

Optima Diode - Low forward voltage drop, Fast Recovery Diode

V_{RRM}	600 V	I_F	30 A
V_{F(TYP)}	1.3 V	T_{RR(TYP)}	75 ns

Features

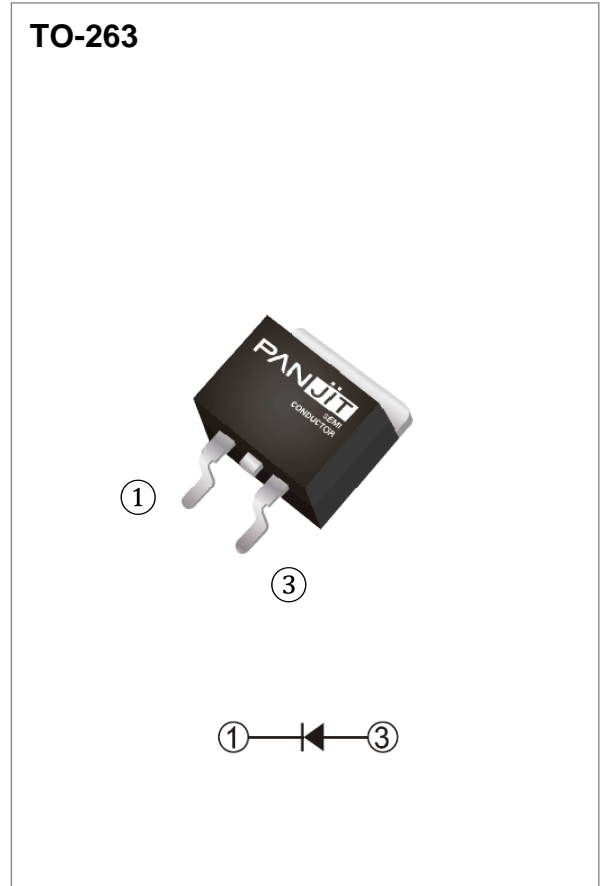
- Fast recovery
- Low forward voltage
- Optimized trade-off performance between V_F & T_{RR}
- Soft recovery characteristic for better EMI
- High junction temperature 150 °C
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

Mechanical Data

- Case: TO-263 package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0487 ounces, 1.38 grams

Application

- PFC, UPS, PV Inverter, EV Charging Station, Welder



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

PARAMETER	SYMBOL	LIMIT	UNITS
Repetitive Peak Reverse Voltage	V _{RRM}	600	V
DC Blocking Voltage	V _{DC}	600	V
Diode Forward Current @ T _C =105°C	I _{F(AV)}	30	A
Repetitive Peak Surge Current <i>t_p = 8.3 ms, sine-wave, D=0.5</i>	I _{FRM}	60	A
Peak Forward Surge Current <i>t_p = 8.3 ms, single half sine-wave</i>	I _{FSM}	230	A
Maximum Power Dissipation	P _{total}	96	W
Operating Junction Temperature Range	T _J	-55~150	°C
Storage Temperature Range	T _{STG}	-55~150	°C

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

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Forward voltage drop	V_F	$I_F = 30\text{ A}, T_J = 25\text{ }^\circ\text{C}$	-	1.3	1.8	V
		$I_F = 30\text{ A}, T_J = 125\text{ }^\circ\text{C}$	-	1.2	-	
Reverse leakage current	I_R	$V_R = 600\text{ V}, T_J = 25\text{ }^\circ\text{C}$	-	-	250	μA
		$V_R = 600\text{ V}, T_J = 125\text{ }^\circ\text{C}$	-	-	1	mA
Reverse recovery time	T_{RR}	$I_F = 0.5\text{ A}, I_R = 1\text{ A},$ $I_{RR} = 0.25\text{ A}$ $T_J = 25\text{ }^\circ\text{C}$	-	-	55	ns
		$I_F = 1\text{ A}, V_R = 30\text{ V},$ $di/dt = 300\text{ A}/\mu\text{s},$ $T_J = 25\text{ }^\circ\text{C}$	-	-	40	ns
Reverse recovery time	T_{RR}	$I_F = 30\text{ A}, V_R = 400\text{ V},$ $di/dt = 300\text{ A}/\mu\text{s},$ $T_J = 25\text{ }^\circ\text{C}$	-	75	115	ns
Peak recovery current	I_{RRM}		-	6.6	-	A
Reverse recovery charge	Q_{RR}		-	325	-	nC
Softness factor = t_b / t_a	S		-	0.9	-	
Reverse recovery time	T_{RR}	$I_F = 30\text{ A}, V_R = 400\text{ V},$ $di/dt = 300\text{ A}/\mu\text{s},$ $T_J = 125\text{ }^\circ\text{C}$	-	115	-	ns
Peak recovery current	I_{RRM}		-	14.5	-	A
Reverse recovery charge	Q_{RR}		-	1150	-	nC
Softness factor = t_b / t_a	S		-	0.46	-	
Thermal Resistance	$R_{\theta JC}$		-	-	1.3	$^\circ\text{C}/\text{W}$
	$R_{\theta JA}$		-	-	53	$^\circ\text{C}/\text{W}$

