



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

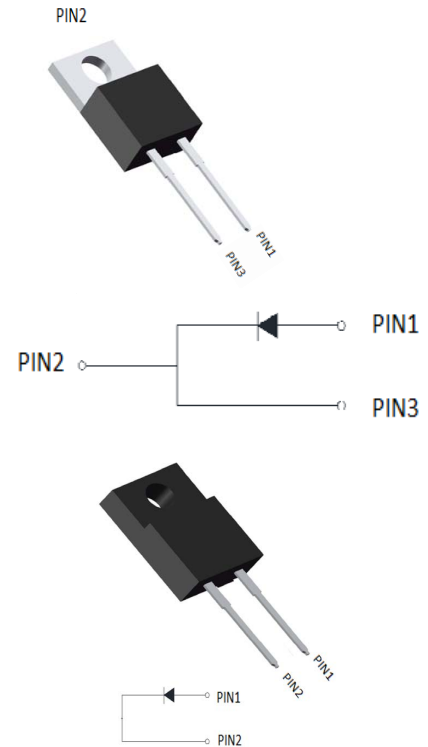
Typical applications are in switching power supplies, converters, freewheeling diodes, and reverse battery protection.

Mechanical Data

- **Package:** TO-220AC ITO-220AC
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°C Unless otherwise specified)

TYPE	V _{RSM} V	V _{RRM} V
MTSR30120	1200	1200
MTSR30120F	1200	1200



Symbol	Test Conditions	Maximum Ratings	Unit	
I _{FRMS}	T _{VJ} =T _{VJM}	70	A	
I _{FAVM}	T _C =85°C; rectangular, d=0.5	30		
I _{FRM}	t _p <10us; rep. rating, pulse width limited by T _{VJM}	375		
I _{FSM}	T _{VJ} =45°C	t=10ms (50Hz), sine t=8.3ms (60Hz), sine	200 210	A
	T _{VJ} =150°C	t=10ms(50Hz), sine t=8.3ms(60Hz), sine	185 195	
I ² t	T _{VJ} =45°C	t=10ms (50Hz), sine t=8.3ms (60Hz), sine	200 180	A ² s
	T _{VJ} =150°C	t=10ms(50Hz), sine t=8.3ms(60Hz), sine	170 160	
T _{VJ}		-40...+175	°C	
T _{VJM}		150		
T _{stg}		-40...+175		
P _{tot}	T _C =25°C	138	W	
M _d	Mounting torque	0.8...1.2	Nm	
Weight	typical	6	g	

■Electrical Characteristics

Symbol	Test Conditions	Characteristic Values		Unit
		typ.	max.	
I _R	T _{VJ} =25°C; V _R =V _{RRM}		750	uA
	T _{VJ} =25°C; V _R =0.8·V _{RRM}		250	uA
	T _{VJ} =125°C; V _R =0.8·V _{RRM}		7	mA
V _F	I _F =30A; T _{VJ} =150°C T _{VJ} =25°C		2.3 2.85	V
V _{TO}	For power-loss calculations only		1.5	V
r _T	T _{VJ} =T _{VJM}		12.5	mΩ
R _{thJC} R _{thCK} R _{thJA}		0.25	0.9 35	K/W
t _{rr}	I _F =1A; -di/dt=100A/us; V _R =30V; T _{VJ} =25°C	28	35	ns
I _{RM}	V _R =540V; I _F =30A; -di _F /dt=240A/us; L≤0.05uH; T _{VJ} =100°C	16	18	A

■Thermal Characteristics (T_a=25°C Unless otherwise specified)

PARAMETER		SYMBOL	UNIT	MTSR30120/MTSR30120F
Thermal Resistance	Between junction and case	R _{θJ-C}	°C/W	4.0
	Between junction and Air	R _{θJ-A}	°C/W	50

■Ordering Information (Example)

PREFERRED P/N	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
MTSR30120/MTSR30120F	Approximate 1.6	50	1000	5000	Tube

■Characteristics (Typical)

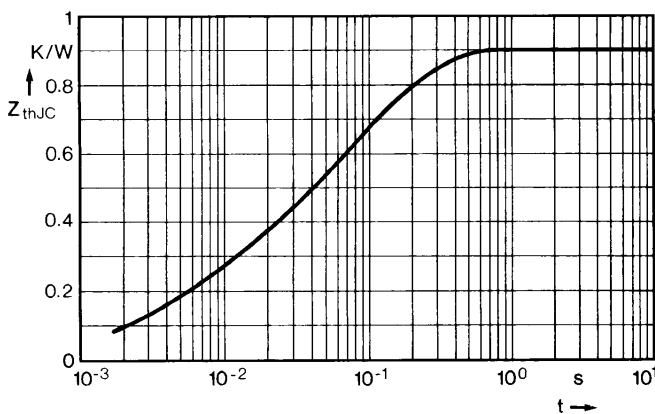


Fig. 7 Transient thermal impedance junction to case.

