Optima Diode - Low forward voltage drop, Fast Recovery Diode

V_{RRM}	650 V	I_F	30 A
$V_{F(Typ.)}$	1.3 V	$T_{RR(TYP)}$	210 ns

Features

- Low Voltage Drop
- Suppressed switching loss with low T_{RR}
- Soft recovery characteristic for better EMI
- High junction temperature 175 °C
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

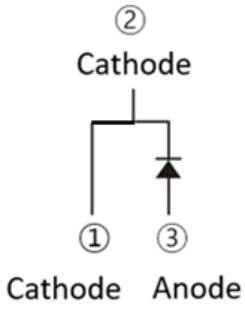
Mechanical Data

- Case: TO-220AC molded plastic
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 1.8903 grams

Application

- PFC, UPS, PV Inverter

TO-220AC



Maximum Ratings and Thermal Characteristics (T_C = 25 °C unless otherwise specified)

PARAMETER	SYMBOL	LIMIT	UNITS
Repetitive Peak Reverse Voltage	V_{RRM}	650	V
DC Blocking Voltage	V_{DC}	650	V
Diode Forward Current, D=1 @ Tc=152°C	$I_{F(AV)}$	30	A
Repetitive Peak Surge Current tp = 8.3 ms, sine-wave, D=0.5	I_{FRM}	60	A
Peak Forward Surge Current tp = 8.3 ms, single half sine-wave	I_{FSM}	300	A
Peak Forward Surge Current tp = 10 ms, single half sine-wave	I_{FSM}	300	A
Maximum I^2t for fusing (tp = 10 ms)	I^2t	450	A^2s
Maximum Power Dissipation	P_{total}	268	W
Operating Junction Temperature Range	T_J	-55~175	°C
Storage Temperature Range	T_{STG}	-55~175	°C
Thermal Resistance	$R_{\theta JC}$	0.56	°C/W
	$R_{\theta JA}$	60	°C/W

Electrical Characteristics (T_C = 25 °C unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Forward voltage drop	V_F	I_F = 30 A, T_J = 25 °C	-	1.3	1.7	V
		I_F = 30 A, T_J = 125 °C	-	1.2	-	
		I_F = 30 A, T_J = 150 °C	-	1.1	-	
Reverse leakage current	I_R	V_R = 650 V, T_J = 25 °C	-	0.03	30	μA
		V_R = 650 V, T_J = 125 °C	-	7	150	
		V_R = 650 V, T_J = 150 °C	-	122	1000	
Reverse recovery time	T_{RR}	I_F=0.5A, I_R=1A, I_{RR}=0.25A T_J = 25 °C	-	40.6	-	ns
		I_F = 1 A, V_R = 30 V, di/dt = 100 A/μs, T_J = 25 °C	-	36	-	ns
Reverse recovery time	T_{RR}	I_F = 30 A, V_R = 400 V, **di/dt = 200 A/μs,** T_J = 25 °C	-	210	-	ns
Peak recovery current	I_{RRM}		-	4	-	A
Reverse recovery charge	Q_{RR}		-	400	-	nC
Softness factor = tb / ta	S		-	6.2	-	
Reverse recovery time	T_{RR}	I_F = 30 A, V_R = 400 V, **di/dt = 200 A/μs,** T_J = 125 °C	-	330	-	ns
Peak recovery current	I_{RRM}		-	9	-	A
Reverse recovery charge	Q_{RR}		-	1600	-	nC
Softness factor = tb / ta	S		-	9	-	
Reverse recovery time	T_{RR}	I_F = 30 A, V_R = 400 V, **di/dt = 1000 A/μs,** T_J = 25 °C	-	115	-	ns
Peak recovery current	I_{RRM}		-	19	-	A
Reverse recovery charge	Q_{RR}		-	967	-	nC
Softness factor = tb / ta	S		-	5	-	
Reverse recovery time	T_{RR}	I_F = 30 A, V_R = 400 V, **di/dt = 1000 A/μs,** T_J = 125 °C	-	155	-	ns
Peak recovery current	I_{RRM}		-	30	-	A
Reverse recovery charge	Q_{RR}		-	2498	-	nC
Softness factor = tb / ta	S		-	3.9	-	

