

Features

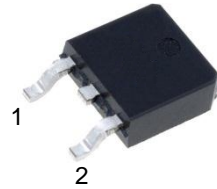
- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- Positive Temperature Coefficient on V_F
- Temperature-independent Switching
- 175°C Operating Junction Temperature

V_{RRM}	=	1200	V
$I_F (T_C \leq 135^\circ C)$	=	14	A
Q_C	=	29	nC

Benefits

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

Package



TO-252-2

Applications

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



Part Number	Package	Marking
AS3D010120D	TO-252-2	ASD10120D

Maximum Ratings

Symbol	Parameter	Value	Unit	Test Conditions	Note
V_{RRM}	Repetitive Peak Reverse Voltage	1200	V	$T_C = 25^\circ\text{C}$	
V_{RSM}	Surge Peak Reverse Voltage	1200	V	$T_C = 25^\circ\text{C}$	
V_R	DC Blocking Voltage	1200	V	$T_C = 25^\circ\text{C}$	
I_F	Forward Current	30 14 10	A	$T_C \leq 25^\circ\text{C}$ $T_C \leq 135^\circ\text{C}$ $T_C \leq 151^\circ\text{C}$	
I_{FSM}	Non-Repetitive Forward Surge Current	95	A	$T_C = 25^\circ\text{C}$, $t_p = 8.3\text{ms}$, Half Sine Wave	
P_{tot}	Power Dissipation	150	W	$T_C = 25^\circ\text{C}$	Fig.3
T_C	Maximum Case Temperature	151	$^\circ\text{C}$		
T_J, T_{STG}	Operating Junction and Storage Temperature	-55 to 175	$^\circ\text{C}$		

Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_F	Forward Voltage	1.55 2.2	1.8 2.5	V	$I_F = 10\text{A}$, $T_J = 25^\circ\text{C}$ $I_F = 10\text{A}$, $T_J = 175^\circ\text{C}$	Fig.1
I_R	Reverse Current	2 10	20 200	μA	$V_R = 1200\text{V}$, $T_J = 25^\circ\text{C}$ $V_R = 1200\text{V}$, $T_J = 175^\circ\text{C}$	Fig.2
C	Total Capacitance	650 49 40	/	pF	$V_R = 0\text{V}$, $T_J = 25^\circ\text{C}$, $f = 1\text{MHz}$ $V_R = 400\text{V}$, $T_J = 25^\circ\text{C}$, $f = 1\text{MHz}$ $V_R = 800\text{V}$, $T_J = 25^\circ\text{C}$, $f = 1\text{MHz}$	Fig.5
Q_C	Total Capacitive Charge	29	/	nC	$V_R = 800\text{V}$, $I_F = 10\text{A}$ $di/dt = 200\text{A}/\mu\text{s}$, $T_J = 25^\circ\text{C}$	Fig.4

Thermal Characteristics

Symbol	Parameter	Typ.	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	1	$^\circ\text{C}/\text{W}$	Fig.6
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	80	$^\circ\text{C}/\text{W}$	
T_{sold}	Soldering Temperature	260	$^\circ\text{C}$	

