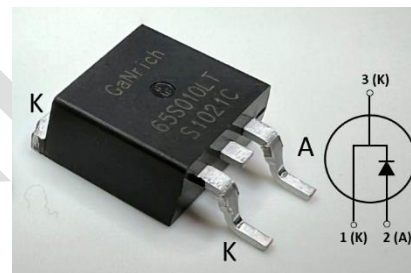


GR-65S010LT – SiC 650V 10A Schottky Barrier Diode

Features

- 650-Volt Schottky Rectifier
- High-Frequency Operation
- Temperature-Independent Switching Behavior
- Extremely Fast Switching
- Positive Temperature Coefficient on VF
- Product Summary

VR	650	V
I _F (T _j =175 °C)	10	A
Q _c	22	nC



GR-65S010LT, D2PAK TO263

Potential Applications

- Boost Diodes in PFC or DC/DC Stages
- Switch Mode Power Supplies (SMPS)
- AC/DC Converters

Product Validation

- Qualified for industrial applications according to the relevant tests of JEDEC22

Production Name	Package
GR-65S010LT	D2PAK- TO263

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1- Electrical Characteristics and Parameters

■ **Table 1 Absolute Maximum Ratings** ($T_j = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Unit
VRRM	Repetitive Peak Reverse Voltage	650	V
VRSM	Surge Peak Reverse Voltage	650	V
I_F	Continuous Forward Current @ $T_c < 150^\circ\text{C}$	10	A
I_{FM}	Non-Repetitive Peak Forward Surge Current $T_c=25^\circ\text{C}$, $t_p=10\text{ms}$, Half Sine Wave, $D=0.3$	50	A
I_{FSM}	Non-Repetitive Forward Surge Current (Half-Sine Pulse) $T_c = 25^\circ\text{C}$, $t_p = 10 \text{ ms}$, $D=0.3$	60	A
T_j T_{stg}	Operating Junction and Storage Temperature Range	-55~175	$^\circ\text{C}$
P_{tot}	Total dissipation at $T_c = 25^\circ\text{C}$ Operation	135	W

■ **Table 2 Thermal Characteristics**

Symbol	Parameter	Value	Unit
$R_{thj-amb}$	(*)Thermal resistance junction-ambient	1.32	$^\circ\text{C/W}$

(*) When Mounted on 1 inch² FR-4 board, 2 oz of Cu and $t = 10 \text{ sec}$.

■ **Table 3 Electrical Characteristics** ($T_j = 25^\circ\text{C}$ unless otherwise noted)

Static Characteristics

Symbol	Parameter	Test Conditions	Values			Unit
			Min.	Typ.	Max.	
VR	DC Blocking Voltage	IR=100uA	650	-	-	V
VF	Forward Voltage	$I_F=10\text{A}$, $T_j = 25^\circ\text{C}$		1.4	1.8	V
		$I_F=10\text{A}$, $T_j = 175^\circ\text{C}$		1.9	2.4	V
IR	Reverse Current	VR=650V $T_j = 25^\circ\text{C}$		1	50	uA
		VR=650V $T_j = 175^\circ\text{C}$		20	200	uA

AC characteristics

Symbol	Parameter	Test Conditions	Values			Unit
			Min.	Typ.	Max.	
C _j	Total Capacitance	VR=0.1V, f=1MHz		402		pF
		VR=100V, f=1MHz		44		pF
		VR=400V, f=1MHz		38		pF
Q _c	Total Capacitive Charge	VR=400V, T _J =25°C $Q_c = \int_0^{V_R} C(V)dV$		22		nC
E _c	Capacitance Stored Energy	VR=400V		4.55		uJ

