

Features

- New Thin Wafer Technology
- Low Forward Voltage Drop (V_F)
- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- Positive Temperature Coefficient on V_F
- Temperature-independent Switching

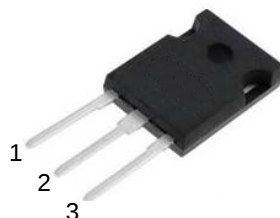
V_{RRM}	=	650	V
$I_F (T_C \leq 156^\circ\text{C})$	=	20	A**
Q_C	=	50	nC**

*Per Leg, **Per Device

Benefits

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

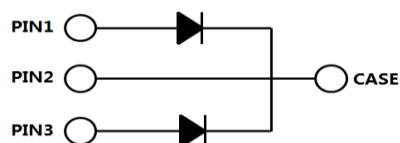
Package



TO-247-3

Applications

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



Part Number	Package	Marking
AS4D020065P2	TO-247-3	AS4D020065P2

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 (Per leg/Device)	35/70 18/36 10/20	A	$T_C \leq 25^{\circ}\text{C}$ $T_C \leq 135^{\circ}\text{C}$ $T_C \leq 156^{\circ}\text{C}$	
I_{FSM}	Non-Repetitive Forward Surge Current	86*	A	$T_C = 25^{\circ}\text{C}$, $t_p = 8.3\text{ms}$, Half Sine Wave	
P_{tot}	Power Dissipation	150/300	W	$T_C = 25^{\circ}\text{C}$	Fig.3
T_J, T_{STG}	Operating Junction and Storage Temperature	-55 to 175	$^{\circ}\text{C}$		
	TO-247 Mounting Torque	1	Nm	M3 Screw	

*Per Leg, **Per Device

Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_F	Forward Voltage	1.27 1.38	1.5 1.6	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	6 25	50 200	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	640 66 48	/	pF	$V_R = 0.1\text{V}$, $T_J = 25^{\circ}\text{C}$, $f = 1\text{MHz}$ $V_R = 200\text{V}$, $T_J = 25^{\circ}\text{C}$, $f = 1\text{MHz}$ $V_R = 400\text{V}$, $T_J = 25^{\circ}\text{C}$, $f = 1\text{MHz}$	Fig.5
Q_C	Total Capacitive Charge	25	/	nC	$V_R = 400\text{V}$, $I_F = 10\text{A}$ $di/dt = 200\text{A}/\mu\text{s}$, $T_J = 25^{\circ}\text{C}$	Fig.4

Thermal Characteristics

Symbol	Parameter	Typ.	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	1* 0.5**	$^{\circ}\text{C}/\text{W}$	Fig.6
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	80	$^{\circ}\text{C}/\text{W}$	
T_{sld}	Soldering Temperature	260	$^{\circ}\text{C}$	

*Per Leg, **Per Device

Typical Performance (Per leg)

