

# THYRISTOR & DIODE MODULES

## POW-R-BLOK™ Modules

### Applications Include:

- Battery Chargers
- Induction Heating/Melting
- Medical Equipment
- Motor Controls
- Power Supplies
- UPS
- Welding

## POW-R-BRIK™

### Applications Include:

- AC Motor Starters
- DC Motor Controls
- Mining Power Centers
- Resistance Welding Controls
- Transportation

### Circuit Configurations:

- Single
- Dual
- Split Dual
- Common Anode
- Common Cathode
- AC Switch

## TABLE OF CONTENTS

Numbering System .....	H-2
Optional Cathode & Gate Lead Kits for POW-R-BLOK™ Modules .....	H-3
Optional Hardware for ND, NS, LD & LS POW-R-BLOK™ Modules .....	H-3
Diode Modules .....	H-4
Thyristor Modules .....	H-6
Thyristor / Diode Modules .....	H-9
Thyristor / Diodes (POW-R-BRIKs™) .....	H-10
Outline Drawings .....	H-11



**POW-R-BLOK™ Modules**  
**VOLTAGE: 600V TO 5000V**  
**CURRENT: 90A TO 2500A**

**POW-R-BRIK™ Modules**  
**VOLTAGE: 600V TO 5000V**  
**CURRENT: 300A TO 1585A**

# Numbering System

## Thyristor (SCR) and Diode Modules

CD431290B is a 90 Ampere, 1200 Volt, Dual Switch Module

CD 4 3 12 90 B  
 (1) (2) (3) (4) (5) (6)

(1) Type Number:

CD, ND, LD, PD = Dual Switches  
 CS, LS, PS = Single Switches  
 PA = AC Switch  
 CC = Common Cathode  
 CN, LN = Common Anode

(2) Package Style

(3) Configuration:

1 = Diode  
 2 = SCR / Diode  
 3 = SCR  
 7 = Diode / SCR

(4) Voltage Rating (x 100):

08 = 800V  
 12 = 1200V  
 16 = 1600V  
 20 = 2000V  
 24 = 2400V  
 36 = 3600V  
 40 = 4000V  
 50 = 5000V

(5) Current Rating:

Device	Current
CD4	A2 = 25A
CS4	40 = 40A
CC4	50 = 50A
CN4	60 = 60A
	90 = 90A
	99 = 100A
CD6	x 10
CS6	Example:
ND	25 = 250A
LD	
LS	
PD	x 100
PA	Example:
	07 = 700A
PS	14 = 1400A
PS	15 = 1500A
PS	20 = 2000A
PS	25 = 2500A

(6) Suffix Identifier:

B, C or D

QRD6516001 is a 160 Ampere, 6500 Volt, Dual Switch Module

Q R D 65 16 001  
 (1) (2) (3) (4) (5) (6)

(1) Product Line

(2) Type Number:  
 R = Rectifier

(3) Package Style:  
 D = Dual Switch

(4) Voltage Rating (x 100)

(5) Current (x 10)

(6) Serial Designation:  
 001 = Special Designation

## POW-R-BRIKs™

P3Z7ACT700W16 is a 1600 Volt, Dual SCR Module with Standard Thermistor

P3 Z 7 A CT7 00 W16  
 (1) (2) (3) (4) (5) (6) (7)

(1) Type Number:

P1 = Dual Diode  
 P2 = SCR / Diode  
 P3 = Dual SCR  
 P7 = Diode / SCR

(2), (3), (4) Package Style

(3) Indicates Size of the Block & Elements

(5) Element Code:

Refer to Product Datasheet for the Element Codes to Reference the Corresponding Disc Device for Additional Specifications

(6) Special Features:

00 = Module Includes Standard Thermistor  
 XT = No Thermistor  
 All Other Codes Denote Unique Customer Specifications

(7) Voltage Rating:

V04 = 400V  
 V08 = 800V  
 W12 = 1200V  
 W16 = 1600V

## Optional Cathode & Gate Lead Kits for POW-R-BLOK™ Modules

Type	Description	Lead Kit	Outline Drawings	
			Number	Page
CD42, CD47 (Half Control)	One red & one yellow lead per module	MR	14	H-15
CD43 (Full Control)	Two red & two yellow leads per module	MQ	14	H-15
CD63, LD43, ND43, PD43(Full Control)	Lead Set 1 & Lead Set 2 (one each/module)	NK	15	H-16
CD62, LD42, LS43, ND42(Half Control), PD47	Lead Set 1 (one/module)	NL	15	H-16
CD67, LD47, ND47, PD42, PS43 (Half Control)	Lead Set 2 (one/module)	NM	15	H-16

## Optional Hardware for ND, NS, LD and LS POW-R-BLOK™ Modules

Type	Hardware Kit	Description
ND	87	Three M8 x 1.25 screws (16mm in length) with captive lock washer and flat washer
NS	86	Two M8 x 1.25 screws (16mm in length) with captive lock washer and flat washer
LD	50	Three M10 x 1.5 screws (20mm in length) and three 10mm lock washers
LS	49	Two M10 x 1.5 screws (20mm in length) and two 10mm lock washers

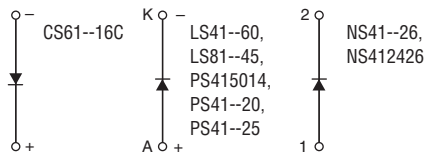
**Diode Modules** (Refer to device datasheets at [www.pwrx.com](http://www.pwrx.com) for test conditions.)



Type	V <sub>DRM</sub> / V <sub>RRM</sub> Volts (V <sub>RSM</sub> = V <sub>RRM</sub> + 100V)	I <sub>F(av)</sub> /T <sub>C</sub> Amperes/°C (180° sin)	I <sub>F(RMS)</sub> Amperes (180° sin)	EUROPEAN		NORTH AMERICAN		V <sub>FM</sub> /I <sub>FM</sub> Volts/Amperes (T <sub>j(max)</sub> )	V <sub>TO</sub> Volts (T <sub>j(max)</sub> )	R <sub>T</sub> mΩ (T <sub>j(max)</sub> )	R <sub>th(j-c)</sub> °C/W	R <sub>th(c-s)</sub> °C/W	T <sub>j(max)</sub> °C	Outline Drawings		
				I <sub>FSM</sub> Amperes (10ms, T <sub>j(max)</sub> , No V <sub>RRM</sub> Reapplied)	i <sup>2</sup> t A <sup>2</sup> sec (10ms, T <sub>j(max)</sub> , No V <sub>RRM</sub> Reapplied)	I <sub>FSM</sub> Amperes (8.3ms, T <sub>j(max)</sub> , 100% V <sub>RRM</sub> Reapplied)	i <sup>2</sup> t A <sup>2</sup> sec (8.3ms, T <sub>j(max)</sub> , 100% V <sub>RRM</sub> Reapplied)							Number	Page	
<b>Single Diode Modules</b>																
CS61--16C	800 – 1800	160 / 99	250	6,600	217,800	4,822	96,880	1.56 / 480 (25°C)	0.80	1.35	0.23	0.08	150	10	H-14	
CS61--16C	2000 – 2500	160 / 95	250	6,600	217,800	4,822	96,880	1.66 / 480 (25°C)	0.80	1.45	0.23	0.08	150	10	H-14	
CS61--16C	2600 – 3600	160 / 90	250	5,720	163,590	4,179	72,760	1.90 / 480 (25°C)	0.90	1.35	0.23	0.08	150	10	H-14	
◆LS81--45	3200 – 4000	450 / 107	710	15,050	1.13 x 10 <sup>6</sup>	11,000	504,000	1.90 / 1800 (150°C)	0.85	0.55	0.065	0.02	150	3	H-11	
◆LS41--60	800 – 2400	600 / 106	950	31,500	4.9 x 10 <sup>6</sup>	21,000	1.8 x 10 <sup>6</sup>	1.16 / 1500	0.747	0.243	0.065	0.02	150	3	H-11	
◆NS412426	800 – 2000	260 / 112	408	12,000	720,000	8,000	266,667	1.35 / 1500	0.764	0.360	0.07	0.03	150	5	H-12	
PS415014	4500 – 5000	1400 / 91	2,200	32,700	7.19 x 10 <sup>6</sup>	24,000	2.39 x 10 <sup>6</sup>	1.30 / 3000	0.71	0.17	0.032	0.009	150	4	H-12	
PS41--20	3600 – 4000	2000 / 99	3,140	60,690	18.4 x 10 <sup>6</sup>	47,600	9.4 x 10 <sup>6</sup>	1.2 / 3000 (150°C)	0.745	0.064	0.024	0.009	150	4	H-12	
PS41--25	800 – 2400	2500 / 90	3,925	72,600	26.3 x 10 <sup>6</sup>	53,000	11.7 x 10 <sup>6</sup>	1.10 / 3000 (25°C)	0.681	0.051	0.024	0.009	150	4	H-12	

◆For Optional Hardware go to Page H-3.

