IXYS
A Littelfuse Technology

The New Name in Power Semiconductors

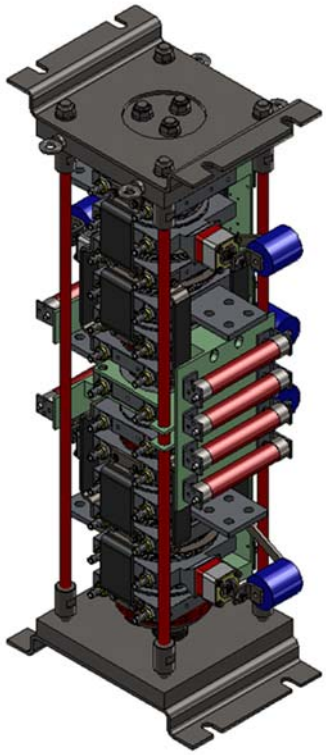
Press-Pack IGBT's

Devices, assemblies & supporting products

With a track record spanning more than 15 years as a leading innovator in press-pack IGBT technology, IXYS UK is proud to offer their range of 1.7kV, 2.5kV, 4.5kV and new 6.5kV devices featuring the latest generation chipsets offering improved SOA.

The standard range now includes the 3000A T2960BB45E press-pack IGBT, the highest power rated press-pack IGBT ever, plus the first in a new line of 1700V press-pack IGBT's, the 960A DC rated T0960VC17G.

To support these products, IXYS UK can supply IGBT gate drives specifically designed to work with the press-pack IGBT's and a range of clamps, coolers and ancillary components.



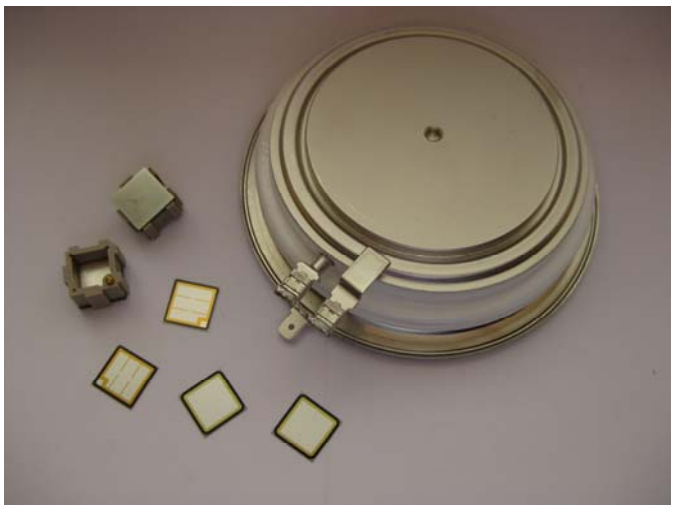
Applications

- Traction; including light rail, trams, trolley-bus and other electric vehicles.
- AC drives for harsh environments such as; mining, marine and off shore, gas and oil installations.
- Renewable energy for wind turbines, hydro generation, wave-generation and solar.
- Medium voltage drives: marine, oil and gas pumps, industrial drives etc.
- Utilities: flexible AC transmission systems, HVDC transmission statcoms, VSC, SVC, etc.

Image courtesy of CKD Elektrotechnika

Littelfuse®
Expertise Applied | Answers Delivered

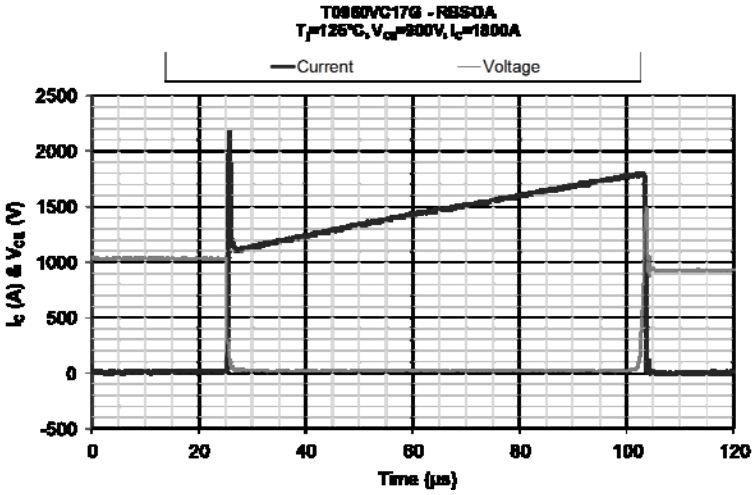
New 1.7kV, 960A Press Pack IGBT

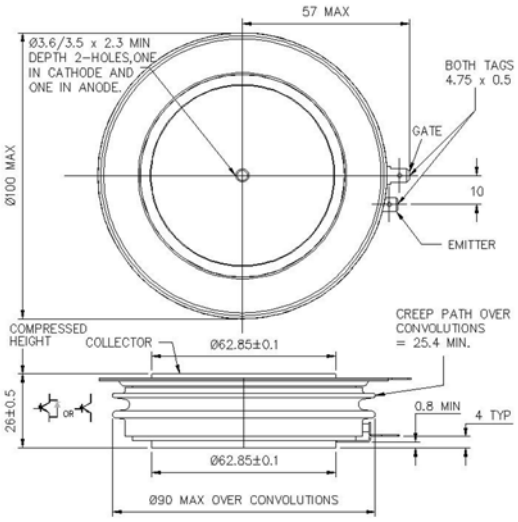


- First of a new range of 1.7kv press-pack IGBT's
- Reverse conducting with fully rated integral diode.
- 960A nominal current rating in a 63mm electrode, 100mm overall diameter industry standard package.

Key parameters

- V_{CES}, 1.7kV / Ic, 900A
- V_{DC} link, 900V with 100 FIT
- I_{CRM}, 1920A
- $V_{CE(sat)}$, 3.3V @ 960A & 125°C
- E_{ON}, 0.47J / E_{OFF}, 0.8J, nominal
- R_{thJK}, 33.8K/kW, double side cooled
- Operating temperature -40 to +125ºC



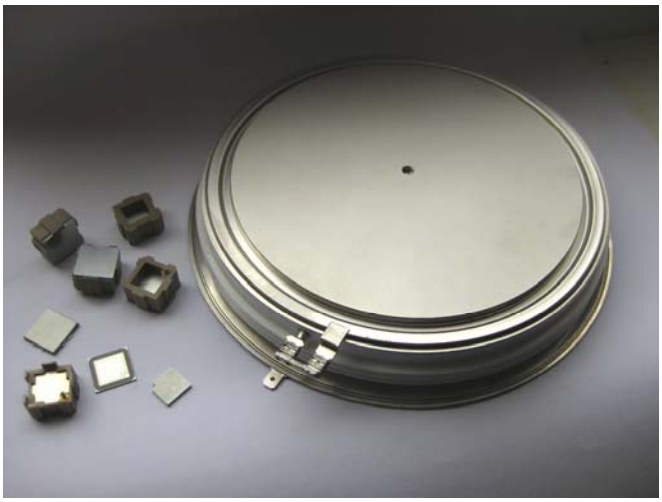


Prospective product matrix		
Provisional part number	Electrode diameter (mm)	Integral diode
T0600NC17A	50	Yes
T0840NC17E	50	No
T0960VC17G	63	Yes
T1440VC17E	63	No
T1800TC17A	75	Yes
T2520TC17E	75	No
T2520TC17G	96	Yes

Applications

- Traction including light rail, trams, trolley-bus and other electric vehicles;
- AC drives for harsh environments such as mining, marine and off shore, gas and oil installations;
- Renewable energy for wind turbines, hydro generation, wave-generation and solar;
- Any application where high power density and reliability are key considerations.

New 3kA, 4.5kV Press Pack IGBT



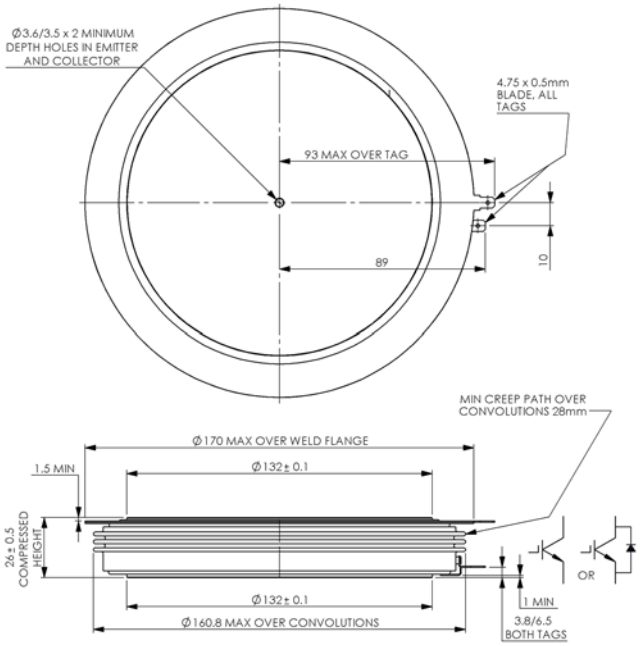
- 3kA nominal current rating in 132mm electrode 170mm overall diameter industry standard package
- Optimised HP Sonic FRD E3000EC45E also available

