

TO-247-2L 650V SiC Schottky Diode EL-SAB02065JA



V_{RRM}	=	650	V
Q_C	=	30	nC
I_F	=	20	A
V_F	=	1.5	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

Key Performance Parameters

Symbol	V_{RRM}	I_F	I_{FSM}	Q_C	$T_{J,max}$
Value	650V	20A	51A	30nC	175°C
Condition	$T_C@25^\circ\text{C}$		$t_p=10\text{ms}$ $T_C@25^\circ\text{C}$ Sine half wave	$V_R=400\text{V}, T_j=25^\circ\text{C}$ $Q_C = \int_0^{V_R} C(V)dV$	-



Schematic

CASE



Pin Configuration

1. Cathode

2. Anode

CASE: Cathode



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}	20	A	
Surge non-repetitive forward current	I_{FSM}	51	A	$T_C = 25^\circ\text{C}$, $t_p = 10\text{ms}$ Sine half wave
Total power dissipation	P_D^{*1}	75	W	$T_C = 25^\circ\text{C}$
Junction temperature	T_J	175	$^\circ\text{C}$	
Storage temperature	T_{STG}	-55 / +175	$^\circ\text{C}$	
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.)

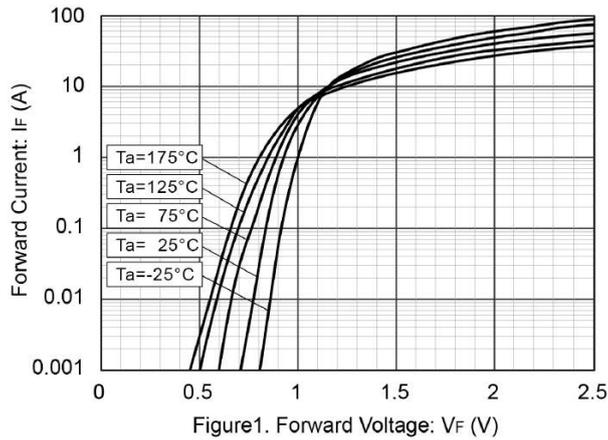
Parameter	Symbol	Value		Unit
		Typ	Max	
Thermal Resistance from Junction to Case	$R_{th(JC)}$	2.0	-	$^\circ\text{C/W}$

Electrical Characteristics

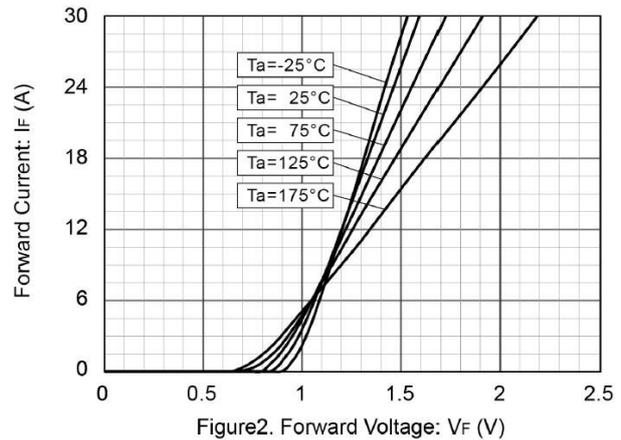
Parameter	Symbol	Values			Unit	Test condition
		Min.	Typ.	Max.		
DC blocking voltage	V_{DC}	650	-	-	V	$T_J = 25^\circ\text{C}$, $I_R = 100\mu\text{A}$
Forward voltage	V_F	-	1.5	1.85	V	$I_F = 20\text{A}$, $T_J = 25^\circ\text{C}$
			1.9	-		$I_F = 20\text{A}$, $T_J = 175^\circ\text{C}$
Reverse current	I_R	-	4	120	μA	$V_R = 520\text{V}$, $T_J = 25^\circ\text{C}$
			40	-		$V_R = 520\text{V}$, $T_J = 175^\circ\text{C}$
Total capacitance	C	-	513	-	pF	$V_R = 1\text{V}$, $f = 1\text{MHz}$,
			57			$V_R = 200\text{V}$, $f = 1\text{MHz}$
			46			$V_R = 400\text{V}$, $f = 1\text{MHz}$
Capacitance Stored Energy	E_C	-	4.4		μJ	$V_R = 400\text{V}$
Total capacitive charge	Q_C	-	30	-	nC	$V_R = 400\text{V}$, $T_J = 25^\circ\text{C}$ $Q_C = \int_0^{V_R} C(V)dV$