2- Typical Characteristic Curves

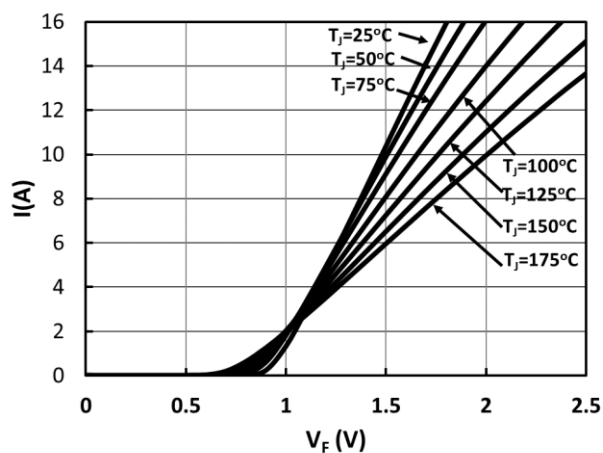


Figure 1: Forward Characteristics

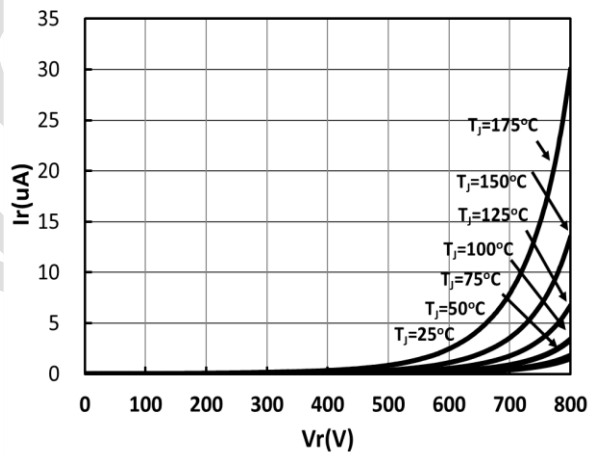


Figure 2: Reverse Characteristics

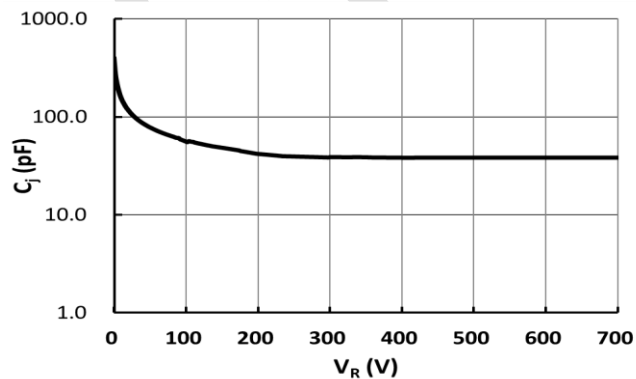


Figure 3: Capacitance vs. Reverse Voltage

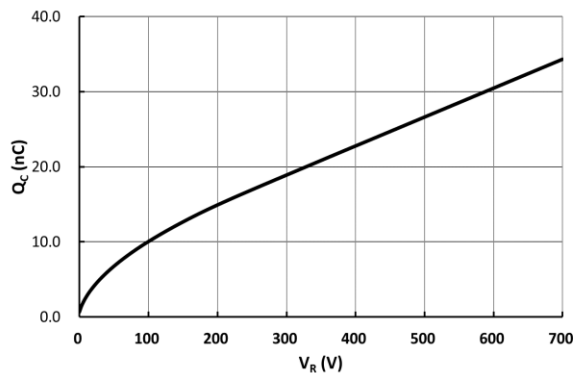


Figure 4: Total Capacitance Charge vs. Reverse Voltage

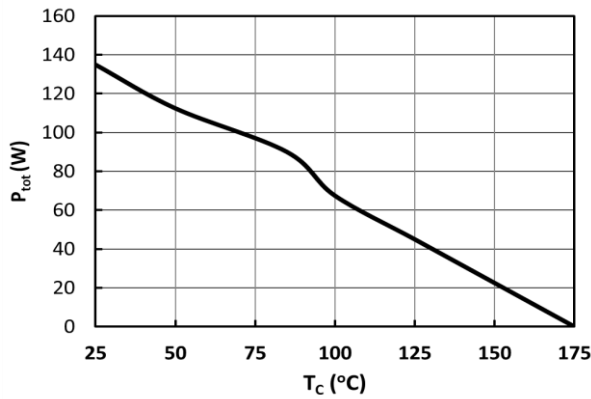


Figure 5: Power Derating

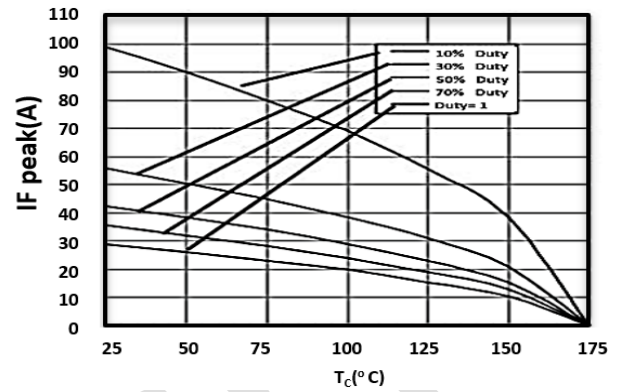


Figure 6: Current Derating

3- Package Outline

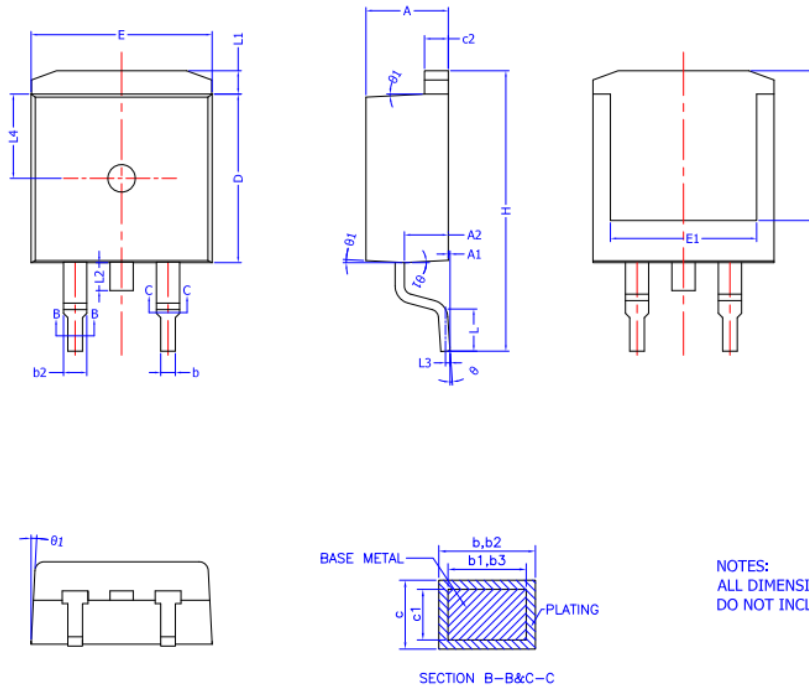


Figure 7 Package Outline of GR-65S010 LT

COMMON DIMENSIONS
(UNITS OF MEASURE =MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	4.40	4.50	4.60
A1	0	0.10	0.25
A2	2.20	2.40	2.60
b	0.76	---	0.89
b1	0.75	0.80	0.85
b2	1.23	---	1.37
b3	1.22	1.27	1.32
c	0.47	---	0.60
c1	0.46	0.51	0.56
c2	1.25	1.30	1.35
D	9.10	9.20	9.30
D1	8.00	---	---
E	9.80	9.90	10.00
E1	7.80	---	---
e	2.54 BSC		
H	14.90	15.30	15.70
L	2.00	2.30	2.60
L1	1.17	1.27	1.40
L2	---	---	1.75
L3	0.25BSC		
L4	4.60 REF		
theta	0°	---	8°
theta1	1°	3°	5°

NOTES:
ALL DIMENSIONS REFER TO JEDEC STANDARD TO-263 AB
DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS.

Table 4 Dimension of GR-65S010LT

GR D2PAK-TO263 Footprint:

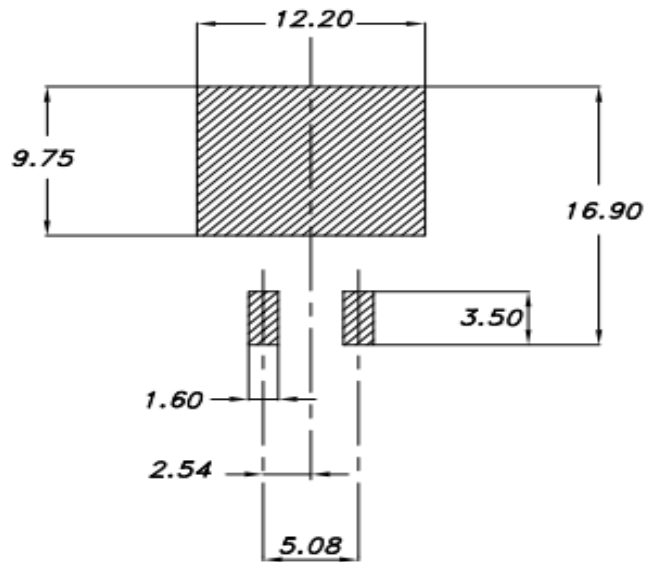


Figure 8 Recommended PCB Solder Pad

4- Reflow Soldering Profile

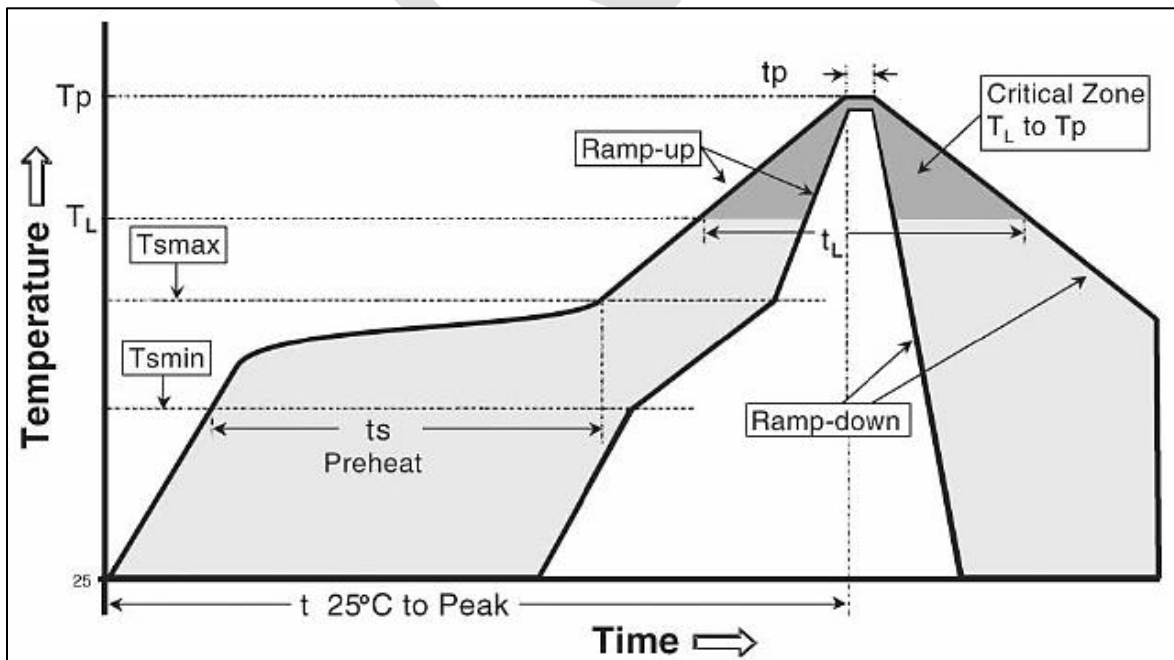


Figure 9 Recommended Reflow Soldering Condition (IPC/JEDEC J-STD-020 Revision C)

Profile Feature		Pb-Free Assembly
Average Ramp-Up Rate (T _{smax} to T _p)		3 °C/second max.
Preheat	Temperature Min (T _{smin})	150 °C
	Preheat: Temperature Max (T _{smax})	200 °C
	Time (t _{smin} to t _{smax})	60-180 seconds
Time Maintained Above	Temperature (T _L)	217 °C
	Time (t _L)	60-150 seconds
Peak Temperature (T _p)		260 °C
Time Within 5 °C of Actual Peak Temperature (t _p)		20-40 seconds
Ramp-Down Rate		6 °C/second max.
Time 25 °C to Peak Temperature		8 minutes max.

Note: All temperatures refer to the topside of the package, measured on the package body surface.

5- Revision History

Date	Revision	Changes
23-Dec-21	1	First issue