



SEMITRANS™ 2

Trench IGBT Modules

SKM 145GAL176D

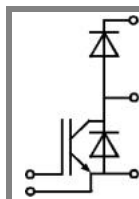
Target Data

Features

- Homogeneous Si
- 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 mains 575 - 750 V AC
- Public transport (auxiliary systems)



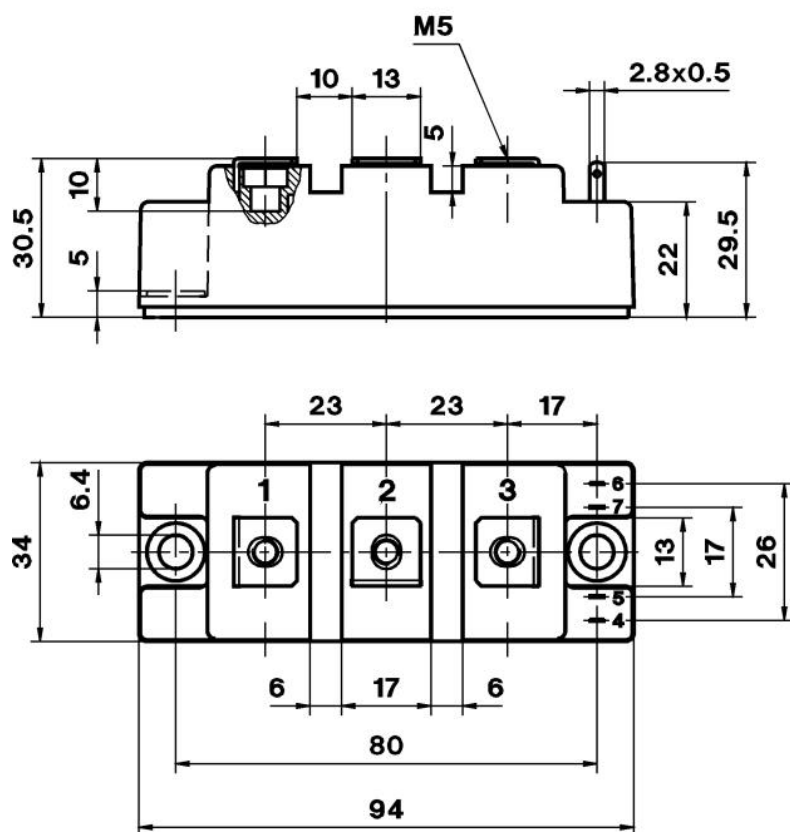
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Absolute Maximum Ratings		T _{case} = 25°C, unless otherwise specified			
Symbol	Conditions	Values			Units
IGBT					
V _{CES}	T _c = 25 (80) °C t _p = 1 ms	1700			V
I _C		160 (120)			A
I _{CRM}		200			A
V _{GES}		± 20			V
T _{vj} ' (T _{stg})		- 40 ... +150 (125)			°C
V _{isol}	AC, 1 min.	4000			V
Inverse diode					
I _F	T _c = 25 (80) °C	140 (100)			A
I _{FRM}	t _p = 1 ms	200			A
I _{FSM}	t _p = 10 ms; sin.; T _j = 150 °C	1400			A
Freewheeling diode					
I _F	T _c = 25 (80) °C	140 (100)			A
I _{FRM}	t _p = 1 ms	200			A
I _{FSM}	t _p = 10 ms; sin.; T _j = 150 °C	1400			A
Characteristics					
		T _{case} = 25°C, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
V _{GE(th)}	V _{GE} = V _{CE} , I _C = 3,5 mA	5,2	5,8	6,4	V
I _{CES}	V _{GE} = 0, V _{CE} = V _{CES} , T _j = 25 (125) °C		0,1	0,3	mA
V _{CE(TO)}	T _j = 25 (125) °C		1 (0,9)	1,2 (1,1)	V
r _{CE}	V _{GE} = 15 V, T _j = 25 (125) °C		10 (15)	12,5	mΩ
V _{CE(sat)}	I _{Cnom} = 100 A, V _{GE} = 15 V, chip level		2 (2,4)	2,45	V
C _{ies}	under following conditions V _{GE} = 0, V _{CE} = 25 V, f = 1 MHz	7,1			nF
C _{oes}		0,4			nF
C _{res}		0,3			nF
L _{CE}		30			nH
R _{CC'+EE'}	res., terminal-chip T _c = 25 (125) °C	0,75 (1)			mΩ
t _{d(on)}	V _{CC} = 1200 V, I _{Cnom} = 100 A R _{Gon} = R _{Goff} = Ω, T _j = 125 °C V _{GE} ± 15 V				ns
t _r					ns
t _{d(off)}					ns
t _f					ns
E _{on} (E _{off})					mJ
Inverse diode					
V _F = V _{EC}	I _{Fnom} = 100 A; V _{GE} = 0 V; T _j = 25 (125) °C		1,6 (1,6)	1,9 (1,9)	V
V _(TO)	T _j = 25 (125) °C		1,1 (0,9)	1,3 (1,1)	V
r _T	T _j = 25 (125) °C		5 (7)	6 (8)	mΩ
I _{RRM}	I _{Fnom} = 100 A; T _j = 125 () °C				A
Q _{rr}	di/dt = A/μs				μC
E _{rr}	V _{GE} = V				mJ
FWD					
V _F = V _{EC}	I _F = 100 A; V _{GE} = 0 V, T _j = 25 (125) °C		1,6 (1,6)	1,9 (1,9)	V
V _(TO)	T _j = 25 (125) °C		1,1 (0,9)	1,3 (1,1)	V
r _T	T _j = 25 (125) °C		5 (7)	6 (8)	mΩ
I _{RRM}	I _F = 100 A; T _j = 125 () °C				A
Q _{rr}	di/dt = A/μs				μC
E _{rr}	V _{GE} = V				mJ
Thermal characteristics					
R _{th(j-c)}	per IGBT			0,18	K/W
R _{th(j-c)D}	per Inverse Diode			0,36	K/W
R _{th(j-c)FD}	per FWD			0,36	K/W
R _{th(c-s)}	per module			0,05	K/W
Mechanical data					
M _s	to heatsink M6	3		5	Nm
M _t	to terminals M5	2,5		5	Nm
w				160	g

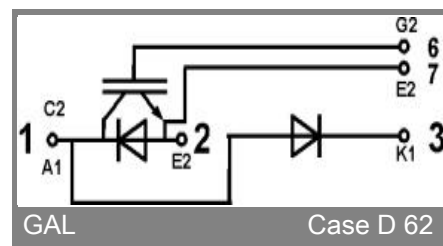
UL Recognized
File no. E 63 532

Dimensions in mm

CASED61



Case D 62



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

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