

### Features

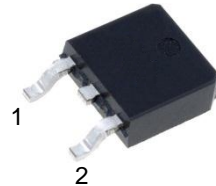
- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- Positive Temperature Coefficient on  $V_F$
- Temperature-independent Switching
- 175°C Operating Junction Temperature

$V_{RRM}$	=	650	V
$I_F (T_C \leq 135^\circ\text{C})$	=	4	A
$Q_C$	=	5.4	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
AS3D002065D	TO-252-2	ASD265D

### 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	8 4 2	A	$T_C \leq 25^\circ\text{C}$ $T_C \leq 135^\circ\text{C}$ $T_C \leq 161^\circ\text{C}$	
$I_{FSM}$	Non-Repetitive Forward Surge Current	20	A	$T_C = 25^\circ\text{C}$ , $t_p = 8.3\text{ms}$ , Half Sine Wave	
$P_{tot}$	Power Dissipation	39	W	$T_C = 25^\circ\text{C}$	Fig.3
$T_C$	Maximum Case Temperature	161	$^\circ\text{C}$		
$T_J, T_{STG}$	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	1.4 1.7	1.65 2.3	V	$I_F = 2\text{A}$ , $T_J = 25^\circ\text{C}$ $I_F = 2\text{A}$ , $T_J = 175^\circ\text{C}$	Fig.1
$I_R$	Reverse Current	1 5	10 100	$\mu\text{A}$	$V_R = 650\text{V}$ , $T_J = 25^\circ\text{C}$ $V_R = 650\text{V}$ , $T_J = 175^\circ\text{C}$	Fig.2
$C$	Total Capacitance	125 12 10	/	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	5.4	/	nC	$V_R = 650\text{V}$ , $I_F = 2\text{A}$ $di/dt = 200\text{A}/\mu\text{s}$ , $T_J = 25^\circ\text{C}$	Fig.4

### Thermal Characteristics

Symbol	Parameter	Typ.	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	3.8	$^\circ\text{C}/\text{W}$	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**

