

Comparison between V-IGBT and IGBT4 chips

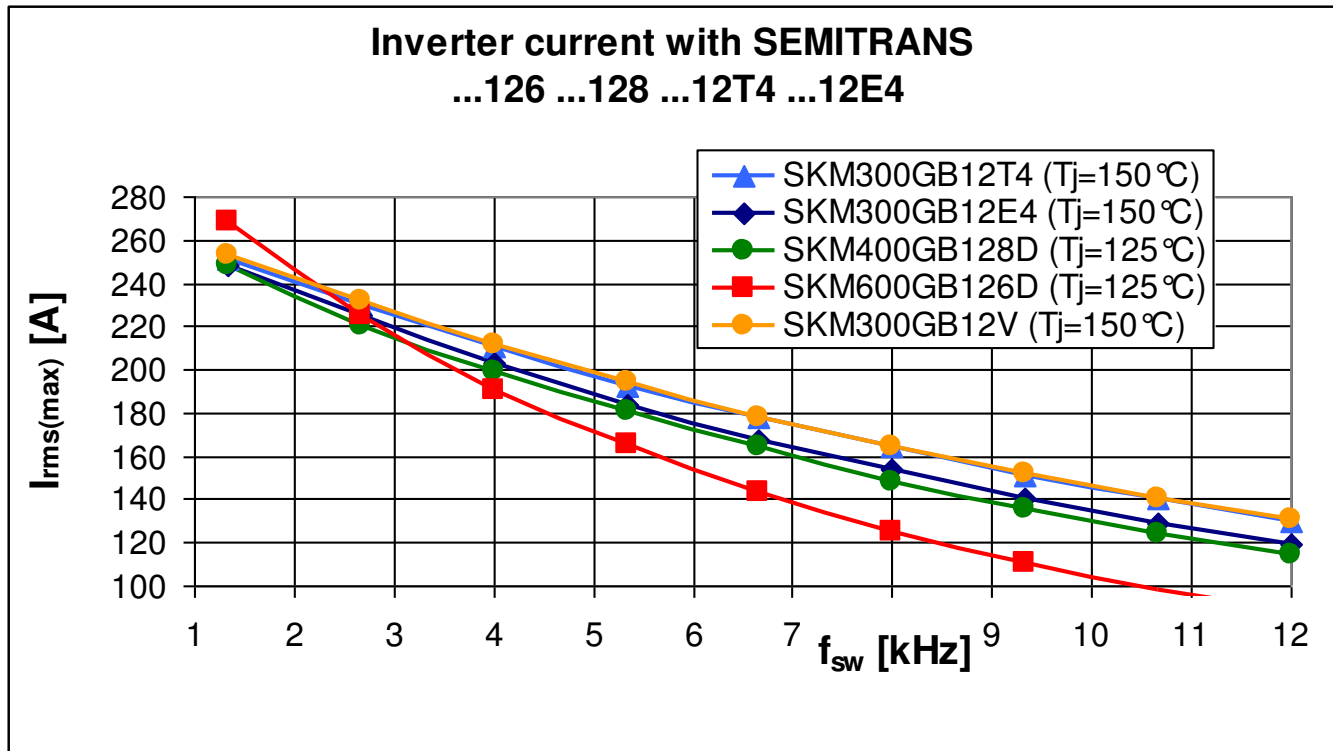
- **General**

- Based on 1200V Trench technology
- Power modules with V-IGBT chips inside end with „12V“.
- Chip size of V-IGBT is similar to IGBT4
- The same diode used (CAL 4)

- **Chip characteristics**

- Switches faster than IGBT4 (di/dt_{on} values) if the same gate resistor values are used, resulting in less E_{on} losses
- If di/dt_{on} is in the same range as IGBT4, the losses are also similar
- The IGBT can be slowed down by higher gate resistors so it reaches similar behavior as IGBT4
- The switch-off behavior of the different chips is similar
- V-IGBT and IGBT4 have the same SOA (Safe Operating Area)
- Overvoltages are lower at high DC-link voltage compared to IGBT4
- Switch-off characteristics (du/dt) can be influenced by gate resistor
- The inverter output current is similar to IGBT4 → **See diagram in the next page**
- Gate charge is about 90% higher than for IGBT4, which means that the gate driver shall be more powerful (higher output average current) → **See the table in the next pages**

Inverter output current (simulation based on data sheet values)



Cross reference new V-IGBT (...12V) IGBT modules

Max. switching frequency f_{max} (kHz) of the gate driver:

> 20 kHz:	green
12 < f < 20 kHz:	orange
< 12 kHz:	red

SKYPER 32 is limited to 50kHz; SKYPER 42 is limited to 100kHz

Values marked in **bold** mean that the Q_g of the power module featured in the left exceeds the max. value of the gate driver (thus does not work)

