

GRANDPOWER COMPONENTS

Power Semiconductors
for Maintenance and
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International
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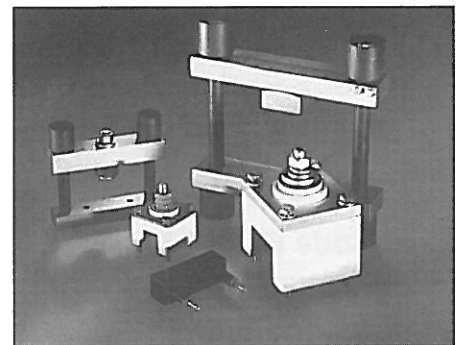
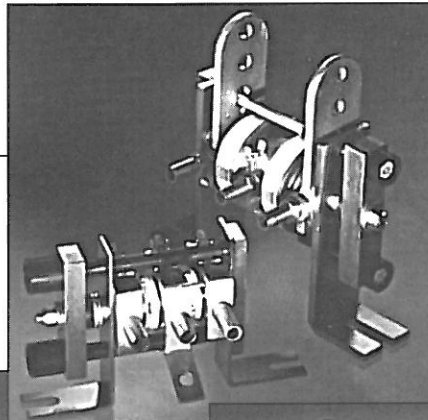


GRANDPOWER COMPONENTS DIV.

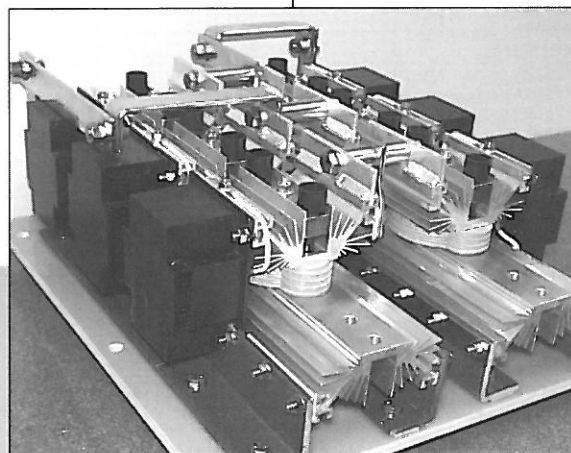
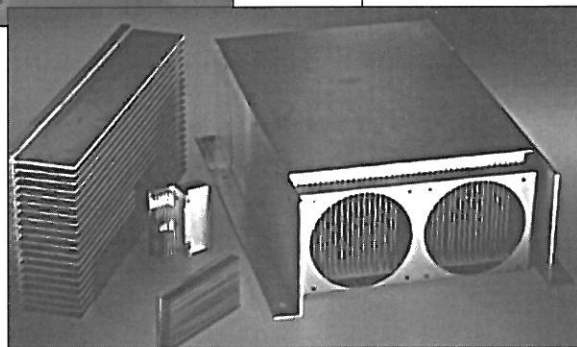
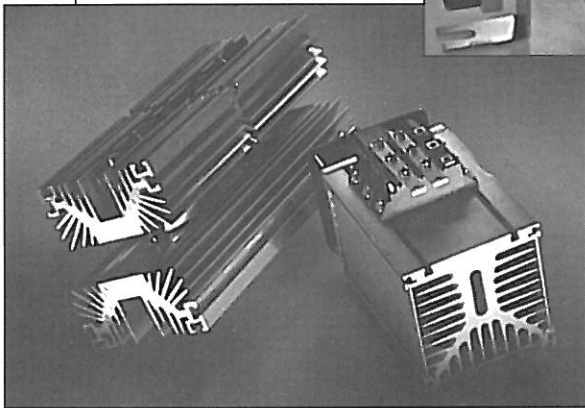
GrandPower Components provides accurate cross-referencing of thousands of OEM part numbers, and can provide same-day shipments for urgent repair situations through its distribution network. In addition to satisfying the semiconductor needs of the MRO market, **GrandPower Components** also has the capability to provide power solutions with additional products and services:

Heat Sinks:

- Bonded Fin
- Extruded
- Liquid Cooled



Hockey Puk Clamps

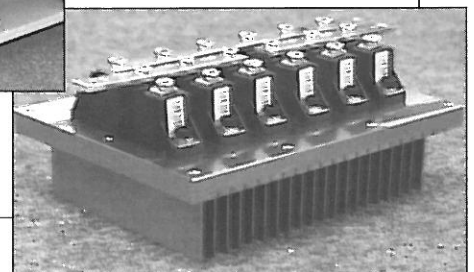


SCR & Diode Assemblies:

- Single Phase Bridges
- Three Phase Bridges
- AC Switches

Value-Added Services:

- engineering and CAD/CAM capabilities
- electrical testing
 - Blocking Voltage
 - Forward Voltage Drop Matching
 - SCR Gate Current Required to Trigger
- custom parts marking
- lead and terminal modifications
- bar coding
- Just-In-Time (JIT) delivery



GPC

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Diodes

Part Number	V _{RRM} (V)	I _{FAV} (A)	@T _C (°C)	V _{FM} (V)	@I _{FM} (A)	I _{FSM} 60Hz (A)	R _{θJC(DC)} (°C/W)	Notes
Stud Packages								DO-203AA (DO-4)
16F60	600	16	140	1.23	16	310	1.6	9 12 17
16F120	1200	16	140	1.23	16	310	1.6	9 12 17
25F60	600	25	120	0.9	25	314	1.5	9 12 17
25F120	1200	25	120	0.9	25	314	1.5	9 12 17



DO-4

DO-203AB (DO-5)								
1N1190	600	35	140	1.7	35	500	1	9 12 17
1N1190A	600	40	150	1.3	40	800	1.1	9 12 17
40HF60	600	40	140	1.3	40	500	1	9 12 17 26
40HF120	1200	40	140	1.3	40	500	1	9 12 17 26
40HF160	1600	40	110	1.3	40	500	1	9 12 17 26
70HF60	600	70	140	1.35	70	1050	0.45	9 12 17 26
70HF120	1200	70	140	1.35	70	1050	0.45	9 12 17 26
70HF160	1600	70	110	1.35	70	1050	0.45	9 12 17 26



DO-5

DO-205AA (DO-8)								
150K60A	600	150	150	1.33	470	3140	0.25	9 12 17 19
150K120E	1200	150	150	1.33	470	3140	0.25	9 12 17 19



DO-8

DO-205AC (DO-30)								
150L60A	600	150	150	1.33	470	3140	0.25	9 12 17 19
150L120A	1200	150	150	1.33	470	3140	0.25	9 12 17 19

SD150N08PV	800	150	125	1.5	470	3170	0.23	5 12 16 19
SD150N12PV	1200	150	125	1.5	470	3170	0.23	5 12 16 19
SD150N16PV	1600	150	125	1.5	470	3170	0.23	5 12 16 19
SD150N20PC	2000	150	125	1.5	470	3170	0.23	5 12 16 19
SD150N25PC	2500	150	125	1.5	470	3170	0.23	5 12 16 19

SD200N12PV	1200	200	110	1.4	630	4140	0.23	5 12 16 19
SD200N16PV	1600	200	110	1.4	630	4140	0.23	5 12 16 19
SD200N20PC	2000	200	110	1.4	630	4140	0.23	5 12 16 19
SD200N24PC	2400	200	110	1.4	630	4140	0.23	5 12 16 19



DO-30

DO-205AB (DO-9)								
300U40A	400	300	130	1.4	942	5750	0.18	9 12 17
300U60A	600	300	130	1.4	942	5750	0.18	9 12 17
300U100A	1000	300	130	1.4	942	5750	0.18	9 12 17
300U120AD	1200	300	130	1.4	942	5750	0.18	9 12 17
300U160AD	1600	300	130	1.4	942	5750	0.18	9 12 17



DO-9

NOTES

- 3 For I_{RM}: T_J = 150°C
- 5 V_{FM} measured at T_J=T_J max.
- 9 V_{FM} measured at T_J=25°C
- 12 For I_{FSM}: 100% V_{RRM} reapplied, T_J=T_J max.
- 16 Cathode to stud. To order anode to stud, change 'N' to 'R' in part number (i.e. 8AF4RPP, SD600R08PC)
- 17 Cathode to stud. To order anode to stud, append 'R' to part letters, e.g. 12FR100
- 19 Available with stud top case or flag terminal. To order, add 2 for stud top case or 4 for flag terminal to second digit of part number, e.g. 152L5A.
- 20 1N3288 series also available.
- 21 V_{FM} for JEDEC types is registered at max T_J.
- 22 Available with strengthening cone for high-g applications. To order, change part number from 301 to 305.3
- 23 DC operation, double side cooled
- 25 I_{FSM} measured at 50% V_{RRM} reapplied
- 26 Add '1' to second digit for Leaded version (e.g. 71HF120)
Add '2' to second digit for Leaded and sleeved version (e.g. 87HF120)

Diodes

Part Number	V _{RRM} (V)	I _{FAV} (A)	@T _C (°C)	V _{FM} (V)	@I _{FM} (A)	I _{FSM} 60Hz (A)	R _{θJC(DC)} (°C/W)	Notes
301U80	800	330	120	1.22	942	7270	0.15	5 12 17 22
301U120	1200	330	120	1.22	942	7270	0.15	5 12 17 22
301U160	1600	330	120	1.22	942	7270	0.15	5 12 17 22
301U200	2000	330	120	1.22	942	7270	0.15	5 12 17 22
301U250	2500	300	120	1.46	942	5330	0.15	5 12 17 22

SD300N20PC	2000	380	100	1.83	1180	5330	0.11	5 12 16
SD300N25PC	2500	380	70	1.83	1180	5330	0.11	5 12 16
SD300N28PC	2800	380	70	1.83	1180	5330	0.11	5 12 16
SD300N32PC	3200	380	70	1.83	1180	5330	0.11	5 12 16

SD400N08PV	800	400	120	1.62	1500	7270	0.11	5 12 16
SD400N12PV	1200	400	120	1.62	1500	7270	0.11	5 12 16
SD400N16PV	1600	400	120	1.62	1500	7270	0.11	5 12 16
SD400N20PC	2000	400	120	1.62	1500	7270	0.11	5 12 16
SD400N24PC	2400	400	120	1.62	1500	7270	0.11	5 12 16



DO-9

B-8								
SD500N36PC	3600	475	55	1.66	1000	6600	0.1	5 12 16
SD500N40PC	4000	475	55	1.66	1000	6600	0.1	5 12 16
SD500N45PC	4500	475	55	1.66	1000	6600	0.1	5 12 16



B-8

SD600N08PC	800	600	92	1.31	1500	11450	0.1	5 12 16
SD600N12PC	1200	600	92	1.31	1500	11450	0.1	5 12 16
SD600N16PC	1600	600	92	1.31	1500	11450	0.1	5 12 16
SD600N20PC	2000	600	92	1.31	1500	11450	0.1	5 12 16
SD600N25PC	2500	600	54	1.44	1500	9250	0.1	5 12 16
SD600N28PC	2800	600	54	1.44	1500	9250	0.1	5 12 16
SD600N32PC	3200	600	54	1.44	1500	9250	0.1	5 12 16

Hockey Puk Packages									DO-200AA (A-Puk)	
SD400C04C	400	800	55	1.86	1930	7265	0.073	5 12 23		
SD400C08C	800	800	55	1.86	1930	7265	0.073	5 12 23		
SD400C12C	1200	800	55	1.86	1930	7265	0.073	5 12 23		
SD400C16C	1600	800	55	1.86	1930	7265	0.073	5 12 23		
SD400C20C	2000	800	55	1.86	1930	7265	0.073	5 12 23		
SD400C24C	2400	800	55	1.86	1930	7265	0.073	5 12 23		



A-Puk

B-43 (E-Puk)								
SD1100C04C	400	1400	55	1.31	1500	11450	0.038	5 12 23
SD1100C08C	800	1400	55	1.31	1500	11450	0.038	5 12 23
SD1100C12C	1200	1400	55	1.31	1500	11450	0.038	5 12 23
SD1100C16C	1600	1400	55	1.31	1500	11450	0.038	5 12 23
SD1100C20C	2000	1400	55	1.31	1500	11450	0.038	5 12 23
SD1100C25C	2500	1100	55	1.44	1500	9250	0.038	5 12 23
SD1100C30C	3000	1100	55	1.44	1500	9250	0.038	5 12 23
SD1100C32C	3200	1100	55	1.44	1500	9250	0.038	5 12 23



E-Puk

NOTES

- 3 For I_{rm}: T_j = 150°C
- 5 V_{FM} measured at T_j=T_j max
- 9 V_{fm} measured at T_j=25°C
- 12 For I_{FSM}: 100% V_{RRM} reapplied, T_j=T_j max.
- 16 Cathode to stud. To order anode to stud, change 'N' to 'R' in part number (i.e. 8AF4RPP, SD600R08PC)
- 17 Cathode to stud. To order anode to stud, append 'R' to part letters, e.g. 12FR100
- 19 Available with stud top case or flag terminal. To order, add 2 for stud top case or 4 for flag terminal to second digit of part number, e.g. 15L25A.
- 20 1N3288 series also available.
- 21 V_{FM} for JEDEC types is registered at max T_j.
- 22 Available with strengthening cone for high-g applications. To order, change part number from 301 to 305 3
- 23 DC operation, double side cooled
- 25 I_{FSM} measured at 50% V_{RRM} reapplied
- 26 Add *1* to second digit for Leaded version (e.g. 71HF120)
Add *2* to second digit for Leaded and sleeved version (e.g. 87HF120)

Diodes

Part Number	V _{RRM} (V)	I _{FAV} (A)	@T _C (°C)	V _{FM} (V)	@I _{FM} (A)	I _{FSM} 60Hz (A)	R _{θJC(DC)} (°C/W)	Notes
DO-200AB (B-Puk)								
SD800C24L	2400	1180	55	1.66	2000	11980	0.031	3 5
SD800C36L	3600	1180	55	1.66	2000	11980	0.031	3 5
SD800C45L	4500	1065	55	1.95	2000	10750	0.031	3 5

SD1100C04L	400	1170	55	1.31	1500	11450	0.05	5 12 23
SD1100C08L	800	1170	55	1.31	1500	11450	0.05	5 12 23
SD1100C12L	1200	1170	55	1.31	1500	11450	0.05	5 12 23
SD1100C16L	1600	1170	55	1.31	1500	11450	0.05	5 12 23
SD1100C20L	2000	1170	55	1.31	1500	11450	0.05	5 12 23
SD1100C25L	2500	910	55	1.44	1500	9250	0.05	5 12 23
SD1100C32L	3200	910	55	1.44	1500	9250	0.05	5 12 23

