

Features

- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- Positive Temperature Coefficient on V_F
- Temperature-independent Switching
- 175°C Operating Junction Temperature

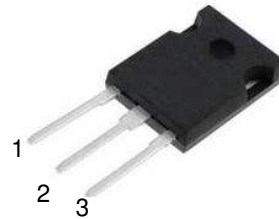
V_{RRM}	=	1200 V
$I_F (T_C \leq 135^\circ C)$	=	48 A**
Q_C	=	102 nC**

*Per Leg, **Per Device

Benefits

- Replace Bipolar with Unipolar Device
- Reduction of Heat Sink Size
- Parallel Devices Without Thermal Runaway
- Essentially No Switching Losses

Package



TO-247-3

Applications

- Switch Mode Power Supplies
- Power Factor Correction
- Motor drive, PV Inverter, Wind Power Station



Part Number	Package	Marking
AS3D040120P2	TO-247-3	ASD40120P2

Maximum Ratings

Symbol	Parameter	Value	Unit	Test Conditions	Note
V _{RRM}	Repetitive Peak Reverse Voltage	1200	V	T _C = 25°C	
V _{RSM}	Surge Peak Reverse Voltage	1200	V	T _C = 25°C	
V _R	DC Blocking Voltage	1200	V	T _C = 25°C	
I _F	Forward Current (Per leg/Device)	52/104 24/48 20/40	A	T _C ≤ 25°C T _C ≤ 135°C T _C ≤ 146°C	
I _{FSM}	Non-Repetitive Forward Surge Current	180*	A	T _C = 25°C, t _p = 8.3ms, Half Sine Wave	
P _{tot}	Power Dissipation (Per leg/Device)	230/ 460	W	T _C = 25°C	Fig.3
T _C	Maximum Case Temperature	146	°C		
T _J , T _{STG}	Operating Junction and Storage Temperature	-55 to 175	°C		
	TO-247 Mounting Torque	1	Nm	M3 Screw	

Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V _F	Forward Voltage	1.55 2.2	1.8 2.5	V	I _F = 20A, T _J = 25°C I _F = 20A, T _J = 175°C	Fig.1
I _R	Reverse Current	5 30	20 200	μA	V _R = 1200V, T _J = 25°C V _R = 1200V, T _J = 175°C	Fig.2
C	Total Capacitance	1280 95 77	/	pF	V _R = 0V, T _J = 25°C, f = 1MHz V _R = 400V, T _J = 25°C, f = 1MHz V _R = 800V, T _J = 25°C, f = 1MHz	Fig.5
Q _C	Total Capacitive Charge	51	/	nC	V _R = 800V, I _F = 20A di/dt = 200A/μs, T _J = 25°C	Fig.4

Thermal Characteristics

Symbol	Parameter	Typ.	Unit	Note
R _{θJC}	Thermal Resistance from Junction to Case	0.65* 0.33**	°C/W	Fig.6
R _{θJA}	Thermal Resistance from Junction to Ambient	80	°C/W	
T _{sold}	Soldering Temperature	260	°C	

*Per Leg, **Per Device

Typical Performance (Per Leg)

