DATASHEET

TO-247-2L 1200V SiC Schottky Diode
EL-SAB050120JA

V_{RRM}	=	1200	V
Q_c	=	263	nC
$I_F(T_C=135℃)$	=	50	A
V_F	=	1.4	V

Features

- Low Forward Voltage
- Ultra-Fast Switching
- Zero Reverse Recovery Current
- High-Frequency Operation and increaced power density
- High Surge Current Capability
- Pb-free Lead, Halogen Free, ROHS Compliant

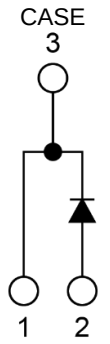
Benefits

- Improve System Efficiency
- Reduction of Heat Sink Requirement
- Essentially No Switching Losses
- Parallel Devices Without Thermal Runaway

Applications

- Solar inverter/Motor Drivers/Data Center
- Boost Diodes in PFC or DC/DC Stages
- AC/DC Converters

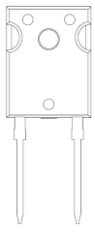
Schematic



Pin Configuration

1. Cathode
2. Anode

CASE: Cathode



Key Performance Parameters

Symbol	V_{RRM}	I_F	I_{FSM}	Q_C	$T_{J,max}$
Value	1200V	20A	300A	263nC	175℃
Condition	T_C@25℃	T_C@135℃	t_p=10ms T_C@25℃ Sine half wave	V_R = 800 V, T_j = 25 °C $Q_c = \int_0^{V_R} C(V)dV$	-

Maximum Ratings

Parameter	Symbol	Value	Unit	Test condition
Repetitive Peak Reverse Voltage	V_{RRM}	1200	V	
Surge Peak Reverse Voltage	V_{RSM}	1200	V	
DC Blocking Voltage	V_R	1200	V	
Continuous Forward Current	I_F*1	50	A	T_C= 135℃
Surge non-repetitive forward current	I_{FSM}	300	A	t_p= 10ms Sine half wave
		225	A	T_C= 110℃, t_p= 10ms Sine half wave
Total power dissipation	P_D	500	W	
		216		T_C= 110℃
Junction temperature	T_J	175	℃	
Storage temperature	T_{STG}	-55 / +175	℃	
Mounting Torque	M_d	1 8.8	Nm lbf-in	M3 or 6-32 screw

*1 Limited by maximum T_A and for Max. R_{thJC}.

Thermal Characteristics (Measured conformable to JESD51-14.)

Parameter	Symbol	Value		Unit
		Typ	Max	
Thermal Resistance from Junction to Case	$R_{th(JC)}$	0.2	0.3	℃/W

Electrical Characteristics

Parameter	Symbol	Values			Unit	Test condition
		Min.	Typ.	Max.		
DC blocking voltage	V_{DC}	1200	-	-	V	T_J= 25℃, I_R= 150μA
Forward voltage	V_F	-	1.40	1.60	V	I_F= 50A, T_J= 25℃
			1.80	-		I_F= 50A, T_J= 150℃
			1.90	-		I_F= 50A, T_J= 175℃
Reverse current	I_R	-	25	150	μA	V_R= 1200V, T_J= 25℃
			100	-		V_R= 1200V, T_J= 150℃
			187.5	-		V_R= 1200V, T_J= 175℃
Total capacitance	C	-	3200	-	pF	V_R= 1V, f= 1MHz T_J= 25℃
			185			V_R= 800V, f= 1MHz T_J= 25℃
			183			V_R= 1200V, f= 1MHz T_J= 25℃
Capacitance Stored Energy	E_C	-	80	-	μJ	V_R= 800V
Total capacitive charge	Q_C	-	263	-	nC	V_R= 800V, T_J= 25℃ $Qc=\int_0^{V_R} C(V)dV$

