

TO-252-3L 650V SiC Schottky Diode EL-SAS00865JA



V_{RRM}	=	650	V
Q_c	=	12	nC
I_F	=	8	A
V_F	=	1.5	V

Features

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



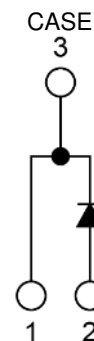
Benefits

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

Applications

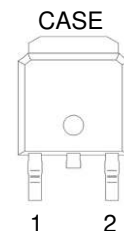
- Solar inverter/Motor Drivers/Data Center
- Boost Diodes in PFC or DC/DC Stages
- AC/DC Converters

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	650V	8A	14.4A	12nC	175°C
Condition	$T_c@25^\circ\text{C}$	$T_c@135^\circ\text{C}$	$t_p=10\text{ms}$ $T_c@25^\circ\text{C}$ 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}	8	A	$T_C=135^{\circ}C$
Surge non-repetitive forward current	I_{FSM}	14.4	A	$t_p=10ms$ Sine half wave
Total power dissipation	P_D	40	W	
Junction temperature	T_J	175	$^{\circ}C$	
Storage temperature	T_{STG}	-55 / +175	$^{\circ}C$	

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

Thermal Characteristics (Measured conformable to JESD51-14.)

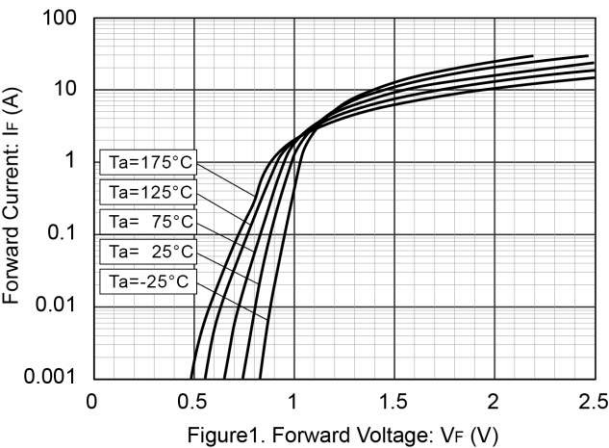
Parameter	Symbol	Value		Unit
		Typ	Max	
Thermal Resistance from Junction to Case	$R_{th(JC)}$	3.7	-	$^{\circ}C/W$

Electrical Characteristics

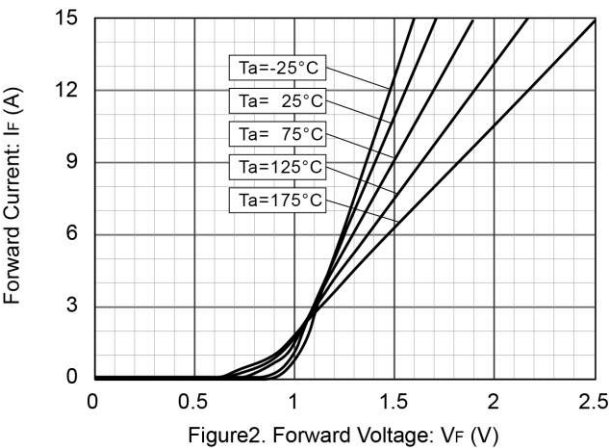
Parameter	Symbol	Values			Unit	Test condition
		Min.	Typ.	Max.		
DC blocking voltage	V _{DC}	650	-	-	V	T _J = 25°C, I _R = 40μA
Forward voltage	V _F	-	1.5	1.85	V	I _F = 8A, T _J = 25°C
			1.85	-		I _F = 8A, T _J = 175°C
Reverse current	I _R	-	2	40	μA	V _R = 520V, T _J = 25°C
			20	-		V _R = 520V, T _J = 175°C
Total capacitance	C	-	208	-	pF	V _R = 1V, f= 1MHz T _J = 25°C
			23			V _R = 200V, f= 1MHz T _J = 25°C
			18			V _R = 400V, f= 1MHz T _J = 25°C
Capacitance Stored Energy	E _C	-	1.7	-	μJ	V _R = 400V
Total capacitive charge	Q _C	-	12	-	nC	V _R = 400V, T _J = 25°C $Q_C=\int_0^{V_R} C(V)dV$

