

Features:

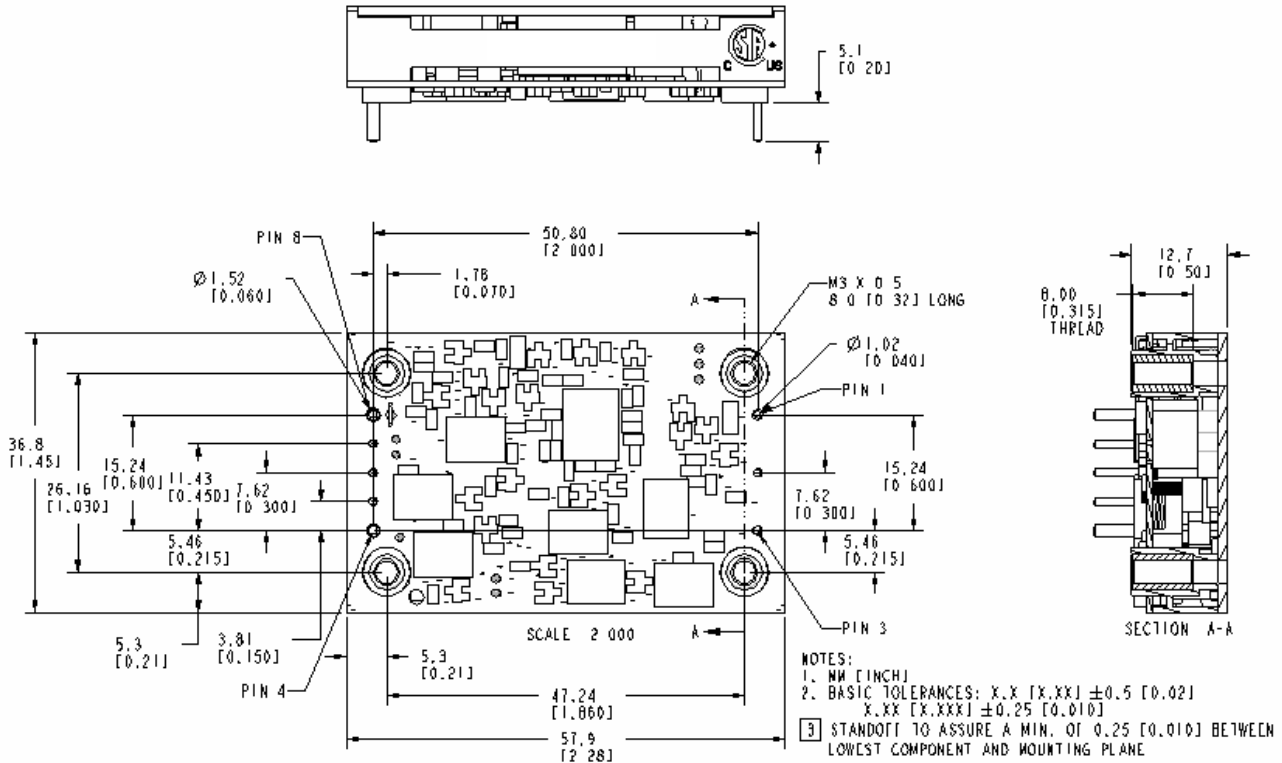
- ✓ Very High Efficiency: to 88%
- ✓ Very High Density: 25A in Quarter-brick
- ✓ 1.8V, 2.5V, 3.3V Models
- ✓ Industry-Standard Pin-out



Parameter	Conditions	Min.	Typ.	Max.	Units
Input	Input Voltage (Vin)	36	48	75	Vdc
	Input Ripple Current	See note (1)	10	--	mA p-p
	Inrush Transient			0.2	A ² s
Protection	Undervoltage Lockout	Turn-on	32	35	Vdc
		Turn-off	31	34	Vdc
	Over-voltage lockout	Turn-off	78	80	Vdc
		Turn-on	77	79	Vdc
Isolation	Input-Output			1500	Vdc
	Input-Case			1500	
	Output-Case			500	
	Resistance; input-output	10			Mohm
Temperature	Operating Base-plate	-40	--	100	°C
	Storage	-40	--	125	°C
Protection	Over-Temperature	Tbase-plate	105	115	Deg C
Physical Information	Dimensions	2.28"L x 1.45" W x 0.5"H (57.9 x 36.83 x 12.7 mm)			
MTBF(Bellcore)	Calculated at 40C, 80% Iomax:	1,000,000 Hrs			
Safety	Designed to meet UL1950, CSA 950, EN60950 with basic insulation				

