

TO-252-3L 650V SiC Schottky Diode EL-SAS01665JA



V_{RRM}	=	650	V
Q_C	=	22	nC
I_F	=	16	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

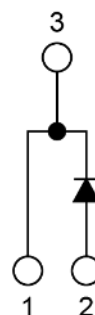
- Power Factor Correction in SMPS
- Solar inverter
- Uninterruptible Power Supply
- Motor Drives
- Data Center

Key Performance Parameters

Symbol	V_{RRM}	I_F	I_{FSM}	Q_C	$T_{J,max}$
Value	650V	16A	27A	22nC	175°C
Condition	$T_C@25^{\circ}C$		$t_p=10ms$ $T_C@25^{\circ}C$ Sine half wave	$V_R=400V, T_J=25^{\circ}C$ $Q_C = \int_0^{V_R} C_C(V) dV$	-

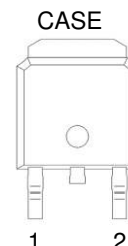
Schematic

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}	16	A	
Surge non-repetitive forward current	I_{FSM}	27	A	$T_C = 25^{\circ}C$, $t_p = 10ms$ Sine half wave
Total power dissipation	P_D^{*1}	70	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.)

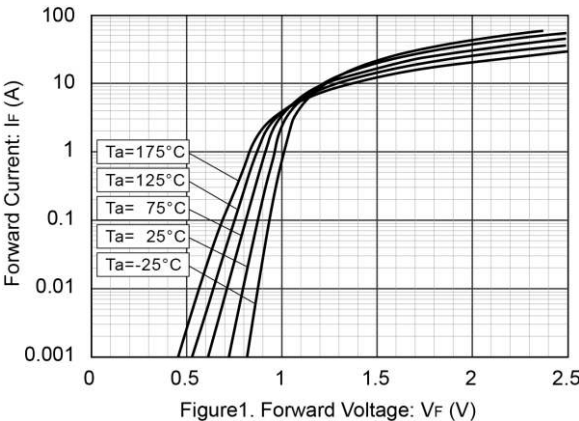
Parameter	Symbol	Value		Unit
		Typ	Max	
Thermal Resistance from Junction to Case	$R_{th(JC)}$	2.9	-	$^{\circ}C/W$

Electrical Characteristics

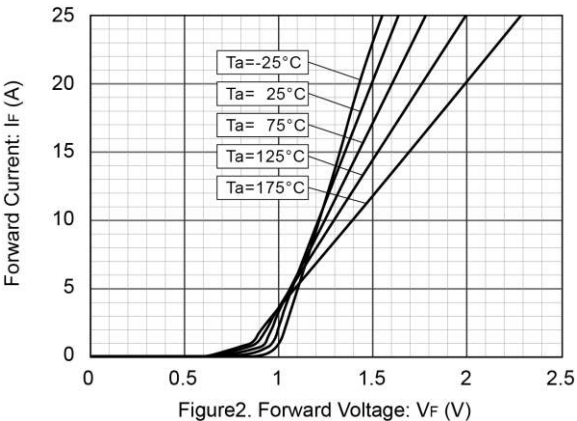
Parameter	Symbol	Values			Unit	Test condition
		Min.	Typ.	Max.		
DC blocking voltage	V_{DC}	650	-	-	V	$T_J = 25^{\circ}\text{C}$, $I_R = 100\mu\text{A}$
Forward voltage	V_F	-	1.5	1.85	V	$I_F = 16\text{A}$, $T_J = 25^{\circ}\text{C}$
			1.9	-		$I_F = 16\text{A}$, $T_J = 175^{\circ}\text{C}$
Reverse current	I_R	-	2	60	μA	$V_R = 520\text{V}$, $T_J = 25^{\circ}\text{C}$
			30	-		$V_R = 520\text{V}$, $T_J = 175^{\circ}\text{C}$
Total capacitance	C	-	402	-	pF	$V_R = 1\text{V}$, $f = 1\text{MHz}$,
			43			$V_R = 200\text{V}$, $f = 1\text{MHz}$
			32			$V_R = 400\text{V}$, $f = 1\text{MHz}$
Capacitance Stored Energy	E_C	-	3.1		μJ	$V_R = 400\text{V}$
Total capacitive charge	Q_C	-	22	-	nC	$V_R = 400\text{V}$, $T_J = 25^{\circ}\text{C}$ $Q_C = \int_0^{V_R} C(V) dV$

