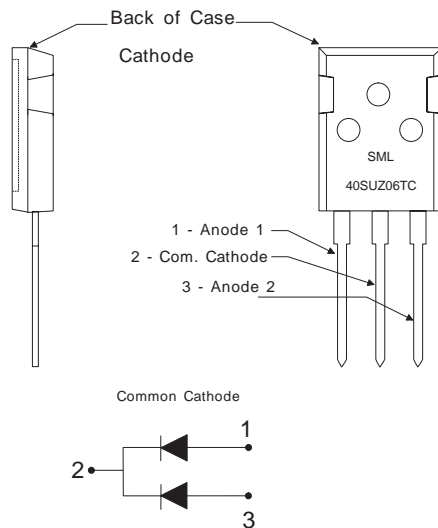


## Ultrafast Recovery Diode 600 Volt, 2 x 40 Amp



See Package outline for mechanical data and more details

### TO247 Clip Package

#### Key Parameters

$V_R$	(max)	600V
$V_F$	(typ)	1.75V
$I_F$	(max)	2 x 40A
$t_{rr}$	(max)	45nS

#### TECHNOLOGY

The planar passivated and standard 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<sub>case</sub> = 25°C unless otherwise stated)

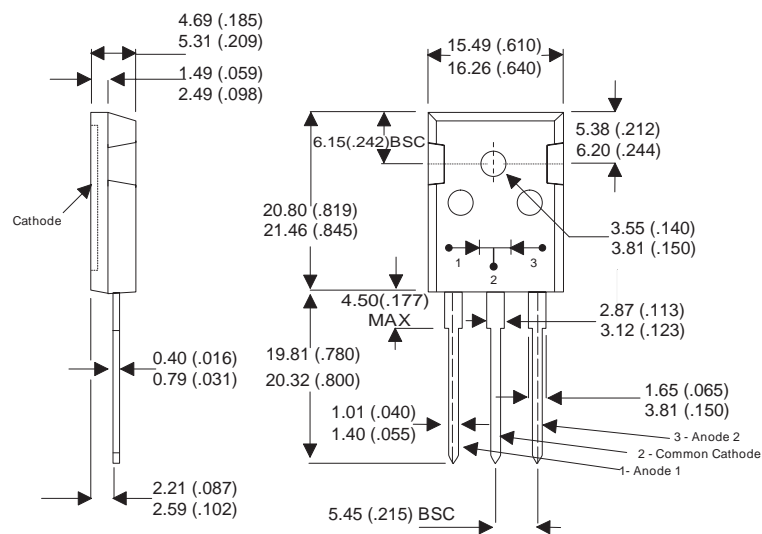
$V_{RRM}$	Peak Repetitive Reverse Voltage	600V
$V_R$	DC Reverse Blocking Voltage	600V
$I_{FAV}$	Average Forward Current @T <sub>C</sub> = 85°C	40A
$I_{FSM(surge)}$	Repetitive Forward Current	100A
$I_{FS(surge)}$	Non-Repetitive Forward Current(10msec pulse)	400A
$P_D$	Power Dissipation @T <sub>C</sub> = 85°C	75W
$W_{AVL}$	Avalanche Energy(L=40mH)	30mJ
$T_J, T_{STG}$	Operating & Storage Junction Temperature	- 55 to 150°C

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## ELECTRICAL CHARACTERISTICS ( $T_{case} = 25^{\circ}C$ unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
<b>STATIC ELECTRICAL CHARACTERISTIC</b>					
$V_F$ Forward Voltage Drop	$I_F = 40A$ $T_j = 25^{\circ}C$		1.75	2.25	V
	$I_F = 40A$ $T_j = 125^{\circ}C$		1.8		
	$I_F = 20A$ $T_j = 25^{\circ}C$		1.4		
$I_R$ Leakage Current	$V_R = 600V$ $T_j = 25^{\circ}C$		0.8	300	$\mu A$
	$V_R = 600V$ $T_j = 125^{\circ}C$		0.6	3	mA
$C_T$ Junction Capacitance	$V_R = 200V$ $T_j = 25^{\circ}C$		45		pF
<b>DYNAMIC ELECTRICAL CHARACTERISTIC</b>					
$Q_{rr}$ Reverse Recovery Charge	$V_R = 300V$ $I_F = 40A$ $d_i / d_t = 800A/\mu s$ $T_J = 25^{\circ}C$		0.91		$\mu C$
$I_{rr}$ Reverse Recovery Current			28		A
$t_{rr}$ Reverse Recovery Time			65		nsec
$Q_{rr}$ Reverse Recovery Charge	$V_R = 300V$ $I_F = 40A$ $d_i / d_t = 800A/\mu s$ $T_J = 125^{\circ}C$		1.47		$\mu C$
$I_{rr}$ Reverse Recovery Current			38		A
$t_{rr}$ Reverse Recovery Time			78		nsec
$t_{rr}$ Reverse Recovery Time	$V_R = 50V$ $I_F = 1A$ $d_i / d_t = 100A/\mu s$ $T_J = 25^{\circ}C$		45		nsec
<b>THERMAL AND MECHANICAL CHARACTERISTICS</b>					
$R_{\theta jc}$ Junction to Case Thermal Resistance				0.93	$^{\circ}C/W$
TL Lead Temperature				300	$^{\circ}C$
LS Stray Inductance			10		nH
Torque Mounting Torque				1.1	N.m

### TO-247 Package Outline



Dimensions in Millimeters and (Inches)

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