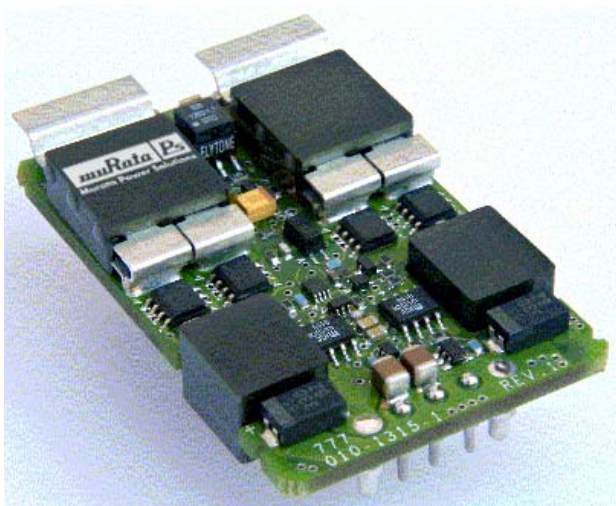




Model		3.3V	Units
Parameter			
Output Voltage Setpoint		3.25 – 3.35	V _{dc}
Line/Load Regulation	Max	0.1, 0.2	% V _o
Output total regulation		3.20 – 3.40	V _{dc}
Output adjust		95-110	%V _{o,nom}
Remote-sense Comp.		10	%V _{o,nom}
Output Ripple & Noise (note 2)	Max	100	mVp-p
Output Current	Min	0.1	A
	Max	35	A
Efficiency (48V, Full load, 25C)	Typ	90.5	%
External Capacitance	Max	10,000	μF
Transient Response (typ) (note3)	ΔV _o	165	mV
25% step, 1A/μs	T _s	300	μs
Over-voltage trip point (latching)	-static -dynamic	max	4.2 – 4.6
			V
Over-current trip point (non-latching)	Typ	44	A

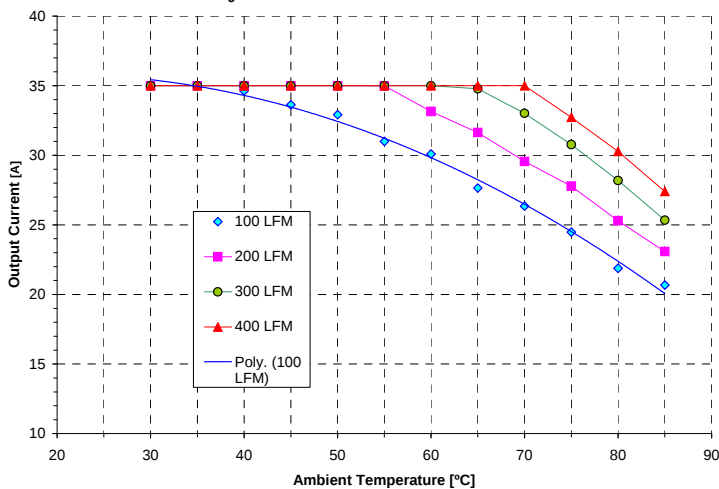
All specifications at T_a=25C, V_{in}=48V, 300 LFM unless otherwise specified