SD1500C04L	400	1600	55	1.64	3000	14700	0.031	5 12 23
SD1500C08L	800	1600	55	1.64	3000	14700	0.031	5 12 23
SD1500C12L	1200	1600	55	1.64	3000	14700	0.031	5 12 23
SD1500C16L	1600	1600	55	1.64	3000	14700	0.031	5 12 23
SD1500C20L	2000	1600	55	1.64	3000	14700	0.031	5 12 23
SD1500C25L	2500	1600	55	1.64	3000	14700	0.031	5 12 23
SD1500C30L	3000	1600	55	1.64	3000	14700	0.031	5 12 23

SD2000C04L	400	2100	55	1.55	6000	21000	0.031	5 12 23
SD2000C08L	800	2100	55	1.55	6000	21000	0.031	5 12 23
SD2000C10L	1000	2100	55	1.55	6000	21000	0.031	5 12 23

DO-200AC (K-Puk)								
SD1700C24K	2400	2080	55	1.81	4000	21150	0.02	5 12 23 25
SD1700C36K	3600	2080	55	1.81	4000	21150	0.02	5 12 23 25
SD1700C45K	4500	1875	55	2.11	4000	17600	0.02	5 12 23 25

SD2500C12K	1200	3000	55	1.41	4000	27300	0.02	5 12 23
SD2500C16K	1600	3000	55	1.41	4000	27300	0.02	5 12 23
SD2500C20K	2000	3000	55	1.41	4000	27300	0.02	5 12 23
SD2500C25K	2500	3000	55	1.41	4000	27300	0.02	5 12 23

SD3000C04K	400	3800	55	1.22	6000	31500	0.02	5 12 23
SD3000C08K	800	3800	55	1.22	6000	31500	0.02	5 12 23
SD3000C10K	1000	3800	55	1.22	6000	31500	0.02	5 12 23

B-44 (R-Puk)								
SD4000C30R	3000	4450	55	1.44	6000	50470	0.01	5 12 23
SD4000C40R	4000	4450	55	1.44	6000	50470	0.01	5 12 23

SD6000C12R	1200	6690	55	1.22	9000	67280	0.01	5 12 23
SD6000C16R	1600	6690	55	1.22	9000	67280	0.01	5 12 23
SD6000C20R	2000	6690	55	1.22	9000	67280	0.01	5 12 23
SD6000C25R	2500	6690	55	1.22	9000	67280	0.01	5 12 23

SD8500C04R	400	9570	55	0.97	10000	84100	0.01	5 12 23
SD8500C06R	600	9570	55	0.97	10000	84100	0.01	5 12 23



B-Puk



K-Puk



R-Puk

NOTES

- 3 For I_{rm}: T_j = 150°C
- 5 V_{FM} measured at T_j=T_j max.
- 9 V_{fm} measured at T_j=25°C
- 12 For I_{FSM}: 100% VRRM reapplied, T_j=T_j max.
- 16 Cathode to stud. To order anode to stud, change 'N' to 'R' in part number (i.e. 8AF4RPP, SD600R08PC)
- 17 Cathode to stud. To order anode to stud, append 'R' to part letters, e.g. 12FR100
- 19 Available with stud top case or flag terminal. To order, add 2 for stud top case or 4 for flag terminal to second digit of part number, e.g. 15L25A.
- 20 1N3288 series also available.
- 21 VFM for JEDEC types is registered at max T_j.
- 22 Available with strengthening cone for high-g applications. To order, change part number from 301 to 305.3
- 23 DC operation, double side cooled
- 25 I_{FSM} measured at 50% VRRM reapplied
- 26 Add '1' to second digit for Leaded version (e.g. 71HF120)
Add '2' to second digit for Leaded and sleeved version (e.g. 87HF120)

Fast Recovery Diodes

Part number	V _{RRM} (V)	I _{FAV} (A)	@T _C (°C)	I _{FSM} 60Hz (A)	V _{FM} (V)	@ I _{FM} (A)	R _{θJC} (°C/W)	t _{rr} (nS)	Notes
Stud Packages									
DO-203AA (DO-4)									
16FL60S02	600	16	100	190	1.40	16	1.6	200	2 3 4 5
16FL60S05	600	16	100	190	1.40	16	1.6	500	2 3 4 5
16FL100S05	1000	16	100	190	1.40	16	1.6	500	2 3 4 5



DO-4

DO-203AB (DO-5)									
40HFL60S02	600	40	75	420	1.95	40	0.6	200	2 3 4 5 6
40HFL60S05	600	40	75	420	1.95	40	0.6	500	2 3 4 5 6
40HFL100S05	1000	40	75	420	1.95	40	0.6	500	2 3 4 5 6



DO-5

60HFU-400	400	60	82	730	1.50	60	0.36	60	2 3 5 6 8 9 10
60HFU-600	600	60	82	730	1.50	60	0.36	60	2 3 5 6 8 9 10

70HFL60S02	600	70	75	730	1.85	70	0.36	200	2 3 5 6 8
70HFL60S05	600	70	75	730	1.85	70	0.36	500	2 3 5 6 6
70HFL100S05	1000	70	75	730	1.85	70	0.36	500	2 3 5 6 6

85HFL60S02	600	85	75	1150	1.75	85	0.30	200	2 3 4 5 6
85HFL60S05	600	85	75	1150	1.75	85	0.30	500	2 3 4 5 6
85HFL100S05	1000	85	75	1150	1.75	85	0.36	500	2 3 4 5 6

DO-205AC (DO-30)									
SD153N08S10PV	800	150	85	3770	1.55	470	0.16	1000	2 4 12 14 15
SD153N12S15PV	1200	150	85	3770	1.55	470	0.16	1500	2 4 12 14 15
SD153N16S15PV	1600	150	85	3770	1.55	470	0.16	1500	2 4 12 14 15



DO-30

DO-205AB (DO-9)									
251UL80S10	800	250	70	3500	1.78	1000	0.15	1000	2 4 5 15 16
251UL120S15	1200	250	70	3500	1.78	1000	0.15	1500	2 4 5 15 16
251UL160S15	1600	250	70	3500	1.78	1000	0.15	1500	2 4 5 15 16
251UL200S20	2000	250	70	3500	1.78	1000	0.15	2000	2 4 5 16
251UL250S20	2500	250	70	3500	1.78	1000	0.15	2000	2 4 5 16



DO-9

SD253N08S15PV	800	250	85	4710	1.38	785	0.115	1500	2 4 12 14 15
SD253N12S20PV	1200	250	85	4710	1.38	785	0.115	2000	2 4 12 14 15
SD253N16S20PV	1600	250	85	4710	1.38	785	0.115	2000	2 4 12 14 15

B-8									
SD233N30S50PC	3000	235	60	4840	3.20	1000	0.10	5000	2 4 12 14 15
SD233N36S50PC	3600	235	60	4840	3.20	1000	0.10	5000	2 4 12 14 15
SD233N40S50PC	4000	235	60	4840	3.20	1000	0.10	5000	2 4 12 14 15
SD233N45S50PC	4500	235	60	4840	3.20	1000	0.10	5000	2 4 12 14 15



B-8

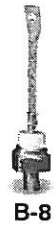
SD453N12S20PC	1200	400	70	8190	2.20	1000	0.10	2000	2 4 12 15
SD453N16S20PC	1600	400	70	8190	2.20	1000	0.10	2000	2 4 12 15
SD453N20S20PC	2000	400	70	8190	2.20	1000	0.10	2000	2 4 12 15
SD453N25S20PC	2500	400	70	8190	2.20	1000	0.10	2000	2 4 12 15

NOTES

- 1.2 IFM=20A, -di/dt=100A/μs
- 1.6 IFM=60A, -di/dt=100A/μs
- 1.8 IFM=80A, -di/dt=100A/μs
- 2 For Ifsm: 100% VRRM reapplied, Tj=Tj max.=125°C
- 3 trr conditions: Tj = 25°C, IFM = pi X rated IF(AV), di/dt = 25 A/μs.
- 4 VFM measured at Tj= 25°C
- 5 Cathode to stud. To order anode to stud, add 'R' to part number (e.g. IRD3899R,40HFLR10502)
- 8 VFM conditions: IFM = 60Apk, Tj=25°C
- 9 IF(AV) conditions: 180°C conduction, half sine
- 10 Tj = 25°C, IF=1A, -di/dt = 100A/μs, VR=30V
- 11 For Ifsm: 100% VRRM reapplied, Tj=Tj max.
- 12 Cathode to stud. To order anode to stud, change 'N' to 'R' in part number (e.g. SD103R04S10PV)
- 14 Available with flag lead. To order, add B to part number, e.g. (e.g. SD103N04S10PBV)
- 15 For trr: Tj=25°C
- 18 IFSM @ 50% VRRM re-applied and Tj=Tj max.
- 19 VFM measured at Tj = Tj max.

Fast Recovery Diodes

Part number	V _{RRM} (V)	I _{FAV} (A)	@T _C (°C)	I _{FSM} 60Hz (A)	V _{FM} (V)	@ I _{FM} (A)	R _{θJC} (°C/W)	t _{rr} (nS)	Notes
SD453N12S30PC	1200	450	70	8450	1.85	1000	0.10	3000	2 4 12 15
SD453N16S30PC	1600	450	70	8450	1.85	1000	0.10	3000	2 4 12 15
SD453N20S30PC	2000	450	70	8450	1.85	1000	0.10	3000	2 4 12 15
SD453N25S30PC	2500	450	70	8450	1.85	1000	0.10	3000	2 4 12 15



Hockey Puk Packages DO-200AA (A-Puk)

SD303C20S20C	2000	350	55	5080	2.26	1100	0.08	2000	4 11 12
SD303C25S20C	2500	350	55	5080	2.26	1100	0.08	2000	4 11 12



SD403C08S10C	800	430	55	5445	1.83	1350	0.08	1000	4 11 12
SD403C12S15C	1200	430	55	5445	1.83	1350	0.08	1500	4 11 12
SD403C16S15C	1600	430	55	5445	1.83	1350	0.08	1500	4 11 12

B-43 (E-Puk)

SD823C12S20C	1200	810	55	8190	2.20	1500	0.038	2000	11 15 19
SD823C16S20C	1600	810	55	8190	2.20	1500	0.038	2000	11 15 19
SD823C20S20C	2000	810	55	8190	2.20	1500	0.038	2000	11 15 19
SD823C25S20C	2500	810	55	8190	2.20	1500	0.038	2000	11 15 19



DO-200AB (B-Puk)

SD553C30S50L	3000	560	55	10570	3.24	1500	0.031	5000	11 15 18 19
SD553C36S50L	3600	560	55	10570	3.24	1500	0.031	5000	11 15 18 19
SD553C40S50L	4000	560	55	10570	3.24	1500	0.031	5000	11 15 18 19
SD553C45S50L	4500	560	55	10570	3.24	1500	0.031	5000	11 15 18 19



SD703C12S20L	1200	700	55	8190	2.20	1500	0.046	2000	11 15 19
SD703C16S20L	1600	700	55	8190	2.20	1500	0.046	2000	11 15 19
SD703C20S20L	2000	700	55	8190	2.20	1500	0.046	2000	11 15 19
SD703C25S20L	2500	700	55	8190	2.20	1500	0.046	2000	11 15 19

SD1053C18S20L	1800	1050	55	13210	1.90	1500	0.031	2000	3 5
SD1053C25S20L	2500	1050	55	13210	1.90	1500	0.031	2000	3 5
SD1053C30S30L	3000	920	55	11450	2.26	1500	0.031	3000	3 5

DO-200AC (K-Puk)

SD853C30S50K	3000	990	55	16750	2.90	2000	0.02	5000	11 15 18 19
SD853C45S50K	4500	990	55	16750	2.90	2000	0.02	5000	11 15 18 19



SD1553C18S20K	1800	1825	55	22010	2.23	4000	0.02	2000	11 15 19
SD1553C25S20K	2500	1825	55	22010	2.23	4000	0.02	2000	11 15 19
SD1553C30S30K	3000	1650	55	19370	2.60	4000	0.02	3000	11 15 19

- 1.2 IFM=20A, -di/dt=100A/μs
- 1.6 IFM=60A, -di/dt=100A/μs
- 1.8 IFM=80A, -di/dt=100A/μs
- 2 For Ifsm: 100% VRRM reapplied, T_J=T_J max.=125°C
- 3 trr conditions: T_J = 25°C, IFM = pi X rated IF(AV), diF/dt = 25 A/μs.
- 4 VFM measured at T_J = 25°C
- 5 Cathode to stud. To order anode to stud, add 'R' to part number (e.g. IRD3899R,40HFLR10502)
- 8 VFM conditions: IFM = 60Apk, T_J=25°C

