

Features

- Zero Forward Recovery Voltage
- Zero Reverse Recovery Current
- Excellent Surge Current Capability
- Temperature Independent Switching
- Positive Temperature Coefficient on VF
- High Frequency Operation

V_{RRM}	=	650	V
$I_F (T_C=135^{\circ}C)$	=	10	A
Q_C	=	38	nC

Benefits

- Increased Power Density
- Essentially no Switching Losses
- Reduction of Heat Sink Requirements
- Higher Efficiency
- Reduced EMI

Package



TO-220-2 Isolated

Applications

- Uninterruptible Power Supplies
- Switch Mode Power Supplies
- Power Factor Correction
- Motor Drivers



Part Number	Package	Marking
ASRD010065AI	TO-220-2 Isolated	ASRD010065AI

Maximum Ratings (T_j=25°C unless otherwise noted)

Symbol	Parameter	Test conditions	Value	Unit
V _{RRM}	Repetitive peak reverse voltage		650	V
I _F	Continuous forward current	T _c =25°C T _c =135°C	25 10	A
I _{FSM}	Non-Repetitive forward surge current	T _c =25°C, t _p =10ms, Half Sine Wave	85	A
∫i ² dt	i ² t value	T _c =25°C, t _p =10ms	36	A ² s
P _{tot}	Power dissipation	T _c =25°C T _c =110°C	68 29	W
T _j	Operating junction temperature		-55~175	°C
T _{stg}	Storage temperature		-55~175	°C

Electrical Characteristics (T_j=25°C unless otherwise noted)

Static Characteristics

Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
V _{DC}	DC blocking voltage	T _j =25°C	650			V
V _F	Diode forward voltage	I _F =10A T _j =25°C I _F =10A T _j =175°C		1.29 1.43		V
I _R	Reverse current	V _R =650V T _j =25°C V _R =650V T _j =175°C		1 9		μA

AC Characteristics

Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
Q _C	Total capacitive charge	V _R =400V T _j =25°C Q _C = ∫ ₀ ^{V_R} C(V)dV		38		nC
C	Total capacitance	V _R =1V f=1MHz V _R =300V f=1MHz V _R =600V f=1MHz		551 63 57		pF
E _C	Capacitance stored energy	V _R =400V		5.7		μJ

Thermal Characteristics

Symbol	Parameter	Value			Unit
		Min.	Typ.	Max.	
R _{th(jc)}	Thermal resistance from junction to case		2.19		°C/W

