

## Optima Diode - Low forward voltage drop, Fast Recovery Diode

<b>V<sub>RRM</sub></b>	<b>600 V</b>	<b>I<sub>F</sub></b>	<b>30 A</b>
<b>V<sub>F(TYP)</sub></b>	<b>1.3 V</b>	<b>T<sub>RR(TYP)</sub></b>	<b>75 ns</b>

### Features

- Fast recovery
- Low forward voltage
- Optimized trade-off performance between V<sub>F</sub> & T<sub>RR</sub>
- 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

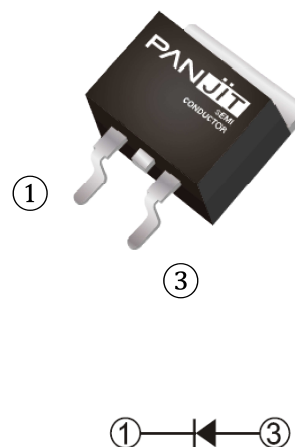
### Mechanical Data

- 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

### TO-263



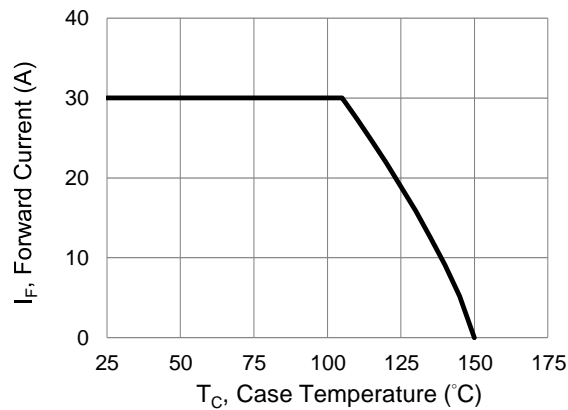
## Maximum Ratings and Thermal Characteristics (T<sub>C</sub> = 25 °C unless otherwise specified)

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

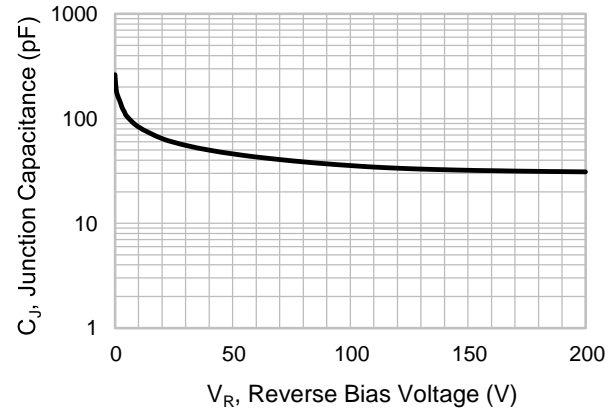
**Electrical Characteristics** ( $T_C = 25\text{ }^{\circ}\text{C}$  unless otherwise specified)

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	$\mu\text{A}$
		$V_R = 600\text{ V}$ , $T_J = 125\text{ }^{\circ}\text{C}$	-	-	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	$^{\circ}\text{C}/\text{W}$

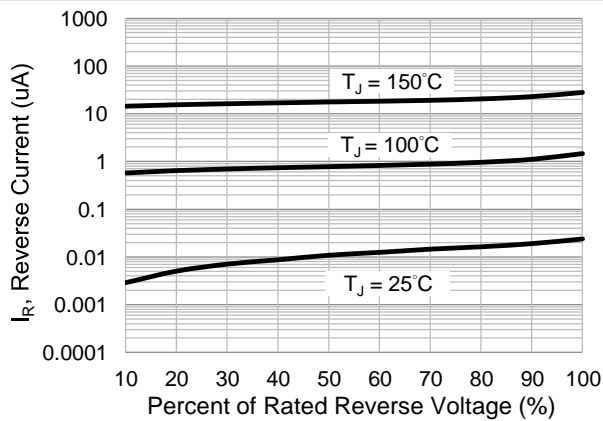
**TYPICAL CHARACTERISTIC CURVES**



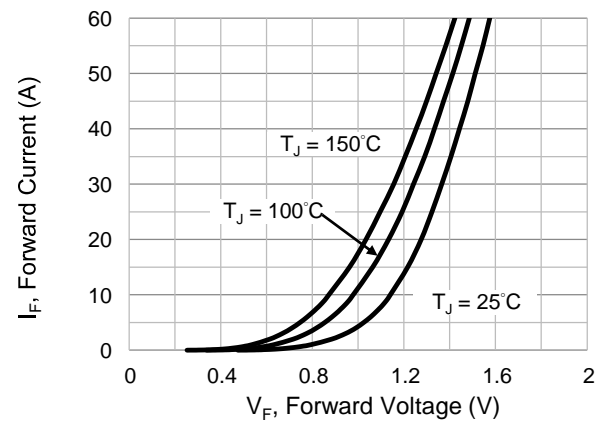
**Fig.1 Forward Current Derating Curve**