NOTES

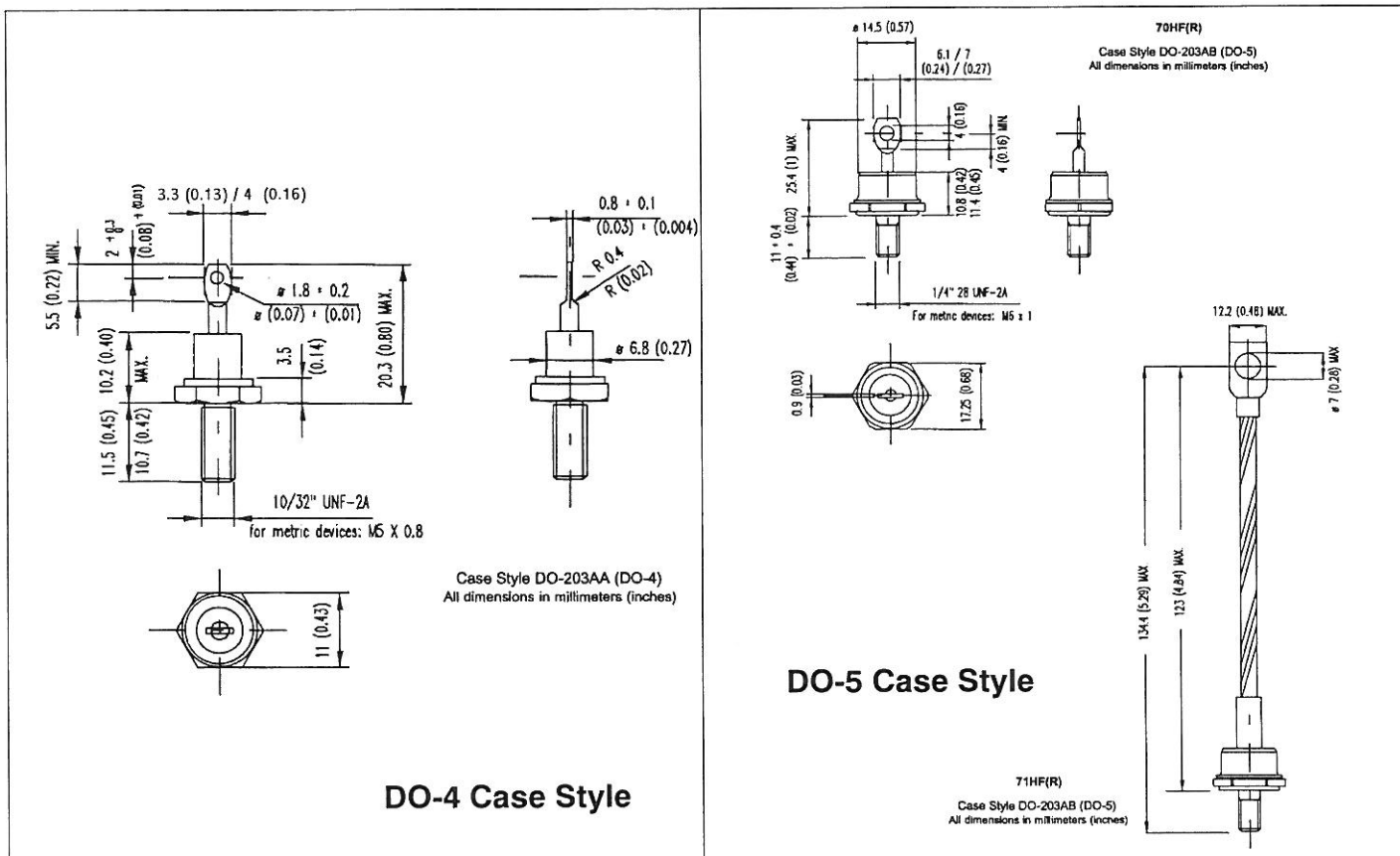
- 9 IF(AV) conditions: 180°C conduction, half sine
- 10 T_J = 25°C, IF=1A, -di/dt = 100A/μs, VR=30V
- 11 For Ifsm: 100% VRRM reapplied, T_J=T_J max.
- 12 Cathode to stud. To order anode to stud, change 'N' to 'R' in part number (e.g. SD103R04S10PV)
- 14 Available with flag lead. To order, add B to part number, e.g. (e.g. SD103N04S10PBV)
- 15 For trr: T_J=25°C
- 18 IFSM @ 50% VRRM re-applied and T_J=T_J max.
- 19 VFM measured at T_J = T_J max.

Fast Recovery Diodes

Part number	V _{RRM} (V)	I _{FAV} (A)	@T _C (°C)	I _{FSM} 60Hz (A)	V _{FM} (V)	@ I _{FM} (A)	R _{θJC} (°C/W)	t _{rr} (nS)	Notes
B-44 (R-Puk)									
SD2053C36S50R	3600	2000	55	27100	3.50	6000	0.01	5000	11 15 19
SD2053C45S50R	4500	2000	55	27100	3.50	6000	0.01	5000	11 15 19
SD3553C16S20R	1600	3500	55	42600	2.04	6000	0.01	2000	11 15 19
SD3553C20S20R	2000	3500	55	42600	2.04	6000	0.01	2000	11 15 19
SD3553C25S20R	2500	3500	55	42600	2.04	6000	0.01	2000	11 15 19



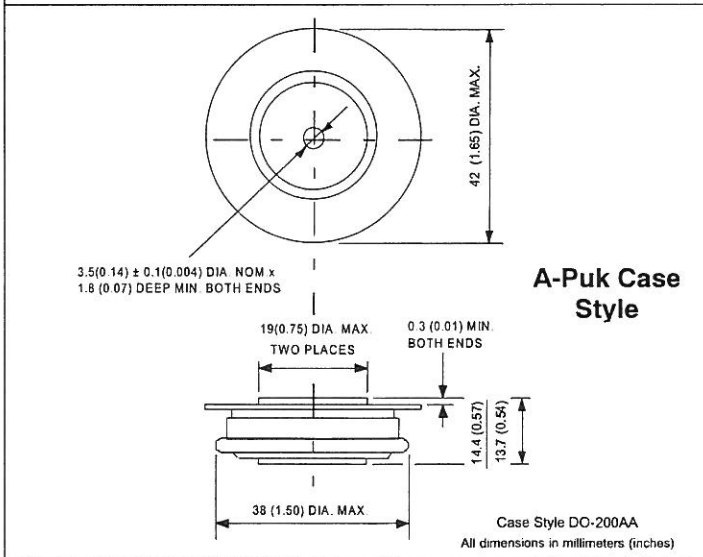
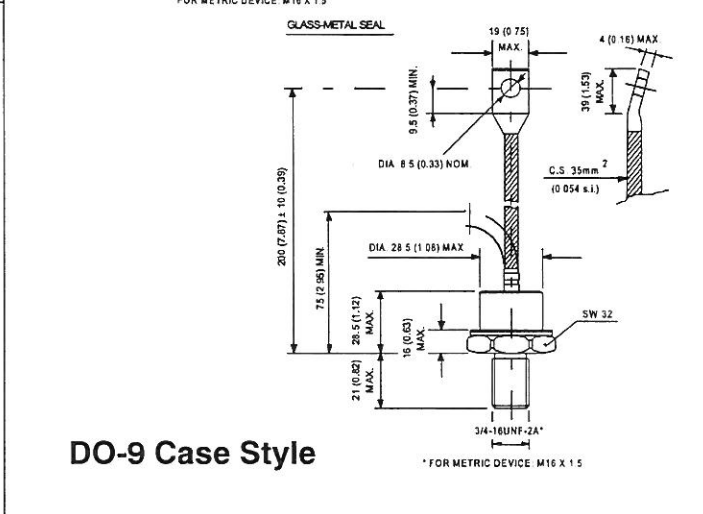
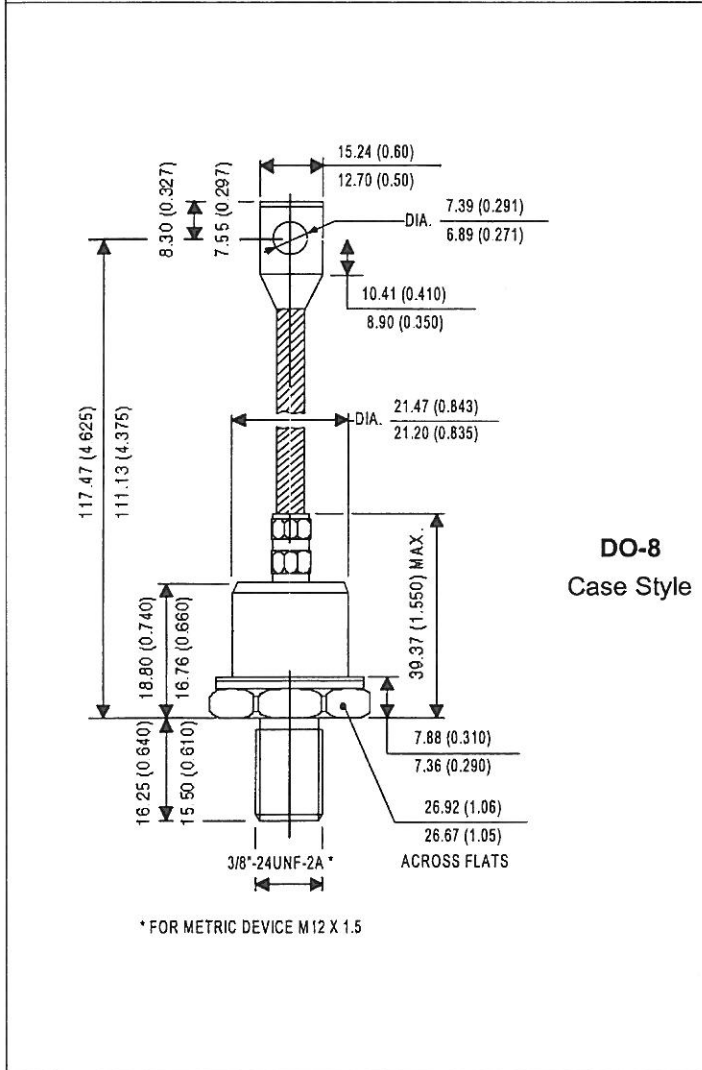
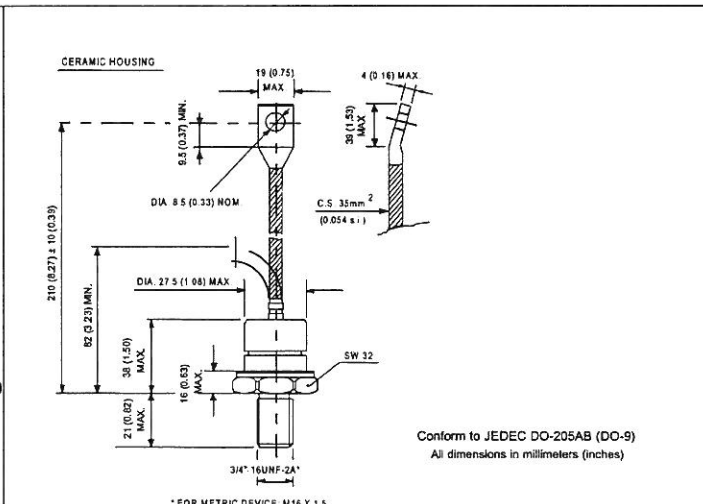
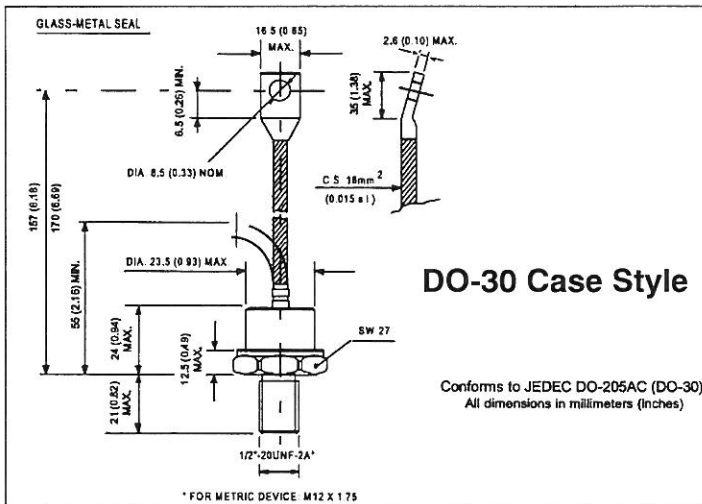
Diode Outline Drawings



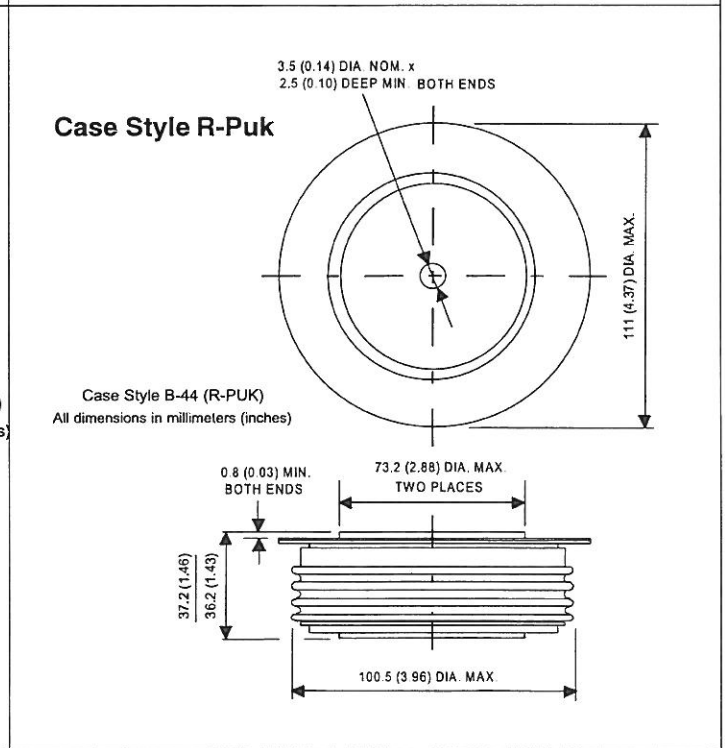
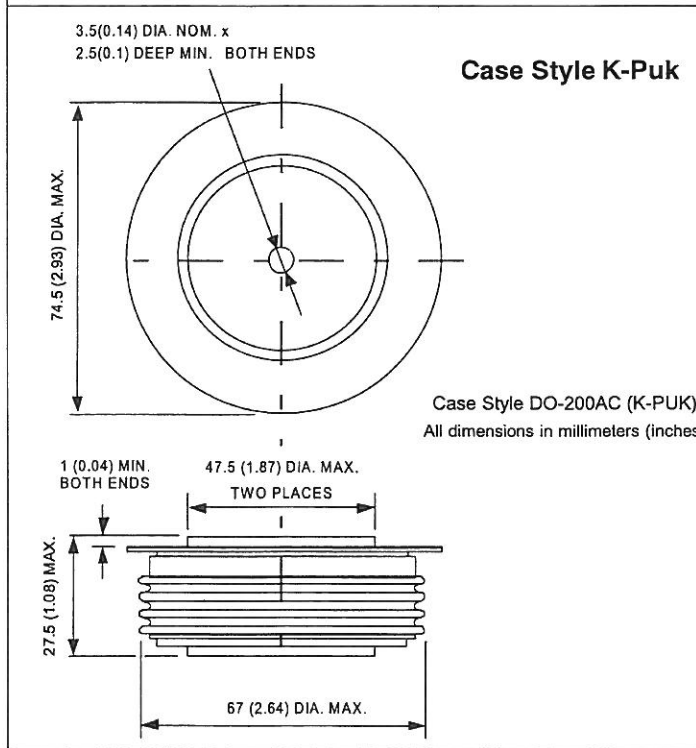
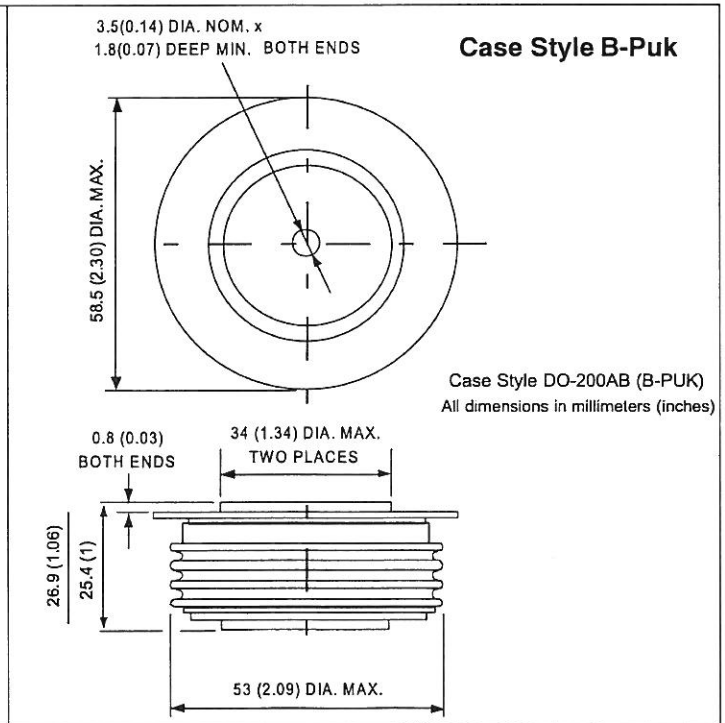
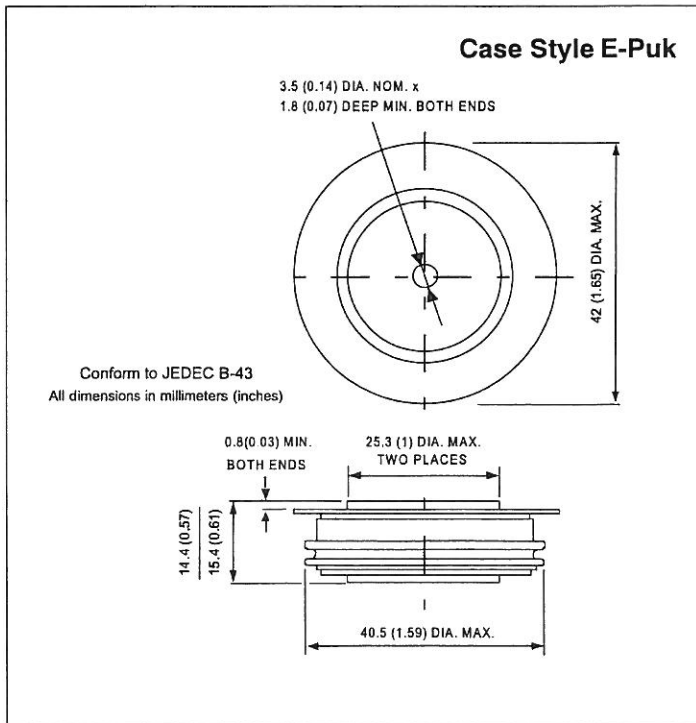
- 1.2 IFM=20A, -di/dt=100A/μs
- 1.6 IFM=60A, -di/dt=100A/μs
- 1.8 IFM=80A, -di/dt=100A/μs
- 2 For Ifsm: 100% VRRM reapplied, Tj=Tj max.=125°C
- 3 trr conditions: Tj = 25°C, IFM = pi X rated IF(AV), diF/dt = 25 A/μs.
- 4 VFM measured at Tj= 25°C
- 5 Cathode to stud. To order anode to stud, add 'R' to part number (e.g. IRD3899R,40HFLR10502)
- 8 VFM conditions: IFM = 60Apk, Tj=25°C

