



SEMITRANS® 2

Trench IGBT Modules

SKM 195GB126D

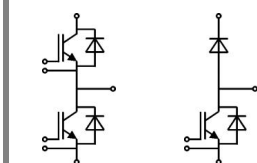
SKM 195GAL126D

Features

- Trench = Trenchgate technology
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability, self limiting to $6 \times I_C$

Typical Applications*

- AC inverter drives
- UPS
- Electronic welders



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Absolute Maximum Ratings		T _{case} = 25°C, unless otherwise specified		
Symbol	Conditions		Values	Units
IGBT				
V _{CES}	T _j = 25 °C		1200	V
I _C	T _j = 150 °C	T _c = 25 °C	220	A
		T _c = 80 °C	160	A
I _{CRM}	I _{CRM} =2xI _{Cnom}		300	A
V _{GES}			± 20	V
t _{psc}	V _{CC} = 600 V; V _{GE} ≤ 20 V; T _j = 125 °C V _{CES} < 1200 V		10	μs
Inverse Diode				
I _F	T _j = 150 °C	T _c = 25 °C	170	A
		T _c = 80 °C	115	A
I _{FRM}	I _{FRM} =2xI _{Fnom}		200	A
I _{FSM}	t _p = 10 ms; sin. T _j = 150 °C		900	A
Freewheeling Diode				
I _F	T _j = 150 °C	T _c = 25 °C	170	A
		T _c = 80 °C	115	A
I _{FRM}	I _{FRM} =2xI _{Fnom}		200	A
I _{FSM}	t _p = 10 ms; sin. T _j = 150 °C		900	A
Module				
I _{t(RMS)}			200	A
T _{vj}			-40 ... +150	°C
T _{stg}			-40 ... +125	°C
V _{isol}	AC, 1 min.		4000	V

Characteristics			T _{case} = 25°C, unless otherwise specified			
Symbol	Conditions		min.	typ.	max.	Units
IGBT						
V _{GE(th)}	V _{GE} = V _{CE} , I _C = 6 mA		5	5,8	6,5	V
I _{CES}	V _{GE} = 0 V, V _{CE} = V _{CES}	T _j = 25 °C		0,1	0,3	mA
V _{CE0}		T _j = 25 °C		1	1,2	V
		T _j = 125 °C		0,9	1,1	V
r _{CE}	V _{GE} = 0 V	T _j = 25°C		4,7	6,3	mΩ
		T _j = 125°C		7,3	9	mΩ
V _{CE(sat)}	I _{Cnom} = 150 A, V _{GE} = 15 V	T _j = 25°C _{chiplev.}		1,7	2,15	V
		T _j = 125°C _{chiplev.}		2	2,45	V
C _{ies}	V _{CE} = 25, V _{GE} = 0 V	f = 1 MHz		10,5		nF
C _{oes}				0,9		nF
C _{res}				0,8		nF
Q _G	V _{GE} = -8V ...+20V			1380		nC
R _{Gint}	T _j = °C			5		Ω
t _{d(on)}	R _{Gon} = 2 Ω	V _{CC} = 600V I _C = 150A T _j = 125 °C V _{GE} = ± 15V		280		ns
t _r				50		ns
E _{on}			16		mJ	
t _{d(off)}	R _{Goff} = 2 Ω			560		ns
t _f				70		ns
E _{off}			24,5		mJ	
R _{th(j-c)}	per IGBT				0,16	K/W



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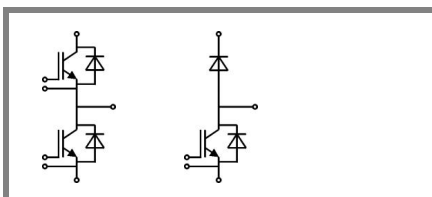
Typical Applications*

