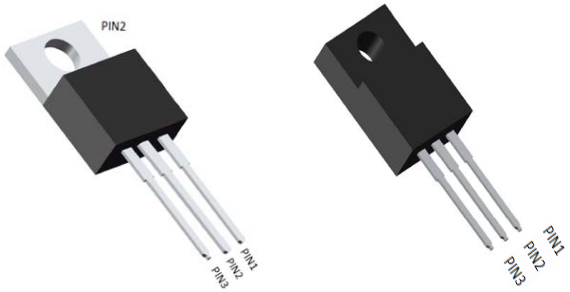
MSR3040CT/MSR3040FCT

Ultra-Fast Recovery Diodes 30A FRD Pt

Features

- Adopt FRD chip
- Low forward Voltage drop
- Fast reverse recovery time
- High frequency operation
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Guard ring for enhanced ruggedness and long term reliability



Typical Applications

Typical applications are in switching power supplies, converters, freewheeling diodes, and reverse battery protection.

Mechanical Data

- **Package**: TO-220AB ITO-220AB
  Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant
- **Terminals**: Tin plated leads, solderable per J-STD-002 and JESD22-B102
  Polarity: As marked

■Maximum Ratings (T_a=25℃ Unless otherwise specified)

	V_{RSM} V	V_{RRM} V
MSR3040CT	400	400
MSR3040FCT	400	400

Symbol	Test Conditions		Maximum Ratings	Unit
I_{FRMS} I_{FAVM} I_{FRM}	$T_{VJ}=T_{VJM}$ T_C=100°C; rectangular, d=0.5 t_p<10us; rep. rating, pulse width limited by T_{VJM}		25 30 150	A
I_{FSM}	T_{VJ}=45°C	t=10ms (50Hz), sine t=8.3ms (60Hz), sine	300 310	A
	T_{VJ}=150°C	t=10ms(50Hz), sine t=8.3ms(60Hz), sine	185 195	
I^2t	T_{VJ}=45°C	t=10ms (50Hz), sine t=8.3ms (60Hz), sine	50 50	A^2s
	T_{VJ}=150°C	t=10ms(50Hz), sine t=8.3ms(60Hz), sine	36 37	
T_{VJ} T_{VJM} T_{stg}			-55...+175 175 -55...+175	°C
P_{tot}	T_C=25°C		62	W
M_d	Mounting torque		0.4...0.6	Nm
Weight	typical		6	g

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■Electrical Characteristics

Symbol	Test Conditions	Characteristic Values typ.	max.	Unit
I_R	T_{VJ}=25°C; V_R=V_{RRM} T_{VJ}=25°C; V_R=0.8·V_{RRM} T_{VJ}=125°C; V_R=0.8·V_{RRM}		50 25 3	uA uA mA
V_F	I_F=15A; T_{VJ}=150°C T_{VJ}=25°C		1.05 1.35	V
V_{TO}	For power-loss calculations only		1.12	V
r_T	T_{VJ}=T_{VJM}		23.2	mΩ
R_{thJC} R_{thCK} R_{thJA}		0.5	2 60	K/W
t_{rr}	I_F=1A; -di/dt=50A/us; V_R=30V; T_{VJ}=25°C	28	35	ns
I_{RM}	V_R=350V; I_F=15A; -di$_F$/dt=100A/us; L≤0.05uH; T_{VJ}=100°C	4	4.4	A

■Thermal Characteristics （T_a=25℃ Unless otherwise specified）

PARAMETER		SYMBOL	UNIT	MSR3040CT/MSR3040FCT
Thermal Resistance	Between junction and case	$R_{\theta J-C}$	℃/W	4.0
	Between junction and Air	$R_{\theta J-A}$	℃/W	50

■Ordering Information (Example)

PREFERED P/N	UNIT WEIGHT(g)	MINIIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
MSR3040CT/MSR3040FCT	Approximate 1.6	50	1000	5000	Tube

■Characteristics (Typical)

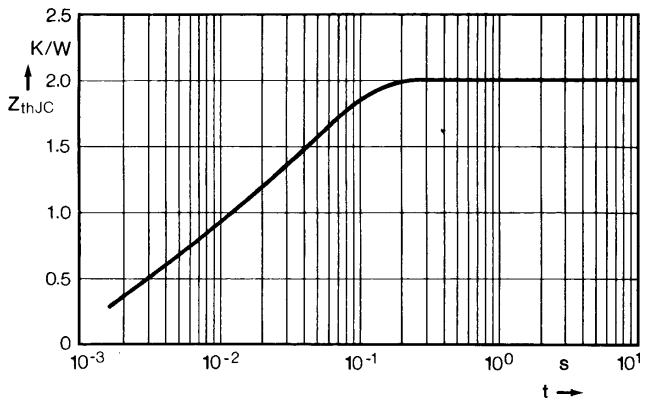

Fig. 7 Transient thermal impedance junction to case.