NOTES

- 9 IF(AV) conditions: 180°C conduction, half sine
- 10 Tj = 25°C, IF=1A, -di/dt = 100A/μs, VR=30V
- 11 For Ifsm: 100% VRRM reapplied, Tj=Tj max.
- 12 Cathode to stud. To order anode to stud, change 'N' to 'R' in part number (e.g. SD103R04S10PV)
- 14 Available with flag lead. To order, add B to part number, e.g. (e.g. SD103N04S10PBV)
- 15 For trr: Tj=25°C
- 18 IFSM @ 50% VRRM re-applied and Tj=Tj max.
- 19 VFM measured at Tj = Tj max.



Diode Outline Drawings



Phase Control SCRs

Part Number	V _{RRM} (V)	I _{TAV} (A)	@T _C (°C)	I _{RMS} (A)	V _{GT} (V)	I _{GT} (mA)	I _{TSM} 60Hz(A)	V _{TM} (V)	@I _{TM} (A)	R _{θJC(DC)} (°C/W)	Notes
Stud Packages TO-208AA (TO-48)											
16RIA60	600	16	85	35	2.0	60	300	1.75		1.15	2 3 4 5
16RIA120	1200	16	85	35	2.0	60	300	1.75		1.15	2 3 4 5
25RIA60	600	25	85	40	2.0	60	370	1.7		0.75	2 3 4 5
25RIA120	1200	25	85	40	2.0	60	370	1.7		0.75	2 3 4 5



TO-208AC (TO-65)											
50RIA60	600	50	94	80	2.5	100	1255	1.6		0.35	2 3 4 15
50RIA120	1200	50	94	80	2.5	100	1255	1.6		0.35	2 3 4 15



TO-208AD (TO-83)											
82RIA40	400	80	85	125	2.5	120	1675	1.4	250	0.3	2 3 4 7 9 12 13
82RIA80	800	80	85	125	2.5	120	1675	1.4	250	0.3	2 3 4 7 9 12 13
82RIA120	1200	80	85	125	2.5	120	1675	1.4	250	0.3	2 3 4 7 9 12 13



TO-209AC (TO-94)											
80RIA40	400	80	85	125	2.5	120	1675	1.4	250	0.3	2 3 4 7 9 12 13
80RIA80	800	80	85	125	2.5	120	1675	1.4	250	0.3	2 3 4 7 9 12 13
80RIA120	1200	80	85	125	2.5	120	1675	1.4	250	0.3	2 3 4 7 9 12 13



110RKI40	400	110	90	172	2.0	100	1830	1.5	350	0.27	2 3 4 7 9 12 13
110RKI80	800	110	90	172	2.0	100	1830	1.5	350	0.27	2 3 4 7 9 12 13
110RKI120	1200	110	90	172	2.0	100	1830	1.5	350	0.27	2 3 4 7 9 12 13
ST110S12P0V	1200	110	90	175	3.0	150	2380	1.52	350	0.195	2 3 7 10
ST110S16P0	1600	110	90	175	3.0	150	2380	1.52	350	0.195	2 3 7 10

TO-209AB (TO-93)											
180RKI40	400	180	80	285	2.5	150	3660	1.35	570	.15	2 3 4 7 9 12 13
180RKI80	800	180	80	285	2.5	150	3660	1.35	570	.15	2 3 4 7 9 12 13
180RKI100	1000	180	80	285	2.5	150	3660	1.35	570	.15	2 3 4 7 9 12 13
ST180S08P0V	800	200	85	314	3.0	150	4400	1.75	570	0.105	2 3 4 7 9 11 16
ST180S12P0V	1200	200	85	314	3.0	150	4400	1.75	570	0.105	2 3 4 7 9 11 16
ST180S16P0	1600	200	85	314	3.0	150	4400	1.75	570	0.105	2 3 4 7 9 11 16
ST180S20P0	2000	200	85	314	3.0	150	4400	1.75	570	0.105	2 3 4 7 9 11

ST230S08P0V	800	230	85	361	3.0	150	5000	1.55	720	0.1	2 3 4 7 9 11
ST230S12P0V	1200	230	85	361	3.0	150	5000	1.55	720	0.1	2 3 4 7 9 11
ST230S16P0	1600	230	85	361	3.0	150	5000	1.55	720	0.1	2 3 4 7 9 11
ST280S04P0V	400	280	85	440	3.0	150	6900	1.28	880	0.105	2 3 4 7 9 11
ST280S06P0V	600	280	85	440	3.0	150	6900	1.28	880	0.105	2 3 4 7 9 11



NOTES

- | | |
|--|--|
| <p>1 I_{tsm1} 10ms sine pulse, no voltage reapplied</p> <p>2 I_{tsm2} 10ms sine pulse, rated V_{RRM} applied</p> <p>3 Available on tape-and-reel. Refer to case outline.</p> <p>4 For I_{tsm}: 100% V_{RRM} reapplied, T_j=T_j max.=125°C</p> <p>5 For I_{gt}, V_{gt}: T_j = 25°C</p> <p>6 V_{tm} @ π X I_{t(AV)}, T_j=125°C</p> <p>7 dv/dt exponential to 0.67 V_{DRM}. T_j=25°C</p> <p>8 dv/dt linear to 0.8 V_{drm}; T_j = 125°C</p> <p>9 dv/dt exponential to 100% V_{DRM}; T_j = 125°C</p> <p>10 V_{tm} measured at T_j=T_j max</p> <p>11 Max T_j = 150°C</p> <p>12 Available with fast-on terminals. To order, change last '0' to '1' in part number, e.g. ST180S04P1V</p> | <p>13 Available with flag terminals. To order, change first '0' to '1' in part number, e.g. 81RIA40</p> <p>14 DC operation, double side cooled</p> <p>15 dv/dt exponential to 0.67; T_j = 125°C</p> <p>16 Available with flag terminal. To order, change last '0' to '2' in part number, e.g. ST180S04P2V</p> <p>17 Available without auxiliary cathode. Refer to case outline for details.</p> <p>18 Available in center tap (circuit common anode or circuit common cathode) configurations. Refer to</p> <p>19 Available with spacers and longer terminal screws. Refer to case outline for details.</p> <p>20 RMS isolation voltage = 3000V - 50Hz</p> <p>21 RMS isolation voltage = 2500V - 50Hz</p> <p>22 Value given for R_{thJC} is per module.</p> <p>23 RMS isolation voltage = 4000V - 50Hz</p> <p>24 RMS isolation voltage = 3500 - 50Hz</p> |
|--|--|

Phase Control SCRs

Part Number	V _{RRM} (V)	I _{TAV} (A)	@T _C (°C)	I _{RMS} (A)	V _{GT} (V)	I _{GT} (mA)	I _{TSM} 60Hz(A)	V _{TM} (V)	@I _{TM} (A)	R _{θJC(PC)} (°C/W)	Notes
TO-209AE (TO-118)											
ST300S20P0	2000	300	75	470	3.0	200	7040	1.66	940	0.1	2 3 4 7 9 11
ST330S08P0	800	330	75	520	3.0	200	7920	1.51	1040	0.1	2 3 4 7 9 11
ST330S12P0	1200	330	75	520	3.0	200	7920	1.51	1040	0.1	2 3 4 7 9 11
ST330S16P0	1600	330	75	520	3.0	200	7920	1.51	1040	0.1	2 3 4 7 9 11



TO-118

Hockey Puk Packages TO-200AA (A-Puk)											
ST180C08C0	800	350	55	660	3.0	150	4400	1.96	750	0.08	2 3 7 9
ST180C12C0	1200	350	55	660	3.0	150	4400	1.96	750	0.08	2 3 7 9
ST180C16C0	1600	350	55	660	3	150	4400	1.96	750	0.08	2 3 7 9
ST180C20C0	2000	350	55	660	3	150	4400	1.96	750	0.08	2 3 7 9
ST230C08C0	800	410	55	780	3	150	5000	1.69	880	0.08	2 3 7 9
ST230C12C0	1200	410	55	780	3	150	5000	1.69	880	0.08	2 3 7 9
ST230C16C0	1600	410	55	780	3	150	5000	1.69	880	0.08	2 3 7 9
ST280C04C0	400	500	55	960	3	150	6900	1.36	1050	0.08	2 3 7 9
ST280C06C0	600	500	55	960	3	150	6900	1.36	1050	0.08	2 3 7 9
ST280CH04C0	400	500	80	1130	3	150	6300	1.35	1000	0.08	2 3 7 9 10
ST280CH06C0	600	500	80	1130	3	150	6300	1.35	1000	0.08	2 3 7 9 10



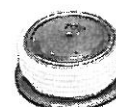
A-Puk

TO-200AB (E-Puk)											
ST300C20C0	2000	650	55	1290	3	200	7040	2.18	1630	0.04	2 3 7 9
ST330C08C0	800	720	55	1420	3	200	7920	1.96	1800	0.04	2 3 7 9
ST330C12C0	1200	720	55	1420	3	200	7920	1.96	1800	0.04	2 3 7 9
ST330C16C0	1600	720	55	1420	3	200	7920	1.96	1800	0.04	2 3 7 9
ST380C04C0	400	960	55	1900	3	200	13200	1.6	3000	0.04	2 3 7 9
ST380C06C0	600	960	55	1900	3	200	13200	1.6	3000	0.04	2 3 7 9
ST380CH04C0	400	960	80	2220	3	200	11000	1.58	2900	0.04	2 3 7 9 10
ST380CH06C0	600	960	80	2220	3	200	11000	1.58	2900	0.04	2 3 7 9 10



E-Puk

TO-200AC (B-Puk)											
ST300C20L0	2000	560	55	1115	3	200	7040	2.18	1635	0.05	2 3 7 9
ST330C08L0	800	650	55	1115	3	200	7925	1.9	1730	0.05	2 3 7 9
ST330C12L0	1200	650	55	1115	3	200	7925	1.9	1730	0.05	2 3 7 9
ST330C16L0	1600	650	55	1115	3	200	7925	1.9	1730	0.05	2 3 7 9
ST700C12L0	1200	910	55	1857	3	200	13800	1.8	2000	0.031	2 3 7 9
ST700C16L0	1600	910	55	1857	3	200	13800	1.8	2000	0.031	2 3 7 9
ST700C18L0	1800	910	55	1857	3	200	13800	1.8	2000	0.031	2 3 7 9
ST700C20L0	2000	910	55	1857	3	200	13800	1.8	2000	0.031	2 3 7 9
ST700C22L0	2200	910	55	1857	3	200	13800	1.8	2000	0.031	2 3 7 9



