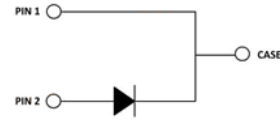




High Power SiC Schottky Barrier Diode ASA040V120B5



Package Type: TO-247-2L



Applications:

- Industrial power supplies:
Industrial UPS
- Battery chargers
- Solar inverters
- Switch mode power supplies

Features:

- Revolutionary semiconductor material - Silicon Carbide (SiC)
- No reverse recovery
- High-speed switching performance
- System cost / size saving due to reduced cooling requirement
- Junction Temp range -55°C to 175°C

Absolute Maximum Ratings ($T_{amb}=25^{\circ}\text{C}$, unless specified otherwise)

Symbol	Parameter		ASA040V120B5	Unit
V_{DC}	DC reverse voltage		1200	V
V_{RRM}	Repetitive peak reverse voltage			
V_{RSM}	Surge peak reverse voltage			
I_F	Continuous Forward Current		$T_C = 25^{\circ}\text{C}$	89
			$T_C = 135^{\circ}\text{C}$	46
			$T_C = 146^{\circ}\text{C}$	40
I_{FSM}	Surge non-repetitive forward current	$T_C = 25^{\circ}\text{C}$, $t_p = 10\text{ms}$, half sine pulse	395	A
		$T_C = 150^{\circ}\text{C}$, $t_p = 10\text{ms}$, half sine pulse	352	
I_{FRM}	Surge repetitive forward current	$T_C = 25^{\circ}\text{C}$, $t_p = 10\text{ms}$, half sine wave $D = 0.1$	166	
P_{tot}	Total Power Dissipation		429	W
$\int i^2 dt$	i^2t value		709	A^2s
T_j	Operating junction temperature range		-55 to 175	$^{\circ}\text{C}$
T_{stg}	Storage temperature range		-55 to 175	
M	Mounting torque	M3 screw	1	Nm

Static Electrical Characteristics ($T_A = 25^\circ\text{C}$, unless specified otherwise)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_{DC}	DC blocking voltage	$I_R = 100 \mu\text{A}$	1200	-	-	V
V_F	Forward voltage	$I_F = 40\text{A}, T_j = 25^\circ\text{C}$	-	1.45	1.65	V
		$I_F = 40\text{A}, T_j = 175^\circ\text{C}$	-	2.15	2.50	
I_R	Reverse current	$V_R = 1200\text{V}, T_j = 25^\circ\text{C}$	-	5	160	μA
		$V_R = 1200\text{V}, T_j = 175^\circ\text{C}$	-	40	640	

Thermal Characteristics

Symbol	Parameter	Test conditions	Min	Typ	Max	Unit
$R_{\theta JC}$	Junction-to-case Thermal Resistance		-	0.35	-	$^\circ\text{C}/\text{W}$

Dynamic Characteristics ($T_A = 25^\circ\text{C}$, unless specified otherwise)

C	Total capacitance	$V_R = 0\text{V}, f = 1\text{MHz}$	-	2429	-	pF
		$V_R = 400\text{V}, f = 1\text{MHz}$	-	155	-	
		$V_R = 800\text{V}, f = 1\text{MHz}$	-	112	-	
Q_C	Total capacitive charge	$V_R = 800\text{V}$	-	166	-	nC
E_C	Capacitance stored energy	$V_R = 800\text{V}$	-	47	-	μJ