For full details go to
www.murata-ps.com/rohs

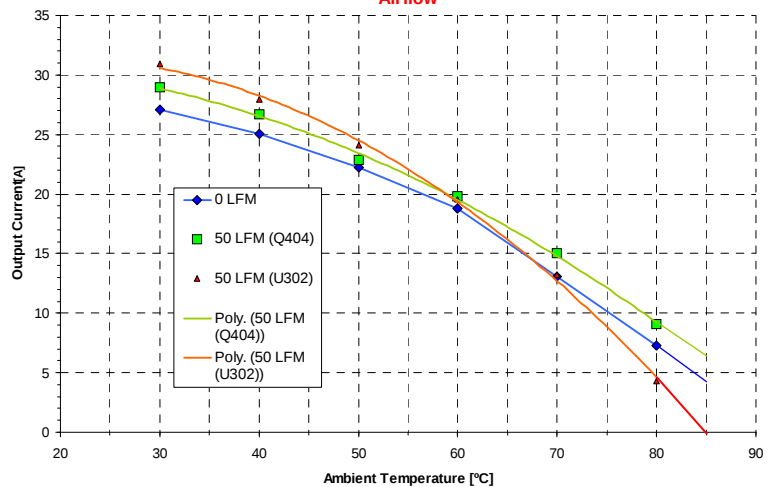
Parameter	Conditions		Min.	Typ.	Max.	Units
Input	Input Voltage (Vin)		36	48	75	Vdc
	Reflected Ripple Current (see note 1)		--	--	10	mA p-p
	Input Current				4	A
	Inrush Transient				0.2	A ² s
	Undervoltage Lockout	Turn-on	32		35	Vdc
		Turn-off	31		34	Vdc
	Over-voltage lockout	Turn-off	76		80	Vdc
		Turn-on	75		79	Vdc
Isolation	Input-Output		1500			Vdc
	Resistance; input-output		10			Mohm
Temperature	Operating Ambient		-40	--	85	°C
	Storage		-40	--	125	°C
Protection	Over-Temperature	Measured on PCB	--	120	--	°C
Physical Information	Dimensions 2.28"L x 1.45" W x 0.47"H (57.91 x 36.83 x 11.8 mm)					
MTBF(Bellcore)	Calculated at 40C ambient, 100% Iomax:		1,000,000 Hrs			
Safety	The QHS35-033 complies with IEC/EN/CSA 60950 safety requirements, providing basic insulation, input to output. c-UL-us (US & Canada) recognized. TUV (Bauart) approved.					

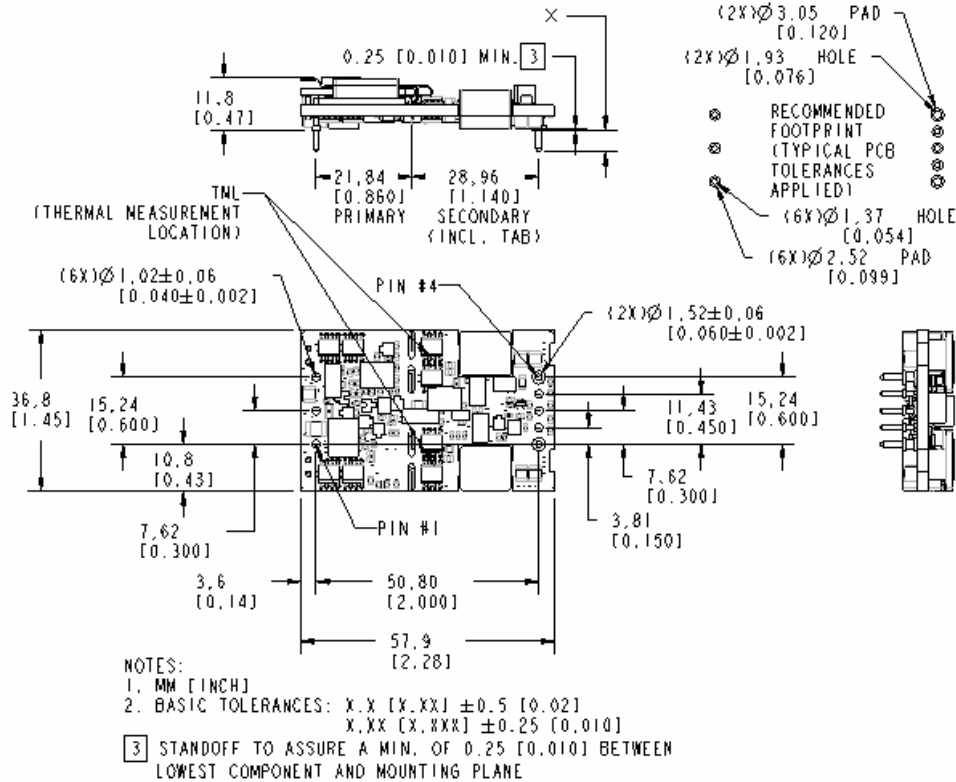
QHS35-033 Thermal Derating
T_J = 120°C Airflow Parallel To +Vin to -Vin