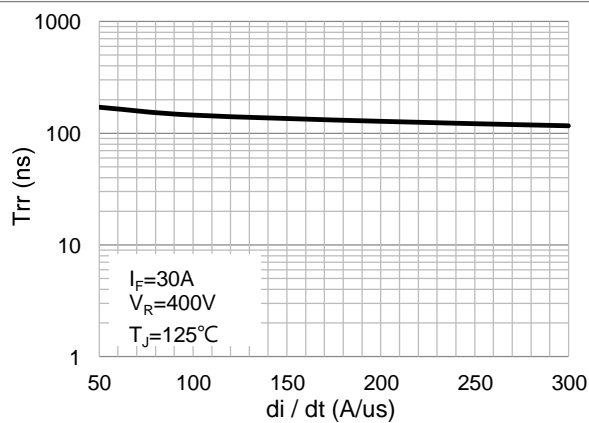
**Fig.2 Typical Junction Capacitance**



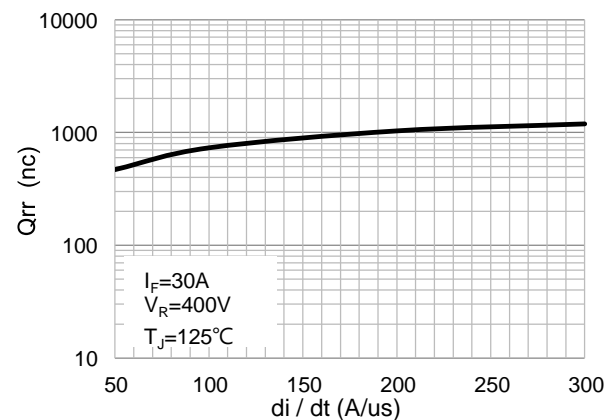
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**



**Fig.5 Typical Reverse Recovery Time Versus di/dt**

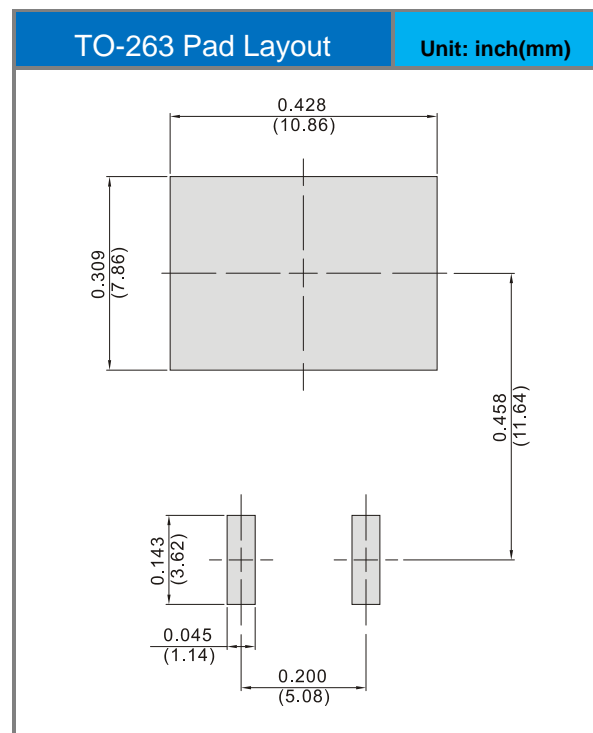
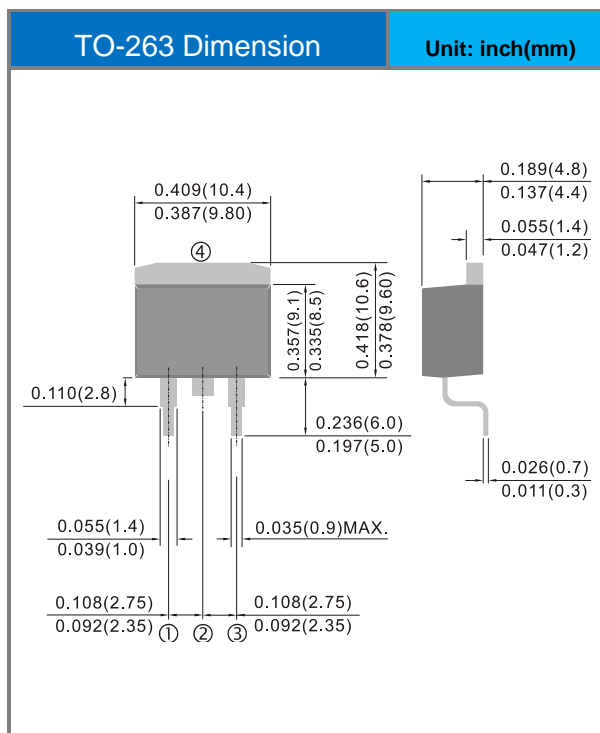


**Fig.6 Typical Reverse Recovery Charges Versus di/dt**

## Product and Packing Information

Part No.	Package Type	Packing Type	Marking
PSDB3060L1	TO-263	50pcs / Tube 800pcs / Reel	SDB3060L1

## Packaging Information & Mounting Pad Layout



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