DATASHEET

TO-247-2L 650V SiC Schottky Diode
EL-SAB00465JA

V_{RRM}	=	650	V
Q_c	=	6.4	nC
I_F	=	4	A
V_F	=	1.4	V

Features

- Low Forward Voltage (VF)
- 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

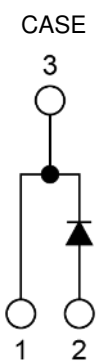
Benefits

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

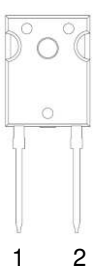
Applications

- 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	4A	19A	6.4nC	175℃
Condition	T_C@25℃		t_p=10ms T_C@25℃ Sine half wave	V_R=400V, T_j=25℃ $Q_c=\int_0^{V_R} C(V)dV$	-

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	4	A	
Surge non-repetitive forward current	I_{FSM}	19	A	T_C= 25℃, t_p= 10ms Sine half wave
Total power dissipation	P_D*1	33	W	T_C= 25℃
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	$R_{th(JC)}$	4.5	-	℃/W

Electrical Characteristics

Parameter	Symbol	Values			Unit	Test condition
		Min.	Typ.	Max.		
DC blocking voltage	V_{DC}	650	-	-	V	T_J= 25℃, I_R= 100μA
Forward voltage	V_F	-	1.4	1.75	V	I_F= 4A, T_J= 25℃
			1.8	-		I_F= 4A, T_J= 175℃
Reverse current	I_R	-	1	25	μA	V_R= 520V, T_J= 25℃
			5	-		V_R= 520V, T_J= 175℃
Total capacitance	C	-	100	-	pF	V_R= 1V, f= 1MHz,
			12			V_R= 200V, f= 1MHz
			10			V_R= 400V, f= 1MHz
Capacitance Stored Energy	E_C	-	1		μJ	V_R = 400V
Total capacitive charge	Q_C	-	6.4	-	nC	V_R= 400V, T_J= 25℃ $Qc=\int_0^{V_R} C(V)dV$

Typical Performance

V_F-I_F Characteristics

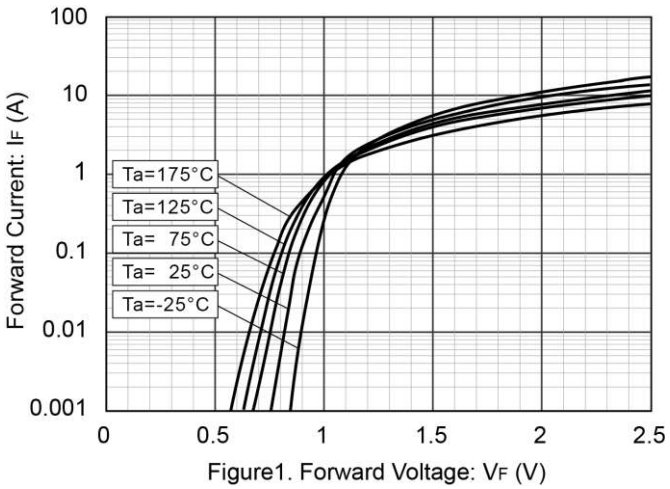


Figure1. Forward Voltage: V_F (V)

V_F-I_F Characteristics

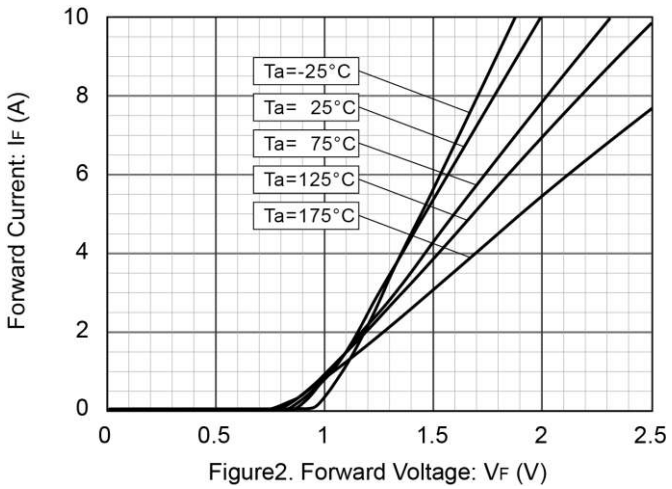


Figure2. Forward Voltage: V_F (V)