Note 1: The V-IGBT modules listed in the columns "Equivalent" and "Alternative" are also featured in this table

Note 2: The column "Equivalent" contains power modules that have the same nominal current and housing type; the suitability of the component in the specific application must be verified

Note 3: The column "Alternative" contains power modules that have different housing type or higher nominal current

Note 4: A 10% safety margin shall be considered in the max. switching frequency of the drivers since in the table typical gate charge values at $T_a=25^\circ\text{C}$ are used (which may vary)

Note 5: For single switch power modules ("GA", "GAL", "GAR"), the driver SKHI10/12 or SKYPER 32 and SKYPER 42 with only one output channel can be used.

Note 6: R_{Gon} and R_{Goff} gate resistor values have been taken from the datasheets. These are minimum values; optimised values will normally be $R_{Gmin} < R_g < 2 \cdot R_{Gmin}$

More information on gate resistors in: www.semikron.com/skcompub/de/SID-8A6B415A-7ECB87B6/AN-7003_Gate_Resistor-Principles_and_Applications_rev00.pdf

Note 7: For the calculation of the total power losses and the chip temperatures, we recommend the free SEMISEL simulation tool (<http://semisel.semikron.com/Circuit.asp?Language=2>)

POWER MODULE								SKYPER 32 R	SKYPER 32 PRO R	SKYPER 42 R	V-IGBT module				
Housing	Article	Product Description	I_{Cnom} [A]	R_{gint} [Ω]	R_{gon} [Ω]	R_{goff} [Ω]	Q_g [μC]	f_{max} [kHz]	Adaptor	f_{max} [kHz]	Adaptor	f_{max} [kHz]	Adaptor	Equivalent (Note 2)	Alternative (Note 3)
SEMITRANS 2	22890002	SKM50GB123D	50	2,5	27	27	0,5	50,0	L6100131	50,0	L6100231	100,0	L5059301	SKM50GB12V	SKM75GB12V
SEMITRANS 2	22890000	SKM75GB123D	50	5	22	22	0,5	50,0	L6100131	50,0	L6100231	100,0	L5059301	SKM50GB12V	SKM75GB12V
SEMITRANS 2	22890010	SKM100GB123D	75	5	15	15	0,75	50,0	L6100131	50,0	L6100231	100,0	L5059301	SKM75GB12V	
SEMITRANS 2	22890030	SKM145GB123D	100	5	6,8	6,8	1	50,0	L6100131	50,0	L6100231	100,0	L5059301	SKM100GB12V	
SEMITRANS 3	22890260	SKM150GB123D	100	2,5	6,8	6,8	1	50,0	L6100131	50,0	L6100231	100,0	L5059301		SKM150GB12VG
SEMITRANS 3	22890270	SKM200GB123D	150	2,5	5,6	5,6	1,5	33,3	L6100131	33,3	L6100231	100,0	L5059301	SKM150GB12VG	
SEMITRANS 3	22890278	SKM300GB123D	200	2,5	4,7	4,7	2	25,0	L6100131	25,0	L6100231	75,0	L5059301	SKM200GB12V	
SEMITRANS 3	22890280	SKM400GB123D	300	1,25	3,3	3,3	3	16,7	L6100131	16,7	L6100231	50,0	L5059301	SKM300GB12V	
SEMITRANS 4	22890310	SKM300GA123D	200	2,5	4,7	4,7	2	25,0	L6100131	25,0	L6100231	75,0	L5059301		SKM300GA12V
SEMITRANS 4	22890320	SKM400GA123D	300	1,25	3,3	3,3	3	16,7	L6100131	16,7	L6100231	50,0	L5059301	SKM300GA12V	
SEMITRANS 4	22890324	SKM500GA123D	400	1,25	3,3	3,3	3	16,7	L6100131	16,7	L6100231	50,0	L5059301	SKM400GA12V	
SEMITRANS 2	22890017	SKM50GAL123D	50	2,5	27	27	0,5	50,0	L6100131	50,0	L6100231	100,0	L5059301		SKM150GAL12V
SEMITRANS 2	22890019	SKM75GAL123D	50	5	22	22	0,5	50,0	L6100131	50,0	L6100231	100,0	L5059301		SKM150GAL12V
SEMITRANS 2	22890020	SKM100GAL123D	75	5	15	15	0,75	50,0	L6100131	50,0	L6100231	100,0	L5059301		SKM150GAL12V
SEMITRANS 2	22890022	SKM145GAL123D	100	5	6,8	6,8	1	50,0	L6100131	50,0	L6100231	100,0	L5059301		SKM150GAL12V
SEMITRANS 3	21916020	SKM150GAL123D	100	2,5	6,8	6,8	1	50,0	L6100131	50,0	L6100231	100,0	L5059301		SKM150GAL12V
SEMITRANS 3	22890025	SKM195GAL123D	150	2,5	5,6	5,6	1,5	33,3	L6100131	33,3	L6100231	100,0	L5059301		SKM150GAL12V
SEMITRANS 3	22890026	SKM200GAL123D	150	2,5	5,6	5,6	1,5	33,3	L6100131	33,3	L6100231	100,0	L5059301		SKM150GAL12V
SEMITRANS 3	22890028	SKM300GAL123D	200	2,5	4,7	4,7	2	25,0	L6100131	25,0	L6100231	75,0	L5059301		SKM400GAL12V
SEMITRANS 2	21916000	SKM75GAR123D	50	5	22	22	0,5	50,0	L6100131	50,0	L6100231	100,0	L5059301	-	
SEMITRANS 2	21915990	SKM100GAR123D	75	5	15	15	0,75	50,0	L6100131	50,0	L6100231	100,0	L5059301	-	
SEMITRANS 2	21915750	SKM145GAR123D	100	5	6,8	6,8	1	50,0	L6100131	50,0	L6100231	100,0	L5059301	-	
SEMITRANS 3	21915730	SKM150GAR123D	100	2,5	6,8	6,8	1	50,0	L6100131	50,0	L6100231	100,0	L5059301	-	
SEMITRANS 3	21915510	SKM200GAR123D	150	2,5	5,6	5,6	1,5	33,3	L6100131	33,3	L6100231	100,0	L5059301	-	