Electrical Characteristic Diagrams

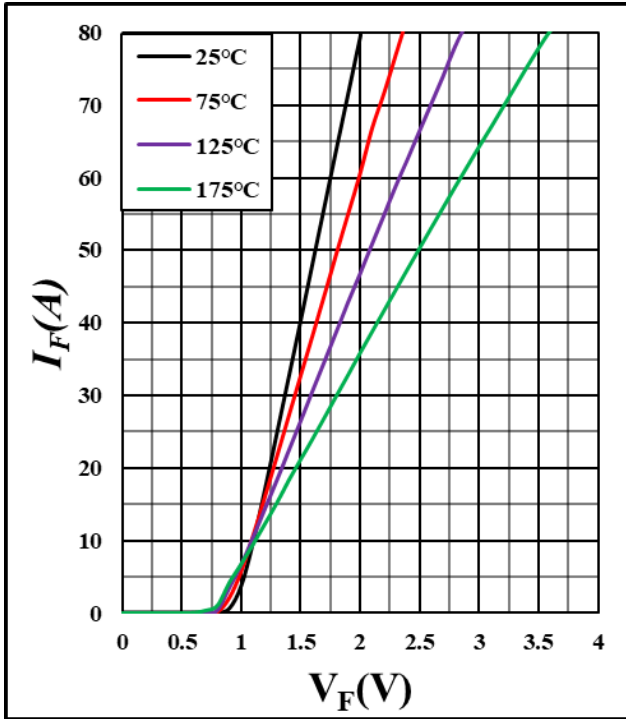


Figure 1. Forward characteristics

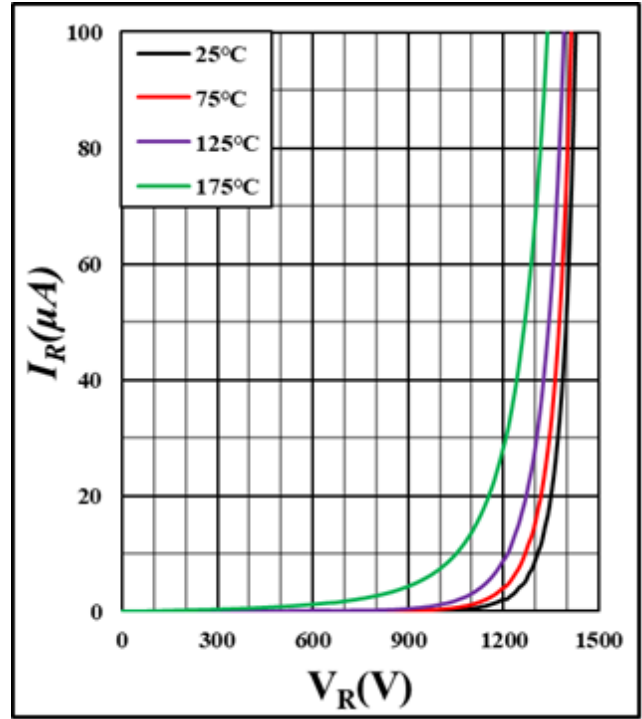


Figure 2. Reverse characteristics

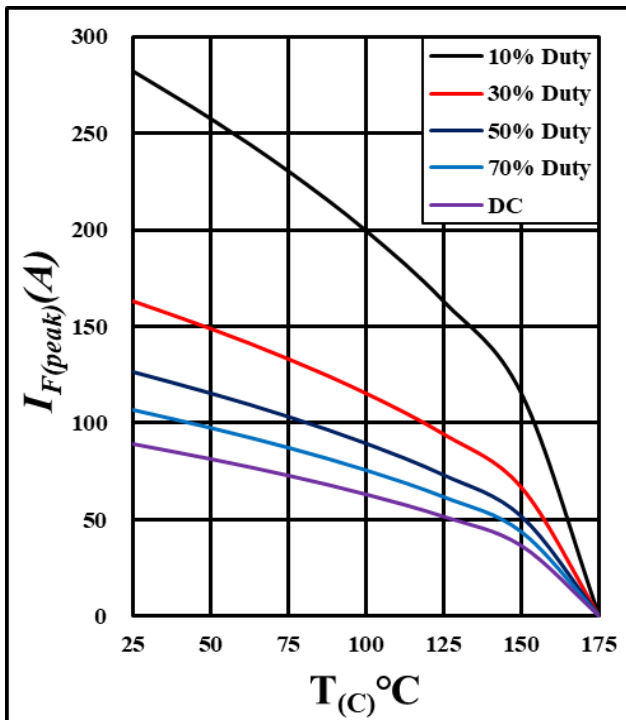


Figure 3. Current derating

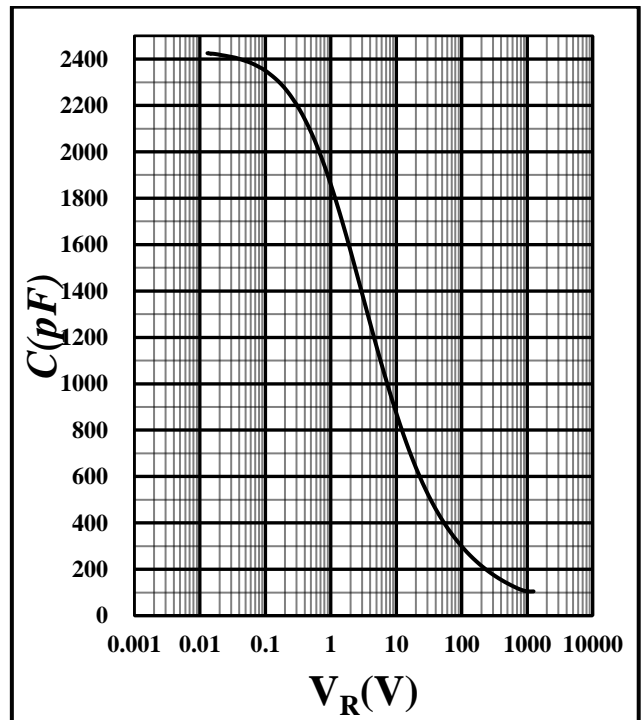


Figure 4. Capacitance vs. reverse voltage

