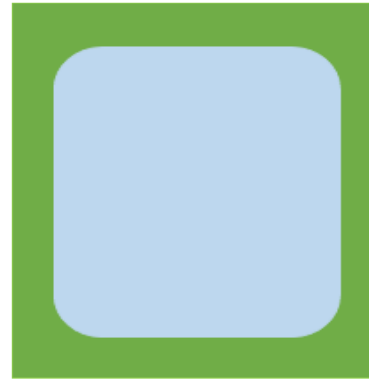


IV1D12030BD – 1200V 30A SiC Schottky Diode Chip

Features

- Max Junction Temperature 175°C
- High Surge Current Capacity
- Extremely Fast Reverse Recovery Time
- Reduced Losses in Associated MOSFET
- High-Frequency Operation
- Temperature Independent Switching Behavior
- Positive Temperature Coefficient on V_F

Chip Outline



Applications

- Solar Power Boost
- Inverter Free Wheeling Diodes
- Vienna 3-Phase PFC
- EV Charger Piles
- Switch Mode Power Supplies

Part Number	Die Size	Anode	Cathode
IV1D12030BD	3.67×3.67mm ²	Al	Ti/Ni/Ag

Absolute Maximum Ratings (T_c=25°C unless otherwise specified)

Symbol	Parameter	Value	Unit
V _{RRM}	Reverse voltage (repetitive peak)	1200	V
V _{DC}	DC blocking voltage	1200	V
I _F	Forward current (continuous) @T _c =25°C	80.6*	A
	Forward current (continuous) @T _c =135°C	38.8*	A
	Forward current (continuous) @T _c =148°C	30*	A
I _{FSM}	Surge non-repetitive forward current sine halfwave @T _c =25°C tp=10ms	210	A
I _{FRM}	Surge repetitive forward current (Freq=0.1Hz, 100cycles) sine halfwave @T _{amb} =25°C tp=10ms	180	A
∫ i ² dt	I ² t value @T _c =25°C tp=10ms	220	A ² s
T _{stg}	Storage temperature range	-55 to 175	°C
T _j	Operating junction temperature range	-55 to 175	°C

* Assumes R_{θjc} Thermal Resistance of 0.4°C/W or less.

Stresses exceeding those listed in the Maximum Ratings table may damage the die. If any of these limits are exceeded, die functionality should not be assumed, damage may occur and reliability may be affected.

Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V _F	Forward Voltage	1.48	1.80	V	I _F = 30 A T _J =25°C	Fig. 1
		2.20	3.00		I _F = 30 A T _J =175°C	
I _R	Reverse Current	10	200	μA	V _R = 1200 V T _J =25°C	Fig. 2
		60	1000		V _R = 1200 V T _J =175°C	
C	Total Capacitance	1640		pF	V _R = 1 V, T _J = 25°C, f = 1 MHz	Fig. 3
		145			V _R = 400 V, T _J = 25°C, f = 1 MHz	
		107			V _R = 800 V, T _J = 25°C, f = 1 MHz	
Q _C	Total Capacitive Charge	153		nC	V _R = 800 V, T _J = 25°C, $Q_C = \int_0^{V_R} C(V) dV$	Fig. 4
E _C	Capacitance Stored Energy	43.8		μJ	V _R = 800 V, T _J = 25°C, $E_C = \int_0^{V_R} C(V) \cdot V dV$	

Mechanical Parameters

Parameter	Typ.	Unit
Die Size	3.67*3.67	mm ²
Anode Pad Size	External FAB: 2.60*2.60 Internal FAB: 3.09*3.09	mm ²
Thickness	180±20	μm
Wafer Size	150	mm
Anode Metallization (Al)	4	μm
Cathode Metallization (Ti/Ni/Ag)	0.2/0.2/1	μm
Frontside Passivation (Polyimide)	5	μm