**Single Diode Modules**



**Diode Modules** (Refer to device datasheets at [www.pwr.x.com](http://www.pwr.x.com) for test conditions.)



CD41--99C,  
CD411699D



CD61--16C,  
CD614020C



ND41



LD41,  
LD81



PD41

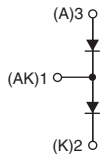


QRD4518001,  
QRD6516001

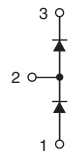
Type	V <sub>DRM</sub> / V <sub>RRM</sub> Volts (V <sub>RSM</sub> = V <sub>RRM</sub> + 100V)	I <sub>F(av)</sub> /T <sub>C</sub> Amperes/°C (180° sin)	I <sub>F(RMS)</sub> Amperes (180° sin)	EUROPEAN		NORTH AMERICAN		V <sub>FM</sub> /I <sub>FM</sub> Volts/Amperes (T <sub>J(max)</sub> )	V <sub>TO</sub> Volts (T <sub>J(max)</sub> )	R <sub>T</sub> mΩ (T <sub>J(max)</sub> )	R <sub>th(j-c)</sub> °C/W	R <sub>th(c-s)</sub> °C/W	T <sub>J(max)</sub> °C	Outline Drawings	
				I <sub>FSM</sub> Amperes (10ms, T <sub>J(max)</sub> , No V <sub>RRM</sub> Reapplied)	i <sup>2</sup> t A <sup>2</sup> sec (10ms, T <sub>J(max)</sub> , No V <sub>RRM</sub> Reapplied)	I <sub>FSM</sub> Amperes (8.3ms, T <sub>J(max)</sub> , 100% V <sub>RRM</sub> Reapplied)	i <sup>2</sup> t A <sup>2</sup> sec (8.3ms, T <sub>J(max)</sub> , 100% V <sub>RRM</sub> Reapplied)							Number	Page
<b>Dual Diode Modules</b>															
CD41--99C	800 – 1800	100 / 104	157	2,860	40,890	2,089	18,190	1.45 / 330 (25°C)	0.80	1.74	0.35	0.15	150	8	H-13
CD41--99C	2000 – 2500	100 / 101	157	2,860	40,890	2,089	18,190	1.65 / 330 (25°C)	0.85	1.88	0.35	0.15	150	8	H-13
CD411699D	1600	100 / 106	157	2,860	40,890	2,089	18,190	1.35 / 300 (25°C)	0.85	1.30	0.35	0.15	150	8	H-13
CD61--16C	800 – 1800	160 / 99	250	6,600	217,800	4,822	96,880	1.56 / 480 (25°C)	0.80	1.35	0.23	0.08	150	10	H-14
CD61--16C	2000 – 2500	160 / 95	250	6,600	217,800	4,822	96,880	1.66 / 480 (25°C)	0.80	1.45	0.23	0.08	150	10	H-14
CD61--16C	2600 – 3600	160 / 90	250	5,720	163,590	4,179	72,760	1.90 / 480 (25°C)	0.90	1.35	0.23	0.08	150	10	H-14
CD61--20C	3600 – 4000	200 / 100	314	7,500	281,000	—	—	1.69 / 440 (25°C)	0.95	1.40	0.5	0.04	150	10	H-14
QRD4518001	4500	180 / 95	282	5,215	151,000	3,860	140,000	1.35 / 180	0.27	5.216	0.099	0.018	150	16	H-16
QRD6516001	6500	160 / 100	251	TBD	TBD	TBD	TBD	1.25 / 160 (Typ.)	0.776	8.081	TBD	TBD	150	16	H-16
◆ND41--25	2600 – 3400	250 / 101	392	7,125	254,000	5,000	104,000	1.80 / 1500	1.095	0.48	0.07	0.14	150	5	H-12
◆ND41--26	800 – 2600	260 / 112	408	12,000	720,000	8,000	266,667	1.35 / 1500	0.764	0.360	0.07	0.03	150	5	H-12
◆ND41--32	800 – 2000	320 / 101	502	12,000	720,000	8,000	266,667	1.35 / 1500	0.764	0.360	0.07	0.03	150	5	H-12
◆ND41--35	800 – 1800	350 / 102	550	11,000	605,000	8,450	297,510	1.15 / 1500	0.654	0.320	0.07	0.03	150	5	H-12
◆LD81--45	3200 – 4000	450 / 107	710	15,050	1.13 x 10 <sup>6</sup>	11,000	504,000	1.90 / 1800	0.85	0.55	0.0325	0.065	150	6	H-12
◆LD41--60	800 – 2600	600 / 106	950	31,500	4.9 x 10 <sup>6</sup>	21,000	1.8 x 10 <sup>6</sup>	1.16 / 1500	0.747	0.243	0.0325	0.01	150	6	H-12
PD41--10	3600 – 4000	1000 / 87	1570	35,700	—	28,000	3.6 x 10 <sup>6</sup>	1.35 / 3000	0.741	0.132	0.029	0.009	150	4	H-12
PD41--11	800 – 2400	1100 / 87	1725	40,350	8.1 x 10 <sup>6</sup>	29,500	3.26 x 10 <sup>6</sup>	1.00 / 3000	0.869	0.237	0.029	0.009	150	4	H-12

◆For Optional Hardware go to Page H-3.

**Dual Diode Modules**



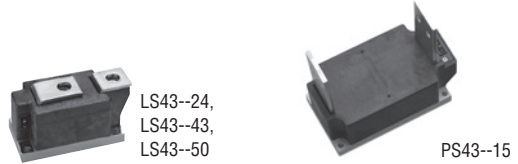
CD41--99C, CD41--99D, CD61--16C, CD614020C,  
ND41--25, ND41--26, ND41--32, ND41--35,  
LD41--60, LD81--45,  
PD41--10, PD41--11



QRD4518001,  
QRD6516001

## Thyristor Modules

(Refer to device datasheets at [www.pwr.com](http://www.pwr.com) for test conditions.)

