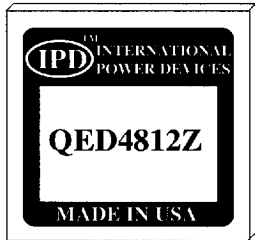




# QE Series of 25 to 30 Watt DC/DC Converters

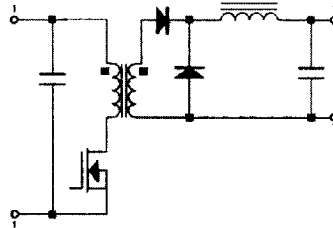


STANDARD HIGH-DENSITY DC/DC CONVERTERS WITH SINGLE, DUAL OR TRIPLE REGULATED OUTPUTS. ALL MODELS FEATURE AN ULTRA-WIDE INPUT RANGE. AN INTERNAL  $\Pi$  (Pi) INPUT FILTER IS STANDARD AND IS USED TO REDUCE REFLECTED RIPPLE CURRENT. ALL MODELS FEATURE A NICKEL-PLATED COPPER CASE WITH SIX-SIDED SHIELDING.



**DIMENSIONS:**  
2.56" x 3.00" x 0.83"  
(65.02) x (76.20) x (21.10)mm

## BLOCK DIAGRAM



## FEATURES

- Industry Standard Pin Out
- Up to 84% Efficiency
- Current Mode Control
- Ultra-Wide Input Voltage Range
- 500 VDC I/O Isolation
- Continuous Short Circuit Protection
- Input  $\Pi$  (Pi) Filter

## APPLICATIONS

- Telecommunication
- Data Processing Equipment
- Industrial Equipment
- Medical Equipment
- A/D and D/A Converters
- Distributed Power Systems

## PART NUMBER SELECTION GUIDE

Q	E	D	48	12		Z	MS	A
SERIES NAME	FEATURES	# OF OUTPUTS	Vin NOMINAL	Vout SINGLES	Vout TRIPLES	OPTIONS	ACCESSORIES	TYPE
	<b>Features</b> • Extra-Wide Input Voltage Range • Regulated	<b># of Outputs</b> S = SINGLE D = DUAL T = TRIPLE		<b>Output Voltage (VDC)</b> <b>Single Output:</b> 05 = 5V @ 5.0A 12 = 12V @ 2.5A 15 = 15V @ 2.0A  <b>Dual Output:</b> 05 = $\pm 5V @ \pm 2.50A$ 12 = $\pm 12V @ \pm 1.25A$ 15 = $\pm 15V @ \pm 1.00A$  <b>Triple Output:</b> 05-12 = 5V @ 3.8A $\pm 12V @ \pm 0.31A$ 05-15 = 5V @ 3.8A $\pm 15V @ \pm 0.25A$ 12-05 = 12V @ 1.50A $\pm 5V @ \pm 1.00A$		<b>Options</b>  S (#) = Modification Number I = Industrial Temperature Range (-40°C to +85°C) Z = Water-washable sealed case		<b>Accessories / Type</b>  MS = Mating Socket  Type = A <i>Please Consult Accessories Page for Mating Socket Selection</i>
	<b>Input Voltage Range (VDC)</b>  24 = 9.0 to 36.0 48 = 18.0 to 72.0							

56

INTERNATIONAL POWER DEVICES, INC.

