

Features

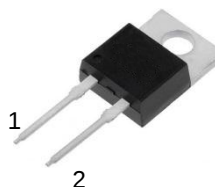
- High Surge Current Capacity
- Extremely Fast Reverse Recovery Time Low
- Reduced Losses in Associated MOSFET
- High-Frequency Operation
- Temperature Independent Switching Behavior
- Positive Temperature Coefficient on V_F

V_{RRM}	=	1200	V
$I_F (T_C = 165^\circ\text{C})$	=	2	A
Q_C	=	9.9	nC

Benefits

- System efficiency improvement over Si diodes
- Higher switching frequency
- Increased power density
- Essentially no switching losses

Package



TO-220-2

Applications

- Solar Power Boost
- Inverter Free Wheeling Diodes
- Vienna 3-Phase PFC
- EV Charger Piles
- Switch Mode Power Supplies



Part Number	Package	Marking
ASVD002120A	TO-220-2	ASVD002120A

Maximum Ratings (T_C=25°C unless otherwise specified)

Symbol	Parameter	Test conditions	Value	Unit
V _{RRM}	Repetitive peak reverse voltage		1200	V
V _{DC}	DC blocking voltage		1200	V
I _F	Continuous forward current	T _C =25°C T _C =135°C T _C =165°C	8.6 4.4 2	A
I _{FRM}	Repetitive forward surge current	T _A =25°C, t _p =10ms, Half Sine Pulse F=0.1Hz, 100 cycles	24	A
I _{FSM}	Non-Repetitive forward surge current	T _C =25°C, t _p =10ms, Half Sine Pulse	31	A
∫i ² dt		I ² t value@T _C =25°C, t _p =10ms	4.8	A ² S
P _{tot}	Power dissipation	T _C =25°C T _C =150°C	65.2 10.9	W
T _j	Operating junction temperature		-55~175	°C
T _{stg}	Storage temperature		-55~175	°C

Electrical Characteristics

Static Characteristics

Symbol	Parameter	Test conditions	Value			Unit
			Min	Typ	Max	
V _F	Diode forward voltage	I _F =2A T _j =25°C I _F =2A T _j =175°C		1.45 2.15	1.65 2.5	V
I _R	Reverse current	V _R =1200V T _j =25°C V _R =1200V T _j =175°C			50 500	μA
Q _C	Total capacitive charge	V _R =800V T _j =25°C Q _C = ∫ ₀ ^{V_R} C(V)dV		9.9		nC
C	Total capacitance	V _R =1V f=1MHz T _j =25°C V _R =400V f=1MHz T _j =25°C V _R =800V f=1MHz T _j =25°C		107 9.3 6.8		pF
E _C	Capacitance Stored Energy	V _R =800V T _j =25°C E _C = ∫ ₀ ^{V_R} C(V)·VdV		2.81		uJ

Thermal Characteristics

Symbol	Parameter	Value			Unit
		Min.	Typ.	Max.	
R _{th(jc)}	Thermal resistance from junction to case		2.3		°C/W