B-Puk

NOTES

- | | |
|---|---|
| <p>Itsm1 10ms sine pulse, no voltage reapplied
 Itsm2 10ms sine pulse, rated VRRM applied
 1 Available on tape-and-reel. Refer to case outline.
 2 For Itsm: 100% VRRM reapplied, T_J=T_J max.=125°C
 3 For Igt, Vgt: T_J = 25°C
 4 V_{tm} @ pi X I_t(AV), T_J=125°C
 5 dv/dt exponential to 0.67 VDRM, T_J=25°C
 7 dv/ dt linear to 0.8 Vdrn; T_J = 125°C
 8 dv/dt exponential to 100% VDRM; T_J = 125°C
 9 V_{tm} measured at T_J=T_J max
 10 Max T_J = 150°C
 11 Available with fast-on terminals. To order, change last '0' to '1' in part number, e.g. ST180S04P1V</p> | <p>12 Available with fast-on terminals. To order, change first '0' to '1' in part number, e.g. 81RIA40
 13 Available with flag terminals. To order, change first '0' to '2' in part number, e.g. 82RIA40
 14 DC operation, double side cooled
 15 dv/dt exponential to 0.67; T_J = 125°C
 16 Available with flag terminal. To order, change last '0' to '2' in part number, e.g. ST180S04P2V
 17 Available without auxiliary cathode. Refer to case outline for details.
 18 Available in center tap (circuit common anode or circuit common cathode) configurations. Refer to
 19 Available with spacers and longer terminal screws. Refer to case outline for details.
 20 RMS isolation voltage = 3000V - 50Hz
 21 RMS isolation voltage = 2500V - 50Hz
 22 Value given for R_{th}JC is per module.
 24 RMS isolation voltage = 4000V - 50Hz
 25 RMS isolation voltage = 3500 - 50Hz</p> |
|---|---|

Phase Control SCRs

Part Number	V _{RRM} (V)	I _{TAV} (A)	@T _C (°C)	I _{RMS} (A)	V _{GT} (V)	I _{GT} (mA)	I _{TSM} 60Hz(A)	V _{TM} (V)	@I _{TM} (A)	R _{θJC(DC)} (°C/W)	Notes
ST730C08L0	800	990	55	2000	3	200	15700	1.62	2000	0.031	2 3 7 9
ST730C12L0	1200	990	55	2000	3	200	15700	1.62	2000	0.031	2 3 7 9
ST730C16L0	1600	990	55	2000	3	200	15700	1.62	2000	0.031	2 3 7 9
ST730C18L0	1800	990	55	2000	3	200	15700	1.62	2000	0.031	2 3 7 9
ST780C04L0	400	1350	55	2700	3	200	21500	1.31	3600	0.031	2 3 7 9
ST780C06L0	600	1350	55	2700	3	200	21500	1.31	3600	0.031	2 3 7 9



B-Puk

A-24 (K-Puk)											
Part Number	V _{RRM} (V)	I _{TAV} (A)	@T _C (°C)	I _{RMS} (A)	V _{GT} (V)	I _{GT} (mA)	I _{TSM} 60Hz(A)	V _{TM} (V)	@I _{TM} (A)	R _{θJC(DC)} (°C/W)	Notes
ST1000C20K0	2000	1470	55	2800	3	200	18100	1.8	3000	0.021	2 3 7 9 11
ST1000C22K0	2200	1470	55	2800	3	200	18100	1.8	3000	0.021	2 3 7 9 11
ST1000C24K0	2400	1470	55	2800	3	200	18100	1.8	3000	0.021	2 3 7 9 11
ST1000C26K0	2600	1470	55	2800	3	200	18100	1.8	3000	0.021	2 3 7 9 11
ST1200C12K0	1200	1650	55	3080	3	200	26900	1.73	4000	0.021	2 3 7 9 11
ST1200C16K0	1600	1650	55	3080	3	200	26900	1.73	4000	0.021	2 3 7 9 11
ST1200C18K0	1800	1650	55	3080	3	200	26900	1.73	4000	0.021	2 3 7 9 11
ST1200C20K0	2000	1650	55	3080	3	200	26900	1.73	4000	0.021	2 3 7 9 11
ST1230C08K0	800	1745	55	3200	3	200	29500	1.62	4000	0.021	2 3 7 9 11
ST1230C12K0	1200	1745	55	3200	3	200	29500	1.62	4000	0.021	2 3 7 9 11
ST1230C16K0	1600	1745	55	3200	3	200	29500	1.62	4000	0.021	2 3 7 9 11
ST1280C04K0	400	2310	55	4150	3	200	37400	1.44	8000	0.021	2 3 7 9 11
ST1280C06K0	600	2310	55	4150	3	200	37400	1.44	8000	0.021	2 3 7 9 11



K-Puk

ANSALDO Semiconductors										
Part Number	V _{RRM} (V)	I _{TAV} (A) 50Hz	@T _C (°C)	V _{GT} (V)	I _{GT} (mA)	I _{TSM} 60Hz(A)	V _{TM} (V)	@I _{TM} (A), 25°C	R _{θJH(DC)} (°C/W)	Case Style
50mm Hockey Puk SCRs										
AT1003S12	1200	1650	55	3.5	300	28675	1.45	2900	.026	DO
AT1003S16	1600	1650	55	3.5	300	28675	1.45	2900	.026	
75mm Hockey Puk SCRs										
AT737S12	1200	3240	55	3.5	350	53725	1.65	6300	.011	MO
AT737S16	1600	3240	55	3.5	350	53725	1.65	6300	.011	
AT737S20	2000	3240	55	3.5	350	53725	1.65	6300	.011	

- NOTES
- 10ms sine pulse, no voltage reapplied
 - 10ms sine pulse, rated VRRM applied
 - 1 Available on tape-and-reel. Refer to case outline.
 - 2 For I_{TSM}: 100% VRRM reapplied, T_J=T_J max.=125°C
 - 3 For I_{GT}, V_{GT}: T_J = 25°C
 - 4 V_{TM} @ π X I_{TAV}, T_J=125°C
 - 5 dv/dt exponential to 0.67 VDRM. T_J=25°C
 - 7 dv/dt linear to 0.8 Vdrn; T_J = 125°C
 - 8 dv/dt exponential to 100% VDRM; T_J = 125°C
 - 9 V_{TM} measured at T_J=T_J max
 - 10 Max T_J = 150°C
 - 11 Available with fast-on terminals. To order, change last '0' to '1' in part number, e.g. ST180S04P1V
 - 12 Available with fast-on terminals. To order, change first '0' to '1' in part number, e.g. 81RIA40
 - 13 Available with flag terminals. To order, change first '0' to '2' in part number, e.g. 82RIA40
 - 14 DC operation, double side cooled
 - 15 dv/dt exponential to 0.67; T_J = 125°C
 - 16 Available with flag terminal. To order, change last '0' to '2' in part number, e.g. ST180S04P2V
 - 17 Available without auxiliary cathode. Refer to case outline for details.
 - 18 Available in center tap (circuit common anode or circuit common cathode) configurations. Refer to
 - 19 Available with spacers and longer terminal screws. Refer to case outline for details.
 - 20 RMS isolation voltage = 3000V - 50Hz
 - 21 RMS isolation voltage = 2500V - 50Hz
 - 22 Value given for R_{thJC} is per module.
 - 24 RMS isolation voltage = 4000V - 50Hz
 - 25 RMS isolation voltage = 3500 - 50Hz

Inverter Grade SCRs

Part Number	V_{RRM}/V_{DRM} (V)	$I_{T(RMS)}$ (A)	$I_{T(AV)}$ (A)	@T _c (°C)	I_{TSM} 60Hz	V_{GT} (V)	I_{GT} (A)	V_{TM} (V)	@I _{TM} (A)	$R_{\theta JC(DC)}$ (°C/W)	tq (μs)	Notes
Stud Packages												TO-208AD (TO-83)
ST083S08PFN2	800	135	85	85	2160	3	200	2.15	300	0.195	10	2 3 4 13 15 16
ST083S12PFP2	1200	135	85	85	2160	3	200	2.15	300	0.195	18	2 3 4 13 15 16



TO-83

												TO-209AC (TO-94)
ST083S08PFN0	800	135	85	85	2160	3	200	2.15	300	0.195	10	2 3 4 13 15 16
ST083S12PFP0	1200	135	85	85	2160	3	200	2.15	300	0.195	18	2 3 4 13 15 16



TO-94

												TO-209AB (TO-93)
ST173S12PFP0	1200	275	175	85	4120	3	200	2.07	600	0.105	18	2 3 4 13 15 16
ST183S08PFN0	800	306	195	85	4310	3	200	1.8	600	0.105	10	2 3 4 13 15 16
ST203S12PFJ0	1200	320	205	85	4630	3	200	1.72	600	0.105	25	2 3 4 13 15 16
ST223S08PFN0	800	345	220	85	5150	3	200	1.58	600	0.105	10	2 3 4 13 15 16



TO-93

												TO-209AE (TO-118)
ST303S08PFL0	800	471	300	65	7000	3	200	2.16	1255	0.1	15	2 3 4 13 16
ST303S12PFL0	1200	471	300	65	7000	3	200	2.16	1255	0.1	20	2 3 4 13 16
ST333S08PFL0	800	518	330	75	9700	3	200	1.51	1040	0.1	15	2 3 4 13 16



TO-118

Hockey Puk Packages												TO-200AA (A-Puk)
ST173C12CFK0	1200	610	330	55	4120	3	200	2.07	600	0.08	20	2 3 4 10 13 16
ST183C08CFN0	800	690	370	55	4310	3	200	1.8	600	0.08	10	2 3 4 10 13 16
ST203C12CFJ0	1200	700	370	55	4630	3	200	1.72	600	0.08	25	2 3 4 10 13 16
ST223C04CFN0	400	745	390	55	5150	3	200	1.58	600	0.08	10	2 3 4 10 13 16



A-Puk

												TO-200AB (E-Puk)
ST303C08CFN0	800	1180	620	55	7000	3	200	2.16	1255	0.04	10	2 3 4 10 13 16
ST303C12CFK0	1200	1180	620	55	7000	3	200	2.16	1255	0.04	20	2 3 4 10 13 16
ST333C08CFL0	800	1435	720	55	9700	3	200	1.96	1810	0.04	15	2 3 4 10 13 16



E-Puk

												TO-200AC (B-Puk)
ST303C08LFL0	800	995	515	55	7000	3	200	2.16	1255	0.05	15	2 3 4 10 13 16
ST303C12LFL0	1200	995	515	55	7000	3	200	2.16	1255	0.05	20	2 3 4 10 13 16
ST333C08LFM0	800	1230	620	55	9700	3	200	1.96	1810	0.05	12	2 3 4 10 13 16
ST733C08LFL0	800	1900	940	55	17600	3	200	1.63	1700	0.031	15	2 3 4 10 13 16



B-Puk

- NOTES**
- 2 For I_{tsm}: 100% V_{RRM} reapplied, T_j=T_j max.=125°C
 - 3 For V_{gt}: T_j = 25°C
 - 4 V_{tm} measured at T_j = T_j max
 - 10 DC operation, double side cooled
 - 11 Value given for R_{thJC} is per module.
 - 12 RMS isolation voltage = 3000V - 50Hz
 - 13 Re-applied dv/dt = 200V/μs. Refer to table below for tq code.
 - 14 Available with spacers and longer terminal screws. Refer to case outline for details.
 - 15 Available with flag terminal. To order, change last '0' to '2' in part number, e.g. ST180S04P2V
 - 16 Available with fast-on terminals. To order, change last 0 to 1 in part number, e.g. ST08304PF.1
 - 17 Re-applied dv/dt = 400V/μs. Refer to table below for tq code

Inverter Grade SCRs

ANSALDO Semiconductors											
Part Number	V _{RRM} (V)	I _{TAV} (A) 50Hz	@T _C (°C)	V _{GT} (V)	I _{GT} (mA)	I _{TSM} 60Hz(A)	V _{TM} (V)	@I _{TM} (A), 25°C	R _{θJH(DC)} (°C/W)	Tq (μs)	Case Style
38mm Hockey Puk Inverter Grade SCRs											
ATF414S12B	1200	805	55	3.5	350	10660	2.4	1400	.040	15	CO
ATF827S12L	1200	900	55	3.5	350	10660	2.0	1600	.040	25	

50mm Hockey Puk Inverter Grade SCRs											
ATF1040S18S	1800	1075	55	3.5	350	14920	2.6	2000	.031	50	DO
ATF1047S12L	1200	1305	55	3.5	350	17050	2.0	2000	.031	25	

SCR Outline Drawings

Case Style TO-48

Case style TO-208AA (TO-48)

• FOR METRIC DEVICES : M6 x 1

Case Style TO-65

Case Style TO-208AC (TO-65)

All dimensions in millimeters (inches)

Case Style TO-83

Case Style TO-208AD (TO-83)