Electrical Characteristic Curves

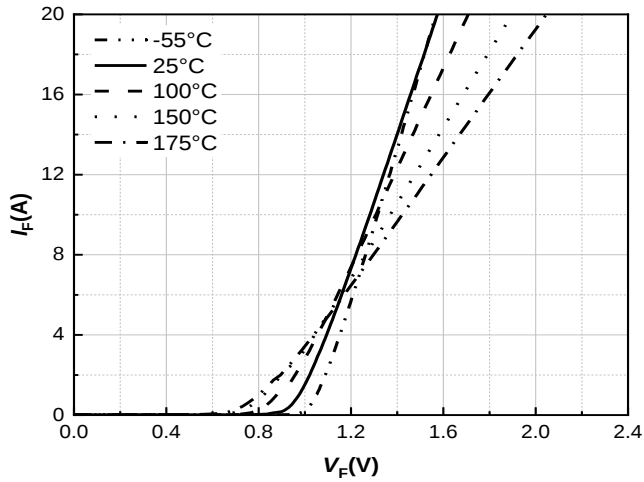


Figure 1. Typical forward characteristics

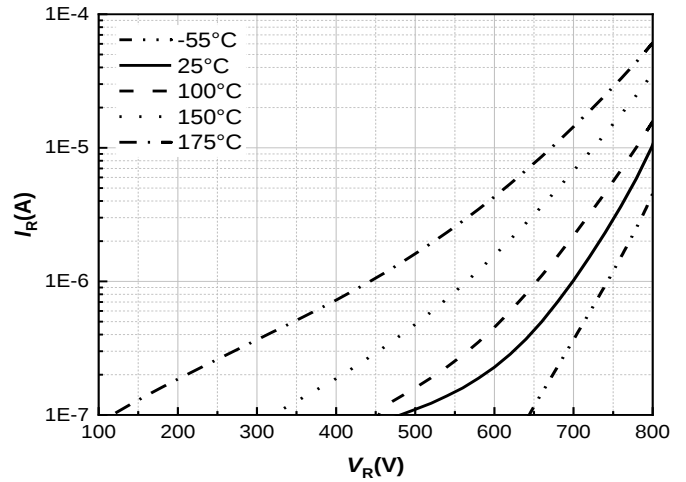


Figure 2. Typical reverse current as function of reverse voltage

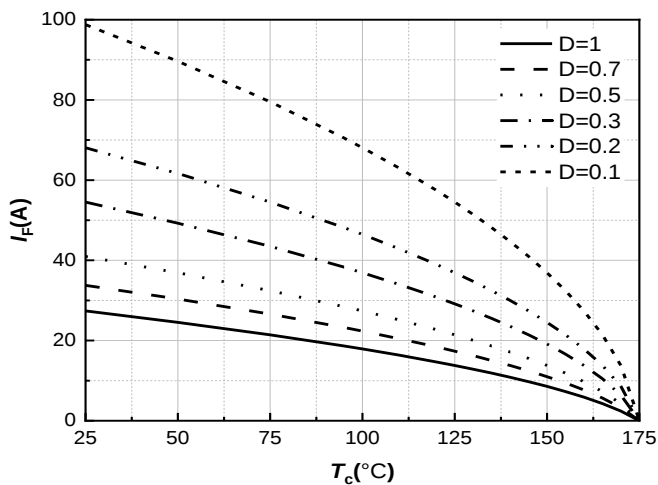


Figure 3. Diode forward current as function of temperature, D=duty cycle

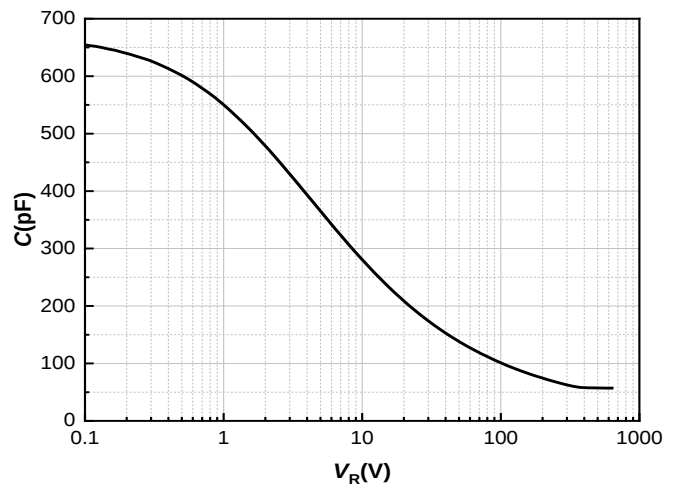


Figure 4. Typical capacitance as function of reverse voltage, $C=f(V_R)$; $T_j=25^{\circ}\text{C}$; $f=1\text{ MHz}$