- AC inverter drives
- UPS
- Electronic welders

Characteristics					
Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 100 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$	2	2,5	V
		$T_j = 125 \text{ }^\circ\text{C}_{chiplev.}$	1,8		V
V_{F0}		$T_j = 25 \text{ }^\circ\text{C}$	1,1	1,2	V
		$T_j = 125 \text{ }^\circ\text{C}$			V
r_F		$T_j = 25 \text{ }^\circ\text{C}$	9	13	mΩ
		$T_j = 125 \text{ }^\circ\text{C}$			mΩ
I_{RRM}	$I_F = 150 \text{ A}$	$T_j = 125 \text{ }^\circ\text{C}$	86		A
Q_{rr}	$di/dt = 2200 \text{ A}/\mu\text{s}$		17		μC
E_{rr}	$V_{GE} = -15 \text{ V}; V_{CC} = 600 \text{ V}$		5,8		mJ
$R_{th(j-c)D}$	per diode			0,32	K/W
Freewheeling diode					
$V_F = V_{EC}$	$I_{Fnom} = 100 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$	2	2,5	V
		$T_j = 125 \text{ }^\circ\text{C}_{chiplev.}$	1,8		V
V_{F0}		$T_j = 25 \text{ }^\circ\text{C}$	1,1	1,2	V
		$T_j = 125 \text{ }^\circ\text{C}$			V
r_F		$T_j = 25 \text{ }^\circ\text{C}$	9	13	V
		$T_j = 125 \text{ }^\circ\text{C}$			V
I_{RRM}	$I_F = 150 \text{ A}$	$T_j = 125 \text{ }^\circ\text{C}$	86		A
Q_{rr}	$di/dt = 2200 \text{ A}/\mu\text{s}$		17		μC
E_{rr}	$V_{GE} = -15 \text{ V}; V_{CC} = 600 \text{ V}$		5,8		mJ
$R_{th(j-c)FD}$	per diode			0,32	K/W
Module					
L_{CE}				30	nH
$R_{CC'+EE'}$	res., terminal-chip	$T_{case} = 25 \text{ }^\circ\text{C}$	0,75		mΩ
		$T_{case} = 125 \text{ }^\circ\text{C}$	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.

* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and written approval by SEMIKRON. We therefore strongly recommend prior consultation of our personal.



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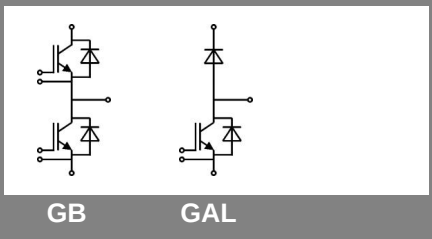
Features