TYPICAL CHARACTERISTIC CURVES

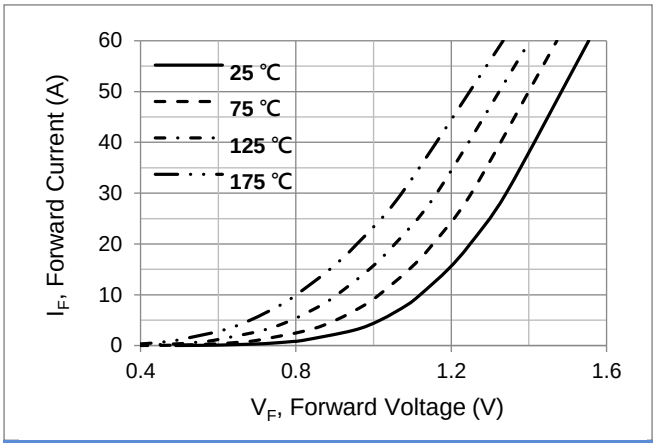


Fig.1 Forward Characteristics

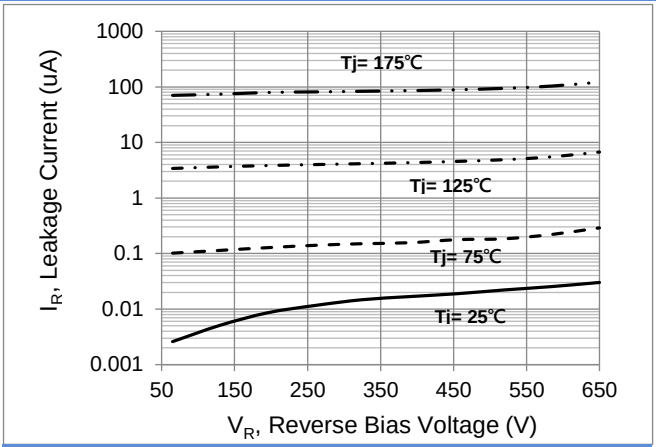


Fig.2 Reverse Characteristics

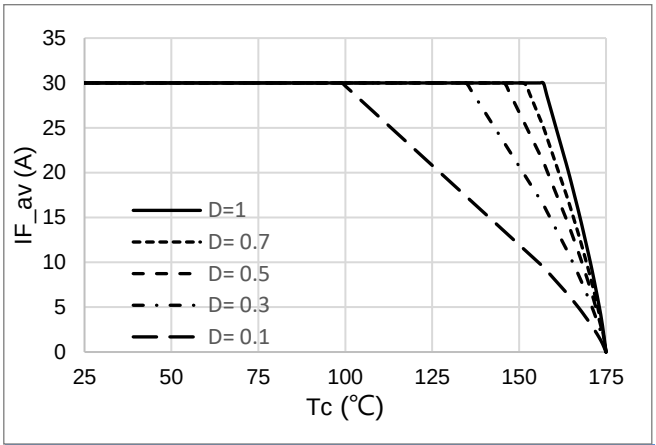


Fig.3 Average Current Derating Curve

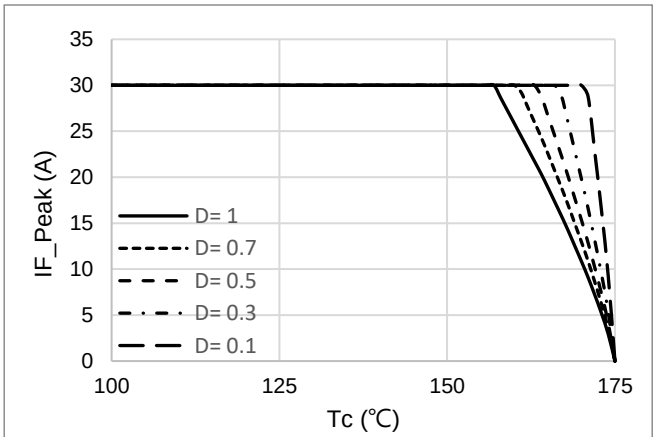


