

Features

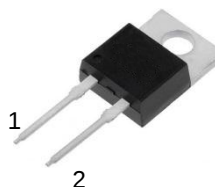
- Low reverse current
- Good surge current capability
- Low capacitive charge
- No reverse recovery current

V_{RRM}	=	650	V
$I_F (T_C = 155^{\circ}C)$	=	20	A
Q_C	=	62	nC

Benefits

- System efficiency improvement over Si diodes
- Higher switching frequency
- Increased power density
- Essentially no switching losses

Package



TO-220-2

Applications

- Switch mode power supplies (SMPS)
- Uninterruptible power supplies
- On Board Charger
- UPS



Part Number	Package	Marking
ASZD020065A	TO-220-2	ASZD020065A

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

Symbol	Parameter	Test conditions	Value	Unit
V_{RRM}	Repetitive peak reverse voltage		650	V
V_{RSM}	Non-repetitive peak reverse voltage		650	V
I_F	Continuous forward current	$T_C=25^{\circ}\text{C}$ $T_C=135^{\circ}\text{C}$ $T_C=155^{\circ}\text{C}$	58 30 20	A
I_{FRM}	Repetitive forward surge current	$T_C=25^{\circ}\text{C}$, $t_p=10\text{ms}$, Half Sine Pulse $T_C=110^{\circ}\text{C}$, $t_p=10\text{ms}$, Half Sine Pulse	90 54	A
I_{FSM}	Non-Repetitive forward surge current	$T_C=25^{\circ}\text{C}$, $t_p=10\text{ms}$, Half Sine Pulse $T_C=110^{\circ}\text{C}$, $t_p=10\text{ms}$, Half Sine Pulse	160 140	A
$\int i^2 dt$	$i^2 t$ value	$T_C=25^{\circ}\text{C}$, $t_p=10\text{ms}$, Half Sine Pulse $T_C=110^{\circ}\text{C}$, $t_p=10\text{ms}$, Half Sine Pulse	128 98	A^2S
P_{tot}	Power dissipation	$T_C=25^{\circ}\text{C}$ $T_C=110^{\circ}\text{C}$	136 59	W
T_j	Operating junction temperature		-55~175	$^{\circ}\text{C}$
T_{stg}	Storage temperature		-55~150	$^{\circ}\text{C}$

Electrical Characteristics ($T_j=25^{\circ}\text{C}$ unless otherwise specified)

Static Characteristics

Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
V_{DC}	DC blocking voltage	$T_j=25^{\circ}\text{C}$	650			V
V_F	Diode forward voltage	$I_F=20\text{A}$ $T_j=25^{\circ}\text{C}$ $I_F=20\text{A}$ $T_j=175^{\circ}\text{C}$		1.3 1.5	1.5	V
I_R	Reverse current	$V_R=650\text{V}$ $T_j=25^{\circ}\text{C}$ $V_R=650\text{V}$ $T_j=175^{\circ}\text{C}$			80 200	μA

AC Characteristics ($T_j=25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
Q_C	Total capacitive charge	$V_R=400\text{V}$ $T_j=25^{\circ}\text{C}$ $Q_C = \int_0^{VR} C(V)dV$		62		nC
C	Total capacitance	$V_R=0\text{V}$ $f=1\text{MHz}$ $V_R=200\text{V}$ $f=1\text{MHz}$ $V_R=400\text{V}$ $f=1\text{MHz}$		1176 119 98		pF

Thermal Characteristics

Symbol	Parameter	Value			Unit
		Min.	Typ.	Max.	
$R_{th(jc)}$	Thermal resistance from junction to case		1.10		$^{\circ}\text{C/W}$

