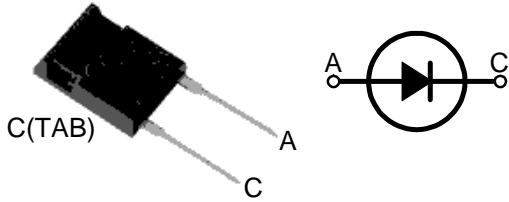


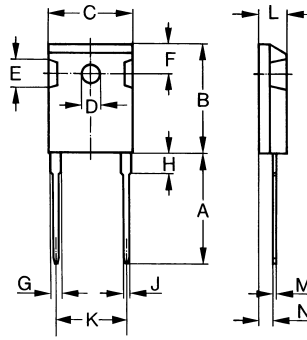
# MUR3020, MUR3030

## Ultra Fast Recovery Diodes



A=Anode, C=Cathode, TAB=Cathode

Dimensions 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

	$V_{RSM}$	$V_{RRM}$
	V	V
<b>MUR3020</b>	200	200
<b>MUR3030</b>	300	300

Symbol	Test Conditions	Maximum Ratings	Unit
$I_{FRMS}$	$T_C=145^\circ\text{C}$ ; rectangular, $d=0.5$	70	A
$I_{FAVM}$		30	
$I_{FSM}$	$T_{VJ}=45^\circ\text{C}$ ; $t_p=10\text{ms}$ (50Hz), sine	300	A
$E_{AS}$	$T_{VJ}=25^\circ\text{C}$ ; non-repetitive; $I_{AS}=3\text{A}$ ; $L=180\mu\text{H}$	1.2	mJ
$I_{AR}$	$V_A=1.5 \cdot V_R$ typ.; $f=10\text{kHz}$ ; repetitive	0.3	A
$T_{VJ}$		-55...+175	$^\circ\text{C}$
$T_{VJM}$		175	
$T_{stg}$		-55...+150	
$P_{tot}$	$T_C=25^\circ\text{C}$	165	W
$M_d$	mounting torque	0.8...1.2	Nm
<b>Weight</b>	typical	6	g

# MUR3020, MUR3030

## Ultra Fast Recovery Diodes

Symbol	Test Conditions	Characteristic Values		Unit
		typ.	max.	
<b>I<sub>R</sub></b>	$T_{VJ}=25^{\circ}\text{C}; V_R=V_{RRM}$		250	uA
	$T_{VJ}=150^{\circ}\text{C}; V_R=V_{RRM}$		1	mA
<b>V<sub>F</sub></b>	$I_F=30\text{A}; T_{VJ}=150^{\circ}\text{C}$		0.91	V
	$T_{VJ}=25^{\circ}\text{C}$		1.25	
<b>R<sub>thJC</sub></b> <b>R<sub>thCH</sub></b>		0.25	0.9	K/W
<b>t<sub>rr</sub></b>	$I_F=1\text{A}; -di/dt=200\text{A/us}; V_R=30\text{V}; T_{VJ}=25^{\circ}\text{C}$	30		ns
<b>I<sub>RM</sub></b>	$V_R=100\text{V}; I_F=50\text{A}; -di_F/dt=100\text{A/us}; T_{VJ}=100^{\circ}\text{C}$		7	A

### FEATURES

- \* International standard package
- \* Planar passivated chips
- \* Very short recovery time
- \* Extremely low switching losses
- \* Low I<sub>RM</sub>-values
- \* Soft recovery behaviour

### 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
- \* Uninterruptible power supplies (UPS)
- \* Ultrasonic cleaners and welders

### ADVANTAGES

- \* Avalanche voltage rated for reliable operation
- \* Soft reverse recovery for low EMI/RFI
- \* Low I<sub>RM</sub> reduces:
  - Power dissipation within the diode
  - Turn-on loss in the commutating switch