QHS35-033 Thermal Derating

T_J = 120°C Ver. Orientation for 0LFM, Hor. Orientation for 50LFM, Vin to Vout Airflow



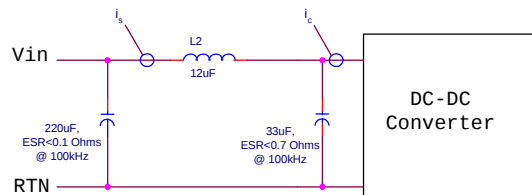


Pin Assignments

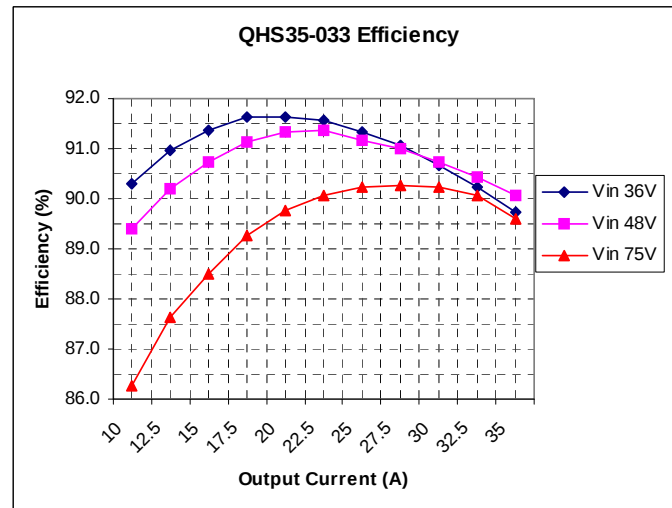
Pin #	Description	Pin #	Description	Pin #	Description
1	Vin (+)	4	Vout(-)	7	Sense +
2	Enable (note 4)	5	Sense -	8	Vo (+)
3	Vin(-)	6	Vo adj		

Notes:

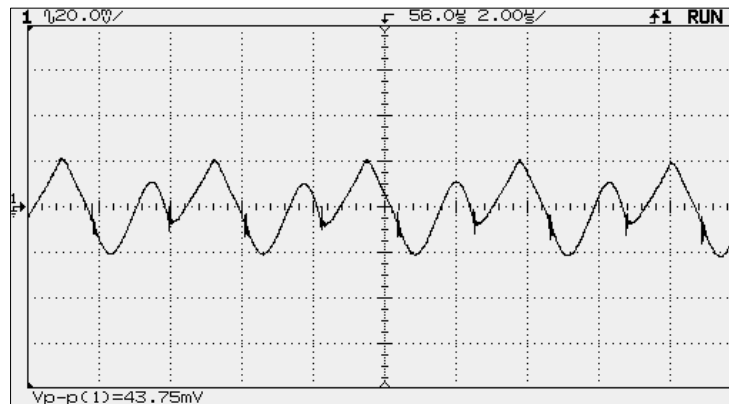
1. Input Reflected Ripple is specified when measured with the filter shown below.



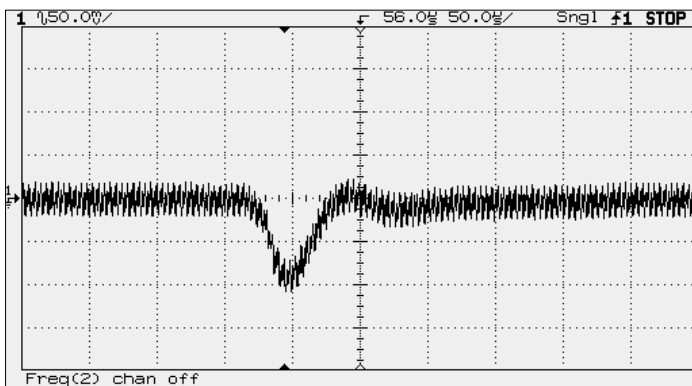
2. Output Ripple and noise is specified when measured with a 10uF tantalum and a 1uF ceramic capacitor at the converter output pins.
3. Transient response is specified without a capacitor at the output of the converter.
4. Enable pin: 2.5V < enable high < 15V, 0V < enable low < 0.8V. Internal pull-up is 5V @ > 50Kohm.
5. For thermal measurement location (TML) refer to mechanical drawing.