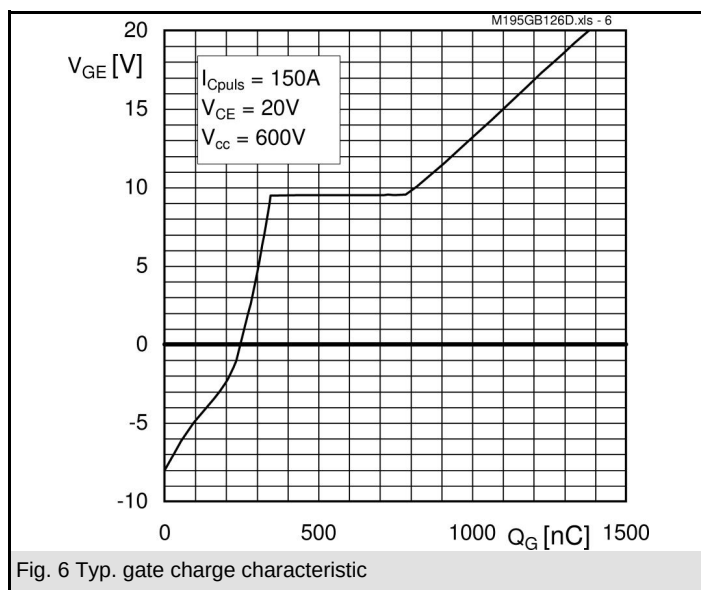
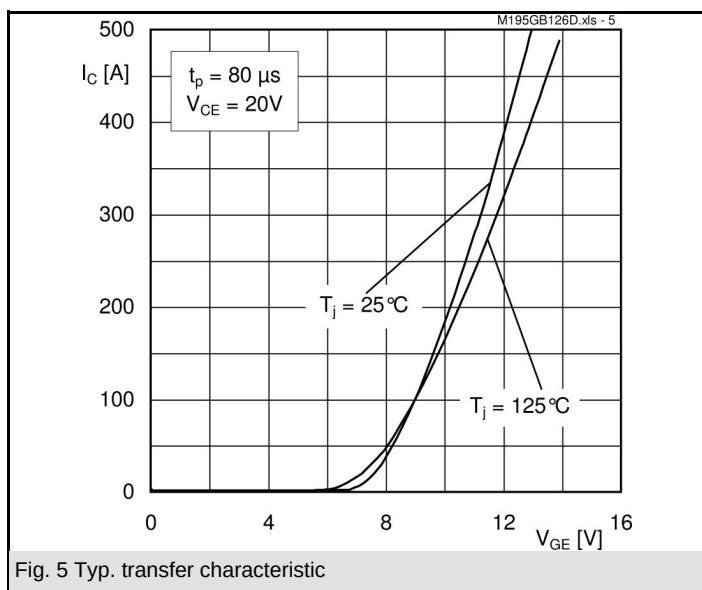
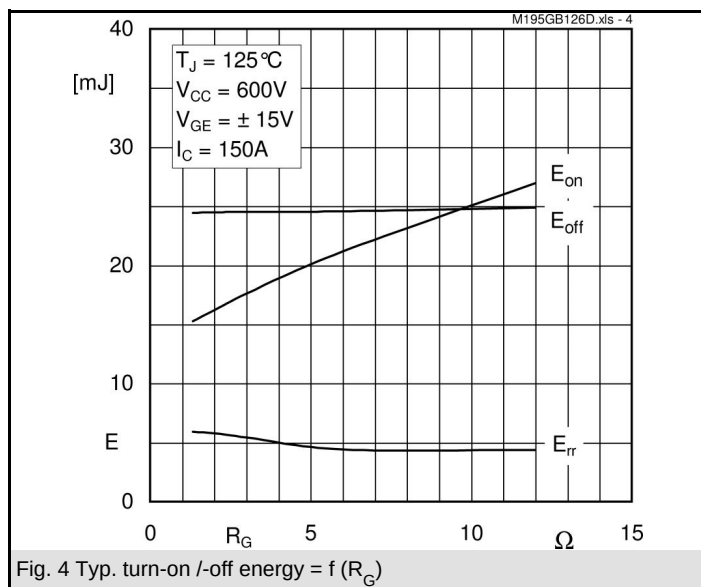
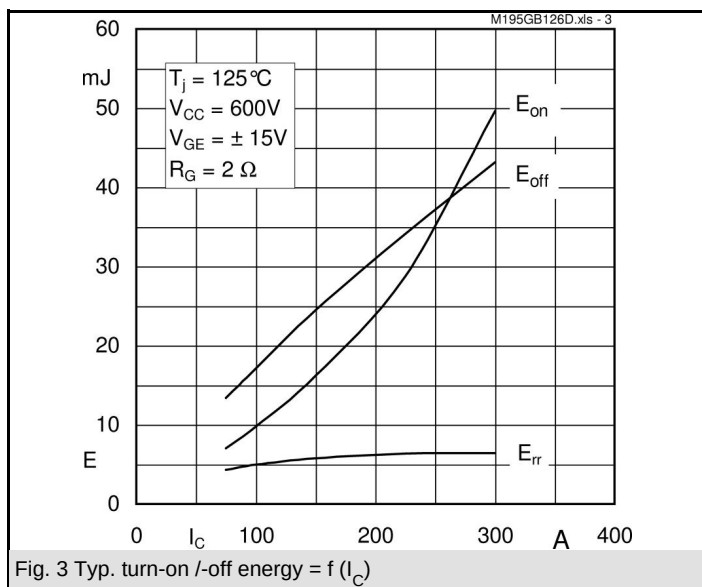
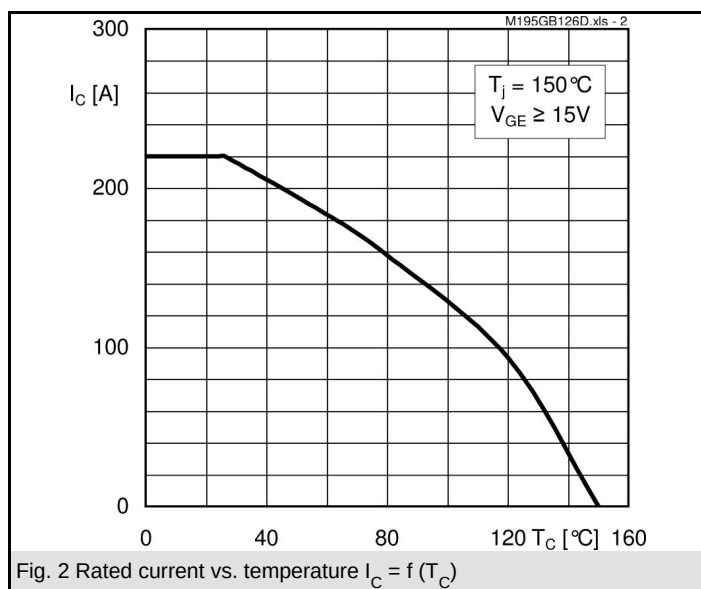
