SKM900GA12E4

SEMITRANS® 4

IGBT4 Modules

SKM900GA12E4

Target Data

Features

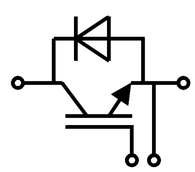
- IGBT4 = 4. Generation Medium Trench IGBT (Infineon)
- CAL4 = Soft switching 4. Generation CAL-Diode
- Isolated copper baseplate using DBC Technology (Direct Copper Bonding)
- UL recognized, file no. E63532
- Increased power cycling capability
- With integrated Gate resistor
- For switching frequenzies up to 12kHz

Typical Applications*

- AC inverter drives
- UPS
- Electronic welders
- Switched reluctance motor

Remarks

- Case temperature limited to T_c = 125°C max, recomm. T_{op} = -40 ... +150°C, product rel. results valid for T_j = 150°



GA

Absolute Maximum Ratings				
Symbol	**Conditions**		**Values**	**Unit**
IGBT				
V_{CES}	T_j = 25 °C		1200	V
I_C	T_j = 175 °C	T_c = 25 °C	1305	A
		T_c = 80 °C	1003	A
I_{Cnom}			900	A
I_{CRM}	$I_{CRM} = 3xI_{Cnom}$		2700	A
V_{GES}			-20 ... 20	V
t_{psc}	V_{CC} = 800 V $V_{GE} \le$ 15 V $V_{CES} \le$ 1200 V	T_j = 150 °C	10	µs
T_j			-40 ... 175	°C
Inverse diode				
I_F	T_j = 175 °C	T_c = 25 °C	871	A
		T_c = 80 °C	651	A
I_{Fnom}			800	A
I_{FRM}	$I_{FRM} = 3xI_{Fnom}$		2400	A
I_{FSM}	t_p = 10 ms, sin 180°, T_j = 25 °C		3520	A
T_j			-40 ... 175	°C
Module				
$I_{t(RMS)}$	$T_{terminal}$ = 80 °C		500	A
T_{stg}			-40 ... 125	°C
V_{isol}	AC sinus 50 Hz, t = 1 min		4000	V

Characteristics						
Symbol	**Conditions**		**min.**	**typ.**	**max.**	**Unit**
IGBT						
$V_{CE(sat)}$	I_C = 900 A V_{GE} = 15 V chiplevel	T_j = 25 °C		1.83	2.08	V
		T_j = 150 °C		2.23	2.44	V
V_{CE0}	chiplevel	T_j = 25 °C		0.8	0.9	V
		T_j = 150 °C		0.7	0.8	V
r_{CE}	V_{GE} = 15 V chiplevel	T_j = 25 °C		1.14	1.31	mΩ
		T_j = 150 °C		1.70	1.82	mΩ
$V_{GE(th)}$	$V_{GE}=V_{CE}$, I_C = 32.8 mA		5	5.8	6.5	V
I_{CES}	V_{GE} = 0 V V_{CE} = 1200 V	T_j = 25 °C		0.1	0.3	mA
		T_j = 150 °C				mA
C_{ies}	V_{CE} = 25 V V_{GE} = 0 V	f = 1 MHz		54.4		nF
C_{oes}		f = 1 MHz		3.52		nF
C_{res}		f = 1 MHz		3		nF
Q_G	V_{GE} = - 8 V...+ 15 V			5100		nC
R_{Gint}	T_j = 25 °C			0.94		Ω
$t_{d(on)}$	V_{CC} = 600 V I_C = 900 A V_{GE} = ±15 V $R_{G\ on}$ = 0.5 Ω $R_{G\ off}$ = 0.5 Ω di/dt_{on} = 9000 A/µs di/dt_{off} = 4500 A/µs	T_j = 150 °C		200		ns
t_r		T_j = 150 °C		100		ns
E_{on}		T_j = 150 °C		80		mJ
$t_{d(off)}$		T_j = 150 °C		620		ns
t_f		T_j = 150 °C		110		ns
E_{off}		T_j = 150 °C		115		mJ
$R_{th(j-c)}$	per IGBT				0.035	K/W

SEMITRANS® 4

IGBT4 Modules

SKM900GA12E4

Target Data

Features

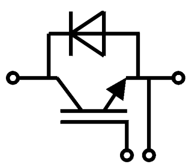
- IGBT4 = 4. Generation Medium Trench IGBT (Infineon)
- CAL4 = Soft switching 4. Generation CAL-Diode
- Isolated copper baseplate using DBC Technology (Direct Copper Bonding)
- UL recognized, file no. E63532
- Increased power cycling capability
- With integrated Gate resistor
- For switching frequenzies up to 12kHz