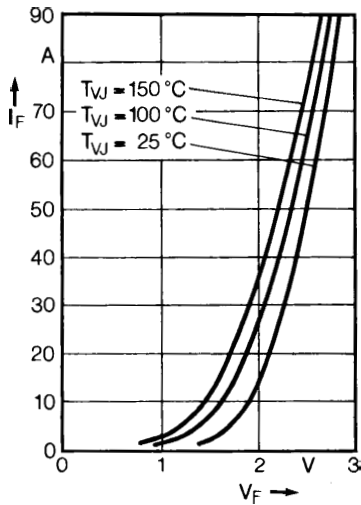


Fig. 1 Forward current versus voltage drop.

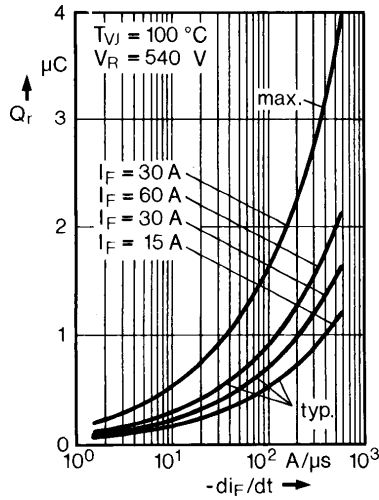


Fig. 2 Recovery charge versus $-di_F/dt$.

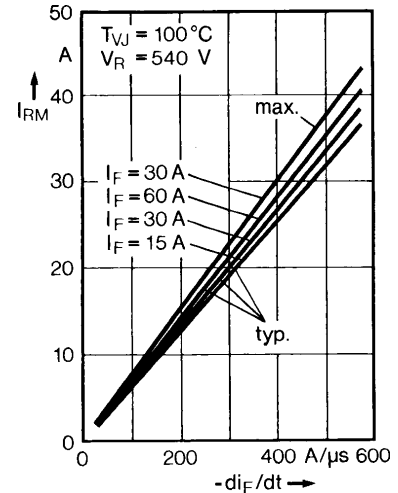


Fig. 3 Peak reverse current versus $-di_F/dt$.

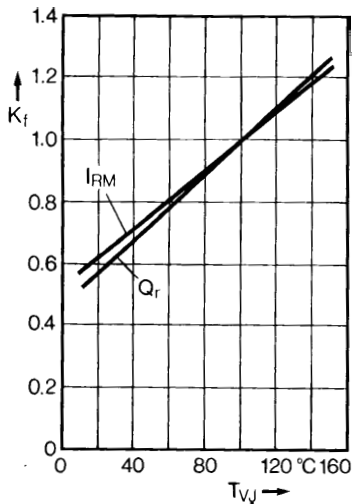


Fig. 4 Dynamic parameters versus junction temperature.

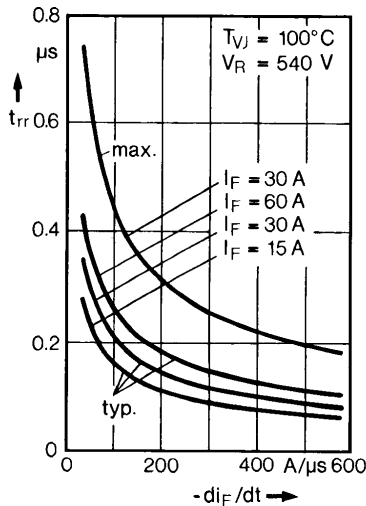


Fig. 5 Recovery time versus $-di_F/dt$.

