

PD030065EH / PD030065EH_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
- Power Factor Correction
- Motor Drives
- HID Lighting

Package Outline



Absolute Maximum Ratings

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 $T_C = 25^\circ\text{C}$ $T_C = 140^\circ\text{C}$	70 30	A
I_{FRM}	Repetitive Peak Forward Current $T_C = 110^\circ\text{C}$	160	A
I_{FSM}	Non-Repetitive Forward Surge Current $T_C = 25^\circ\text{C}$ $T_C = 110^\circ\text{C}$	150 120	A
P_D	Power Dissipation $T_C = 25^\circ\text{C}$	230	W
T_J, T_{stg}	Operating Junction and Storage Temperature	-55 to +175	$^\circ\text{C}$

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

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
V_F	Forward Voltage	$I_F = 30\text{A}, T_C = 25^{\circ}\text{C}$ $I_F = 30\text{A}, T_C = 175^{\circ}\text{C}$	--	1.5 2.0	1.8 2.4	V
I_R	Reverse Current	$V_R = 650\text{V}, T_C = 25^{\circ}\text{C}$ $V_R = 650\text{V}, T_C = 175^{\circ}\text{C}$	--	40 80	90 900	μA
Q_C	Total Capacitive Charge	$V_R = 400\text{V}$	--	58	--	nC
C	Total Capacitance	$V_R = 1\text{V}, T_J = 25^{\circ}\text{C}, f = 1\text{MHz}$ $V_R = 520\text{V}, T_J = 25^{\circ}\text{C}, f = 1\text{MHz}$	--	1475 140	--	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	--	0.65	0.80	$^{\circ}\text{C}/\text{W}$

Package Marking and Ordering Information

Device Marking	Device	Package	Reel Size	Tape Width	Quantity
PD030065EH	PD030065EH	TO-247	-	-	30
PD030065EH_G	PD030065EH_G	TO-247	-	-	30

