DATASHEET

TO-252-3L 650V SiC Schottky Diode
EL-SAS00465JA

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

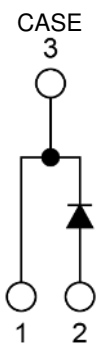
RoHS

Halogen-Free (F, Cl, Br, I)

Benefits

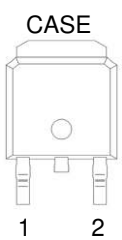
- Improve System Efficiency
- Reduction of Heat Sink Requirement
- Essentially No Switching Losses
- Parallel Devices Without Thermal Runaway

Schematic



Pin Configuration

1. Cathode
2. Anode
CASE: Cathode



Applications

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

Key Performance Parameters

Symbol	V_{RRM}	I_F	I_{FSM}	Q_C	$T_{J,max}$
Value	650V	4A	12A	6.4nC	175°C
Condition	T_C@25°C		t_p=10ms T_C@25°C Sine half wave	V_R = 400 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}	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}	12	A	t_p= 10ms Sine half wave
Total power dissipation	P_D	25	W	
Junction temperature	T_J	175	°C	
Storage temperature	T_{STG}	-55 / +175	°C	

*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	$R_{th(JC)}$	5.9	-	°C/W

Electrical Characteristics

Parameter	Symbol	Values			Unit	Test condition
		Min.	Typ.	Max.		
DC blocking voltage	V_{DC}	650	-	-	V	T_J= 25℃, I_R= 40μA
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℃
			1.8	-		V_R= 520V, T_J= 175℃
Total capacitance	C	-	100	-	pF	V_R= 1V, f= 1MHz T_J= 25℃
			12			V_R= 200V, f= 1MHz T_J= 25℃
			10			V_R= 400V, f= 1MHz T_J= 25℃
Capacitance Stored Energy	E_C	-	1.0	-	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

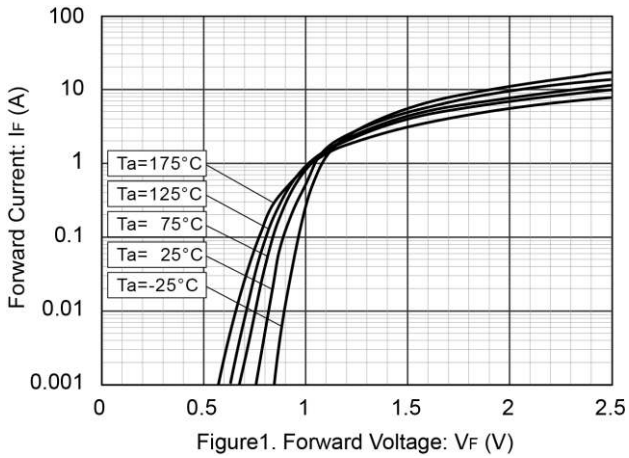


Figure1. Forward Voltage: V_F (V)

V_F-I_F Characteristics

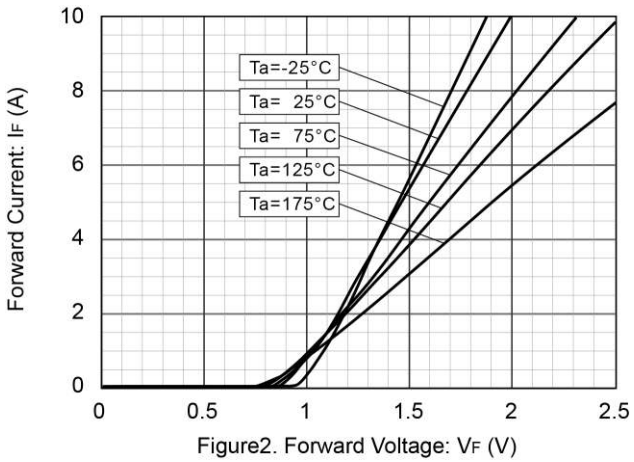


Figure2. Forward Voltage: V_F (V)