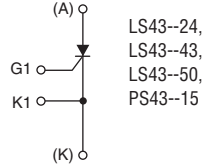


Type	V <sub>DRM</sub> / V <sub>RRM</sub> Volts (V <sub>RSM</sub> = V <sub>RRM</sub> + 100V)	I <sub>T(av)</sub> /T <sub>C</sub> Amperes/°C (180° sin)	I <sub>T(RMS)</sub> Amperes (180° sin)	EUROPEAN		NORTH AMERICAN		V <sub>TM</sub> /I <sub>TM</sub> Volts/Amperes (T <sub>J(max)</sub> )	V <sub>TO</sub> Volts (T <sub>J(max)</sub> )	R <sub>T</sub> mΩ (T <sub>J(max)</sub> )	di/dt Amperes/μsec (Non-Repelitive)	dV/dt Volts/μsec	R <sub>th(j-c)</sub> °C/W	R <sub>th(c-s)</sub> °C/W	T <sub>J(max)</sub> °C	Outline Drawings Number	Page
				I <sub>TSM</sub> Amperes (10ms, T <sub>J(max)</sub> , No V <sub>RRM</sub> Reapplied)	i <sup>2</sup> t A <sup>2</sup> sec (10ms, T <sub>J(max)</sub> , No V <sub>RRM</sub> Reapplied)	I <sub>TSM</sub> Amperes (8.3ms, T <sub>J(max)</sub> , 100% V <sub>RRM</sub> Reapplied)	i <sup>2</sup> t A <sup>2</sup> sec (8.3ms, T <sub>J(max)</sub> , 100% V <sub>RRM</sub> Reapplied)										
◆●LS43--24	3600 – 4000	240 / 74	377	7,525	236,000	5,500	126,000	3.5 / 1000 (25°C)	1.563	2.141	TBD	1000	0.065	0.02	125	3	H-11
◆●LS43--43	1800 – 2200	430 / 80	800	12,000	0.72 x 10 <sup>6</sup>	12,000	0.82 x 10 <sup>6</sup>	1.77 / 1500	0.88	0.66	200	1000	0.065	0.02	130	3	H-11
◆●LS43--50	600 – 1600	500 / 86	900	25,500	3.25 x 10 <sup>6</sup>	17,000	1.20 x 10 <sup>6</sup>	1.29 / 1500	0.81	0.32	200	1000	0.065	0.02	130	3	H-11
●PS43--15	600 – 1800	1500 / 86	2355	93,000	43.2 x 10 <sup>6</sup>	68,000	19.3 x 10 <sup>6</sup>	1.02 / 3000	0.691	0.102	400	200	0.024	0.009	125	4	H-12
●PS43--15	2000 – 2400	1500 / 76	2355	74,640	27.8 x 10 <sup>6</sup>	54,570	12.4 x 10 <sup>6</sup>	1.50 / 3000 (25°C)	0.849	0.130	400	300	0.024	0.009	125	4	H-12

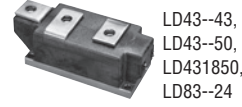
◆For Optional Hardware go to Page H-3.

●For Optional Cathode & Gate Lead Kits, go to page H-3.

### Single Thyristor Modules



## Thyristor Modules (Refer to device datasheets at www.pwr.com for test conditions.)

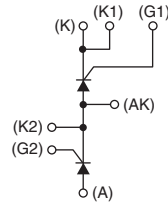


Type	V <sub>DRM</sub> / V <sub>RRM</sub> Volts (V <sub>RSM</sub> = V <sub>RRM</sub> + 100V)	I <sub>T(av)</sub> /T <sub>C</sub> Amperes/°C (180° sin)	I <sub>T(RMS)</sub> Amperes (180° sin)	EUROPEAN		NORTH AMERICAN		V <sub>TM</sub> /I <sub>TM</sub> Volts/Amperes (T <sub>J(max)</sub> )	V <sub>T0</sub> Volts (T <sub>J(max)</sub> )	R <sub>T</sub> mΩ (T <sub>J(max)</sub> )	di/dt Amperes/μsec (Non-Repetitive)	dV/dt Volts/μsec	R <sub>th(j-c)</sub> °C/W	R <sub>th(c-s)</sub> °C/W	T <sub>J(max)</sub> °C	Outline Drawings	
				I <sub>TSM</sub> Amperes (10ms, T <sub>J(max)</sub> ; No V <sub>RRM</sub> Reapplied)	i <sup>2</sup> t A <sup>2</sup> sec (10ms, T <sub>J(max)</sub> ; No V <sub>RRM</sub> Reapplied)	I <sub>TSM</sub> Amperes (8.3ms, T <sub>J(max)</sub> ; 100% V <sub>RRM</sub> Reapplied)	i <sup>2</sup> t A <sup>2</sup> sec (8.3ms, T <sub>J(max)</sub> ; 100% V <sub>RRM</sub> Reapplied)									Number	Page
●CD43--90B	800 – 1800	90 / 87	140	1,785	15,910	1,570	10,270	1.10 / 100	0.80	2.40	150	500	0.135	0.1	125	1	H-11
●CD43--90C	800 – 1800	90 / 85	141	2,200	24,200	1,600	10,760	1.70 / 270 (25°C)	0.80	3.01	TBD	800	0.28	0.15	125	9	H-14
●CD43--99C	1600 – 1800	100 / 88	157	2,640	34,800	1,930	15,500	1.83 / 270 (25°C)	0.80	3.01	TBD	800	0.25	0.15	125	9	H-14
●CD63--15B	800 – 1800	160 / 85	250	4,870	119,000	4,300	76,700	0.99 / 100	0.80	1.67	300	1000	0.08	0.05	125	2	H-11
●CD63--15C	800 – 1800	150 / 86	235	5,940	176,415	4,340	78,470	1.70 / 480 (25°C)	0.80	1.69	TBD	800	0.17	0.08	125	11	H-14
●CD63--15C	2000 – 2500	150 / 83	235	4,950	122,510	3,615	54,490	2.20 / 480 (25°C)	1.10	1.96	TBD	800	0.17	0.08	125	11	H-14
◆●ND43--21	600 – 2000	210 / 92	330	13,200	871,200	8,800	320,000	1.30 / 625	0.813	0.810	800	500	0.07	0.03	130	5	H-12
◆●LD83--24	3600 – 4000	240 / 74	377	7,525	236,000	5,500	126,000	3.5 / 1000 (25°C)	1.563	2.141	TBD	1000	0.0325	0.065	125	6	H-12
◆●ND43--25	600 – 1600	250 / 89	393	13,200	871,200	8,800	322,000	1.20 / 625	0.819	0.589	800	500	0.07	0.03	130	5	H-12
◆●ND43--25	1800 – 2000	250 / 84	393	13,200	871,200	8,800	322,000	1.36 / 625	0.877	0.731	800	500	0.07	0.03	130	5	H-12
◆●ND43--33	800 – 1600	330 / 71	520	11,850	702,000	8,800	322,667	1.3 / 625 (25°C)	0.819	0.59	800	500	0.07	0.03	130	5	H-12
◆●LD43--43	1800 – 2200	430 / 80	800	12,000	0.72 x 10 <sup>6</sup>	12,000	0.82 x 10 <sup>6</sup>	1.77 / 1500	0.88	0.66	200	1000	0.0325	0.01	130	6	H-12
◆●LD43--50	600 – 1600	500 / 86	900	25,500	3.25 x 10 <sup>6</sup>	17,000	1.20 x 10 <sup>6</sup>	1.29 / 1500	0.81	0.32	200	1000	0.0325	0.01	130	6	H-12
◆●LD431850	1800	500 / 84	900	25,500	3.25 x 10 <sup>6</sup>	17,000	1.20 x 10 <sup>6</sup>	1.4 / 1500	0.916	0.280	200	1000	0.0325	0.01	130	6	H-12
●PD43--06	2000 - 2400	600 / 81	942	40,350	8.14 x 10 <sup>6</sup>	29,500	3.63 x 10 <sup>6</sup>	1.60 / 3000	0.869	0.237	400	200	0.029	0.009	125	4	H-12
●PD43--07	600 - 1800	700 / 82	1100	54,750	14.9 x 10 <sup>6</sup>	40,000	6.60 x 10 <sup>6</sup>	1.30 / 3000	0.703	0.184	400	200	0.029	0.009	125	4	H-12

◆For Optional Hardware go to Page H-3.

●For Optional Cathode & Gate Lead Kits, go to page H-3.

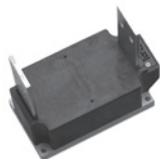
### Dual Thyristor Modules and AC Switches



CD43--90B, CD43--90C, CD--99C,  
CD63--15B, CD63--15C,  
LD43--43, LD43--50, LD431850, LD83--24,  
ND43--21, ND43--25, ND43--33,  
PD43--06, PD43--07

# Thyristor Modules

(Refer to device datasheets at [www.pwr.com](http://www.pwr.com) for test conditions.)

