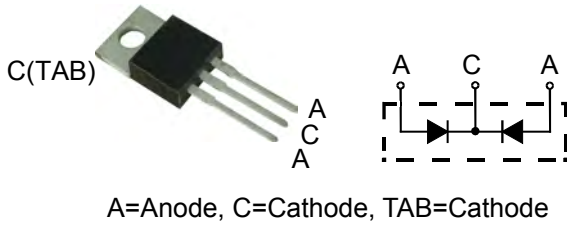
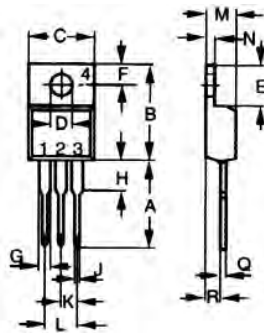


# SUR20100CT

## Soft Recovery Behaviour Ultra Fast Recovery Epitaxial Diodes



Dimensions TO-220AB



Dim.	Inches		Millimeter	
	Min.	Max.	Min.	Max.
A	0.500	0.550	12.70	13.97
B	0.580	0.630	14.73	16.00
C	0.390	0.420	9.91	10.66
D	0.139	0.161	3.54	4.08
E	0.230	0.270	5.85	6.85
F	0.100	0.125	2.54	3.18
G	0.045	0.065	1.15	1.65
H	0.110	0.230	2.79	5.84
J	0.025	0.040	0.64	1.01
K	0.100	BSC	2.54	BSC
M	0.170	0.190	4.32	4.82
N	0.045	0.055	1.14	1.39
Q	0.014	0.022	0.35	0.56
R	0.090	0.110	2.29	2.79

	$V_{RSM}$	$V_{RRM}$
	V	V
<b>SUR20100CT</b>	1000	1000

Symbol	Test Conditions	Maximum Ratings	Unit
$I_{FRMS}$	$T_{VJ}=T_{VJM}$	25	A
$I_{FAVM}$	$T_C=100^{\circ}C$ ; rectangular, $d=0.5$	10	
$I_{FRM}$	$t_p < 10\mu s$ ; rep. rating, pulse width limited by $T_{VJM}$	150	
$I_{FSM}$	$T_{VJ}=45^{\circ}C$	$t=10ms$ (50Hz), sine	A
		$t=8.3ms$ (60Hz), sine	
	$T_{VJ}=150^{\circ}C$	$t=10ms$ (50Hz), sine	
		$t=8.3ms$ (60Hz), sine	
$I^2t$	$T_{VJ}=45^{\circ}C$	$t=10ms$ (50Hz), sine	$A^2s$
		$t=8.3ms$ (60Hz), sine	
	$T_{VJ}=150^{\circ}C$	$t=10ms$ (50Hz), sine	
		$t=8.3ms$ (60Hz), sine	
$T_{VJ}$		-40...+150	$^{\circ}C$
$T_{VJM}$		150	
$T_{stg}$		-40...+150	
$P_{tot}$	$T_C=25^{\circ}C$	78	W
$M_d$	Mounting torque	0.4...0.6	Nm
Weight		2	g

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# SUR20100CT

## Soft Recovery Behaviour Ultra Fast Recovery Epitaxial Diodes

Symbol	Test Conditions	Characteristic Values		Unit
		typ.	max.	
$I_R$	$T_{VJ}=25^{\circ}\text{C}; V_R=V_{RRM}$		250	$\mu\text{A}$
	$T_{VJ}=25^{\circ}\text{C}; V_R=0.8 \cdot V_{RRM}$		150	$\mu\text{A}$
$V_F$	$T_{VJ}=125^{\circ}\text{C}; V_R=0.8 \cdot V_{RRM}$		4	mA
	$I_F=12\text{A}; T_{VJ}=150^{\circ}\text{C}$		2.1	V
	$T_{VJ}=25^{\circ}\text{C}$		2.7	
$V_{TO}$	For power-loss calculations only		1.67	$V_{\Omega}$
$r_T$	$T_{VJ}=T_{VJM}$		33.6	m
$R_{thJC}$ $R_{thCK}$ $R_{thJA}$		0.5	1.6	K/W
$t_{rr}$	$I_F=1\text{A}; -di/dt=50\text{A}/\mu\text{s}; V_R=30\text{V}; T_{VJ}=25^{\circ}\text{C}$	50	60	ns
$I_{RM}$	$V_R=540\text{V}; I_F=10\text{A}; -di_F/dt=100\text{A}/\mu\text{s}; L \leq 0.05\mu\text{H}; T_{VJ}=100^{\circ}\text{C}$	6.5	7.2	A

### FEATURES

- \* International standard package JEDEC TO-220AB
- \* Glass passivated chips
- \* Very short recovery time
- \* Extremely low switching losses
- \* Low  $I_{RM}$ -values
- \* Soft recovery behaviour
- \* RoHS compliant

### 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

### ADVANTAGES

- \* 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

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## Soft Recovery Behaviour Ultra Fast Recovery Epitaxial Diodes

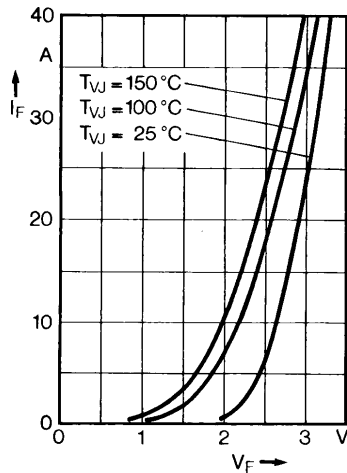


Fig. 1 Forward current versus voltage drop.

