

TO-252-3L 650V SiC Schottky Diode EL-SAS02065JA



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

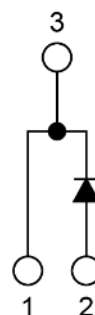
- Power Factor Correction in SMPS
- Solar inverter
- Uninterruptible Power Supply
- Motor Drives
- Data Center

Key Performance Parameters

Symbol	V_{RRM}	I_F	I_{FSM}	Q_C	$T_{J,max}$
Value	650V	20A	26A	30nC	175°C
Condition	$T_C@25^\circ\text{C}$		$t_p=10\text{ms}$ $T_C@25^\circ\text{C}$ Sine half wave	$V_R=400\text{V}, T_J=25^\circ\text{C}$ $Q_C = \int_0^{V_R} C_C(V) dV$	-

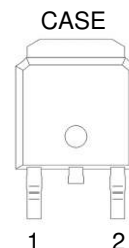
Schematic

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}	26	A	$T_C= 25^{\circ}C$, $t_p= 10ms$ Sine half wave
Total power dissipation	P_D^{*1}	50	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	$R_{th(JC)}$	3.6	-	$^{\circ}C/W$

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 = 16A, T _J = 25°C
			1.9	-		I _F = 16A, T _J = 175°C
Reverse current	I _R	-	4	120	μA	V _R = 520V, T _J = 25°C
			40	-		V _R = 520V, T _J = 175°C
Total capacitance	C	-	513	-	pF	V _R = 1V, f= 1MHz,
			57			V _R = 200V, f= 1MHz
			46			V _R = 400V, f= 1MHz
Capacitance Stored Energy	E _C	-	4.4		μJ	V _R = 400V
Total capacitive charge	Q _C	-	30	-	nC	V _R = 400V, T _J = 25°C $Q_C=\int_0^{V_R} C(V)dV$

Typical Performance

V_F-I_F Characteristics

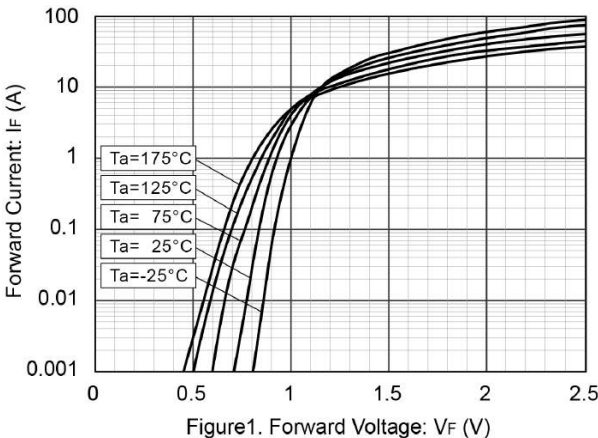


Figure1. Forward Voltage: V_F (V)

V_F-I_F Characteristics

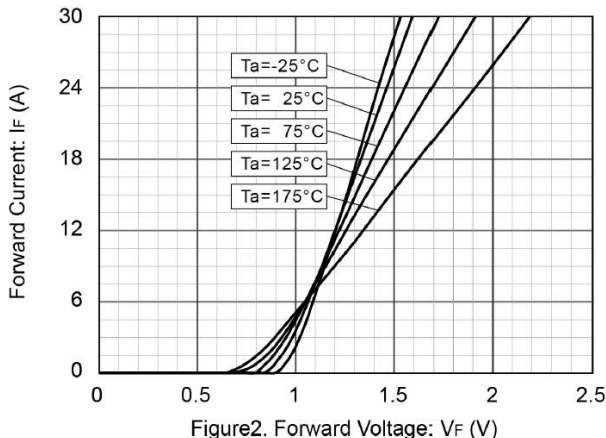


Figure2. Forward Voltage: V_F (V)

V_R-I_R Characteristics

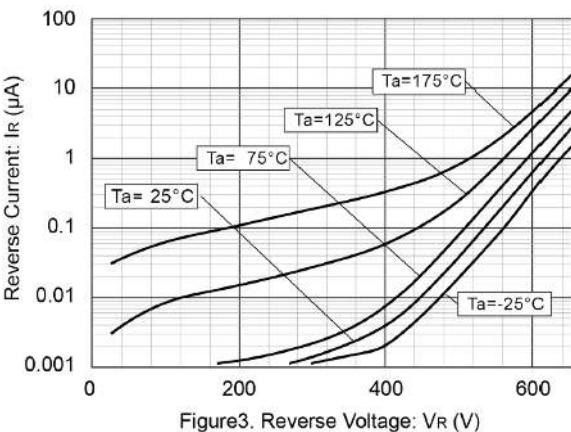


Figure3. Reverse Voltage: V_R (V)

