

# Thyristor, Diode and IGBT Modules



SEMIKRON invented the SEMIPACK®, the beginning of a new industry standard for isolated power semiconductor modules. The SEMIKRON power modules represent quality, continued innovation and engineering know-how that reduce customer design time and time to market.

Power levels of SEMIKRON's power electronic systems range from 1 kW to over 1 MW. Most important of all, the customer can take advantage of SEMIKRON's product performance and expertise for the reliability and performance of his equipment.

SEMIKRON today produces over 1500 different power modules comprising diode, thyristor, MOS and IGBT technology.

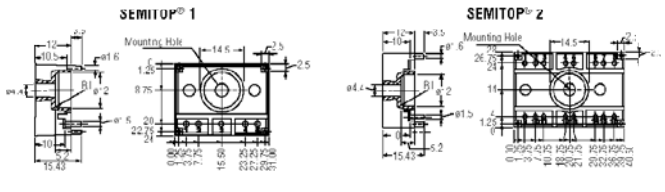
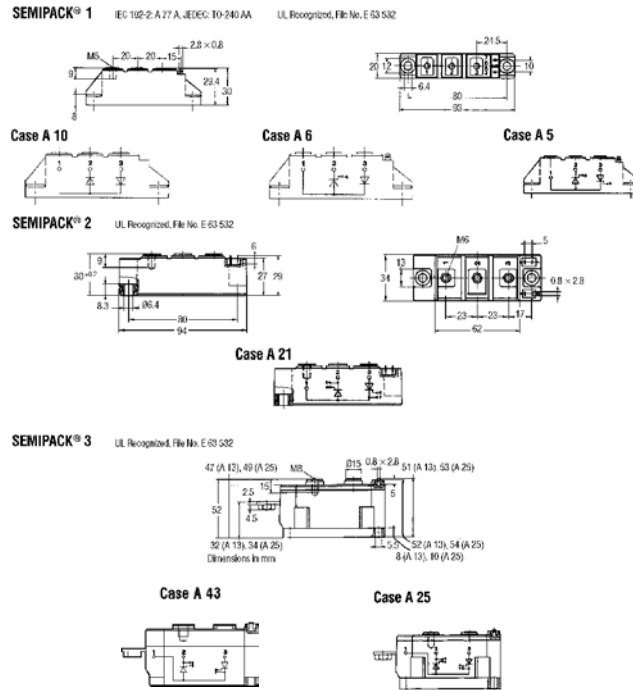
SEMIKRON has a complete catalog with all data-sheets on our web site at [www.semikron.com](http://www.semikron.com). For additional applications engineering support, please call 1-800-258-1308.

## SEMIPACK® Thyristor/Diode Modules

### Thyristor/Diode Modules

- Features**
- Heat Transfer through Ceramic Isolated Metal Baseplate
  - Hard Soldered Joints for High Reliability
  - UL Recognized; File No. E 63 532
  - Free of BEO Ceramic
- SEMIPACK® 1 and 2 Features**
- DCB Ceramic (Aluminum Oxide)
  - Glass Passivated Thyristor Chips
- SEMIPACK® 3 Features**
- Heat Transfer through AlN Ceramic Isolated Metal Baseplate
  - Precious Metal Pressure Contacts for High Reliability
- Typical Applications**
- DC Motor Control, i.e. for Machine Tools
  - Temperature Control, i.e. for Ovens, Chemical Processes
  - Professional Light Dimming
  - Non-Controllable Rectifiers for AC/AC Converters
  - Line Rectifiers for Transistorized AC Motor Controllers
  - Field Supply for DC Motors
  - Soft Starters for Induction Motors

Mr.'s Type	V <sub>ORM</sub> V <sub>RRM</sub> (V)	I <sub>TRMS</sub> I <sub>FRMS</sub> (A)	I <sub>TRV</sub> @ T <sub>case</sub> I <sub>FRV</sub> (A)	I <sub>TSM</sub> /I <sub>FSM</sub> 25°C; 10 ms (A)	I <sup>2</sup> t (A <sup>2</sup> s)	T <sub>J</sub> Max. (°C)	R <sub>th(j-c)</sub> Sin. 180 (°C/W)	SEMIPACK®	Case/Circuit Diagram	
SKKD 46/16	1600	90	45	86	700	2450	125	0.600	1	A 10
SKKD 81/16	1600	140	80	87	2000	20000	125	0.400	1	A 10
SKKH 41/16E	1600	75	40	85	1000	5000	125	0.690	1	A 6
SKKH 91/12E	1200	150	95	85	2000	20000	125	0.300	1	A 6
SKKH 91/16E	1600	150	95	85	2000	20000	125	0.300	1	A 6
SKKH 105/16E	1600	180	106	85	2250	25000	130	0.300	1	A 6
SKKT 41/12E	1200	75	40	85	1000	5000	125	0.690	1	A 5
SKKT 41/16E	1600	75	40	85	1000	5000	125	0.690	1	A 5
SKKT 56/12E	1200	95	55	80	1500	11000	125	0.600	1	A 5
SKKT 56/16E	1600	95	55	80	1500	11000	125	0.600	1	A 5
SKKT 91/12E	1200	150	95	85	2000	20000	125	0.300	1	A 5
SKKT 91/16E	1600	150	95	85	2000	20000	125	0.300	1	A 5
SKKT 122/16E	1600	195	122	88	3600	51200	130	0.210	2	A 21
SKKT 132/12E	1200	220	130	87	4700	110000	125	0.190	2	A 21
SKKT 132/16E	1600	220	130	87	4700	110000	125	0.190	2	A 21
SKKT 253/12E	1200	420	253	85	9000	320000	130	0.115	3	A 43
SKKT 253/16E	1600	420	253	85	9000	320000	130	0.115	3	A 43
SKKT 250/12E	1200	420	250	85	9000	405000	130	0.150	3	A 25
SKKT 250/16E	1600	420	250	85	9000	405000	130	0.150	3	A 25