Typical Performance

V_F-I_F Characteristics

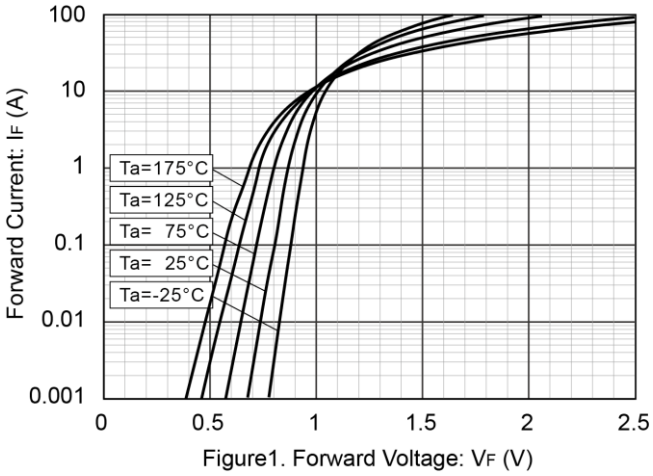


Figure1. Forward Voltage: V_F (V)

V_F-I_F Characteristics

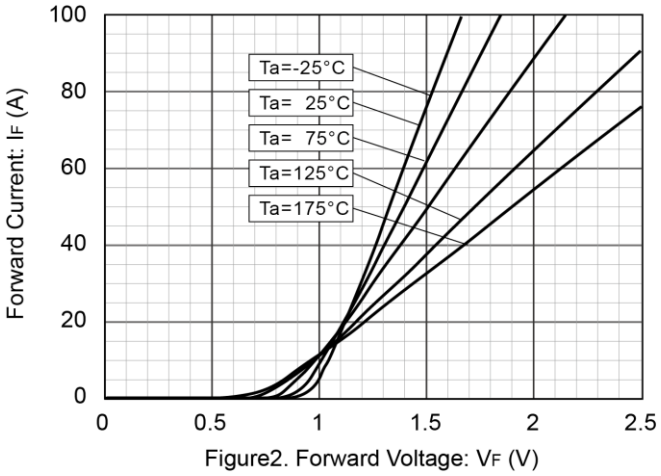


Figure2. Forward Voltage: V_F (V)

V_R-I_R Characteristics

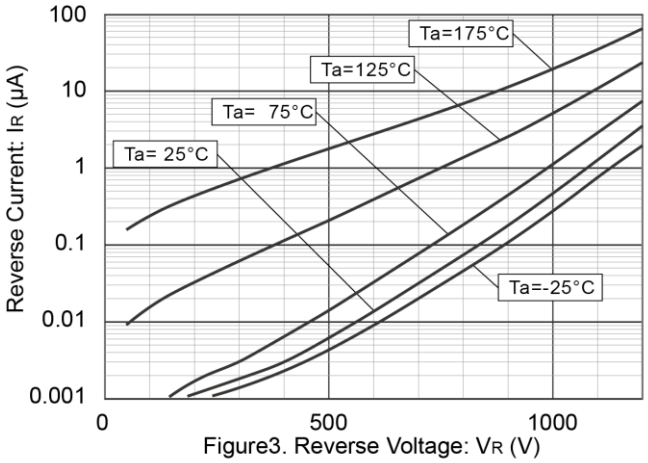


Figure3. Reverse Voltage: V_R (V)