# MUR3020, MUR3030

## Ultra Fast Recovery Diodes

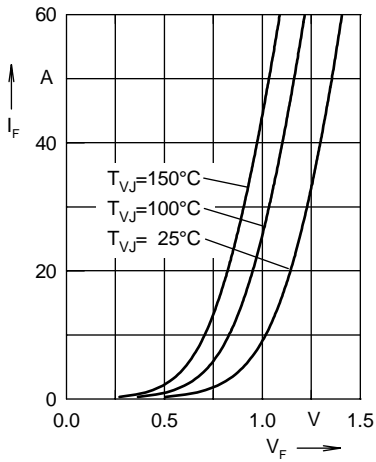


Fig. 1 Forward current  $I_F$  versus  $V_F$

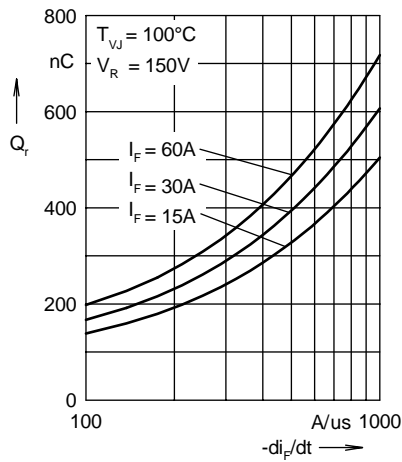


Fig. 2 Reverse recovery charge  $Q_r$  versus  $-di_F/dt$

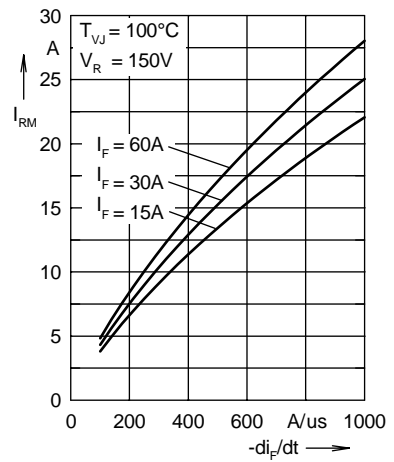


Fig. 3 Peak reverse current  $I_{RM}$  versus  $-di_F/dt$

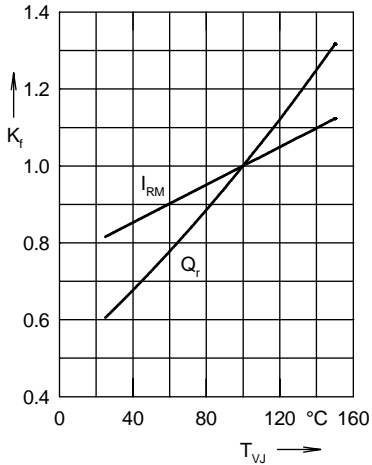


Fig. 4 Dynamic parameters  $Q_r$ ,  $I_{RM}$  versus  $T_{VJ}$

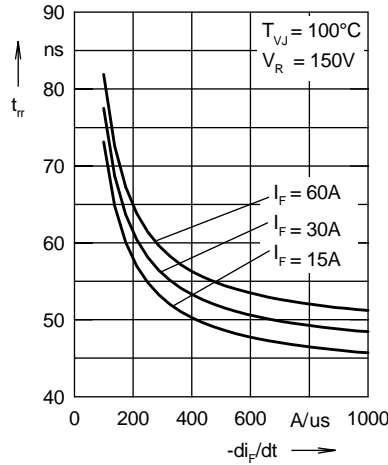


Fig. 5 Recovery time  $t_{tr}$  versus  $-di_F/dt$

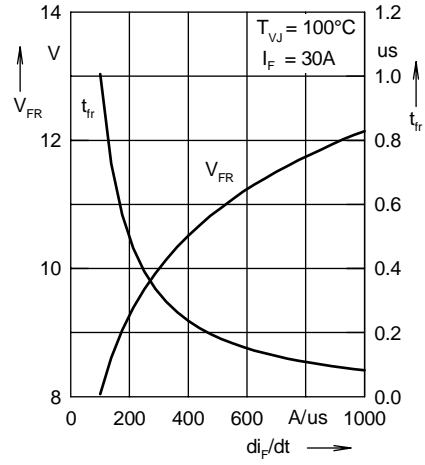


Fig. 6 Peak forward voltage  $V_{FR}$  and  $t_{tr}$  versus  $di_F/dt$

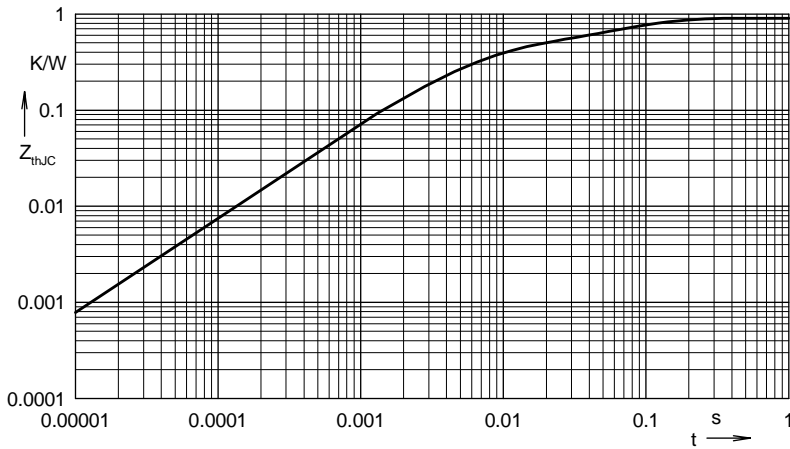


Fig. 7 Transient thermal resistance junction to case

Constants for  $Z_{thJC}$  calculation:

i	$R_{thi}$ (K/W)	$t_i$ (s)
1	0.465	0.005
2	0.179	0.0003
3	0.256	0.04