POWER MODULE								SKYPER 32 R		SKYPER 32 PRO R		SKYPER 42 R		V-IGBT module	
Housing	Article	Product Description	I _{Cnom} [A]	R _{gint} [Ω]	R _{gon} [Ω]	R _{goff} [Ω]	Q _g [μC]	f _{max} [kHz]	Adaptor	f _{max} [kHz]	Adaptor	f _{max} [kHz]	Adaptor	Equivalent (Note 2)	Alternative (Note 3)
SEMITRANS 3	21915670	SKM300GAR123D	200	2,5	4,7	4,7	2	25,0	L6100131	25,0	L6100231	75,0	L5059301	-	
SEMITRANS 2	22890630	SKM195GB126D	150	5	2	2	1,38	36,2	L6100131	36,2	L6100231	100,0	L5059301	SKM150GB12V	
SEMITRANS 3	22890631	SKM200GB126D	150	5	1,5	1,5	1,53	32,7	L6100131	32,7	L6100231	98,0	L5059301	SKM150GB12VG	
SEMITRANS 3	22890633	SKM300GB126D	200	3,8	1,5	1,5	1,8	27,8	L6100131	27,8	L6100231	83,3	L5059301	SKM200GB12V	
SEMITRANS 3	22890635	SKM400GB126D	300	2,5	2	2	2,8	17,9	L6100131	17,9	L6100231	53,6	L5059301	SKM300GB12V	
SEMITRANS 3	22890638	SKM600GB126D	400	1,88	2	2	3,6	13,9	L6100131	13,9	L6100231	41,7	L5059301	SKM400GB12V	
SEMITRANS 4	21915720	SKM600GA126D	400	1,88	2	2	3,6	13,9	L6100131	13,9	L6100231	41,7	L5059301	SKM400GA12V	
SEMITRANS 4	22890405	SKM800GA126D	600	1,25	3	3	5,2	9,6	L6100131	9,6	L6100231	28,8	L5059301	SKM600GA12V	
SEMITRANS 2	22890470	SKM195GAL126D	150	5	2	2	1,38	36,2	L6100131	36,2	L6100231	100,0	L5059301	SKM150GAL12V	
SEMITRANS 3	22890472	SKM200GAL126D	150	5	1,5	1,5	1,53	32,7	L6100131	32,7	L6100231	98,0	L5059301		SKM150GAL12V
SEMITRANS 3	21916030	SKM400GAL126D	300	2,5	2	2	2,8	17,9	L6100131	17,9	L6100231	53,6	L5059301		SKM400GAL12V
SEMITRANS 3	21916010	SKM600GAL126D	400	1,88	2	2	3,6	13,9	L6100131	13,9	L6100231	41,7	L5059301	SKM400GAL12V	
SEMITRANS 2	22890308	SKM75GB128D	50	5	6	6	0,6	50,0	L6100131	50,0	L6100231	100,0	L5059301	SKM50GB12V	SKM75GB12V
SEMITRANS 2	22890306	SKM100GB128D	75	5	4,7	4,7	0,86	50,0	L6100131	50,0	L6100231	100,0	L5059301	SKM75GB12V	
SEMITRANS 2	22890304	SKM145GB128D	100	4	3	3	1,2	41,7	L6100131	41,7	L6100231	100,0	L5059301		
SEMITRANS 3	22890305	SKM150GB128D	100	2,5	8	8	1,2	41,7	L6100131	41,7	L6100231	100,0	L5059301	-	SKM150GB12VG
SEMITRANS 3	22890300	SKM200GB128D	150	2,5	7	7	1,7	29,4	L6100131	29,4	L6100231	88,2	L5059301	SKM150GB12VG	
SEMITRANS 3	22890290	SKM300GB128D	200	2	5	5	2,4	20,8	L6100131	20,8	L6100231	62,5	L5059301	SKM200GB12V	
SEMITRANS 3	22890294	SKM400GB128D	300	1,25	4,7	4,7	3,7	13,5	L6100131	13,5	L6100231	40,5	L5059301	SKM300GB12V	
