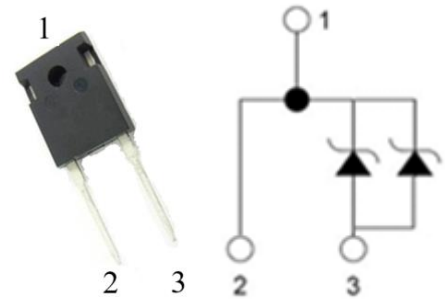


## Product Summary

$V_R = 1700\text{ V}$   
 $I_F = 30\text{ A}$  ( $T_C=147^\circ\text{C}$ )  
 $Q_c = 275\text{ nC}$  ( $V_R=1700\text{ V}$ )



TO-247-2

## Features

- Zero Forward/Reverse Recovery Current
- High Blocking Voltage
- High Frequency Operation
- Positive Temperature Coefficient on  $V_F$
- Temperature Independent Switching Behavior
- High surge current capability
- 100% avalanche tested

## Benefits

- Higher System Efficiency
- Parallel Device Convenience without thermal runaway
- Higher Temperature Application
- No Switching loss
- Hard Switching & Higher Reliability
- Environmental Protection

## Applications

- Motor Drives
- Solar / Wind Inverters
- AC/DC converters
- DC/DC converters
- Uninterruptable power supplies

## Maximum Ratings ( $T_C=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test conditions	Value	Unit
Peak Repetitive Reverse Voltage	$V_{RRM}$		1700	V
Continuous Forward Current	$I_F$	$T_C=25^\circ\text{C}$	74	A
		$T_C=135^\circ\text{C}$	36	
		$T_C=147^\circ\text{C}$	30	
Non repetitive Forward Surge Current	$I_{FSM}$	$T_C = 25^\circ\text{C}$ , $t_p=10\text{ ms}$ , Half Sine Pulse	270	A
		$T_C = 110^\circ\text{C}$ , $t_p=10\text{ ms}$ , Half Sine Pulse	245	
Repetitive peak Forward Surge Current	$I_{FRM}$	$T_C = 25^\circ\text{C}$ , $t_p=10\text{ ms}$ , Freq = 0.1Hz, 100 cycles, Half Sine Pulse	215	A
		$T_C = 110^\circ\text{C}$ , $t_p=10\text{ ms}$ , Freq = 0.1Hz, 100 cycles, Half Sine Pulse	190	
Total power dissipation	$P_D$	$T_C=25^\circ\text{C}$	455	W
		$T_C=110^\circ\text{C}$	197	
Operating Junction Temperature	$T_J$		-55 to 175	$^\circ\text{C}$
Storage Temperature	$T_{STG}$		-55 to 175	$^\circ\text{C}$

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

## Electrical Characteristics

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
DC Blocking Voltage	$V_{DC}$	$T_J = 25^{\circ}C$	1700			V
Forward Voltage	$V_F$	$I_F = 30A, T_J = 25^{\circ}C$		1.5	1.75	V
		$I_F = 30A, T_J = 125^{\circ}C$		2.0		
		$I_F = 30A, T_J = 175^{\circ}C$		2.4		
Reverse Current	$I_R$	$V_R = 1700V, T_J = 25^{\circ}C$		4	150	uA
		$V_R = 1700V, T_J = 125^{\circ}C$		17		
		$V_R = 1700V, T_J = 175^{\circ}C$		74		
Total Capacitive Charge	$Q_C$	$V_R = 1700V, T_J = 25^{\circ}C$		275		nC
Total Capacitance	C	$V_R = 1V, T_J = 25^{\circ}C,$ Freq = 1MHz		1990		pF
		$V_R = 800V, T_J = 25^{\circ}C,$ Freq = 1MHz		122		
		$V_R = 1200V, T_J = 25^{\circ}C,$ Freq = 1MHz		109		
		$V_R = 1700V, T_J = 25^{\circ}C,$ Freq = 1MHz		101		

Note: This is a majority carrier diode, so there is no reverse recovery charge

## Thermal Characteristics

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Thermal Resistance	$R_{th(j-c)}$	junction-case		0.33		$^{\circ}C/W$