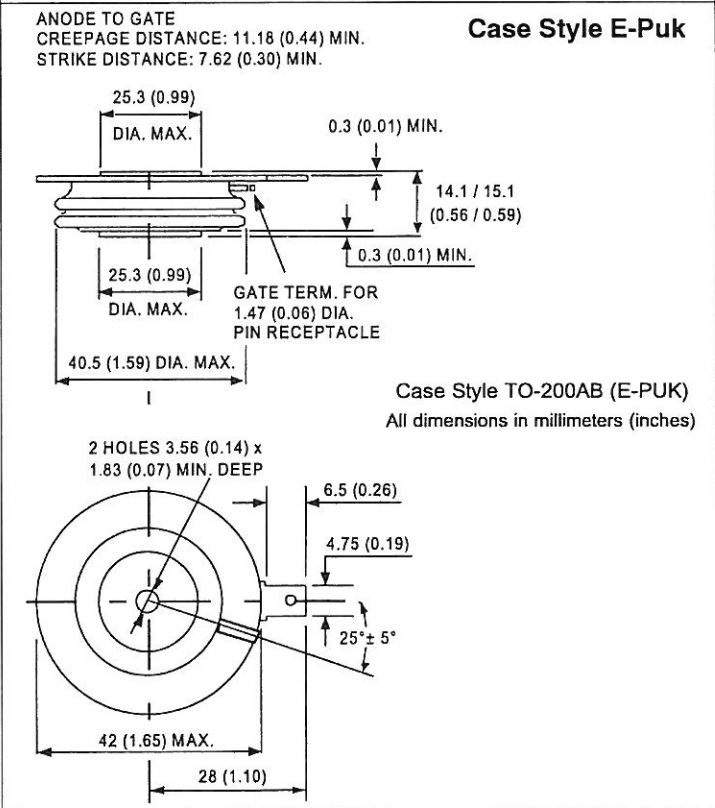
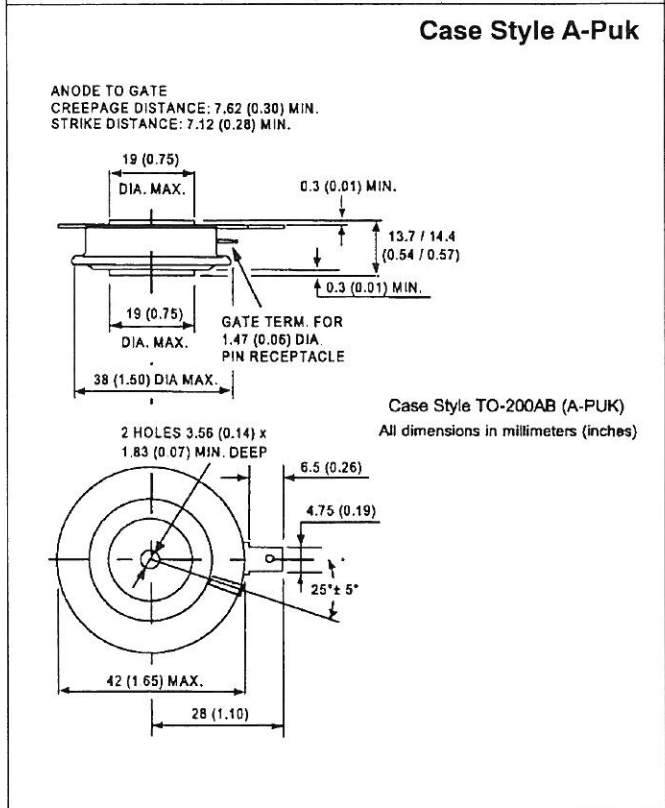
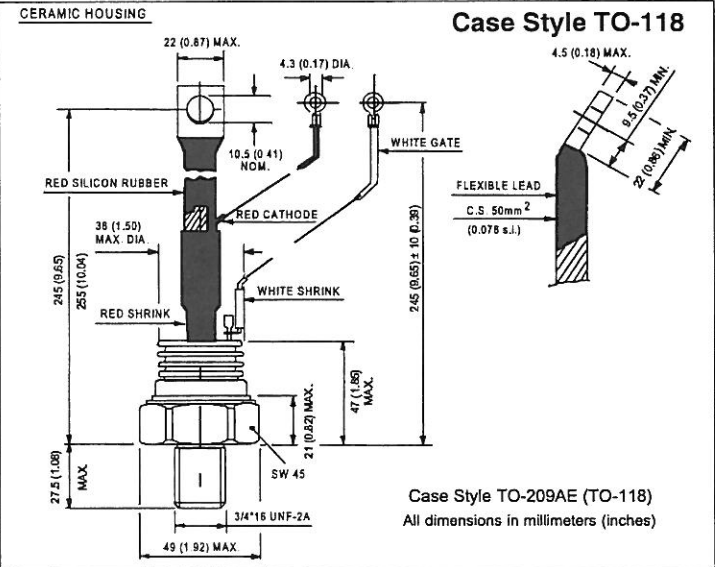
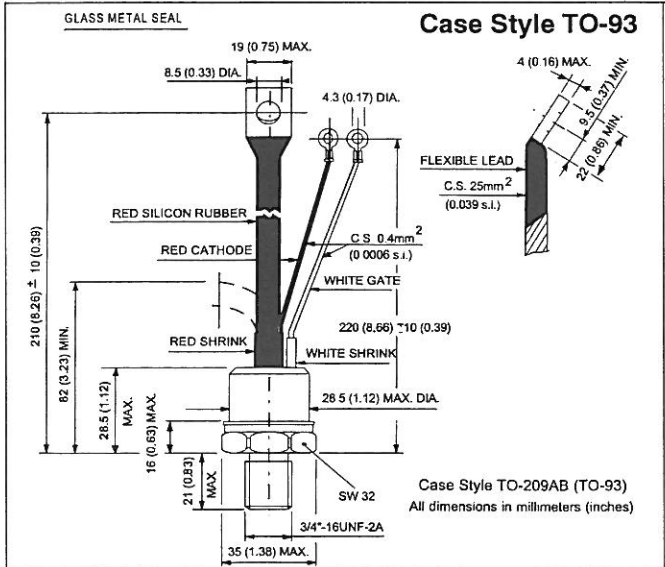
All dimensions in millimeters (inches)

Case Style TO-94

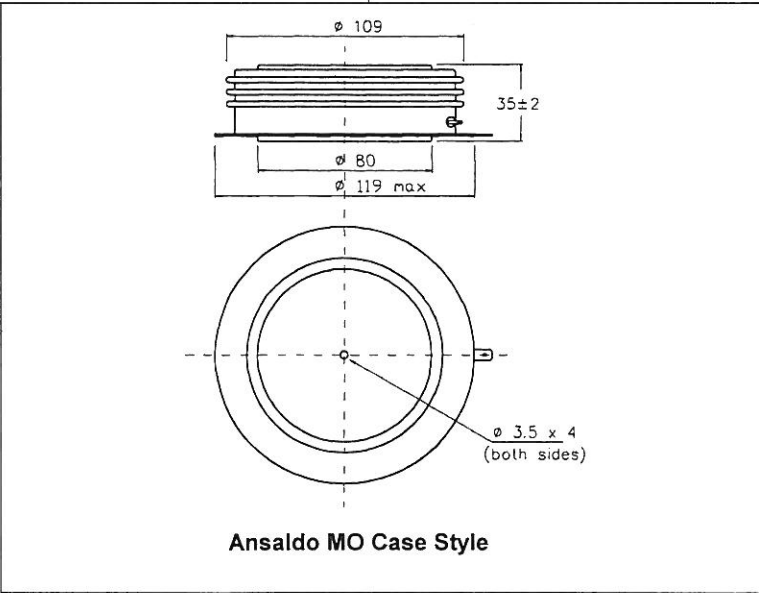
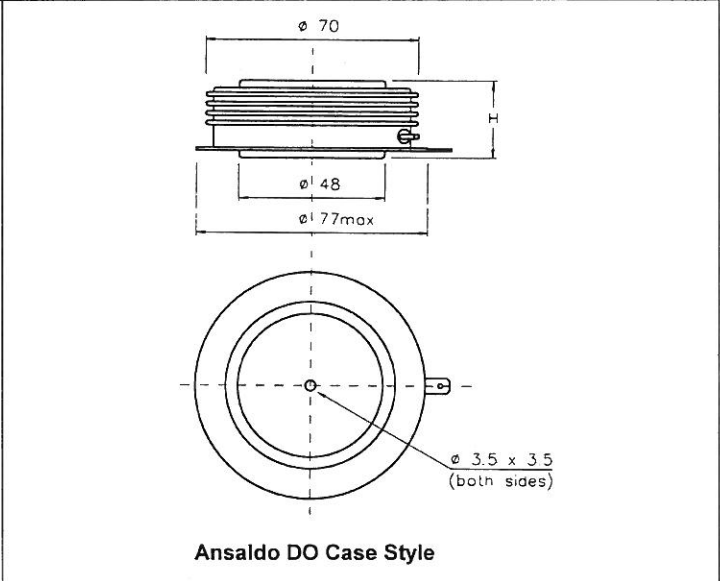
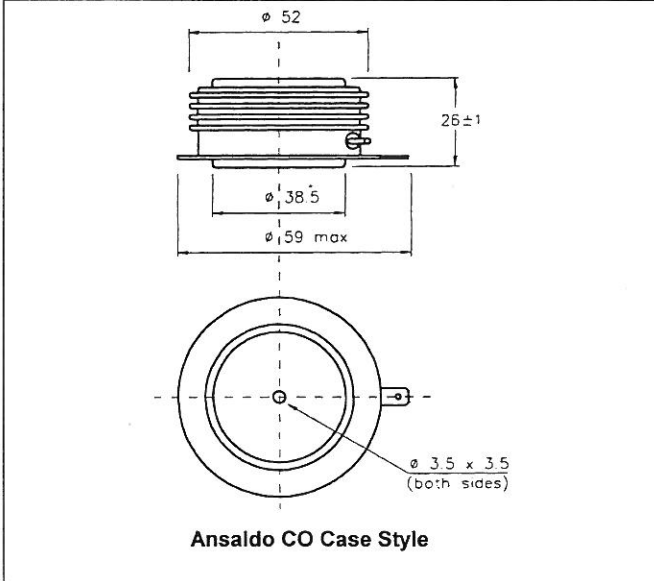
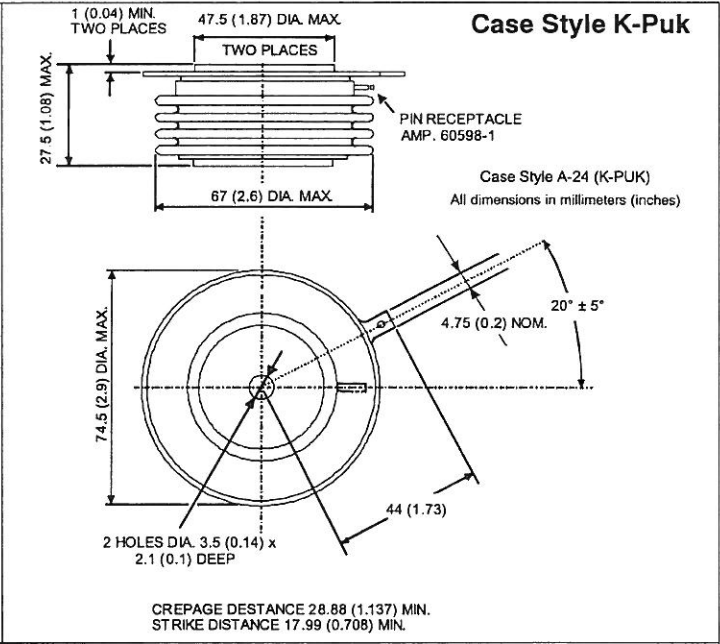
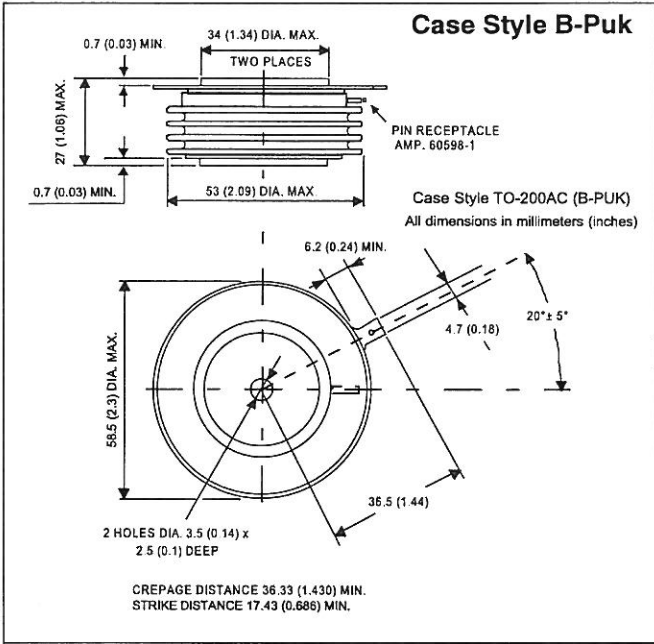
Case Style TO-209AC (TO-94)

All dimensions in millimeters (inches)

SCR Outline Drawings



SCR Outline Drawings



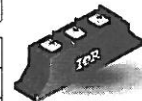
Diode Modules

Part number	V _{RRM} (V)	I _{FAV} (A)	T _C (°C)	V _{FM} (V) @ π XI _{FAV}	I _{FSM} 60Hz (A)	R _{θJC(DC)} (°C/W)	Notes				
Single Diode Modules							T-Module				
T40HF60	600	40	85	1.3	500	1.36	2	8	9	27	
T40HF120	1200	40	85	1.3	500	1.36	2	8	9	27	
T40HF160	1600	40	85	1.3	500	1.36	2	8	9	27	
T70HF60	600	70	85	1.35	1050	0.69	2	8	9	27	
T70HF120	1200	70	85	1.35	1050	0.69	2	8	9	27	
T70HF160	1600	70	85	1.35	1050	0.69	2	8	9	27	
T85HF60	600	85	85	1.27	1500	0.62	2	8	9	27	
T85HF120	1200	85	85	1.27	1500	0.62	2	8	9	27	
T85HF160	1600	85	85	1.27	1500	0.62	2	8	9	27	
T110HF60	600	110	85	1.35	1780	0.47	2	8	9	27	
T110HF120	1200	110	85	1.35	1780	0.47	2	8	9	27	
T110HF160	1600	110	85	1.35	1780	0.47	2	8	9	27	



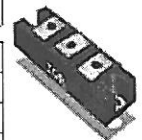
T-Module

Add-A-Pak										
IRKE56/06	600	60	100	1.51	1420	0.5	2	8	9	27
IRKE56/12	1200	60	100	1.51	1420	0.5	2	8	9	27
IRKE56/16	1600	60	100	1.51	1420	0.5	2	8	9	27
IRKE71/06	600	80	100	1.5	1570	0.4	2	8	9	27
IRKE71/12	1200	80	100	1.5	1570	0.4	2	8	9	27
IRKE71/16	1600	80	100	1.5	1570	0.4	2	8	9	27
IRKE91/06	600	100	100	1.45	1780	0.35	2	8	9	27
IRKE91/12	1200	100	100	1.45	1780	0.35	2	8	9	27
IRKE91/16	1600	100	100	1.45	1780	0.35	2	8	9	27



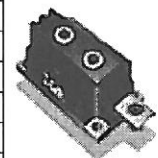
ADD-A-Pak

INT-A-Pak										
IRKE166-08	800	165	100	1.69	3500	0.2	2	8	9	28 29
IRKE166-12	1200	165	100	1.69	3500	0.2	2	8	9	28 29
IRKE166-16	1600	165	100	1.69	3500	0.2	2	8	9	28 29
IRKE166-20	2000	165	100	1.69	3500	0.2	2	8	9	28 29
IRKE196-08	800	195	100	1.38	4200	0.2	2	8	9	28 29
IRKE196-12	1200	195	100	1.38	4200	0.2	2	8	9	28 29
IRKE196-16	1600	195	100	1.38	4200	0.2	2	8	9	28 29
IRKE196-20	2000	195	100	1.38	4200	0.2	2	8	9	28 29
IRKE236-08	800	230	100	1.27	5700	0.17	2	8	9	28 29
IRKE236-12	1200	230	100	1.27	5700	0.17	2	8	9	28 29
IRKE236-16	1600	230	100	1.27	5700	0.17	2	8	9	28 29
IRKE236-20	2000	230	100	1.27	5700	0.17	2	8	9	28 29
IRKE236-24	2400	230	100	1.27	5700	0.17	2	8	9	28 29



