

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}	=	650	V
$I_F (T_J \leq 175^\circ\text{C})$	=	16	A
Q_C	=	30	nC

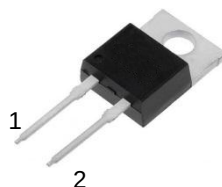
Benefits

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

Applications

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

Package



TO-220-2



Part Number	Package	Marking
AS3D012065A	TO-220-2	ASD1265A

Maximum Ratings

Symbol	Parameter	Value	Unit	Test Conditions	Note
V_{RRM}	Repetitive Peak Reverse Voltage	650	V	$T_C = 25^{\circ}\text{C}$	
V_{RSM}	Surge Peak Reverse Voltage	650	V	$T_C = 25^{\circ}\text{C}$	
V_R	DC Blocking Voltage	650	V	$T_C = 25^{\circ}\text{C}$	
I_F	Forward Current	35 16 12	A	$T_C \leq 25^{\circ}\text{C}$ $T_C \leq 135^{\circ}\text{C}$ $T_C \leq 150^{\circ}\text{C}$	
I_{FSM}	Non-Repetitive Forward Surge Current	108	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	150	$^{\circ}\text{C}$		
T_J, T_{STG}	Operating Junction and Storage Temperature	-55 to 175	$^{\circ}\text{C}$		
	TO-220-2 Mounting Torque	1	Nm	M3 Screw	

Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_F	Forward Voltage	1.4 1.7	1.65 2.3	V	$I_F = 12\text{A}$, $T_J = 25^{\circ}\text{C}$ $I_F = 12\text{A}$, $T_J = 175^{\circ}\text{C}$	Fig.1
I_R	Reverse Current	1 5	20 100	μA	$V_R = 650\text{V}$, $T_J = 25^{\circ}\text{C}$ $V_R = 650\text{V}$, $T_J = 175^{\circ}\text{C}$	Fig.2
C	Total Capacitance	690 68 59	/	pF	$V_R = 0\text{V}$, $T_J = 25^{\circ}\text{C}$, $f = 1\text{MHz}$ $V_R = 200\text{V}$, $T_J = 25^{\circ}\text{C}$, $f = 1\text{MHz}$ $V_R = 400\text{V}$, $T_J = 25^{\circ}\text{C}$, $f = 1\text{MHz}$	Fig.5
Q_C	Total Capacitive Charge	30	/	nC	$V_R = 650\text{V}$, $I_F = 12\text{A}$ $di/dt = 200\text{A}/\mu\text{s}$, $T_J = 25^{\circ}\text{C}$	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