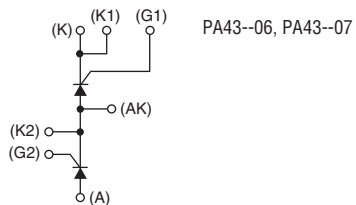


PA43--06,  
PA43--07

Type	V <sub>DRM</sub> / V <sub>RRM</sub> Volts (V <sub>DRM</sub> = V <sub>RRM</sub> + 100V)	I <sub>T(av)</sub> /T <sub>C</sub> Amperes/°C (180° sin)	I <sub>T(RMS)</sub> Amperes (180° sin)	EUROPEAN		NORTH AMERICAN		V <sub>FM</sub> /I <sub>FM</sub> Volts/Amperes (T <sub>j</sub> = 25°C)	V <sub>TO</sub> Volts (T <sub>j(max)</sub> )	R <sub>T</sub> mΩ (T <sub>j(max)</sub> )	di/dt Amperes/μsec (Non-Repetitive)	dV/dt Volts/μsec	R <sub>th(j-c)</sub> °C/W	R <sub>th(c-s)</sub> °C/W	T <sub>j(max)</sub> °C	Outline Drawings		
				I <sub>TSM</sub> Amperes (10ms, T <sub>j(max)</sub> , No V <sub>RRM</sub> Reapplied)	i <sup>2</sup> t A <sup>2</sup> sec (10ms, T <sub>j(max)</sub> , No V <sub>RRM</sub> Reapplied)	I <sub>TSM</sub> Amperes (8.3ms, T <sub>j(max)</sub> , 100% V <sub>RRM</sub> Reapplied)	i <sup>2</sup> t A <sup>2</sup> sec (8.3ms, T <sub>j(max)</sub> , 100% V <sub>RRM</sub> Reapplied)									Number	Page	
<b>AC Switches</b>																		
●PA43--06	1300 - 2400	600 / 81	1330	40,350	8.14 x 10 <sup>6</sup>	29,500	3.63 x 10 <sup>6</sup>	1.75 / 3000	0.869	0.237	400	600	0.029	0.009	125	4	H-12	
●PA43--07	600 - 1800	700 / 82	1550	54,750	14.9 x 10 <sup>6</sup>	40,000	6.60 x 10 <sup>6</sup>	1.30 / 3000	1.010	0.117	400	600	0.029	0.009	125	4	H-12	

●For Optional Cathode & Gate Lead Kits, go to page H-3.

## AC Switches





## Thyristor / Diode Modules (Refer to device datasheets at [www.pwr.x.com](http://www.pwr.x.com) for test conditions.)

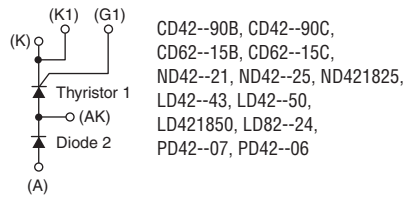


Type	V <sub>DRM</sub> / V <sub>RRM</sub> Volts (V <sub>RSM</sub> = V <sub>RRM</sub> + 100V)	I <sub>T(av)</sub> /T <sub>c</sub> Amperes/°C (180° sin)	I <sub>T(RMS)</sub> Amperes (180° sin)	EUROPEAN		NORTH AMERICAN		V <sub>TM</sub> /I <sub>TM</sub> Volts/Amperes (T <sub>j(max)</sub> )	V <sub>T0</sub> Volts (T <sub>j(max)</sub> )	R <sub>T</sub> mΩ (T <sub>j(max)</sub> )	di/dt Amperes/μsec (Non-Repetitive)	dV/dt Volts/μsec	R <sub>th(j-c)</sub> °C/W	R <sub>th(c-s)</sub> °C/W	T <sub>j(max)</sub> °C	Outline Drawings Number Page
				I <sub>TSM</sub> Amperes (10ms, T <sub>j(max)</sub> , No V <sub>RRM</sub> Reapplied)	i <sup>2</sup> t A <sup>2</sup> sec (10ms, T <sub>j(max)</sub> , No V <sub>RRM</sub> Reapplied)	I <sub>TSM</sub> Amperes (8.3ms, T <sub>j(max)</sub> , 100% V <sub>RRM</sub> Reapplied)	i <sup>2</sup> t A <sup>2</sup> sec (8.3ms, T <sub>j(max)</sub> , 100% V <sub>RRM</sub> Reapplied)									
●CD42--90B, CD47--90B	800 – 1800	90 / 87	140	1,785	15,910	1,570	10,270	1.10 / 100	0.80	2.40	150	500	0.135	0.1	125	1 H-11
●CD42--90C, CD47--90C	800 – 1800	90 / 85	141	2,200	24,200	1,600	10,760	1.70 / 270 (25°C)	0.80	3.01	TBD	800	0.28	0.15	125	12 H-15
●CD62--15B	800 – 1800	160 / 85	250	4,870	119,000	4,300	76,700	0.99 / 100 (25°C)	0.80	1.67	300	1000	0.08	0.05	125	2 H-11
●CD62--15C, CD67--15C	800 – 1800	150 / 86	235	5,940	176,415	4,340	78,470	1.70 / 480 (25°C)	0.80	1.69	TBD	800	0.17	0.08	125	13 H-15
●CD62--15C, CD67--15C	2000 – 2500	150 / 83	235	4,950	122,510	3,615	54,490	2.20 / 480 (25°C)	1.10	1.96	TBD	800	0.17	0.08	125	13 H-15
◆●ND42--21, ND47--21	600 – 2000	210 / 92	330	13,200	871,200	8,800	320,000	1.30 / 625	0.813	0.810	800	500	0.07	0.03	130	5 H-12
◆●ND42--25, ND47--25	600 – 1600	250 / 89	393	13,200	871,200	8,800	322,000	1.20 / 625	0.819	0.589	800	500	0.07	0.03	130	5 H-12
◆●ND421825, ND471825	1800	250 / 84	393	13,200	871,200	8,800	322,000	1.36 / 625	0.877	0.731	800	500	0.07	0.03	130	5 H-12
◆●LD42--43, LD47--43	1800 – 2200	510 / 70	800	12,000	0.72 x 10 <sup>6</sup>	12,000	0.82 x 10 <sup>6</sup>	1.77 / 1500	0.88	0.66	200	1000	0.0325	0.01	130	6 H-12
◆●LD42--50, LD47--50	600 – 1600	500 / 86	900	25,500	3.2 x 10 <sup>6</sup>	17,000	1.20 x 10 <sup>6</sup>	1.29 / 1500	0.81	0.32	200	1000	0.0325	0.01	130	6 H-12
◆●LD421850, LD471850	1800	500 / 84	900	25,500	3.2 x 10 <sup>6</sup>	17,000	1.20 x 10 <sup>6</sup>	1.36 / 1500	0.916	0.280	200	1000	0.0325	0.01	130	6 H-12
◆●LD82--24	3600 – 4000	240 / 74	377	7,525	236,000	5,500	126,000	3.5 / 1000 (25°C)	1.563	2.141	TBD	1000	0.0325	0.065	125	6 H-12
●PD42--07, PD47--07	600 – 1800	700 / 82	1100	60,000	18.0 x 10 <sup>6</sup>	40,000	6.60 x 10 <sup>6</sup>	1.30 / 3000	0.703	0.184	400	200	0.029	0.009	125	4 H-12
●PD42--06, PD47--06	2000 – 2400	600 / 81	942	44,250	9.7 x 10 <sup>6</sup>	29,500	3.63 x 10 <sup>6</sup>	1.60 / 3000	0.869	0.237	400	200	0.029	0.009	125	4 H-12

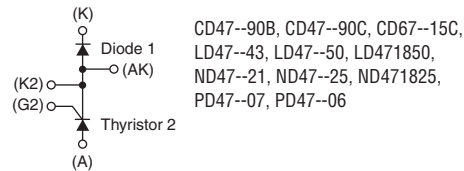
◆For Optional Hardware go to Page H-3.

●For Optional Cathode & Gate Lead Kits, go to page H-3.

### Thyristor 1, Diode 2 Modules



### Diode 1, Thyristor 2 Modules

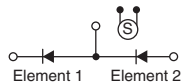


**Thyristor / Diodes (POW-R-BRIKs™)** (Refer to device datasheets at [www.pwr.com](http://www.pwr.com) for test conditions.)