V_R-I_R Characteristics

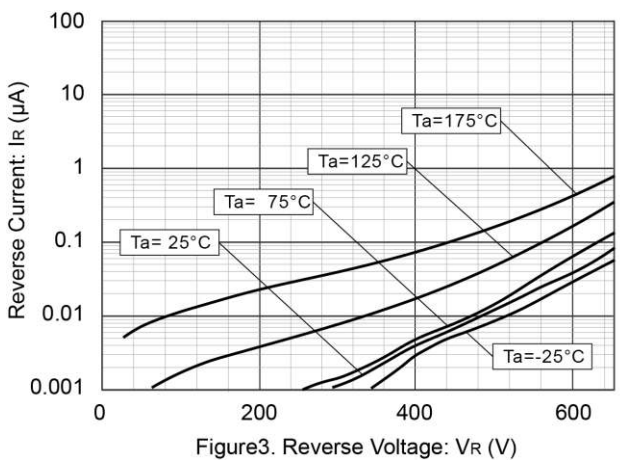


Figure3. Reverse Voltage: V_R (V)

V_R-C_t Characteristics

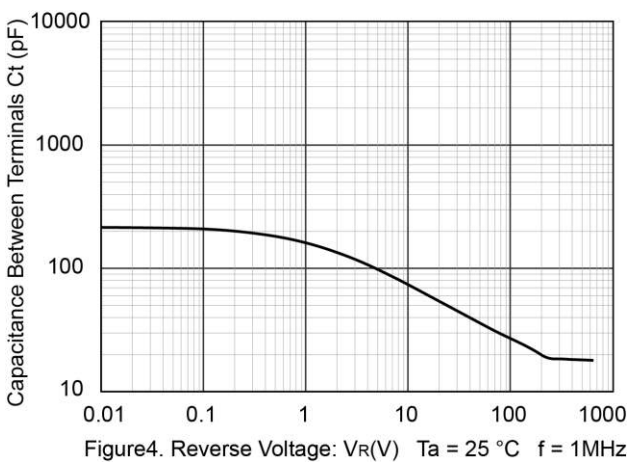


Figure4. Reverse Voltage: V_R(V) Ta = 25 °C f = 1MHz

Maximum I_p – T_C Characteristics

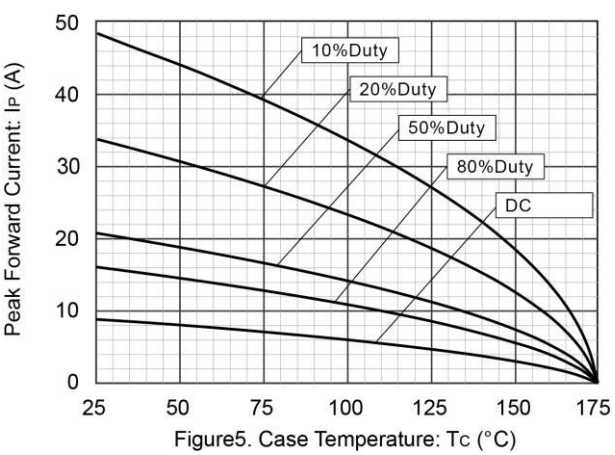


Figure5. Case Temperature: T_C (°C)

Power Dissipation

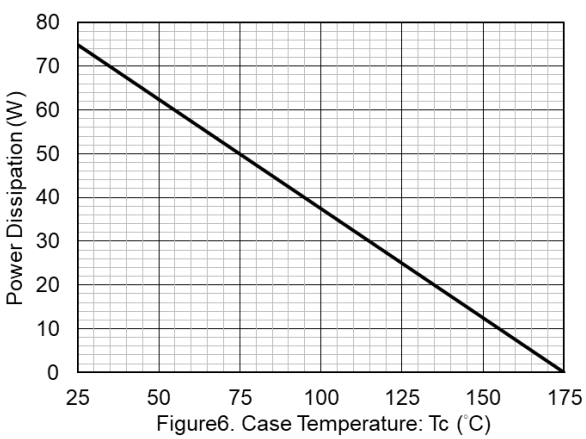


Figure6. Case Temperature: Tc (°C)