V_R-I_R Characteristics

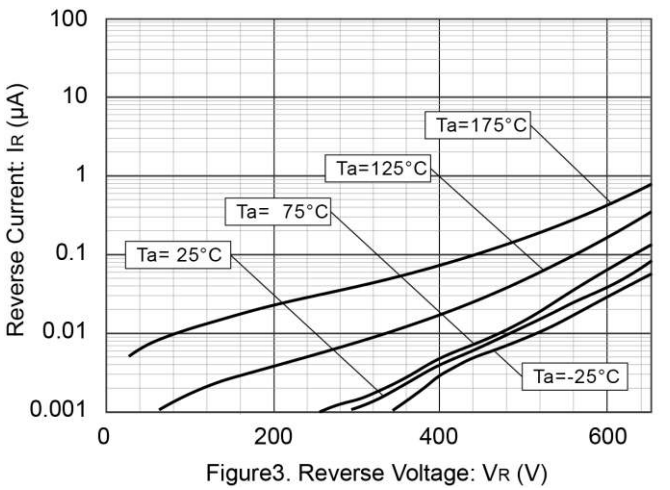


Figure3. Reverse Voltage: V_R (V)

V_R-C_t Characteristics

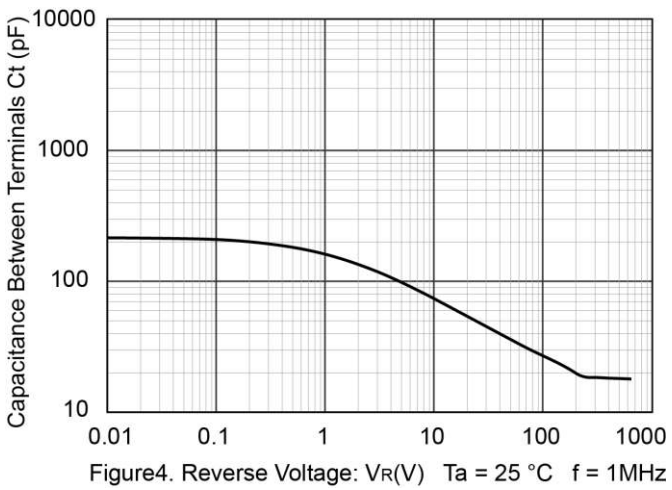


Figure4. Reverse Voltage: V_R(V) Ta = 25 °C f = 1MHz

Maximum I_p – T_C Characteristics

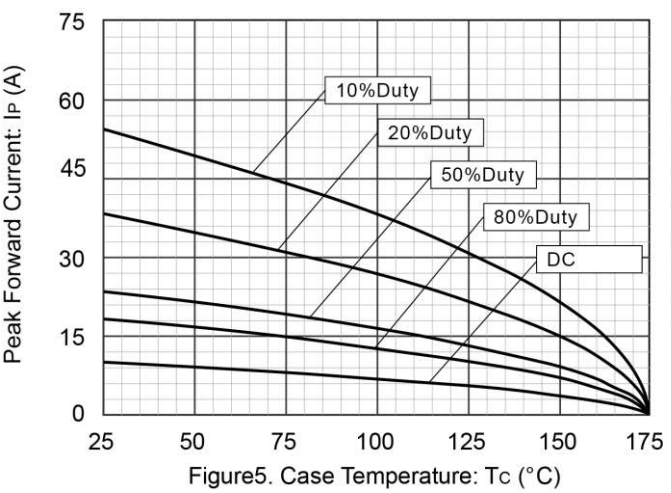


Figure5. Case Temperature: T_C (°C)