Typical Performance

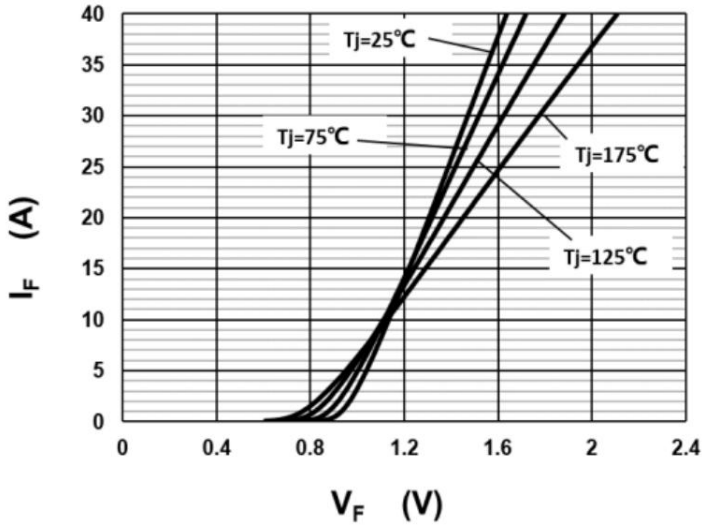


Figure 1. Typical forward characteristics

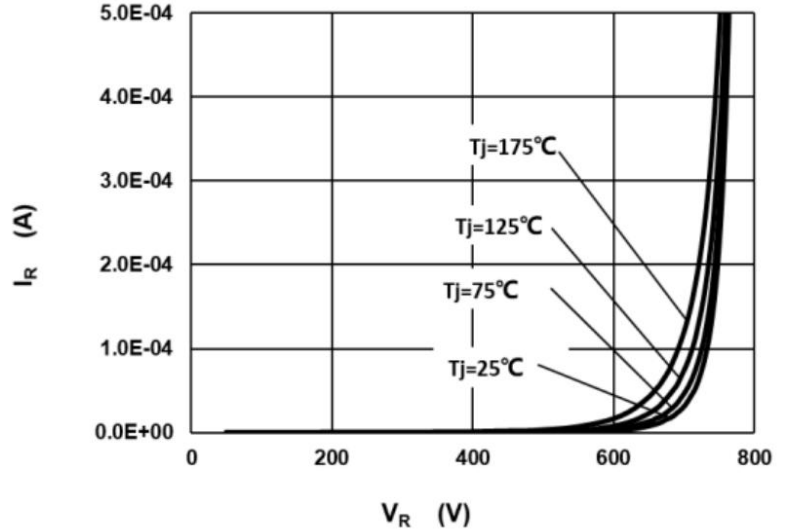


Figure 2. Typical reverse current as function of reverse voltage

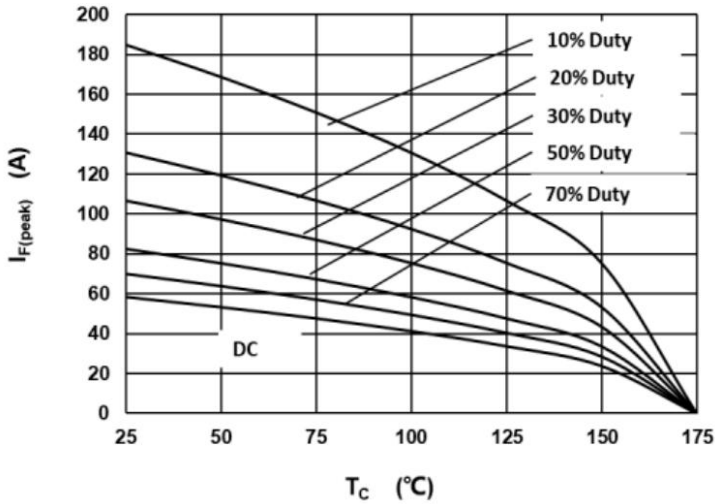


Figure 3. Diode forward current as function of temperature, D=duty cycle

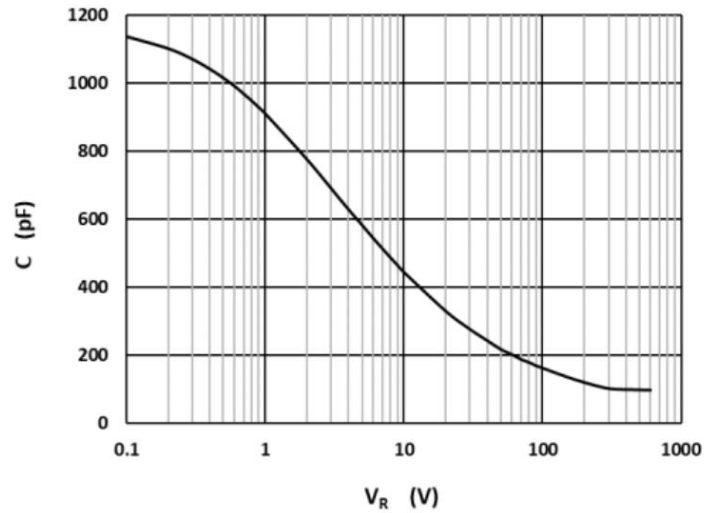


Figure 4. Typical capacitance as function of reverse voltage, $C=f(V_R)$; $T_J=25^\circ\text{C}$

