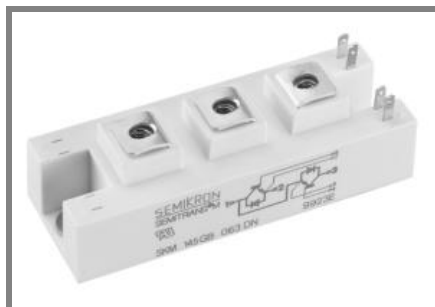


SKM 100GB125DN



SEMITRANS® 2N

Ultra Fast IGBT Module

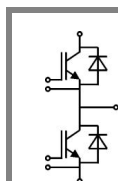
SKM 100GB125DN

Features

- N channel, homogeneous Si
- Low inductance case
- Short tail current with low temperature dependence
- High short circuit capability, self limiting to $6 \times I_{Cnom}$
- Fast & soft inverse CAL diodes
- Isolated copper baseplate using DCB Direct Copper Bonding Technology
- Large clearance (10 mm) and creepage distances (20 mm)

Typical Applications

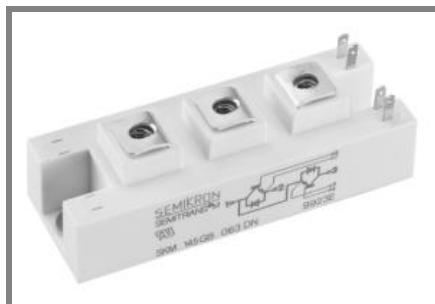
- Switched mode power supplies at $f_{sw} > 20$ kHz
- Resonant inverters up to 100 kHz
- Inductive heating
- Electronic welders at $f_{sw} > 20$ kHz



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Absolute Maximum Ratings		$T_c = 25^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	Values			Units
IGBT					
V_{CES}	$T_j = 25^\circ\text{C}$	1200			V
I_C	$T_j = 150^\circ\text{C}$	$T_{case} = 25^\circ\text{C}$	100		A
		$T_{case} = 85^\circ\text{C}$	80		A
I_{CRM}	$I_{CRM} = 2 \times I_{Cnom}$	150			A
V_{GES}		± 20			V
t_{psc}	$V_{CC} = 600\text{ V}; V_{GE} \leq 20\text{ V}; T_j = 125^\circ\text{C}$ $V_{CES} < 1200\text{ V}$	10			μs
Inverse Diode					
I_F	$T_j = 150^\circ\text{C}$	$T_{case} = 25^\circ\text{C}$	95		A
		$T_{case} = 80^\circ\text{C}$	65		A
I_{FRM}	$I_{FRM} = 2 \times I_{Fnom}$	150			A
I_{FSM}	$t_p = 10\text{ ms}; \sin.$	$T_j = 150^\circ\text{C}$	720		A
Module					
$I_{t(RMS)}$		200			A
T_{vj}		- 40 ... + 150			$^\circ\text{C}$
T_{stg}		125			$^\circ\text{C}$
V_{isol}	AC, 1 min.	4000			V

Characteristics		$T_c = 25^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 2\text{ mA}$	4,5	5,5	6,5	V
I_{CES}	$V_{GE} = 0\text{ V}, V_{CE} = V_{CES}$	$T_j = 25^\circ\text{C}$	0,15		mA
		$T_j = 125^\circ\text{C}$	0,45		mA
V_{CE0}		$T_j = 25^\circ\text{C}$			V
		$T_j = 125^\circ\text{C}$			V
r_{CE}	$V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}$			m Ω
		$T_j = 125^\circ\text{C}$			m Ω
$V_{CE(sat)}$	$I_{Cnom} = 75\text{ A}, V_{GE} = 15\text{ V}$	$T_j = ^\circ\text{C}_{chiplev.}$	3,3	3,85	V
C_{ies}	$V_{CE} = 25, V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	5		nF
C_{oes}			0,72		nF
C_{res}			0,38		nF
Q_G	$V_{GE} = 0 - +20\text{V}$		650		nC
R_{Gint}	$T_j = ^\circ\text{C}$		5		Ω
$t_{d(on)}$	$R_{Gon} = 8\ \Omega$	$V_{CC} = 600\text{V}$ $I_{Cnom} = 75\text{A}$	80		ns
t_r			40		ns
E_{on}	$R_{Goff} = 8\ \Omega$	$T_j = 125^\circ\text{C}$ $V_{GE} = \pm 15\text{V}$	9		mJ
$t_{d(off)}$			360		ns
t_f			20		ns
E_{off}			3,5		mJ
$R_{th(j-c)}$	per IGBT		0,18		K/W