Typical Performance

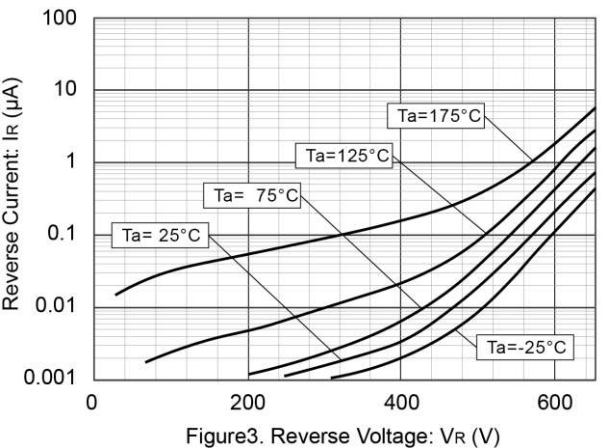
V_F-I_F Characteristics



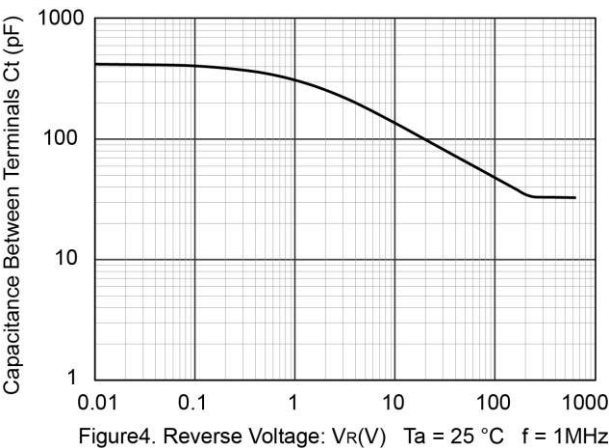
V_F-I_F Characteristics



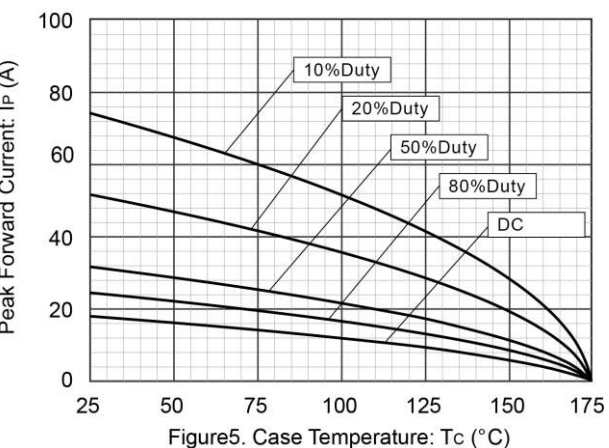
V_R-I_R Characteristics



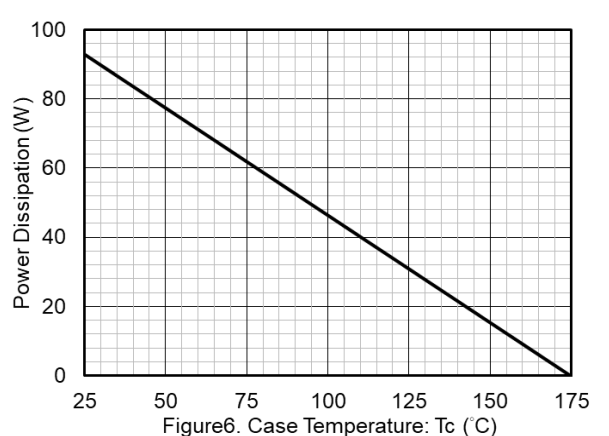
V_R-C_t Characteristics



Maximum I_p – T_c Characteristics



Power Dissipation



$I_{FSM} - P_W$ Characteristics

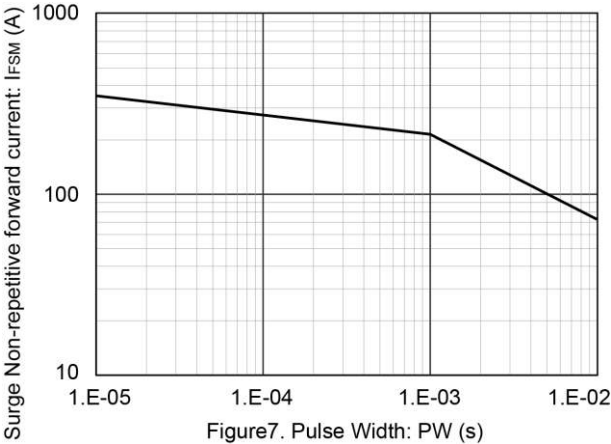


Figure7. Pulse Width: PW (s)