## Typical Electrical Curves

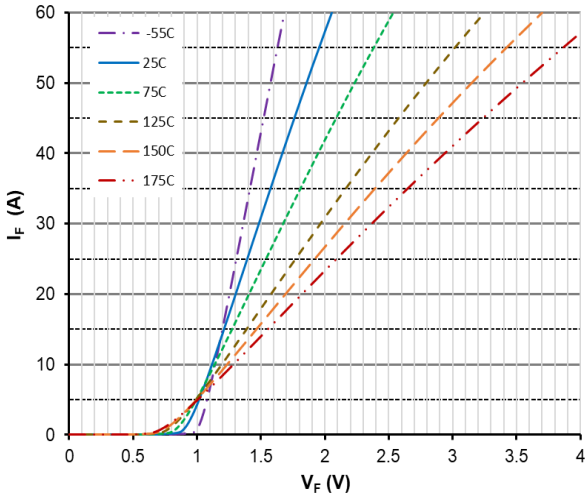


Figure 1. Forward Characteristics

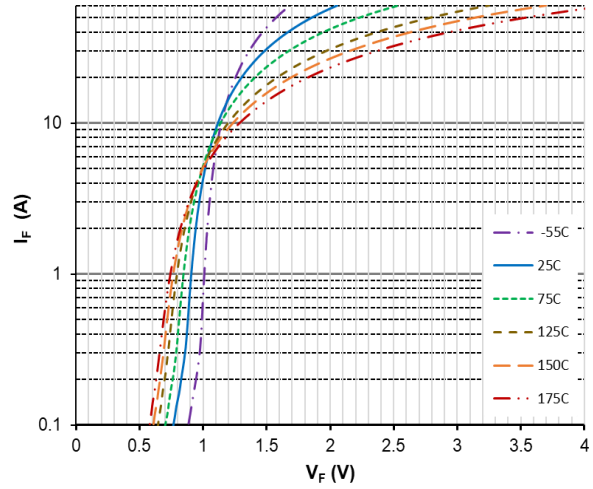


Figure 2. Forward Characteristics

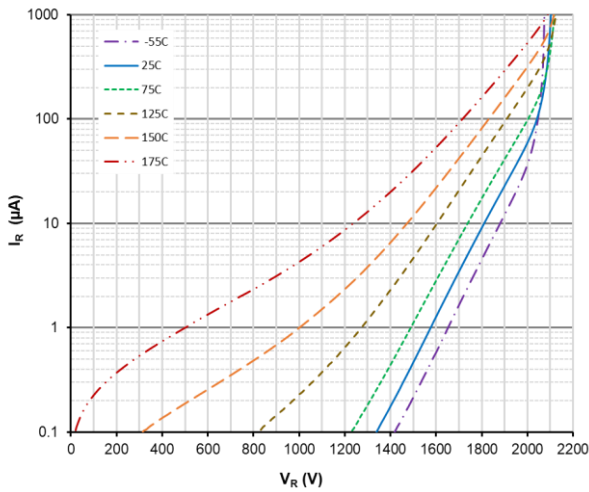


Figure 3. Reverse Characteristics

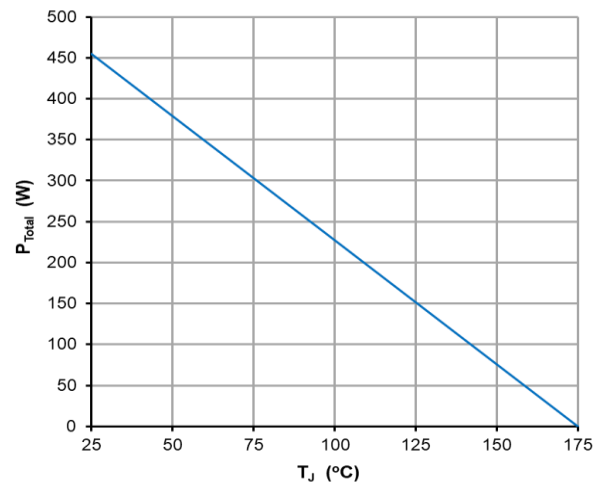


Figure 4. Power Derating

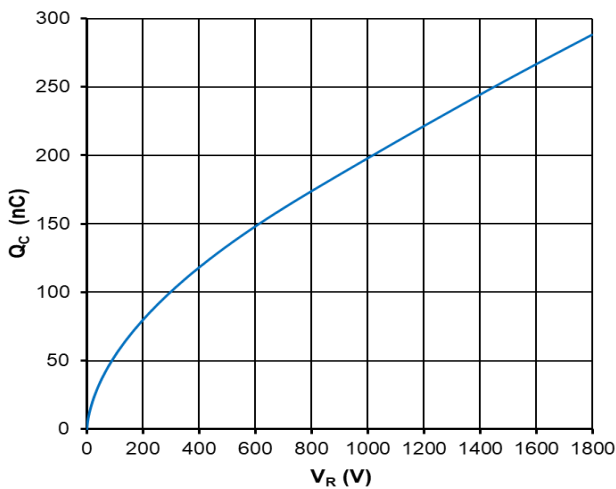


Figure 5. Capacitive charge vs. Reverse Voltage

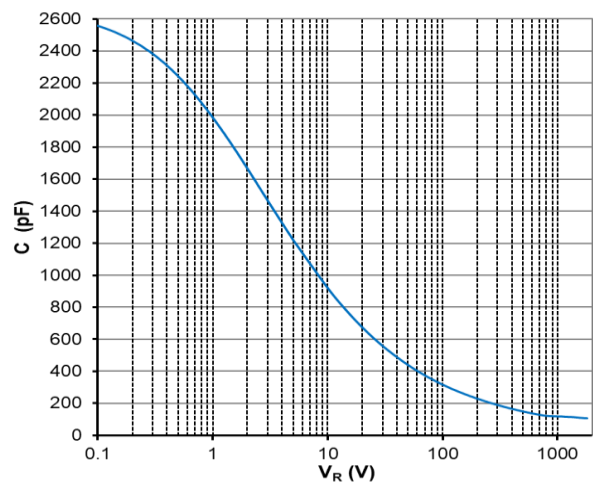


Figure 6. Capacitance vs. Reverse Voltage

## Typical Electrical Curves

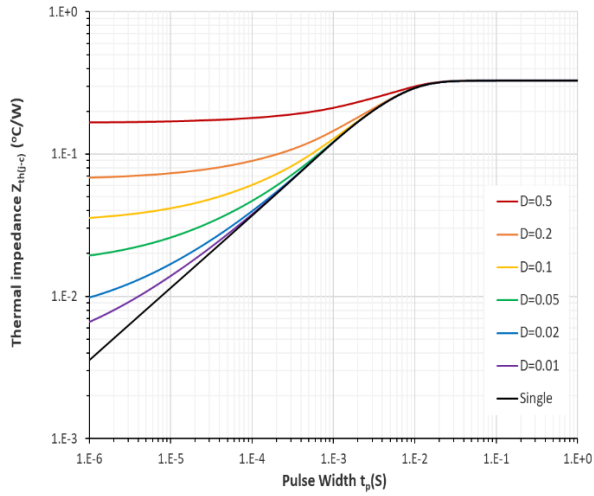