Typical Performance

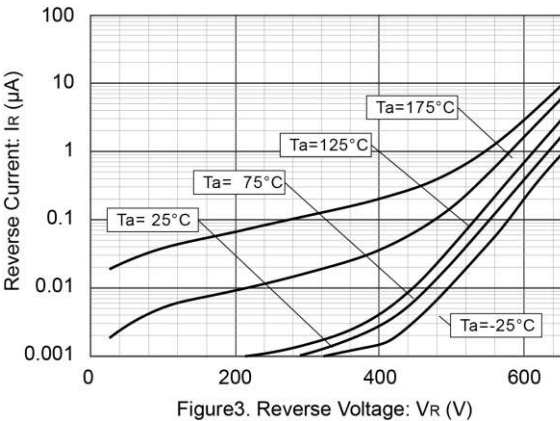
V_F - I_F Characteristics



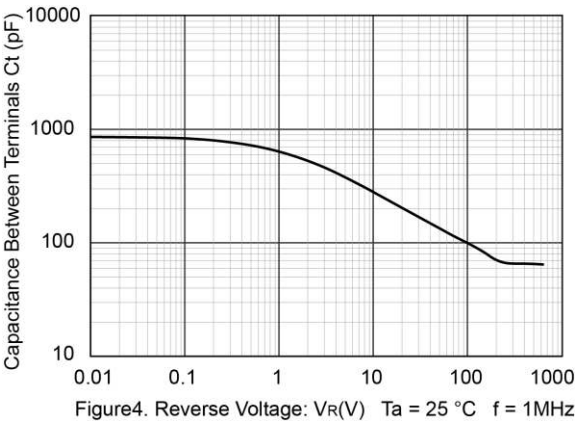
V_F - I_F Characteristics



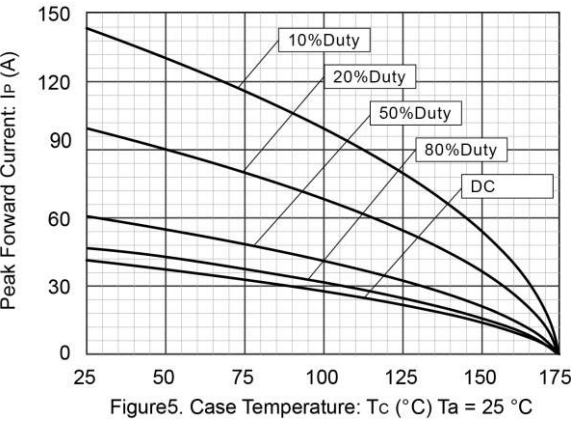
V_R - I_R Characteristics



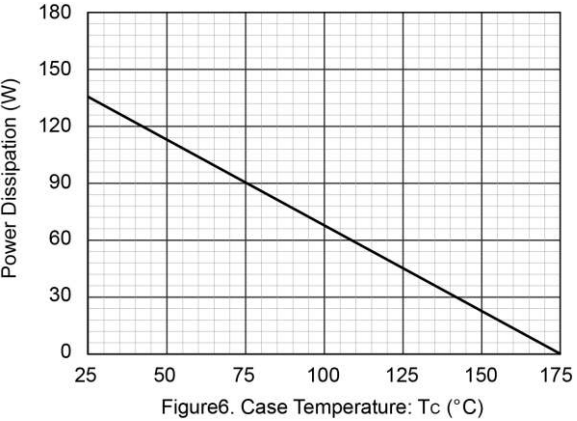
V_R - C_t Characteristics



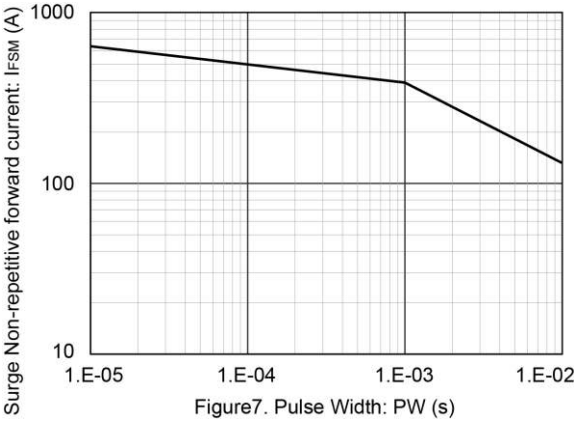
Maximum I_P - T_C Characteristics



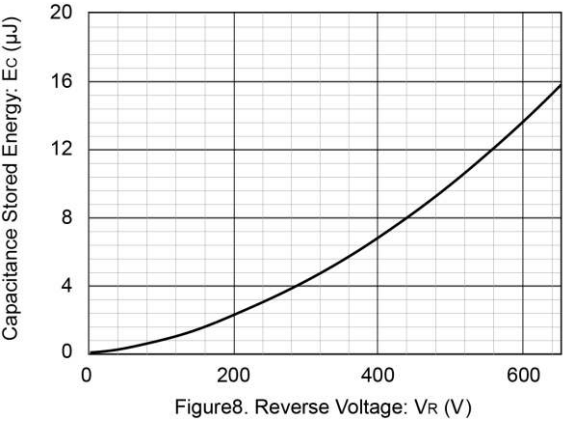