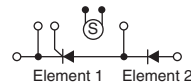
Type	V <sub>DRM</sub> / V <sub>RRM</sub> Volts (V <sub>RSM</sub> = V <sub>RRM</sub> + 100V)	I <sub>T(av)</sub> /T <sub>C</sub> Amperes/°C (180° sin)	Maximim Power Dissipation (Watts)	E1 - I <sub>TSM</sub> /I <sub>FSM</sub> Amperes (180° sin)	E2 - I <sub>TSM</sub> /I <sub>FSM</sub> Amperes (180° sin)	Gate V <sub>gt</sub> Volts	Gate I <sub>gt</sub> mAmperes	di/dt Amperes/μsec (Non-Repettive)	dV/dt Volts/μsec	R <sub>th(j-c)</sub> °C/W (Per Module)	R <sub>th(c-s)</sub> °C/W (Per Module)	R <sub>th(c-a)</sub> °C/W (Per Module)	T <sub>j(max)</sub> °C	Outline Drawings Number Page
<b>Diode / Diode Modules</b>														
P1Z7AAR700W_	2200 – 3000	355 / 105	1125	7,000	7,000	—	—	—	—	0.04	0.010	0.10	150	7 H-13
P1Z8ABR800W_	1200 – 2200	435 / 105	1125	9,000	9,000	—	—	—	—	0.04	0.010	0.10	150	7 H-13
P1Z9AAR900W_	2200 – 3000	590 / 105	1500	16,000	16,000	—	—	—	—	0.03	0.008	0.08	150	7 H-13
P1Z9ACR900W_	800 - 1200	740 / 105	1500	30,000	30,000	—	—	—	—	0.03	0.008	0.08	150	7 H-13
P1Z9ADR900W_	600	800 / 110	1330	50,000	50,000	—	—	—	—	0.03	0.008	0.08	150	7 H-13
P1ZAADDA00W_	3600 - 5000	985 / 80	—	24,000	24,000	—	—	—	—	0.024	0.007	0.08	150	7 H-13
P1ZAABRA00W_	2200 - 3000	1270 / 80	—	—	—	—	—	—	—	0.03	0.008	0.08	150	7 H-13
P1ZAACRA00W_	1800 - 2200	1420 / 80	—	—	—	—	—	—	—	0.03	0.008	0.08	150	7 H-13
P1ZAADRA00W_	1200 - 1800	1585 / 80	—	—	—	—	—	—	—	0.03	0.008	0.08	150	7 H-13
<b>Half Controlled SCR / Diode Modules</b>														
P2Z7ABB700W_	1600 – 2200	380 / 85	1100	9,000	9,000	3	150	600	300	0.04	0.010	0.10	130	7 H-13
P2Z7ACB700W_	1200 – 1600	395 / 85	1100	10,000	14,000	3	150	600	300	0.04	0.010	0.10	130	7 H-13
P2Z9AAA900W_	2000 – 3000	430 / 85	1325	15,000	16,000	3	200	600	300	0.03	0.008	0.08	125	7 H-13
P2Z9ABA900W_	1600 - 2000	520 / 85	1465	17,000	16,000	3	200	600	300	0.03	0.008	0.08	130	7 H-13
P2Z9ACA900W_	1200 - 1600	590 / 85	1465	25,000	16,000	3	200	600	300	0.03	0.008	0.08	130	7 H-13
P2ZAABA00W_	1200 - 2200	880 / 80	—	—	—	3	200	400	300	0.03	0.008	0.08	125	7 H-13
<b>Full Control SCR / SCR Modules</b>														
P3Z8AAT800W_	2200 – 3000	300 / 85	1095	9,000	9,000	3	150	600	300	0.04	0.010	0.10	130	7 H-13
P3Z7ABT700W_	1600 – 2200	345 / 85	1095	9,000	9,000	3	150	600	300	0.04	0.010	0.10	130	7 H-13
P3Z9AAT900W_	2000 - 3000	355 / 85	1295	15,000	15,000	3	200	600	300	0.03	0.008	0.08	125	7 H-13
P3Z7ACT700W_	1200 – 1600	375 / 85	1095	10,000	10,000	3	150	600	300	0.04	0.010	0.10	130	7 H-13
P3Z8ABT800W_	1400 - 2200	390 / 85	1095	12,000	12,000	3	150	600	300	0.04	0.010	0.10	130	7 H-13
P3Z8ACT800W_	1200 - 1400	450 / 85	1095	15,000	15,000	3	150	600	300	0.04	0.010	0.10	130	7 H-13
P3Z9ABT900W_	1600 - 2000	470 / 85	1460	17,000	17,000	3	200	600	300	0.03	0.008	0.08	130	7 H-13
P3Z9ACT900W_	1200 - 1600	600 / 85	1460	25,000	25,000	3	200	600	300	0.03	0.008	0.08	130	7 H-13
P3ZAABTA00W_	1200 - 2200	880 / 80	—	—	—	3	200	400	300	0.03	0.008	0.08	125	7 H-13
<b>Half Controlled Diode / SCR Modules</b>														
P7Z7ABB700W_	1600 – 2200	380 / 85	1100	9,000	9,000	3	150	600	300	0.04	0.010	0.10	130	7 H-13
P7Z7ABC700W_	1200 – 1600	395 / 85	1100	14,000	10,000	3	150	600	300	0.04	0.010	0.10	130	7 H-13
P7Z9AAA900W_	2000 – 3000	430 / 85	1325	16,000	15,000	3	200	600	300	0.03	0.008	0.08	125	7 H-13
P7Z9AAB900W_	1600 - 2000	520 / 85	1465	16,000	17,000	3	200	600	300	0.03	0.008	0.08	130	7 H-13
P7Z9AAC900W_	1200 - 1600	590 / 85	1465	16,000	25,000	3	200	600	300	0.03	0.008	0.08	130	7 H-13
P7ZAABA00W_	1200 - 2200	880 / 80	—	—	—	3	200	400	300	0.03	0.008	0.08	125	7 H-13

**Diode / Diode**



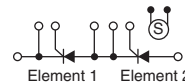
- P1Z7AAR700W\_
- P1Z8ABR800W\_
- P1Z9AAR900W\_
- P1Z9ACR900W\_
- P1Z9ADR900W\_
- P1ZAADDA00W\_
- P1ZAABRA00W\_
- P1ZAACRA00W\_
- P1ZAADRA00W\_

**SCR / Diode**



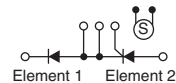
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- P2Z7ACB700W\_
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- P2Z9ACA900W\_
- P2ZAABA00W\_

**SCR / SCR**



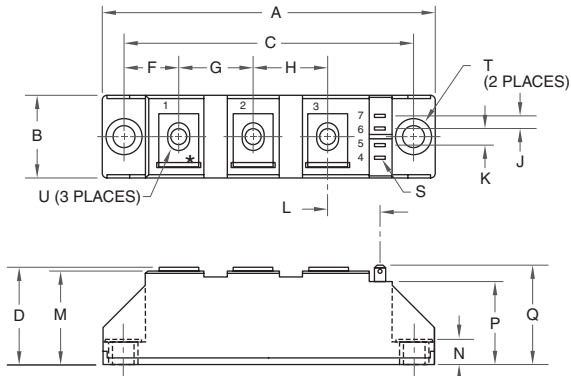
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- P3Z7ACT700W\_
- P3Z8AAT800W\_
- P3Z8ABT800W\_
- P3Z8ACT800W\_
- P3Z9AAT900W\_
- P3Z9ABT900W\_
- P3Z9ACT900W\_
- P3ZAABTA00W\_

**Diode / SCR**



- P7Z7ABB700W\_
- P7Z7ABC700W\_
- P7Z9AAA900W\_
- P7Z9AAB900W\_
- P7Z9AAC900W\_
- P7ZAABA00W\_

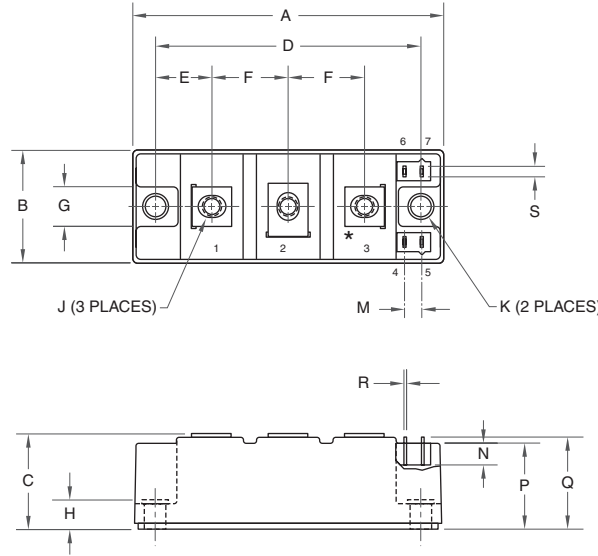
**1** CD42--90B, CD43--90B, CD47--90B



Dim.	Inches	Millimeters
A	3.66	93.0
B	0.79	20.0
C	3.15	80.0
D	1.18	30.0
F	0.61	15.5
G	0.79	20.0
H	0.79	20.0
J	0.16	4.0
K	0.22	5.7

