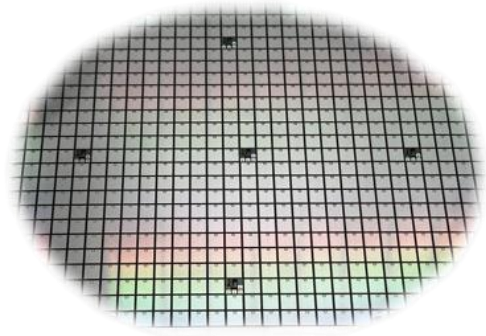


TARGET DATASHEET

SCS0030C230m23

M23 SiC power MOSFET, 5.0 mm x 5.0 mm



$V_{DS} = 2300\text{ V}$
 $R_{DS(on)} = 30\text{ m}\Omega$

- positive temperature coefficient
- easy paralleling

Maximum ratings¹

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	MAX	UNIT
Drain-source voltage	V_{DSmax}	$V_{GS} = 0\text{ V}$, $T_{vj} \geq 25^\circ\text{C}$		2300	V
Continuous DC drain current	I_D	$V_{GS} = 18\text{ V}$, $T_{vj} = 25^\circ\text{C}$		80	A
Peak drain current	I_{DM}	Pulse width t_p limited by T_{jmax}		160	A
Gate-source voltage (DC)	V_{GSS}		-8	22	V
Gate-source surge voltage	$V_{GS\text{ surge}}$	$t_p \leq 300\text{ ns}$, $D < 1\%$	-10	25	V
DC reverse drain current	I_S	$V_{GS} = -5\text{ V}$, $T_c = 25^\circ\text{C}$,		80	A
Peak reverse drain current	I_{SM}	$V_{GS} = 0\text{ V}$, limited by T_{jmax}		160	A
Junction operating temperature	$T_{vj(op)}$		-55	175	$^\circ\text{C}$

¹ Maximum rated values indicate limits beyond which damage to the device may occur per IEC 60747-8



MOSFET²

Recommended values

PARAMETER	SYMBOL	CONDITIONS	VALUE	UNIT
Gate-source turn-on voltage	$V_{GS(on)}$		18	V
Gate-source turn-off voltage	$V_{GS(off)}$		-5	V

Characteristic values

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Drain-source breakdown voltage –	$V_{(BR)DSS}$	$V_{GS} \leq 0$ V, $I_D = 250$ μ A, $T_{vj} = 25^\circ\text{C}$	2300			V
Drain-source on-state resistance ³ –	$R_{DS(on)}$	$I_D = 80$ A, $V_{GS} = 18$ V				
		$T_{vj} = 25^\circ\text{C}$		30		m Ω
		$T_{vj} = 175^\circ\text{C}$		85		m Ω
Drain leakage current	I_{DSS}	$V_{DS} = 2300$ V, $V_{GS} = 0$ V				
		$T_{vj} = 25^\circ\text{C}$		1	50	μ A
		$T_{vj} = 175^\circ\text{C}$		5		μ A
Gate leakage current	I_{GSS}	$V_{GS} = +22 / -8$ V, $V_{DS} = 0$ V, $T_{vj} = 25^\circ\text{C}$	-50		50	nA
Gate-source threshold voltage –	$V_{GS(th)}$	$I_D = 5$ mA, $V_{DS} = V_{GS}$				
		$T_{vj} = 25^\circ\text{C}$	2.5	3	3.5	V
		$T_{vj} = 175^\circ\text{C}$		tbd		V
Input capacitance	C_{iss}	$V_{DS} = 1500$ V, $V_{GS} = 0$ V, $f = 100$ kHz, $V_{AC} = 25$ mV		54.5		nF
Output capacitance	C_{oss}	$T_{vj} = 25^\circ\text{C}$		180		pF
Reverse transfer capacitance	C_{rss}			15		pF
Internal gate resistor	R_{Gint}	$f = 1$ MHz, $T_{vj} = 25^\circ\text{C}$		2.5		Ω
Total gate charge	Q_G	$I_D = 80$ A, $V_{DS} = 150$ V, $V_{GS} = -5$ V ... 18 V		200		nC