20 Linden Street, Boston, MA 02134 • Phone: (617)782-3331 • Fax: (617)782-7416



4853809 0000330 170



# QE Series of 25 to 30 Watt DC/DC Converters



PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS	NOTES
<b>GENERAL:</b>						
Switching Frequency	180	200	220	KHz		1. No derating required up to a maximum case temperature of 85°C. See efficiency and thermal impedance data provided. Internal Power Dissipation = $P_{out} * (1 - \text{Eff}) / \text{Eff}$ .
Isolation Voltage	500			VDC	Note 5	
Input to Output				VDC		
Input to Case				VDC		
Output to Case	10 <sup>9</sup>			Ohms	Note 3	
Isolation Resistance						
Input to Output						
Isolation Capacitance			500	pF		
Input to Output						
Short Circuit Protection						
<b>ENVIRONMENTAL:</b>						
Operating Temperature	-25		85	°C	Note 1	2. Provided for input fuse selection.
Storage Temperature	-40		125	°C	Ambient	
Operating Humidity			95%		Non-Condensing	3. Continuous Short Circuit Protection is provided. For dual output units the short circuit current on each individual output is equivalent to the short circuit current for a single output unit.
Storage Humidity			95%			
<b>REMOTE ON/OFF CONTROL:</b>						
Compatibility					TTL, CMOS, Relay >5.5 VDC or open circuit <1.8 VDC, Note 4	4. Long term continuous operation in this mode is not recommended. Converter will auto-restart once short has been removed.
On Control						
Off Control						
<b>INPUT:</b>						
Input Voltage						5. For 48V input models, the case is connected to +Vin. For all other input voltages, the case is tied to either -Vout (Singles) or the Output Common (Duals).
24 Vin	9.00	24.00	36.00	VDC		
48 Vin	18.00	48.00	72.00	VDC		
Input Current						
24 Vin			4.00	Amps	Note 2	
48 Vin			2.00	Amps	Note 2	
Input Ripple Current			20%	Iin max		
Reverse Input Current			100%	Iin max		
<b>OUTPUT:</b>						
<b>Singles:</b>						
Trim			±10.0%	Vout		Full Load 10% to 100% LL to HL Note 3
Voltage Accuracy			±1.00%	Vout		
Load Regulation			±1.00%	Vout		
Line Regulation			±1.00%	Vout max		
Current Limit			140%	Iout		
<b>Duals:</b>						
Voltage Accuracy			±1.00%	Vout	Full Load	
+Vout			±1.00%	Vout	Full Load	
-Vout			±1.00%	Vout	Full Load	
Load Regulation						

\* All specifications typical at +25°C Nominal Line and Full Load unless otherwise noted.  
 \* Specifications subject to change without notice.



## INTERNATIONAL POWER DEVICES, INC.

20 Linden Street, Boston, MA 02134 • Phone: (617)782-3331 • Fax: (617)782-7416



■ 4853809 0000331 007 ■



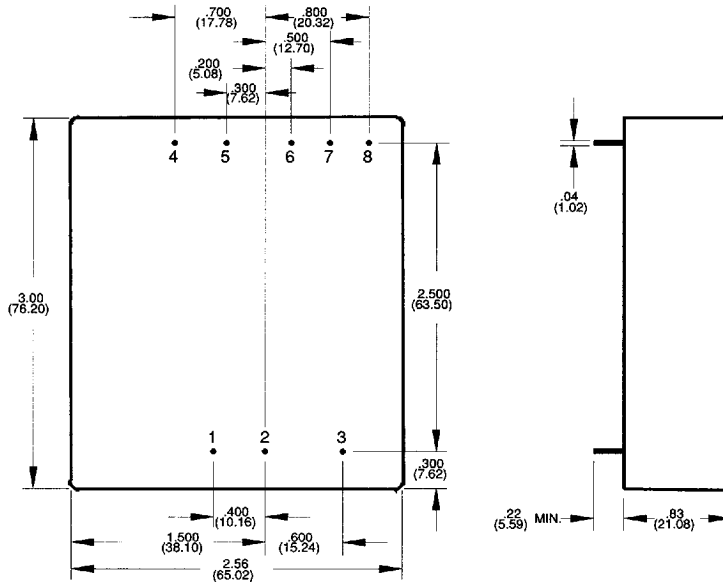
# QE Series of 25 to 30 Watt DC/DC Converters



PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS	NOTES
<b>OUTPUT (Con't.)</b>						4. Long term continuous operation in this mode is not recommended. Converter will auto-restart once short has been removed.
<b>Triples:</b>						
Voltage Accuracy						
Vout 1			±1.00%	Vout	Full Load	
Vout 2			±5.00%	Vout	Full Load	
Vout 3			±5.00%	Vout	Full Load	
<b>Load Regulation</b>						
Vout1			±1.00%	Vout	10% to 100%	
Vout 2			±5.00%	Vout	10% to 100%	
Vout 3			±5.00%	Vout	10% to 100%	
<b>Line Regulation</b>						
Vout			±1.00%	Vout	LL to HL	
<b>Current Limit</b>			140%	Iout	Note 4	
<b>Temp. Coefficient</b>			±0.02%	/°C		
<b>Voltage Stability</b>			±0.05%	Vout		
<b>Ripple and Noise</b>			1.00 %	Vout	p-p, 20MHz BW	
<b>Transient Response</b>			500	µS	1% Error Band	

## BOTTOM VIEW

Mechanical tolerances are ± 0.040"



Specifications are subject to change without notice.