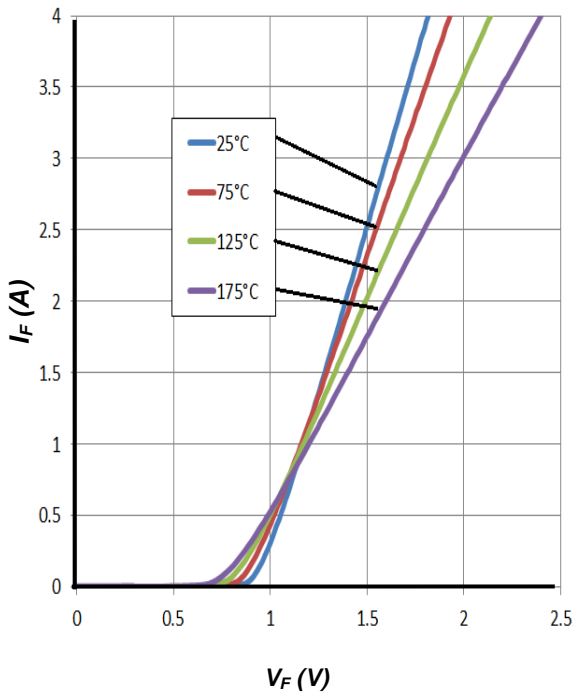


Figure 1. Forward Characteristics

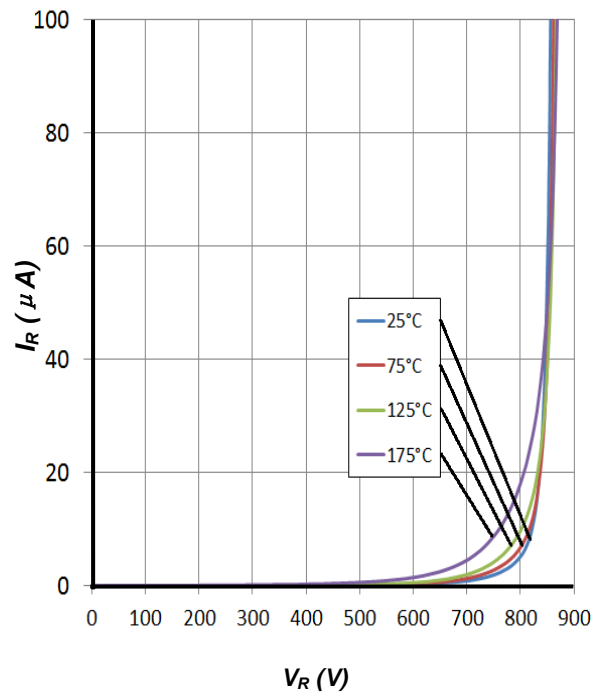


Figure 2. Reverse Characteristics

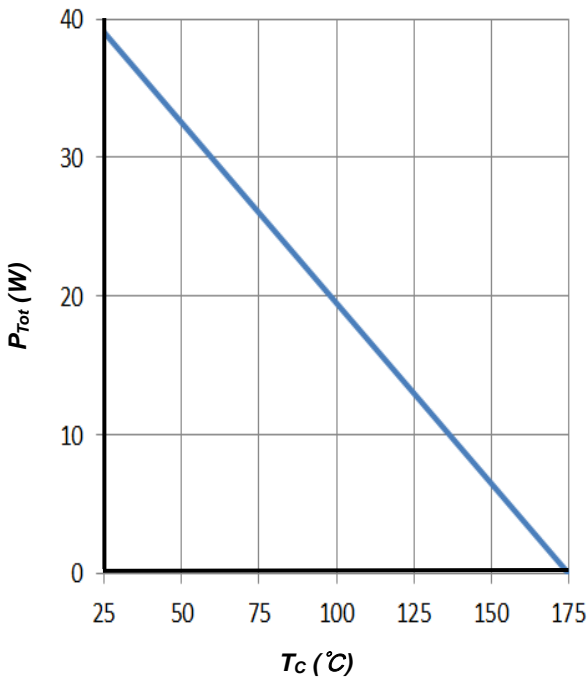


Figure 3. Power Derating

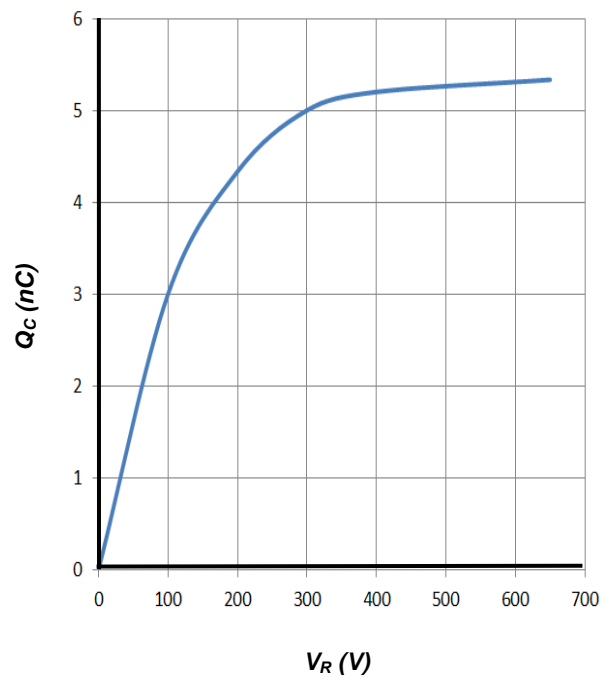


Figure 4. Total Capacitive Charge vs. Reverse Voltage

**Typical Performance**

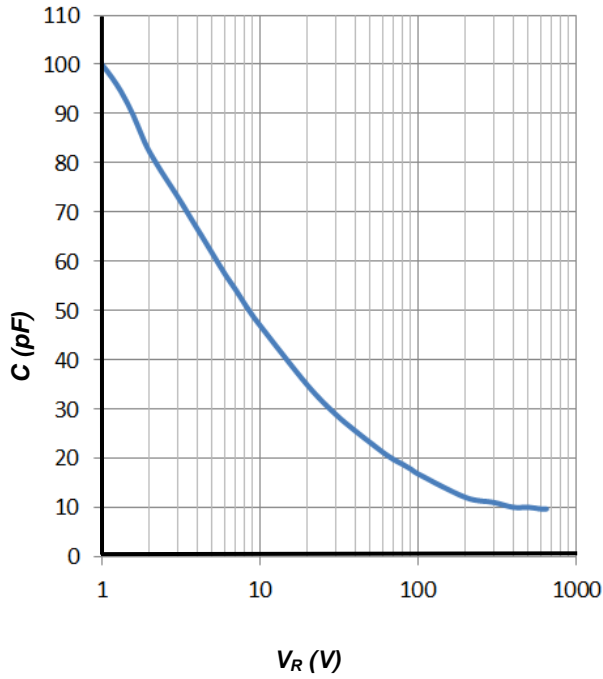


Figure 5. Total Capacitance vs. Reverse Voltage

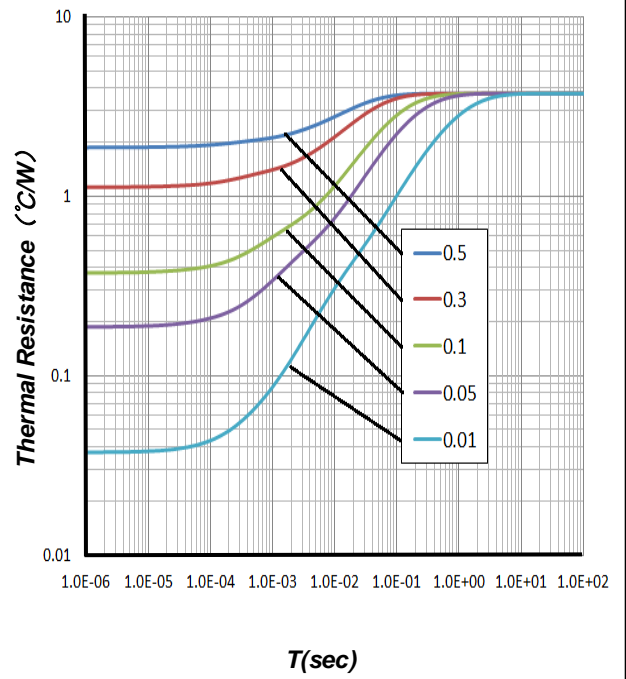
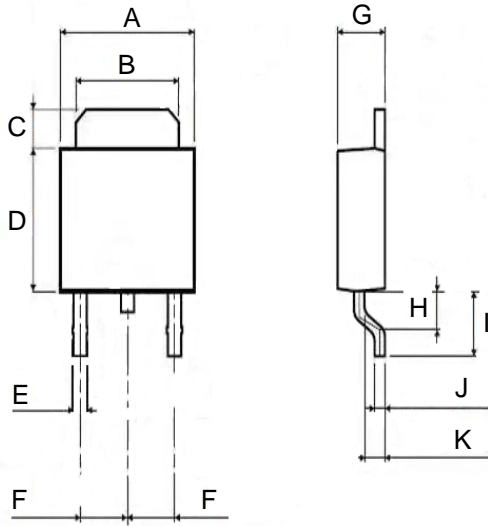


Figure 6. Transient Thermal Impedance

## 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