I_{FSM} – P_W Characteristics

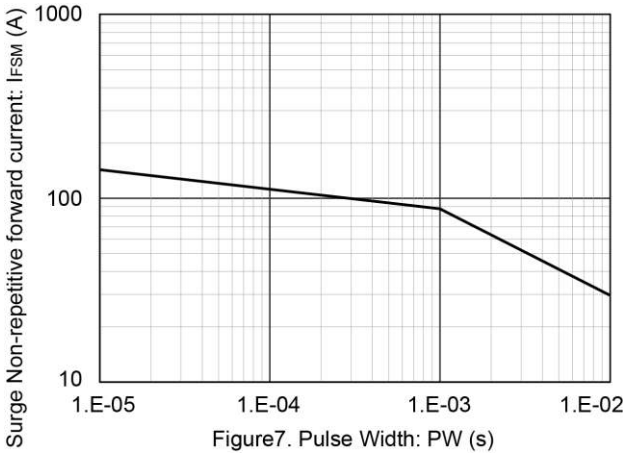


Figure7. Pulse Width: PW (s)

E_C-V_R Characteristics

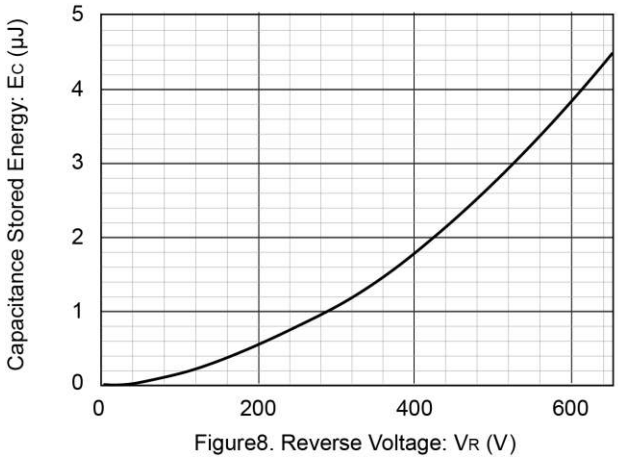
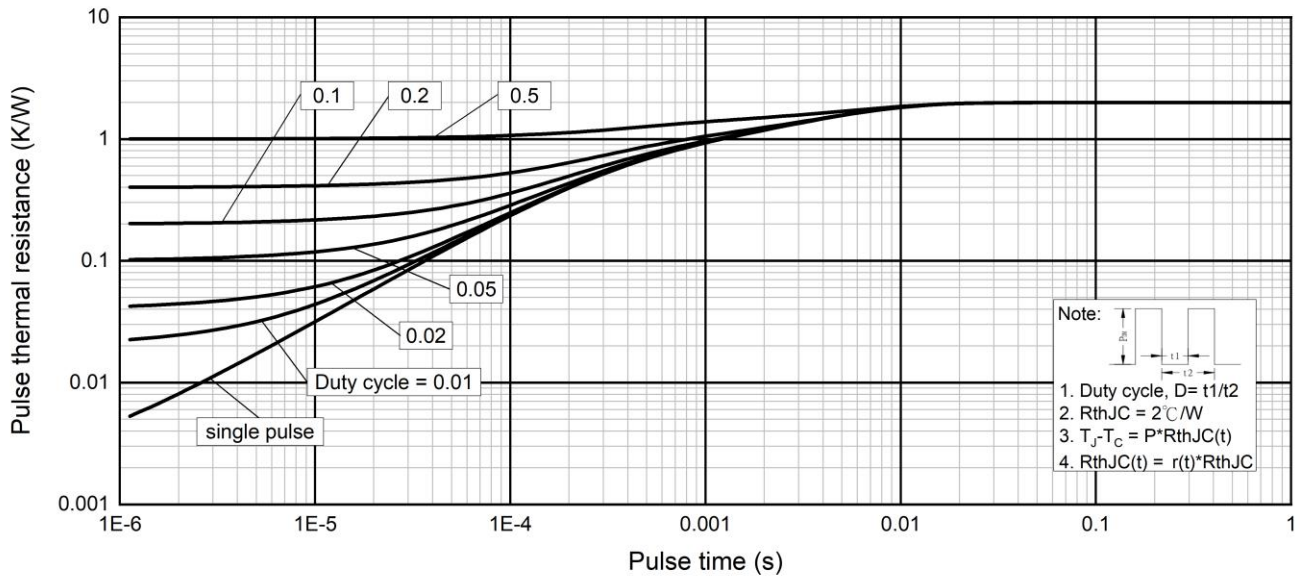
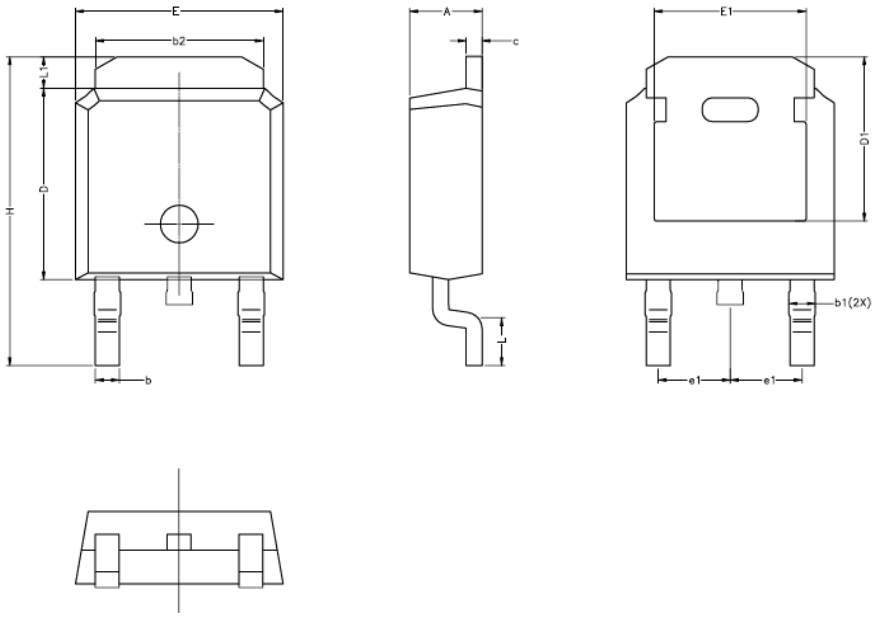