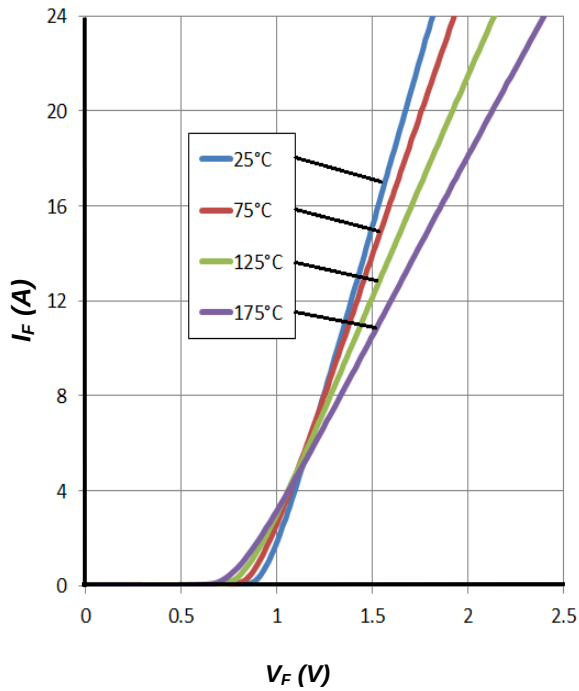


Figure 1. Forward Characteristics

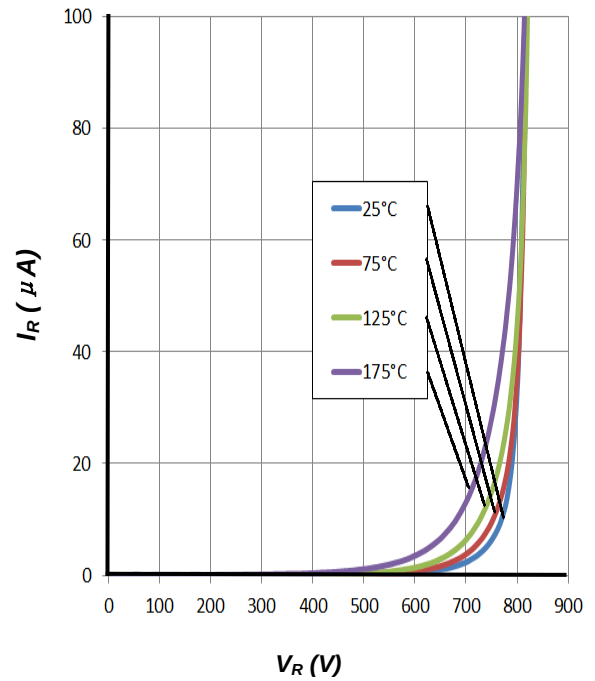


Figure 2. Reverse Characteristics

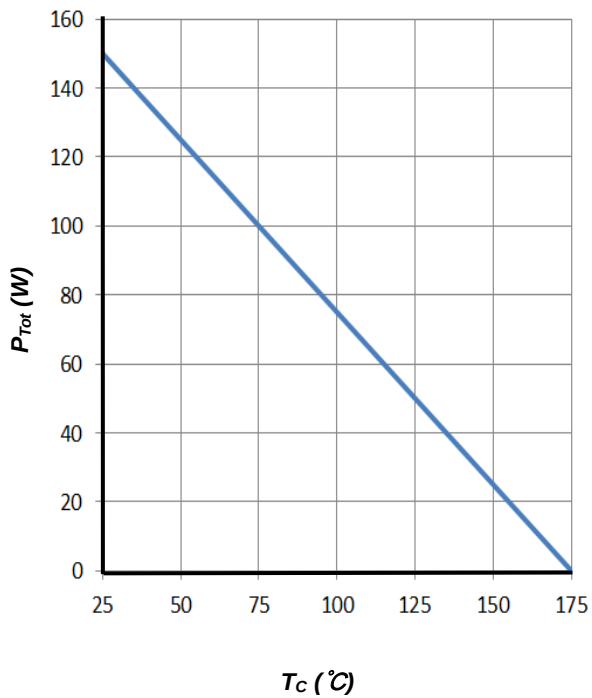


Figure 3. Power Derating

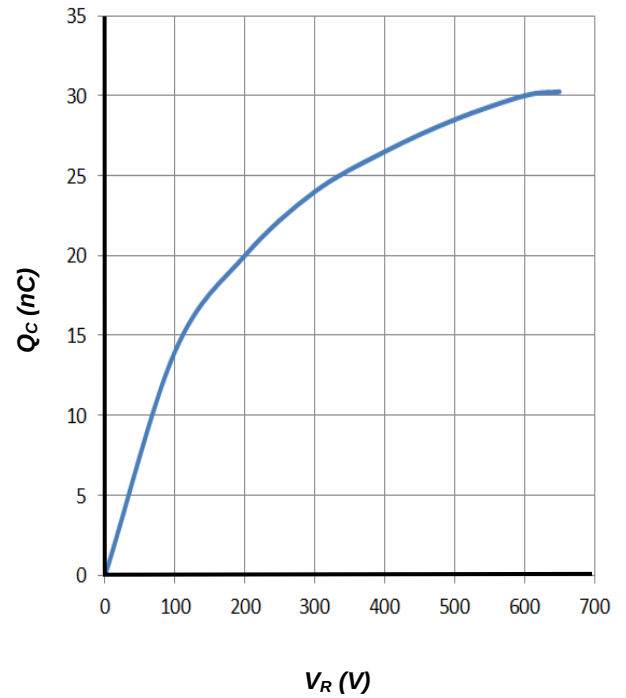


Figure 4. Total Capacitive Charge vs. Reverse Voltage

Typical Performance

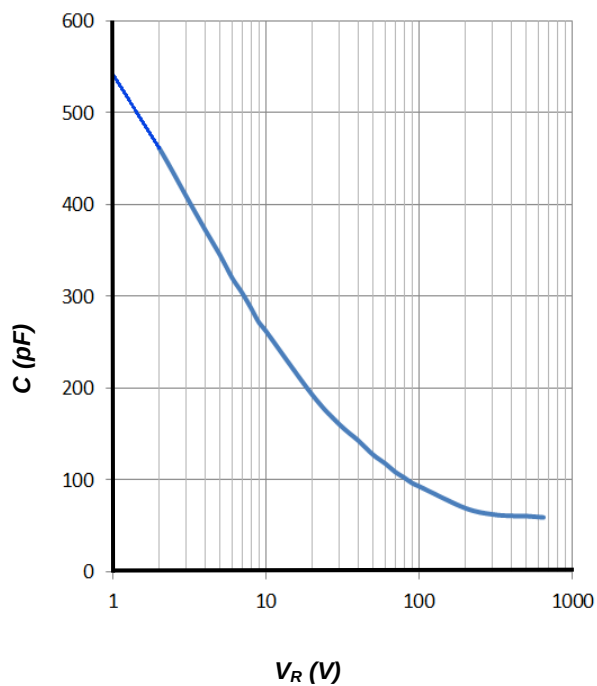