Figure 7. Transient Thermal Impedance

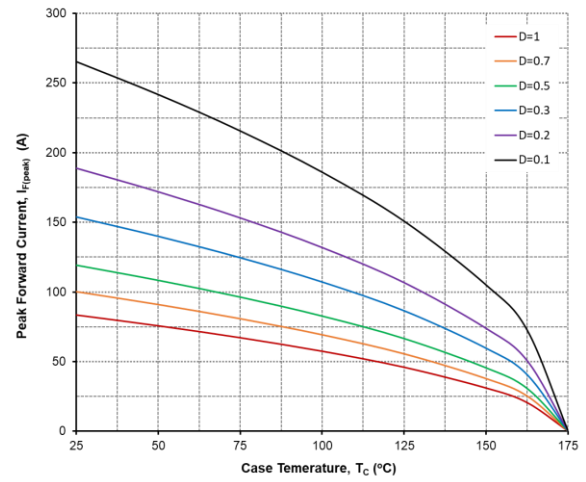
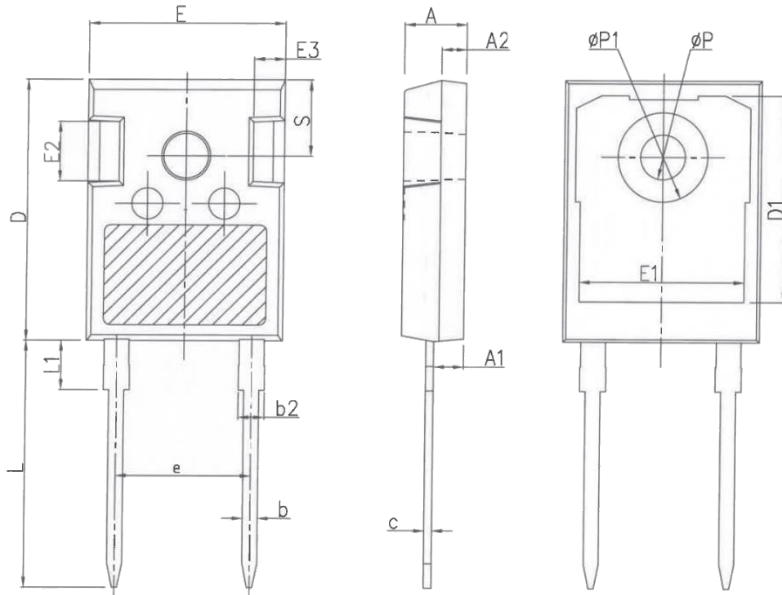


Figure 8. Current Derating

## Package Dimensions

(TO-247-2 Package)



SYMBOL	mm	
	MIN.	MAX
A	4.8	5.20
A1	2.21	2.59
A2	1.85	2.15
b	1.11	1.36
b2	1.91	2.21
c	0.51	0.75
D	20.70	21.30
D1	16.25	16.85
E	15.50	16.10
E1	13.00	13.60
E2	4.80	5.20
E3	2.30	2.70
e	10.88BSC	
L	19.62	20.22
L1	-	4.30
$\phi P$	3.4	3.80
$\phi P1$	-	7.30
S	6.15BSC	

Part Number	Package	Packing	Marking
A3D30PD170AN	TO-247-2	30pcs / Tube	A3D30PD170AN