V_R-C_t Characteristics

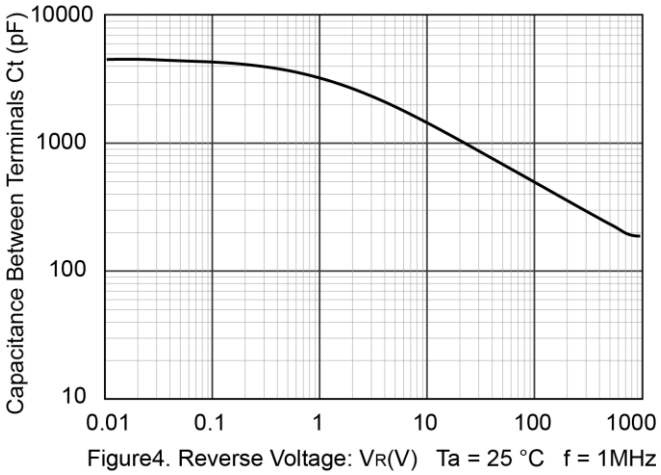


Figure4. Reverse Voltage: V_R(V) Ta = 25 °C f = 1MHz

Maximum I_p – T_C Characteristics

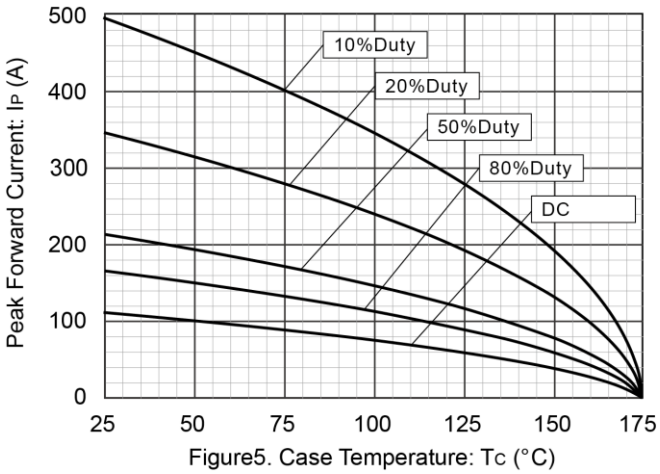


Figure5. Case Temperature: T_C (°C)

Power Dissipation

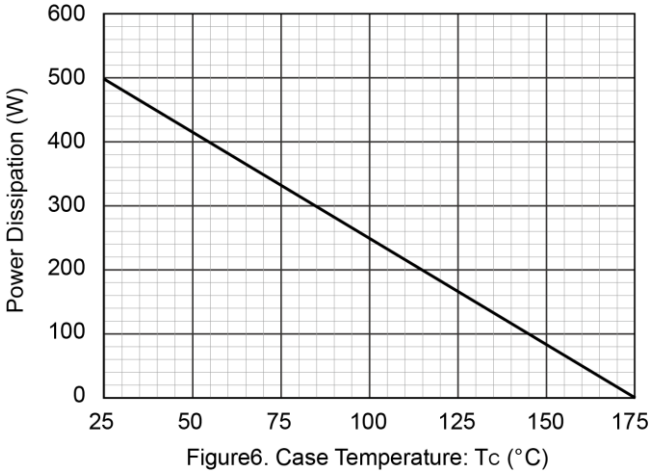


Figure6. Case Temperature: T_C (°C)

I_{FSM} – P_W Characteristics

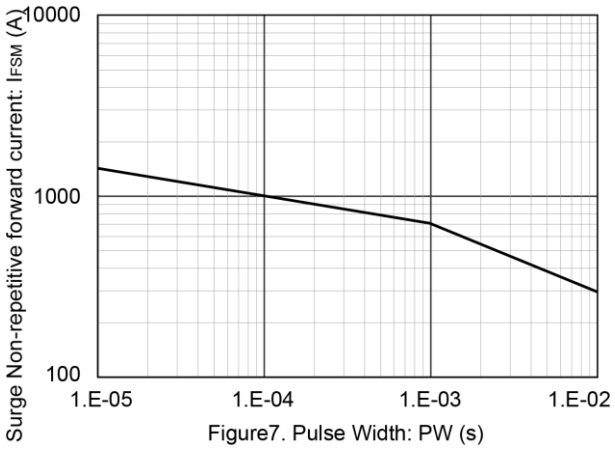


Figure7. Pulse Width: PW (s)

E_C-V_R Characteristics

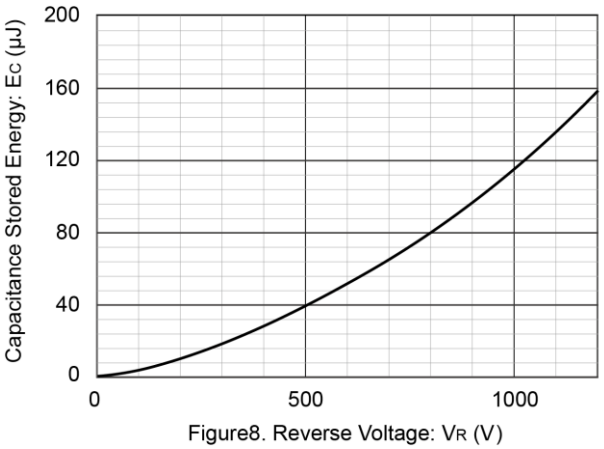


Figure8. Reverse Voltage: VR (V)