Power Dissipation



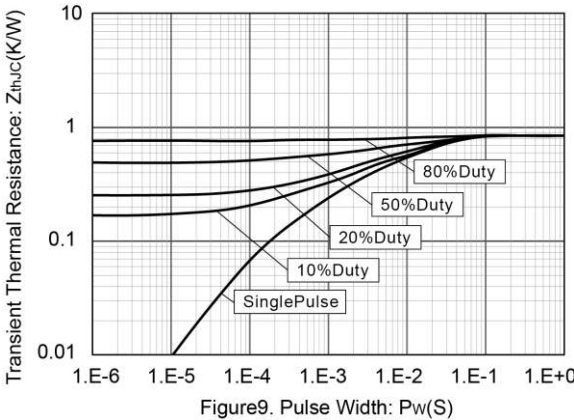
$I_{FSM} - P_W$ Characteristics



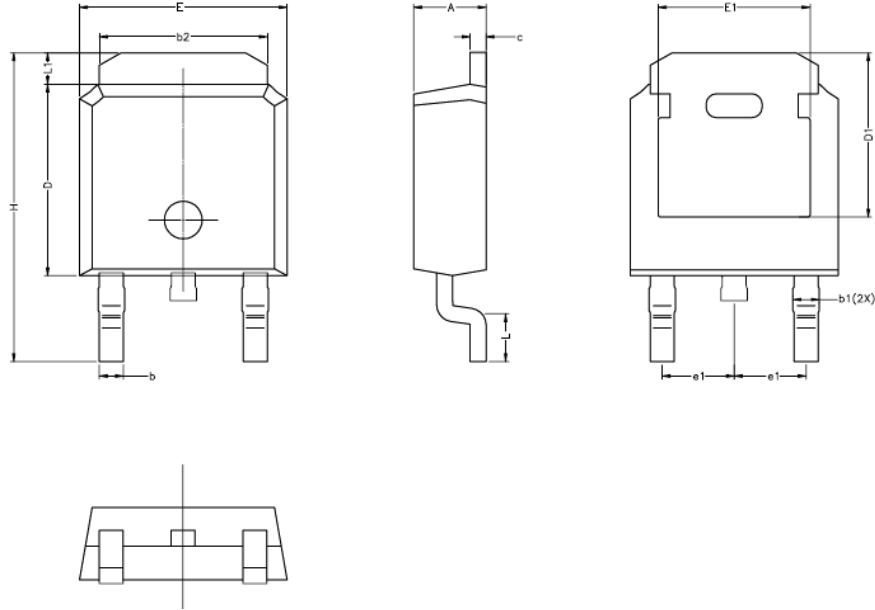
$E_C - V_R$ Characteristics



Typical Transient Thermal Resistance vs. Pulse Width



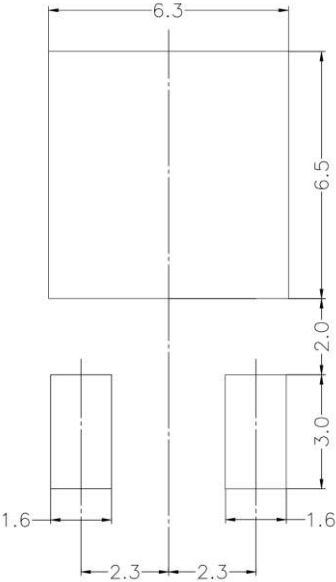
Package Outlines



DIM	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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