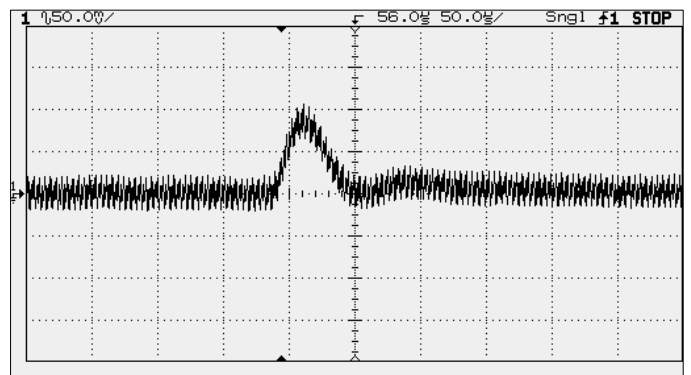
Output Ripple and Noise
($V_{in}=48V$, $I_o=35A$, 100Mz BW)
Note 2



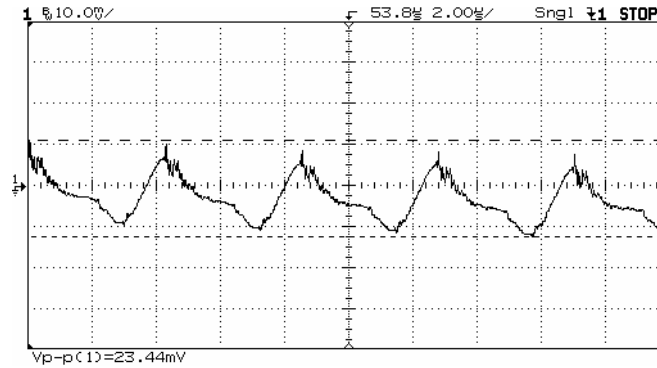
Output Voltage Response to Step Load (25.5A, -17.5A
load step, $di/dt = 1A/\mu s$, $T_{amb}=25C$, $V_{in}=48V$)



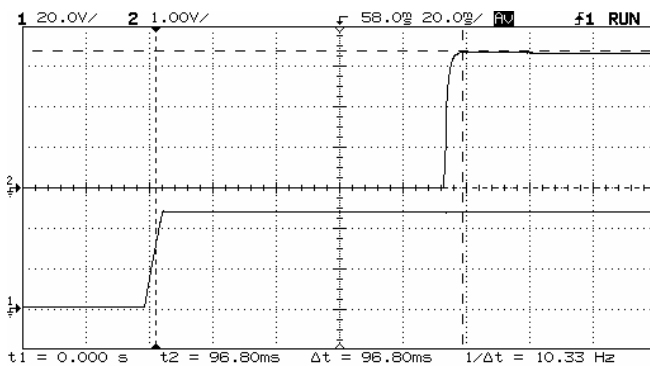
Output Voltage Response to Step Load (25.5A, +17.5A
load step, $di/dt = 1A/\mu s$, $T_{amb}=25C$, $V_{in}=48V$)



Input Reflected Ripple ($V_{in}=48V$, $I_{out}=35A$)