SEMITRANS 4	22890354	SKM300GA128D	200	1,25	5,1	5,1	2,4	20,8	L6100131	20,8	L6100231	62,5	L5059301		SKM300GA12V
SEMITRANS 4	22890350	SKM400GA128D	300	1,25	5	5	3,5	14,3	L6100131	14,3	L6100231	42,9	L5059301	SKM300GA12V	
SEMITRANS 4	22890349	SKM500GA128D	400	1	4	4	4,85	10,3	L6100131	10,3	L6100231	30,9	L5059301	SKM400GA12V	
SEMITRANS 2	22890480	SKM145GAL128D	100	4	3	3	1,2	41,7	L6100131	41,7	L6100231	100,0	L5059301		SKM150GAL12V
SEMITRANS 3	22890484	SKM300GAL128D	200	2	5	5	2,4	20,8	L6100131	20,8	L6100231	62,5	L5059301		SKM400GAL12V
SEMITRANS 3	22890487	SKM400GAL128D	300	1,25	4,7	4,7	3,7	13,5	L6100131	13,5	L6100231	40,5	L5059301		SKM400GAL12V
SEMITRANS 2	22890570	SKM145GAR128D	100	4	3	3	1,2	41,7	L6100131	41,7	L6100231	100,0	L5059301	-	
SEMITRANS 3	22890578	SKM400GAR128D	300	1,25	4,7	4,7	3,7	13,5	L6100131	13,5	L6100231	40,5	L5059301	-	
SEMITRANS 2	22892000	SKM50GB12T4	50	4	8,2	8,2	0,28	50,0	L6100131	50,0	L6100231	100,0	L5059301	SKM50GB12V	SKM75GB12V
SEMITRANS 2	22892010	SKM75GB12T4	75	10	1	1	0,425	50,0	L6100131	50,0	L6100231	100,0	L5059301	SKM75GB12V	
SEMITRANS 2	22892020	SKM100GB12T4	100	7,5	1	1	0,565	50,0	L6100131	50,0	L6100231	100,0	L5059301	SKM100GB12V	
SEMITRANS 3	22892030	SKM100GB12T4G	100	2	1	1	0,56	50,0	L6100131	50,0	L6100231	100,0	L5059301		SKM150GB12VG
SEMITRANS 2	22892040	SKM150GB12T4	150	5	1	1	0,85	50,0	L6100131	50,0	L6100231	100,0	L5059301	SKM150GB12V	
SEMITRANS 3	22892050	SKM150GB12T4G	150	5	1	1	0,85	50,0	L6100131	50,0	L6100231	100,0	L5059301	SKM150GB12VG	
SEMITRANS 3	22892060	SKM200GB12T4	200	3,8	1	1	1,13	44,2	L6100131	44,2	L6100231	100,0	L5059301	SKM200GB12V	
SEMITRANS 3	22892070	SKM300GB12T4	300	2,5	1,5	1,5	1,7	29,4	L6100131	29,4	L6100231	88,2	L5059301	SKM300GB12V	
SEMITRANS 3	22892080	SKM400GB12T4	400	1,9	1	1	2,26	22,1	L6100131	22,1	L6100231	66,4	L5059301	SKM400GB12V	
SEMITRANS 4	22892120	SKM300GA12T4	300	2,5	1,4	1,5	1,7	29,4	L6100131	29,4	L6100231	88,2	L5059301	SKM300GA12V	
SEMITRANS 4	22892100	SKM400GA12T4	400	1,9	1	1	2,26	22,1	L6100131	22,1	L6100231	66,4	L5059301	SKM400GA12V	
SEMITRANS 4	22892110	SKM600GA12T4	600	1,3	2	2	3,4	14,7	L6100131	14,7	L6100231	44,1	L5059301	SKM600GA12V	
SEMITRANS 2	22892600	SKM100GAL12T4	100	7,5	1	1	0,565	50,0	L6100131	50,0	L6100231	100,0	L5059301		SKM150GAL12V