Fig.4 Peak Current Derating Curve

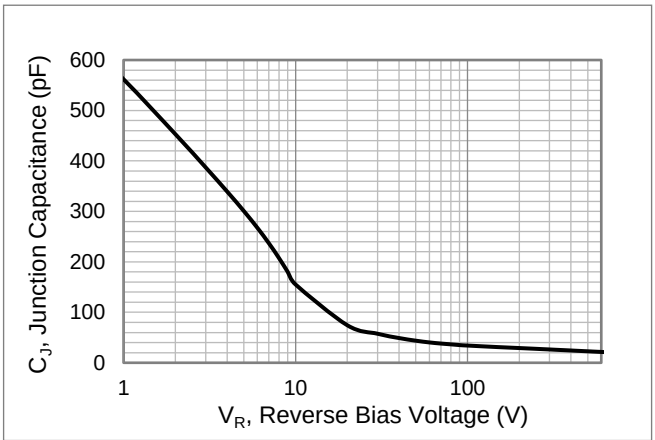


Fig.5 Typical Junction Capacitance

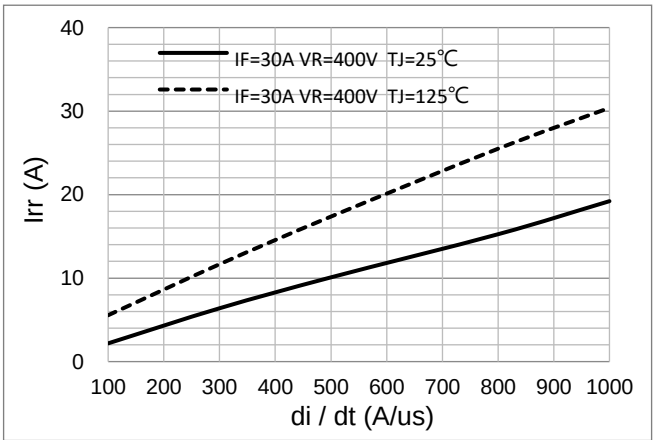


Fig.6 Typical Peak reverse recovery current versus di/dt

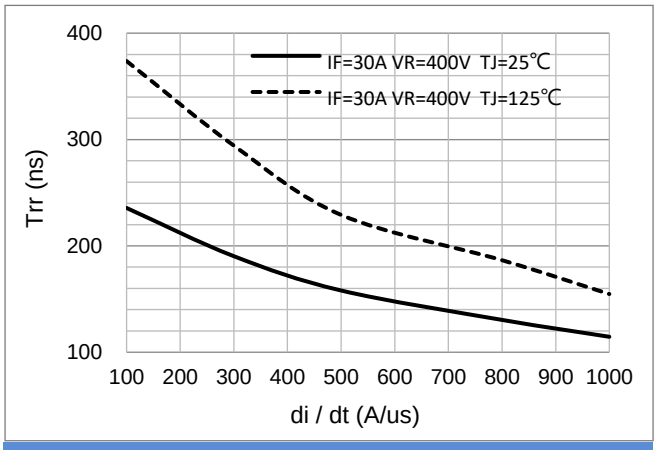


Fig.7 Typical Reverse Recovery Time Versus di/dt