Typical Performance

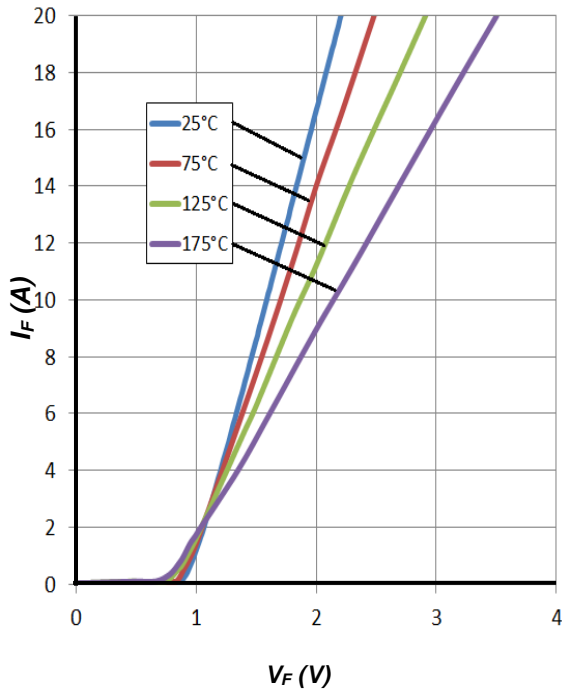


Figure 1. Forward Characteristics

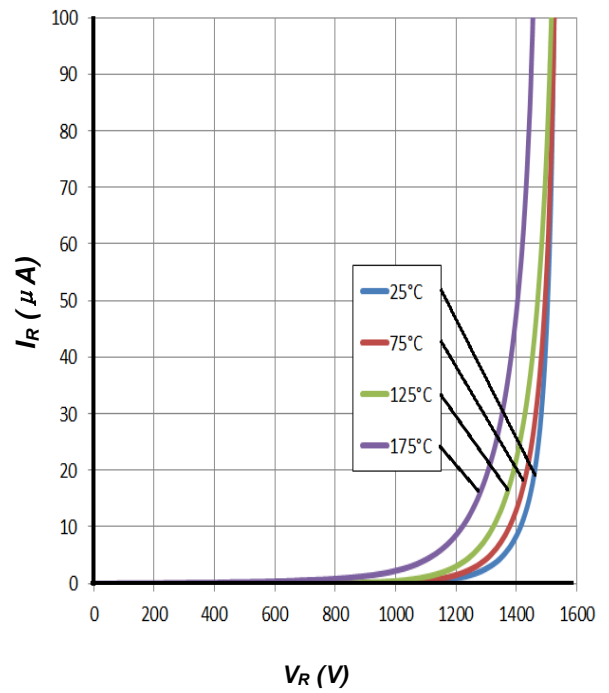


Figure 2. Reverse Characteristics

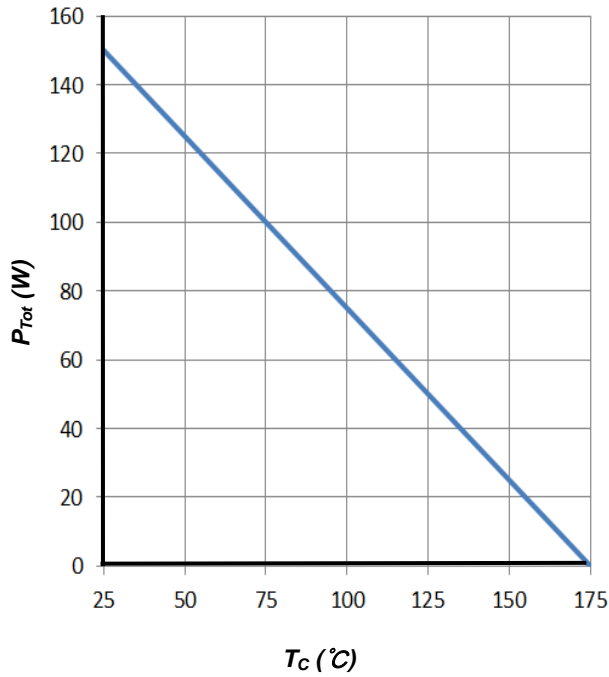


Figure 3. Power Derating

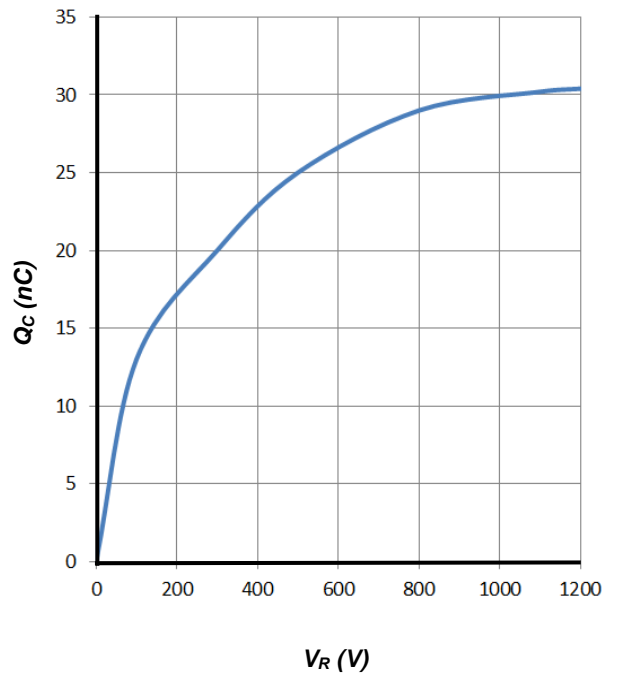


Figure 4. Total Capacitive Charge vs. Reverse Voltage

Typical Performance

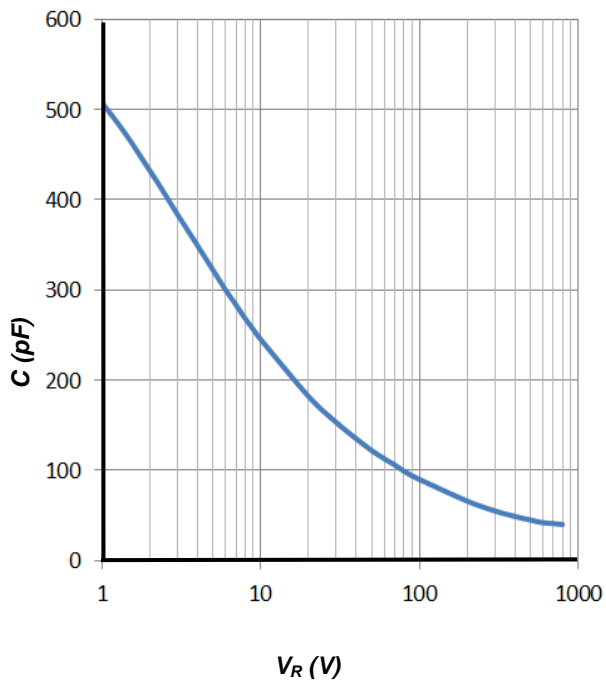


