

EDK65S12R1L

ev™ Silicon Carbide Schottky Diode 650V, 12A

Features

- Zero Reverse Recovery Current
- Low Forward Voltage
- High Surge Current Capability
- Independent of Temperature Switching Behavior
- Positive Temperature Coefficient
- Max Junction Temperature 175 °C
- Pb-free, Halogen Free, and RoHS Compliant

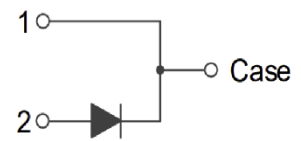
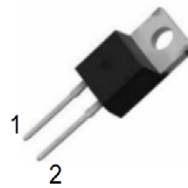
Benefits

- Higher Efficiency
- Ease of Paralleling
- Increased Power Density
- Reduced Cooling Requirements

Applications

- Solar Inverters
- Power Factor Correction
- Industrial Power Supply
- EV Charging Station

V_{RRM}	$I_F, T_C=25^\circ C$	$T_{J, Max}$	Q_C, Typ
650V	12A	175°C	39nC



Ordering Information

Part Number	Package	Shipping	Quantity
EDK65S12R1L	TO-220-2L	Tube	50 units

Absolute Maximum Ratings ($T_C=25^\circ C$, unless otherwise specified)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive Peak Reverse Voltage		650	V
I_F	Forward Current	$T_C=140^\circ C$	12	A
$I_{F,SM}$	Non-Repetitive Forward Surge Current	$T_C=25^\circ C, t_p=10ms$	62	A
		$T_C=150^\circ C, t_p=10ms$	53	
$I_{F,Max}$	Non-Repetitive Peak Forward Current	$T_C=25^\circ C, t_p=10\mu s$	665	A
		$T_C=150^\circ C, t_p=10\mu s$	565	
I^2dt value	$\int I^2t$	$T_C=25^\circ C, t_p=10ms$	19.2	A^2s
		$T_C=150^\circ C, t_p=10ms$	14	A^2s
P_{tot}	Power Dissipation	$T_C=25^\circ C$	94	W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to 175	°C

■ Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Maximum Thermal Resistance, Junction to Case	1.6	°C/W

■ Electrical Characteristics (T_C=25°C, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_F	Forward Voltage	$I_F=12A, T_J=25^\circ C$		1.40	1.70	V
		$I_F=12A, T_J=175^\circ C$		1.55		
I_R	Reverse Current	$V_R=650V, T_J=25^\circ C$			100	μA
		$V_R=650V, T_J=175^\circ C$			300	
Q_C	Total Capacitive Charge	$V_R=400V, T_J=25^\circ C$		39		nC
C	Total Capacitance	$V_R=1V, f=100kHz$		624		pF
		$V_R=400V, f=100kHz$		59		
E_C	Capacitance Stored Energy	$V_R=400V$		5.7		μJ

■ **Typical Characteristics** ($T_J=25^\circ\text{C}$ unless otherwise noted)

