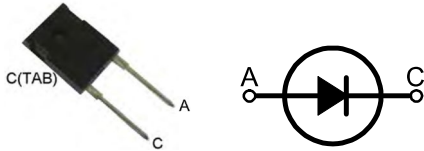


# Ultra Fast Recovery Epitaxial Diodes

## 1. Description



A=Anode, C=Cathode, TAB=Cathode

Type Number	$V_{RSM} / V$	$V_{RRM} / V$
SUR6080	800	800
SUR60100	1000	1000
SUR60120	1200	1200

## 2. Features

- International standard package JEDEC TO-247AC
- Planar passivated chips
- Very short recovery time
- Extremely low switching losses
- Low IRM-values
- Soft recovery behaviour
- High reliability circuit operation
- Low voltage peaks for reduced protection circuits
- Low noise switching
- Low losses
- Operating at lower temperature or space saving by reduced cooling

## 3. Applications

- Antiparallel diode for high frequency switching devices
- Antisaturation diode
- Snubber diode
- Free wheeling diode in converters and motor control circuits
- Rectifiers in switch mode power supplies (SMPS)
- Inductive heating and melting
- Uninterruptible power supplies (UPS)
- Ultrasonic cleaners and welders

## 4. Ordering Information

Type Number	Package Type	Packing	Packing Qty
SUR6080	TO-247AC		
SUR60100	TO-247AC		
SUR60120	TO-247AC		

**Note:** If the physical information is inconsistent with the ordering information, please refer to the actual product.

## 5. Electrical Characteristics

Symbol	Test Conditions		Maximum Ratings	Unit
<b>I<sub>FRMS</sub></b>	$T_{VJ}=T_{VJM}$		100	A
<b>I<sub>FAVM</sub></b>	TC=60°C; rectangular, d=0.5		60	
<b>I<sub>FRM</sub></b>	tp<10us; rep. rating, pulse width limited by $T_{VJM}$		800	
<b>I<sub>FSM</sub></b>	$T_{VJ}=45^{\circ}\text{C}$	t=10ms (50Hz), sine	500	A
		t=8.3ms (60Hz), sine	540	
	$T_{VJ}=150^{\circ}\text{C}$	t=10ms(50Hz), sine	450	
		t=8.3ms(60Hz), sine	480	
<b>I<sup>2</sup>t</b>	$T_{VJ}=45^{\circ}\text{C}$	t=10ms (50Hz), sine t=8.3ms (60Hz), sine	1250	A <sup>2</sup> s
			1200	
	$T_{VJ}=150^{\circ}\text{C}$	t=10ms(50Hz), sine	1000	
		t=8.3ms(60Hz), sine	950	
<b>T<sub>VJ</sub></b>			-40...+150	°C
<b>T<sub>VJM</sub></b>			150	
<b>T<sub>stg</sub></b>			-40...+150	
<b>P<sub>tot</sub></b>	TC=25°C		189	W
<b>M<sub>d</sub></b>	Mounting torque		0.8...1.2	Nm
<b>Weight</b>			6	g

Symbol	Test Conditions	Characteristic Values		Unit
		typ.	max.	
<b>I<sub>R</sub></b>	$T_{VJ}=25^{\circ}\text{C}; V_R=V_{RRM}$		3	mA
	$T_{VJ}=25^{\circ}\text{C}; V_R=0.8 \cdot V_{RRM}$		0.5	
	$T_{VJ}=125^{\circ}\text{C}; V_R=0.8 \cdot V_{RRM}$		14	
<b>V<sub>F</sub></b>	$I_F=60\text{A}; T_{VJ}=150^{\circ}\text{C}$		1.8	V
	$T_{VJ}=25^{\circ}\text{C}$		2.3	
<b>V<sub>TO</sub></b>	For power-loss calculations only		1.43	V
<b>r<sub>T</sub></b>	$T_{VJ}=T_{VJM}$		6.1	m
<b>R<sub>thJC</sub></b>			0.66	
<b>R<sub>thCK</sub></b>		0.25		K/W
<b>R<sub>thJA</sub></b>			35	
<b>t<sub>rr</sub></b>	$I_F=1\text{A}; -di/dt=200\text{A/us}; V_R=30\text{V}; T_{VJ}=25^{\circ}\text{C}$	35	50	ns
<b>I<sub>RM</sub></b>	$V_R=540\text{V}; I_F=60\text{A}; -di_F/dt=480\text{A/us}; L<0.05\mu\text{H}; T_{VJ}=100^{\circ}\text{C}$	32	36	A

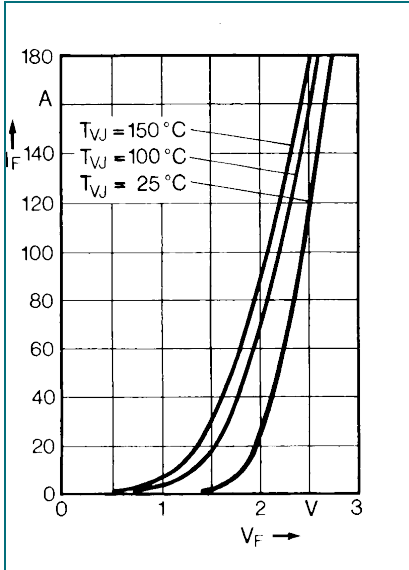


Fig. 1. Forward current versus voltage drop.

