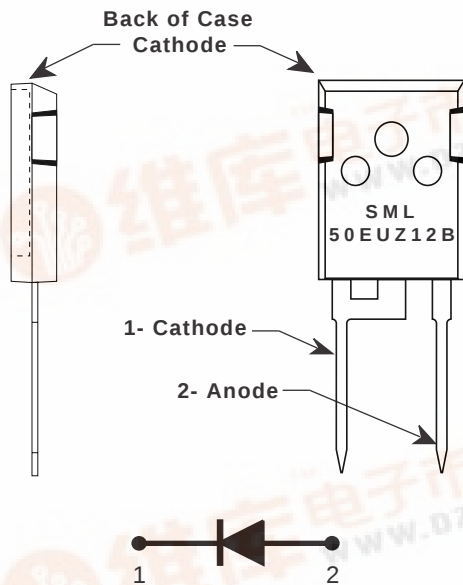




SML50EUZ12B

TO-247 Package



See package outline for mechanical data and more details

Key Parameters

V_R	(max)	1200V
V_F	(typ)	3.0V
I_F	(max)	50A
t_{rr}	(max)	50ns

Enhanced Ultrafast Recovery Diode 1200 Volt, 50 Amp

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

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

APPLICATIONS

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

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C unless otherwise stated)

V_{RRM}	Peak Repetitive Reverse Voltage	1200V
V_R	DC Reverse Blocking Voltage	1200V
I_{FAV}	Average Forward Current @T _C = 85°C	50A
$I_{FSM(surge)}$	Repetitive Forward Current	125A
$I_{FS(surge)}$	Non-Repetitive Forward Current (10msec pulse)	500A
P_D	Power Dissipation @T _C = 85°C	155W
W_{AVL}	Avalanche Energy (L=40mH)	40mJ
Operating & Storage Junction Temperature		-55 to 150°C

ELECTRICAL & MECHANICAL CHARACTERISTICS

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
STATIC ELECTRICAL CHARACTERISTICS					
V_F Forward Voltage Drop	$I_F = 50A$ $T_j = 25^\circ C$		3	3.5	V
	$I_F = 50A$ $T_j = 125^\circ C$			3.7	
	$I_F = 25A$ $T_j = 25^\circ C$		2.25		
I_R Leakage Current	$V_R = 1200V$ $T_j = 25^\circ C$		1.5	1000	μA
	$V_R = 1200V$ $T_j = 125^\circ C$		1	5	mA
C_T Junction Capacitance	$V_R = 200V$ $T_j = 25^\circ C$		TBD		pF
DYNAMIC ELECTRICAL CHARACTERISTICS					
Q_{rr} Reverse Recovery Charge	$V_R = 600V$ $I_F = 50A$ $di/dt = 1000A/\mu s$ $T_j = 25^\circ C$		1.37		μC
I_{rr} Reverse Recovery Current			42		A
t_{rr} Reverse Recovery Time			65		nsec
Q_{rr} Reverse Recovery Charge	$V_R = 600V$ $I_F = 50A$ $di/dt = 1000A/\mu s$ $T_j = 125^\circ C$		2.66		μC
I_{rr} Reverse Recovery Current			63		A
t_{rr} Reverse Recovery Time			85		nsec
t_{rr} Reverse Recovery Time	$V_R = 50V$ $I_F = 1A$ $di/dt = 100A/\mu s$ $T_j = 25^\circ C$		50		nsec
THERMAL AND MECHANICAL CHARACTERISTICS					
$R_{\theta jc}$ Junction to Case Thermal Resistance				0.6	$^\circ C/W$
$R_{\theta ja}$ Junction to Ambient Thermal Resistance			TBD		
T_L Lead Temperature				300	$^\circ C$
L_S Stray Inductance			10		nH
Torque Mounting Torque				1.1	N.m