* PD030065EH_G : RoHS Compliant

Typical Characteristics

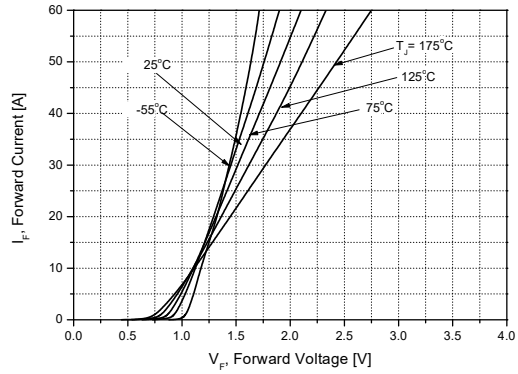


Figure 1. Forward Characteristics

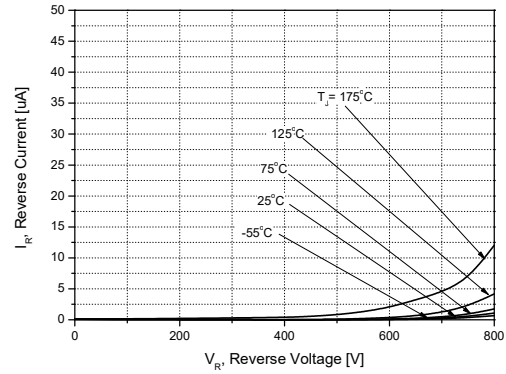


Figure 2. Reverse Characteristics

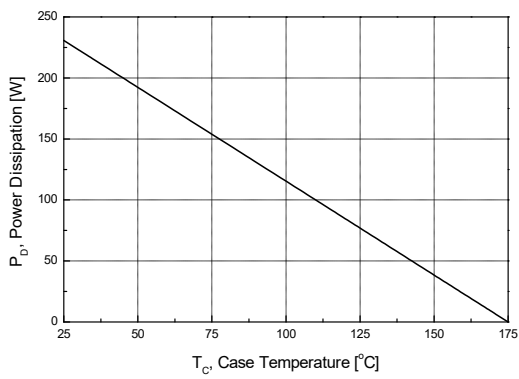


Figure 3. Power Dissipation

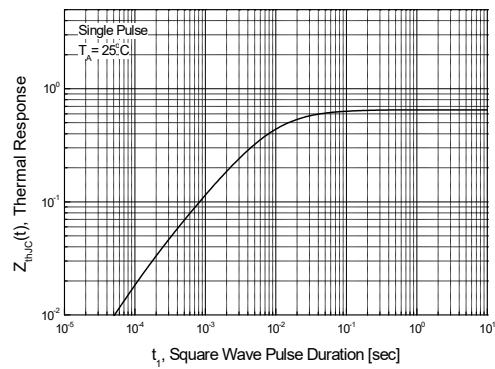


Figure 4. Transient Thermal Resistance

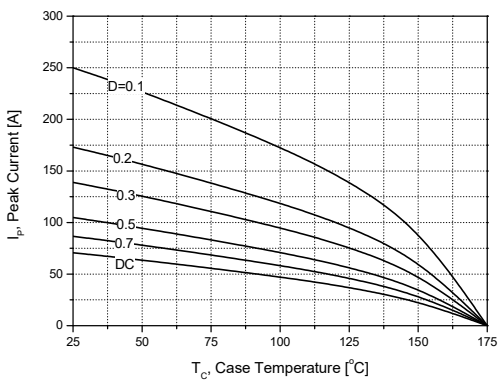


Figure 5. Peak Forward Current Derating

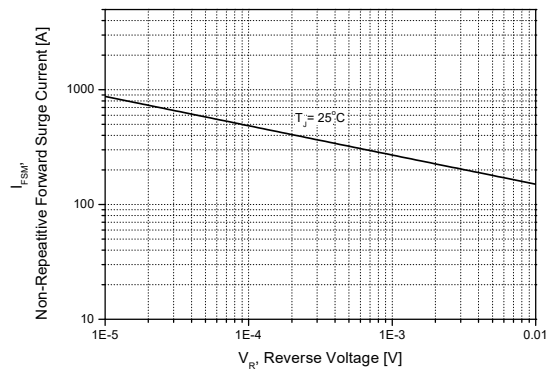


Figure 6. Non-Repetitive Peak Forward Surge Current vs. Pulse Duration

Typical Characteristics

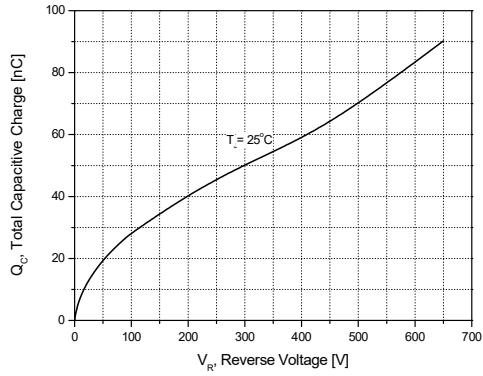


Figure 7. Total Capacitive Charge

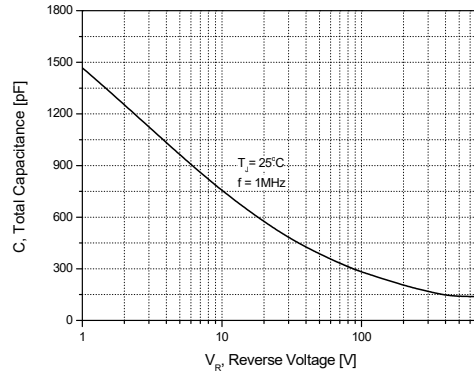


Figure 8. Total Capacitance

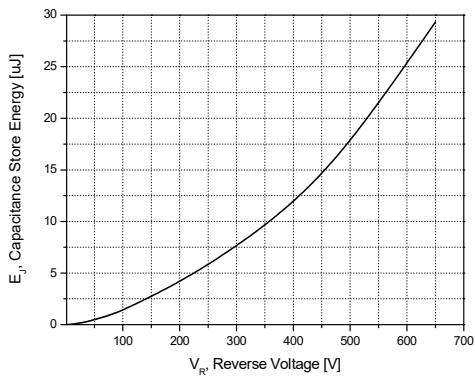


Figure 9. Capacitance Store Energy

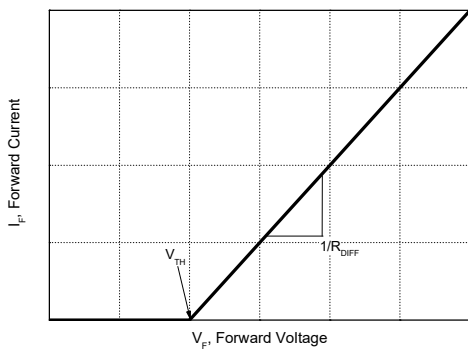


Figure 10. Equivalent Forward Current Curve

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

Threshold Voltage(V_{TH})

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

Differential Resistance (R_{DIFF})