Model		3.3V	2.5V	1.8V	Units
Output Voltage Setpoint		3.25 – 3.35	2.47 – 2.52	1.78 – 1.82	Vdc
Line/Load Regulation	Max	0.1%, 0.2%	0.1%, 0.2%	0.1%, 0.2%	% Vo
Output total regulation		3.2 - 3.4	2.43 – 2.57	1.75 – 1.85	Vdc
Output adjust		90-110	90-110	90-110	%Vo,nom
Remote-sense Comp.		0.5	0.5	0.18	V
Output Ripple & Noise (note 2)	Max	100	100	100	mVp-p
Output Current	Min	0.5	0.5	0.5	A
	Max	25	25	25	A
Efficiency (48V, Full load, 25C)	Typ	88%	86%	84%	%
External Capacitance	Max	10,000	10,000	10,000	µF
Transient Response (typ) (3)	ΔVo	165	165	165	mV
	Ts	400	400	400	µs
Over-voltage trip point		3.96-4.29	3.1 – 3.4	2.4 – 2.7	V
Over-current trip point	Max	35	35	35	A

Mechanical Information

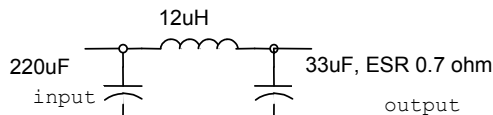


Pin Assignments

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

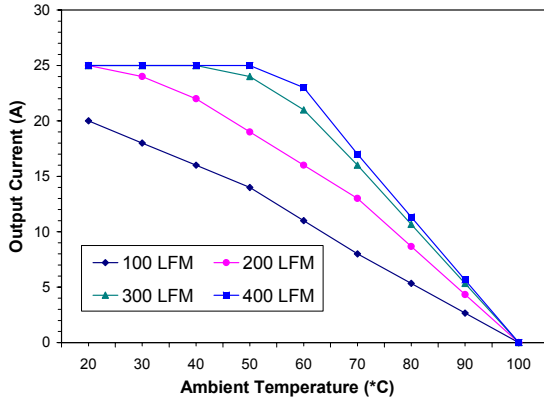
Notes:

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

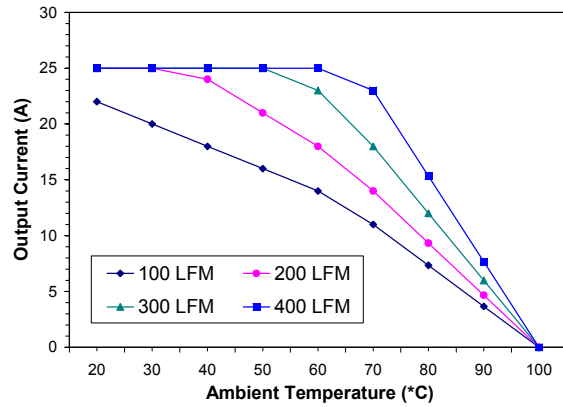


2. Output Ripple and noise is specified when measured with a 10uF electrolytic and a 1uF ceramic capacitor at the converter output pins
3. Transient response is specified with a 470uF tantalum capacitor at the output of the converter
4. The Enable signal is Logic Low. It is referenced to Vi-. The pin should be tied to Vi- if it is not used. Isink = 1mA max, Voff = 15V max