Typical Transient Thermal Resistance vs. Pulse Width

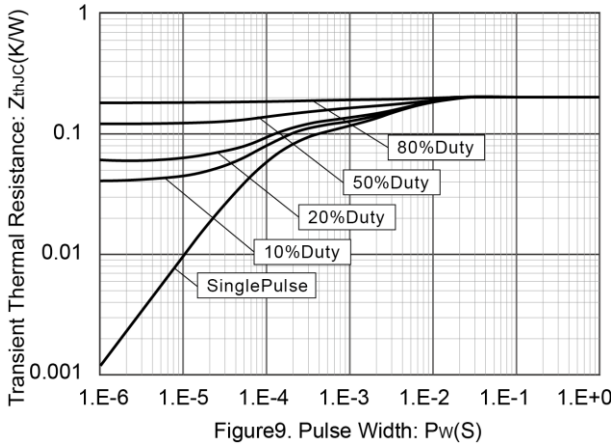
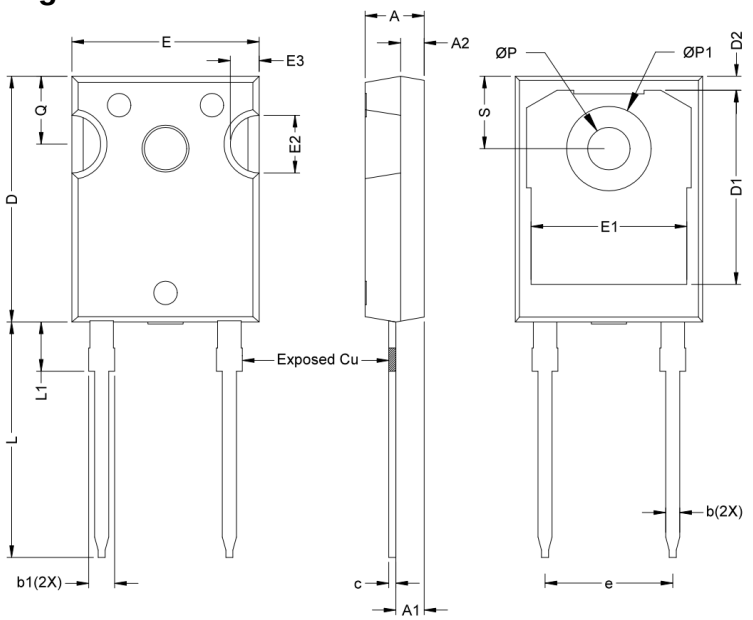


Figure9. Pulse Width: PW(S)

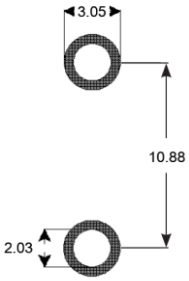
Package Outlines



DIM	MILIMETERS		
	MIN	TYP.	MAX
A	4.82	5.02	5.22
A1	2.21	2.41	2.61
A2	1.8	2	2.2
b	0.95	1.2	1.45
b1	1.95	2.2	2.45
c	0.35	0.6	0.85
D	20.75	20.95	21.15
D1	16.3	16.55	16.8
D2	0.99	1.19	1.39
E	15.74	15.94	16.14
E1	13.01	13.26	13.51
E2	4.71	4.91	5.11
E3	2.26	2.46	2.66
e	10.88BSC.		
L	19.82	20.07	20.32
L1	3.94	4.19	4.44
P	3.41	3.61	3.81
P1	6.94	7.19	7.44
Q	5.59	5.79	5.99
S	5.97	6.17	6.37

Unit : mm

Recommended pad layout for surface mount leadform



Unit : mm

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