TYPICAL CHARACTERISTIC CURVES

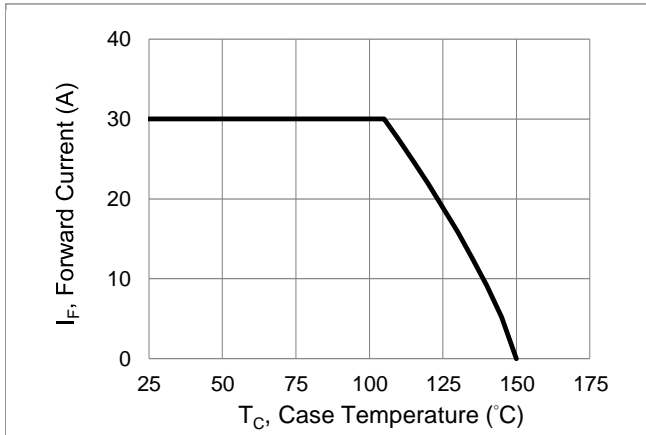


Fig.1 Forward Current Derating Curve

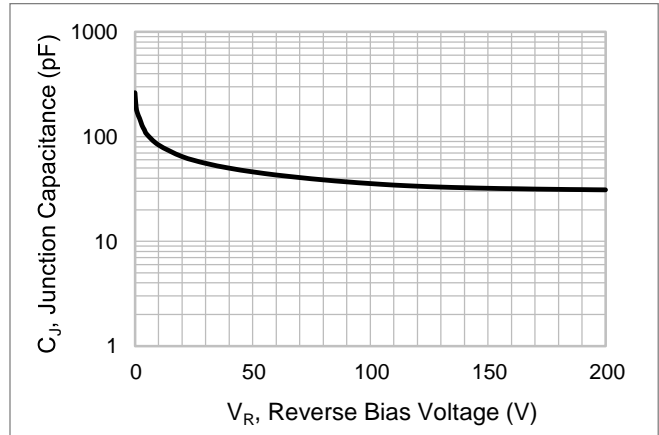


Fig.2 Typical Junction Capacitance

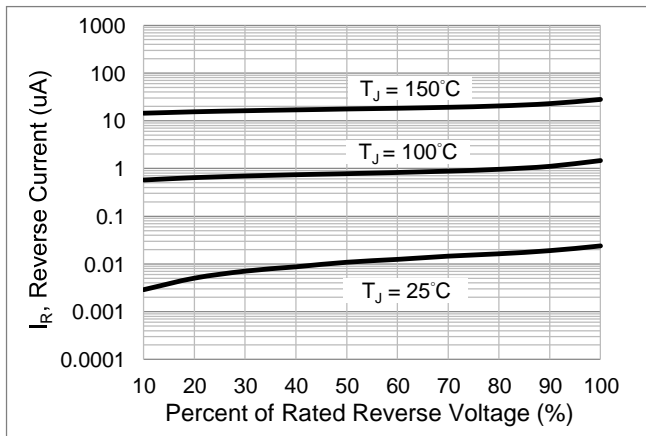


Fig.3 Typical Reverse Characteristics

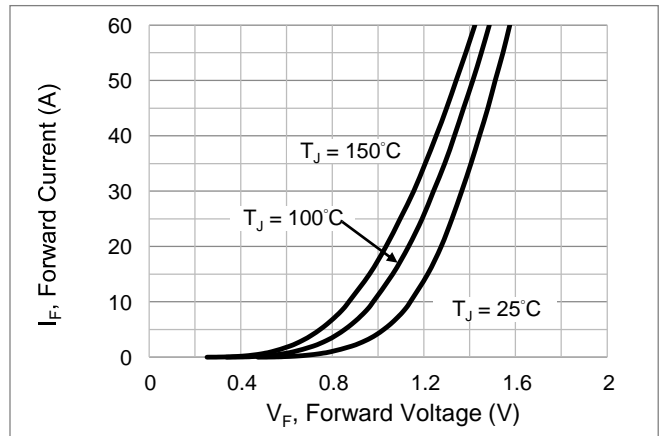


Fig.4 Typical Forward Characteristics

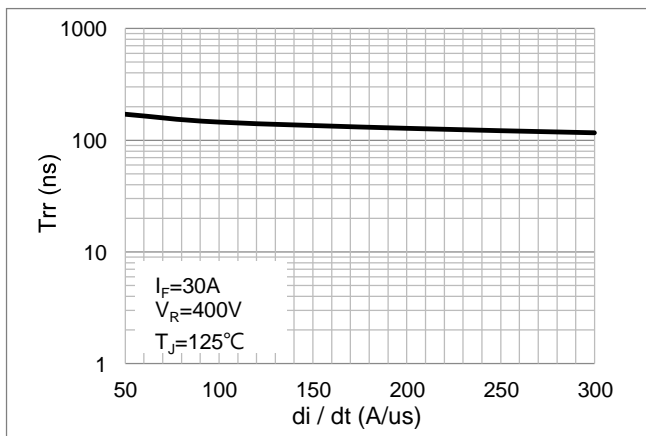


Fig.5 Typical Reverse Recovery Time Versus di/dt

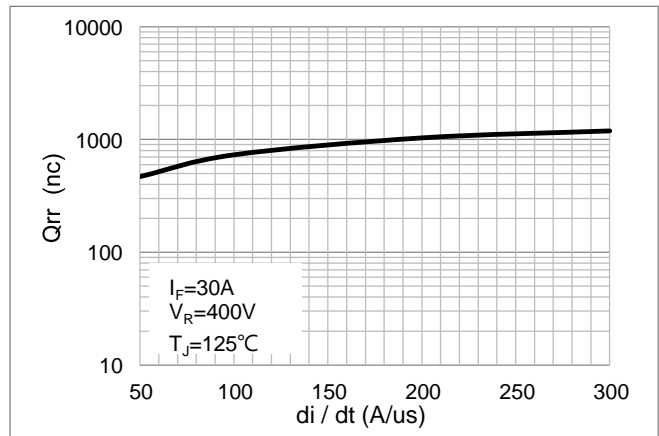


Fig.6 Typical Reverse Recovery Charges Versus di/dt

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