, R93	RES, CHIP, 100k, 1/10W, 1%, 0603	VISHAY, CRCW0603100KFKEA	

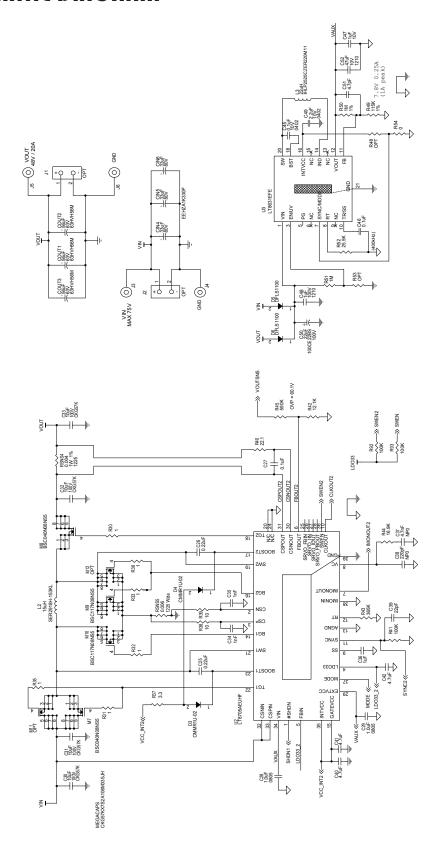
PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER	
33	0	R17, R27, R48, R53, R69, R100, R103, R104, R106-R113, R118 (OPT)	RES., OPTION, 0603		
34	10	R18, R56, R57, R59, R60, R91, R115, R116, R117	RES, CHIP, 10k, 1/10W, 1%, 0603	VISHAY, CRCW060310K0FKEA	
35	5	R19, R55, R64, R66, R67	RES, CHIP, 1k, 1/10W, 1%, 0603	VISHAY, CRCW06031K00FKEA	
36	1	R77	RES, CHIP, 365k, 1/10W, 1%, 0603	VISHAY, CRCW0603365KFKEA	
37	1	R24	RES, CHIP, 46.4k, 1/10W, 1%, 0603	VISHAY, CRCW060346K4FKEA	
38	1	R25	RES, CHIP, 47.5k, 1/10W, 1%, 0603	VISHAY, CRCW060347K5FKEA	
39	1	R49	RES, CHIP, 115k, 1/10W, 1%, 0603	VISHAY, CRCW0603115KFKEA	
40	5	R50, R51, R68, R70, R101	RES, CHIP, 1M, 1/10W, 1%, 0603	VISHAY, CRCW06031M00FKEA	
41	1	R52	RES, CHIP, 25.5k, 1/10W, 1%, 0603	VISHAY, CRCW060325K5FKEA	
42	1	R58	RES, CHIP, 34.8k, 1/10W, 1%, 0603	VISHAY, CRCW060334K8FKEA	
43	1	R61	RES, CHIP, 150k, 1/10W, 1%, 0603	VISHAY, CRCW0603150KFKEA	
44	2	R62, R63	RES, CHIP, 14.7k, 1/10W, 1%, 0603	VISHAY, CRCW060314K7FKEA	
45	1	R72	RES, CHIP, 412k, 1/10W, 1%, 0603	VISHAY, CRCW0603412KFKEA	
46	2	R74, R76	RES, CHIP, 36.5k, 1/10W, 1%, 0603	VISHAY, CRCW060336K5FKEA	
47	1	R78	RES, CHIP, 38.3k, 1/10W, 1%, 0603	VISHAY, CRCW060338K3FKEA	
48	1	R83	RES, CHIP, 576k, 1/10W, 1%, 0603	VISHAY, CRCW0603576KFKEA	
49	2	R84, R85	RES, CHIP, 51.1k, 1/10W, 1%, 0603	VISHAY, CRCW060351K1FKEA	
50	1	R86	RES, CHIP, 75k, 1/10W, 1%, 0603	VISHAY, CRCW060375K0FKEA	
51	1	R88	RES, CHIP, 30.1k, 1/10W, 1%, 0603	VISHAY, CRCW060330K1FKEA	
52	1	R102	RES, CHIP, 383k, 1/10W, 1%, 0603	VISHAY, CRCW0603383KFKEA	
53	2	R54, R105, R119	RES, CHIP, 0Ω, 1/10W, 1%, 0603	VISHAY, CRCW06030000Z0EA	
54	1	R114	RES, CHIP, 422k, 1/10W, 1%, 0603	VISHAY, CRCW0603422KFKEA	
55	1	U3	I.C. REGULATOR, 20-TSSOP	LINEAR TECH., LT8631EFE#PBF	
56	1	U5	I.C., OP AMP, S014	LINEAR TECH., LTC2052CS#PBF	
Hardwa	re: For	Demo Board Only			
1	4	J3, J4, J5, J6	STUD, TEST PIN	PEM, KFH-032-10ET	
2	8	J3, J4, J5, J6	NUT, BRASS NUTS # 10-32	ANY, 10-32M/S BR PL	
3	8	J3, J4, J5, J6	RING, LUG RING # 10	KEYSTONE, 8208	
4	4	J3, J4, J5, J6	WASHER, TIN PLATED BRASS	ANY, #10EXT- BZ TN	
5	4	MH1-MH4	STAND-OFF, NYLON 0.375"	WURTH ELEKTRONIK, 702933000	
6	1		PCB, DC2285A	DEMO CIRCUIT 2285A	
7	2		STENCIL, DC2285A (TOP & BOTTOM)	STENCIL DC2285A	

SCHEMATIC DIAGRAM



SCHEMATIC DIAGRAM



DEMONSTRATION BOARD IMPORTANT NOTICE

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