

600V Chip Technologies (Module)

本资料由武汉科期电子有限公司提供

		Low Loss 2 nd Gen. KL4 / DLC	IGBT ³ FS & Trench E3
Technology		NPT optimised : saturation - voltage	FS trench with field stop
IGBT $V_{ce\ sat}(V)$	25°C	1,95V	1,5V
	125°C	2,2V	1,75V
Diode		EmCon	EmCon3 (HE technology)
Diode $V_f (V)$	25°C	1,25V	1,4V
	125°C	1,2V	1,4V
Switching - frequency		4 kHz -20 kHz	2 kHz- 20 kHz
			Tj max = 175 °C! Tvj max = 150 °C!

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Currently, 600V modules are produced with IGBT² (KL4/DLC) & IGBT³ (E3).



1200V IGBT & Diode Technology

		Standard 2Gen. DN2 / KF4	Low Loss 2Gen. DLC / KL4C	Short Tail 2Gen. KS4 FAST	IGBT³ E3	Fast IGBT³ T3
Technology		NPT optimised : switching - losses	NPT optimised : saturation - voltage	NPT optimised : high switching - frequency	Trench with fieldstop	Trench with fieldstop optimised : high switching - frequency
IGBT	25°C	2,5	2,1	3,2	1,7	1,7
	V_{cesat} (V) 125°C	3,1	2,4	3,85	2,0	1,9
Diode		EmConFast / CAL	EmCon	EmConFast / CAL	EmConHE / EmConFast	EmConHE
Diode	25°C	2,0 / 2,3	1,8	2,0 / 2,3	1,65 / 2,0	1,65
	V_f (V) 125°C	1,7 / 1,8	1,7	1,7 / 1,8	1,65 / 1,7	1,65
Switching - frequency		4 kHz - 15 kHz	1 kHz - 8 kHz	> 15 kHz	1 kHz-8 kHz	1 kHz-15kHz
					Please find additional information in the application notes AN2003-03 and AN2005-02	

		Standard 1Gen. DN2 / KF4	Low Loss 2Gen. DLC / KF6C	IGBT³ E3
Technology		NPT optimised : switching - losses	NPT optimised : saturation - voltage	Trench with fieldstop
IGBT	25°C	3,5	2,6	2,0
	125°C	4,6	3,1	2,4
V_{ce sat} (V)				
Diode		CAL	EmCon	EmCon3
Diode	25°C	2,4	2,1	1,8
	125°C	2,2	2,1	1,9
V_f (V)				
Switching - frequency		2 kHz - 4 kHz	1 kHz -2 kHz	2 kHz- 5 kHz
				Please find additional information in the valid application note AN2003-03 - Switching behavior and optimal driving of IGBT modules

Chip generations of 3300V IGBT modules

K: IHM A
H: IHM B

		standard 2nd gen. KF2C	low loss 2nd gen. KL2C	low loss 2nd gen. KL2C_B5	Trench+FS 3rd gen. HL3	Trench+FS 3rd gen. HE3
IGBT		NPT	NPT with field stop	NPT with field stop	NPT Trench with field stop	NPT Trench with field stop
optimized regarding -->		low switching losses	low saturation voltage high DC stability	low saturation voltage high DC stability high insulation	low saturation voltage high DC stability	low switching losses high DC stability
V_{cesat}(V)	25°C	3.4	3.0	3.0	2.15	2.7
	125°C	4.3	3.7	3.7	2.5	2.95
E_{on}(mJ) 125°C		2200	3150	3150	2550	2200
E_{off}(mJ) 125°C		1550	1900	1900	2200	1550
Diode		Emcon	Emcon with field stop	Emcon with field stop	Emcon 3 field stop	Emcon 3 field stop
V_f(V)	25°C	2.8	2.6	2.6	2.05	2.5
	125°C	2.8	2.55	2.55	2.0	2.5
E_{rec}(mJ) 125°C		1550	1650	1500	2650	1350
switching frequency		... 1000Hz	... 500Hz	... 500Hz	... 500Hz	... 2000Hz
housing insulation		IHM A 6kV	IHM A 6kV	6.5kV housing 10.2kV	IHM B 6kV	IHM B 6kV
DC stability 100fit @		1800V	2150V	2150V	2100V	2100V
Tvjmax		125°C	125°C	125°C	150°C	150°C

for better comparability all Vcesat, Vf and switching energies are rated @ 1200A

6500V Chip Technologies (Modules)

		KF1
Technology		NPT with field stop
IGBT	25°C	4,3
	125°C	5,3
V_{ce sat} (V)		
Diode		EmCon with field stop
Diode	25°C	3,8
	125°C	3,9
V_f (V)		
Switching - frequency		500 Hz
Type range		200A – 600A

Trench FS 3Gen.

KE3

3,x

4,x

EmCon 3

3,x

3,x

500 Hz

**Planned Product
availability M9:**

2006 ?