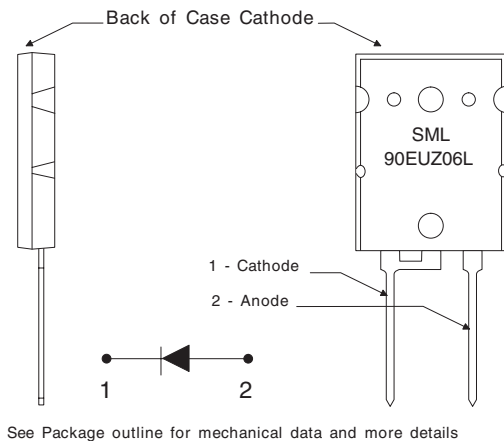


## Enhanced Ultrafast Recovery Diode 600 Volt, 90Amp



### TO-264 Package

### Key Parameters

$V_R$	(max)	<b>600V</b>
$V_F$	(typ)	<b>2.0V</b>
$I_F$	(max)	<b>90A</b>
$t_{rr}$	(max)	<b>55ns</b>

### TECHNOLOGY

The planar passivated and enhanced ultrafast recovery diode features a triple charge control action utilising Semelab's Graded Buffer Zone technology combined with low emitter efficiency and local lifetime control techniques.

### BENEFITS

- Very fast recovery for low switching losses
- Ultra soft recovery with low EMI generation
- High dynamic ruggedness under all conditions
- Low temperature dependency
- Low on-state losses with positive temperature coefficient
- Stable blocking voltage and low leakage current
- Avalanche rated for high reliability circuit operation

### APPLICATIONS

- Freewheeling Diode for IGBTs and MOSFETs
- Uninterruptible Power Supplies UPS
- Switch Mode Power Supplies SMPS
- Inverse and Clamping Diode
- Snubber Diode
- Fast Switching Rectification

### ABSOLUTE MAXIMUM RATINGS ( $T_{case} = 25^\circ C$ unless otherwise stated)

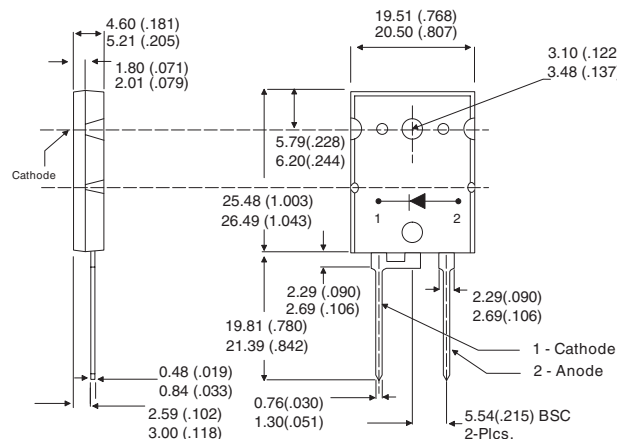
$V_{RRM}$	Peak Repetitive Reverse Voltage	600V
$V_R$	DC Reverse Blocking Voltage	600V
$I_{FAV}$	Average Forward Current @ $T_C = 85^\circ C$	90A
$I_{FSM(surge)}$	Repetitive Forward Current	225A
$I_{FS(surge)}$	Non-Repetitive Forward Current	900A
$P_D$	Power Dissipation @ $T_C = 85^\circ C$	185W
$W_{AVL}$	Avalanche Energy	50mJ
$T_J, T_{STG}$	Operating & Storage Junction Temperature	-55 to $150^\circ C$

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## ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25°C unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit	
<b>STATIC ELECTRICAL CHARACTERISTIC</b>						
V <sub>F</sub>	Forward Voltage Drop	I <sub>F</sub> = 90A      T <sub>j</sub> = 25°C		2	2.5	V
		I <sub>F</sub> = 90A      T <sub>j</sub> = 125°C		2.05		
		I <sub>F</sub> = 50A      T <sub>j</sub> = 25°C		1.6		
I <sub>R</sub>	Leakage Current	V <sub>R</sub> = 600V      T <sub>j</sub> = 25°C		1.5	400	μA
		V <sub>R</sub> = 600V      T <sub>j</sub> = 125°C		1.5	5	mA
C <sub>T</sub>	Junction Capacitance	V <sub>R</sub> = 200V      T <sub>j</sub> = 25°C		123		pF
<b>DYNAMIC ELECTRICAL CHARACTERISTIC</b>						
Q <sub>rr</sub>	Reverse Recovery Charge	V <sub>R</sub> = 300V      I <sub>F</sub> = 90A d <sub>i</sub> / d <sub>t</sub> = 800A/μs      T <sub>J</sub> = 25°C		1.26		μC
I <sub>rr</sub>	Reverse Recovery Current			28		A
t <sub>rr</sub>	Reverse Recovery Time			90		nsec
Q <sub>rr</sub>	Reverse Recovery Charge	V <sub>R</sub> = 300V      I <sub>F</sub> = 90A d <sub>i</sub> / d <sub>t</sub> = 800A/μs      T <sub>J</sub> = 125°C		2.46		μC
I <sub>rr</sub>	Reverse Recovery Current			42		A
t <sub>rr</sub>	Reverse Recovery Time			117		nsec
t <sub>rr</sub>	Reverse Recovery Time	V <sub>R</sub> = 50V      I <sub>F</sub> = 1A d <sub>i</sub> / d <sub>t</sub> = 100A/μs      T <sub>J</sub> = 25°C		55		nsec
<b>THERMAL AND MECHANICAL CHARACTERISTICS</b>						
R <sub>θjc</sub>	Junction to Case Thermal Resistance			0.4		°C/W
T <sub>L</sub>	Lead Temperature			300		°C
L <sub>S</sub>	Stray Inductance		10			nH
Torque	Mounting Torque			1.1		N.m

TO-264 Package Outline



Dimensions in Millimeters and (Inches)

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