

TO-247-2L 650V SiC Schottky Diode EL-SAB00665JA



V_{RRM}	=	650	V
Q_C	=	10	nC
I_F	=	6	A
V_F	=	1.5	V

Features

- Low Forward Voltage (V_F)
- Shorter recovery time
- High speed switching
- High surge current capability
- Enabling higher frequency and increased power density
- System efficiency improvement
- System cost and size savings due to the reduced cooling requirements
- Pb-Free, Halogen Free, RoHS Compliant



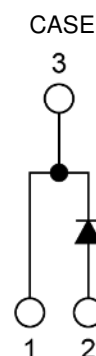
Benefits

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

Applications

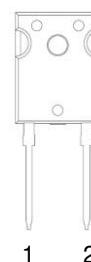
- Power Factor Correction in SMPS
- Solar inverter
- Uninterruptible Power Supply
- Motor Drives
- Data Center

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	650V	6A	24A	10nC	175°C
Condition	$T_C@25^\circ\text{C}$		$t_p=10\text{ms}$ $T_C@25^\circ\text{C}$ Sine half wave	$V_R=400\text{V}, T_j=25^\circ\text{C}$ $Q_C = \int_0^{V_R} C(V) dV$	-

Maximum Ratings

Parameter	Symbol	Value	Unit	Test condition
Repetitive Peak Reverse Voltage	V_{RRM}	650	V	
Surge Peak Reverse Voltage	V_{RSM}	650	V	
DC Blocking Voltage	V_R	650	V	
Continuous Forward Current	I_F^{*1}	6	A	
Surge non-repetitive forward current	I_{FSM}	24	A	$T_C= 25^{\circ}C$, $t_p= 10ms$ Sine half wave
Total power dissipation	P_D^{*1}	71	W	$T_C= 25^{\circ}C$
Junction temperature	T_J	175	$^{\circ}C$	
Storage temperature	T_{STG}	-55 / +175	$^{\circ}C$	
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	$R_{th(JC)}$	2.1	-	$^{\circ}C/W$

Electrical Characteristics

Parameter	Symbol	Values			Unit	Test condition
		Min.	Typ.	Max.		
DC blocking voltage	V _{DC}	650	-	-	V	T _J = 25°C, I _R = 100μA
Forward voltage	V _F	-	1.5	1.85	V	I _F = 6A, T _J = 25°C
			1.9	-		I _F = 6A, T _J = 175°C
Reverse current	I _R	-	0.8	36	μA	V _R = 520V, T _J = 25°C
			9	-		V _R = 520V, T _J = 175°C
Total capacitance	C	-	173	-	pF	V _R = 1V, f= 1MHz,
			19			V _R = 200V, f= 1MHz
			15			V _R = 400V, f= 1MHz
Capacitance Stored Energy	E _C	-	1.5		μJ	V _R = 400V
Total capacitive charge	Q _C	-	10	-	nC	V _R = 400V, T _J = 25°C $Q_C=\int_0^{V_R} C(V)dV$

Typical Performance

V_F-I_F Characteristics

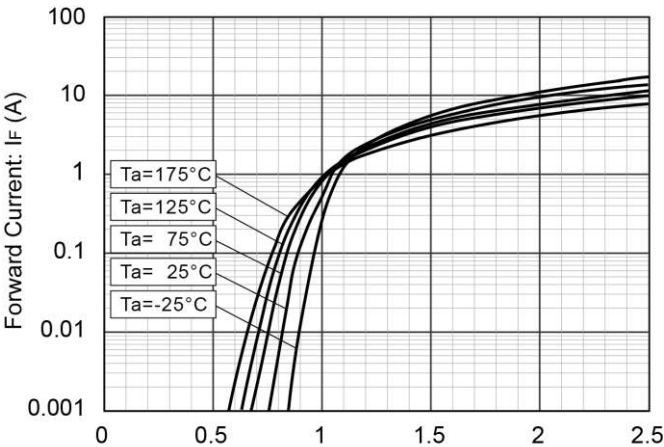


Figure1. Forward Voltage: V_F (V)

V_F-I_F Characteristics

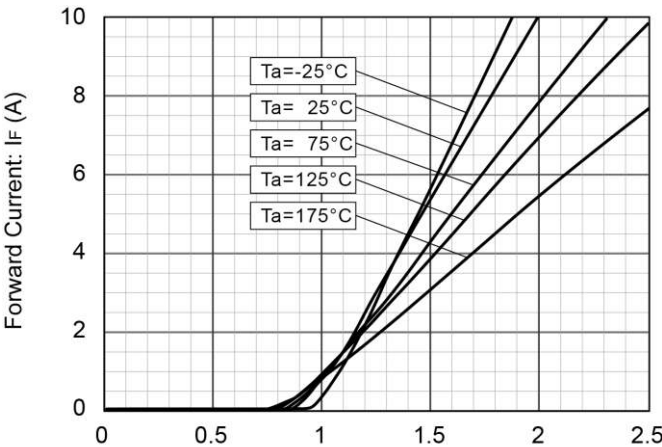


Figure2. Forward Voltage: V_F (V)