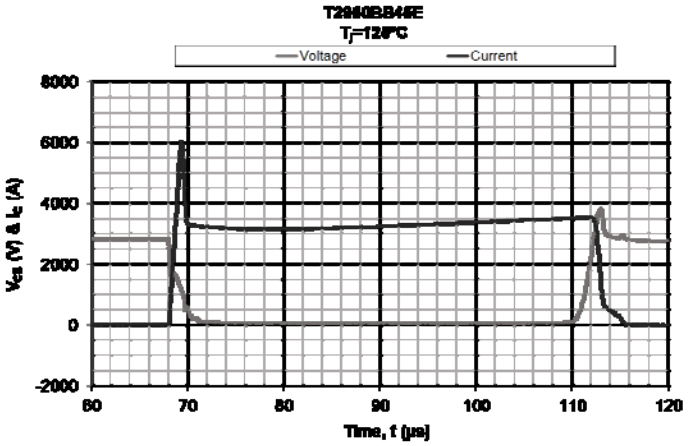
Applications

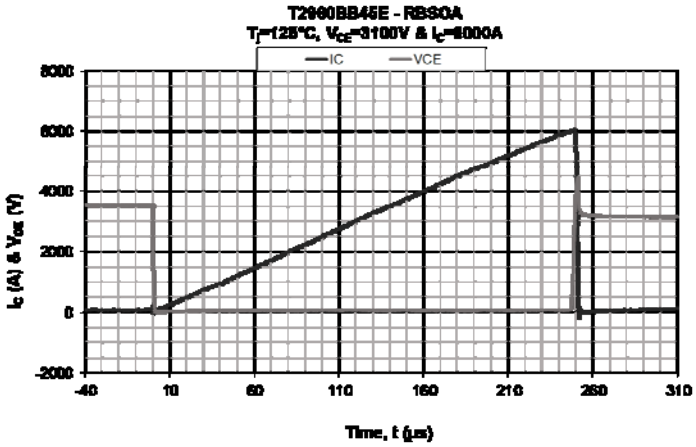
- Utilities: Flexible AC transmission systems, HVDC transmission, statcoms , VSC, SVC, etc.
- Medium voltage drives : Marine, oil and gas pumps, industrial drives etc .

Key parameters

- V_{CES}, 4.5kV / I_C, 3kA
- V_{DC} link, 2.8kV with 100 FIT
- I_{CRM}, 6kA
- $V_{CE(sat)}$, 3.6V@3kA&125°C
- E_{ON}, 11.5J / E_{OFF}, 17.5J, nominal
- R_{thJK}, 4.2K/kW, double side cooled
- Operating temperature-40 to +125ºC







Press-pack IGBT's

IXYS UK's press-pack IGBT's utilise an enhanced planar cell technology, delivering comparable $V_{CE(sat)}$ to modern trench designs whilst retaining the superior RBSOA, SCSOA performance and easy driving characteristics of traditional planar technology. When combined with IXYS UK's proven hermetic press-pack technology, these devices re-define the state-of-the-art for high power switching devices.

Available in a range of packages with electrode diameters of up to 132mm, IXYS UK can offer both reverse conducting and asymmetric blocking types.

Improved diode chips complement the IGBT and offer breakthrough levels of performance and a choice of diode to IGBT ratio enables full utilisation of the IGBT in reverse conducting applications.

IXYS UK's new generation HP-sonic monolithic diodes complement the 1.7kV, 2.5kV and 4.5kV asymmetric IGBT range and also support such applications as multi-level diode clamped converters. New multi-chip 6.5kV diodes are now available to support the new 6.5kV asymmetric IGBT's

Press-pack IGBT's are now gaining significant market share in high performance and medium voltage applications in the power range 2MW to 30MW and above. They offer all the benefits of conventional IGBT's and more, over alternative bipolar technology while maintaining the high reliability levels associated with press-pack devices in these systems.

1700V IGBT's

	V_{CES}	I_C	I_{CM}	Typ $V_{CE(sat)}$ $I_C=I_C$	IGBT Switching Typical		Typ V_F $I_F=I_C$	Diode Recovery Typical			T_{JM}	R_{thJK}		Fig. No.
					E_{ON}	E_{OFF}		I_{rm}	t_{rr}	Q_r		IGBT	Diode	
Part No.	V	A	A	V	J	J	V	A	µs	µC	°C	K/W	K/W	
T0960VC17G	1700	960	1920	3	0.47	0.8	2.05	540	0.6	310	125	0.0338	0.0361	W67

2500V IGBT's

	V_{CES}	I_C	I_{CM}	Typ $V_{CE(sat)}$ $I_C=I_C$	IGBT Switching Typical		Typ V_F $I_F=I_C$	Diode Recovery Typical			T_{JM}	R_{thJK}		Fig. No.
					E_{ON}	E_{OFF}		I_{rm}	t_{rr}	Q_r		IGBT	Diode	
Part No.	V	A	A	V	J	J	V	A	µs	µC	°C	K/W	K/W	
T0360ND25A	2500	360	720	3.05	0.28	0.66	2.25	320	1.2	300	125	0.0541	0.0730	W40
T0500ND25E	2500	500	1000	3.05	0.65	0.87	N/A	N/A	N/A	N/A	125	0.0386	N/A	W40
T0570VD25G	2500	570	1140	3.05	0.44	1.05	2.07	400	1.3	420	125	0.0338	0.0365	W67
T0850VD25E	2500	850	1700	3.05	1.10	1.60	N/A	N/A	N/A	N/A	125	0.0225	N/A	W67
T1200TD25A	2500	1200	2400	3.15	1.50	2.10	2.50	800	0.97	840	125	0.0169	0.0292	W41
T1500TD25E	2500	1500	3000	3.05	1.97	2.65	N/A	N/A	N/A	N/A	125	0.0129	N/A	W41
T2250AD25E	2500	2250	4500	3.05	3.00	4.20	N/A	N/A	N/A	N/A	125	0.0085	N/A	W71

4500V IGBT's

Part No.	V_{CES} V	I_C A	I_{CM} A	Typ $V_{CE(sat)}$ $I_C=I_C$ V	IGBT Switching Typical E_{ON} J	E_{OFF} J	Typ V_F $I_F=I_C$ V	Diode Recovery Typical I_{rm} A	t_{rr} µs	Q_r µC	T_{JM} °C	R_{thJK} IGBT K/W	Diode K/W	Fig. No.
T0115QB45G	4500	115	230	3.60	1.00	0.65	3.45	100	1.7	150	125	0.1092	0.1728	W109
T0240NB45E	4500	240	480	3.60	1.50	1.10	N/A	N/A	N/A	N/A	125	0.0546	N/A	W40
T0340VB45G	4500	340	680	3.50	2.90	1.40	3.45	220	2.3	500	125	0.0364	0.0576	W67
T0510VB45E	4500	510	1020	3.60	4.20	2.10	N/A	N/A	N/A	N/A	125	0.0243	N/A	W67
T0600TB45A	4500	600	1200	3.70	4.60	2.90	3.70	640	1.2	700	125	0.0218	0.0432	W41
T0800TB45E	4500	800	1600	3.50	5.10	1.90	N/A	N/A	N/A	N/A	125	0.0156	N/A	W41
T0800EB45G	4500	800	1600	3.50	5.10	4.90	3.45	800	1.7	1020	125	0.0156	0.0247	W44
T0900EB45A	4500	900	1800	3.60	4.30	3.60	3.90	610	1.6	920	125	0.0140	0.0260	W44
T1200EB45E	4500	1200	2400	3.60	5.70	5.10	N/A	N/A	N/A	N/A	125	0.0080	N/A	W44
T1600GB45G	4500	1600	3200	3.50	12.00	8.70	3.45	1380	1.7	1970	125	0.0078	0.0123	W45
T1800GB45A	4500	1800	3600	3.60	11.00	10.50	3.90	1600	1.6	2000	125	0.0073	0.0144	W45
T2400GB45E	4500	2400	4800	3.60	13.00	13.00	N/A	N/A	N/A	N/A	125	0.0052	N/A	W45
T2960BB45E	4500	3000	6000	3.60	16.00	16.00	N/A	N/A	N/A	N/A	125	0.0042	N/A	W110