Typical Performance

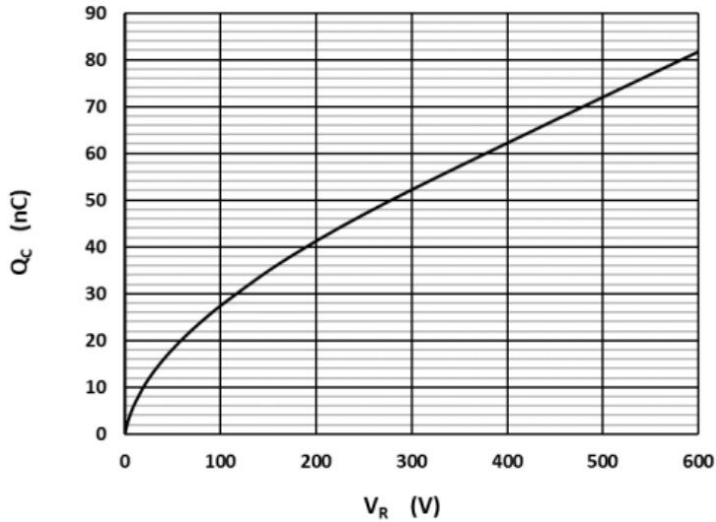


Figure 5. Typical reverse charge as function of reverse voltage

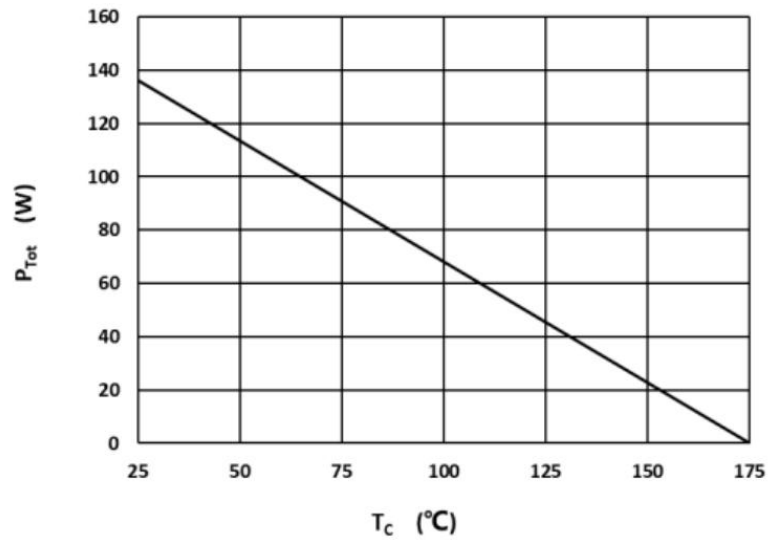


Figure 6. Power dissipation as function of case temperature

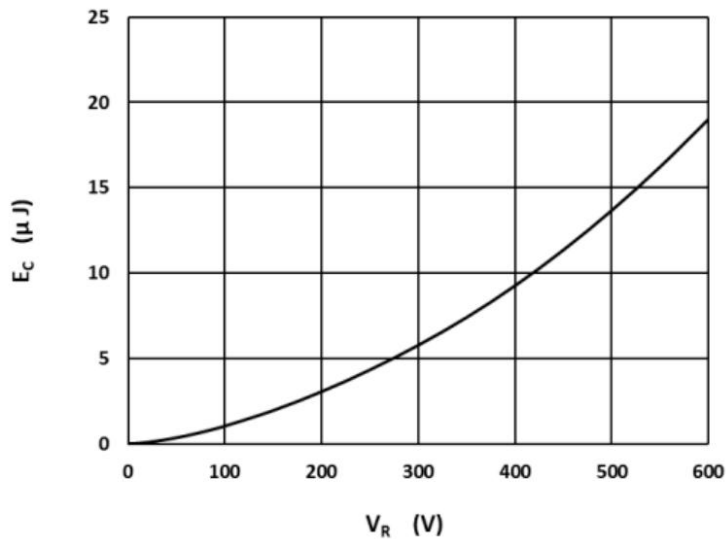


Figure 7. Capacitance stored energy

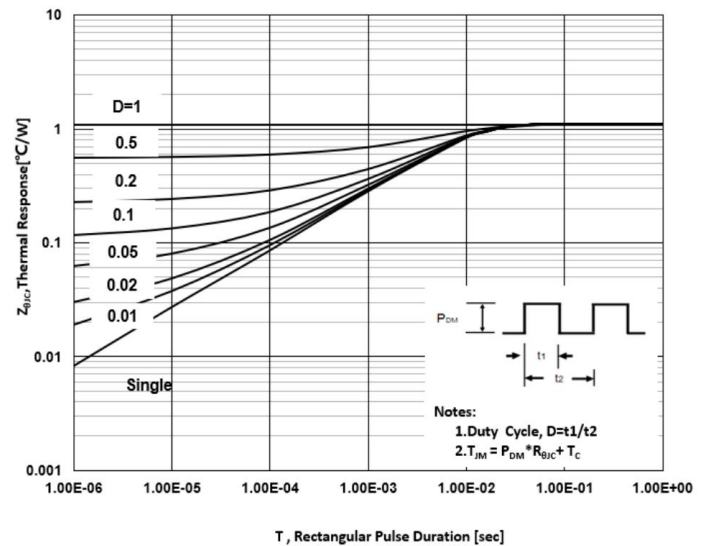
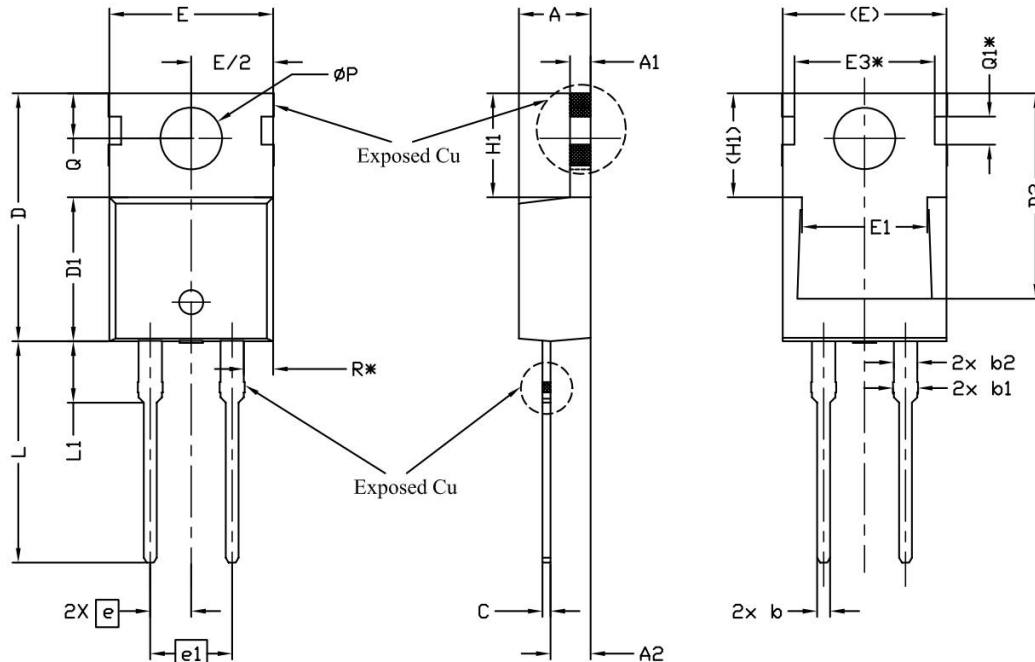


Figure 8. Max. transient thermal impedance

Package Dimensions

Package TO-220-2



SYMBOL	DIMENSIONS		
	MIN.	NOM.	MAX.
A	4.24	4.44	4.64
A1	1.15	1.27	1.40
A2	2.30	2.48	2.70
b	0.70	0.80	0.90
b1	1.20	1.55	1.75
b2	1.20	1.45	1.70
c	0.40	0.50	0.60
D	14.70	15.37	16.00
D1	8.82	8.92	9.02
D2	12.43	12.73	12.83
E	9.96	10.16	10.36
E1	6.86	7.77	8.89
E3*	8.70REF.		
e	2.54BSC		
e1	5.08BSC		
H1	6.30	6.45	6.60
L	13.47	13.72	13.97
L1	3.60	3.80	4.00
ØP	3.75	3.84	3.93
Q	2.60	2.80	3.00
Q1*	1.73REF.		
R*	1.82REF.		