SEMITRANS® 2N

Ultra Fast IGBT Module

SKM 100GB125DN

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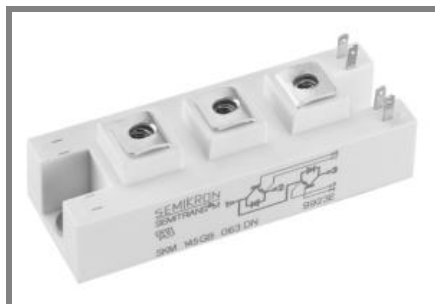
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Characteristics				min.	typ.	max.	Units
Symbol	Conditions						
Inverse Diode							
$V_F = V_{EC}$	$I_{Fnom} = 75$ A; $V_{GE} = 0$ V	$T_j = 25$ °C _{chiplev.}		2		2,5	V
		$T_j = 125$ °C _{chiplev.}		1,8			V
V_{F0}		$T_j =$ °C			1,1	1,2	V
r_F		$T_j =$ °C			12	17,3	mΩ
I_{RRM}	$I_{Fnom} = 75$ A	$T_j = 125$ °C			50		A
Q_{rr}	$di/dt = 800$ A/μs				11,5		μC
E_{rr}	$V_{GE} = 0$ V; $V_{CC} = 600$ V						mJ
$R_{th(j-c)D}$	per diode					0,5	K/W
Module							
L_{CE}					20	25	nH
R_{CC+EE}	res., terminal-chip	$T_{case} = 25$ °C			0,75		mΩ
		$T_{case} = 125$ °C			1		mΩ
$R_{th(c-s)}$	per module					0,05	K/W
M_s	to heat sink M6				3	5	Nm
M_t	to terminals M5				2,5	5	Nm
w						160	g

This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee expressed or implied is made regarding delivery, performance or suitability.