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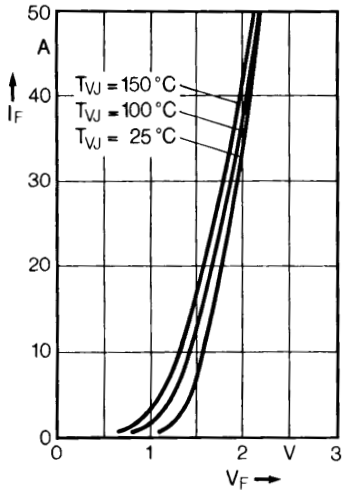


Fig. 1 Forward current versus voltage drop.

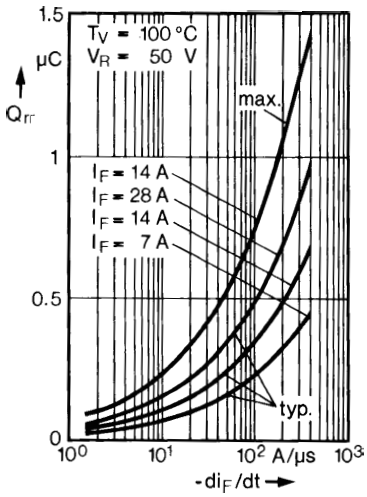


Fig. 2 Recovery charge versus $-di_F/dt$.

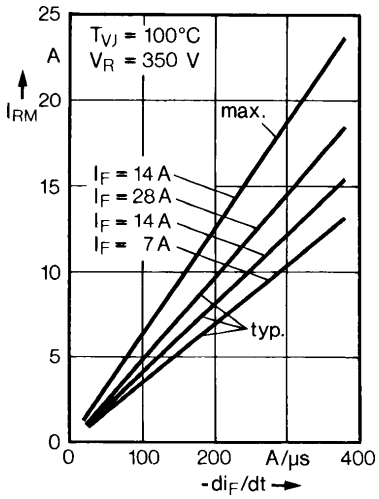


Fig. 3 Peak reverse current versus $-di_F/dt$.

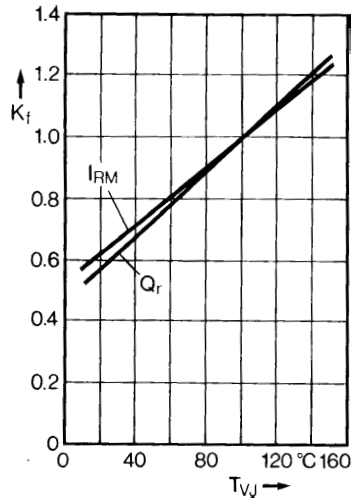


Fig. 4 Dynamic parameters versus junction temperature.

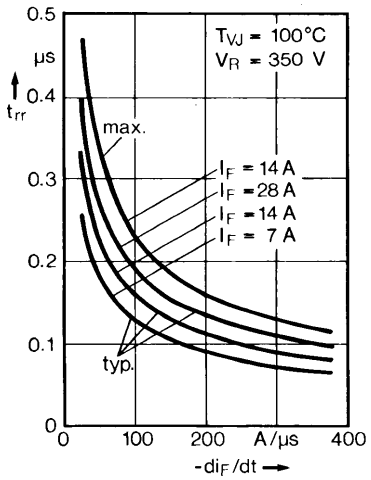


Fig. 5 Recovery time versus $-di_F/dt$.

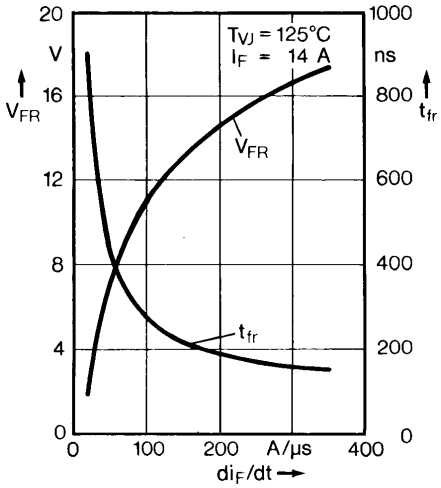
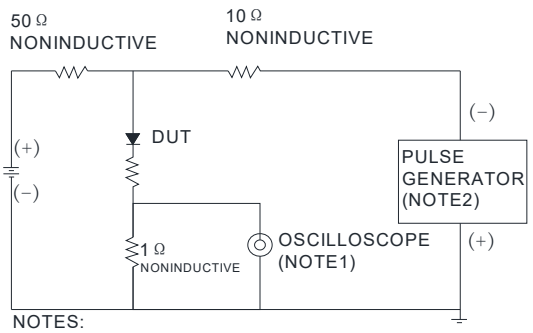
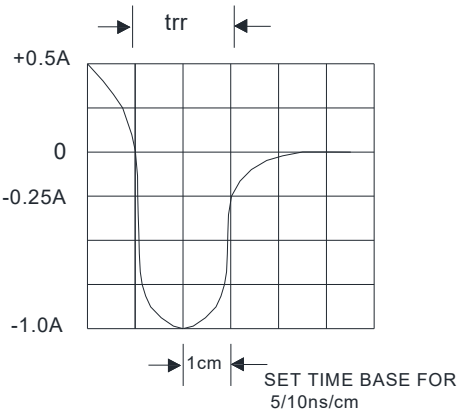