INT-A-Pak

MAGN-A-Pak										
IRKE270-08	800	270	100	1.48	7850	0.125	2	8	9	29
IRKE270-12	1200	270	100	1.48	7850	0.125	2	8	9	29
IRKE270-16	1600	270	100	1.48	7850	0.125	2	8	9	29
IRKE270-20	2000	270	100	1.48	7850	0.125	2	8	9	29
IRKE270-24	2400	270	100	1.48	7850	0.125	2	8	9	29
IRKE270-30	3000	270	100	1.48	7850	0.125	2	8	9	29



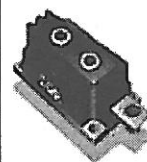
MAGN-A-Pak

NOTES

- 2 For Ifsm: 100% VRRM reapplied, T_j=T_j max.=150°C
- 27 RMS isolation voltage=3500V - 50Hz
- 8 Value given for R_{θJC} is per module
- 28 Available with spacers and longer screws
- 9 V_{fm} measured at T_j=25°C
- 29 RMS isolation voltage=3000V - 50Hz

Diode Modules

Part number	V _{RRM} (V)	I _{FAV} (A)	T _C (°C)	V _{FM} (V) @πX I _{FAV}	I _{FSM} 60Hz (A)	R _{θJC(DC)} (°C/W)	Notes			
IRKE320-08	800	320	100	1.28	8900	0.125	2	8	9	29
IRKE320-12	1200	320	100	1.28	8900	0.125	2	8	9	29
IRKE320-16	1600	320	100	1.28	8900	0.125	2	8	9	29
IRKE320-20	2000	320	100	1.28	8900	0.125	2	8	9	29



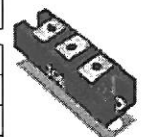
MAGN-A-Pak

Dual Diode Modules						(See Circuit Configuration Table for Circuit Codes)				Add-A-Pak	
IRKD56/06	600	60	100	1.51	1420	0.25	2	8	9	27	
IRKD56/12	1200	60	100	1.51	1420	0.25	2	8	9	27	
IRKD56/16	1600	60	100	1.51	1420	0.25	2	8	9	27	
IRKD71/06	600	80	100	1.5	1570	0.2	2	8	9	27	
IRKD71/12	1200	80	100	1.5	1570	0.2	2	8	9	27	
IRKD71/16	1600	80	100	1.5	1570	0.2	2	8	9	27	
IRKD91/06	600	100	100	1.45	1780	0.175	2	8	9	27	
IRKD91/12	1200	100	100	1.45	1780	0.175	2	8	9	27	
IRKD91/16	1600	100	100	1.45	1780	0.175	2	8	9	27	



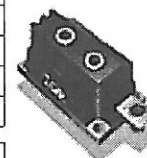
ADD-A-Pak

INT-A-Pak										
IRKD166-08	800	165	100	1.69	3500	0.1	2	8	9	28 29
IRKD166-12	1200	165	100	1.69	3500	0.1	2	8	9	28 29
IRKD166-16	1600	165	100	1.69	3500	0.1	2	8	9	28 29
IRKD166-20	2000	165	100	1.69	3500	0.1	2	8	9	28 29
IRKD196-08	800	195	100	1.38	4200	0.1	2	8	9	28 29
IRKD196-12	1200	195	100	1.38	4200	0.1	2	8	9	28 29
IRKD196-16	1600	195	100	1.38	4200	0.1	2	8	9	28 29
IRKD196-20	2000	195	100	1.38	4200	0.1	2	8	9	28 29
IRKD236-08	800	230	100	1.27	5700	0.085	2	8	9	28 29
IRKD236-12	1200	230	100	1.27	5700	0.085	2	8	9	28 29
IRKD236-16	1600	230	100	1.27	5700	0.085	2	8	9	28 29
IRKD236-20	2000	230	100	1.27	5700	0.085	2	8	9	28 29
IRKD236-24	2400	230	100	1.27	5700	0.085	2	8	9	28 29



INT-A-Pak

MAGN-A-Pak										
IRKD270-08	800	270	100	1.48	7850	0.063	2	8	9	29
IRKD270-12	1200	270	100	1.48	7850	0.063	2	8	9	29
IRKD270-16	1600	270	100	1.48	7850	0.063	2	8	9	29
IRKD270-20	2000	270	100	1.48	7850	0.063	2	8	9	29
IRKD270-24	2400	270	100	1.48	7850	0.063	2	8	9	29
IRKD270-30	3000	270	100	1.48	7850	0.063	2	8	9	29
IRKD320-08	800	320	100	1.28	8900	0.063	2	8	9	29
IRKD320-12	1200	320	100	1.28	8900	0.063	2	8	9	29
IRKD320-16	1600	320	100	1.28	8900	0.063	2	8	9	29
IRKD320-20	2000	320	100	1.28	8900	0.063	2	8	9	29



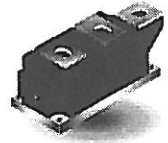
MAGN-A-Pak

NOTES

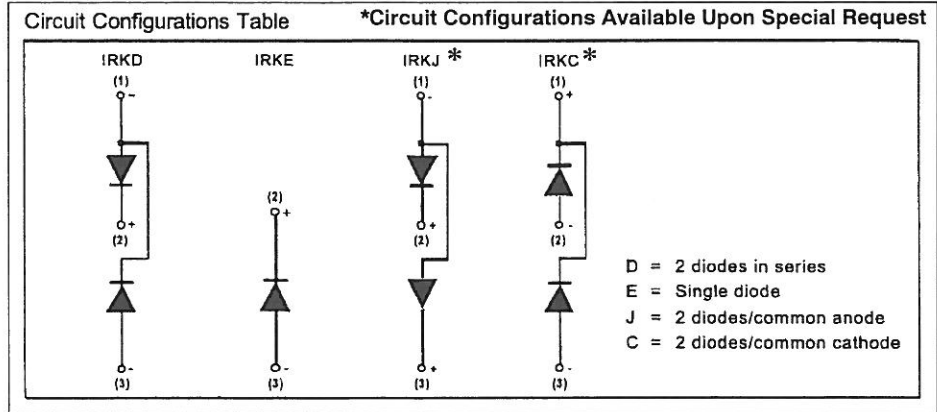
- | | |
|---|---|
| 2 For Ifsm: 100% VRRM reapplied, T _j =T _j max.=150°C
8 Value given for RthJC is per module
9 Vfm measured at T _j =25°C | 27 RMS isolation voltage=3500V - 50Hz
28 Available with spacers and longer screws
29 RMS isolation voltage=3000V - 50Hz |
|---|---|

Diode Modules

Part number	V _{RRM} (V)	I _{FAV} (A)	T _C (°C)	V _{FM} (V) @ π XI _{FAV}	I _{FSM} 60Hz (A)	R _{θJC(DC)} (°C/W)	Notes
Super MAGN-A-Pak							
IRKD600-08	800	600	100	1.25	17200	0.032	2 8 9 29
IRKD600-12	1200	600	100	1.25	17200	0.032	2 8 9 29
IRKD600-16	1600	600	100	1.25	17200	0.032	2 8 9 29
IRKD600-20	2000	600	100	1.25	17200	0.032	2 8 9 29



Super
MAGN-A-Pak



NOTES

- 2 For I_{FSM}: 100% V_{RRM} reapplied, T_J=T_J max.=150°C
- 8 Value given for R_{thJC} is per module
- 9 V_{FM} measured at T_J=25°C
- 27 RMS isolation voltage=3500V - 50Hz
- 28 Available with spacers and longer screws
- 29 RMS isolation voltage=3000V - 50Hz

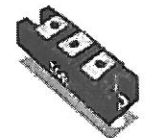
Fast Recovery Diode Modules

Part number	V _{RRM} (V)	I _{FAV} (A)	T _C (°C)	I _{FSM} 60Hz (A)	V _{FM} (V) @ I _{FM} (A)	R _{θJC} (°C/W)	t _{rr} (nS)	Notes
Fast Recovery Diode Modules								T-Module
T40HFL60S02	600	40	70	420	1.6	0.85	200 (70)	3 10 11 17 22
T40HFL100S05	1000	40	70	420	1.6	0.85	500 (110)	3 10 11 17 22
T70HFL60S02	600	70	70	730	1.73	0.53	200 (70)	3 10 11 17 22
T70HFL100S05	1000	70	70	730	1.73	0.53	500 (110)	3 10 11 17 22
T85HFL60S02	600	85	70	1150	1.55	0.46	200 (80)	3 10 11 17 22
T85HFL100S05	1000	85	70	1150	1.55	0.46	500 (120)	3 10 11 17 22



T-Module

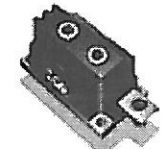
INT-A-Pak								
IRKEL132-10S10	1000	140	100	2600	1.68	0.20	1000	11 20 21 23 24 25
IRKEL132-14S20	1400	140	100	2600	1.68	0.20	2000	11 20 21 23 24 25



INT-A-Pak

MAGN-A-Pak								
IRKEL240-10S10	1000	250	100	7100	1.62	0.125	1000	11 20 21 23 24
IRKEL240-16S20	1600	250	100	7100	1.62	0.125	2000	11 20 21 23 24
IRKEL240-25S30	2500	240	100	6600	1.71	0.125	3000	11 20 21 23 24

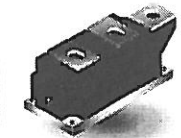
Diode/Diode	(See Circuit Configurations Table for Circuit Codes)							INT-A-Pak		
IRKDL132-10S10	1000	140	100	2600	1.68	0.10	1000	11 20 21 23 24 25		
IRKDL132-14S20	1400	140	100	2600	1.68	0.10	2000	11 20 21 23 24 25		



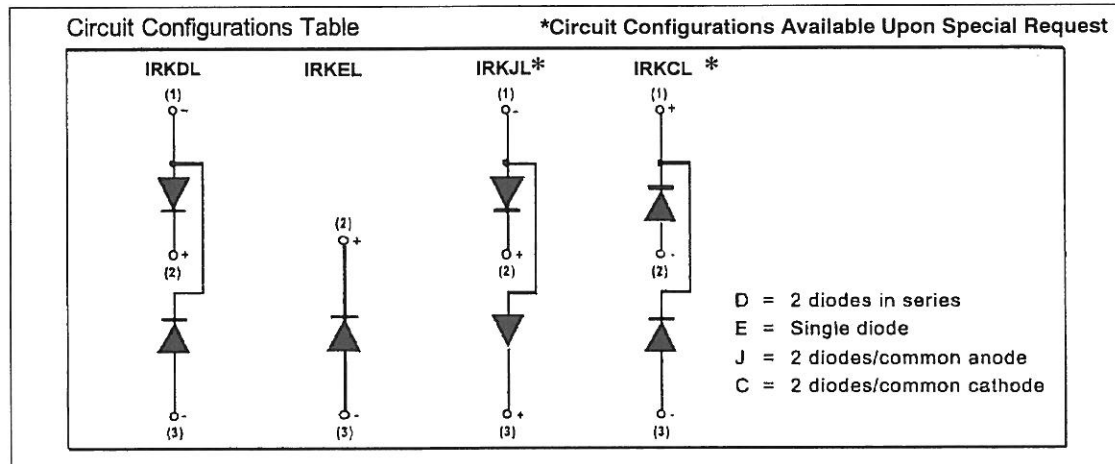
MAGN-A-Pak

MAGN-A-Pak								
IRKDL240-14S10	1400	250	100	7100	1.62	0.063	1000	11 20 21 23 24 25
IRKDL240-20S20	2000	240	100	7100	1.62	0.063	2000	11 20 21 23 24 25
IRKDL240-25S30	2500	240	100	6600	1.71	0.063	3000	11 20 21 23 24 25

Super MAGN-A-Pak								
IRKDL450-16S20	1600	460	82	11800	2.05	0.032	2000	11 20 21 23 24 25
IRKDL450-20S20	2000	460	82	11800	2.05	0.032	2000	11 20 21 23 24 25
IRKDL450-25S20	2500	460	82	11800	2.05	0.032	2000	11 20 21 23 24 25



Super MAGN-A-Pak



- NOTES**
- 3 t_{rr} conditions: T_J = 25°C, I_{FM} at pi X rated I_{F(AV)}, -diF/dt = 25A/μs
 - 10 t_{rr} conditions: T_J = 25°C, I_F = 1A to V_R=30V, -diF/dt = 100A/μs. Values shown in parentheses.
 - 11 For I_{FSM}: 100% V_{RRM} reapplied, T_J=T_J max.
 - 15 For I_{RM}: T_J=25°C
 - 20 Value given for R_{thJC} is per module.
 - 21 V_{FM} at I_{FM} = pi X rated I_{F(AV)}, T_J=25°C.
 - 22 RMS isolation voltage=3500V - 50Hz
 - 23 RMS isolation voltage=3000V - 50Hz
 - 24 t_{rr} conditions: I_{FM} = 500A I_{F(AV)}, di/dt = 100A/μs, T_J=25°C, V_R=50V.
 - 25 Available with spacers and longer leads. Refer to case outline for details.