V_R-I_R Characteristics

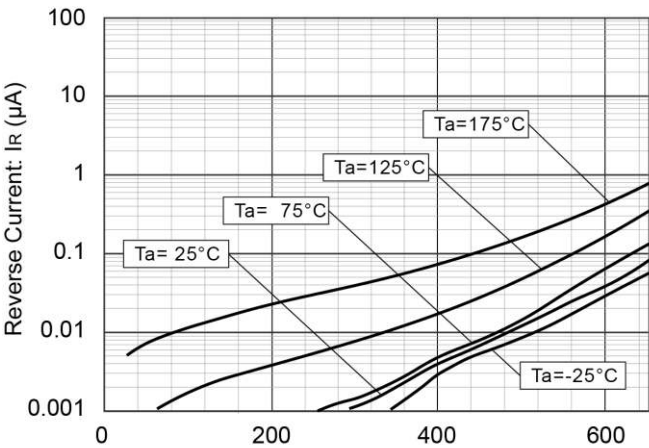


Figure3. Reverse Voltage: V_R (V)

V_R-C_t Characteristics

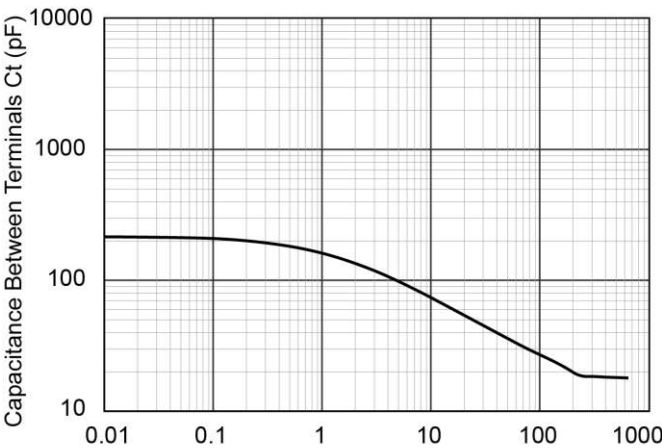


Figure4. Reverse Voltage: V_R(V) Ta = 25 °C f = 1MHz

Maximum I_p - T_c Characteristics

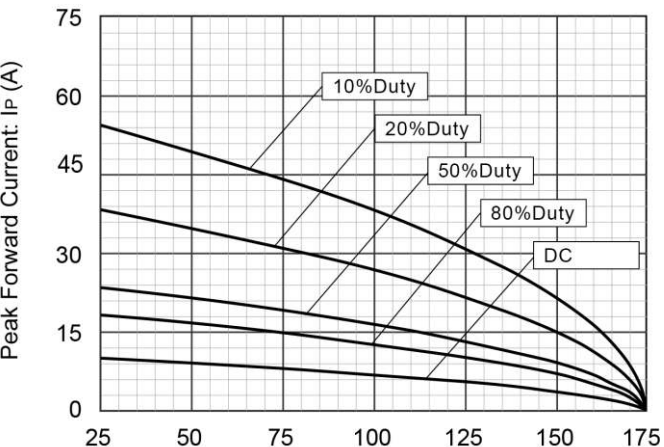


Figure5. Case Temperature: T_c (°C)

Power Dissipation

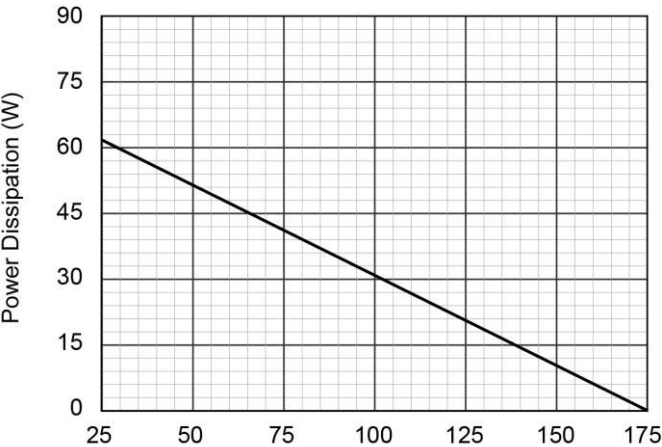


Figure6. Case Temperature: T_c (°C)