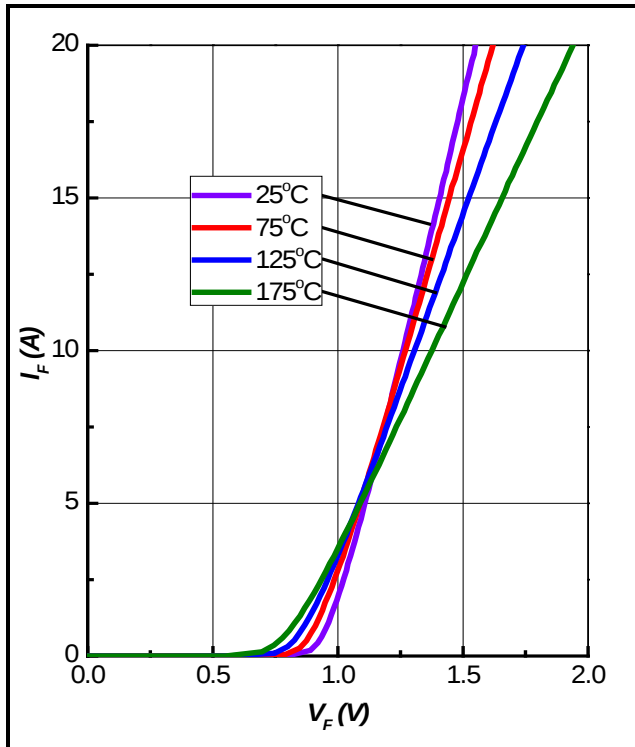


Figure 1. Forward Characteristics

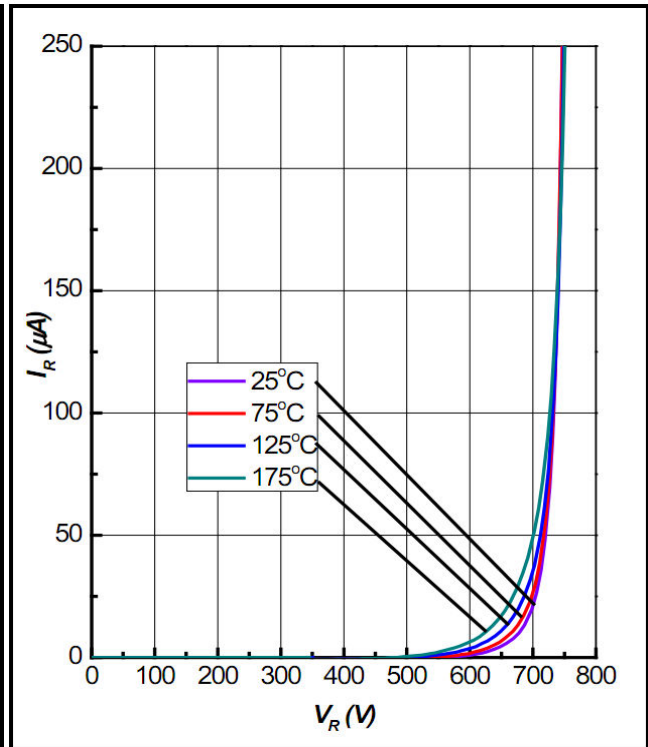


Figure 2. Reverse Characteristics

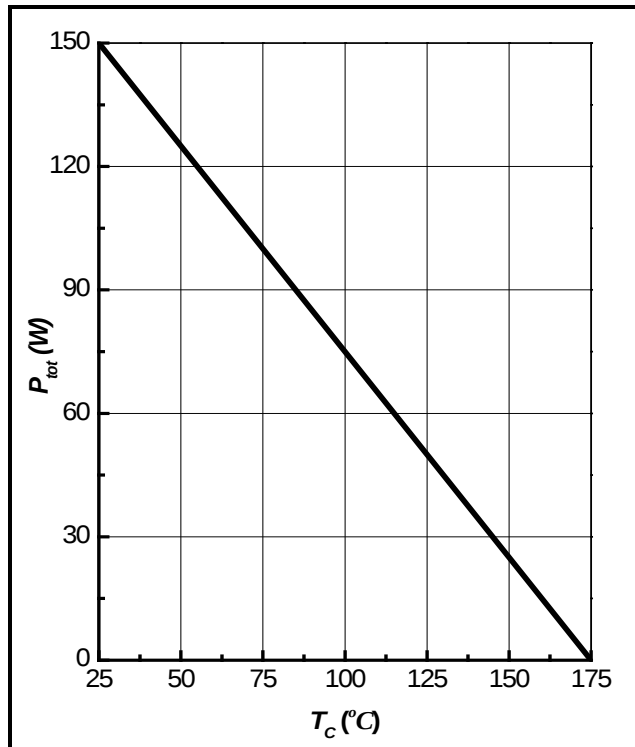


Figure 3. Power Derating

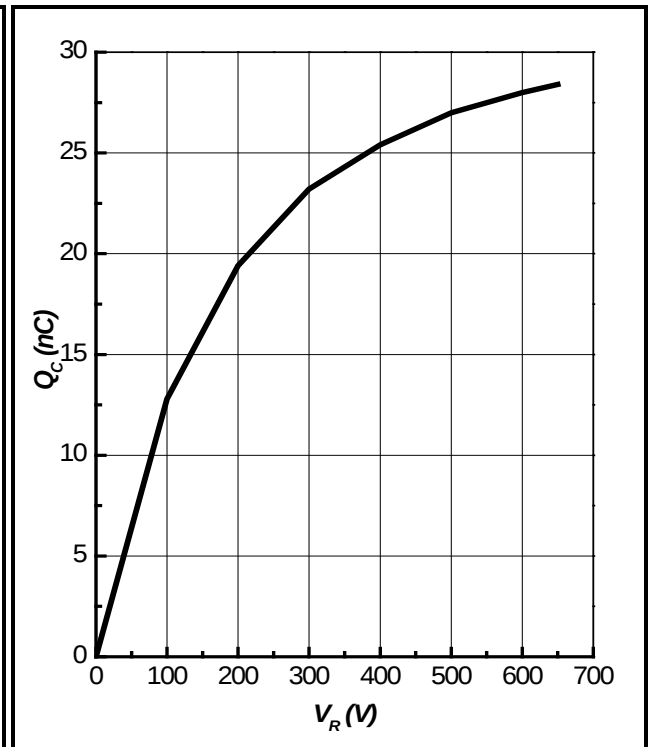


Figure 4. Total Capacitive Charge vs. Reverse Voltage

Typical Performance (Per Leg)