Turn-on, Startup Inhibit Delay

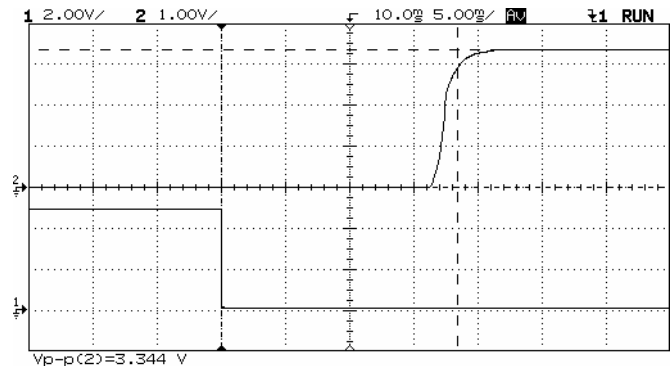


$V_{in}=48V$, $I_{out}=35A$, $C_{out}=10,000\mu F$, Enable tied to $V_i(-)$

CH1: V_{in} 20V/div

CH2: V_{out} @ 1V/div time base 20ms/div

Turn-on from Enable



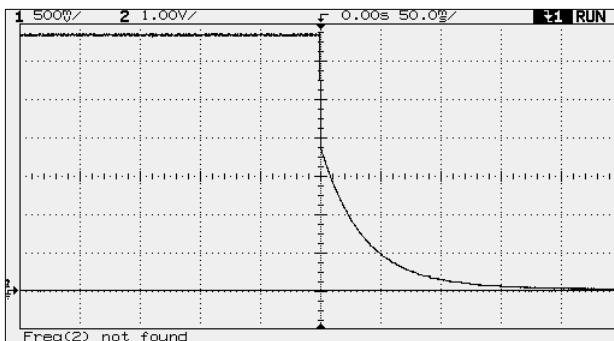
$V_{in}=48V$, $I_{out}=35A$, $C_{out}=10,000\mu F$

CH1: V_{out} 1V/div time base 5ms/div

CH2 Enable pin 2V/div

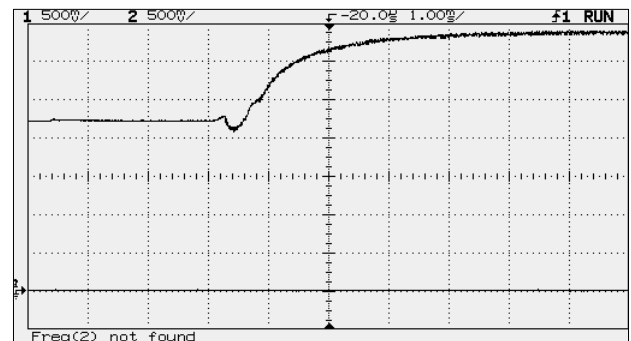
Turn-Off Characteristic

$V_{in} = 48V$ $I_{out} = 35A$ 10mF output capacitance

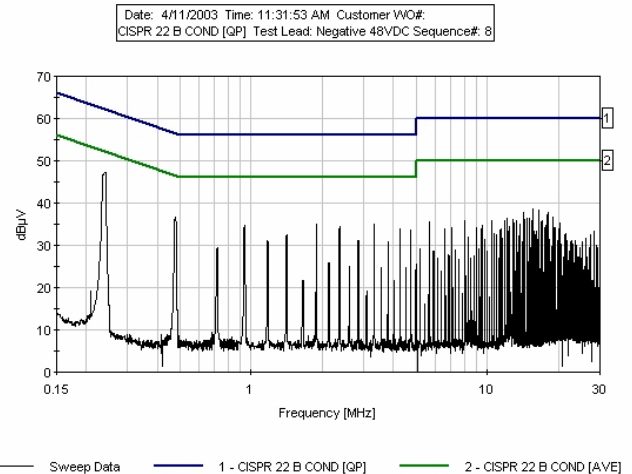
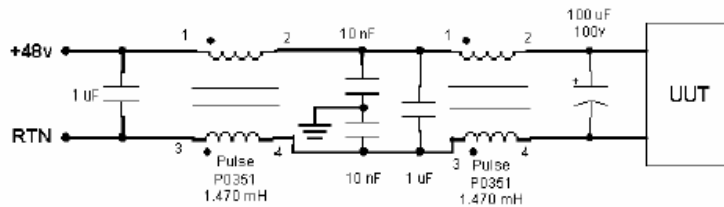