Thyristor Modules

Part Number	V _{RRM} (V)	I _{TAV} (A)	@T _C (°C)	I _{T(RMS)} (A)	I _{TSM} (60Hz)	V _{TM} (V) @πX I _{TAV}	R _{θJC(DC)} (K/W)	V _{GT} (V)	I _{GT} (mA)	Notes
Single Thyristor Modules										T-Module
T50RIA60	600	50	70	80	1150	1.6	.65	2.5	100	2 4 22
T50RIA120	1200	50	70	80	1150	1.6	.65	2.5	100	2 4 22
T70RIA60	600	70	70	110	1460	1.55	.5	2.5	120	2 4 22
T70RIA120	1200	70	70	110	1460	1.55	.5	2.5	120	2 4 22
T90RIA60	600	90	70	141	1570	1.55	.38	2.5	120	2 4 22
T90RIA120	1200	90	70	141	1570	1.55	.38	2.5	120	2 4 22



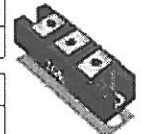
T-Module

Thyristor Modules (See Circuit Configurations Table for Circuit Codes)										ADD-A-Pak
IRKT41/06	600	45	85	89	750		.23	2.5	100	2 17 18 22 25
IRKT41/12	1200	45	85	89	750		.23	2.5	100	2 17 18 22 25
IRKT41/16	1600	45	85	89	750		.23	2.5	100	2 17 18 22 25
IRKT56/06	600	60	85	122	1150		.2	2.5	100	2 17 18 22 25
IRKT56/12	1200	60	85	122	1150		.2	2.5	100	2 17 18 22 25
IRKT56/16	1600	60	85	122	1150		.2	2.5	100	2 17 18 22 25
IRKT71/06	600	75	85	155	1470		.165	2.5	120	2 17 18 22 25
IRKT71/12	1200	75	85	155	1470		.165	2.5	120	2 17 18 22 25
IRKT71/16	1600	75	85	155	1470		.165	2.5	120	2 17 18 22 25
IRKT91/06	600	95	85	200	1570		.135	2.5	120	2 17 18 22 25
IRKT91/12	1200	95	85	200	1570		.135	2.5	120	2 17 18 22 25
IRKT91/16	1600	95	85	200	1570		.135	2.5	120	2 17 18 22 25
IRKT105/06	600	105	85	235	1570		.135	2.5	150	2 17 18 22 25
IRKT105/12	1200	105	85	235	1570		.135	2.5	150	2 17 18 22 25
IRKT105/16	1600	105	85	235	1570		.135	2.5	150	2 17 18 22 25



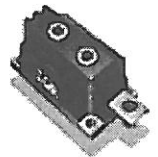
ADD-A-Pak

										INT-A-Pak
IRKT136-08	800	135	85	300	2800		.1	3.0	200	2 18 19 20 22
IRKT136-12	1200	135	85	300	2800		.1	3.0	200	2 18 19 20 22
IRKT136-16	1600	135	85	300	2800		.1	3.0	200	2 18 19 20 22
IRKT142-12	1200	140	85	310	4200		.085	3.0	200	2 18 19 20 22
IRKT142-16	1600	140	85	310	4200		.085	3.0	200	2 18 19 20 22
IRKT142-20	2000	140	85	310	4200		.085	3.0	200	2 18 19 20 22
IRKT162-08	800	160	85	355	4500		.085	3.0	200	2 18 19 20 22
IRKT162-12	1200	160	85	355	4500		.085	3.0	200	2 18 19 20 22
IRKT162-16	1600	160	85	355	4500		.085	3.0	200	2 18 19 20 22



INT-A-Pak

										MAGN-A-Pak
IRKT170-08	800	170	85	377	4500		.085	3.0	200	2 18 20 22
IRKT170-12	1200	170	85	377	4500		.085	3.0	200	2 18 20 22
IRKT170-16	1600	170	85	377	4500		.085	3.0	200	2 18 20 22
IRKT230-08	800	230	85	510	6600		.063	3.0	200	2 18 20 22
IRKT230-12	1200	230	85	510	6600		.063	3.0	200	2 18 20 22
IRKT230-16	1600	230	85	510	6600		.063	3.0	200	2 18 20 22
IRKT230-20	2000	230	85	510	6600		.063	3.0	200	2 18 20 22



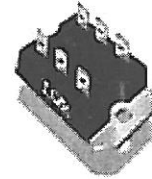
MAGN-A-Pak

NOTES

- 2 For I_{TSM}: 100% V_{RRM} reapplied, T_J=T_J max.=125°C
- 4 V_{TM} @ π X I_{TAV}, T_J=125°C
- 17 Available without auxiliary cathode. Refer to case outline for details.
- 18 Available in center tap (circuit common anode or circuit common cathode) configurations. Refer to case outline for details.
- 20 RMS isolation voltage = 3000V - 50Hz
- 22 Value given for R_{θJC} is per module.
- 25 RMS isolation voltage = 3500 - 50Hz

Single Phase Controlled Bridge Modules

Part Number	V_{RRM} (V)	I_D (A)	@ T_C (°C)	I_{TSM} 60Hz (A)	$R_{\theta JC(DC)}$ (K/W)	Notes
Circuit "0"						PACE-Pak
P102 P102W (w/ free-wheeling diode) P102K (w/ voltage suppressor) P102KW (w/ free-wheeling diode & voltage suppressor)	600	25	85	315	.56	2 21 22
P105 P105W P105K P105KW	1200	25	85	315	.56	2 21 22
P402 P402W P402K P402KW	600	40	85	340	.263	2 21 22
P405 P405W P405K P405KW	1200	40	85	340	.263	2 21 22



Pace-Pak

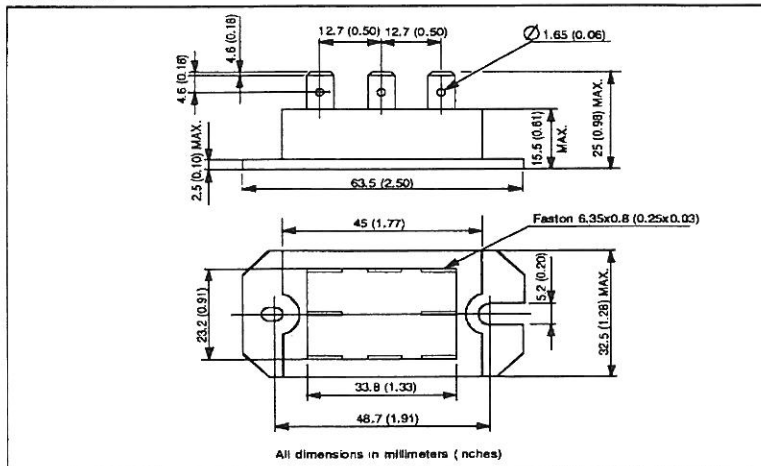
Circuit "2"							
P122	Add "K" for Voltage Suppressor Option	600	25	85	315	.56	2 21 22
P125		1200	25	85	315	.56	2 21 22
P422		600	40	85	340	.263	2 21 22
P425		1200	40	85	340	.263	2 21 22

Circuit "3"							
P132	Add "K" for Voltage Suppressor Option	600	25	85	315	.56	2 21 22
P135		1200	25	85	315	.56	2 21 22
P432		600	40	85	340	.263	2 21 22
P435		1200	40	85	340	.263	2 21 22

Circuit Type and Coding

	Circuit "0"	Circuit "2"	Circuit "3"
Terminal Positions			
Schematic diagram			
	Single Phase Hybrid Bridge Common Cathode	Single Phase Hybrid Bridge Doubler	Single Phase All SCR Bridge

Outline Table

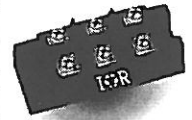


NOTES

- 2 For I_{TSM} : 100% V_{RRM} reapplied, $T_J = T_J \text{ max.} = 125^\circ\text{C}$
- 22 Value given for $R_{\theta JC}$ is per module.
- 21 RMS isolation voltage = 2500V - 50Hz
- 24 RMS isolation voltage = 4000V - 50Hz

Three Phase Controlled Bridge Modules

Part Number	V _{RRM} (V)	I _{TAV} (A)	@T _c (°C)	I _{TSM} 60Hz (A)	V _{TM} (V)	@I _{PK} , 25°C (A)	R _{θJC(DC)} (°C/W)	Notes
Controlled Bridges								INT-A-Pak
51MT80KB	800	55	85	345	2.68	150	.179	2 22 24
51MT120KB	1200	55	85	345	2.68	150	.179	2 22 24
51MT160KB	1600	55	85	345	2.68	150	.179	2 22 24
91MT80KB	800	90	85	840	1.65	150	.144	2 22 24
91MT120KB	1200	90	85	840	1.65	150	.144	2 22 24
91MT160KB	1600	90	85	840	1.65	150	.144	2 22 24
111MT80KB	800	110	95	1000	1.57	150	.117	2 22 24
111MT120KB	1200	110	95	1000	1.57	150	.117	2 22 24
111MT160KB	1600	110	95	1000	1.57	150	.117	2 22 24



INT-A-Pak Bridge

Device Code

11	3	MT	160	K	B	S90
①	②	③	④	⑤	⑥	

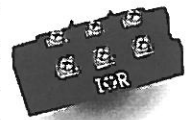
- 1** - Current rating code: 5 = 55 A (Avg)
9 = 90 A (Avg)
11 = 110 A (Avg)
- 2** - Circuit configuration code: 3 = Full-controlled bridge
2 = Positive half-controlled bridge
1 = Negative half-controlled bridge
- 3** - Essential part number
- 4** - Voltage code: Code x 10 = V_{RRM} (See Voltage Ratings Table)
- 5** - Generation II
- 6** - Critical dv/dt: None = 500V/μs (Standard value)
S90 = 1000V/μs (Special selection)

full-controlled bridge
(53, 93, 113MT..KB)

positive half-controlled bridge
(52, 92, 112MT..KB)

negative half-controlled bridge
(51, 91, 111MT..KB)

AC Controllers								
54MT80KB	800	50	80	345	2.68	150	.187	2 21 24
54MT120KB	1200	50	80	345	2.68	150	.187	2 21 24
54MT160KB	1600	50	80	345	2.68	150	.187	2 21 24
94MT80KB	800	90	80	840	1.55	150	.137	2 21 24
94MT120KB	1200	90	80	840	1.55	150	.137	2 21 24
94MT160KB	1600	90	80	840	1.55	150	.137	2 21 24
104MT80KB	800	100	80	1000	1.53	150	.119	2 21 24
104MT120KB	1200	100	80	1000	1.53	150	.119	2 21 24
104MT160KB	1600	100	80	1000	1.53	150	.119	2 21 24



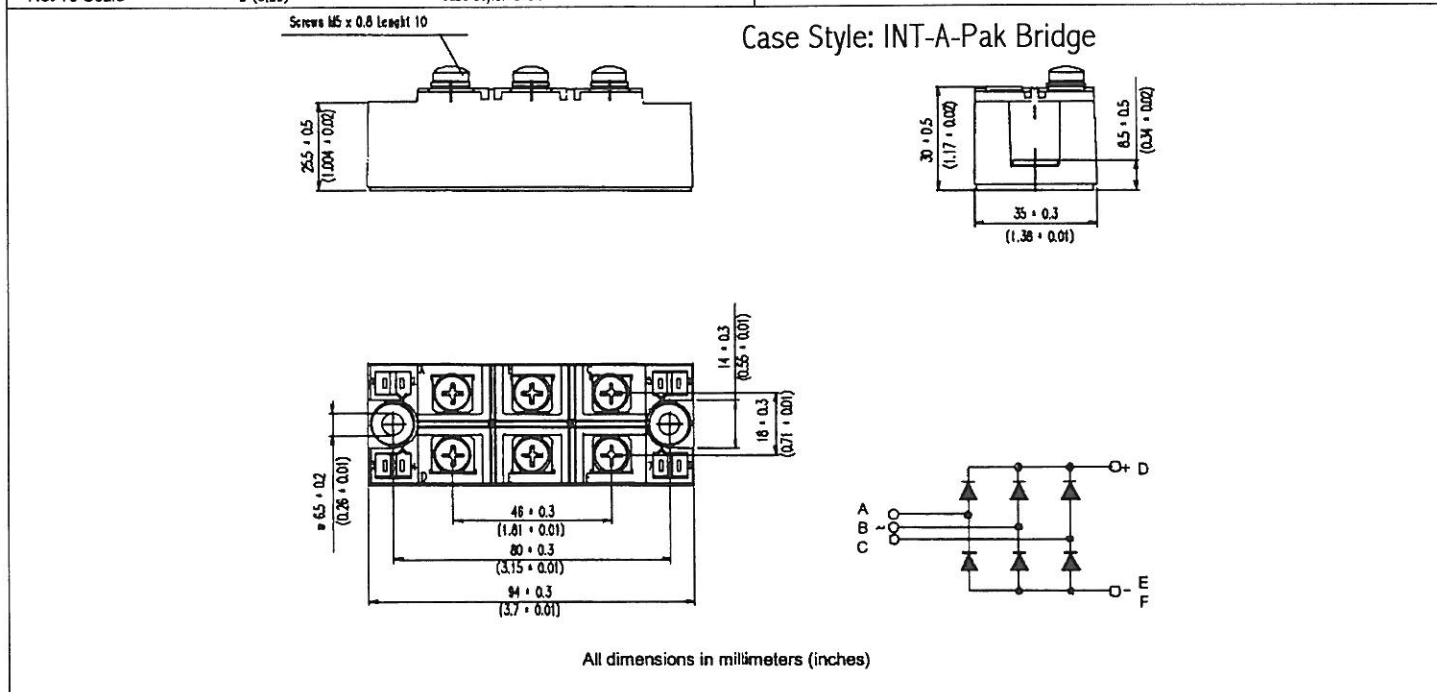
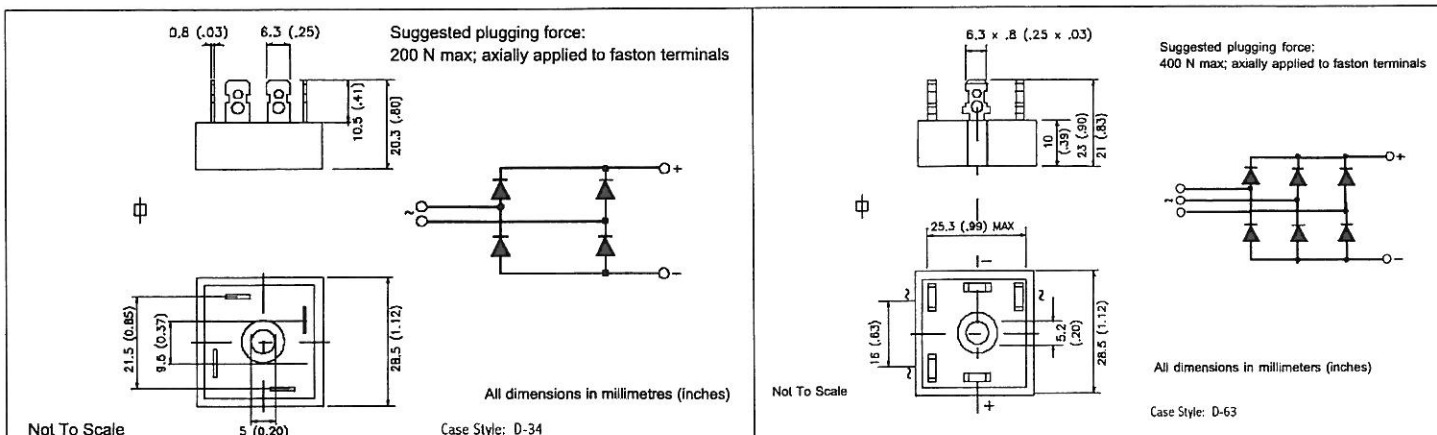
INT-A-Pak Bridge

**AC Controllers
(54,94,114MT..KB)**

NOTES

- 2 For I_{TSM}: 100% V_{RRM} reapplied, T_J=T_J max.=125°C
- 21 RMS isolation voltage = 2500V - 50Hz
- 22 Value given for R_{thJC} is per module.
- 24 RMS isolation voltage = 4000V - 50Hz

Bridge Module Outline Drawings



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