Dim.	Inches	Millimeters
L	0.59	15.5
M	1.10	28.0
N	0.31	8.0
P	0.94	24.0
Q	1.16	29.4
S	0.11 x 0.03	2.8 x 0.8
T	0.25	6.4
U	M5 Metric	M5

**2** CD61, CD62--16B, CD63--15B, CD67, CS61\*

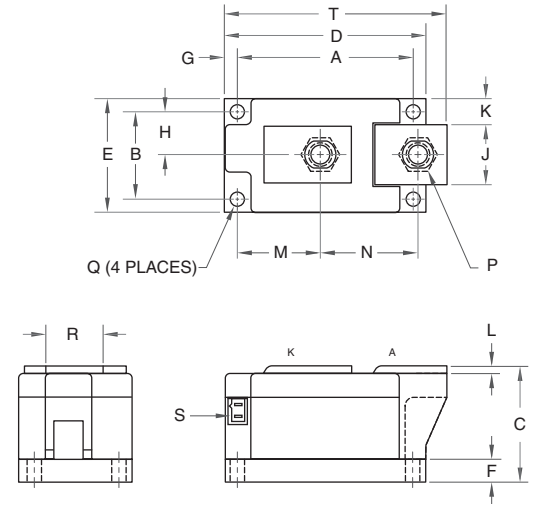


Dim.	Inches	Millimeters
A	3.70	94.0
B	1.34	34.0
C	1.18	30.0
D	3.15	80.0
E	0.67	17.0
F	0.91	23.0
G	0.51	13.0
H	0.35	8.3

Dim.	Inches	Millimeters
J	M6 Metric	M6
K	0.26	6.4
M	0.02	5.0*
N	0.28	6.0*
P	1.06	27.0*
Q	1.14	29.0*
R	0.03	0.8*
S	0.11	2.8*

\*Does not apply to CD61--16B, and CS61--16B.

**3** LS41, LS43, LS81, LS83

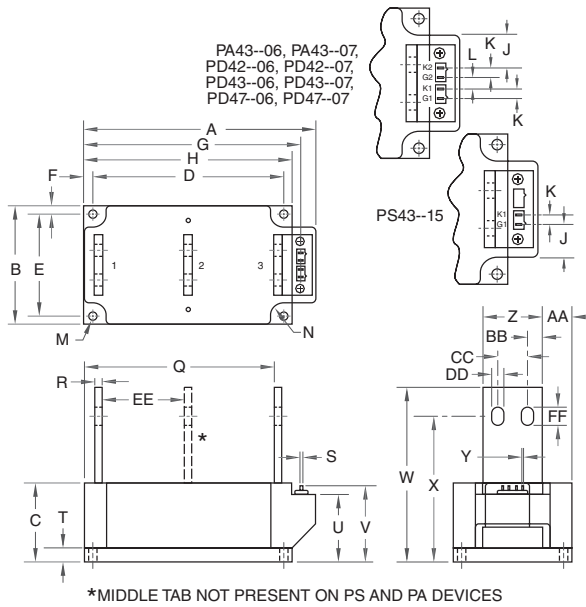


Dim.	Inches	Millimeters
A	3.15	80.0
B	1.50	38.0
C	2.05	52.1
D	3.62	92.0
E	1.97	50.0
F	0.39	9.9
G	0.24	6.1
H	0.75	19.0
J	0.99	25.1

Dim.	Inches	Millimeters
K	0.48	12.2
L	0.12	3.1
M	1.45	36.8
N	1.76	44.77
P	M10 Metric	M10
Q	9.25 Dia.	6.35 Dia.
S	0.110 x 0.032	2.5 x 0.8*
T	3.99	101.3

\*Does not apply to LS41--60.

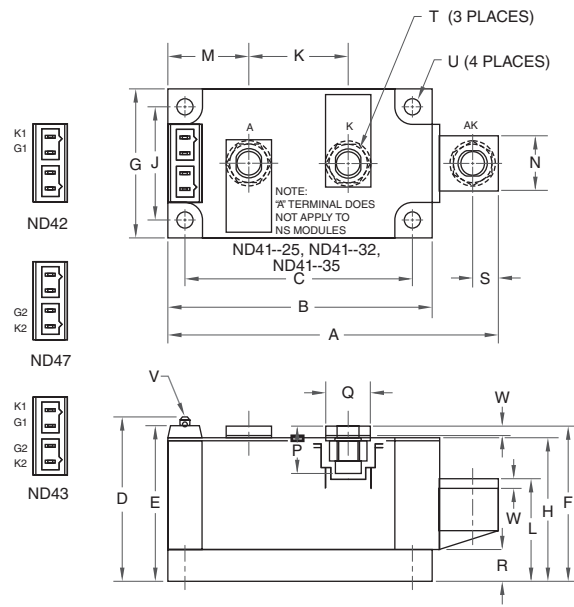
**4** PA43, PD41, PD42, PD43, PD47, PS41, PS415014, PS43



Dim.	Inches	Millimeters	Dim.	Inches	Millimeters
A	7.80	198.1	R	0.19	4.8
B	4.0	101.6	S	0.11	2.8*
C	2.68	68.1	T	0.48	12.2
D	6.44	163.6	U	2.28	58.0
E	3.44	87.4	V	2.54	64.5
F	0.28	7.1	W	4.93	125.2
G	7.31	185.7	X	3.81	96.8
H	7.0	177.8	Y	0.03	0.8*
J	1.65	42.0*	Z	2.0	50.8
K	0.21	5.3*	AA	1.0	25.4
L	0.28	7.1*	BB	0.5	12.7
M	0.281	7.1	CC	1.0	25.4
N	0.45	11.4	DD	0.406	10.3
P	0.54	13.7	EE	2.87	72.9*
Q	5.93	150.6	FF	0.66	16.8

\*Does not apply to PD41--11, PS41--25.

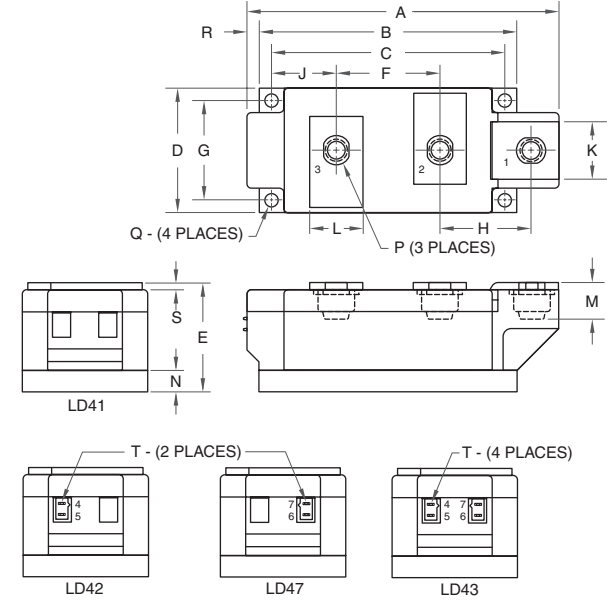
**5** ND41, ND42, ND43, ND47, NS41



Dim.	Inches	Millimeters	Dim.	Inches	Millimeters
A	4.57	116.0	M	1.122	28.5
B	3.66	93.0	N	0.71	18.0
C	3.15	80.0	P	0.57	14.5
D	2.17	55.1	Q	0.625	15.9
E	2.06	52.3	R	0.394	10.0
F	2.07	52.0	S	0.35	8.9
G	1.97	50.0	T	M8 Metric	M8
H	1.90	48.3	U	0.25 Dia.	6.35 Dia.
J	1.50	38.1	V	0.110 x 0.032	2.8 x 0.8*
K	1.36	35.0	W	0.12	3.0
L	1.26	32.0			

\*Does not apply to ND41--26, ND41--32, and ND41--35.