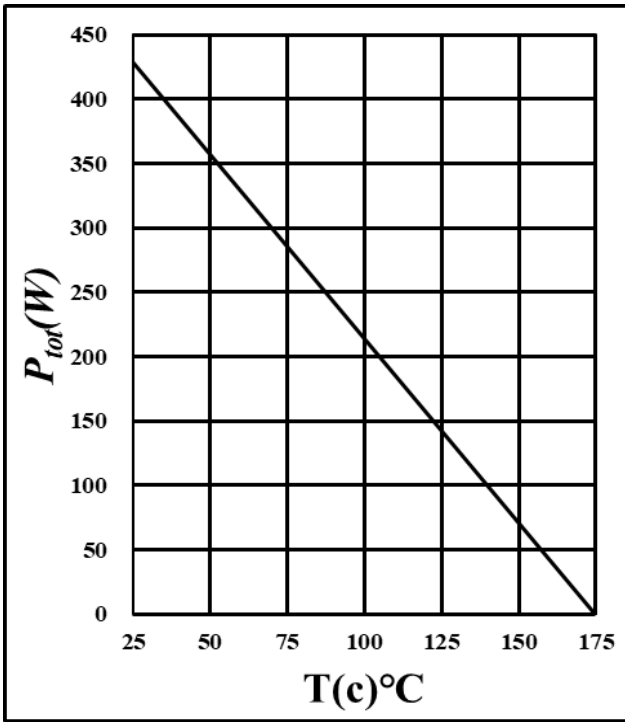


Figure 5. Power derating

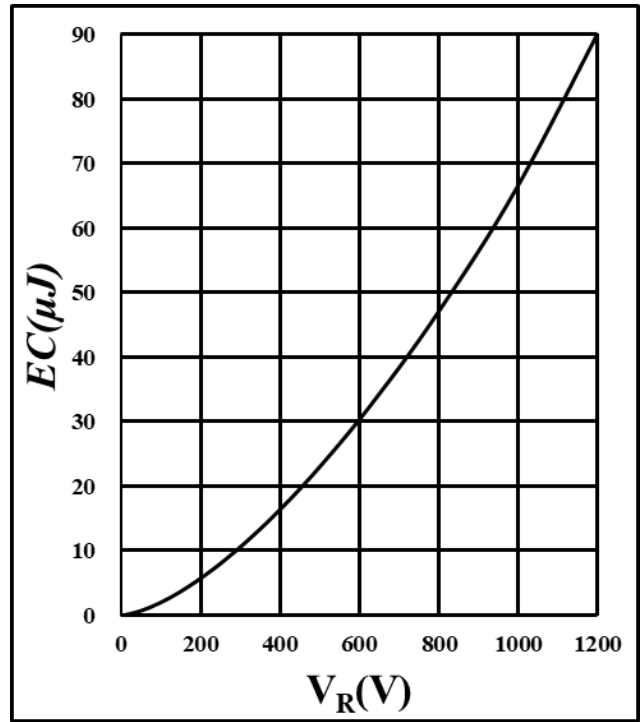


Figure 6. Capacitance stored energy

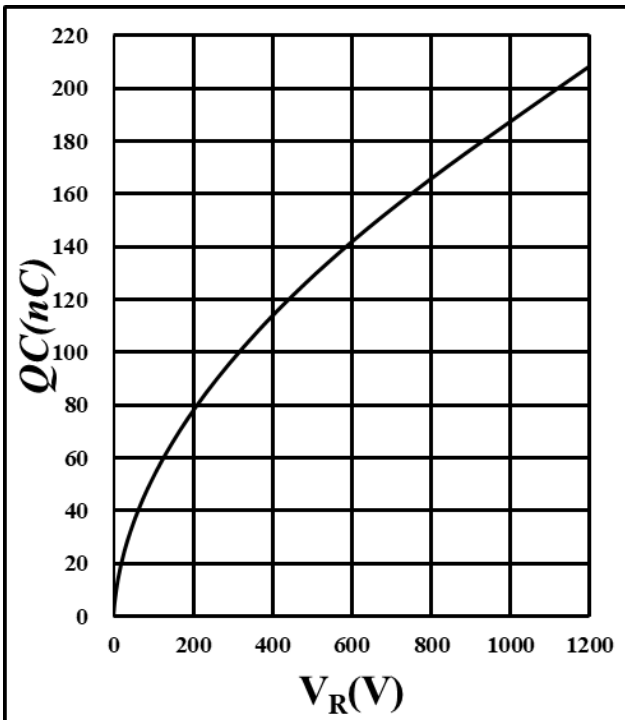


Figure 7. Total capacitance charge vs. reverse voltage

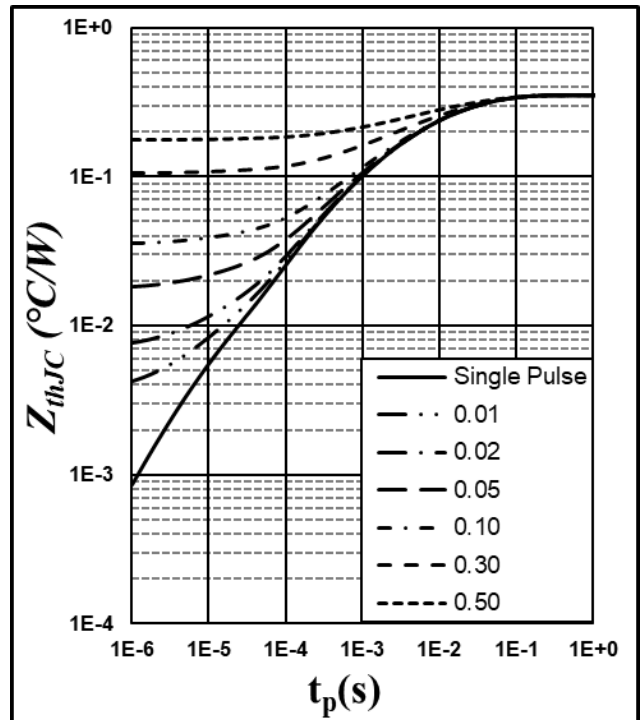
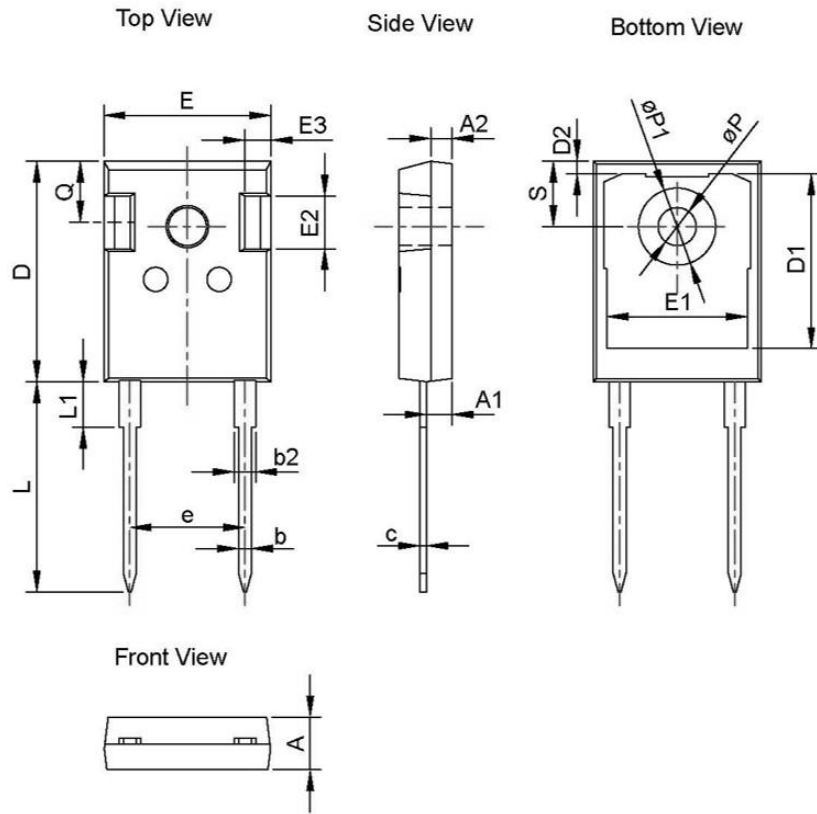