POWER MODULE								SKYPER 32 R		SKYPER 32 PRO R		SKYPER 42 R		V-IGBT module	
Housing	Article	Product Description	I _{Cnom} [A]	R _{gint} [Ω]	R _{gon} [Ω]	R _{goff} [Ω]	Q _g [μC]	f _{max} [kHz]	Adaptor	f _{max} [kHz]	Adaptor	f _{max} [kHz]	Adaptor	Equivalent (Note 2)	Alternative (Note 3)
SEMITRANS 2	22892300	SKM150GAL12T4	150	5	1	1	0,85	50,0	L6100131	50,0	L6100231	100,0	L5059301	SKM150GAL12V	
SEMITRANS 3	22892320	SKM200GAL12T4	200	3,8	1	1	1,13	44,2	L6100131	44,2	L6100231	100,0	L5059301		SKM400GAL12V
SEMITRANS 3	22892330	SKM300GAL12T4	300	2,5	1,5	1,5	1,7	29,4	L6100131	29,4	L6100231	88,2	L5059301		SKM400GAL12V
SEMITRANS 3	22892310	SKM400GAL12T4	400	1,9	1	1	2,26	22,1	L6100131	22,1	L6100231	66,4	L5059301	SKM400GAL12V	
SEMITRANS 2	22892400	SKM150GAR12T4	150	5	1	1	0,85	50,0	L6100131	50,0	L6100231	100,0	L5059301	-	
SEMITRANS 3	22892410	SKM400GAR12T4	400	1,9	1	1	2,26	22,1	L6100131	22,1	L6100231	66,4	L5059301	-	
SEMITRANS 3	22892067	SKM200GB12E4	200	3,8	1	1	1,13	44,2	L6100131	44,2	L6100231	100,0	L5059301	SKM200GB12V	
SEMITRANS 3	22892077	SKM300GB12E4	300	2,5	1,5	1,5	1,7	29,4	L6100131	29,4	L6100231	88,2	L5059301	SKM300GB12V	
SEMITRANS 3	22892087	SKM400GB12E4	400	1,9	1	1	2,26	22,1	L6100131	22,1	L6100231	66,4	L5059301	SKM400GB12V	
SEMITRANS 4	22892124	SKM300GA12E4	300	2,5	1,4	1,5	1,7	29,4	L6100131	29,4	L6100231	88,2	L5059301	SKM300GA12V	
SEMITRANS 4	22892104	SKM400GA12E4	400	1,9	1	1	2,26	22,1	L6100131	22,1	L6100231	66,4	L5059301	SKM400GA12V	
SEMITRANS 4	22892114	SKM600GA12E4	600	1,3	2	2	3,4	14,7	L6100131	14,7	L6100231	44,1	L5059301	SKM600GA12V	
SEMITRANS 3	22892304	SKM200GAL12E4	200	3,8	1	1	1,13	44,2	L6100131	44,2	L6100231	100,0	L5059301		SKM400GAL12V
SEMITRANS 3	22892334	SKM300GAL12E4	300	2,5	1,5	1,5	1,7	29,4	L6100131	29,4	L6100231	88,2	L5059301		SKM400GAL12V
SEMITRANS 3	22892314	SKM400GAL12E4	400	1,9	1	1	2,26	22,1	L6100131	22,1	L6100231	66,4	L5059301	SKM400GAL12V	
SEMITRANS 3	22892420	SKM200GAR12E4	200	3,8	1	1	1,13	44,2	L6100131	44,2	L6100231	100,0	L5059301	-	
SEMITRANS 3	22892418	SKM300GAR12E4	300	2,5	1,5	1,5	1,7	29,4	L6100131	29,4	L6100231	88,2	L5059301	-	
SEMITRANS 3	22892414	SKM400GAR12E4	400	1,9	1	1	2,26	22,1	L6100131	22,1	L6100231	66,4	L5059301	-	
SEMITRANS 2	22892003	SKM50GB12V	50	4	13	13	0,5	50,0	L6100131	50,0	L6100231	100,0	L5059301	-	
SEMITRANS 2	22892013	SKM75GB12V	75	10	1,3	1,3	0,83	50,0	L6100131	50,0	L6100231	100,0	L5059301	-	
SEMITRANS 2	22892023	SKM100GB12V	100	7,5	1	1	1,15	43,5	L6100131	43,5	L6100231	100,0	L5059301	-	
SEMITRANS 2	22892043	SKM150GB12V	150	5	1,5	1,5	1,65	30,3	L6100131	30,3	L6100231	90,9	L5059301	-	
SEMITRANS 3	22892052	SKM150GB12VG	150	5	4	4	1,65	30,3	L6100131	30,3	L6100231	90,9	L5059301	-	
SEMITRANS 3	22892064	SKM200GB12V	200	3,8	3	3	2,21	22,6	L6100131	22,6	L6100231	67,9	L5059301	-	
SEMITRANS 3	22892073	SKM300GB12V	300	2,5	2,5	2,5	3,31	15,1	L6100131	15,1	L6100231	45,3	L5059301	-	
SEMITRANS 3	22892083	SKM400GB12V	400	1,9	3	3	4,42	11,3	L6100131	11,3	L6100231	33,9	L5059301	-	
SEMITRANS 4	22892123	SKM300GA12V	300	2,5	2,5	2,5	3,31	15,1	L6100131	15,1	L6100231	45,3	L5059301	-	
SEMITRANS 4	22892103	SKM400GA12V	400	1,9	3	3	4,42	11,3	L6100131	11,3	L6100231	33,9	L5059301	-	
SEMITRANS 4	22892113	SKM600GA12V	600	1,3	2,5	2,5	6,62	7,6	L6100131	7,6	L6100231	22,7	L5059301	-	
SEMITRANS 2	22892301	SKM150GAL12V	150	5	1,5	1,5	1,65	30,3	L6100131	30,3	L6100231	90,9	L5059301	-	
SEMITRANS 3	22892313	SKM400GAL12V	400	1,9	3	3	4,42	11,3	L6100131	11,3	L6100231	33,9	L5059301	-	
SEMiX 2s	27890680	SEMiX252GB126HDs	150	5	3	3	1,2	41,7	L6100141	41,7	L6100241	100,0	-		SEMiX202GB12Vs
SEMiX 2s	27890675	SEMiX302GB126HDs	200	3,75	2,8	2,8	1,6	31,3	L6100141	31,3	L6100241	93,8	-	SEMiX202GB12Vs	
SEMiX 3s	27890715	SEMiX353GB126HDs	225	3,33	2	2	1,8	27,8	L6100151	27,8	L6100251	83,3	-	SEMiX223GB12Vs	
SEMiX 2s	27890690	SEMiX452GB126HDs	300	2,5	2	2	2,4	20,8	L6100141	20,8	L6100241	62,5	-	SEMiX302GB12Vs	
SEMiX 3s	27890710	SEMiX503GB126HDs	300	2,5	2	2	2,4	20,8	L6100151	20,8	L6100251	62,5	-	SEMiX303GB12Vs	
SEMiX 4s	27890725	SEMiX604GB126HDs	400	1,88	2,2	2,2	3,2	15,6	L6100161	15,6	L6100261	46,9	-	SEMiX404GB12Vs	
SEMiX 3s	27890700	SEMiX703GB126HDs	450	1,67	1,6	1,6	3,6	13,9	L6100151	13,9	L6100251	41,7	-	SEMiX453GB12Vs	
SEMiX 4s	27890720	SEMiX904GB126HDs	600	1,25	1,6	1,6	4,8	10,4	L6100161	10,4	L6100261	31,3	-	SEMiX604GB12Vs	
SEMiX 2s	27890685	SEMiX452GAL126HDs	300	2,5	2	2	2,4	20,8	L6100141	20,8	L6100241	62,5	-	-	