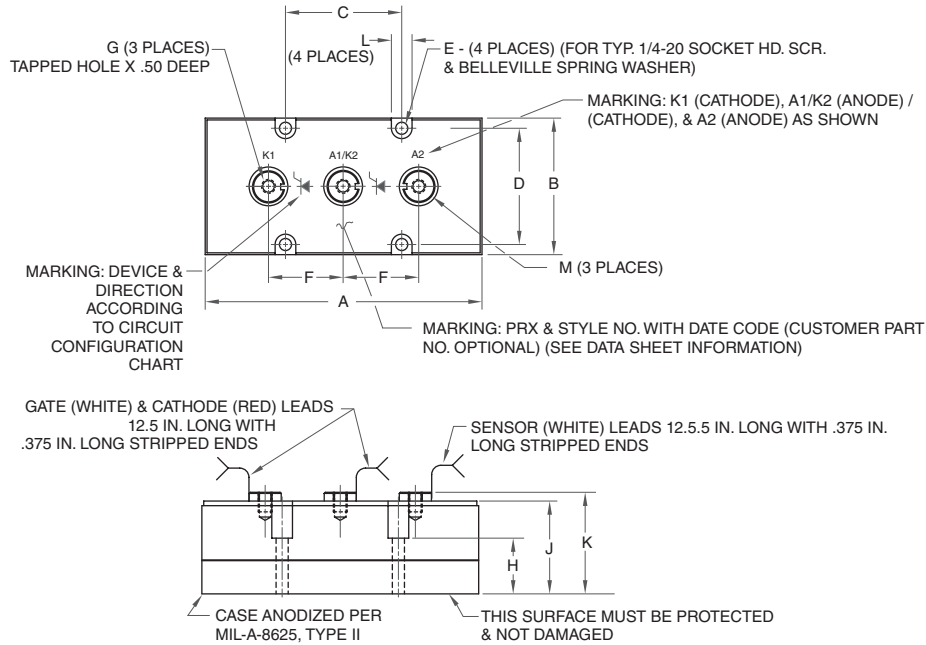
**6** LD41, LD42, LD43, LD47, LD81, LD82, LD83



Dim.	Inches	Millimeters	Dim.	Inches	Millimeters
A	5.91	150.0	K	1.10	28.0
B	4.88	124.0	L	1.00	25.4
C	4.41	112.0	M	0.69	17.5
D	2.36	60.0	N	0.39	10.0
E	2.05	52.0	P	M10 Metric	M10
F	1.97	50.0	Q	0.26 Dia.	6.5 Dia.
G	1.89	48.0	R	0.24	6.0
H	1.73	44.0	S	0.12	3.0
J	1.22	31.0	T	0.110 x 0.32	2.5 x 0.8*

\*Does not apply to LD41--60.

**7** P1Z7, P1Z8, P1Z9, P1ZA, P2Z7, P2Z9, P2ZA, P3Z7, P3Z8, P3Z9, P3ZA, P7Z7, P7Z9, P7ZA



**ZAA Modules**

Dim.	Inches	Millimeters
A	8.5	215.9
B	4.33	109.98
C	3.15	80.01
D	3.78	96.01
E	0.328 Dia.	8.33 Dia.
F	2.34±0.03	59.4±0.8
G	7/16-14 UNC-2B	
H	2.14	54.36
J	3.15	80.01
K	3.38	85.85
L	0.56	14.22
M	1.12	28.45

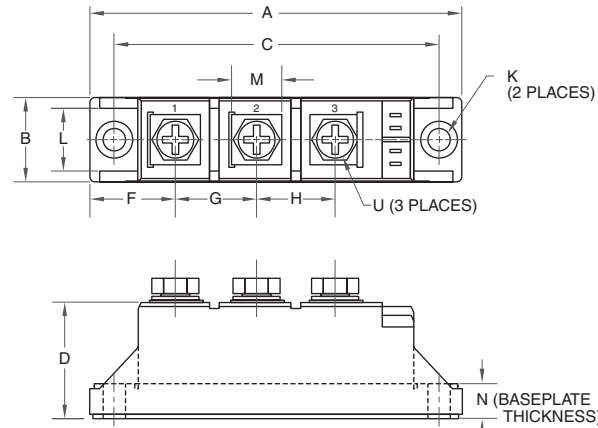
**Z7A / Z8A Modules**

Dim.	Inches	Millimeters
A	6.30	153.16
B	3.03	76.96
C	3.15	80.01
D	2.47	62.73
E	0.328 Dia.	8.33 Dia.
F	1.83±0.03	46.48±0.8
G	5/16-18 UNC-2B	
H	1.27	32.25
J	2.09	53.08
K	2.25	57.15
L	0.58	14.22

**Z9A Modules**

Dim.	Inches	Millimeters
A	7.50	190.5
B	3.70	93.98
C	3.15	80.01
D	3.15	80.01
E	0.328 Dia.	8.33 Dia.
F	2.03±0.03	51.56±0.8
G	3/8-16 UNC-2B	
H	1.51	38.35
J	2.52	64.0
K	2.75	69.85
L	0.56	14.22

**8** CD41--99C, CD41--99D, CD411699D



Dim.	Inches	Millimeters	Dim.	Inches	Millimeters
A	3.62	92.0	H	0.79	20.0
B	0.83	21.0	K	0.24 Dia.	6.2 Dia.
C	3.15	80.0	L	0.63	16.0
D	1.18	30.0	M	0.51	13.0
F	0.83	21.0	U	M5 Metric	M5
G	0.79	20.0			

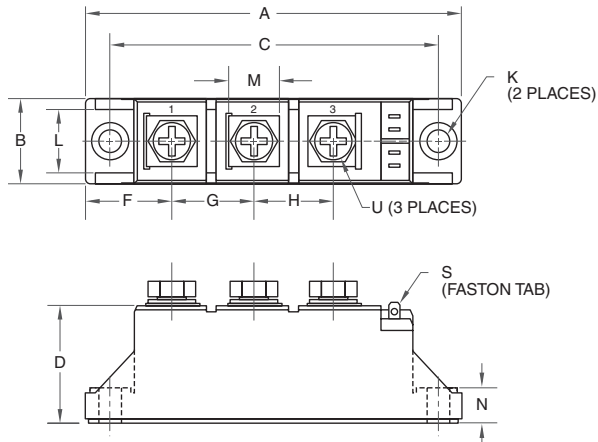
**CD41--99C**

Dim.	Inches	Millimeters
N	0.33	8.5

**CD41--99D**

Dim.	Inches	Millimeters
N	0.24	6.1

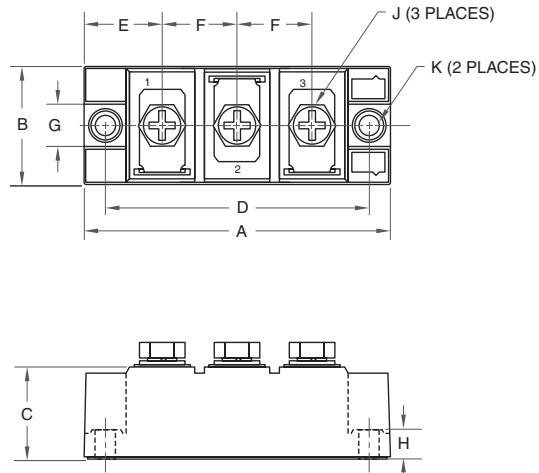
**9** CD43--90C, CD43--99C



Dim.	Inches	Millimeters
A	3.62	92.0
B	0.83	21.0
C	3.15	80.0
D	1.18	30.0
F	0.83	21.0
G	0.79	20.0
H	0.79	20.0

Dim.	Inches	Millimeters
K	0.24	6.2
L	0.63	16.0
M	0.51	13.0
N	0.33	8.5
S	0.11 x 0.02	2.8 x 0.5
U	M5 Metric	M5