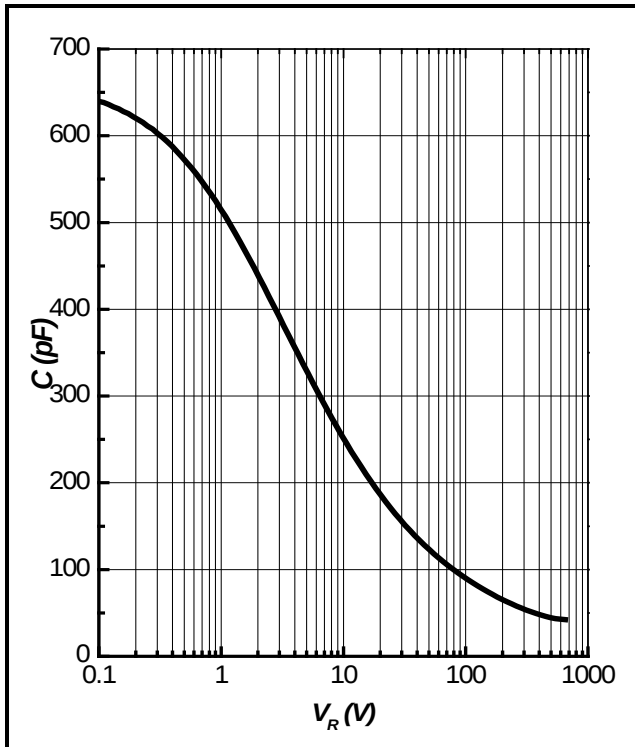


Figure 5. Total Capacitance vs. Reverse Voltage

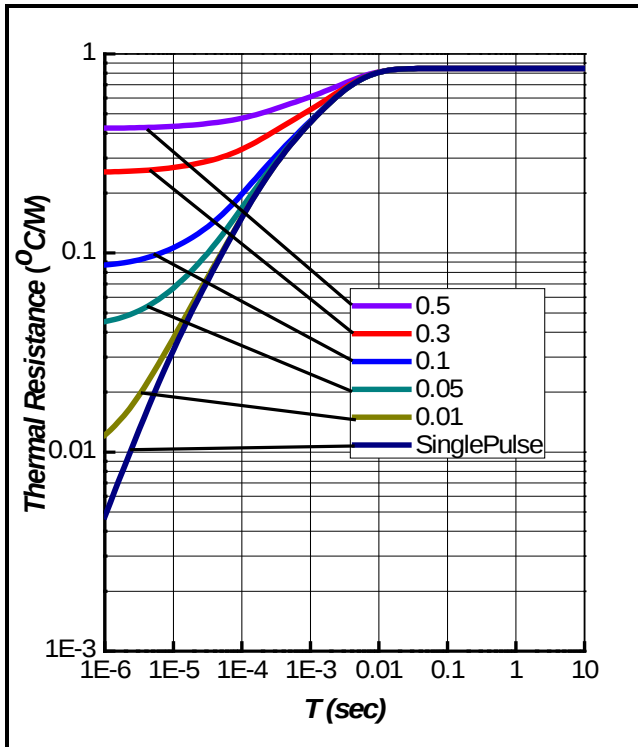
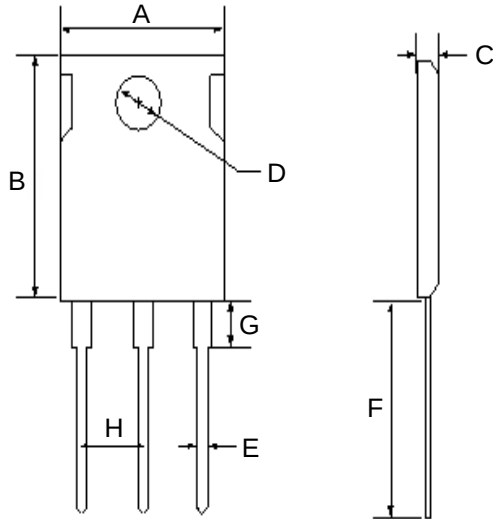


Figure 6. Transient Thermal Impedance

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