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

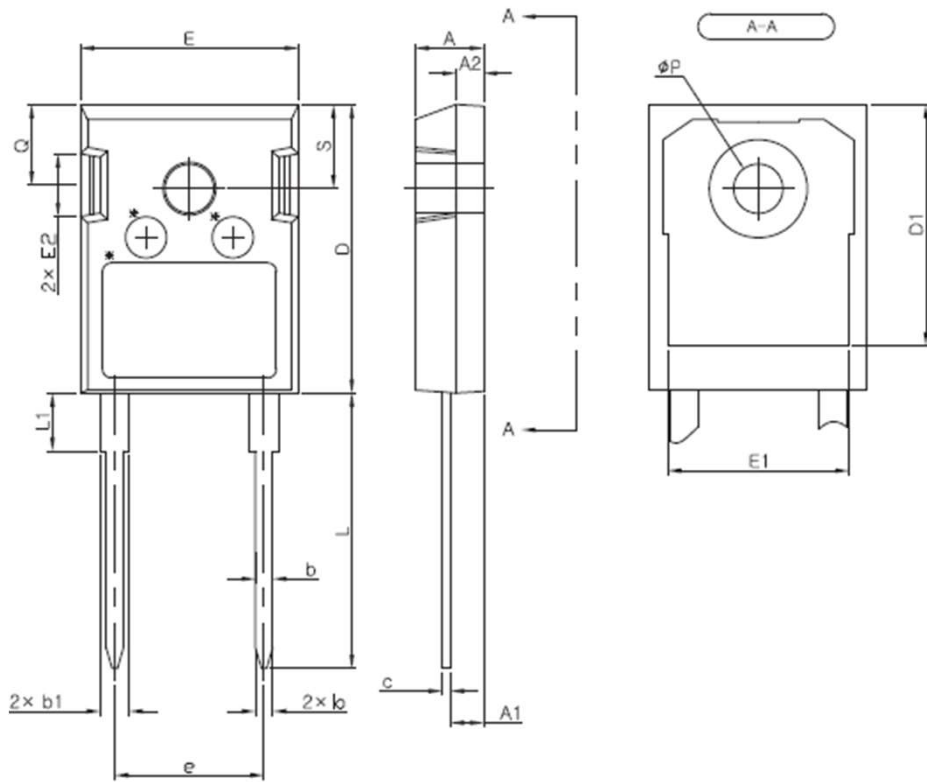
$$A = 3.55 \times 10^{-7}$$

$$B = 3.91 \times 10^{-5}$$

$$C = 1.55 \times 10^{-2}$$

$$[T_j \text{ [}^\circ\text{C]}; -55 \text{ }^\circ\text{C} \leq T_j \leq 175 \text{ }^\circ\text{C}; I_F \leq 30 \text{ A}]$$

Package Information

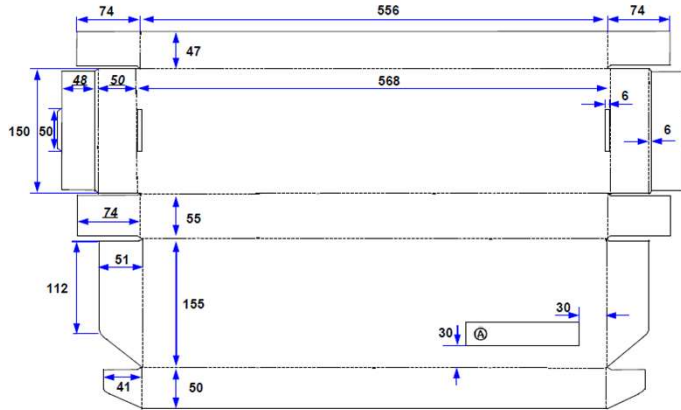


REVISION						
Rev	Page	위치	개 정	사	내	용
000	-	-	신규	제	정	
001	4	-	c	치	수	오기
002	4	-	A, A2	치	수	및
003	4	-	b	치	수	표
004	4	*	도	면	내	E-Pin

SYMBOL	MIN	NOM	MAX
A	4.80	5.00	5.20
A1	2.29	2.41	2.54
A2	1.90	2.00	2.10
b	1.10	1.20	1.30
b1	1.91	2.10	2.20
c	0.50	0.60	0.70
D	20.80	21.07	21.34
D1	17.43	17.63	17.83
E	15.75	15.94	16.13
E1	13.06	13.26	13.46
E2	4.32	4.58	4.83
e	10.90 BSC		
L	20.00	20.10	20.20
L1	4.13	4.23	4.33
phi P	3.55	3.60	3.65
Q	5.59	5.90	6.20
S	6.15 BSC		

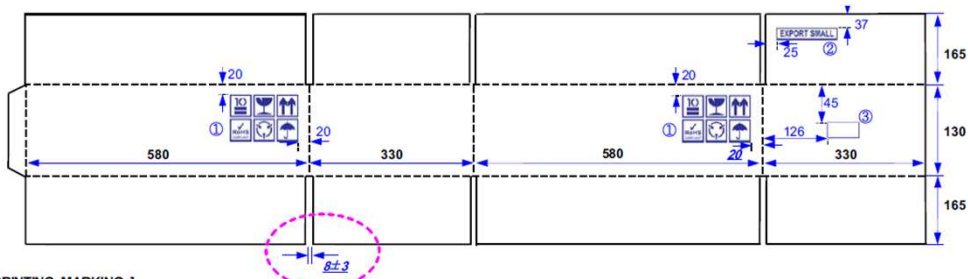
NOTE
 1. THESE DIMENSION DO NOT INCLUDE MOLD PROTRUSION

Packing Information Inner Box



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

Outer Box



[BOX PRINTING MARKING]

①

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 : PDXXXXXXEX_G	
LOT NO : XXXXXXXXXXXXX	
QTY : XX,XXXX ea	
DATE : XXXX.XX.XX	

Notes

- A. Specifications mentioned in this publication are subject to change without notice.
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