6500V IGBT's

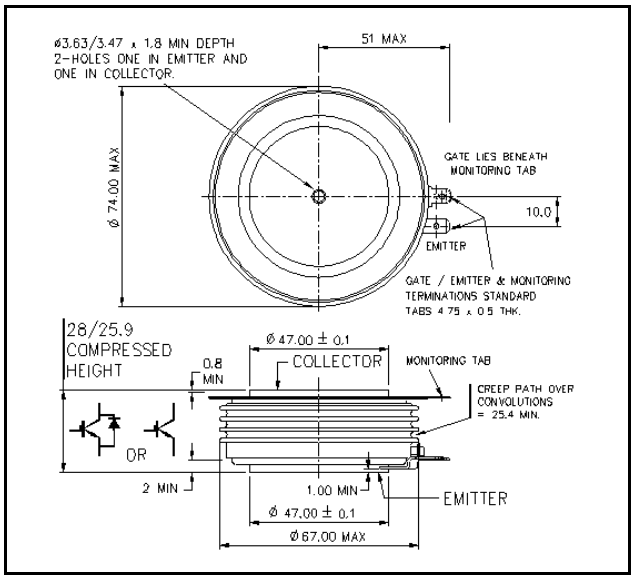
Part No.	V_{CES} V	I_C A	I_{CM} A	Typ $V_{CE(sat)}$ $I_C=I_C$ V	IGBT Switching Typical E_{ON} J	E_{OFF} J	Typ V_F $I_F=I_C$ V	Diode Recovery Typical I_{rm} A	t_{rr} µs	Q_r µC	T_{JM} °C	R_{thJK} IGBT K/W	Diode K/W	Fig. No.
T0258HF65G	6500	258	516	4.80	1.80	1.45	3.85	300	1.2	410	125	0.0328	0.0567	W95
T0385HF65E	6500	385	770	4.80	2.70	2.20	N/A	N/A	N/A	N/A	125	0.0219	N/A	W95
T0600AF65G	6500	600	1030	4.80	4.20	3.38	3.45	700	1.2	950	125	0.0141	0.0243	W98
T0900AF65E	6500	900	1800	4.80	6.30	5.10	N/A	N/A	N/A	N/A	125	0.0094	N/A	W98
T0900DF65A	6500	900	1800	4.80	6.30	5.10	3.40	950	1.2	1500	125	0.0094	0.0155	W96
T1290BF65A	6500	1290	2580	4.80	9.00	7.30	3.60	1400	1.1	1900	125	0.0066	0.0122	W103
T1375DF65E	6500	1375	2750	4.80	9.60	7.70	N/A	N/A	N/A	N/A	125	0.0062	N/A	W96
T1890BF65E	6500	1890	3780	4.80	13.20	10.60	N/A	N/A	N/A	N/A	125	0.0045	N/A	W103

Features and Benefits

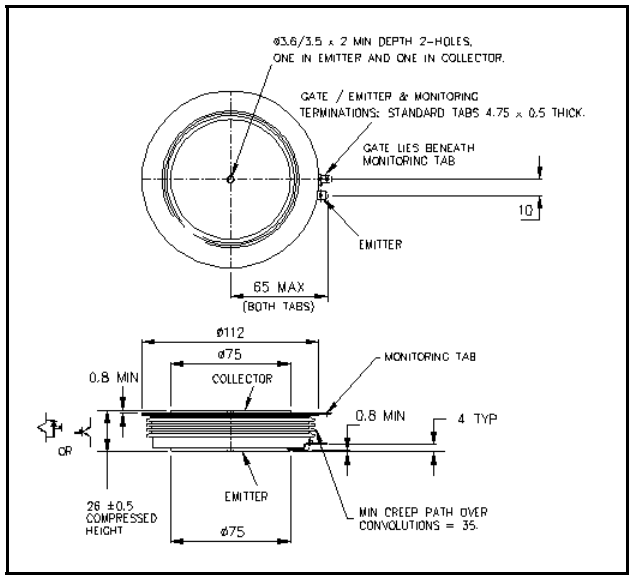
- Bondless construction for high reliability
- Hermetic package suitable for all cooling options including direct liquid immersion
- Explosion and rupture resistant (at more than 10 times the energy of a similarly rated plastic module)
- High thermal cycling resistance
- Double side cooling
- Mechanically compatible with GTO thyristors allowing upgrading of existing equipment and designs to new IGBT technology