$E_C - V_R$ Characteristics

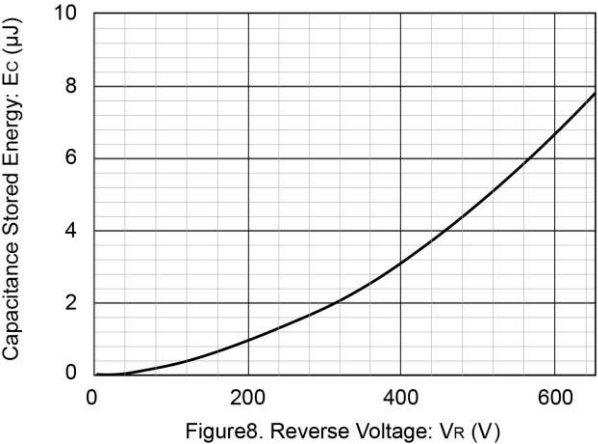
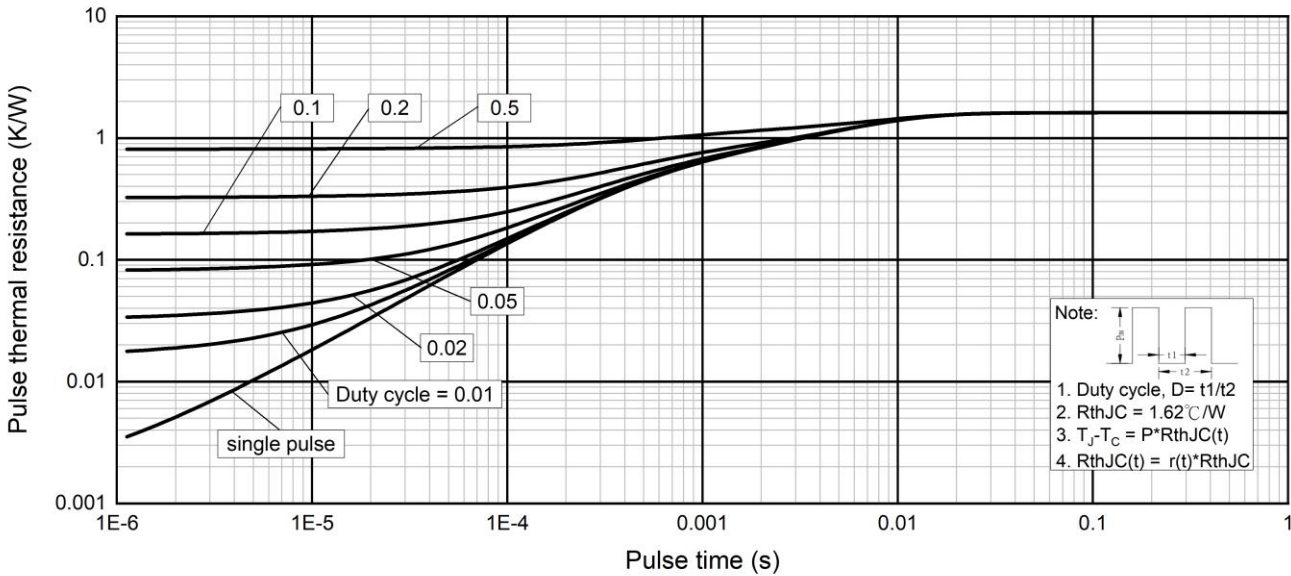
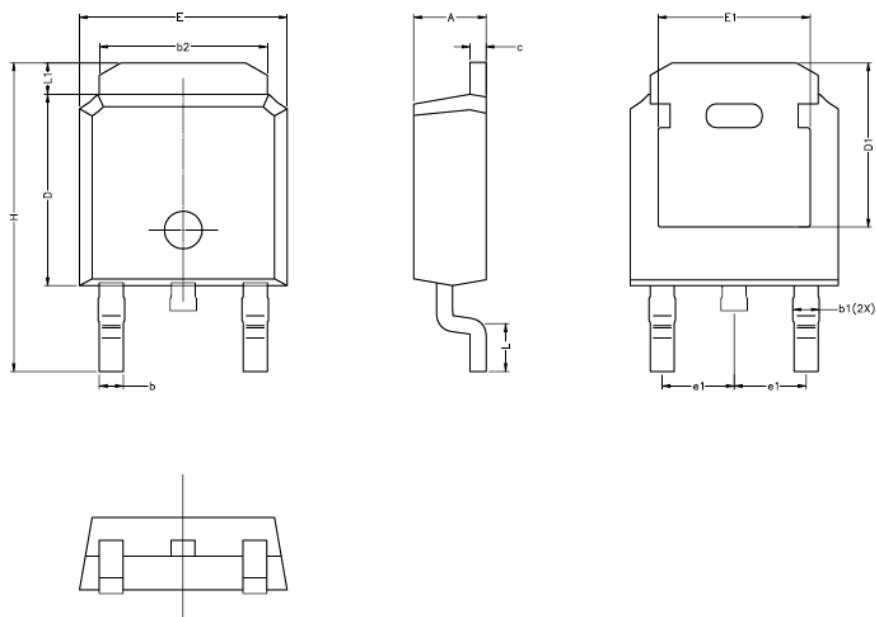


Figure8. Reverse Voltage: V_R (V)

Typical Transient Thermal Resistance vs. Pulse Width



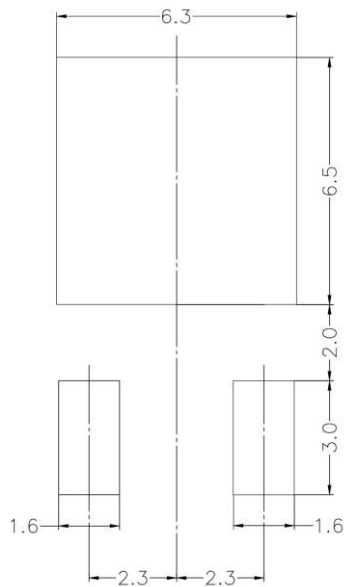
Package Outlines



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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