Pre-Bias Startup Characteristic

$V_{in} = 48V$ Pre-bias of 2.2V



Conducted EMI Characteristic with external filter as specified



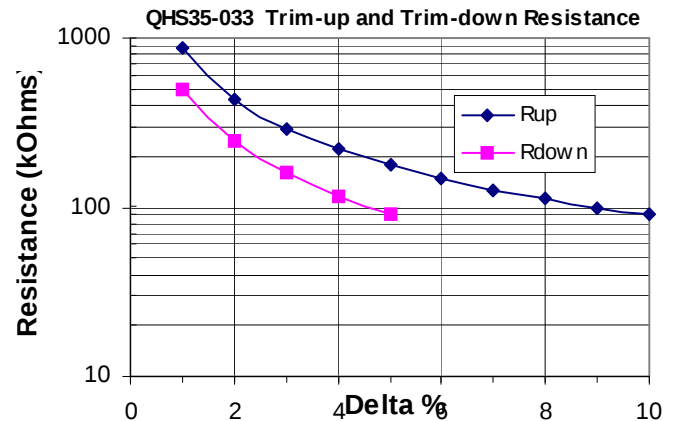
$$R_{up}(V_{nom}, \Delta\%) := \left[5.11 \cdot V_{nom} \cdot \frac{(100 + \Delta\%)}{1.225 \cdot \Delta\%} \right] - \left(\frac{511}{\Delta\%} \right) - 10.22$$

$$R_{dwn}(\Delta\%) := \frac{511}{\Delta\%} - 10.22$$

$$\Delta\% = \left\lceil 100 \times (V_o - V_{nom}) / V_{nom} \right\rceil$$

V_o : target output voltage

V_{nom} : nominal output voltage

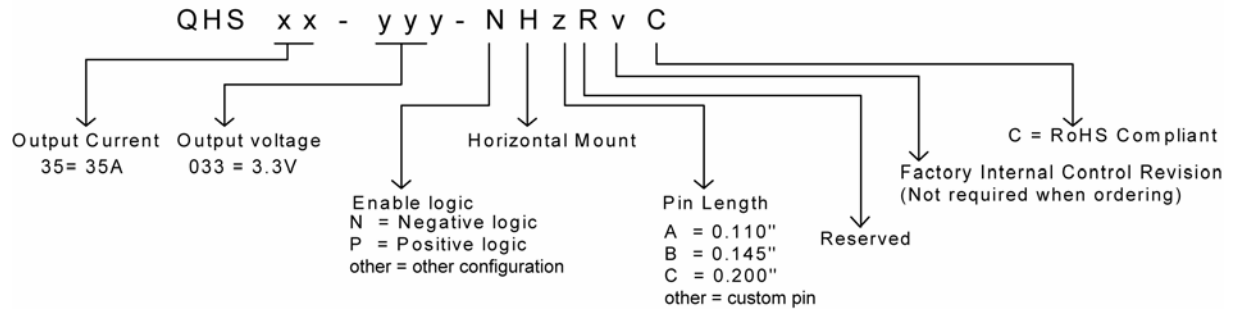


Safety considerations

The QHS35-033 complies with IEC/EN/CSA 60950 safety requirements, providing basic insulation, input to output. c-UL-us (US & Canada) recognized. An external input fuse, rated at 5A to 20/30A, fast-blow type, must be used to meet the above requirements. The fuse will isolate the failed converter from the input source and protect the distribution wiring from overheating. The output of the converter is considered to remain within SELV limits when the input to the converter meets SELV requirements

The converters are designed to meet UL 94V-0 flammability ratings.

Part Number Designations



RoHS Compliant

The QHS35-033 series of converters is in compliance with the European Union Directive 2002/95/EC (RoHS) with respect to the following substances: lead (Pb), mercury (Hg), cadmium (Cd), hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE).