

PD020065L2P / PD020065L2P_G

650V Silicon Carbide Diode

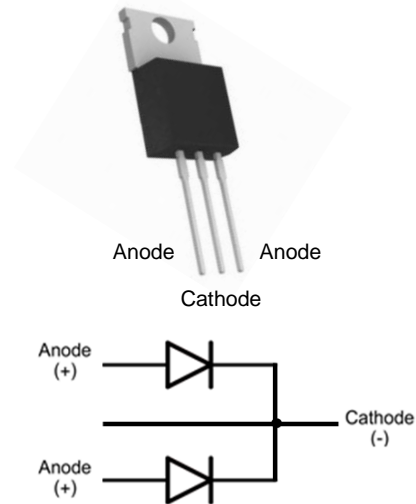
Features

- 650-Volt Schottky Rectifier
- Shorter recovery time
- High-speed switching possible
- High-Frequency Operation
- Temperature-Independent Switching Behavior
- Extremely Fast Switching
- Positive Temperature Coefficient on VF
- RoHS Compliant

Applications

- Switch Mode Power Supplies
- Server/Telecom Power Supplies
- Industrial Power Supplies
- Solar Inverter
- Uninterruptible Power Supply

Package Outline



Absolute Maximum Ratings

$T_C = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
V_{RRM}	Repetitive Peak Reverse Voltage	650	V
V_{RSM}	Surge Peak Reverse Voltage	650	V
V_{DC}	DC Blocking Voltage	650	V
I_F	Continuous Forward Current $T_C = 25^\circ\text{C}$ $T_C = 150^\circ\text{C}$	30 / 60 10 / 20	A
I_{FRM}	Repetitive Peak Forward Current $T_C = 110^\circ\text{C}$	73 / 146	A
I_{FSM}	Non-Repetitive Forward Surge Current (PW=10ms sinusoidal) $T_C = 25^\circ\text{C}$ $T_C = 110^\circ\text{C}$	100 / 200 80 / 160	A
P_D	Power Dissipation $T_C = 25^\circ\text{C}$	103 / 206	W
T_J, T_{stg}	Operating Junction and Storage Temperature	-55 to +175	$^\circ\text{C}$

* Per Leg / Per Device

Electrical Characteristics (Per Leg) $T_C = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
V_F	Forward Voltage	$I_F = 10\text{A}, T_C = 25^\circ\text{C}$ $I_F = 10\text{A}, T_C = 175^\circ\text{C}$	--	1.35 1.65	1.65 1.95	V
I_R	Reverse Current	$V_R = 650\text{V}, T_C = 25^\circ\text{C}$ $V_R = 650\text{V}, T_C = 175^\circ\text{C}$	--	20 40	50 500	μA
Q_C	Total Capacitive Charge	$V_R = 400\text{V}$	--	27	--	nC
C	Total Capacitance	$V_R = 1\text{V}, T_J = 25^\circ\text{C}, f = 1\text{MHz}$ $V_R = 520\text{V}, T_J = 25^\circ\text{C}, f = 1\text{MHz}$	--	467 67	--	pF

Thermal Characteristics $T_C = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Min	Typ	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	--	1.45 / 0.73	1.74 / 0.87	$^\circ\text{C}/\text{W}$

* Per Leg / Per Device

Package Marking and Ordering Information

Device Marking	Device	Package	Reel Size	Tape Width	Quantity
PD020065L2P	PD020065L2P	TO-220_3L	-	-	50
PD020065L2P_G	PD020065L2P_G	TO-220_3L	-	-	50

* PD020065L2P_G : RoHS Compliant

Typical Characteristics (Per Leg)

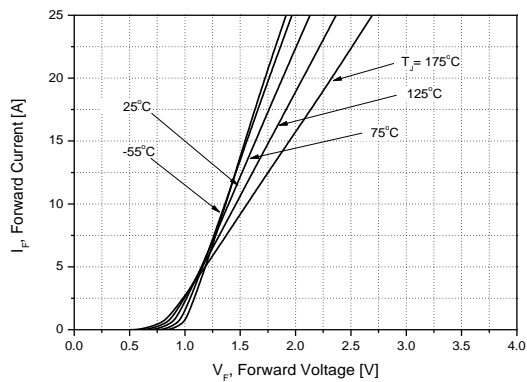


Figure 1. Forward Characteristics

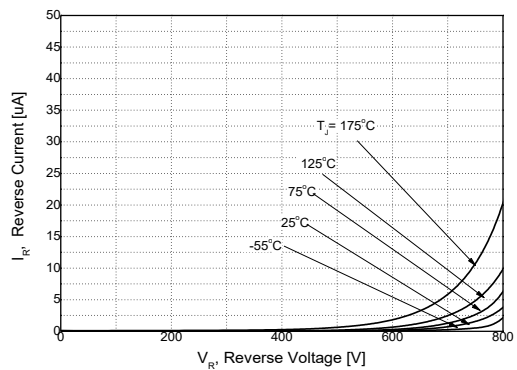


Figure 2. Reverse Characteristics

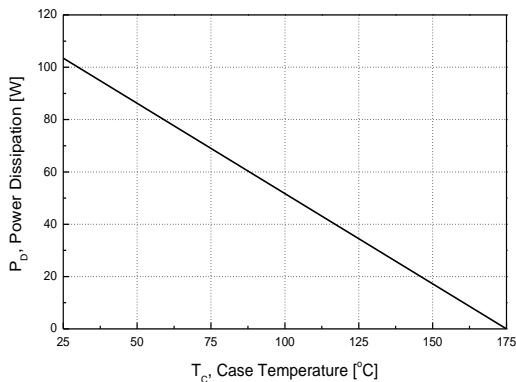


Figure 3. Power Dissipation

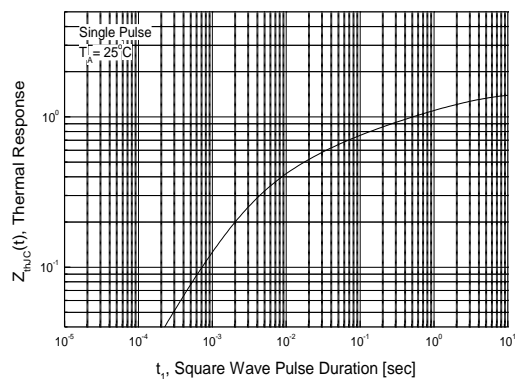


Figure 4. Transient Thermal Resistance

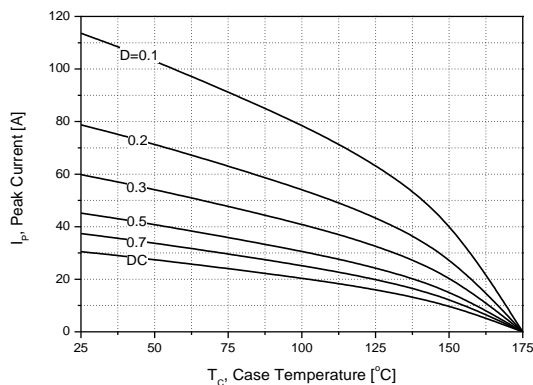


Figure 5. Peak Forward Current Derating

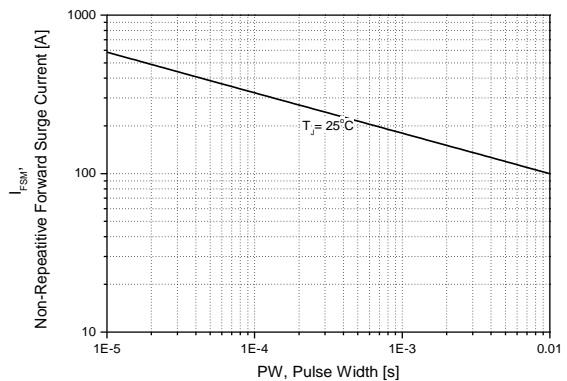


Figure 6. Non-Repetitive Peak Forward Surge Current vs. Pulse Duration

Typical Characteristics (Per Leg)

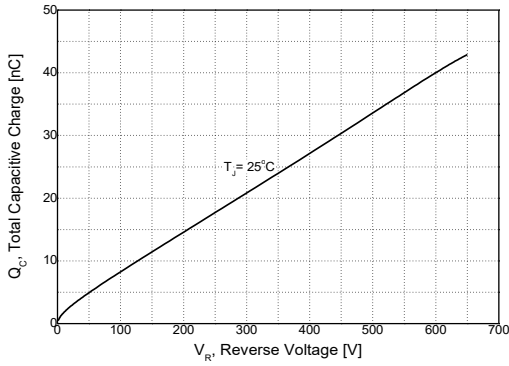


Figure 7. Total Capacitive Charge

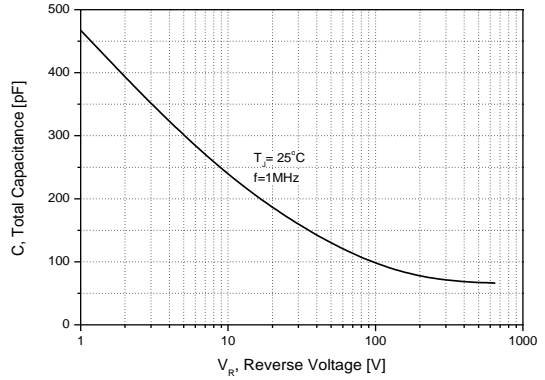


Figure 8. Total Capacitance

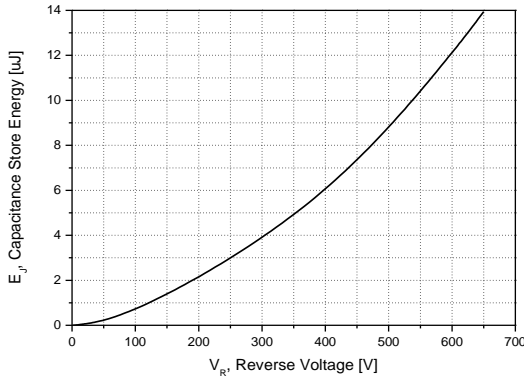


Figure 9. Capacitance Store Energy

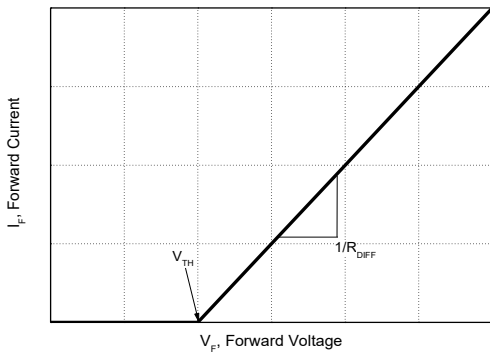


Figure 10. Equivalent Forward Current Curve

$$V_F = V_{TH} + R_{DIFF} \times I_F$$

Threshold Voltage (V_{TH})

$$V_{TH}(T_j) = -0.001 \times (T_j) + 0.950 \text{ [V]}$$

Differential Resistance (R_{DIFF})

$$R_{DIFF}(T_j) = A \times T_j^2 + B \times T_j + C \text{ [}\Omega\text{]}$$

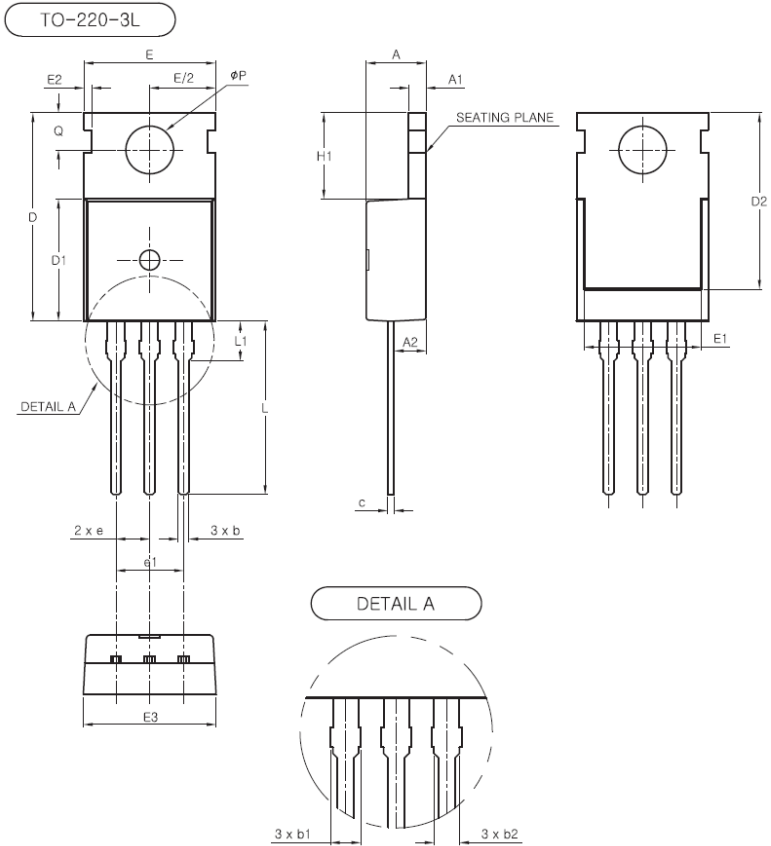
$$A = 7.50 \times 10^{-7}$$

$$B = 9.16 \times 10^{-5}$$

$$C = 4.19 \times 10^{-2}$$

$$[T_j \text{ [}^\circ\text{C]}; -55 \text{ }^\circ\text{C} \leq T_j \leq 175 \text{ }^\circ\text{C}; I_F \leq 10 \text{ A}]$$

Package Information



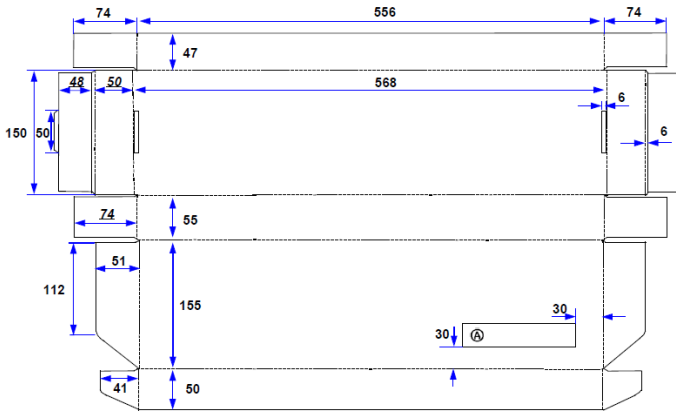
SYMBOL	MIN	NOM	MAX
A	4.30	4.50	4.70
A1	1.25	1.30	1.40
A2	2.20	2.40	2.60
b	0.70	0.80	0.90
b1	1.42	1.52	1.62
b2	1.17	1.27	1.37
c	0.45	0.50	0.60
D	15.50	15.70	15.90
D1	9.00	9.20	9.40
D2	13.10	13.30	13.50
E	9.70	9.90	10.10
E1	(8.80)		
E2	(0.60)		
E3	9.80	10.00	10.20
e	2.54 BSC		
e1	5.08 BSC		
H1	6.30	6.50	6.70
L	12.88	13.08	13.28
L1	(3.00)		
φP	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.

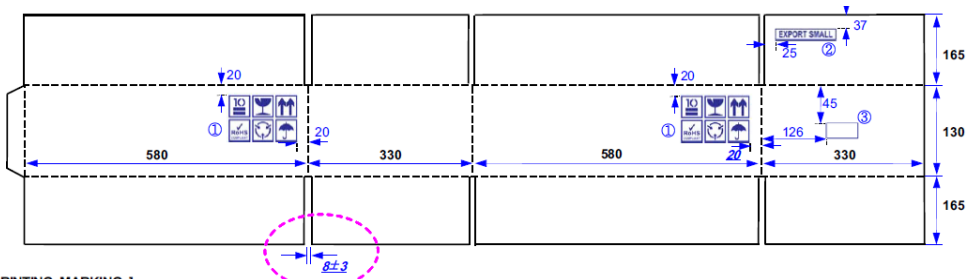
Packing Information

Inner Box



PART ID PDXXXXXXXXLX_G	PKG Type XX-XXXX-XX
LOT No. XXXXXXXXXXXXXX	QTY X,XXX ea
	
DATE : XXXX.XX.XX	

Outer Box



[BOX PRINTING MARKING]




MARKING SIZE (Each Symbol 30*30)
COLOR (DARK BLUE)

- ② EXPORT SMALL
MARKING SIZE (112*20)
COLOR (DARK BLUE)
- ③
LABEL MARKING SIZE (75*35)
COLOR (DARK BLUE)

[NOTE]

- MATERIAL : KLB175*K180*KLB175*K180*KLB175
(SUK175*K200*K200*K200*SUK175)
- NAIL QTY : 3 PCS
- PRINTING TOLERANCE : MARKING SIZE(±3)
MARKING POSITION(±5)

PART ID : PDXXXXXXXXLX_G
LOT NO : XXXXXXXXXXXX
QTY : XX,XXXX ea

DATE : XXXX.XX.XX

Notes

- A. Specifications mentioned in this publication are subject to change without notice.
- B. Before you use our Products, please contact our sales representative and verify the latest specifications.
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