Outlines

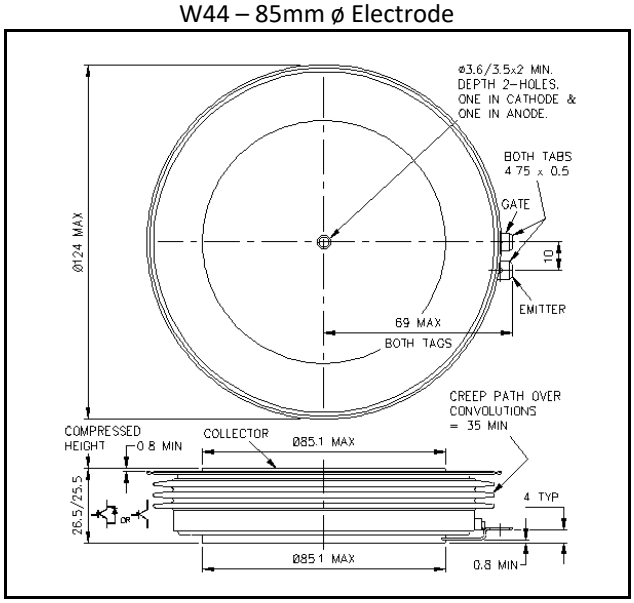
W40 – 47mm ø Electrode



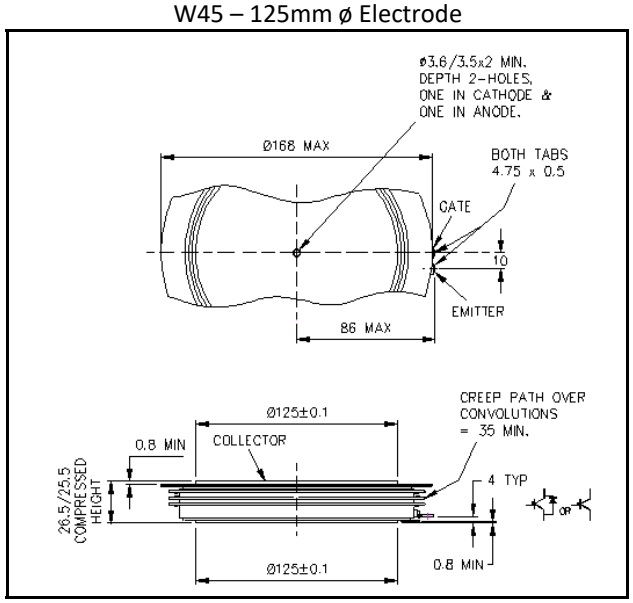
W41 – 75mm ø Electrode



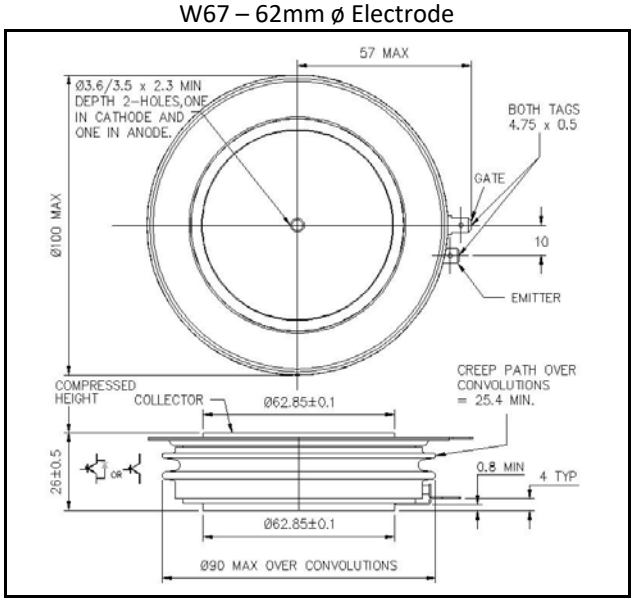
W44 – 85mm ø Electrode



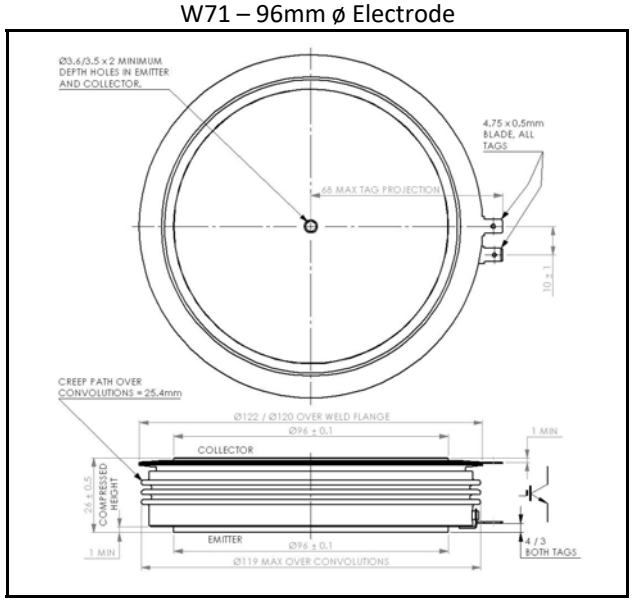
W45 – 125mm ø Electrode



W67 – 62mm ø Electrode

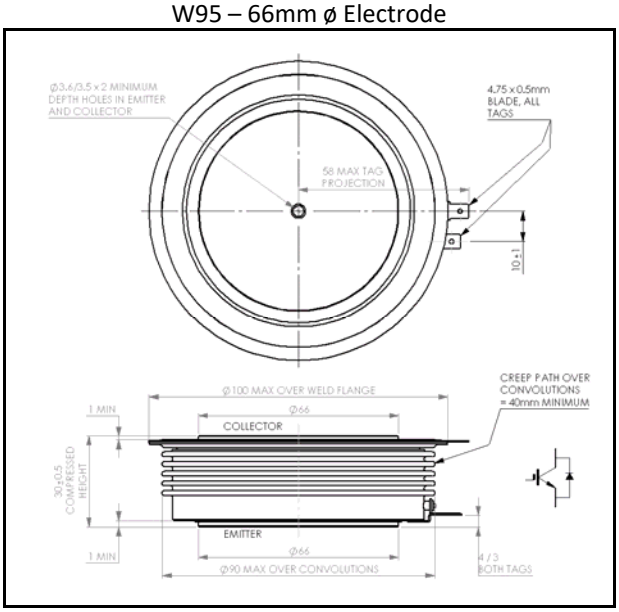


W71 – 96mm ø Electrode

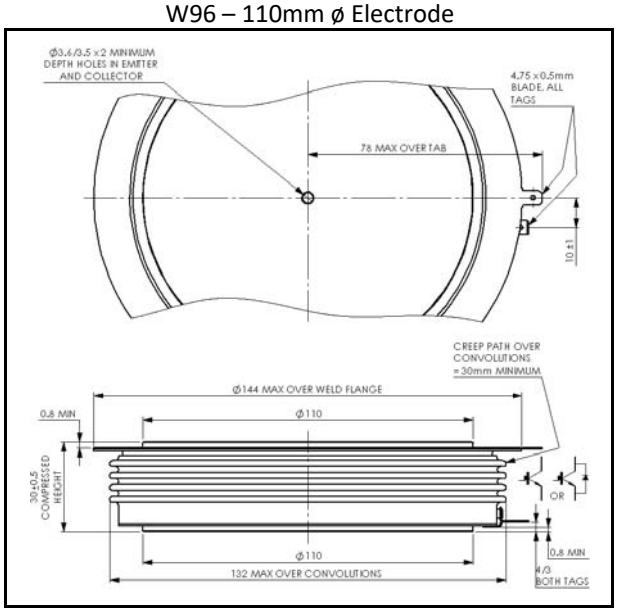


Outlines

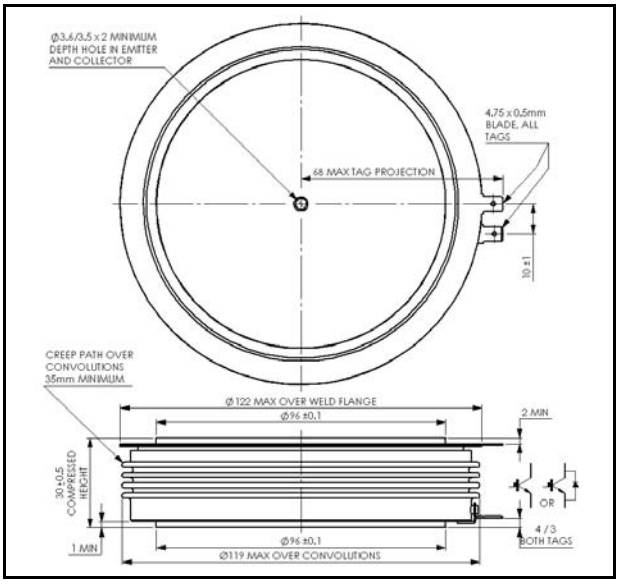
W95 – 66mm ø Electrode



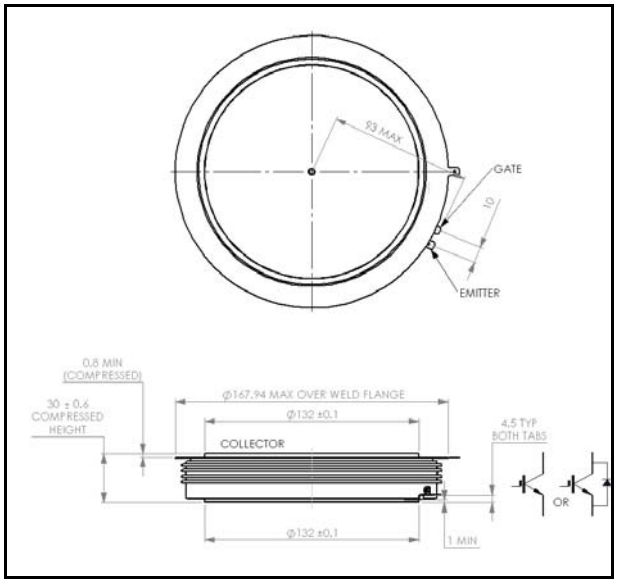
W96 – 110mm ø Electrode



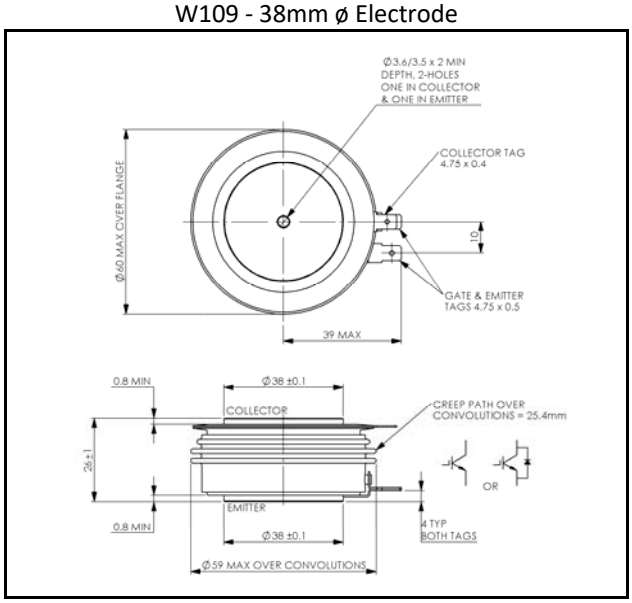
W98 - 96mm ø Electrode



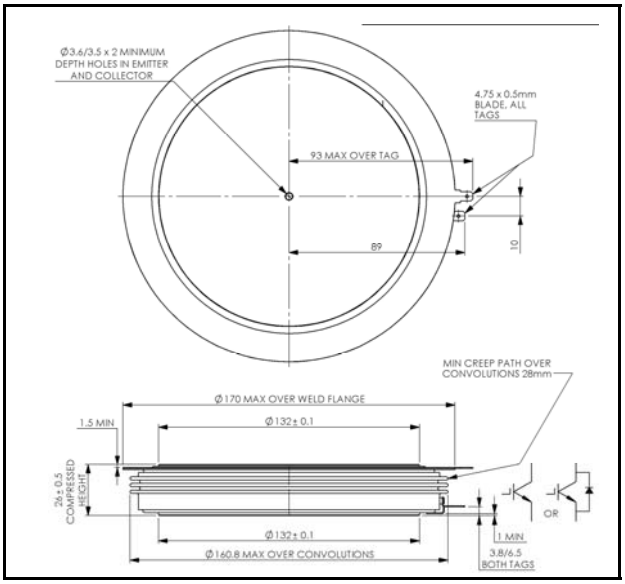
W103 - 132mm ø Electrode



W109 - 38mm ø Electrode



W110 - 132mm ø Electrode



New E-series high-power sonic fast recovery diodes added to range

IXYS UK brings you a world-leading class of ultra fast and ultra soft recovery diode available from 2.5kV to 6.5kV in current ratings from 170 to 4000A. Newly added to this range are the 4.5kV E-series diodes incorporating the latest silicon bonding technology for improved thermal characteristics and improved reliability.

These diodes incorporate a unique manufacturing process and lifetime control to offer a class leading trade-off between conduction and switching loses. The wide safe operating area (SOA) makes them ideal as freewheeling diodes for snubberless IGBT and IGCT applications. In fact, any application which requires a fast, low loss diode. For example, traction, medium voltage drives, induction heating and pulsed power applications.