$I_{FSM} - P_W$ Characteristics

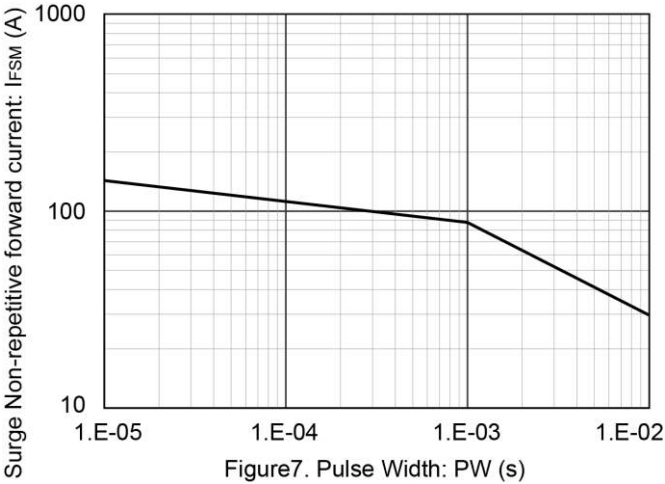


Figure7. Pulse Width: PW (s)

$E_C - V_R$ Characteristics

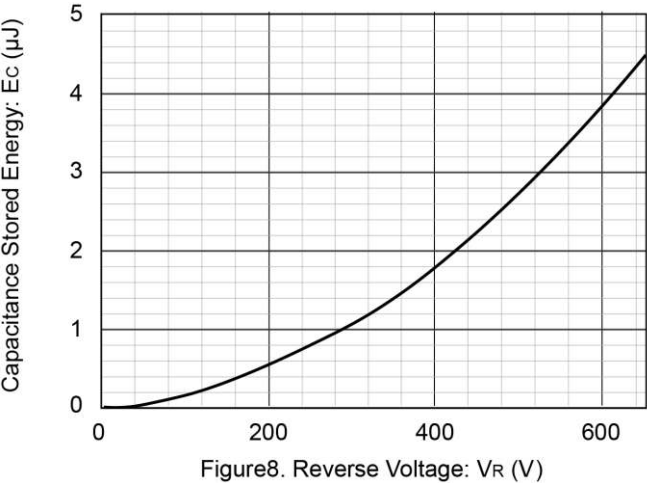


Figure8. Reverse Voltage: V_R (V)

Typical Transient Thermal Resistance vs. Pulse Width

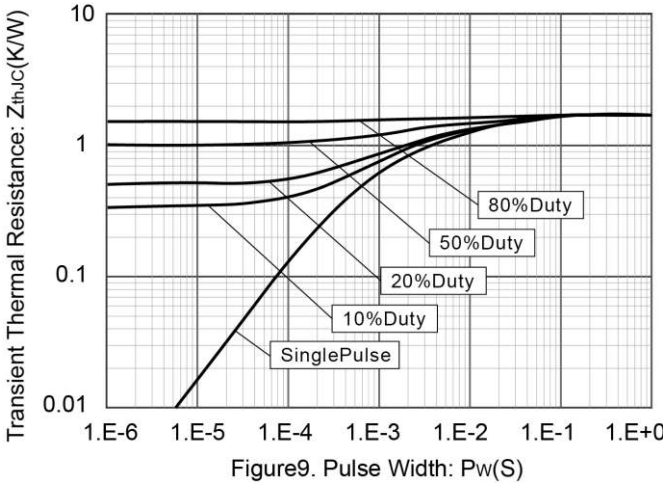
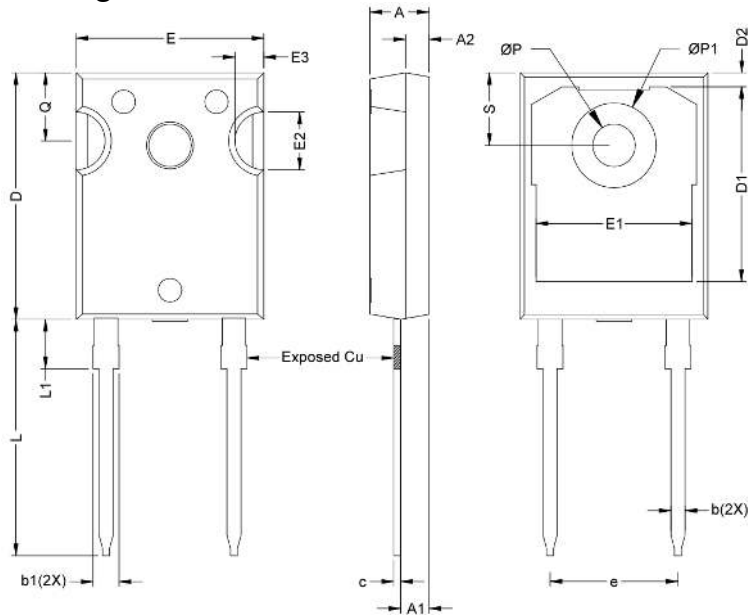


Figure9. Pulse Width: PW(S)

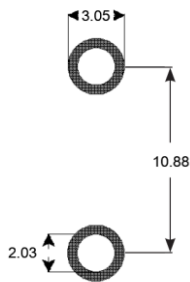
Package Outlines



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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