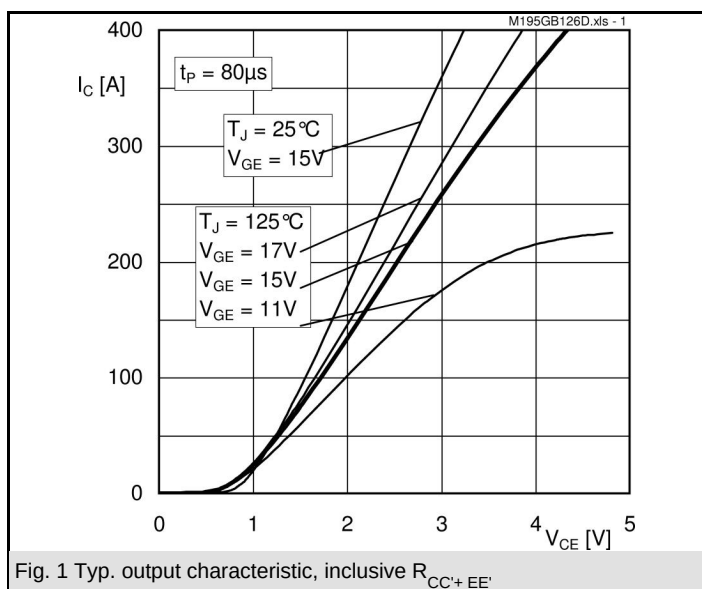
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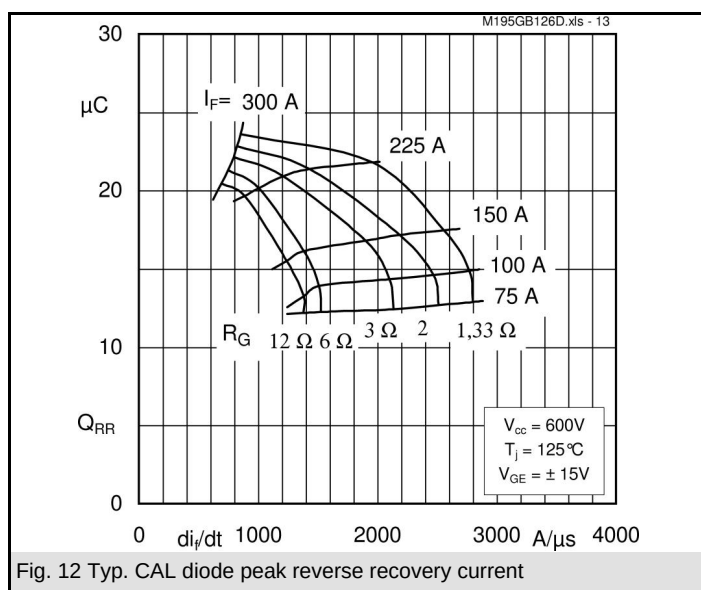
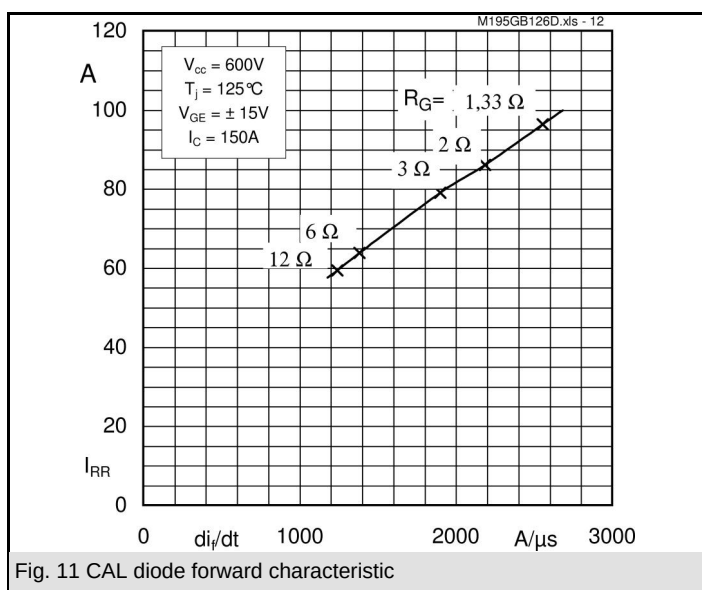