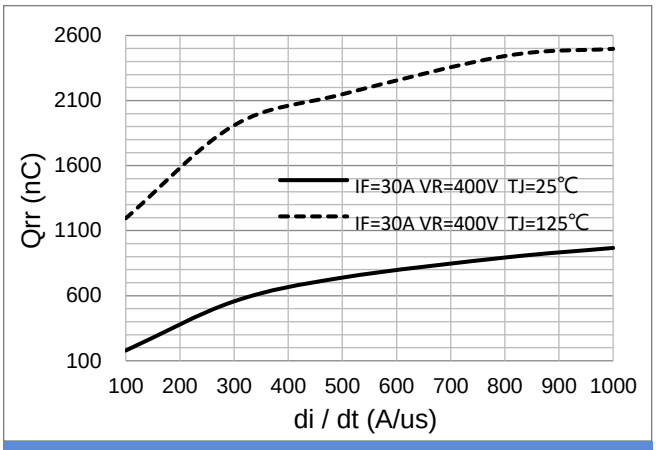


Fig.8 Typical Reverse Recovery Charges Versus di/dt

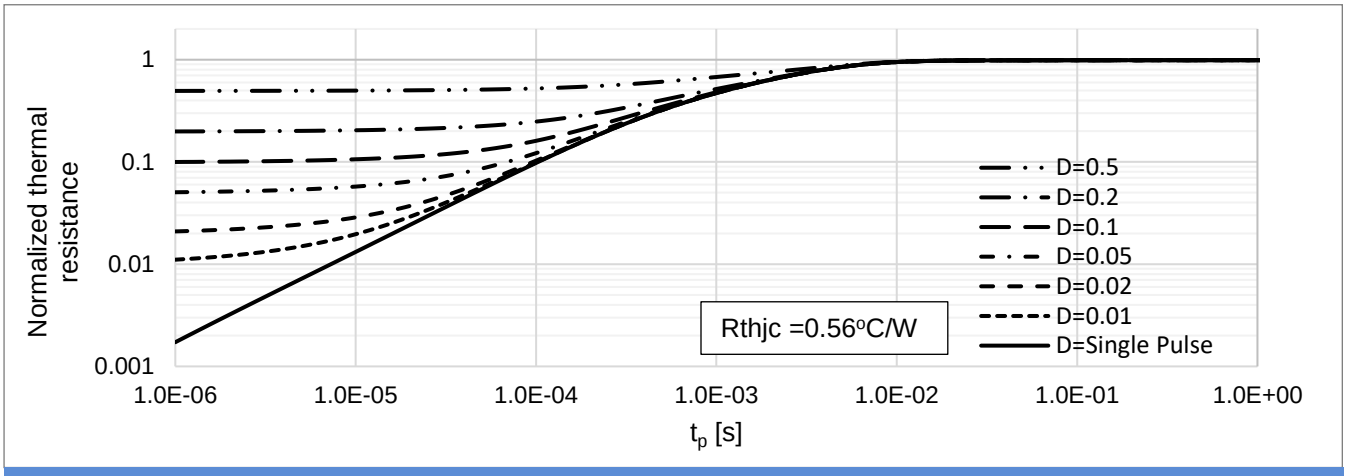


Fig.9 Max. transient thermal impedance Junction to Case

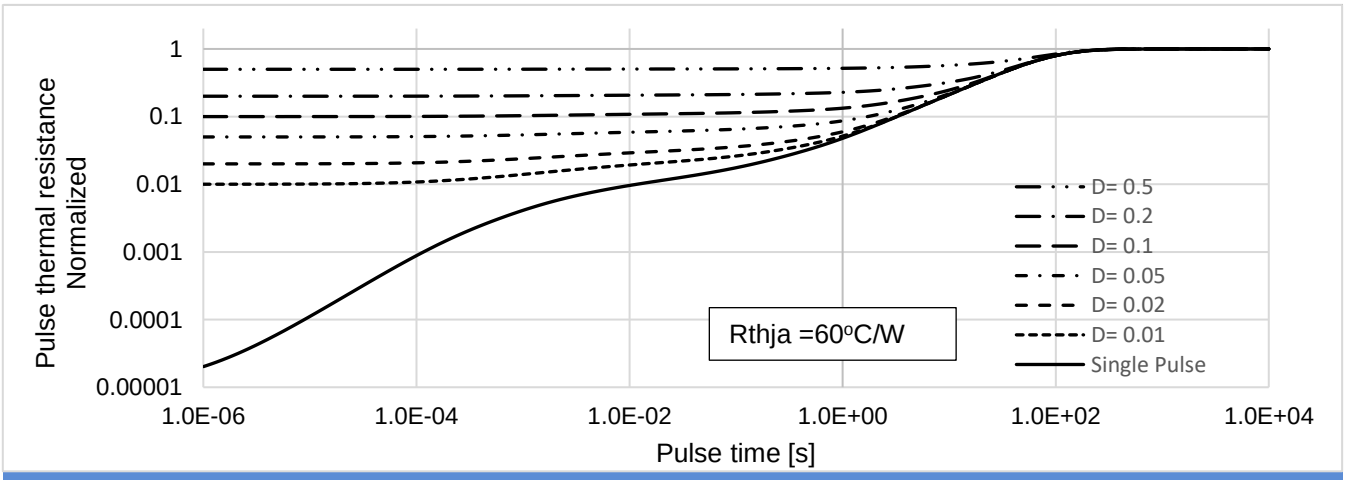


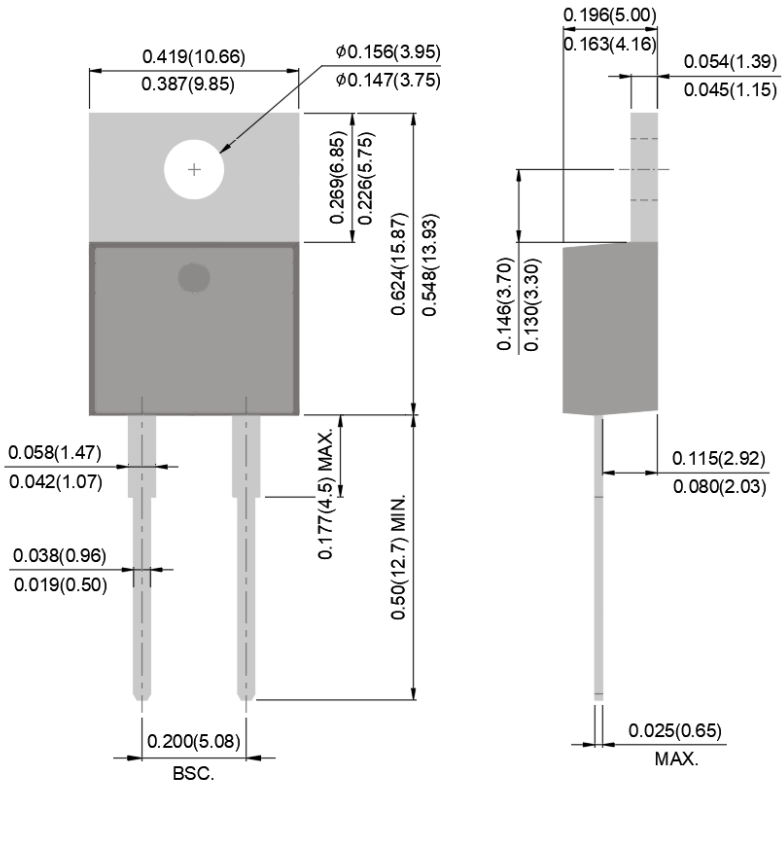
Fig.10 Transient thermal impedance Junction to Ambient

Product and Packing Information

Part No.	Package Type	Packing Type	Marking
PSDP3065L2	TO-220AC	50pcs / Tube	SDP3065L2

Packaging Information

TO-220AC Dimension — Unit: inch(mm)



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