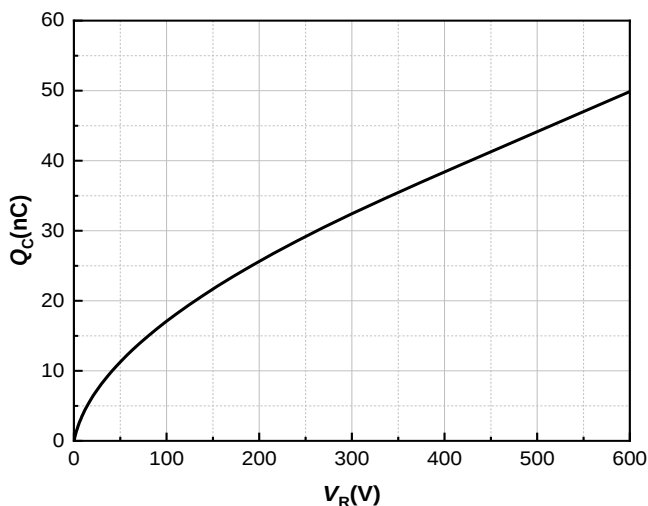


Figure 5. Typical reverse charge as function of reverse voltage

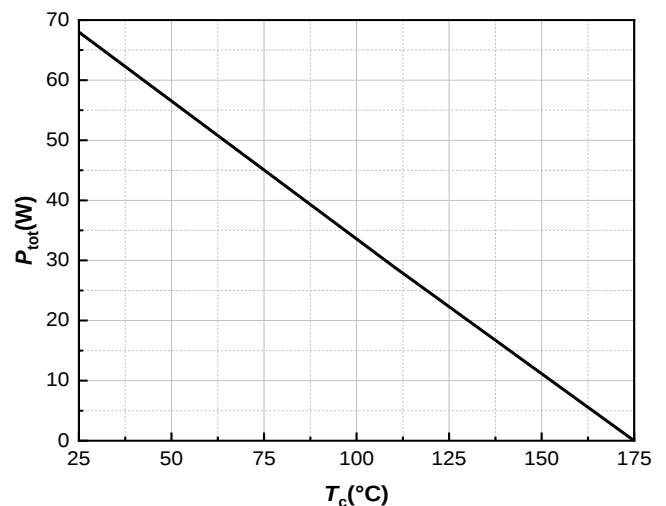


Figure 6. Power dissipation as function of case temperature

Electrical Characteristic Curves

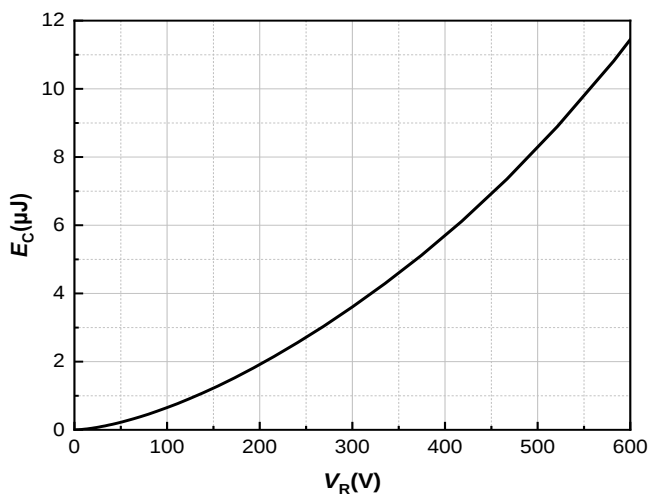


Figure 7. Capacitance stored energy

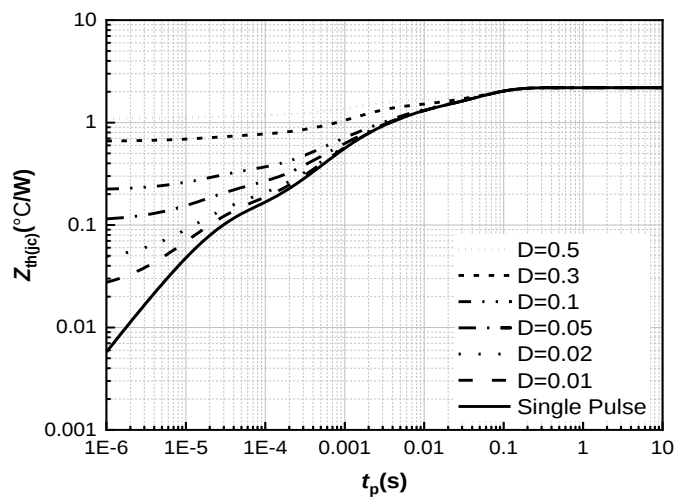
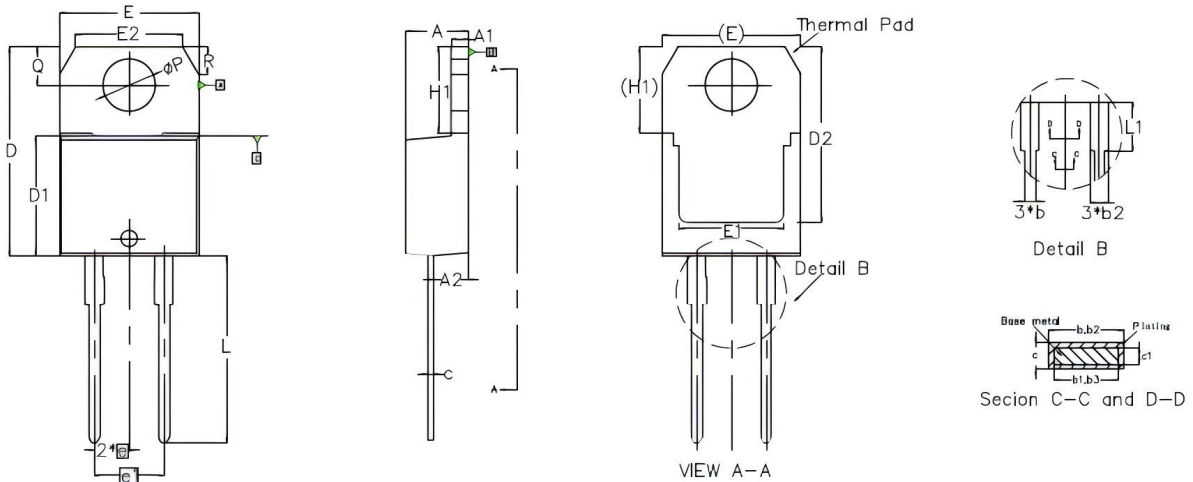


Figure 8. Max. transient thermal impedance,
 $Z_{th(jc)} = f(t_p)$, parameter: $D = t_p / T$

TO-220-2 Isolated Package Dimensions



SYMBOL	MILLIMETERS			NOTES		SYMBOL	MILLIMETERS			NOTES
	Normal	MIN.	MAX.				Normal	MIN.	MAX.	
A	4.45	4.35	4.75			E1	7.60	6.86	8.89	
A1	1.27	1.14	1.40			e	2.54	2.41	2.67	
A2	2.60	2.40	2.80			e1	5.08	4.88	5.28	
b	0.85	0.69	1.01			H1	6.20	6.00	6.40	
b1	0.83	0.38	0.97			L	13.35	13.00	13.70	
b2	1.46	1.20	1.73			L1	3.00	2.70	3.30	
b3	1.44	1.14	1.73			ØP	3.80	3.70	3.95	
c	0.50	0.36	0.61			Q	2.80	2.60	3.00	
c1	0.48	0.36	0.56			E2	7.80	7.50	8.10	
D	15.50	15.20	15.80			R	2.00	1.70	2.20	
D1		8.50	9.02							
D2	12.85	12.20	12.88							
E	10.18	10.00	10.40							