Features

- Robust dynamic characteristics – di/dt> 4000A/µs
- Up to 150°C operating junction temperature
- Soft fast recovery – no snap off
- Low recovery losses, low forward voltage drop
- Snubberless operation

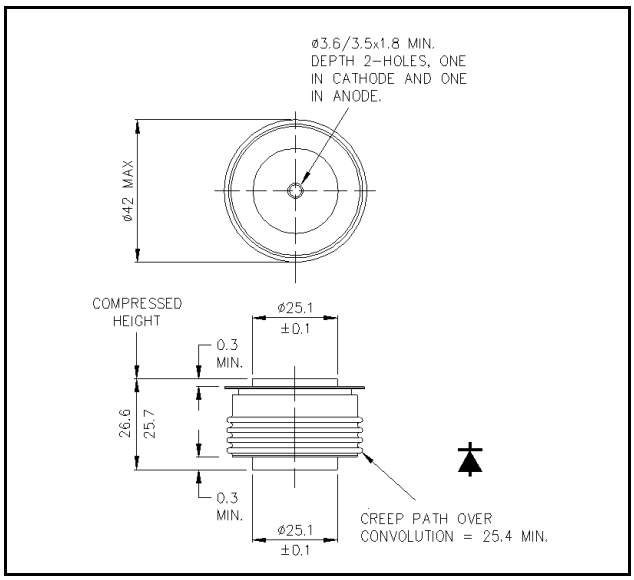
Applications

- Anti-parallel diodes of IGBT's and IGCT's
- Clamp and snubber diodes
- Any application which requires a fast low loss diode
- Ideally suited for:
  - Traction
  - Medium voltage drives
  - Renewables
  - Induction heating
  - Pulsed power applications

Part No.	V_{RRM} V	I_{FAV} T_K=55°C A	I_{FSM} 10ms ½ sine V_R ≤60% V_{RRM} A	I^2t A^2s	Typ. Reverse Recovery Parameters T_{JM} I_{rm} A	t_{rr} µs	Q_{rr} µC	@I_{FM} A	@-di_F/dt A/µs	V_{T0} @T_{JM} V	r_T @T_{JM} mΩ	T_{JM} °C	R_{thJK} 180° Sine K/W	Fig. No.
E0170YH45C	4500	210	1390	9.67×10^3	125	1.60	280	170	300	2.580	7.170	150	0.073	W3
E0280YH25C	2500	350	2330	27.1×10^3	380	1.30	500	280	1000	1.410	2.600	150	0.073	W3
E0330MF65F	6500	277	2790	38.9×10^3	400	1.20	550	330	1000	1.890	5.800	125	0.043	W99
E0460QC45E*	4500	550	5800	168×10^3	450	1.00	900	500	150	2.160	3.050	140	0.028	W68
E0460QC45C	4500	532	5750	165×10^3	450	1.00	900	500	1500	2.150	3.040	150	0.029	W68
E0660NC45C	4500	765	7318	268×10^3	600	1.50	960	660	1000	2.000	2.236	150	0.020	W5
E0660NH45C	4500	765	7318	268×10^3	600	1.50	960	660	1000	2.000	2.236	150	0.020	W47
E0770HF65F	6500	632	6418	206×10^3	900	1.20	1200	770	2000	1.890	2.538	125	0.019	W100
E0800QC25C	2500	960	10700	575×10^3	720	1.60	1420	800	1500	1.410	0.839	150	0.029	W68
E1000TF65F*	6500	915	10400	537×10^3	650	1.80	1700	1000	1700	2.291	1.185	125	0.015	W97
E1200NC25C	2500	1338	13300	884×10^3	650	4.00	2000	1200	1500	1.305	0.678	150	0.020	W5
E1200NH25C	2500	1338	13300	884×10^3	650	4.00	2000	1200	1500	1.305	0.678	150	0.020	W47
E1300VF45C	4500	1350	14000	1.08×10^6	1500	1.10	2150	1300	3000	2.310	0.930	150	0.013	W43
E1375EF65F	6500	1125	12180	742×10^3	1600	1.10	2100	1375	3500	1.890	1.423	125	0.011	W101
E1500NC36P	3600	1280	17050	1.45×10^6	1425	2.80	2750	1000	1000	1.417	0.656	140	0.019	W5
E1500NC42P	4200	1280	17050	1.45×10^6	1425	2.80	2750	1000	1000	1.417	0.656	140	0.019	W5
E1500NC48P	4800	1280	17050	1.45×10^6	1425	2.80	2750	1000	1000	1.417	0.656	140	0.019	W5
E1500NH36P	3600	1280	17050	1.45×10^6	1425	2.80	2750	1000	1000	1.417	0.656	140	0.019	W47
E1500NH42P	4200	1280	17050	1.45×10^6	1425	2.80	2750	1000	1000	1.417	0.656	140	0.019	W47
E1500NH48P	4800	1280	17050	1.45×10^6	1425	2.80	2750	1000	1000	1.417	0.656	140	0.019	W47
E1800TC45E*	4500	2209	34100	5.81×10^6	1645	1.35	3200	1800	3000	2.067	0.605	140	0.008	W28
E2060FF65F	6500	1690	20090	2.02×10^6	2050	1.10	2800	2060	4500	1.890	0.951	125	0.007	W105
E2250VF25C	2500	2426	25200	3.17×10^6	1650	1.90	3700	2250	2500	1.510	0.250	150	0.013	W43
E2400EC45E*	4500	2655	39500	7.80×10^6	1816	1.30	3540	2400	3000	2.150	0.580	140	0.006	W111
E2400TC45C	4500	2233	25600	3.29×10^6	2050	1.50	3700	2400	3000	2.060	0.590	150	0.008	W28
E3000EC45E*	4500	3005	42400	8.98×10^6	2630	1.40	5500	3000	5000	2.240	0.550	140	0.005	W111
E4000TC25C	2500	4080	50000	12.5×10^6	2480	2.50	6700	4000	3500	1.406	0.149	150	0.008	W28

*** - New**

W3—100A317



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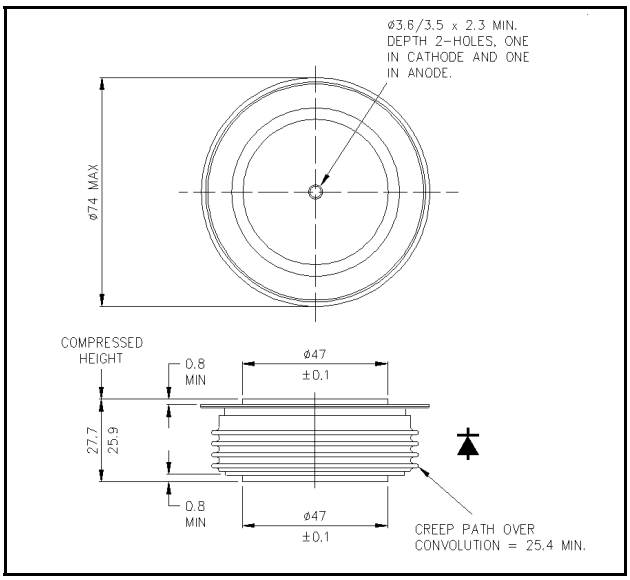

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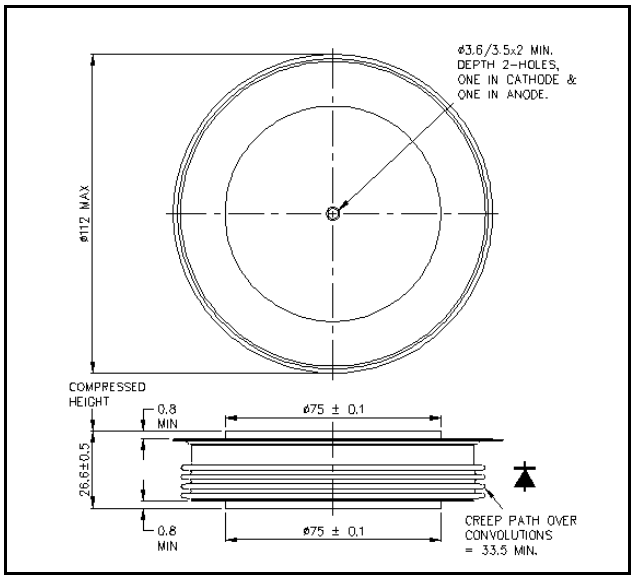

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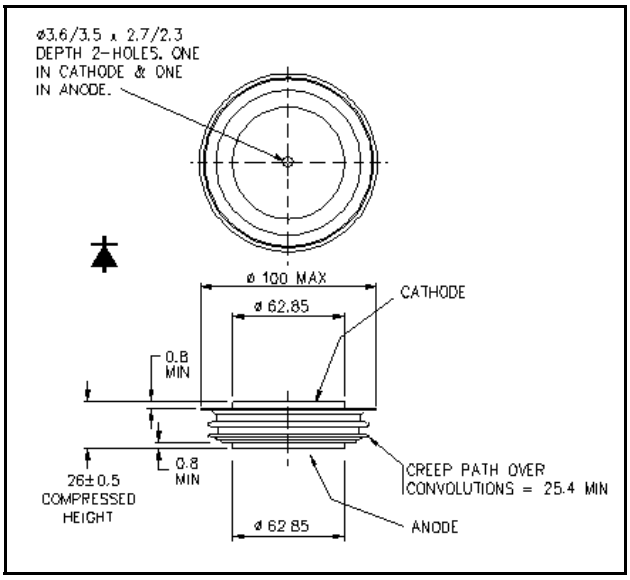

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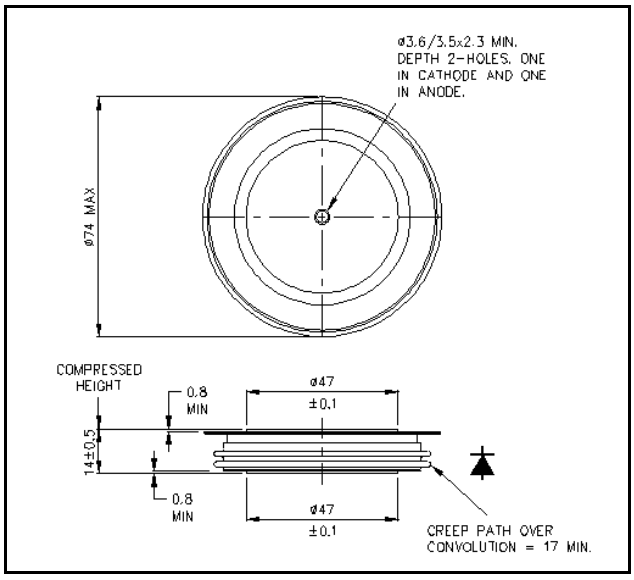