Figure8. Reverse Voltage: VR (V)

Typical Transient Thermal Resistance vs. Pulse Width



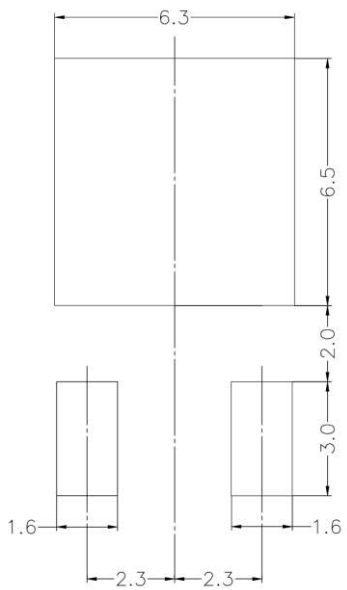
Package Outlines



DIM	MILLIMETERS		
	MIN	TYP.	MAX
A	2.10	2.30	2.50
b	0.51	0.76	1.01
b1	0.59	0.84	1.09
b2	5.08	5.33	5.58
c	0.26	0.51	0.76
D	5.90	6.10	6.30
D1	4.98	5.23	5.48
E	6.40	6.60	6.80
E1	4.58	4.83	5.08
e1	2.28BSC.		
H	9.59	9.84	10.09
L	1.27	1.52	1.77
L1	0.75	1.00	1.25

Unit : mm

Recommended pad layout for surface mount leadform



Unit : mm

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