Figure 5. Total Capacitance vs. Reverse Voltage

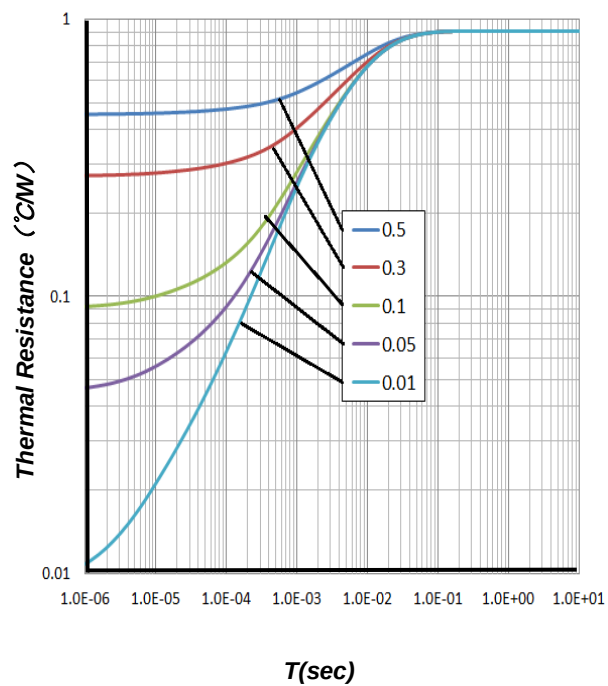
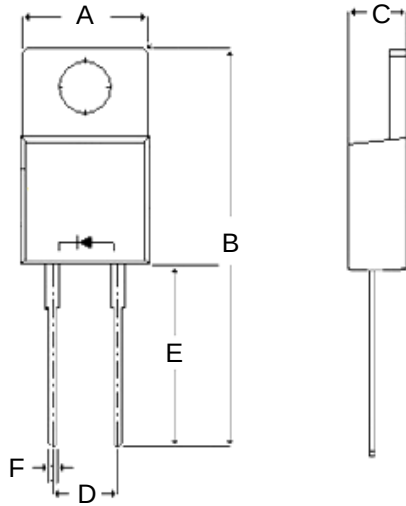


Figure 6. Transient Thermal Impedance

Package Dimensions

Package TO-220-2



Symbol	Min. (mm)	Typ. (mm)	Max. (mm)
A	9.17	10.08	10.91
B	27.00	28.58	30.00
C	3.89	4.50	5.00
D	4.20	5.10	5.80
E	11.70	13.30	14.97
F	0.50	0.80	1.21