

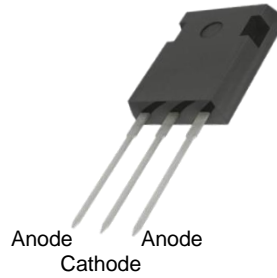
PD040120E2H / PD040120E2H_G

1200V Silicon Carbide Diode

Features

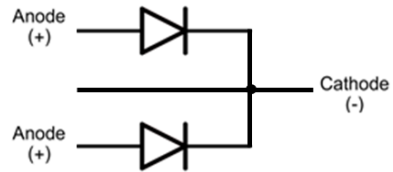
- 1200-Volt Schottky Rectifier
- Shorter recovery time
- High-speed switching possible
- High-Frequency Operation
- Temperature-Independent Switching Behavior
- Extremely Fast Switching
- Positive Temperature Coefficient on VF
- RoHS Compliant

Package Outline



Applications

- Switch Mode Power Supplies
- Power Factor Correction
- Motor Drives
- HID Lighting



Absolute Maximum Ratings

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

Symbol	Parameter	Value	Units
V_{RRM}	Repetitive Peak Reverse Voltage	1200	V
V_{RSM}	Surge Peak Reverse Voltage	1200	V
V_{DC}	DC Blocking Voltage	1200	V
I_F	Continuous Forward Current $T_C = 25^\circ\text{C}$ $T_C = 145^\circ\text{C}$	49 / 98 20 / 40	A
I_{FRM}	Repetitive Peak Forward Current $T_C = 110^\circ\text{C}$	115 / 230	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 $T_C = 25^\circ\text{C}$	220 / 440	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	$I_F = 20\text{A}, T_C = 25^\circ\text{C}$ $I_F = 20\text{A}, T_C = 175^\circ\text{C}$	--	1.5 2.0	1.8 2.4	V
I_R	Reverse Current	$V_R = 1200\text{V}, T_C = 25^\circ\text{C}$ $V_R = 1200\text{V}, T_C = 175^\circ\text{C}$	--	30 60	70 700	μA
Q_C	Total Capacitive Charge	$V_R = 800\text{V}$	--	66	--	nC
C	Total Capacitance	$V_R = 1\text{V}, T_J = 25^\circ\text{C}, f = 1\text{MHz}$ $V_R = 800\text{V}, T_J = 25^\circ\text{C}, f = 1\text{MHz}$	--	1275 83	--	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	--	0.68 / 0.34	0.8 / 0.4	$^\circ\text{C}/\text{W}$

* Per Leg / Per Device

Package Marking and Ordering Information

Device Marking	Device	Package	Reel Size	Tape Width	Quantity
PD040120E2H	PD040120E2H	TO-247_3L	-	-	30
PD040120E2H_G	PD040120E2H_G	TO-247_3L	-	-	30

* PD040120E2H_G : RoHS Compliant

Typical Characteristics (Per Leg)

