



SPD300S120DW

1200V 300A FRD CHIP

Features:

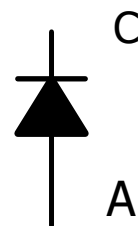
- Emitter injection control technology
- Soft, fast switching
- Low reverse recovery charge
- Small and positive temperature coefficient

Recommended for:

Low / medium power modules

Applications:

Low / medium power drives



Mechanical parameters

Die size (include scribe lane)	L x W	8.24×12.16	mm ²
Anode pad size	L x W	7.08×11.00	mm ²
Scribe lane		60	μm
Silicon thickness		110	μm
Wafer size		200	mm
Maximum possible chips per wafer		256	
Passivation frontside		Polyimide	
Pad Metallization	AlSiCu	4	μm
Backside Metallization	Ti / Ni / Ag	1.3	μm

Maximum Ratings

Parameters	Symbol	Value	Unit
Repetitive peak reverse voltage	V_{RRM}	1200	V
Continuous forward current, limited by $T_{vj\ max}^1$	I_F	300 ¹	A
Maximum repetitive forward current, t_p limited by $T_{vj\ max}$	I_{FRM}	600	A
Operating junction temperature	$T_{vj\ op}$	-40~175	°C
Storage temperature	T_{stg}	-40~150	°C

Static Characteristic (T_j=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Cathode-Anode breakdown voltage	V_{BR}	$I_R=1mA$	1200	-	-	V
Diode forward voltage	V_F	$I_F=25A$	0.80	1.00	1.15	V
Reverse leakage	I_R	$V_R=1200V$ $T_J=25^{\circ}C$	-	-	15	μA
		$V_R=1200V$, $T_J=175^{\circ}C$	-	5.0	-	mA



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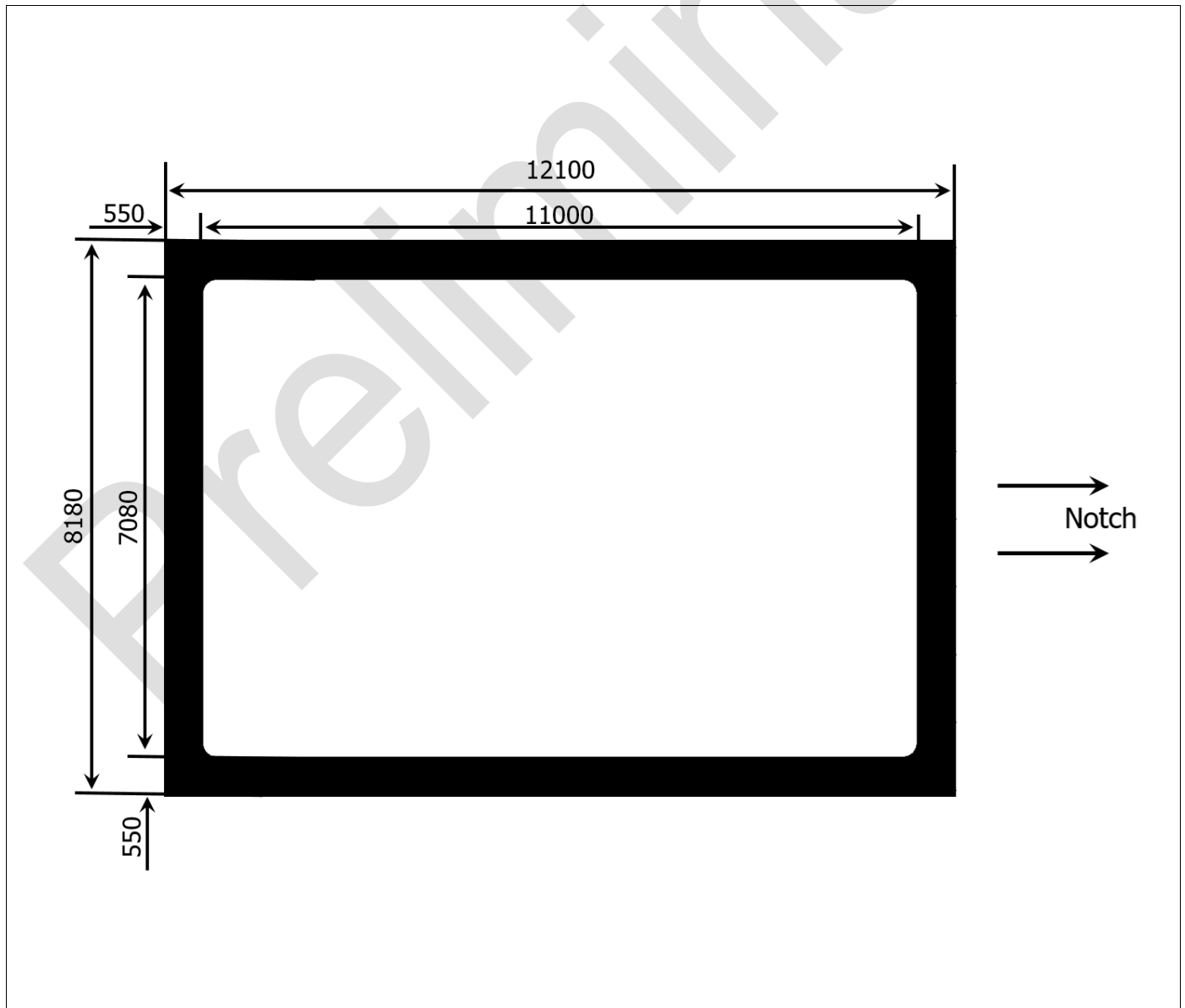
Electrical Characteristic²

Parameter		Symbol	Conditions	Min.	Typ.	Max.	Unit
Breakdown voltage	$T_{vj}=-40^{\circ}\text{C}$	V_{BR}	$I_R=1\text{mA}$	1200	-	-	V
Diode forward voltage	$T_{vj}=25^{\circ}\text{C}$	V_F	$I_F=300\text{A}$	-	1.65	-	V
	$T_{vj}=175^{\circ}\text{C}$			-	1.69	-	V
Reverse recovery time	$T_{vj}=25^{\circ}\text{C}$	T_{rr}	VR=600V, IF=300A, di/dt≈ 1400A/us	-	450	-	ns
	$T_{vj}=175^{\circ}\text{C}$			-	830	-	ns
Reverse recovery charge	Q_{rr}	-		24	-	uC	
		-		51	-	uC	
Reverse recovery current	I_{rr}			120		A	
				172		A	
Reverse recovery charge loss	E_{rec}			10		mJ	
				24		mJ	

¹ Depending on thermal properties of assembly.

² Not subject to production test - verified by design/characterization and the electrical characteristics are obtained by testing the bare die bonded on a 30x30mm Direct Bond Copper substrate

Chip Drawing (unit: μm)





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