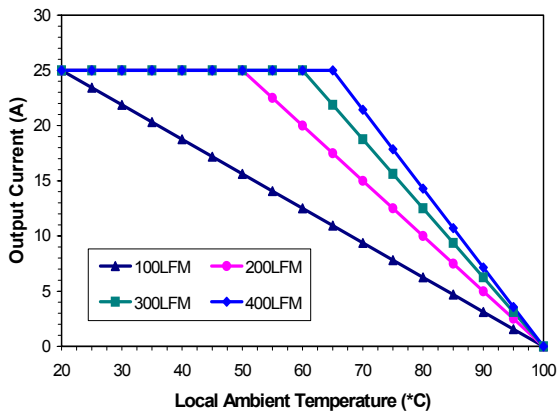
Current Derating Curve (3.3V) – No heatsink



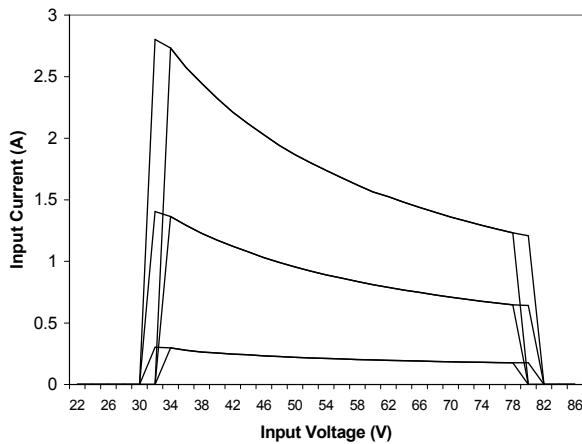
Current Derating Curve (2.5V) – No heatsink



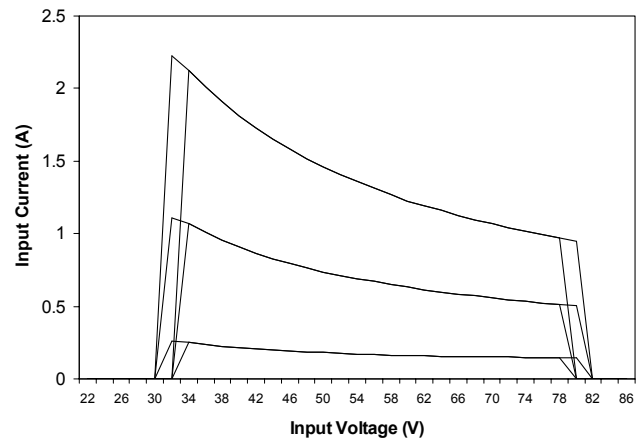
Current Derating Curve (1.8V) – No heatsink



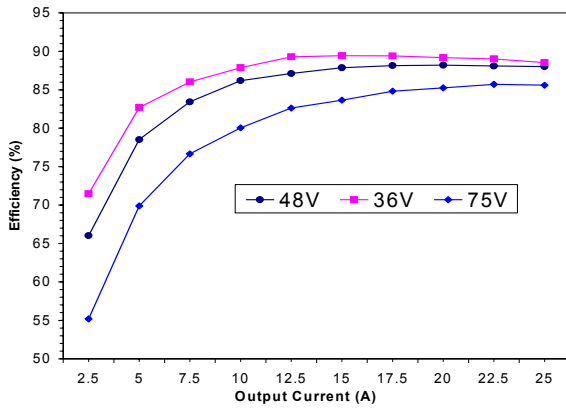
QHS25-033 Input Voltage-Current Characteristic



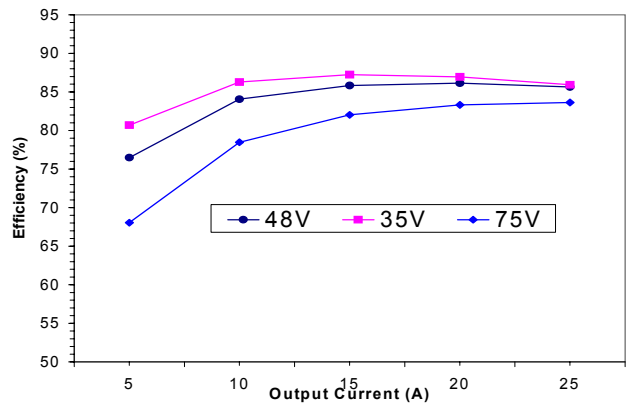
QHS25-025 Input Voltage-Current Characteristic