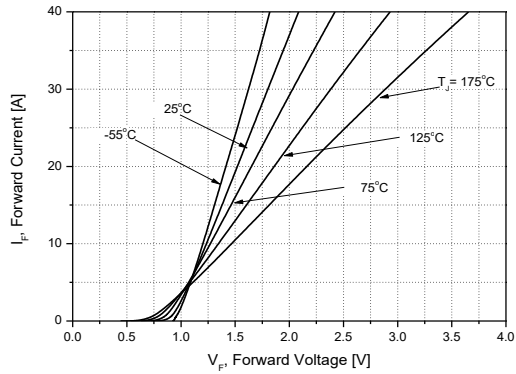


Figure 1. Forward Characteristics

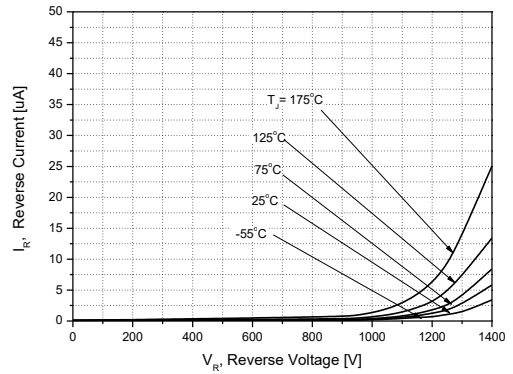


Figure 2. Reverse Characteristics

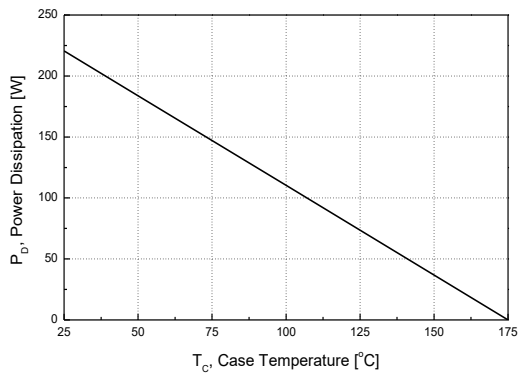


Figure 3. Power Dissipation

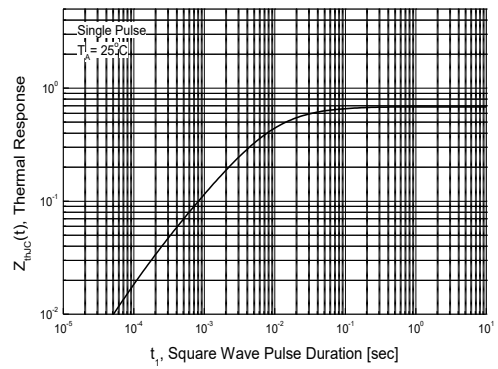


Figure 4. Transient Thermal Resistance

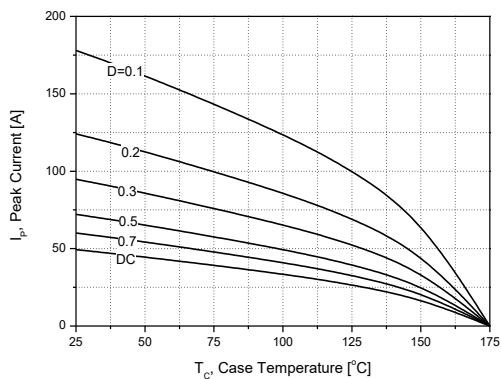


Figure 5. Peak Forward Current Derating

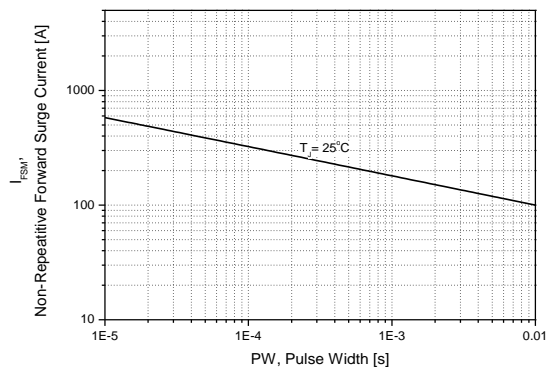


Figure 6. Non-Repetitive Peak Forward Surge Current vs. Pulse Duration

Typical Characteristics (Per Leg)