Typical Performance

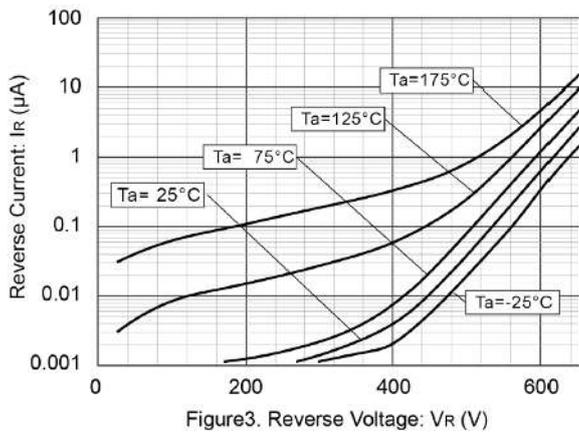
V_F-I_F Characteristics



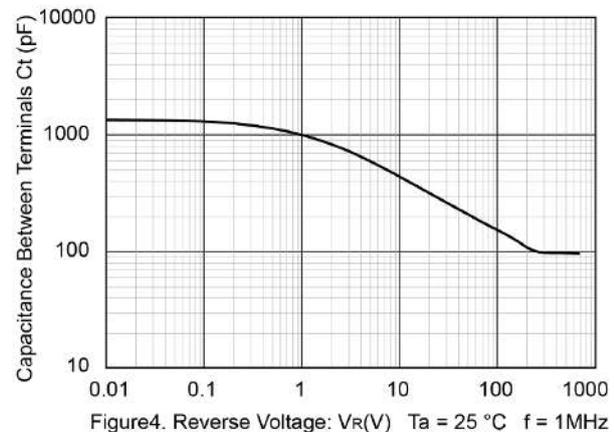
V_F-I_F Characteristics



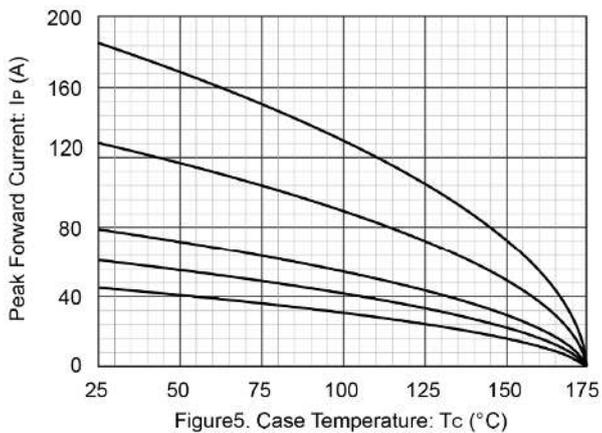
V_R-I_R Characteristics



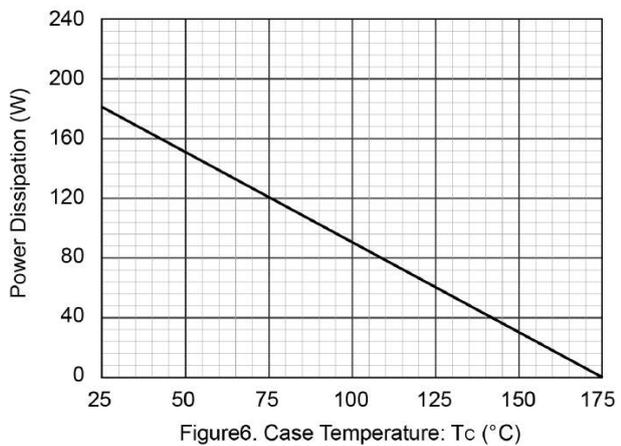
V_R-C_t Characteristics



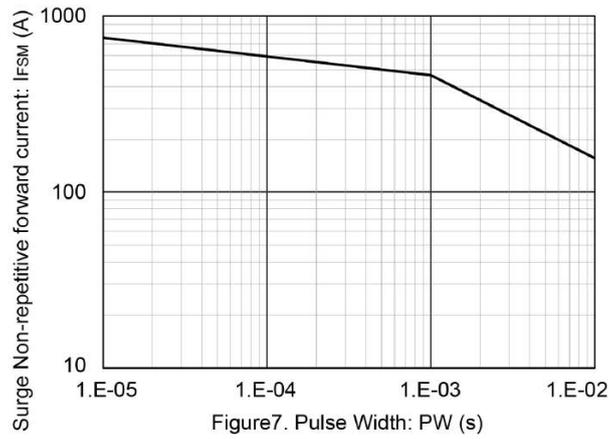
Maximum I_p - T_c Characteristics



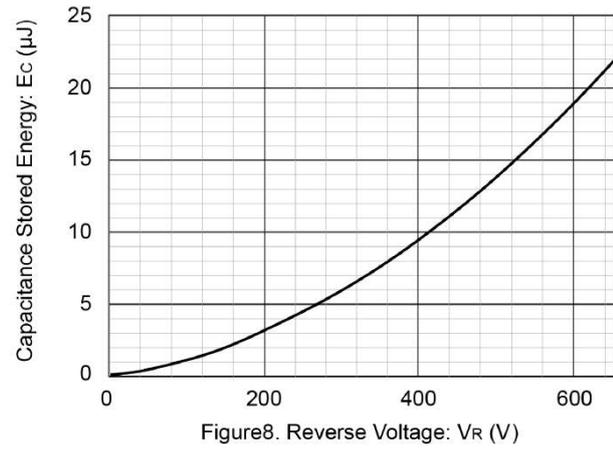