SKM 100GB125DN



SEMITRANS® 2N

Ultra Fast IGBT Module

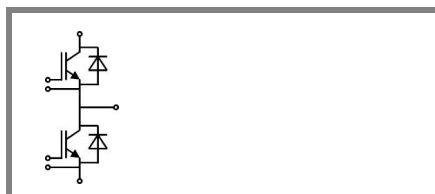
SKM 100GB125DN

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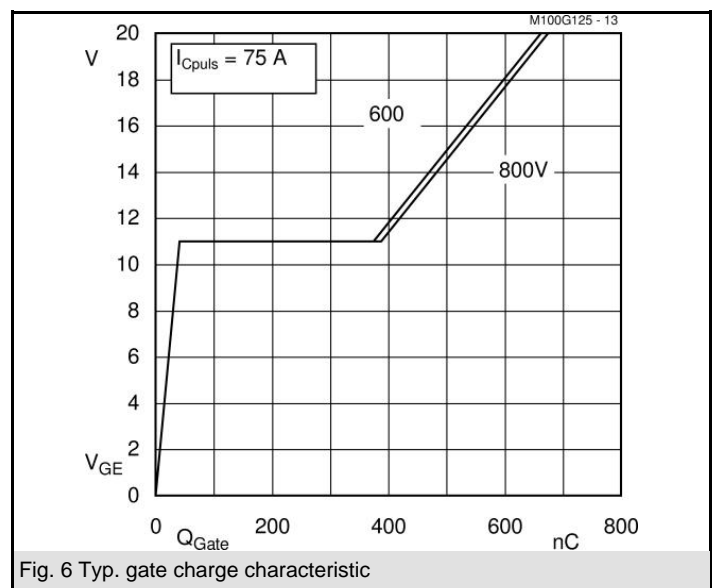
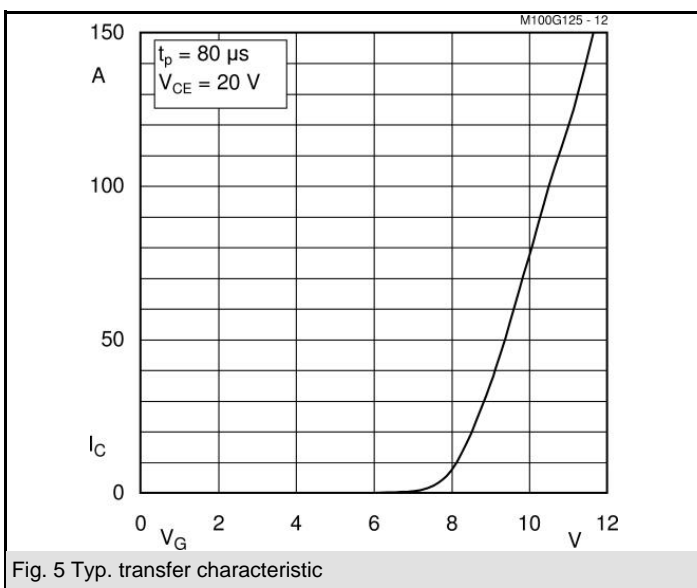
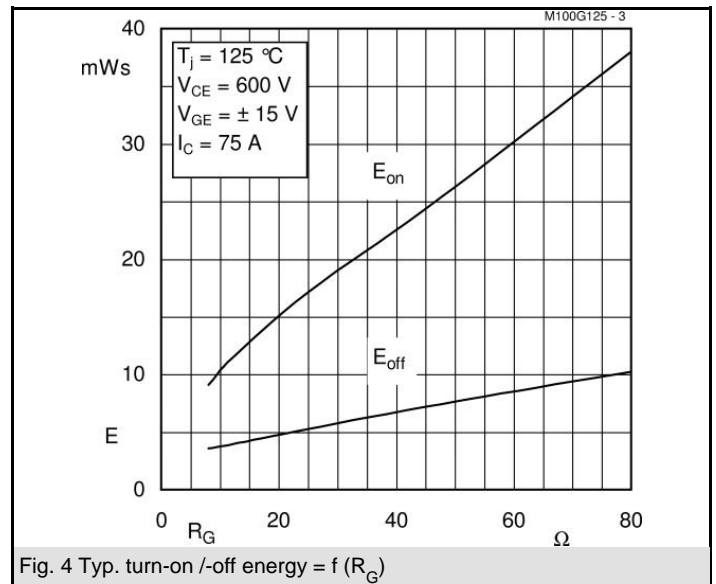
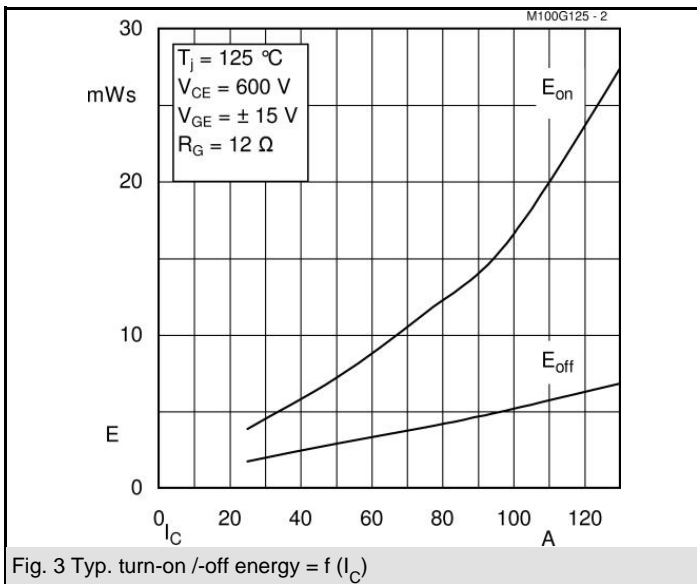
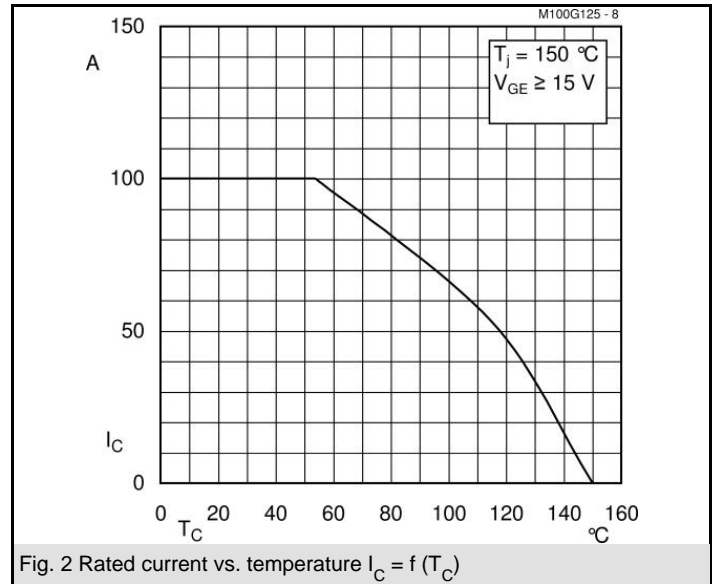
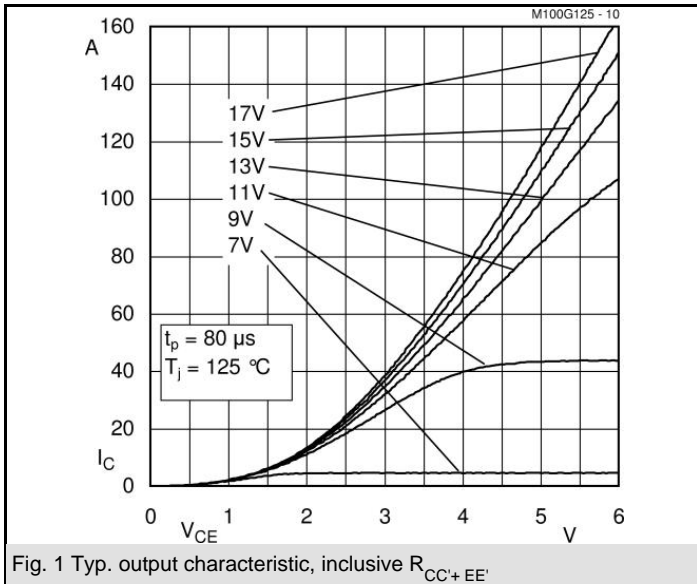
Typical Applications