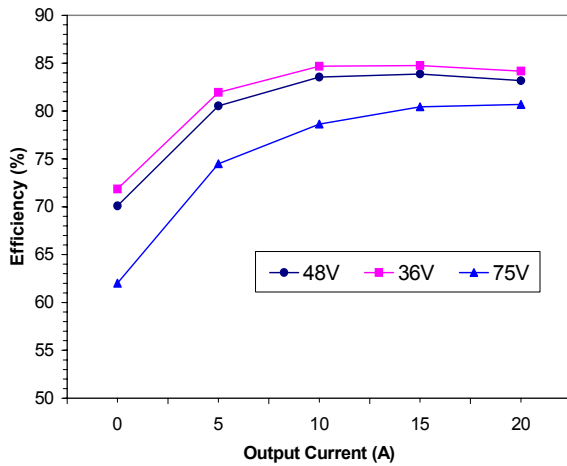
Efficiency of QHS25-033



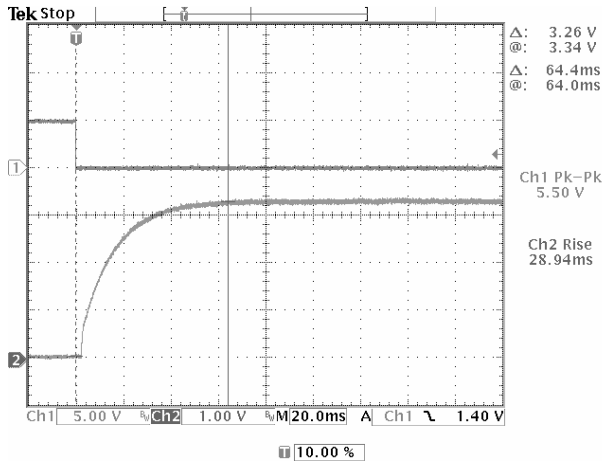
Efficiency of QHS25-025



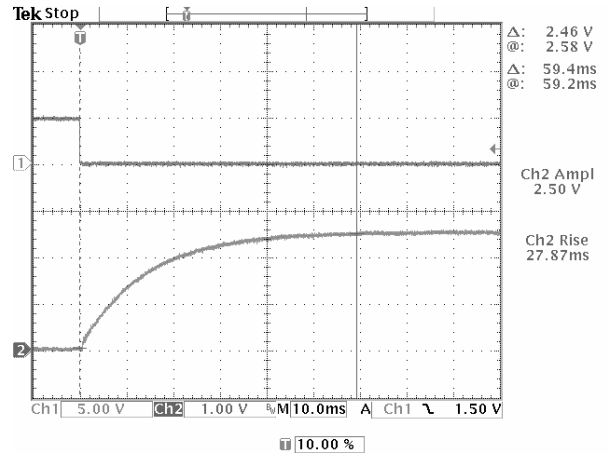
Efficiency of QHS25-018



Turn-On Waveform
(48Vin, 3.3V model, 25A output, 50C baseplate)



Turn-On Waveform
(48Vin, 2.5V model, 25A output, 50C baseplate)