Figure 1. Forward Characteristics

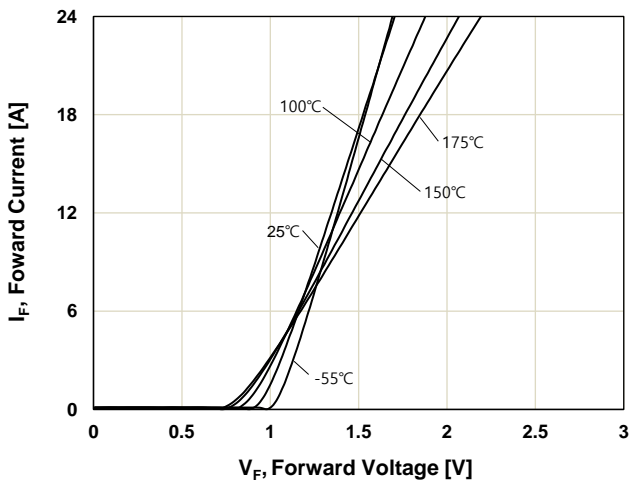


Figure 2. Reverse Characteristics

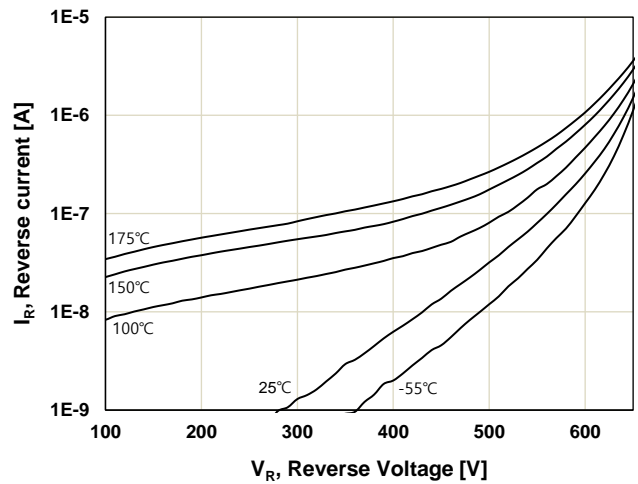


Figure 3. Power Derating

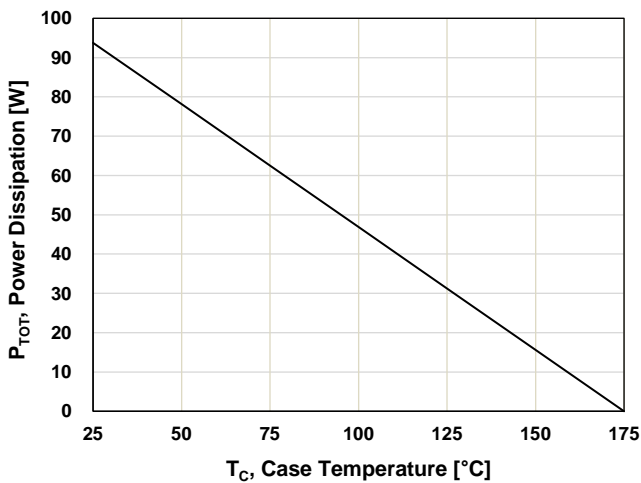