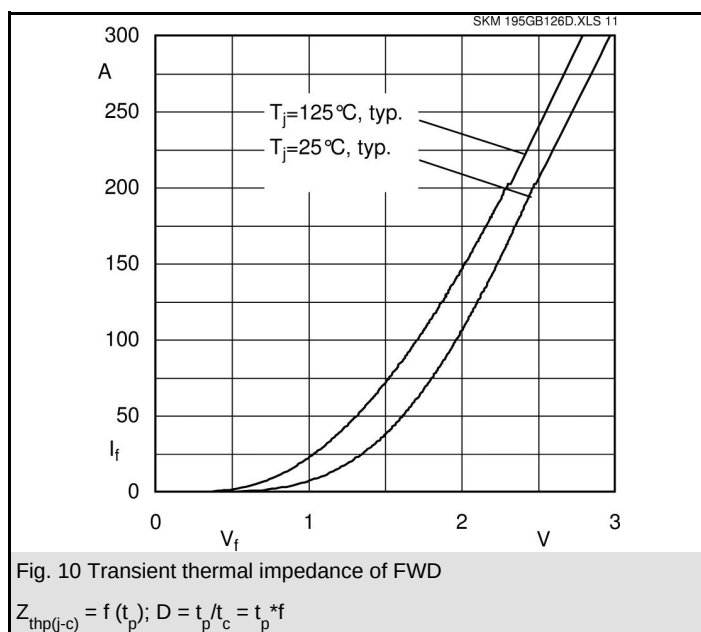
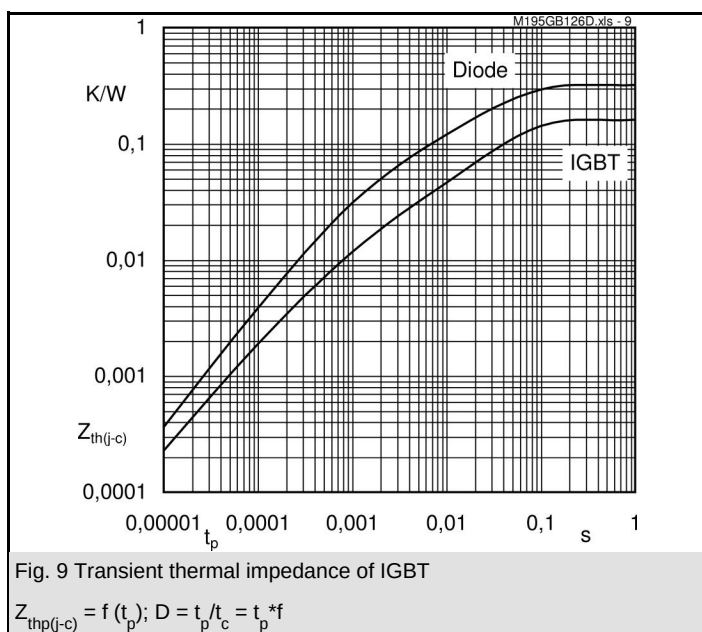
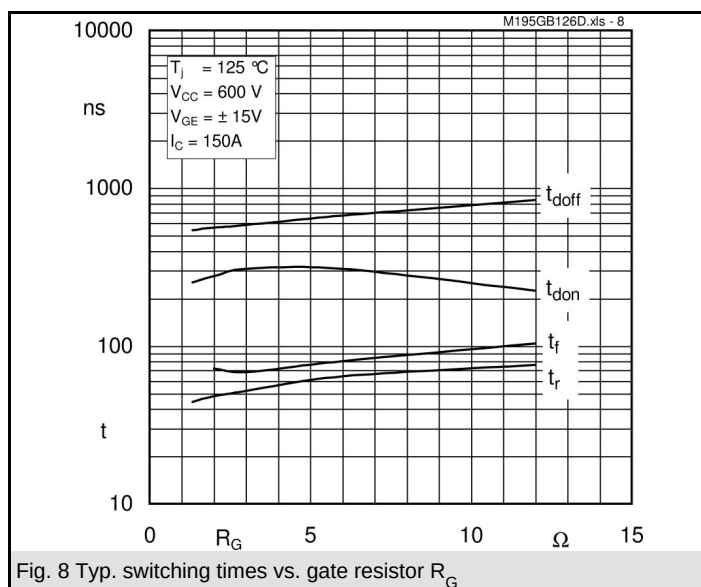
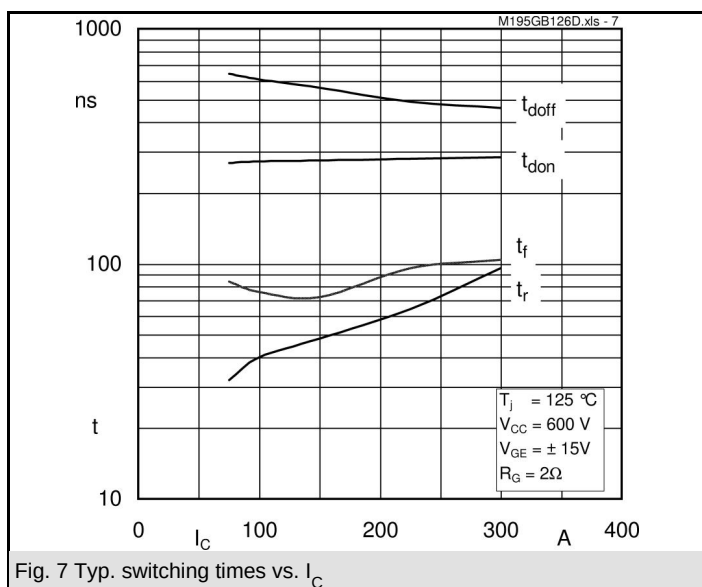
Typical Applications*