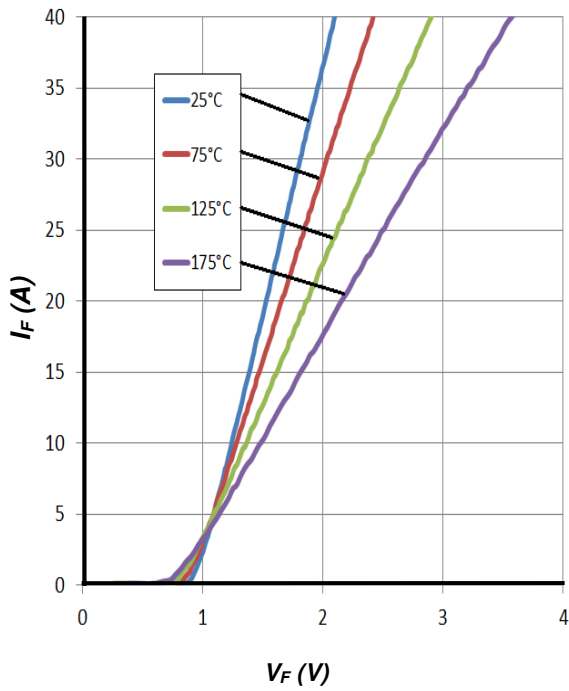


Figure 1. Forward Characteristics

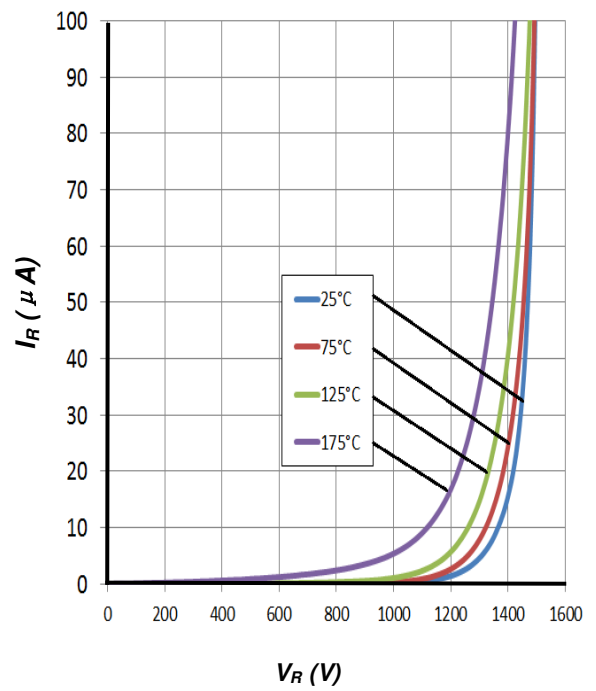


Figure 2. Reverse Characteristics

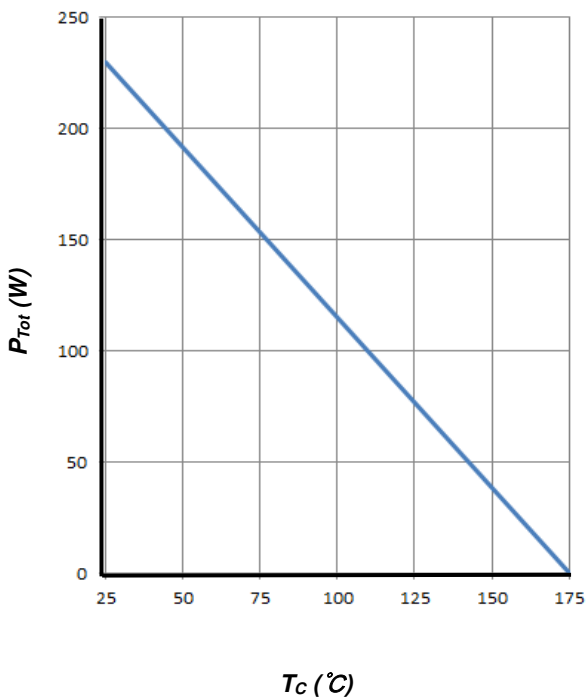


Figure 3. Power Derating

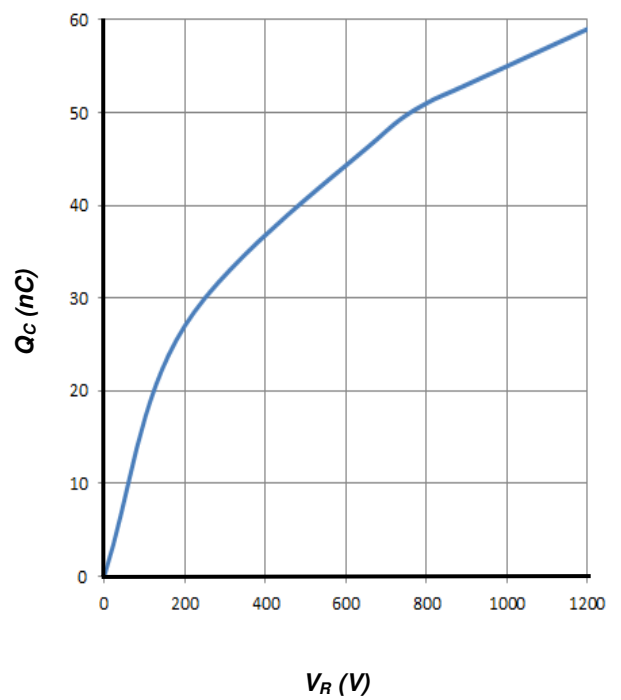


Figure 4. Total Capacitive Charge vs. Reverse Voltage

Typical Performance (Per Leg)