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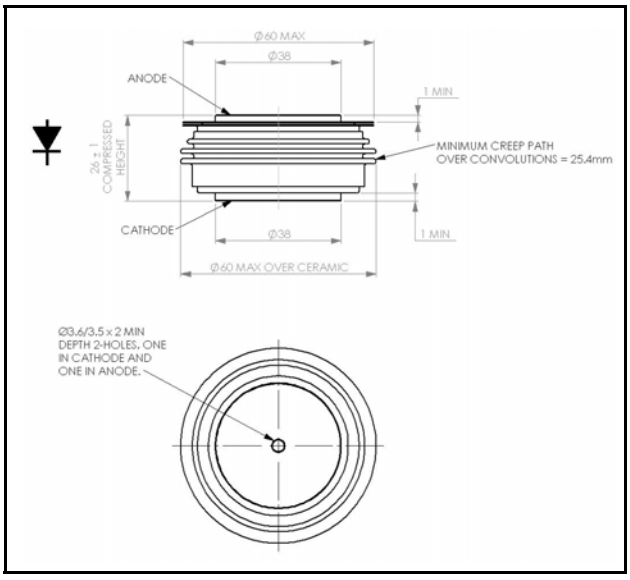

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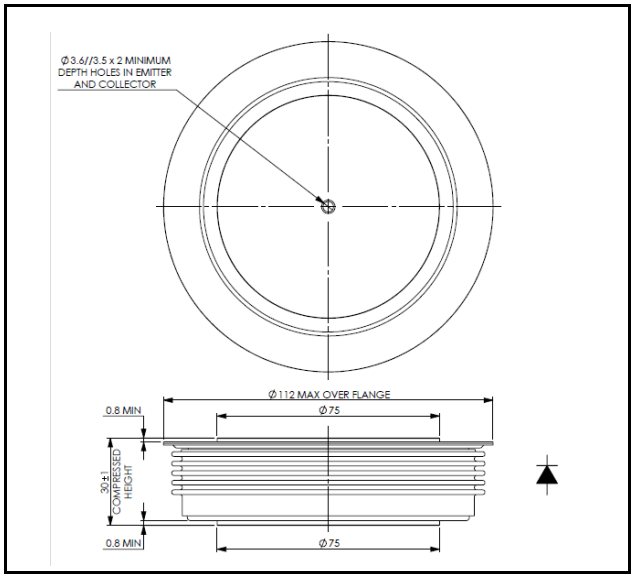

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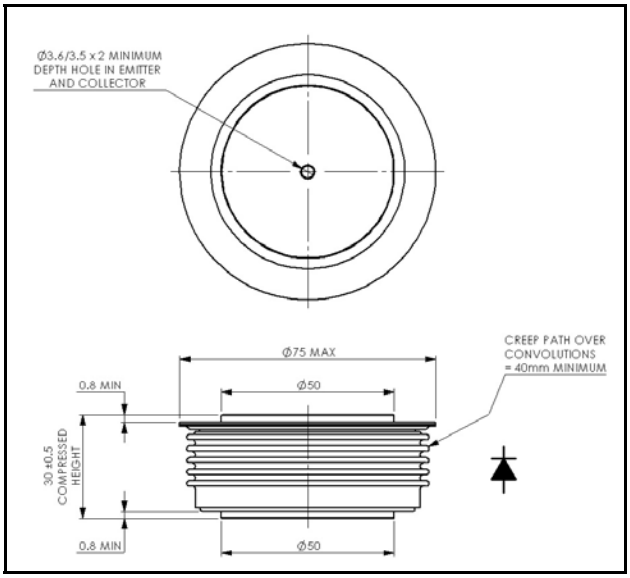

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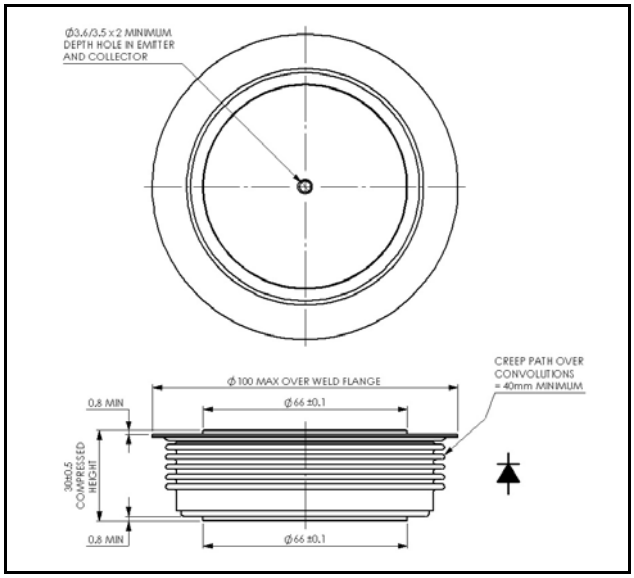

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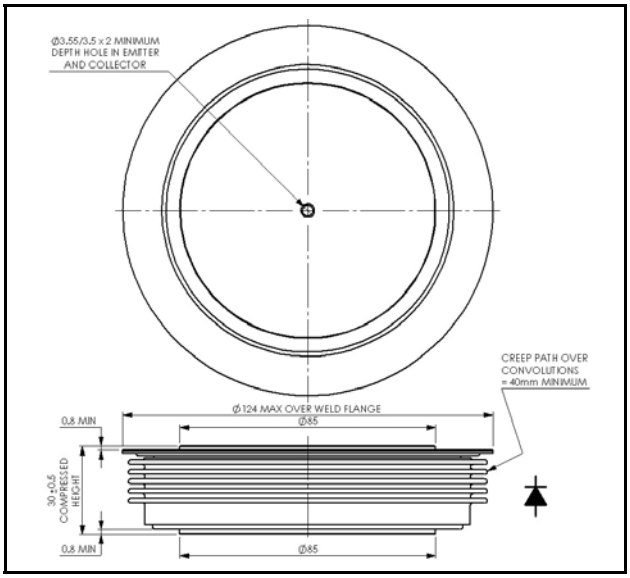

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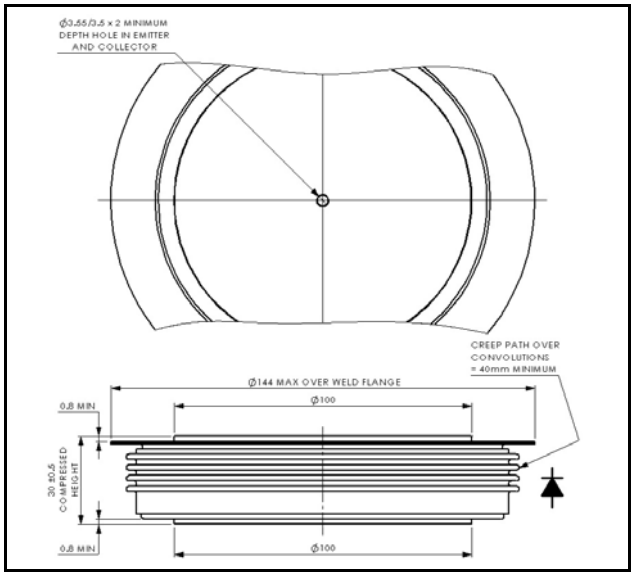

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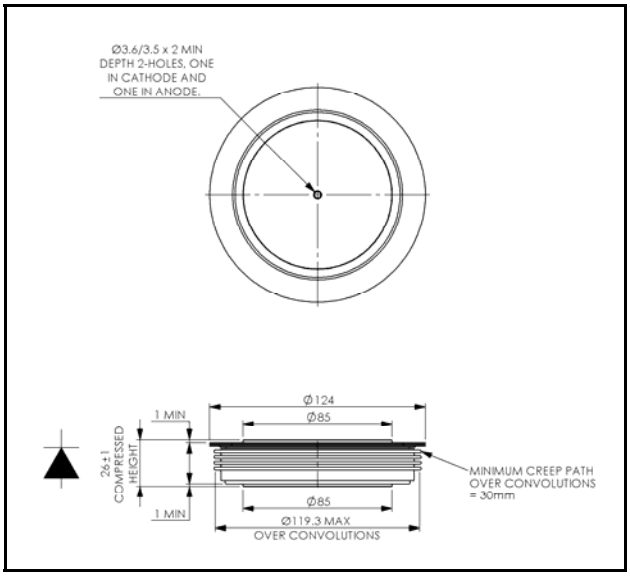


IGBT gate drives

The C044BG400 IGBT Gate Driver is a low power consumption driver with on board VCE desaturation detection for high reliability application. The driver features a fibre-optic communication interface for drive, status and switching feedback signals. A fully supervised DC/DC converter with EMI filtering, low coupling capacitance and high partial discharge level is integrated into the board. The high voltage collector sense and gate interface are implemented on a separate card to allow close coupling to the IGBT. A range of pre-configured boards is available to complement IXYS UK's range of press-pack IGBTs – other applications on request.