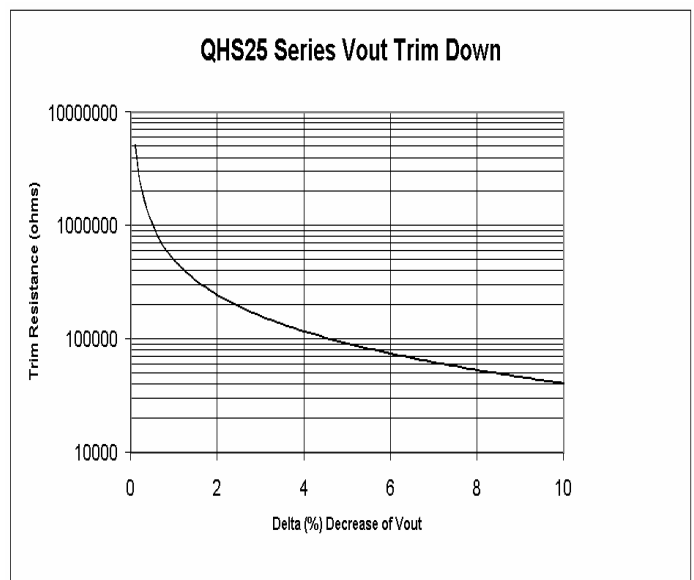
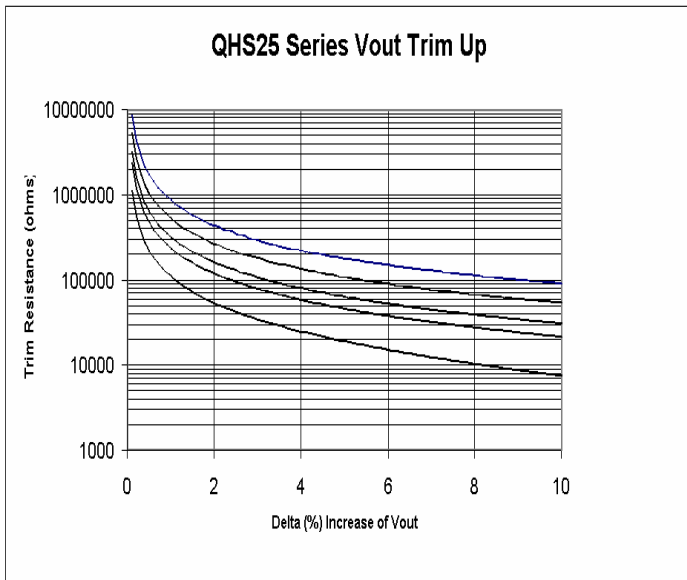


Trim Value vs Resistance

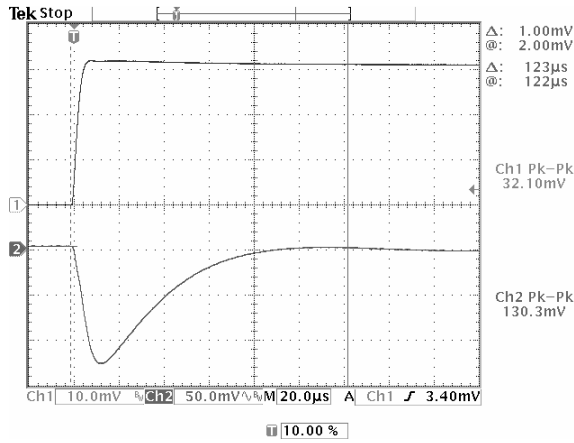
$$R_{adj_up} = \left[\frac{5.1V_o (100 + \Delta\%)}{1.225 \Delta\%} - \frac{511}{\Delta\%} - 10.22 \right] \text{ kohm}$$

$$R_{adj_down} = \frac{511}{\Delta\%} - 10.22 \text{ kohm}$$

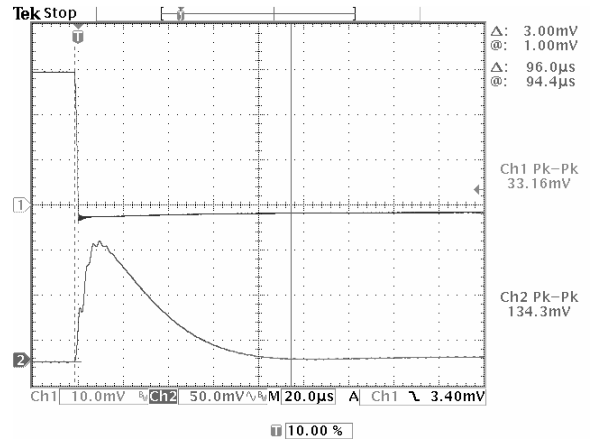
Plot of Resistance required to adjust Output Voltage