Figure 4. Current Derating

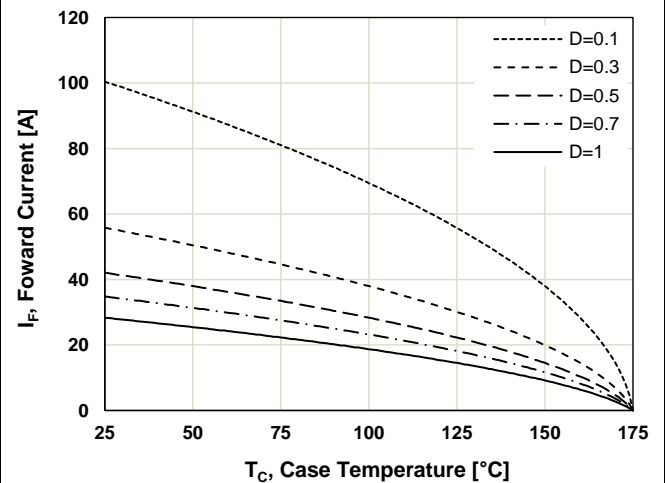


Figure 5. Capacitive Charge Characteristics

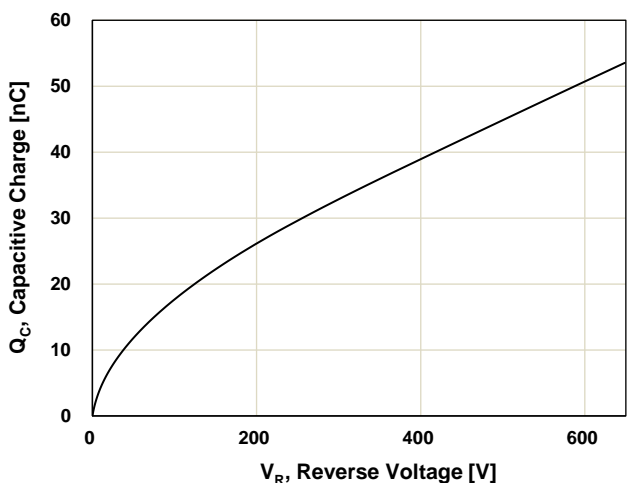
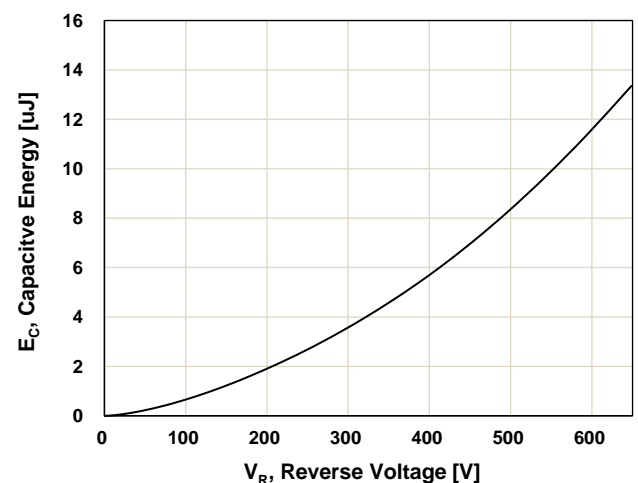