POWER MODULE								SKYPER 32 R	SKYPER 32 PRO R	SKYPER 42 R	V-IGBT module				
Housing	Article	Product Description	I _{Cnom} [A]	R _{gint} [Ω]	R _{gon} [Ω]	R _{goff} [Ω]	Q _g [μC]	f _{max} [kHz]	Adaptor	f _{max} [kHz]	Adaptor	f _{max} [kHz]	Adaptor	Equivalent (Note 2)	Alternative (Note 3)
SEMiX 3s	27890695	SEMiX703GAL126HDs	450	1,67	1,6	1,6	3,6	13,9	L6100151	13,9	L6100251	41,7	-	-	
SEMiX 3s	27890705	SEMiX703GAR126HDs	450	1,67	1,6	1,6	3,6	13,9	L6100151	13,9	L6100251	41,7	-	-	
SEMiX 13	27890730	SEMiX101GD126HDs	75	10	2	2	0,6	50,0	-	50,0	-	100,0	-		SEMiX101GD12Vs
SEMiX 13	27890731	SEMiX151GD126HDs	100	7,5	1,7	1,7	0,8	50,0	-	50,0	-	100,0	-	SEMiX101GD12Vs	
SEMiX 13	27890732	SEMiX251GD126HDs	150	5	1	1	1,2	41,7	-	41,7	-	100,0	-	SEMiX151GD12Vs	
SEMiX 33c	27890745	SEMiX353GD126HDs	225	3,33	2	2	1,8	27,8	-	27,8	-	83,3	-	SEMiX223GD12Vc	
SEMiX 33c	27890740	SEMiX503GD126HDs	300	2,5	2,2	2,2	2,4	20,8	-	20,8	-	62,5	-	SEMiX303GD12Vc	
SEMiX 33c	27890735	SEMiX703GD126HDs	450	1,67	1,6	1,6	3,6	13,9	-	13,9	-	41,7	-	SEMiX453GD12Vc	
SEMiX 2s	27890922	SEMiX202GB128Ds	100	2,5	6,8	6,8	0,96	50,0	L6100141	50,0	L6100241	100,0	-		SEMiX151GB12Vs
SEMiX 2s	27890912	SEMiX302GB128Ds	150	2,5	4	4	1,42	35,2	L6100141	35,2	L6100241	100,0	-		SEMiX151GB12Vs
SEMiX 2s	27890904	SEMiX352GB128Ds	200	2	3	3	1,92	26,0	L6100141	26,0	L6100241	78,1	-	SEMiX202GB12Vs	
SEMiX 2s	27890902	SEMiX352GAL128Ds	200	2	3	3	1,92	26,0	L6100141	26,0	L6100241	78,1	-	-	
SEMiX 3s	27890935	SEMiX403GB128Ds	225	1,67	4	4	2,13	23,5	L6100151	23,5	L6100251	70,4	-	SEMiX223GB12Vs	
SEMiX 3s	27890939	SEMiX553GB128Ds	300	1,33	3	3	2,88	17,4	L6100151	17,4	L6100251	52,1	-	SEMiX303GB12Vs	
SEMiX 4s	27890941	SEMiX754GB128Ds	400	1	2,5	2,5	3,84	13,0	L6100161	13,0	L6100261	39,1	-	SEMiX404GB12Vs	
SEMiX 13	27890930	SEMiX151GD128Ds	75	5	5,5	5,5	0,71	50,0	-	50,0	-	100,0	-		SEMiX101GD12Vs
SEMiX 1s	27890100	SEMiX151GB12E4s	150	5	1	1	0,85	50,0	-	50,0	-	100,0	-	SEMiX151GB12Vs	
SEMiX 1s	27890102	SEMiX151GAL12E4s	150	5	1	1	0,85	50,0	-	50,0	-	100,0	-	-	
SEMiX 1s	27890104	SEMiX151GAR12E4s	150	5	1	1	0,85	50,0	-	50,0	-	100,0	-	-	