Part Number	IGBT Type
C0044BG400SBX	T0115QB45G
C0044BG400SBL	T0240NB45E
C0044BG400SBQ	T0340VB45G
C0044BG400SBA	T0360ND25A
C0044BG400SBB	T0500ND25E
C0044BG400SBE	T0510VB45E
C0044BG400SBF	T0570VD25G
C0044BG400SBM	T0600TB45A
C0044BG400SBG	T0800EB45G
C0044BG400SBN	T0800TB45E
C0044BG400SBH	T0850VD25E
C0044BG400SBP	T0900EB45A
C0044BG400SBR	T1200EB45E
C0044BG400SBC	T1200TD25A
C0044BG400SBD	T1500TD25E
C0044BG400SBJ	T1600GB45G
C0044BG400SBS	T1800GB45A
C0044BG400SBV	T2250AD25E
C0044BG400SBT	T2400GB45E
C0044BG400SBW	T2960BB45E

Features and benefits

- High reliability topology
- Designed for ultra-low power consumption
- Built in DC/DC converter with soft start
- Integrated input filter for low EMI
- Separate low impedance path for parasitic EMI currents
- PD-voltage levels available up to 11kV on request
- Low impedance from gate to emitter at start-up and power fail
- Monitoring of all secondary supply voltages
- Monitoring of IGBT switching status (V_{CE} de-sat condition)
- Soft switch-off at V_{CE} de-sat fault condition
- Fibre-optic links for switching commands and status control
- Low light protection for input signal
- Short-pulse suppression, configurable
- Balanced propagation delay time
- Gate current up to 44A
- Optional gate speed-up capacitors

6.5kV gate drives in development

Please contact IXYS UK for more information

Press-pack IGBT 3-level inverters

A range of 3-level topology assemblies using press-pack IGBT technology have been developed to serve applications at the highest end of the power market.

3 separate designs are available, a totally independent 3.3kV system, a 6.6kV system and a 10kV system. The 6.6kV and 10kV systems are based on the combination of 2 IGBT stacks and 1 diode stack. Each system benefits from direct water cooling to provide highly effective heat dissipation away from the devices and pre-loaded disc spring clamping to evenly distribute the applied force across the entire surface area of the device.

These assemblies are custom manufactured and can be adapted to suit any mechanical or electrical configuration

3.3kV system - Complete phase leg

Power Rating (MW)	8
Nominal Line Current (Amps)	1600
No. of IGBT's	4
No. of Diodes	6
No. of Coolers	13
Required IGBT Type	T2400GB45E
Required Diode Type	E2400TC45C

6.6kV system

Phase leg requirement – 2 × IGBT stack & 1 × diode stack

Power Rating (MW)	12
Nominal Line Current (Amps)	1000
No. of IGBT's	4
No. of Diodes	4
No. of Coolers	5
Required IGBT Type	T1600GB45G
Required Diode Type	E2400TC45C

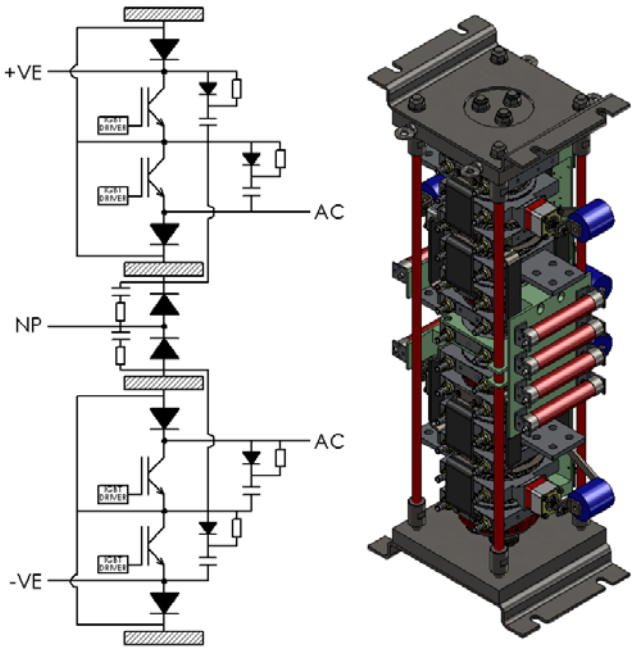
10kV system

Phase leg requirement – 2 × IGBT stack & 1 × diode stack

Power Rating (MW)	16
Nominal Line Current (Amps)	1000
No. of IGBT's	6
No. of Diodes	6
No. of Coolers	7
Required IGBT Type	T1600GB45G
Required Diode Type	E2400TC45C

Features and benefits

- Direct water cooled for effective heat dissipation
- Pre-loaded clamping to evenly distribute the applied force
- Isolated clamping rod system
- Integrated snubber circuit
- Single unit mechanical configuration: Short inductance paths for relative size of unit to avoid high stray inductance
- Advanced optically fired gate trigger circuits



3.3kV system - Complete phase leg

New—DC link capacitors

The E50 PK16 capacitor can be universally used for the assembly of low inductance DC buffer circuits and DC filters; with its high energy density it can replace banks of series-connected electrolytic capacitors as well as large film capacitors in rectangular cases.

The capacitance in a DC buffer circuit must be sufficiently sized to both handle and smoothen the occurring ripple currents. The traditional use of series/parallel-connected electrolytic capacitors offered large capacitance at seeming low cost, however the low cost per microfarad is countered by very low current strength, the high sensitivity to voltage and current surges, as well as high risk of field failures resulting in high maintenance cost. Advanced know-how in special capacitor film coating and many years of practical experience in designing and manufacturing capacitors have allowed the design of the E50 PK16 range with high current density. With fivefold the current strength of conventional electrolytic capacitors, it is not necessary to reproduce the same capacitance in film technology. Instead, the user now gets a superior technical solution within the same – or even less – space.

Thanks to its compact cylindrical aluminium (NT) or plastic (N4) can design these capacitors are ideal for both electrical and mechanical requirements of high-speed IGBT converters. Its robust terminals and the robust fixing stud allow for very simple and reliable mounting that unites lowest inductance and highest current strength. The particularly large creepage and clearance distances make this design suitable for a wide range of operating voltages. As a result, existing standard converter concepts can easily be adapted to new applications without having to change the principal construction and to re-approve the entire system. The capacitors listed below have been designed specifically to match the requirements of IXYS UK's press-pack IGBT range in most inverter/converter applications.

Features and benefits

- Superior voltage and current strength
- Dramatic increase in operational life
- Drastic reduction of failures
- Minimisation of power dissipation losses
- Substantial reduction of self-inductance and series resistance
- More exact manufacturing tolerances
- Elimination of sharing resistors

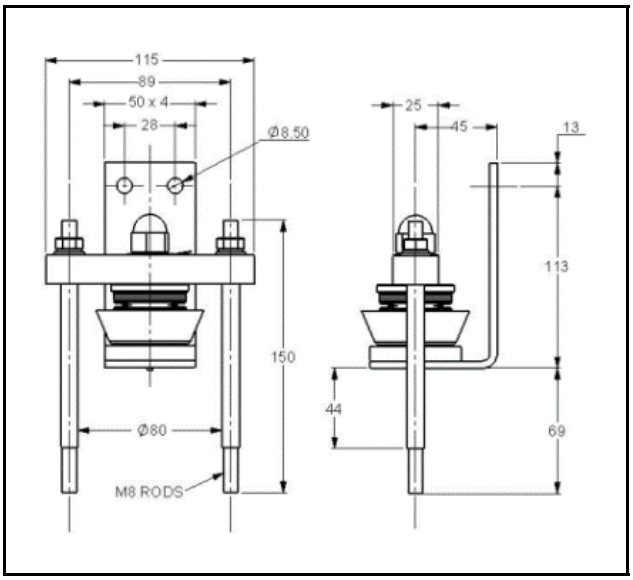
New—DC link capacitors

Part No.	V_{DC} V	Capacitance µF	Series resistance R_S Ω	Maximum current I_{MAX} A	Inductance L_e nH	Diameter mm	Length mm	Design
E50.N15-254N5W	1300	250	4.20	60	40	85	155	N5
E50.N15-304NTW	1300	300	3.70	60	40	85	155	NT
E50.R16-554NTW	1300	545	2.30	80	40	116	165	NT
E50.N25-564NTW	1300	560	2.30	60	60	85	252	NT
E50.R23-824NTW	1300	820	1.70	100	50	116	230	NT
E50.R29-115NTW	1300	1090	1.40	100	60	116	295	NT
E50.R34-145NTW	1300	1370	1.10	100	70	116	345	NT
E50.S29-165NTW	1300	1560	1.10	120	70	136	295	NT
E50.S34-205NTW	1300	1950	0.69	120	70	136	345	NT
E50.N15-603NTW	2800	60	1.3	50	40	85	155	NT
E50.N23-104NTW	2800	100	1.70	60	60	85	232	NT
E50.R16-114NTW	2800	110	0.66	80	40	116	165	NT
E50.R23-174NTW	2800	165	0.63	100	50	116	230	NT
E50.R29-224NTW	2800	220	0.62	100	60	116	295	NT
E50.R34-284NTW	2800	275	0.85	100	70	116	345	NT
E50.S29-314NTW	2800	310	0.61	120	70	136	295	NT
E50.S34-394NTW	2800	390	0.76	120	70	136	345	NT
E50.N15-293NTW	3600	29	1.40	50	40	85	155	NT
E50.N23-503NTW	3600	50	1.90	60	60	85	232	NT
E50.R16-573NTW	3600	57	0.67	80	40	116	165	NT
E50.R23-863NTW	3600	85.5	0.65	100	50	116	230	NT
E50.R29-114NTW	3600	114	0.68	100	60	116	295	NT
E50.R34-144NTW	3600	142	0.88	100	70	116	345	NT
E50.S29-164NTW	3600	160	0.63	120	70	136	295	NT