Typical Applications*

- AC inverter drives
- UPS
- Electronic welders
- Switched reluctance motor

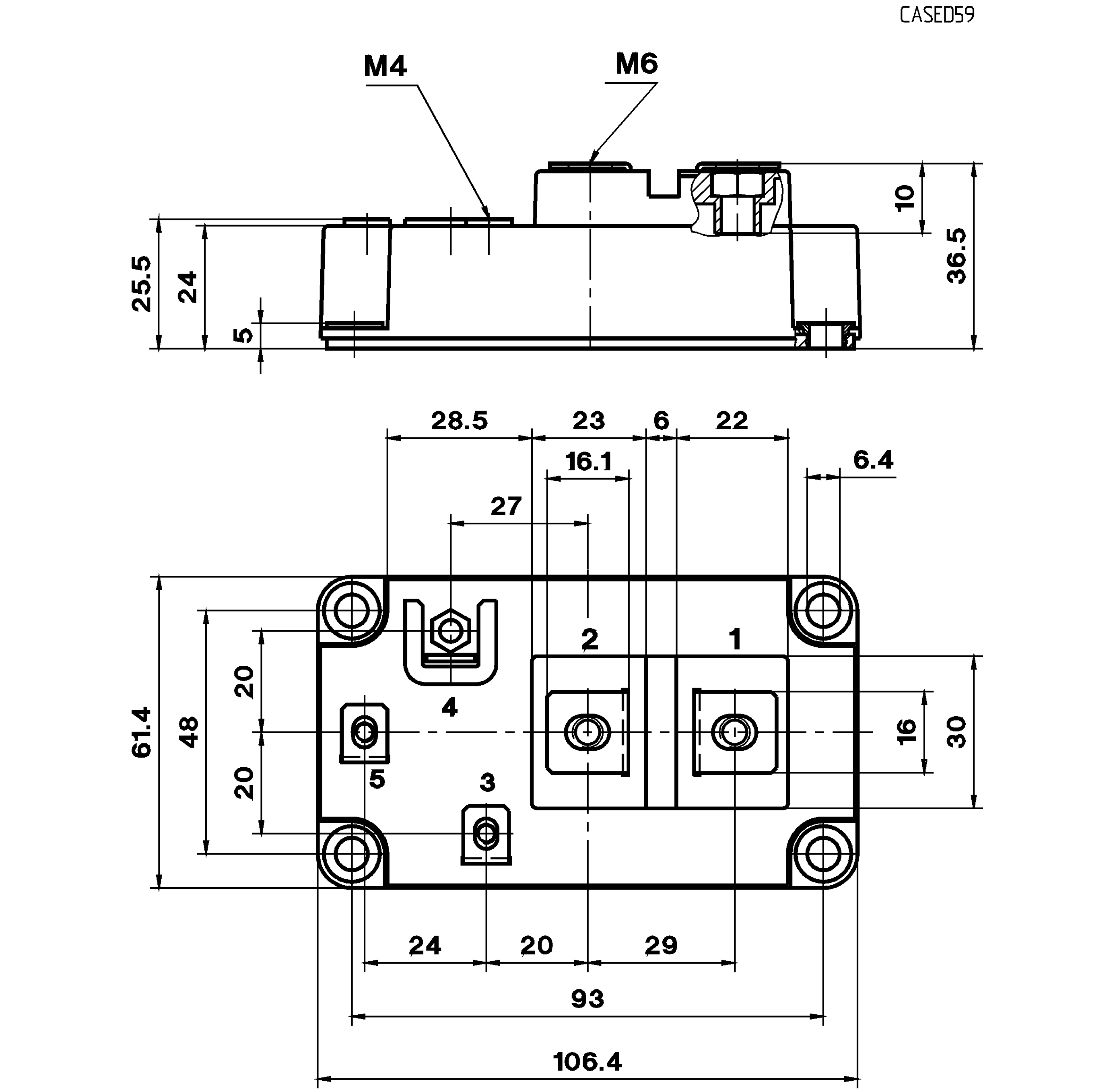
Remarks

- Case temperature limited to T_c = 125°C max, recomm. T_{op} = -40 ... +150°C, product rel. results valid for T_j = 150°

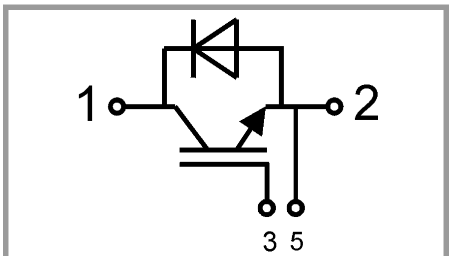


GA

Characteristics						
Symbol	**Conditions**		**min.**	**typ.**	**max.**	**Unit**
Inverse diode						
$V_F = V_{EC}$	I_F = 900 A V_{GE} = 0 V chiplevel	T_j = 25 °C		2.31	2.65	V
		T_j = 150 °C		2.31	2.64	V
V_{F0}	chiplevel	T_j = 25 °C		1.3	1.5	V
		T_j = 150 °C		0.9	1.1	V
r_F	chiplevel	T_j = 25 °C		1.1	1.3	mΩ
		T_j = 150 °C		1.6	1.7	mΩ
I_{RRM}	I_F = 900 A di/dt_{off} = 9000 A/µs V_{GE} = ±15 V V_{CC} = 600 V	T_j = 150 °C		850		A
Q_{rr}		T_j = 150 °C		140		µC
E_{rr}		T_j = 150 °C		65		mJ
$R_{th(j-c)}$	per diode				0.07	K/W
Module						
L_{CE}				15	20	nH
$R_{CC'+EE'}$	terminal-chip	T_C = 25 °C		0.18		mΩ
		T_C = 125 °C		0.22		mΩ
$R_{th(c-s)}$	per module			0.02	0.038	K/W
M_s	to heat sink M6		3		5	Nm
M_t	to terminals	M6	2.5		5	Nm
		M4	1.1		2	Nm
w					330	g



SEMITRANS 4



GA

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 staff.