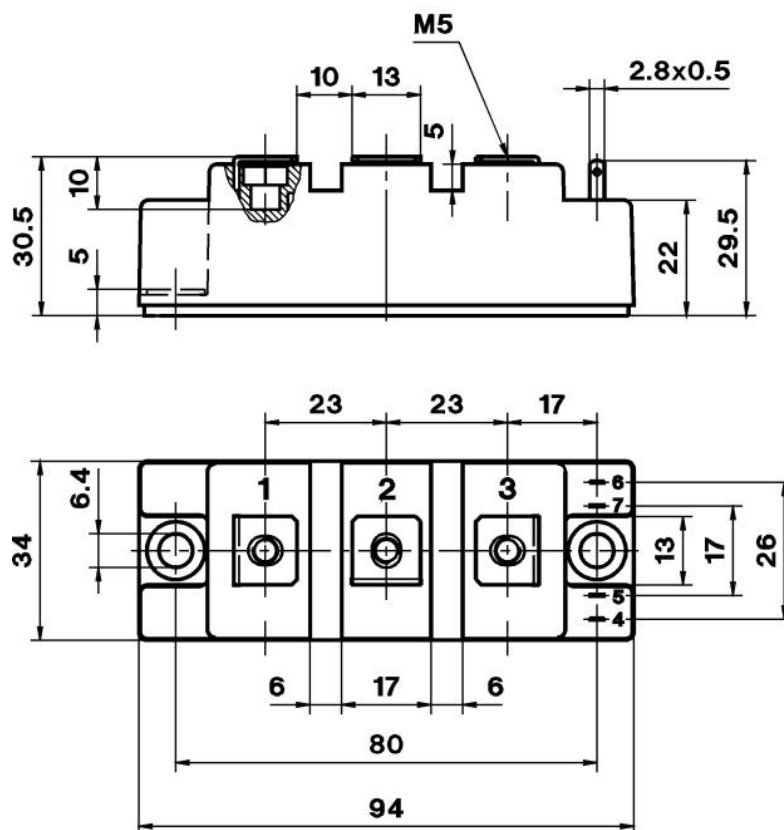
- AC inverter drives
- UPS
- Electronic welders