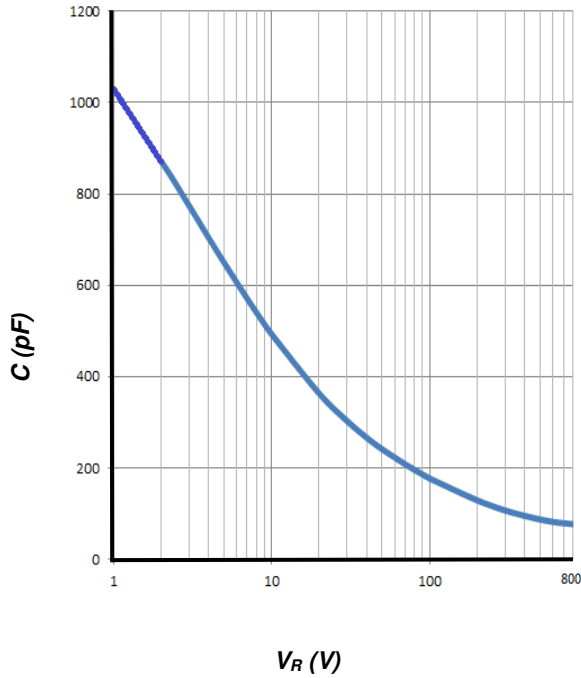


Figure 5. Total Capacitance vs. Reverse Voltage

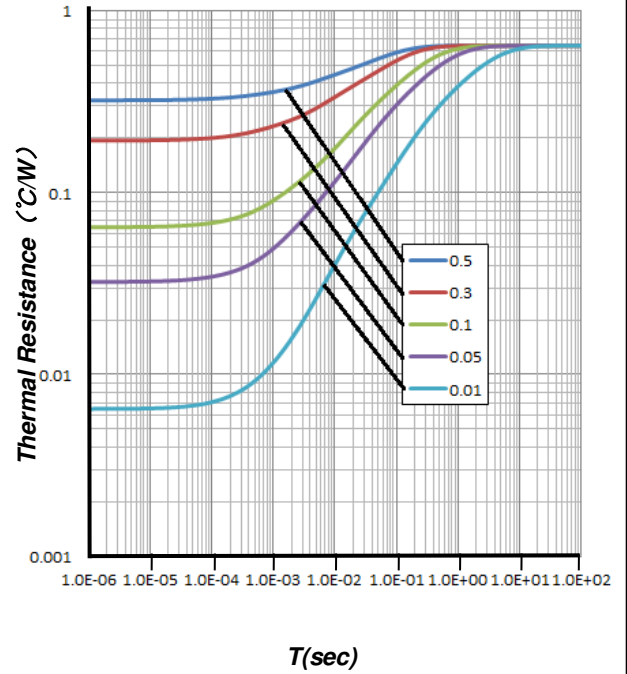
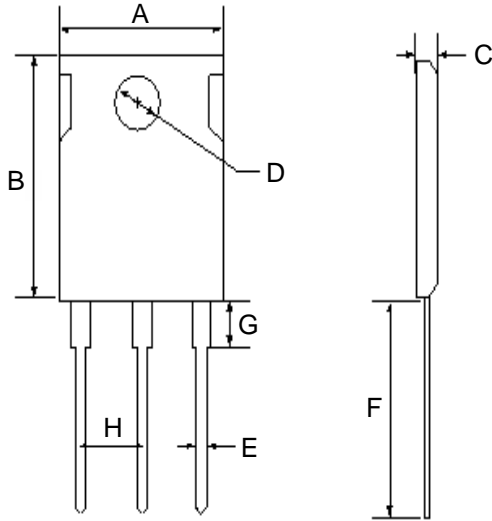


Figure 6. Transient Thermal Impedance

Package Dimensions

Package TO-247-3



Symbol	Min. (mm)	Typ. (mm)	Max. (mm)
A	14.18	15.75	17.33
B	18.45	20.5	22.55
C	4.50	5.00	5.50
D	3.15	3.50	3.85
E	1.08	1.20	1.32
F	18.27	20.30	22.33
G	4.21	4.68	5.15
H	4.91	5.46	6.01