Typical Performance

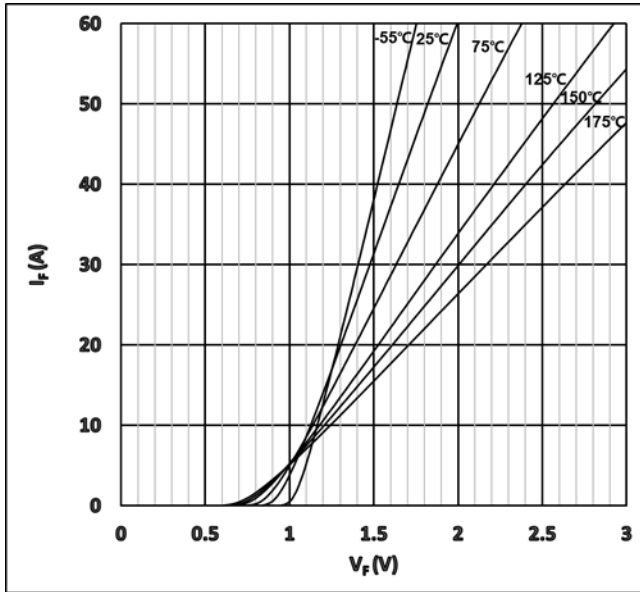


Figure 1. Typical Forward Characteristics

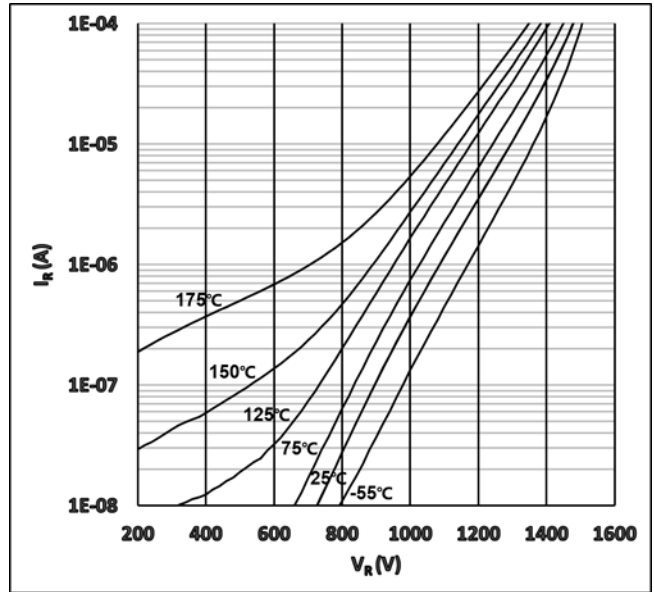


Figure 2. Typical Reverse Characteristics

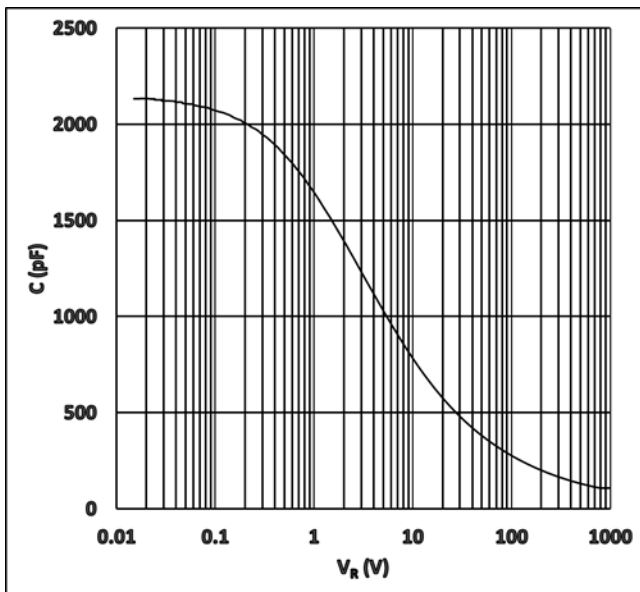


Figure 3. Capacitance vs. Reverse Voltage

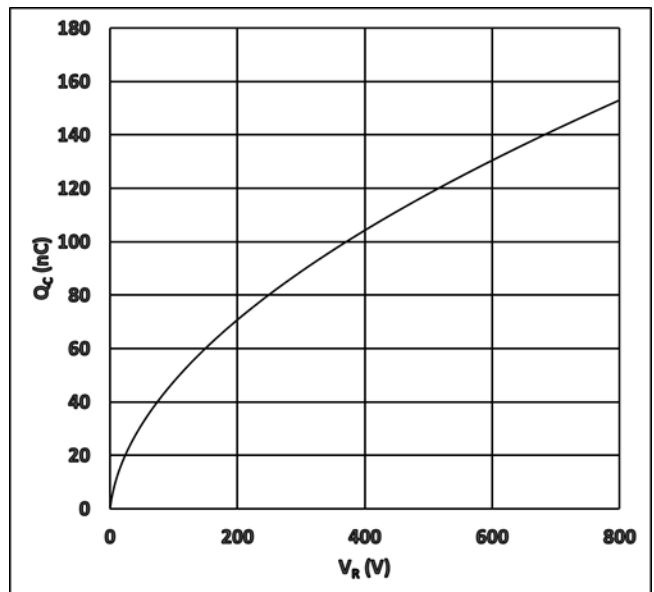
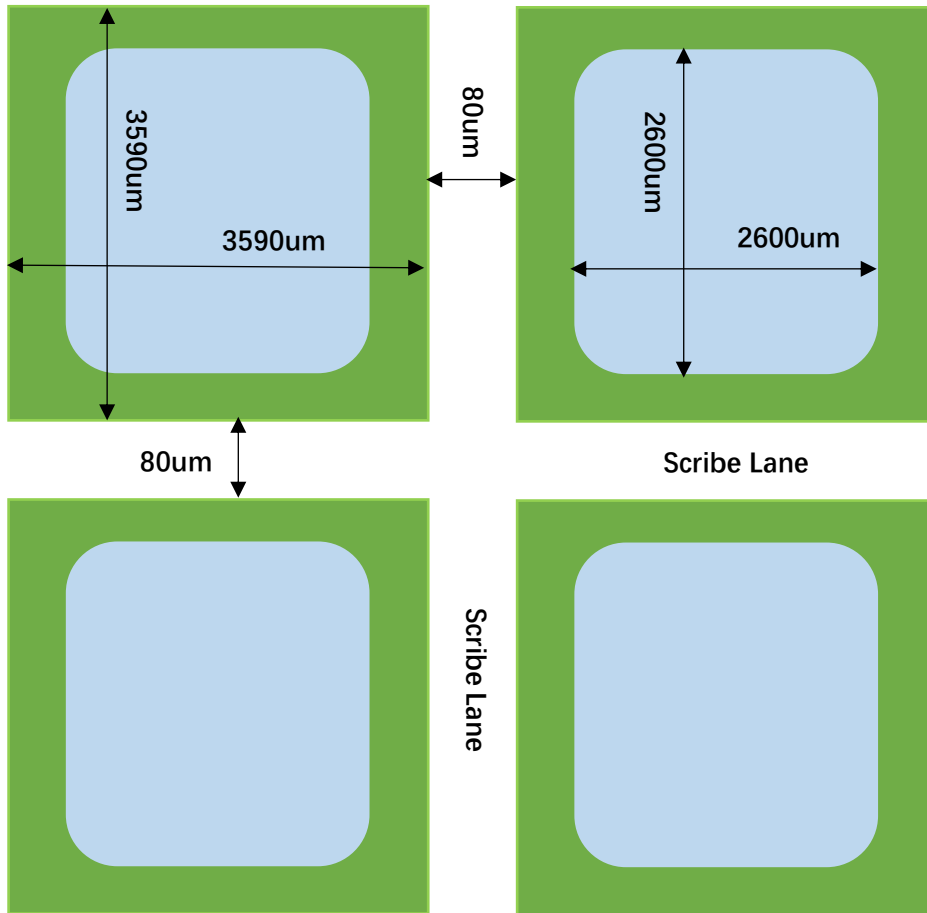