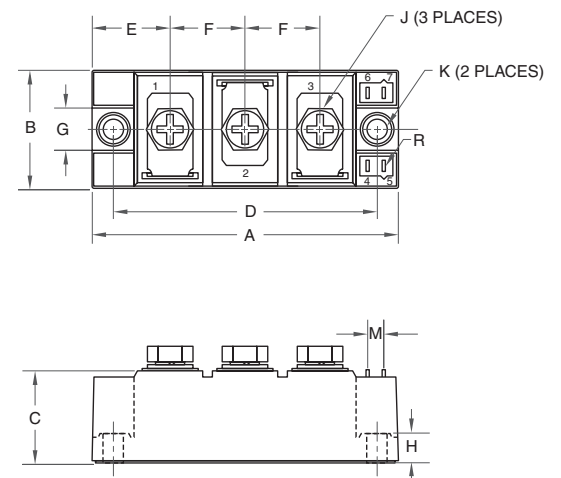
**10** CD61--16C, CD61--20C, CS61--16C



Dim.	Inches	Millimeters
A	3.70	94.0
B	1.34	34.0
C	1.15	29.2
D	3.15	80.0
E	0.94	24.0

Dim.	Inches	Millimeters
F	0.91	23.0
G	0.51	13.0
H	0.35	9.0
J	M6 Metric	M6
K	0.24 Dia.	6.2 Dia.

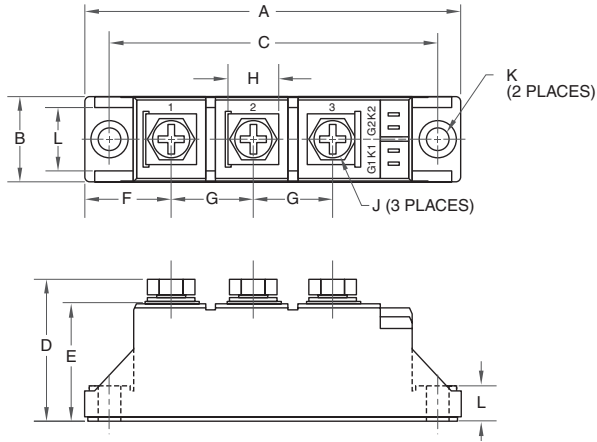
**11** CD63--15C



Dim.	Inches	Millimeters
A	3.70	94.0
B	1.34	34.0
C	1.15	29.2
D	3.15	80.0
E	0.94	24.0
F	0.91	23.0

Dim.	Inches	Millimeters
G	0.51	13.0
H	0.35	9.0
J	M6 Metric	M6
K	0.24 Dia.	6.2 Dia.
M	0.19	4.9
R	0.03 x 0.11	2.8 x 0.8

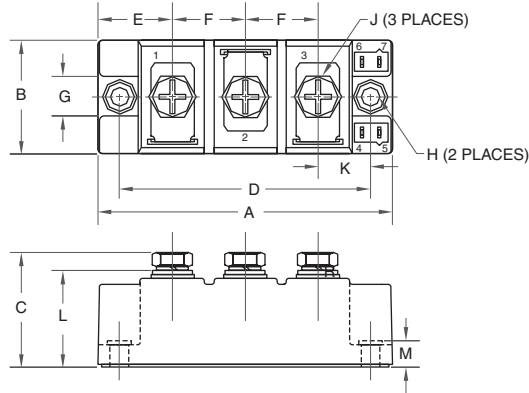
## 12 CD42--90C, CD47--90C



Dim.	Inches	Millimeters
A	3.62	92.0
B	0.83	21.0
C	3.15	80.0
D	1.38	35.0
E	1.18	30.0

Dim.	Inches	Millimeters
F	0.83	21.0
G	0.79	20.0
H	0.51	13.0
J	M5 Metric	M5
K	0.24 Dia.	6.2 Dia.

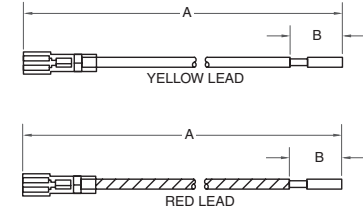
## 13 CD62--15C, CD67--15C



Dim.	Inches	Millimeters
A	3.70	94.0
B	1.34	34.0
C	1.42	36.0
D	3.15	80.0
E	0.94	24.0
F	0.91	23.0

Dim.	Inches	Millimeters
G	0.51	13.0
H	0.24 Dia.	6.2 Dia.
J	M6 Metric	M6
K	0.67	17.0
L	1.15	29.2
M	0.35	9.0

## 14 Lead Kits MR, MQ



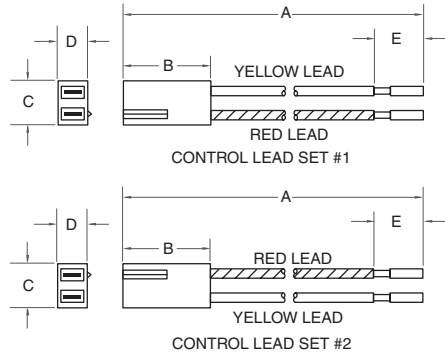
1. WIRE COMPOSITION:  
AWG 22, TINNED COPPER STRAND WIRE WITH ETEF INSULATION RATED TO 125°C
2. LEAD COLOR:  
RED (CATHODE) AND YELLOW (GATE), BOTH WITH INSULATED TERMINALS
3. RECEPTACLES:  
FEMALE TERMINAL WITH NYLON INSULATOR THAT FITS .11 x .03 IN. BLADES

MQ KIT: TWO RED & TWO YELLOW LEADS / MODULE

MR KIT: ONE RED & ONE YELLOW LEAD / MODULE

Dim.	Inches	Millimeters
A	0.46	11.80
B	0.01	0.26

# 15 Lead Kits NK, NL, NM



1. WIRE COMPOSITION:  
AWG 22, TINNED COPPER STRAND WIRE WITH ETEF INSULATION RATED TO 125°C
2. LEAD COLOR:  
RED (CATHODE) AND YELLOW (GATE). RED LEAD IS POSITIONED NEXT TO KEY ON BLACK POLARIZED HOUSING.
3. RECEPTACLES:  
FEMALE TERMINAL WITH LOCKING TAB FITS .11 x .03 IN. BLADES

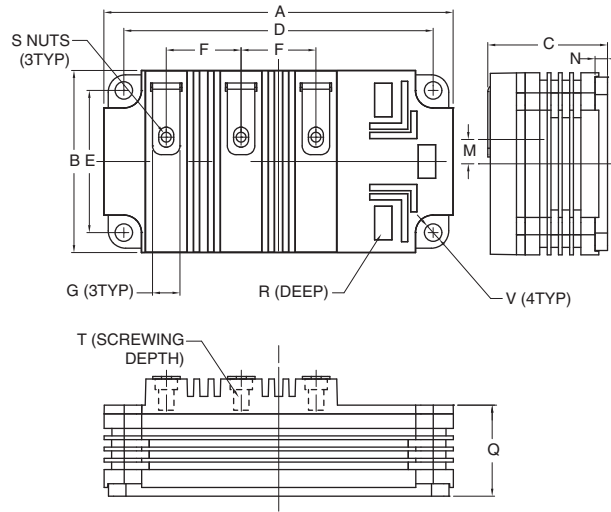
NK KIT: LEAD SET 1 & LEAD SET 2 - ONE EACH / MODULE

NL KIT: LEAD SET 1 - ONE / MODULE

NM KIT: LEAD SET 2 - ONE / MODULE

Dim.	Inches	Millimeters	Dim.	Inches	Millimeters
A	0.54	13.80	D	0.009	0.23
B	0.03	0.79	E	0.01	0.26
C	0.015	0.39			

# 16 QRD4518001, QRD6516001



Dim.	Inches	Millimeters	Dim.	Inches	Millimeters
A	5.51	140.0	M	0.38	9.75
B	2.87	73.0	N	0.20	5.0
C	1.89	48.0	Q	1.44	36.5
D	4.88±0.01	124.0±0.25	R	0.16	4.0
E	2.24±0.01	57.0±0.25	S	M6 Metric	M6
F	1.18	30.0	T	0.63 Min.	16.0 Min.
G	0.43	11.0	V	0.28 Dia.	7.0 Dia.