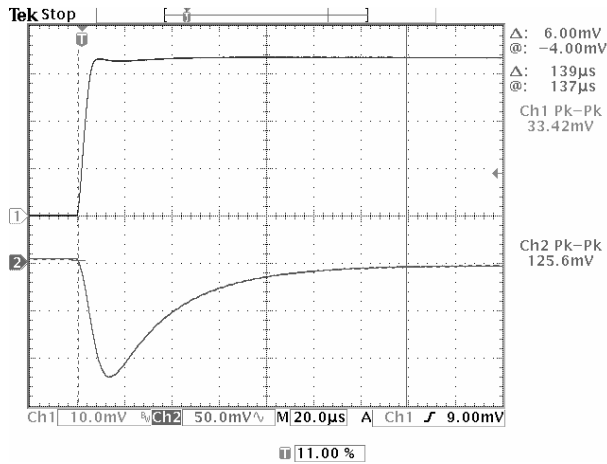
Step Load Response (50% to 75% load) (48Vin 3.3V model)



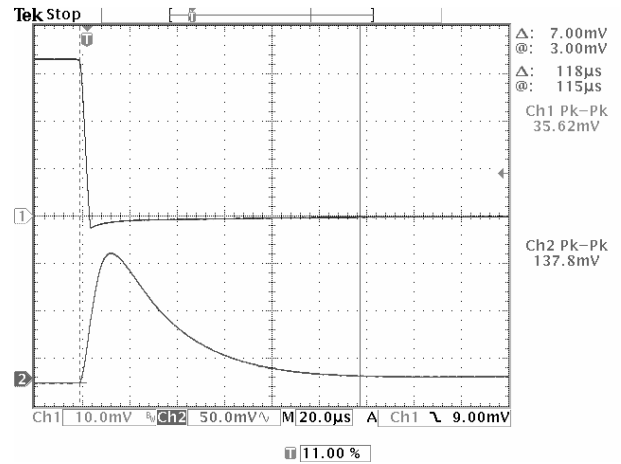
Step Load Response (50% to 25% load) (48Vin 3.3V model)



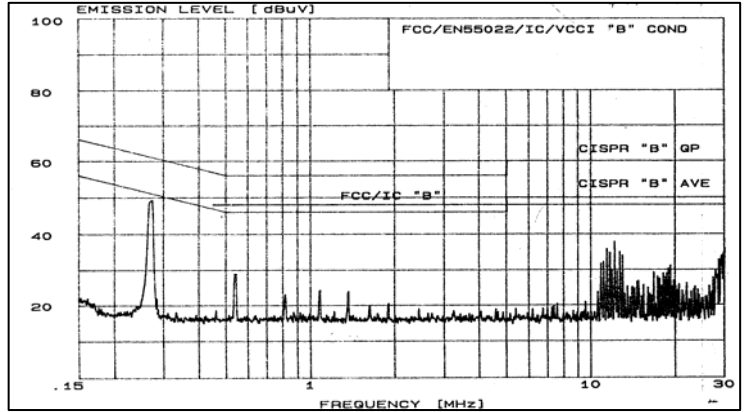
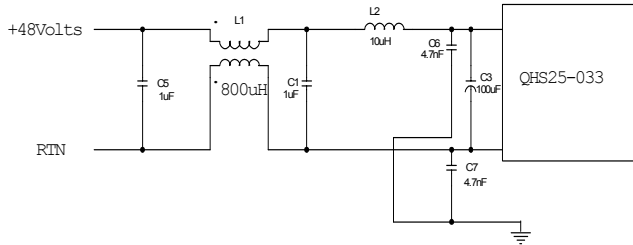
Step Load Response (50% to 75% load) (48Vin 2.5V model)



Step Load Response (50% to 25% load) (48Vin 2.5V model)



EMI Filter Requirements to meet EN55022



Safety considerations

The QHS25 series of converters are certified by CSA to CAN/CSA-C22.2 No. 950.95 and ANSI/UL Std No. 1950, 3rd Ed. with basic insulation, input to output. The QHS25 series bears the marking of Canada and USA approval. Even though the QHS25 is approved with no fuse requirement, an external fast-blow input fuse is recommended. The output of the converter is considered to remain within SELV limits when the input to the converter meets SELV requirements. The converters meet UL 94V-0 flammability ratings.