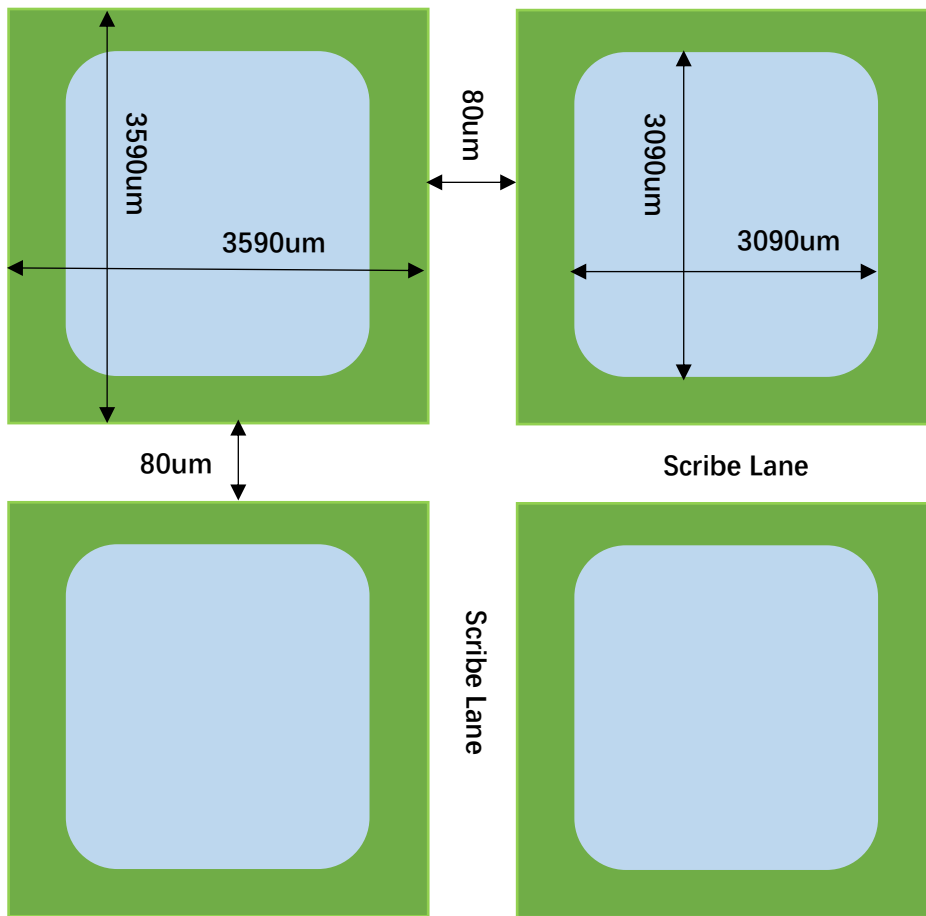
Figure 4. Recovery Charge vs. Reverse Voltage

The Configuration of Chips

External FAB:



Internal FAB:



Notes

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