Figure 5. Total Capacitance vs. Reverse Voltage

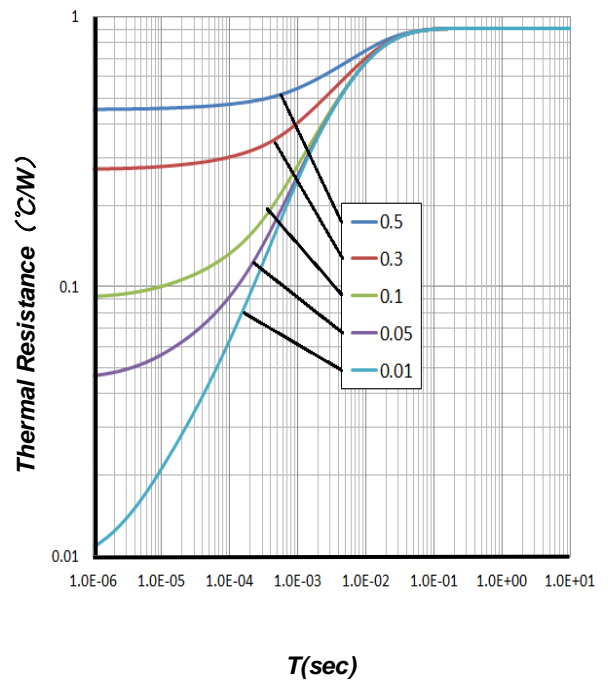
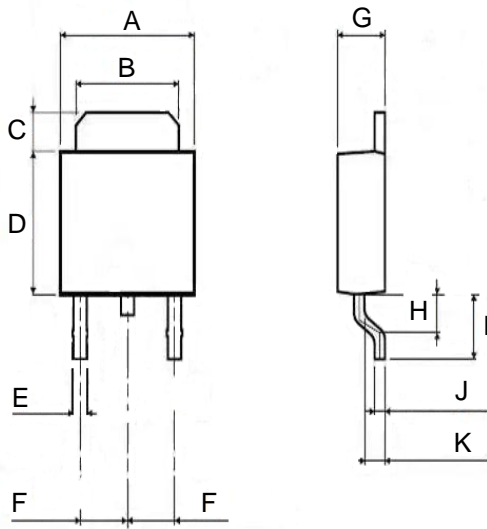


Figure 6. Transient Thermal Impedance

Package Dimensions

Package TO-252-2



Symbol	Min. (mm)	Typ. (mm)	Max. (mm)
A	6.3	6.5	6.7
B	5.2	5.3	5.4
C	1.15	1.25	1.35
D	5.7	5.9	6.1
E	0.65	0.7	0.75
F	2.1	2.3	2.5
G	2.2	2.3	2.4
H	1.45	1.5	1.55
I	2.9	3.0	3.1
J	0.45	0.5	0.55
K	0.9	1	1.1