Part Number Designations

QHS25 - xxx - ab

xxx = output voltage combinations

'033 = 3.3V; 025 = 2.5V; 018 = 1.8V

a = reserved; 0 = default

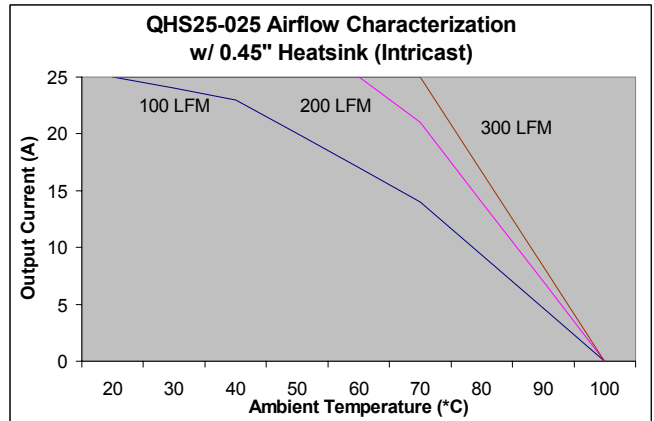
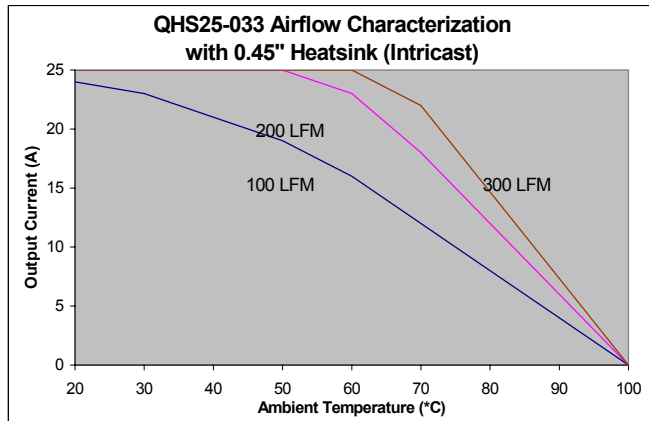
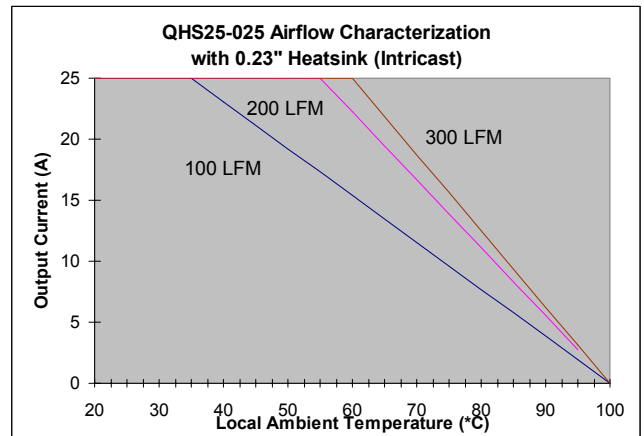
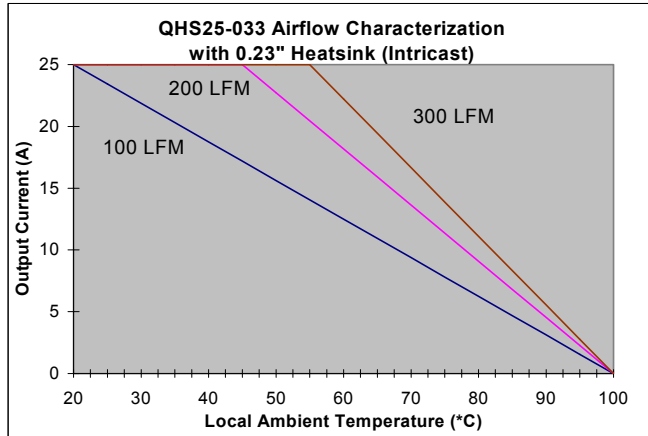
b = pin length

A = 0.110"

B = 0.145"

C = 0.200"

Thermal Performance with Heatsinks



The above data was taken with the following heatsinks:

1. 0.23" tall Intricast p/n: HS2065DC
2. 0.45" tall Intricast p/n: HS2066DC

Parts can be obtained from:

Intricast Co., Inc
2160 Walsh Ave.
Santa Clara, CA 95050-2512
Tel: 408-988-6200

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