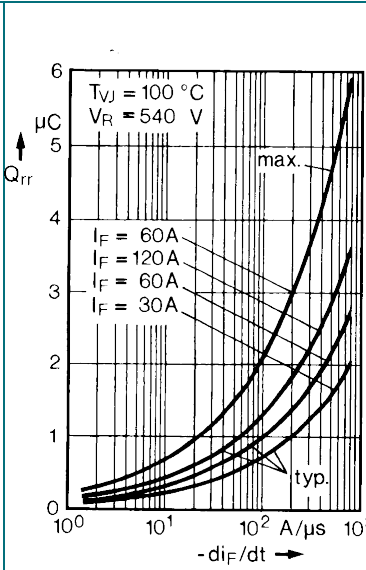


Fig. 2. Recovery charge versus  $-di_F/dt$ .

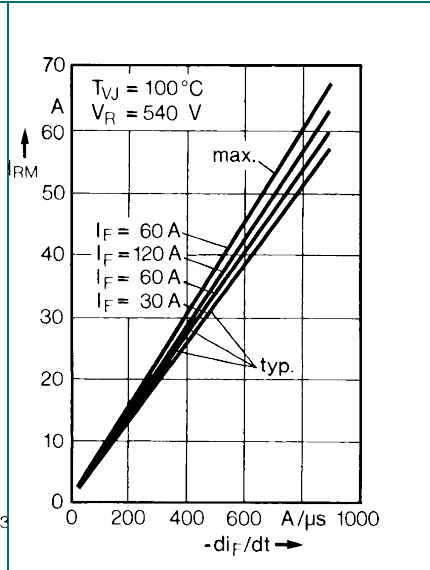


Fig. 3. Peak reverse current versus  $-di_F/dt$ .

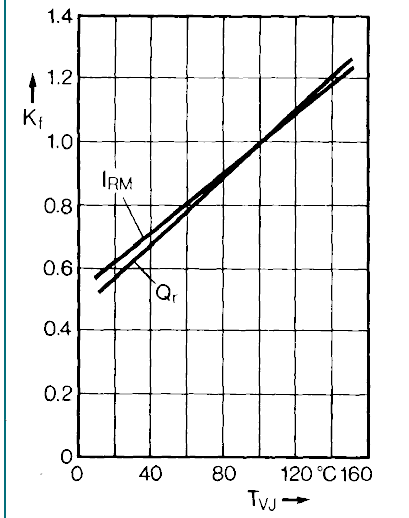


Fig. 4. Dynamic parameters versus junction temperature.

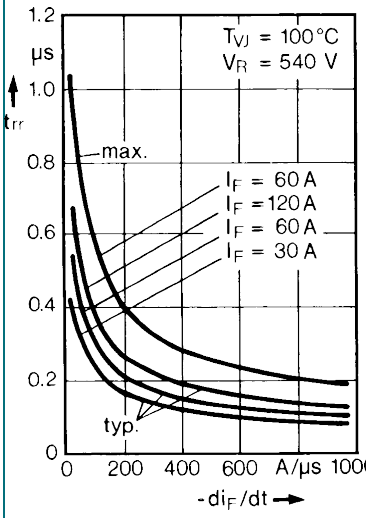


Fig. 5. Recovery time versus  $-di_F/dt$ .

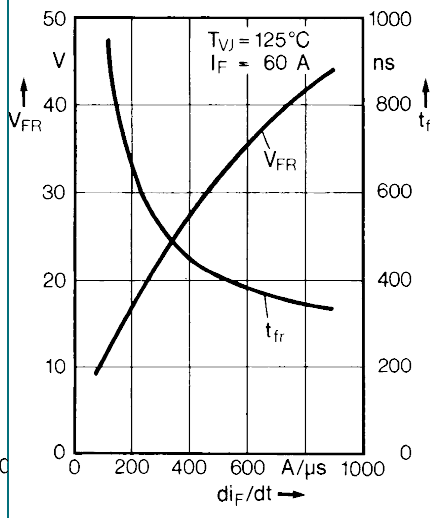


Fig. 6. Peak forward voltage versus  $di_F/dt$ .

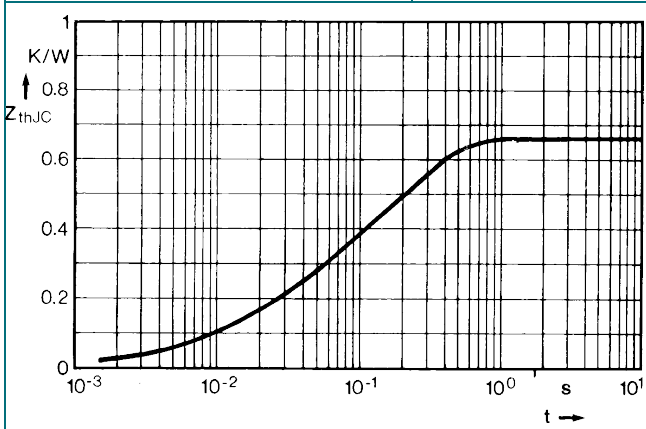


Fig. 7. Transient thermal impedance junction to case.

## 6. Package Outlines

TO-247AC				
Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	19.81	20.32	0.780	0.800
B	20.80	21.46	0.819	0.845
C	15.75	16.26	0.610	0.640
D	3.55	3.65	0.140	0.144
E	4.32	5.49	0.170	0.216
F	5.4	6.2	0.212	0.244
G	1.65	2.13	0.065	0.084
H	-	4.5	-	0.177
J	1.0	1.4	0.040	0.055
K	10.8	11.0	0.426	0.433
L	4.7	5.3	0.185	0.209
M	0.4	0.8	0.016	0.031
N	1.5	2.49	0.087	0.102

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