V_R-C_t Characteristics

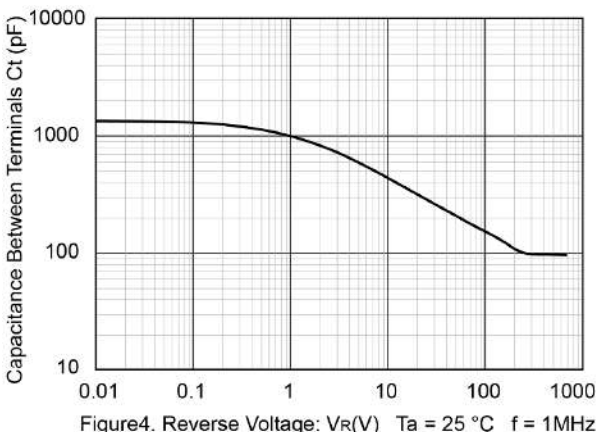


Figure4. Reverse Voltage: V_R(V) Ta = 25 °C f = 1MHz

Maximum I_p - T_C Characteristics

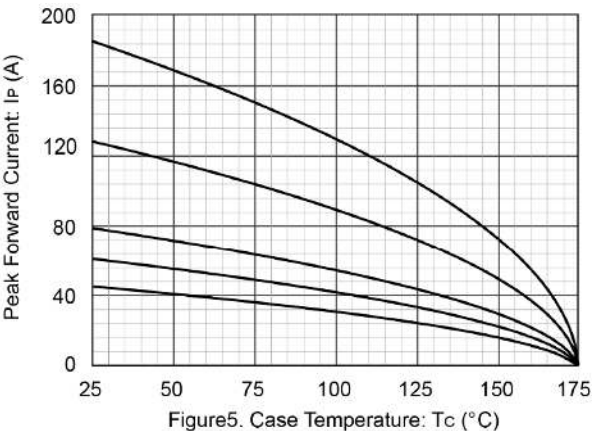


Figure5. Case Temperature: T_C (°C)

Power Dissipation

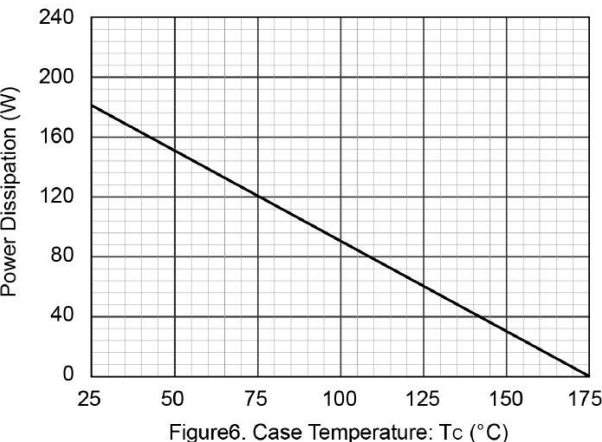
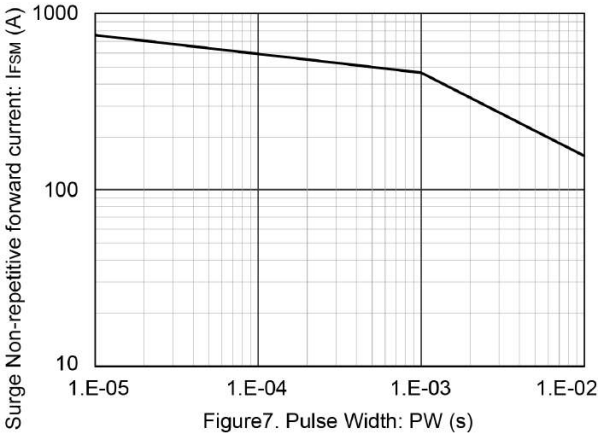
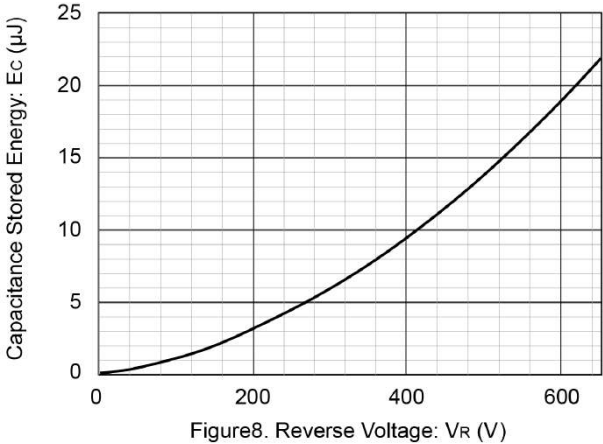