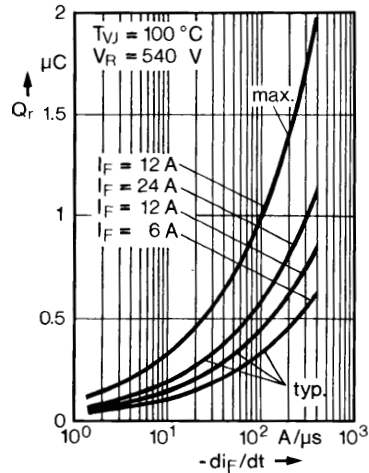


Fig. 2 Recovery charge versus  $-di_F/dt$ .

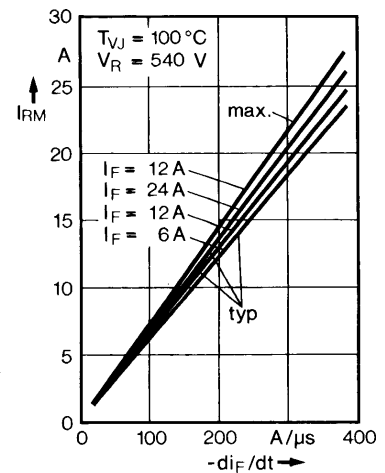


Fig. 3 Peak reverse current versus  $-di_F/dt$ .

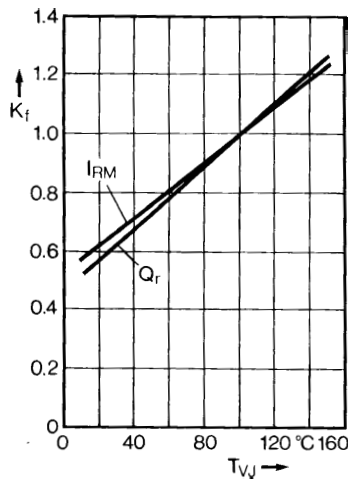


Fig. 4 Dynamic parameters versus junction temperature.

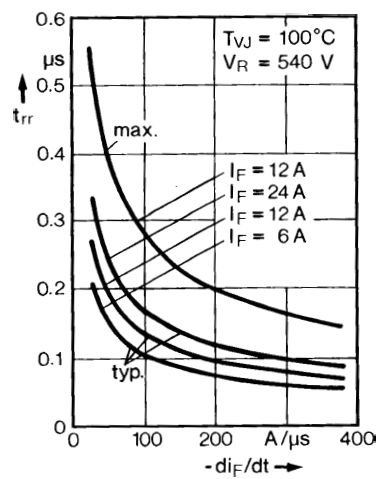


Fig. 5 Recovery time versus  $-di_F/dt$ .

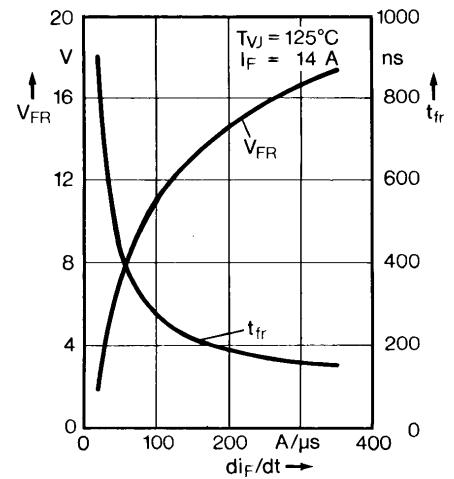


Fig. 6 Peak forward voltage versus  $di_F/dt$ .

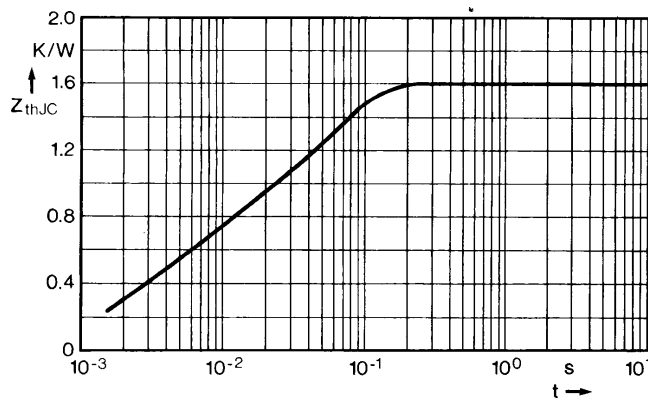


Fig. 7 Transient thermal impedance junction to case.

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