All Dimensions are in inches (MM)



**INTERNATIONAL POWER DEVICES, INC.**  
 20 Linden Street, Boston, MA 02134 • Phone: (617)782-3331 • Fax: (617)782-7416



■ 4853809 0000332 T43 ■



# QE Series of 25 to 30 Watt DC/DC Converters



## PIN CONNECTIONS

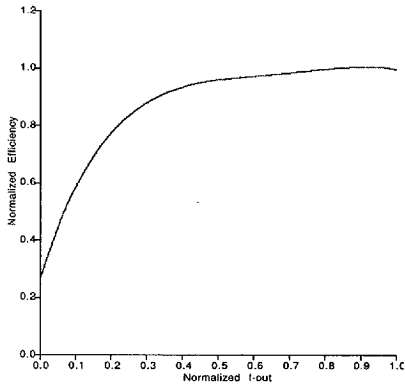
PIN #	SINGLE	DUAL	TRIPLE
1	-Vin	-Vin	-Vin
2	+Vin	+Vin	+Vin
3	S/D (Optional)	Shut Down	Shut Down
4	-Vout	No Connect	No Connect
5	+Vout	No Connect	+5Vout
6	-Sense Out	-Vout	-Vout
7	Trim	Common	Common
8	+Sense Out	+Vout	+Vout

## THERMAL IMPEDANCE

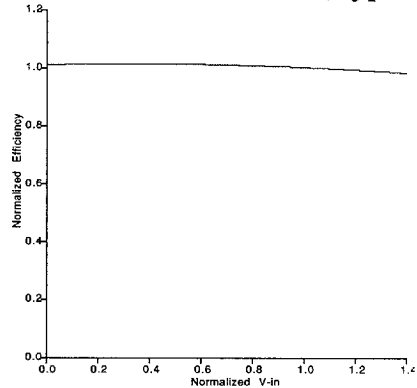
	Typical R <sub>θCA</sub>
NATURAL CONVECTION	6.8°C/W
100 LFPM	4.0°C/W
200 LFPM	3.43°C/W
300 LFPM	2.5°C/W
400 LFPM	1.6°C/W

Thermal Impedance data depends upon many environmental factors and may vary from application to application. The numbers provided are intended as a guide. The exact thermal performance should be validated in each application.

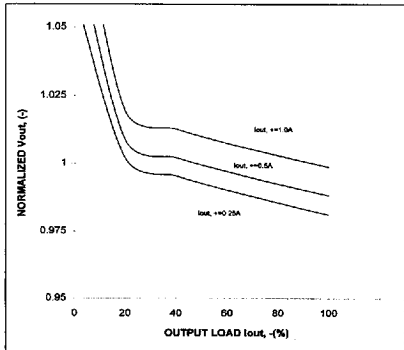
## EFFICIENCY vs. LOAD (Typical)



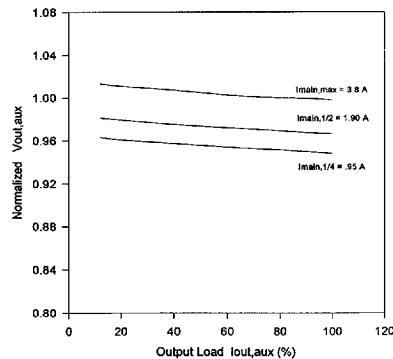
## EFFICIENCY vs. Vin (Typical)



## TYPICAL CROSS-REGULATION (Dual Output Units)



## TYPICAL CROSS-REGULATION (Triple Output Units)



# INTERNATIONAL POWER DEVICES, INC.

20 Linden Street, Boston, MA 02134 • Phone: (617)782-3331 • Fax: (617)782-7416



4853809 0000333 98T