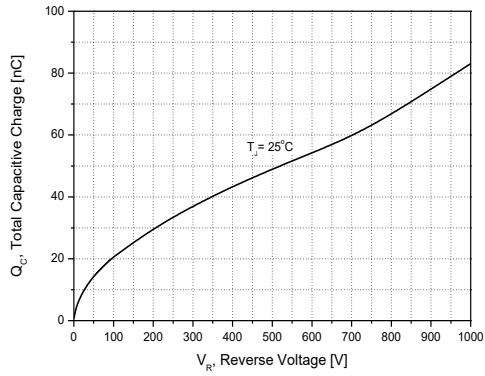


Figure 7. Total Capacitive Charge

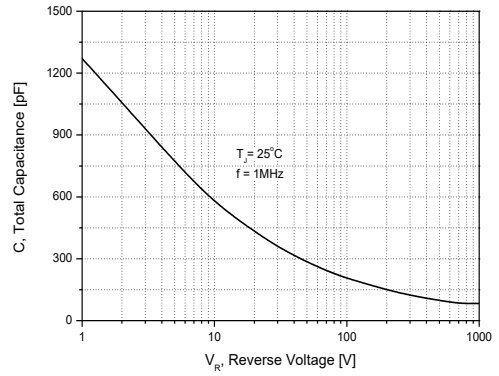


Figure 8. Total Capacitance

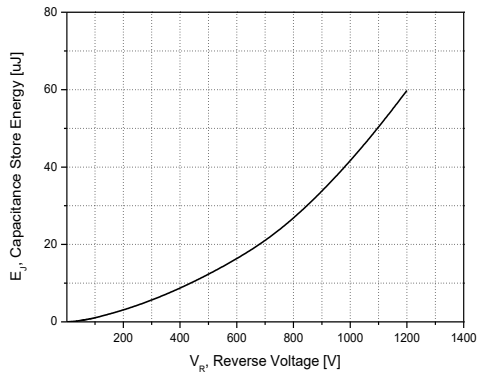


Figure 9. Capacitance Store Energy

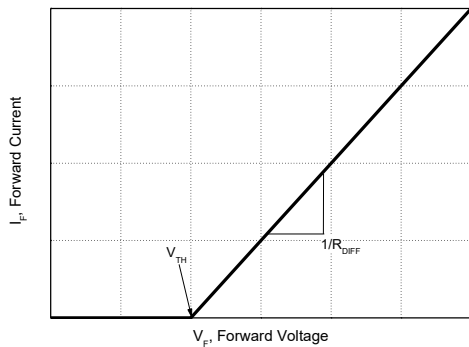


Figure 10. Equivalent Forward Current Curve

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

Threshold Voltage (V_{TH})

$$V_{TH}(T_j) = -0.001 \times (T_j) + 0.930 \text{ [V]}$$

Differential Resistance (R_{DIFF})