SEMiX 2s	27890110	SEMiX202GB12E4s	200	3,75	2,4	2,4	1,13	44,2	L6100141	44,2	L6100241	100,0	-	SEMiX202GB12Vs	
SEMiX 2s	27890120	SEMiX302GB12E4s	300	2,5	1,9	1,9	1,7	29,4	L6100141	29,4	L6100241	88,2	-	SEMiX302GB12Vs	
SEMiX 2s	27890220	SEMiX302GAL12E4s	300	2,5	1,9	1,9	1,7	29,4	L6100141	29,4	L6100241	88,2	-	-	
SEMiX 2s	27890222	SEMiX302GAR12E4s	302	2,5	1,9	1,9	1,7	29,4	L6100141	29,4	L6100241	88,2	-	-	
SEMiX 3s	27890130	SEMiX303GB12E4s	300	2,5	1,8	1,8	1,695	29,5	L6100151	29,5	L6100251	88,5	-	SEMiX303GB12Vs	
SEMiX 3s	27890140	SEMiX453GB12E4s	450	1,67	1,9	1,9	2,55	19,6	L6100151	19,6	L6100251	58,8	-	SEMiX453GB12Vs	
SEMiX 3s	27890142	SEMiX453GAR12E4s	450	1,67	1,9	1,9	2,55	19,6	L6100151	19,6	L6100251	58,8	-	-	
SEMiX 3s	27890144	SEMiX453GAL12E4s	450	1,67	1,9	1,9	2,55	19,6	L6100151	19,6	L6100251	58,8	-	-	
SEMiX 4s	27890150	SEMiX604GB12E4s	600	1,25	1,7	6,9	3,4	14,7	L6100161	14,7	L6100261	44,1	-	SEMiX604GB12Vs	
SEMiX 4s	27890154	SEMiX604GAL12E4s	600	1,25	1,7	6,9	3,4	14,7	L6100161	14,7	L6100261	44,1	-	-	
SEMiX 4s	27890156	SEMiX604GAR12E4s	600	1,25	1,7	6,9	3,4	14,7	L6100161	14,7	L6100261	44,1	-	-	
SEMiX 4s	27890170	SEMiX404GB12E4s	400	1,88	1,7	1,7	2,26	22,1	L6100161	22,1	L6100261	66,4	-	SEMiX404GB12Vs	
SEMiX 13	27890190	SEMiX71GD12E4s	75	10	1	1	0,425	50,0	-	50,0	-	100,0	-		SEMiX101GD12Vs
SEMiX 13	27890195	SEMiX101GD12E4s	100	7,5	1	1	0,565	50,0	-	50,0	-	100,0	-	SEMiX101GD12Vs	
SEMiX 13	27890200	SEMiX151GD12E4s	150	5	1	1	0,85	50,0	-	50,0	-	100,0	-	SEMiX151GD12Vs	
SEMiX 33c	27890208	SEMiX223GD12E4c	225	3,33	1,5	1,5	1,275	39,2	-	39,2	-	100,0	-	SEMiX223GD12Vc	
SEMiX 33c	27890210	SEMiX303GD12E4c	300	2,5	1,8	1,8	1,695	29,5	-	29,5	-	88,5	-	SEMiX303GD12Vc	
SEMiX 33c	27890212	SEMiX453GD12E4c	450	1,67	2	2	2,55	19,6	-	19,6	-	58,8	-	SEMiX453GD12Vc	
SEMiX 1s	27890101	SEMiX151GB12Vs	150	5	1,5	1,5	1,65	30,3	-	30,3	-	90,9	-	-	
SEMiX 2s	27890111	SEMiX202GB12Vs	200	3,75	1,9	1,9	2,2	22,7	L6100141	22,7	L6100241	68,2	-	-	
SEMiX 3s	27890114	SEMiX223GB12Vs	220	3,33	2,1	2,1	2,46	20,3	L6100151	20,3	L6100251	61,0	-	-	