Figure 8. Transient Thermal Impedance
(Junction - Case)

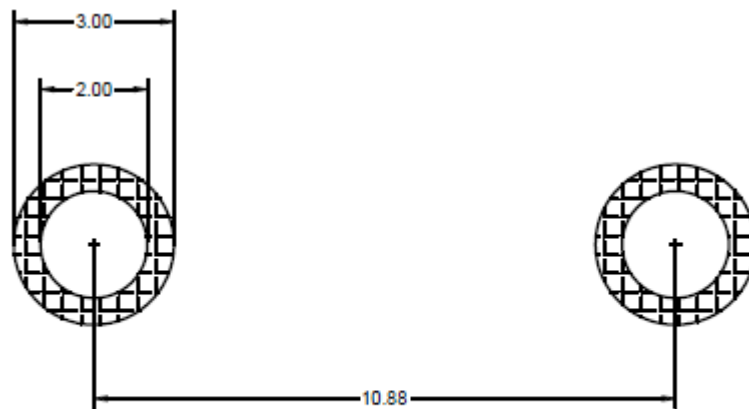
Package Information



Dimension unit: [mm]			
Symbol	Min	Nom	Max
A	4.80	5.00	5.20
A1	2.21	2.41	2.61
A2	1.85	2.00	2.15
b	1.11	1.21	1.36
b2	1.91	2.01	2.21
c	0.51	0.60	0.75
D	20.70	21.00	21.30
D1	16.25	16.55	16.85
D2	1.00	1.20	1.35
E	15.50	15.80	16.10
E1	13.00	13.30	13.60
E2	4.80	5.00	5.20
E3	2.30	2.50	2.70
e	10.88 BSC		
L	19.62	19.92	20.22
L1	-	-	4.30
ϕP	3.40	3.60	3.80
$\phi P1$	-	-	7.30
Q	5.40	5.80	6.20
S	6.20 BSC		

Recommended Solder Pad Layout

Note: All dimensions are in mm



TO-247-2L

Ordering Information

Part number	ASA040V120B5
Package	TO-247-2L
Unit quantity	300 EA
Packing type	Tube