Typical Performance

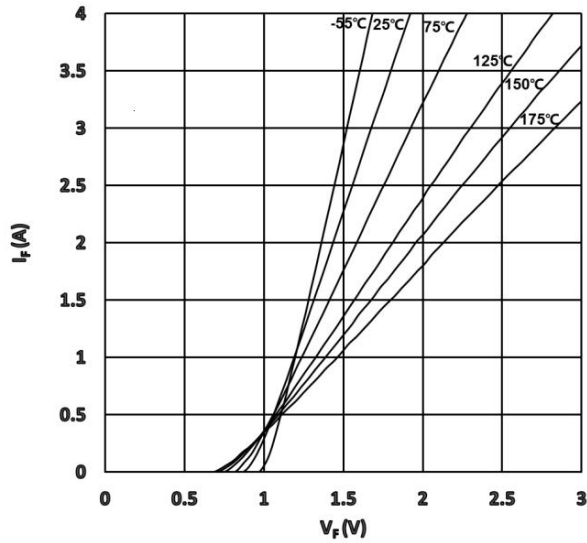


Figure 1. Typical Forward Characteristics

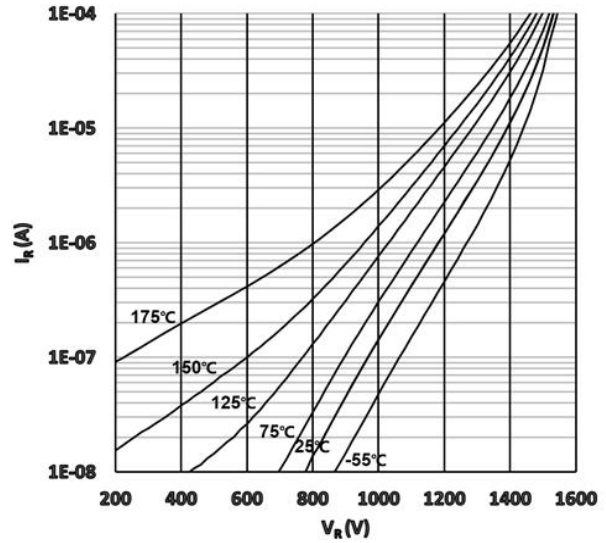


Figure 2. Typical Reverse Characteristics

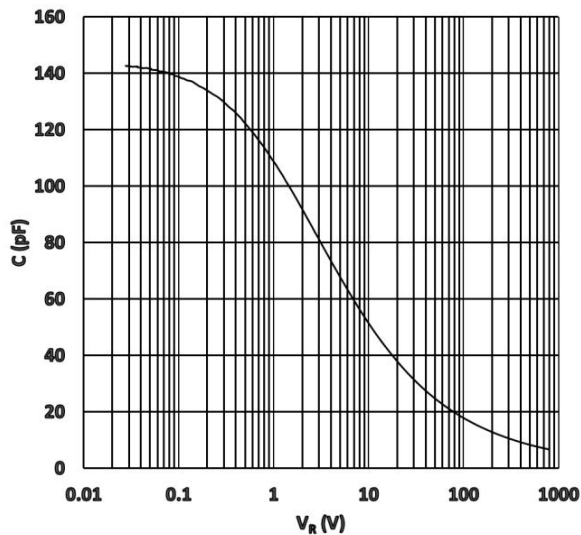


Figure 3. Capacitance vs. Reverse Voltage

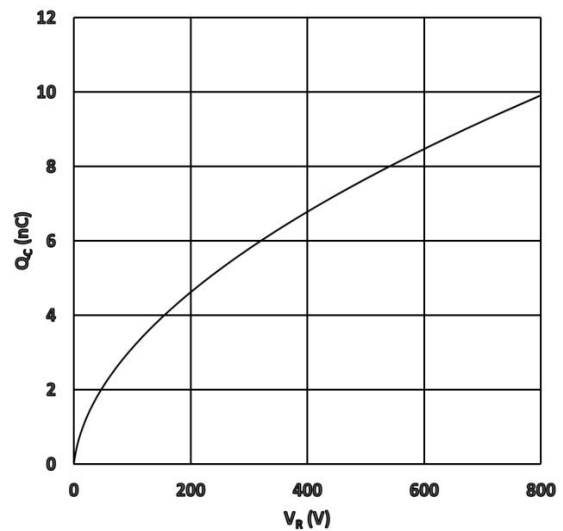


Figure 4. Recovery Charge vs. Reverse Voltage

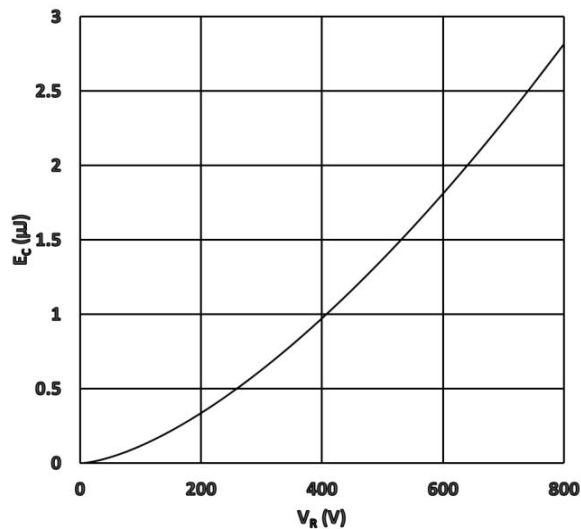


Figure 5. Capacitance Stored Energy

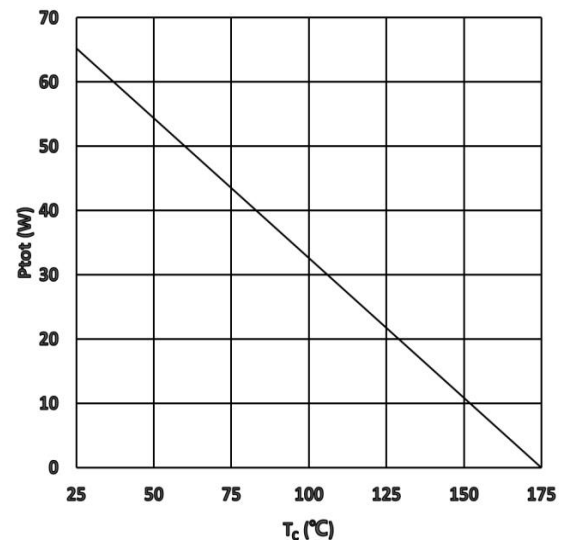


Figure 6. Power Derating