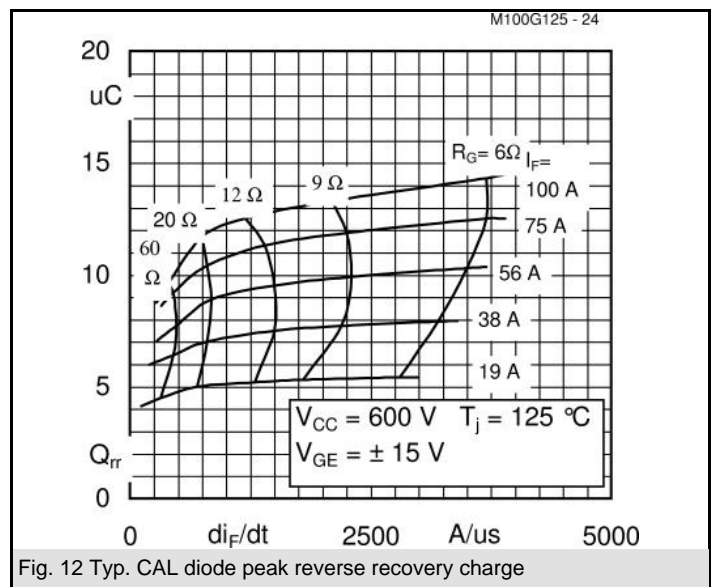
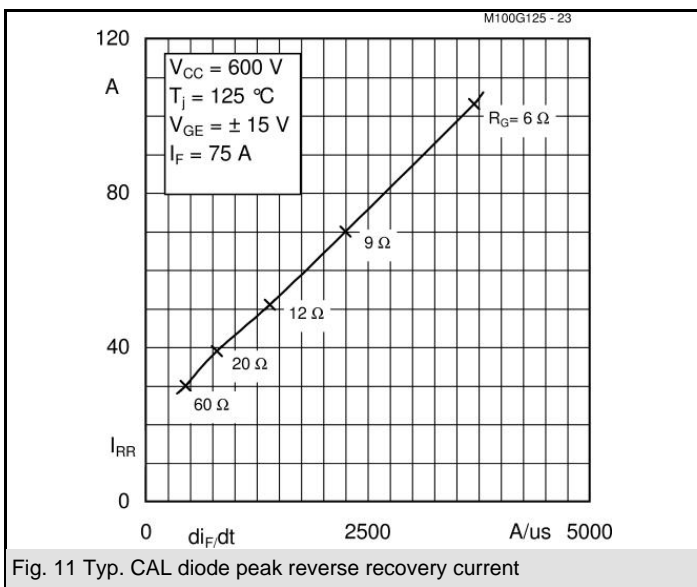
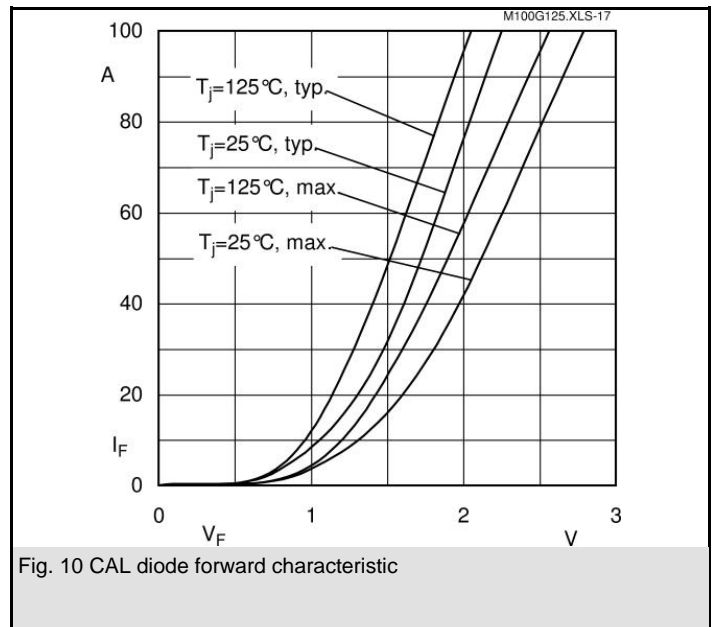
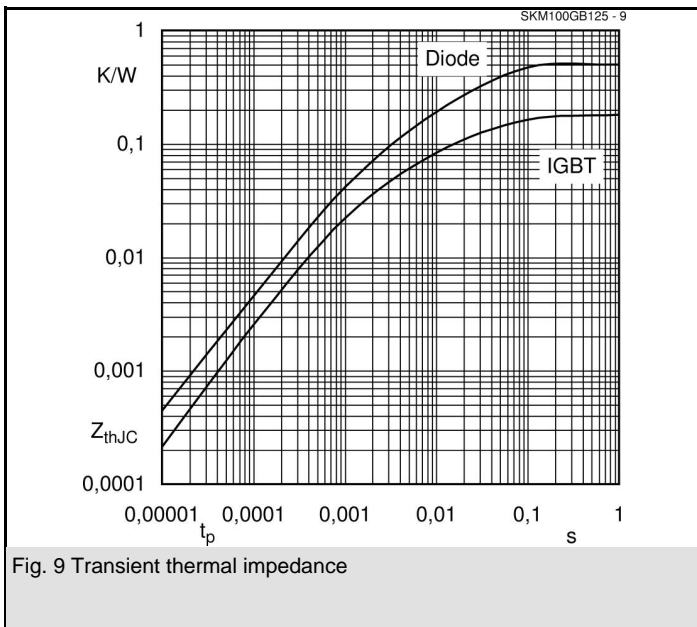
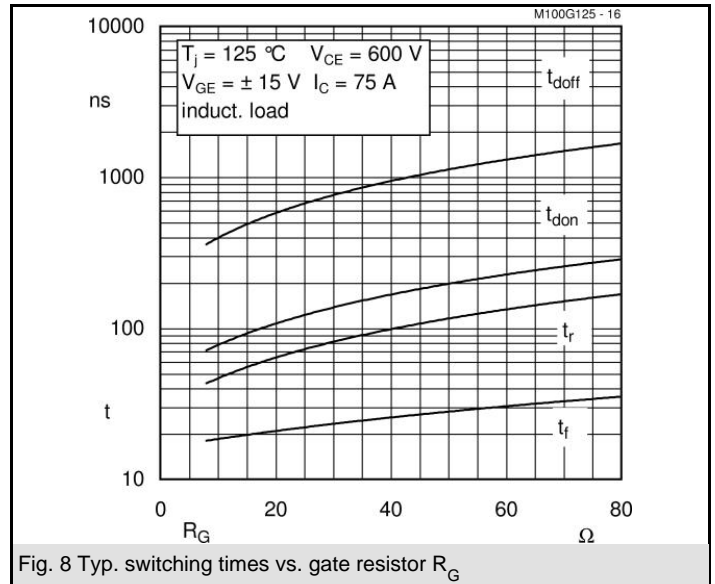
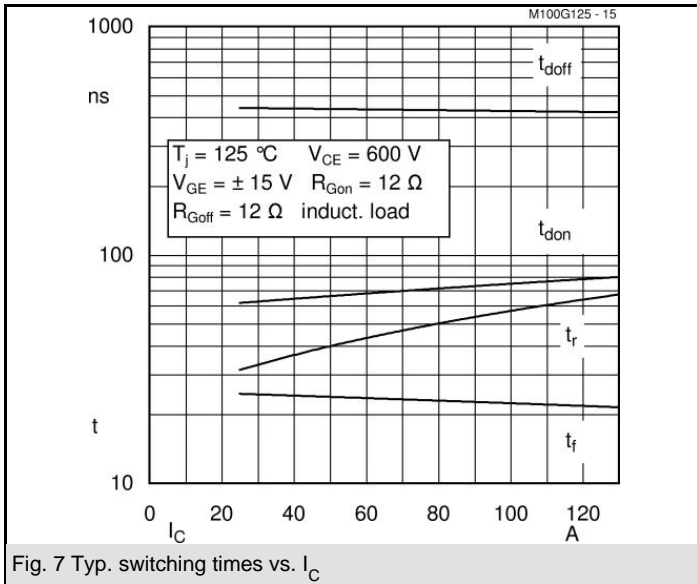
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Z_{th}		Conditions	Values	Units
$Z_{th(j-c)I}$				
$R_{\theta j-c}$	$i = 1$		95	mk/W
$R_{\theta j-c}$	$i = 2$		65	mk/W
$R_{\theta j-c}$	$i = 3$		17,5	mk/W
$R_{\theta j-c}$	$i = 4$		2,5	mk/W
$\tau_{th(j-c)}$	$i = 1$		0,0327	s
$\tau_{th(j-c)}$	$i = 2$		0,008	s
$\tau_{th(j-c)}$	$i = 3$		0,0017	s
$\tau_{th(j-c)}$	$i = 4$		0,008	s
$Z_{th(j-c)D}$				
$R_{\theta j-c}$	$i = 1$		300	mk/W
$R_{\theta j-c}$	$i = 2$		160	mk/W
$R_{\theta j-c}$	$i = 3$		36	mk/W
$R_{\theta j-c}$	$i = 4$		4	mk/W
$\tau_{th(j-c)}$	$i = 1$		0,054	s
$\tau_{th(j-c)}$	$i = 2$		0,001	s
$\tau_{th(j-c)}$	$i = 3$		0,0015	s
$\tau_{th(j-c)}$	$i = 4$		0,1	s