² Characteristic values according to IEC 60747-8

³ Given at chip level

**Characteristic values (continued)**

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Turn-on switching energy	E _{on}	V _{CC} = 1500 V, I _D = 80 A, V _{GS} = -5 / +15 V, L _s = 30 nH	T _{vj} = 25 °C			mJ
			T _{vj} = 175 °C	16.1		mJ
Turn-off switching energy	E _{off}	V _{CC} = 1500 V, I _D = 80 A, V _{GS} = -5 / +15 V, L _s = 30 nH	T _{vj} = 25 °C			mJ
			T _{vj} = 175 °C	7.8		mJ

Body Diode (MOSFET)⁴

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Drain-source reverse voltage ⁵	V _{SD}	V _{GS} = -5 V, I _S = 80 A	T _{vj} = 25 °C	5.5		V
			T _{vj} = 175 °C	5		V

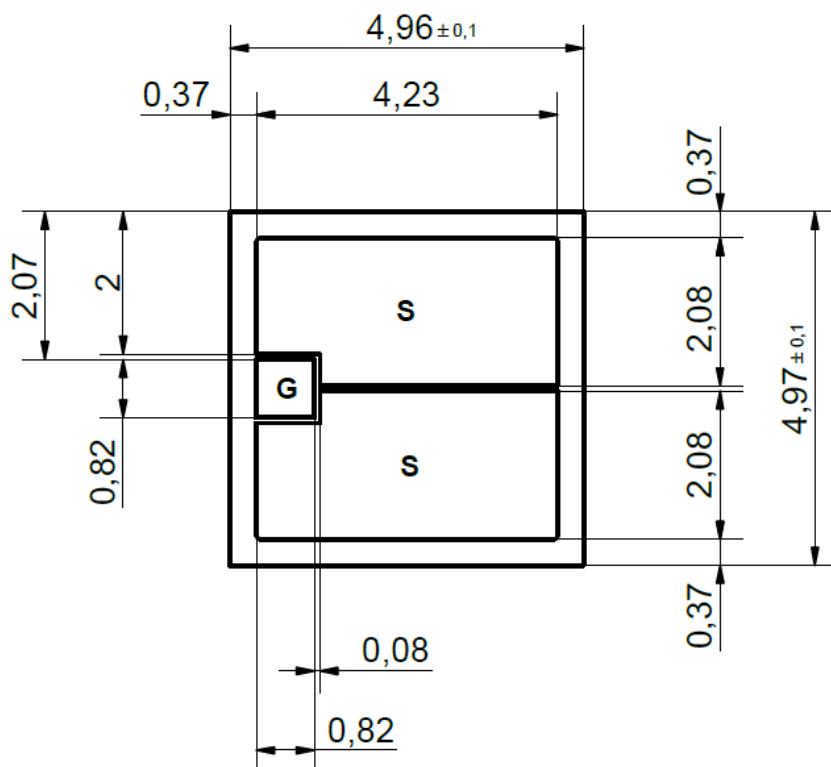
Mechanical properties⁶

PARAMETER	UNIT
Die size	(4.96 ± 0.01) x (4.97 ± 0.01) mm ²
Gate pad size	0.8 x 0.8 mm ²
Thickness	150 ± 5 µm
Wafer diameter	150 mm
Maximum chips per wafer	556 pcs
Frontside passivation	Polyimide
Frontside metal (pads)	Ti:TiN:AlCu, 100:100:4000 nm
Backside metal	Ti:Ni:Ag, 300:400:1200 nm

⁴ Characteristic values according to IEC 60747-8

⁵ Given at chip level

Chip drawing



This is an electrostatic sensitive device.

Ordering Information

OPTION		ARTICLE NUMBER
Frontside metal (gate and source pads)	AlCu (_F00)	SCS0030C230m23_F00
Packaging Method	Sawn on tape (_O10)	SCS0030C230m23_XXX_O10
	Wafer unsawn (_O20)	SCS0030C230m23_XXX_O20
	Waffle pack (_O30)	SCS0030C230m23_XXX_O30