Figure 6. Capacitance Stored Energy



■ Typical Characteristics

Figure 7. Capacitive Characteristics

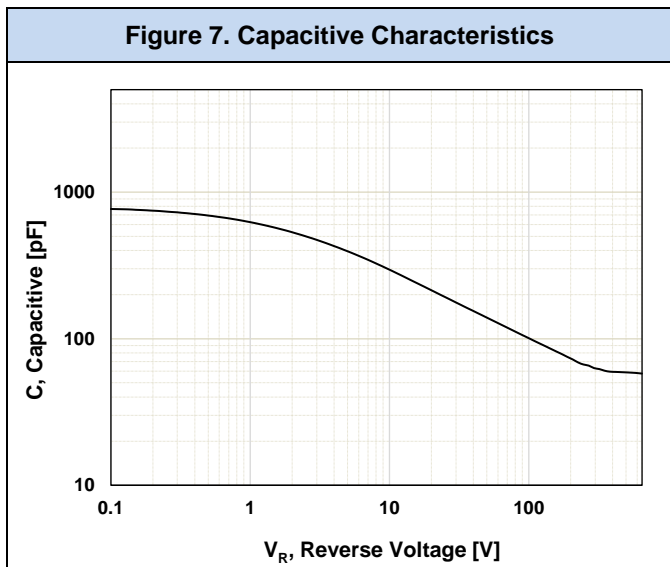
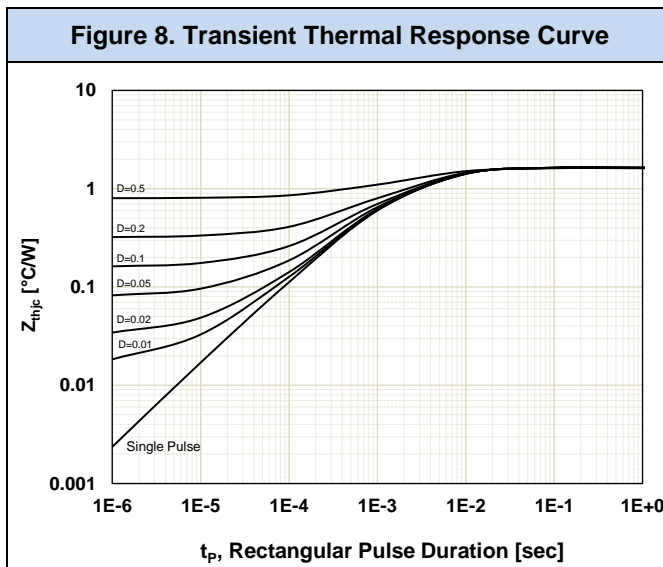
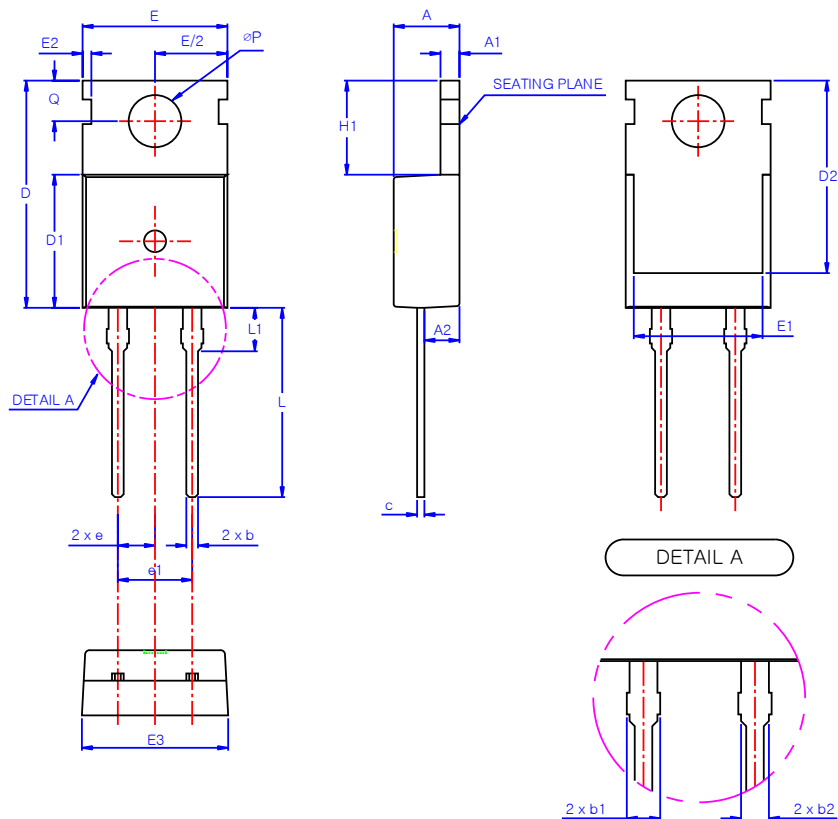


Figure 8. Transient Thermal Response Curve



Package Outlines

TO-220-2L



SYMBOL	MIN	NOM	MAX
A	4.30	4.50	4.70
A1	1.25	1.30	1.40
A2	2.20	2.40	2.60
b	0.70	0.80	0.90
b1	1.42	1.52	1.62
b2	1.17	1.27	1.37
c	0.45	0.50	0.60
D	15.50	15.70	15.90
D1	9.00	9.20	9.40
D2	13.10	13.30	13.50
E	9.70	9.90	10.10
E1	(8.00)		
E2	(0.60)		
E3	9.80	10.00	10.20
e	2.54 BSC		
e1	5.08 BSC		
H1	6.30	6.50	6.70
L	12.88	13.08	13.28
L1	(3.00)		
∅P	3.40	3.60	3.80
Q	2.70	2.80	2.90

NOTE

1. THESE DIMENSIONS DO NOT INCLUDE PROTRUSIONS OF THE MOLD.
2. THE "()" MARK IS THE REFERENCE
3. THERMAL PAD (HEAT SINK) CONTOUR OPTIONAL WITHIN SPECIFIED DIMENSIONS.

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