Recommended clamps for capsule IGBT's

Device type	Device housing code	Electrode diameter (mm)	Max capsule height (mm)	Recommended clamps
Press-pack IGBT	NB/ND	47	28	XK1000D/SA074M
	VB/VC/VD	63	26	XK3060D/SA140ML
	TB/TD	75	26	XK2000D/SA114M
	AB/AD	96	26	XK3060D/SA140ML
	EB	85	26.5	XK3060D/SA140ML
	GB	125	26.5	XK6120D/SA180ML
	HF	66	30	*Consult Factory*
	DF	110	30	*Consult Factory*
	AF	122	30	XK3060D/SA140ML
	BF	132	30	XK6120D/SA180ML
	BB	132	26	Consult Factory
	QB	38	26	Consult Factory

XK1000DA074M



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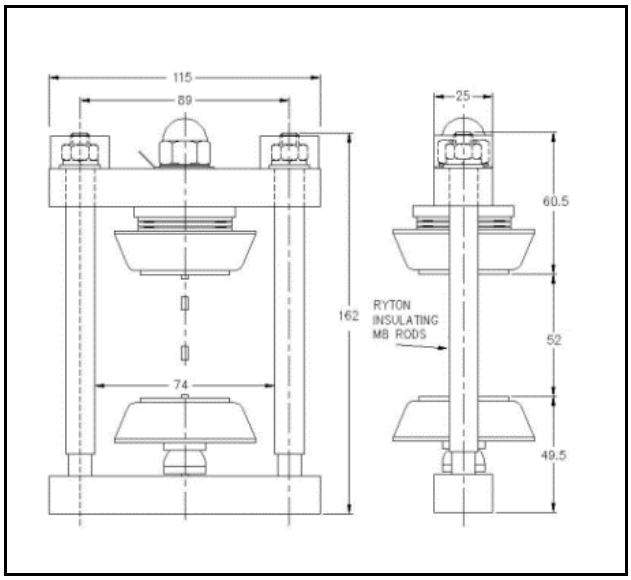

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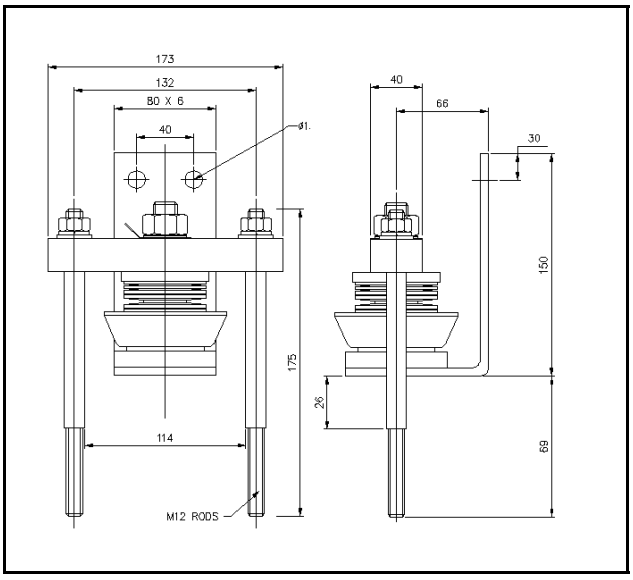

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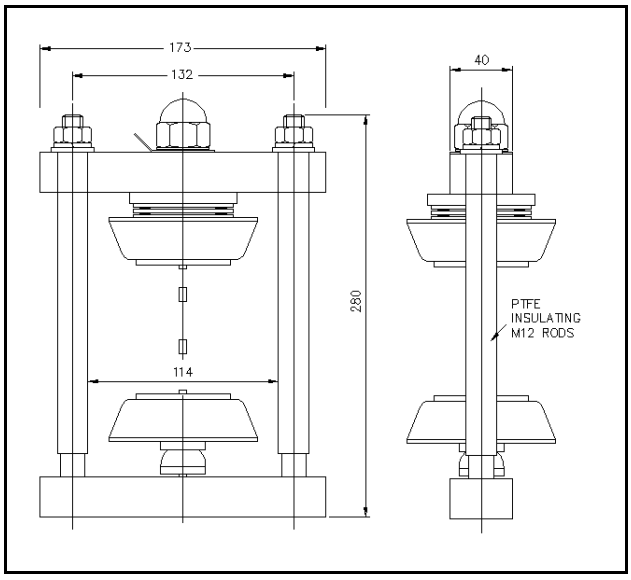

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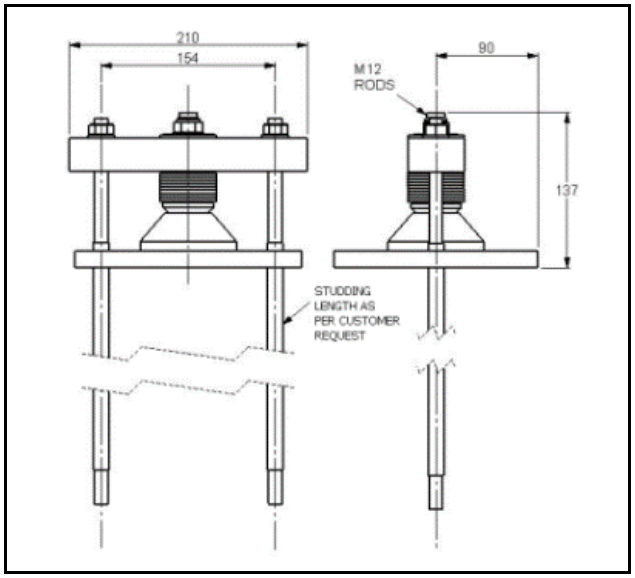

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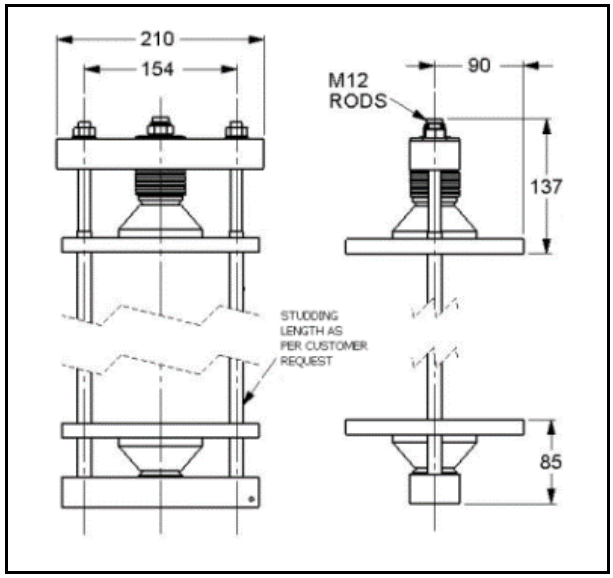

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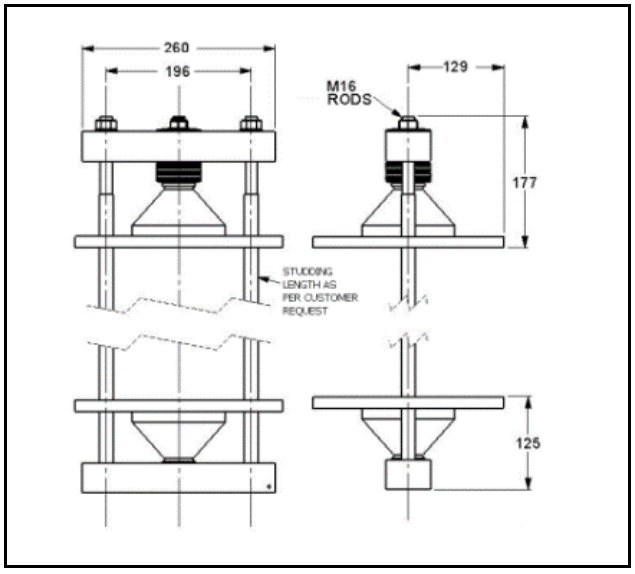

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