Typical Performance

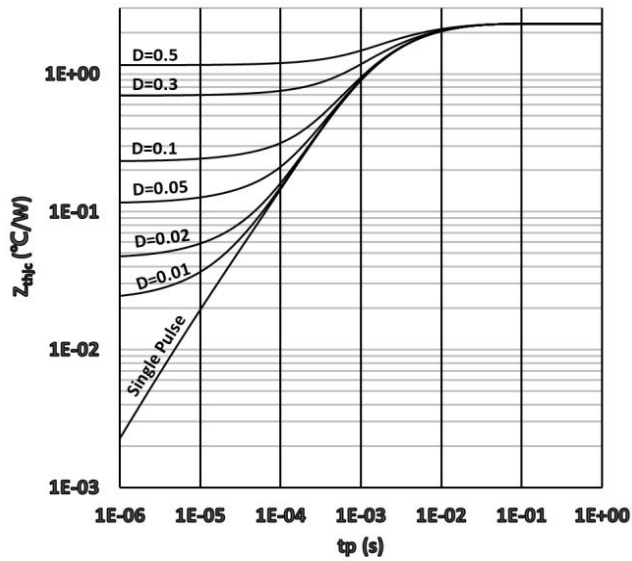


Figure 7. Transient Thermal Impedance

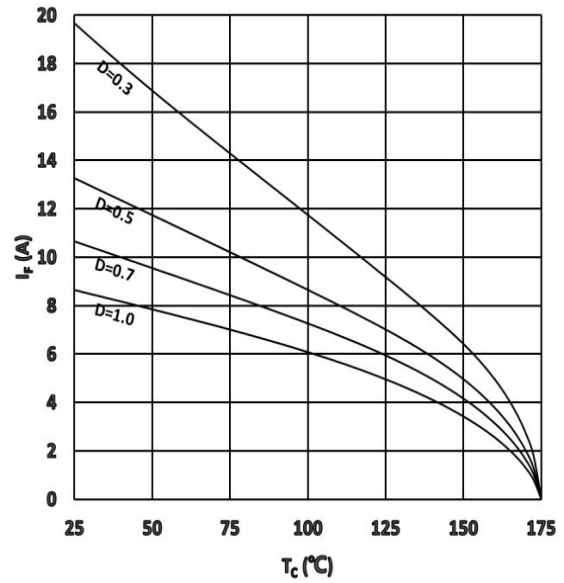
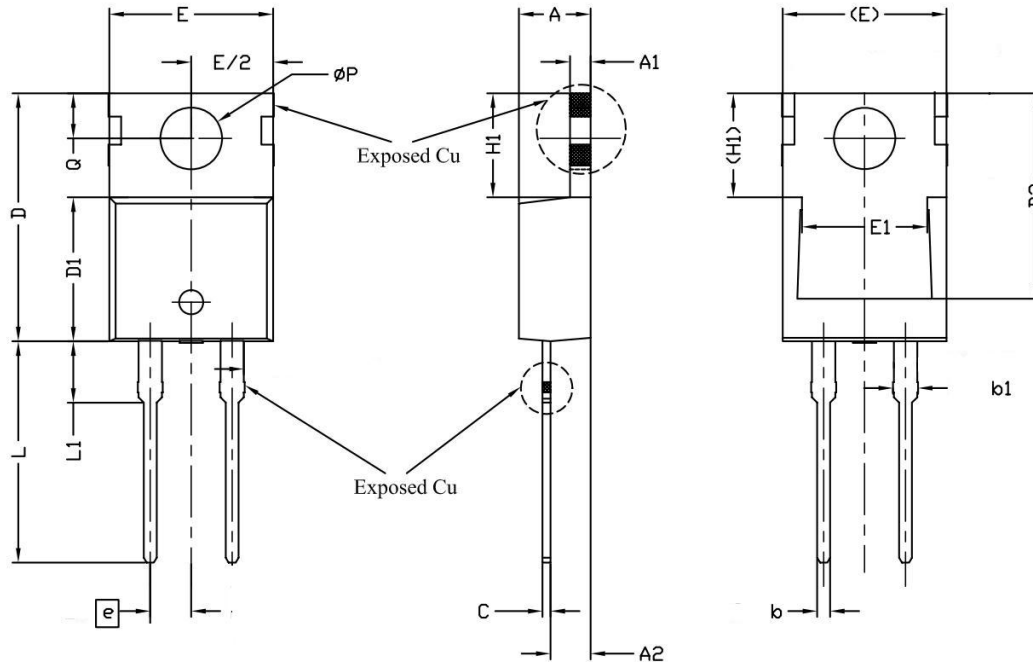


Figure 8. I_F as a Function of Temp.

Package Dimensions

Package TO-220-2



Dimensions In Millimeters		
SYMBOL	MIN.	MAX.
A	4.24	4.64
A1	1.16	1.40
A2	2.25	2.70
b	0.70	0.91
b1	1.17	1.75
c	0.33	0.65
D	14.70	16.00
D1	8.82	9.45
D2	12.63	13.55
E	9.91	10.36
E1	6.86	8.89
e	2.54 BSC	
H1	6.30	6.65
L	12.90	13.97
L1	2.85	4.00
Ø P	3.40	3.93
Q	2.60	3.00