Z_{th}			
Symbol	Conditions	Values	Units
$Z_{th(j-c)I}$			
R_i	$i = 1$	115	mk/W
R_i	$i = 2$	34	mk/W
R_i	$i = 3$	9	mk/W
R_i	$i = 4$	2	mk/W
τ_{u_i}	$i = 1$	0,0493	s
τ_{u_i}	$i = 2$	0,0174	s
τ_{u_i}	$i = 3$	0,0012	s
τ_{u_i}	$i = 4$	0,0002	s
$Z_{th(j-c)D}$			
R_i	$i = 1$	200	mk/W
R_i	$i = 2$	90	mk/W
R_i	$i = 3$	26	mk/W
R_i	$i = 4$	4	mk/W
τ_{u_i}	$i = 1$	0,054	s
τ_{u_i}	$i = 2$	0,0089	s
τ_{u_i}	$i = 3$	0,001	s
τ_{u_i}	$i = 4$	0,08	s

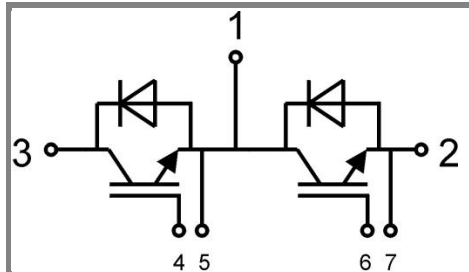






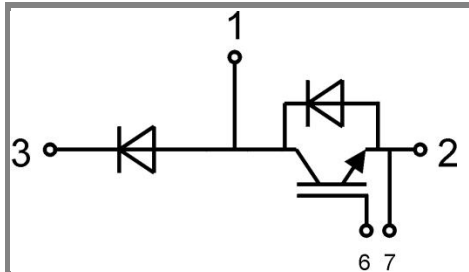


Case D 61



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Case D 62