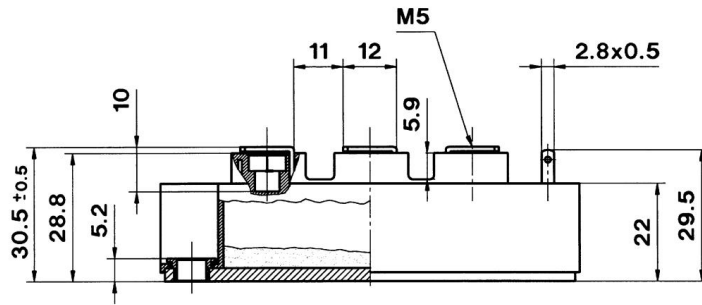




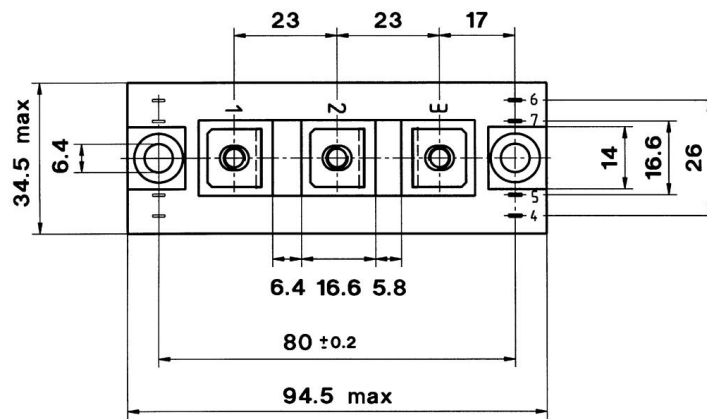
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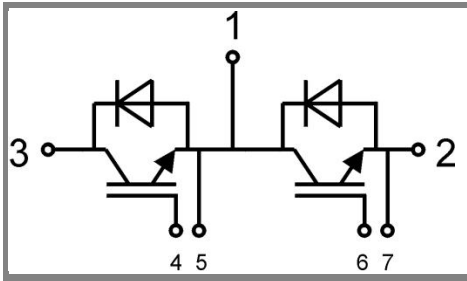
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Case D 93