Figure6. Case Temperature: T_C (°C)

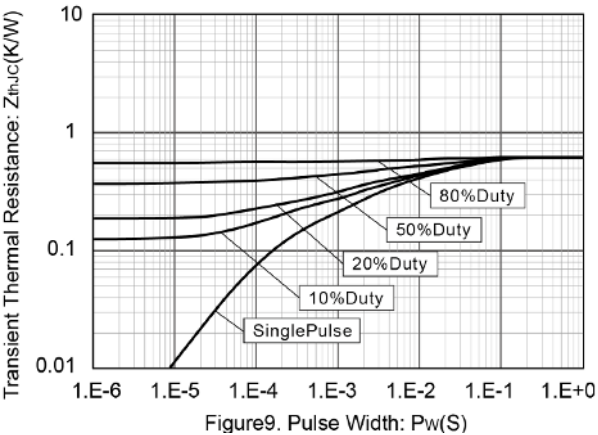
I_{FSM} – P_W Characteristics



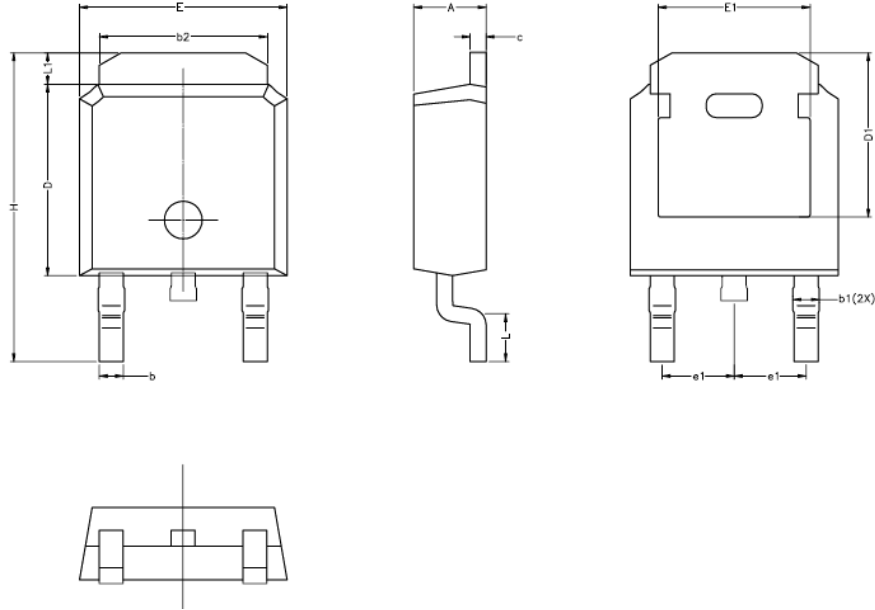
E_C-V_R Characteristics



Typical Transient Thermal Resistance vs. Pulse Width



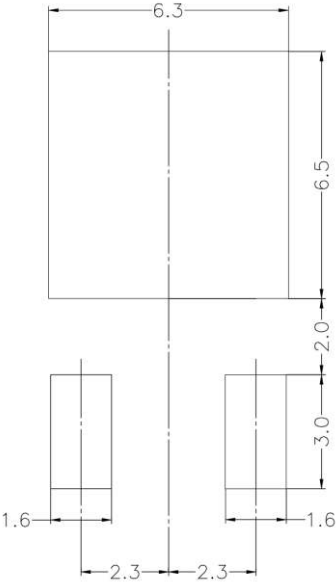
Package Outlines



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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