Power Dissipation



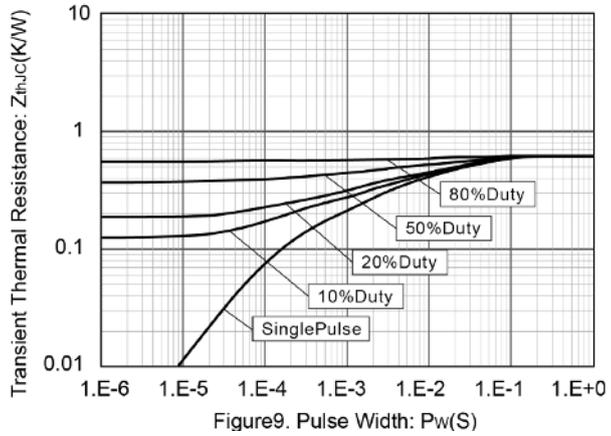
I_{FSM} – P_W Characteristics



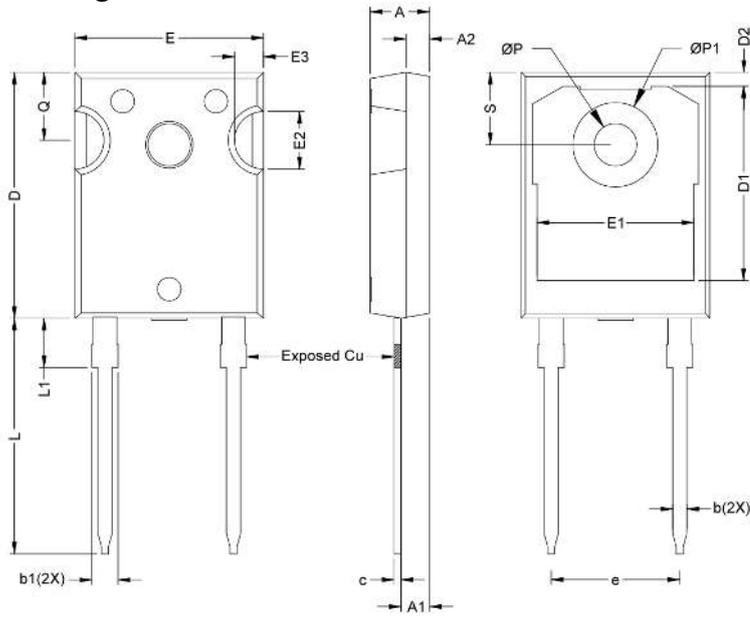
E_C-V_R Characteristics



Typical Transient Thermal Resistance vs. Pulse Width



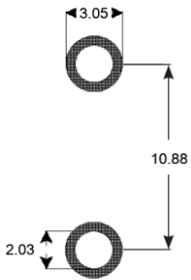
Package Outlines



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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