## SEMITOP®

### Thyristor Modules for AC Controllers

- Features**
- MOS Input (Voltage Controlled)
  - N Channel Homogenous Si
  - Low Inductance
  - Very Low Tail Current with Low Temperature Dependence
  - One Screw Mounting
  - Compact Design
  - Low Thermal Impedance Due to Durable Ceramic Insulation
- Typical Applications**
- Switching (Not for Linear Use)
  - Small Inverters
  - Chopper Topologies

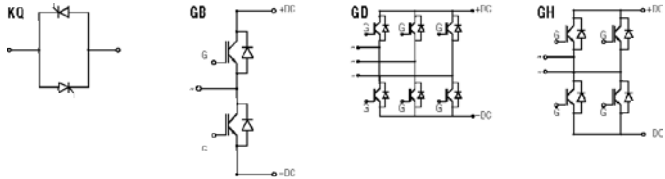
Mr.'s Type	V <sub>ORM</sub> V <sub>RRM</sub> (V)	I <sub>TRMS</sub> @ T <sub>J</sub> =85°C Max. (A)	I <sub>FSM</sub> 25°C; 10 ms (A)	I <sup>2</sup> t (A <sup>2</sup> s)	R <sub>th(j-c)</sub> * Sin. 180 (°C/W)	T <sub>J</sub> Max. (°C)	Circuit	SEMITOP®	Schematic
SK 45KQ12	1200	45	450	1000	1.30	125	Dual SCR AC Switch	1	KQ
SK 45KQ16	1600	45	450	1000	1.30	125	Dual SCR AC Switch	1	KQ
SK 70KQ12	1200	70	1000	5000	0.90	125	Dual SCR AC Switch	1	KQ
SK 70KQ16	1600	70	1000	5000	0.90	125	Dual SCR AC Switch	1	KQ
SK 100KQ12	1200	100	1500	11250	0.65	125	Dual SCR AC Switch	2	KQ
SK 100KQ16	1600	100	1500	11250	0.65	125	Dual SCR AC Switch	2	KQ
SK 120KQ12	1200	120	2000	20000	0.55	125	Dual SCR AC Switch	2	KQ
SK 120KQ16	1600	120	2000	20000	0.55	125	Dual SCR AC Switch	2	KQ

\*Per thyristor.

### IGBT Modules

- Features**
- Glass Passivated Thyristor Chips
  - Heat Transfer through Direct Copper Bonded Aluminum Oxide
  - Ceramic Base Plate
  - Up to 1600 V Reverse Voltage
  - High Surge Currents
- Typical Applications**
- Soft Starters
  - Light Control
  - Temperature Control

Mr.'s Type	V <sub>CEs</sub> (V)	I <sub>c</sub> @ T <sub>J</sub> =25°C Typ. (A)		R <sub>th(j-c)</sub> IGBT Max. (°C/W)	E <sub>sw</sub> (mJ) Typ. I <sub>c</sub> @ T <sub>J</sub> =80°C	Circuit	SEMITOP®	Schematic	
		(V)	(A)						
SK 25GB063	600	30	2.1	30	1.00	1.7	Dual IGBT Half Bridge	1	GB
SK 45GB063	600	45	1.8	30	1.00	2.5	Dual IGBT Half Bridge	2	GB
SK 30GB123	1200	33	2.5	25	1.00	5.5	Dual IGBT Half Bridge	2	GB
SK 25GD063	600	30	2.1	30	1.00	1.7	3 Phase Bridge	3	GD
SK 45GD063	600	45	1.8	30	0.85	3.5	3 Phase Bridge	3	GD
SK 20GD123	1200	23	2.5	15	1.00	4.0	3 Phase Bridge	3	GD
SK 15GH063	600	20	2.1	15	2.80	2.1	IGBT H-Bridge	2	GH
SK 25GH063	600	30	2.1	30	1.00	1.7	IGBT H-Bridge	2	GH
SK 45GH063	600	45	1.8	30	0.85	2.5	IGBT H-Bridge	3	GH
SK 20GH123	1200	23	2.5	15	1.00	4.0	IGBT H-Bridge	2	GH
SK 30GH123	1200	33	2.5	25	0.85	5.5	IGBT H-Bridge	3	GH



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