POWER MODULE								SKYPER 32 R	SKYPER 32 PRO R	SKYPER 42 R	V-IGBT module				
Housing	Article	Product Description	I _{Cnom} [A]	R _{gint} [Ω]	R _{gon} [Ω]	R _{goff} [Ω]	Q _g [μC]	f _{max} [kHz]	Adaptor	f _{max} [kHz]	Adaptor	f _{max} [kHz]	Adaptor	Equivalent (Note 2)	Alternative (Note 3)
SEMiX 2s	27890121	SEMiX302GB12Vs	300	2,5	2,4	2,4	3,3	15,2	L6100141	15,2	L6100241	45,5	-	-	-
SEMiX 3s	27890131	SEMiX303GB12Vs	300	2,5	2,5	2,5	3,3	15,2	L6100151	15,2	L6100251	45,5	-	-	-
SEMiX 3s	27890141	SEMiX453GB12Vs	450	1,67	2,4	2,4	4,95	10,1	L6100151	10,1	L6100251	30,3	-	-	-
SEMiX 4s	27890151	SEMiX604GB12Vs	600	1,25	2,25	2,25	6,6	7,6	L6100161	7,6	L6100261	22,7	-	-	-
SEMiX 4s	27890171	SEMiX404GB12Vs	400	1,88	2,5	2,5	4,4	11,4	L6100161	11,4	L6100261	34,1	-	-	-
SEMiX 13	27890191	SEMiX101GD12Vs	100	7,5	1	1	1,1	45,5	-	45,5	-	100,0	-	-	-
SEMiX 13	27890201	SEMiX151GD12Vs	150	5	1,5	1,5	1,65	30,3	-	30,3	-	90,9	-	-	-
SEMiX 33c	27890209	SEMiX223GD12Vc	220	3,33	2,1	2,1	2,46	20,3	-	20,3	-	61,0	-	-	-
SEMiX 33c	27890211	SEMiX303GD12Vc	300	2,5	2,5	2,5	3,3	15,2	-	15,2	-	45,5	-	-	-
SEMiX 33c	27890219	SEMiX453GD12Vc	450	1,67	2,4	2,4	4,95	10,1	-	10,1	-	30,3	-	-	-
SEMiX 3s	27890114	2 // SEMiX223GB12Vs	440				4,92	10,2	-	10,2	-	30,5	L5059201	-	-
SEMiX 3s	27890131	2 // SEMiX303GB12Vs	600				6,6	7,6	-	7,6	-	22,7	L5059201	-	-
SEMiX 3s	27890141	2 // SEMiX453GB12Vs	900				9,9	5,1	-	5,1	-	15,2	L5059201	-	-
SEMiX 4s	27890151	2 // SEMiX604GB12Vs	1200				13,2	3,8	-	3,8	-	11,4	L6100261	-	-
SEMiX 4s	27890171	2 // SEMiX404GB12Vs	800				8,8	5,7	-	5,7	-	17,0	L6100261	-	-