Power Dissipation

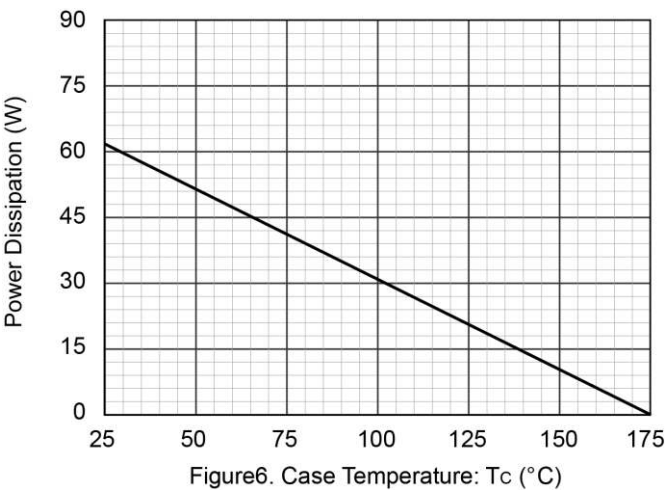


Figure6. Case Temperature: T_C (°C)

I_{FSM} – P_W Characteristics

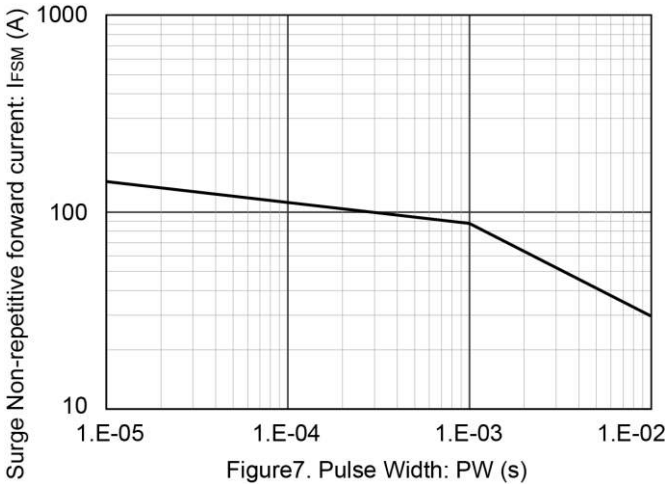


Figure7. Pulse Width: PW (s)

E_C-V_R Characteristics

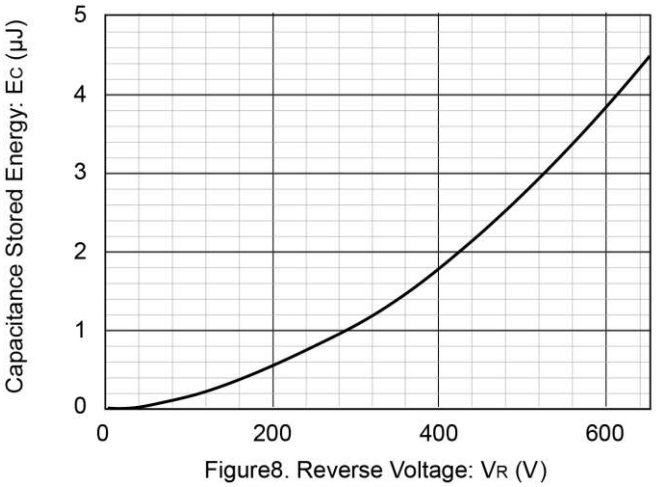


Figure8. Reverse Voltage: VR (V)