Fig. 6 Peak forward voltage versus di_F/dt.

FIG.5: Diagram of circuit and Testing wave form of reverse recovery time





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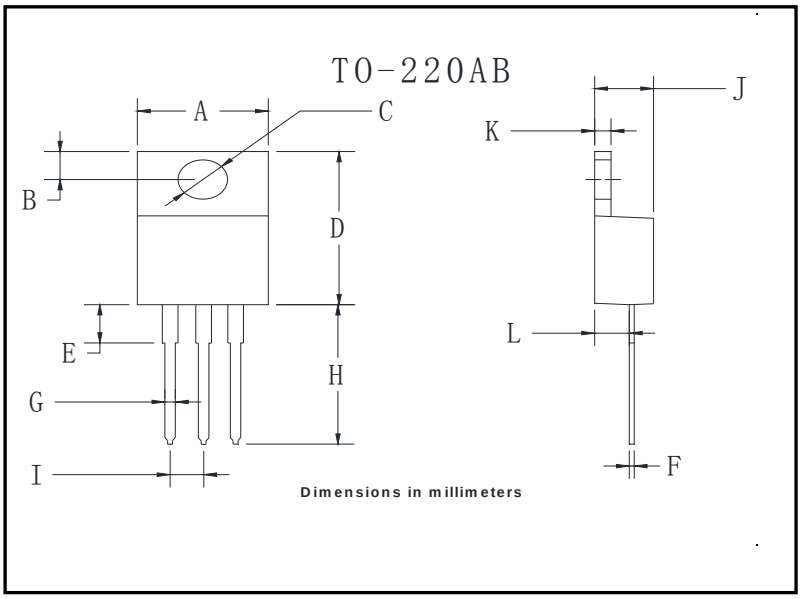
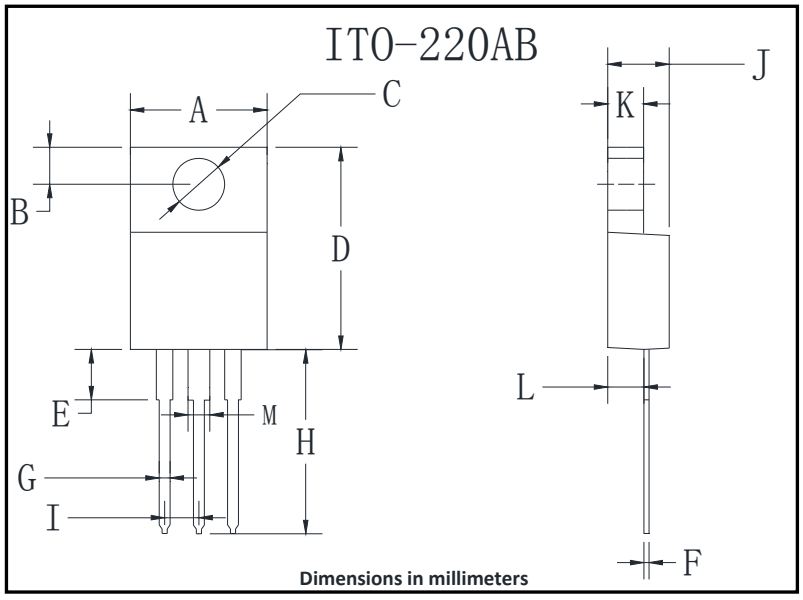
■Outline Dimensions



TO-220AB		
Dim	Min	Max
A	9.5	10.9
B	2.22	3.27
C	3.34	4.31
D	14.5	15.5
E	3.16	4.46
F	0.28	0.64
G	0.68	0.94
H	13.06	14.62
I	2.01	3.07
J	4.04	5.1
K	1.14	1.4
L	2.14	3.19



ITO-220AB		
Dim	Min	Max
A	9.8	10.2
B	2.25	2.75
C	2.95	3.45
D	14.75	15.25
E	3.05	3.95
F	0.45	0.75
G	0.45	0.75
H	13.4	14.2
I	2.35	2.75
J	4.3	4.8
K	2.58	2.82
L	2.58	2.82
M	1.47	1.77