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

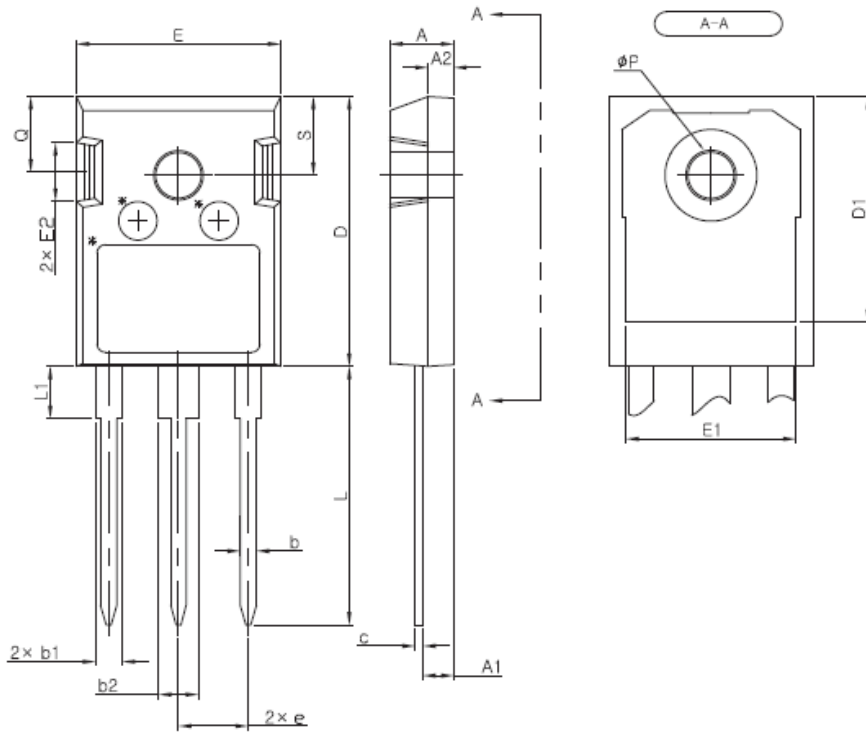
$$A = 9.99 \times 10^{-7}$$

$$B = 9.02 \times 10^{-5}$$

$$C = 2.59 \times 10^{-2}$$

$$[T_j \text{ [}^\circ\text{C]}; -55^\circ\text{C} \leq T_j \leq 175^\circ\text{C}; I_F \leq 20 \text{ A}]$$

Package Information



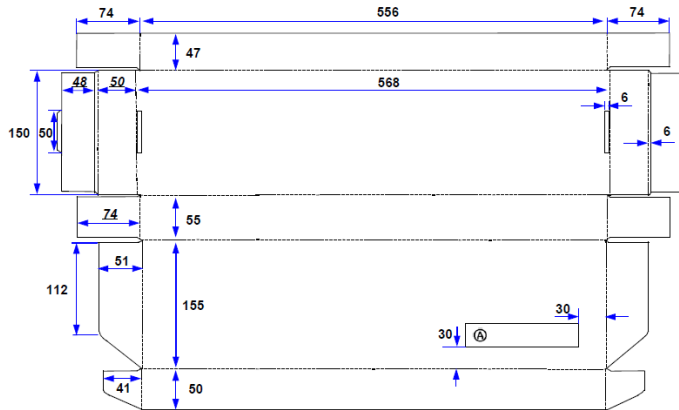
SYMBOL	MIN	NOM	MAX
A	4.80	5.00	5.20
A1	2.29	2.41	2.54
A2	1.90	2.00	2.10
b	1.10	1.20	1.30
b1	1.91	2.10	2.20
b2	2.92	3.10	3.20
c	0.50	0.60	0.70
D	20.80	21.07	21.34
D1	17.43	17.63	17.83
E	15.75	15.94	16.13
E1	13.06	13.26	13.46
E2	4.32	4.58	4.83
e	5.45 BSC		
L	19.81	20.19	20.57
L1	3.81	4.07	4.32
ϕP	3.55	3.60	3.65
Q	5.59	5.90	6.20
S	6.15 BSC		

NOTE

1. THESE DIMENSION DO NOT INCLUDE MOLD PROTRUSION

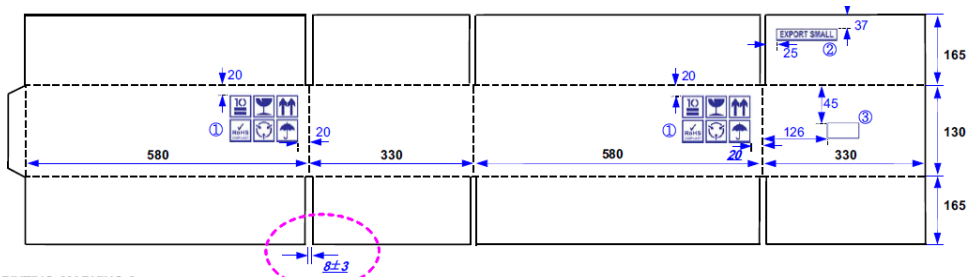
Packing Information

Inner Box



PART ID PDXXXXXXXXEX_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)



[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 : PDXXXXXXXXEX_G	
LOT NO : XXXXXXXXXXXXX	
QTY : XX,XXXX ea	
DATE : XXXX.XX.XX	

Notes

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