Typical Transient Thermal Resistance vs. Pulse Width

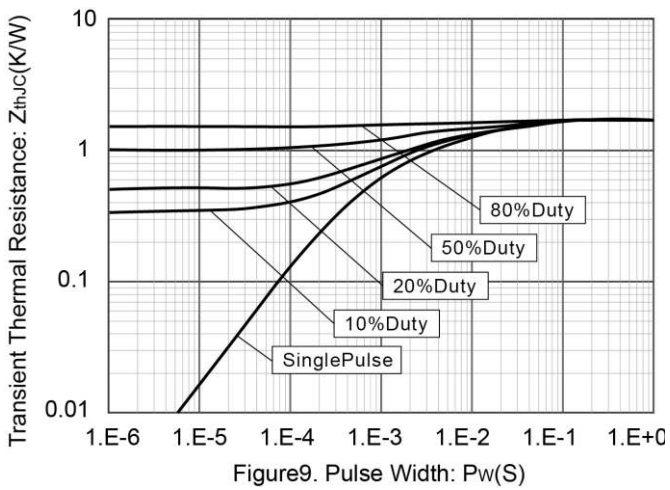
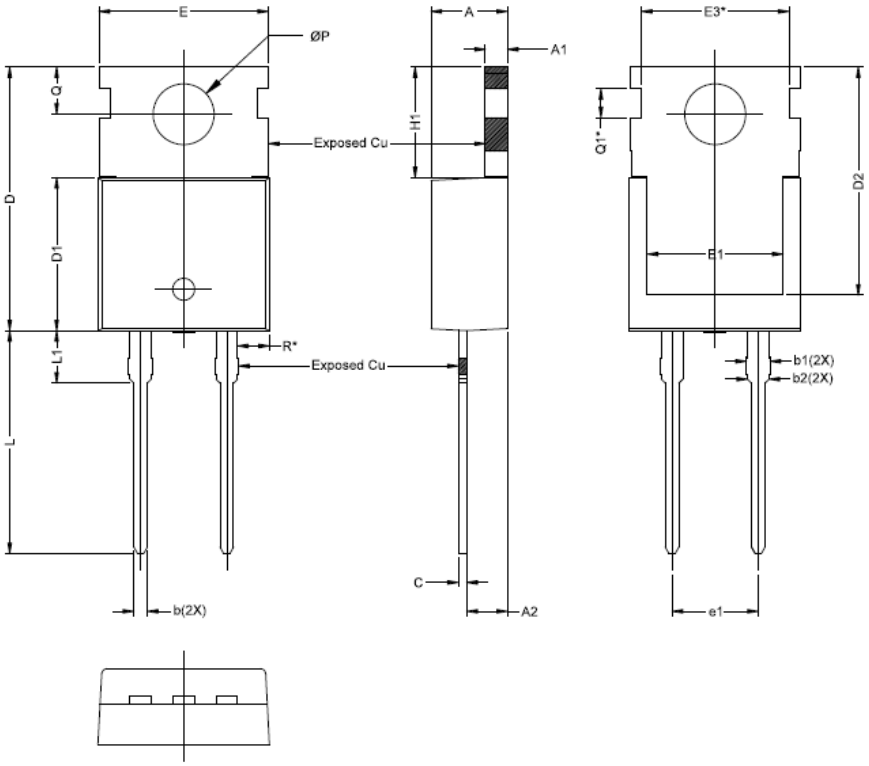


Figure9. Pulse Width: PW(S)

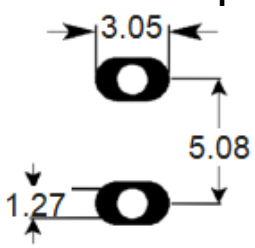
Package Outlines



DIM	MILLIMETERS		
	MIN	TYP.	MAX
A	4.3	4.5	4.7
A1	1.05	1.3	1.55
A2	2.2	2.4	2.6
b	0.7	0.8	0.9
b1	1.14	1.39	1.64
c	0.4	0.5	0.6
D	15.4	15.6	15.8
D1	8.85	9.05	9.25
D2	13.25	13.5	13.75
E	9.74	9.99	10.24
E1	7.75	8	8.25
E3	8.70REF.		
e1	5.08BSC.		
H1	6.35	6.55	6.75
L	12.93	13.18	13.43
L1	2.85	3.1	3.35
P	3.35	3.6	3.85
Q	2.55	2.8	3.05
Q1	1.70REF.		

Unit : mm

Recommended pad layout for surface mount leadform



Unit : mm

DISCLAIMER

1. Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.
2. The graphs shown in this datasheet are representing typical data only and do not show guaranteed values.
3. When using this product, please observe the absolute maximum ratings and the instructions for use outlined in these specification sheets. EVERLIGHT assumes no responsibility for any damage resulting from use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.
4. These specification sheets include materials protected under copyright of EVERLIGHT. Reproduction in any form is prohibited without the specific consent of EVERLIGHT.
5. This product is not intended to be used for military, aircraft, automotive, medical, life sustaining or life saving applications or any other application which can result in human injury or death. Please contact authorized Everlight sales agent for special application request.
6. Statements regarding the suitability of products for certain types of applications are based on Everlight's knowledge of typical requirements that are often placed on Everlight products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Everlight's terms and conditions of purchase, including but not limited to the warranty expressed therein.