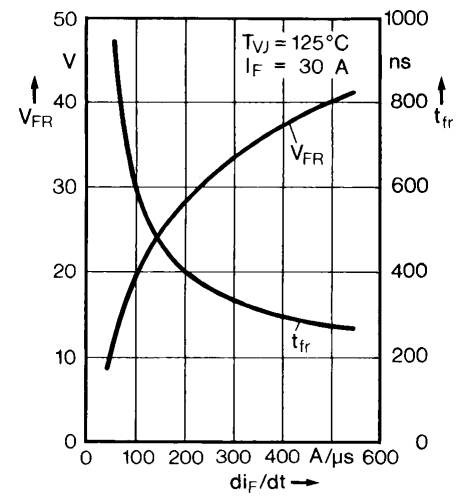
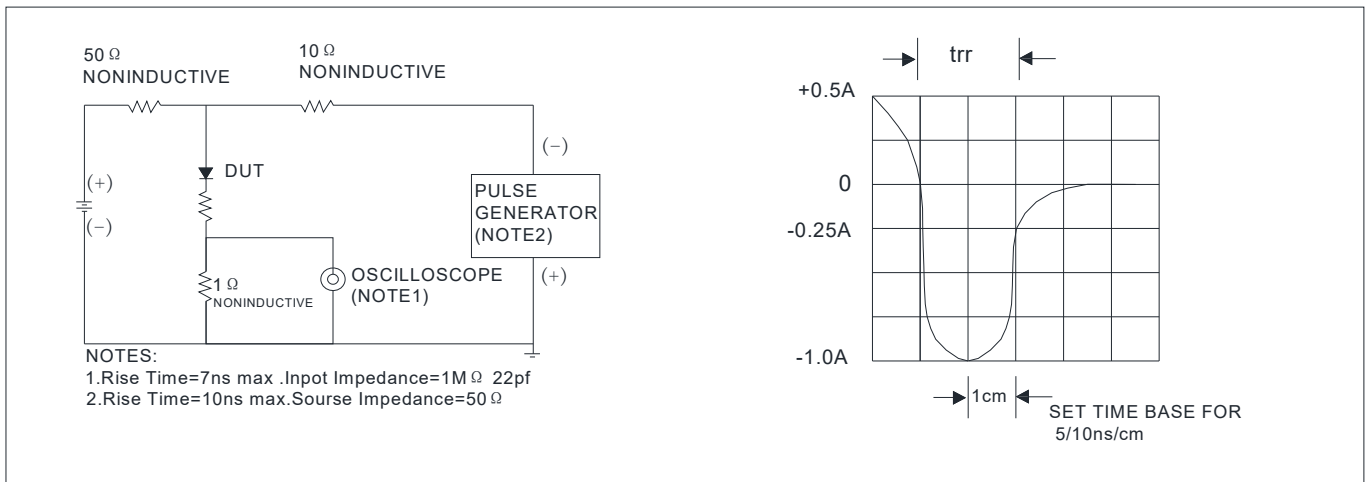
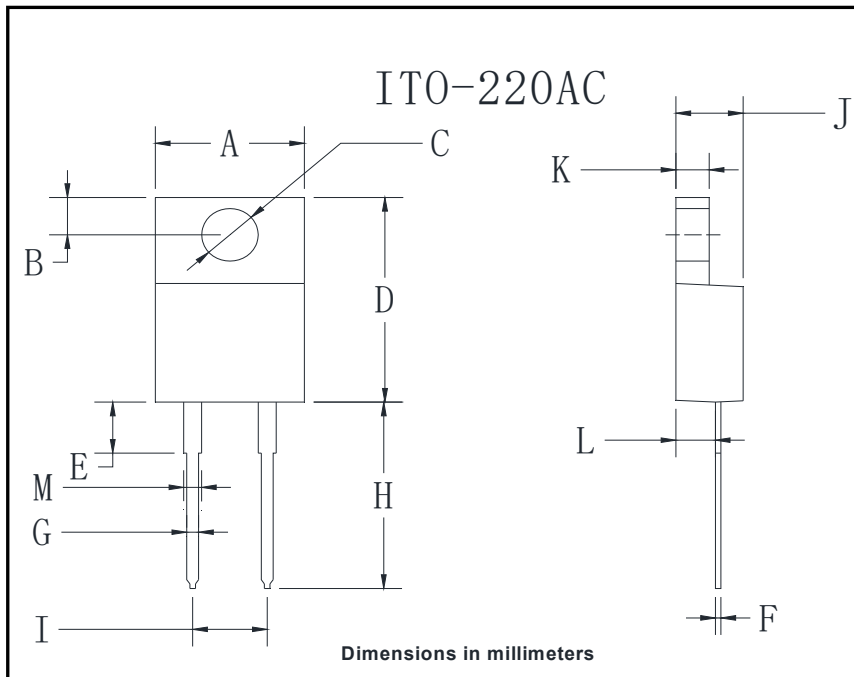


Fig. 6 Peak forward voltage versus di_F/dt .

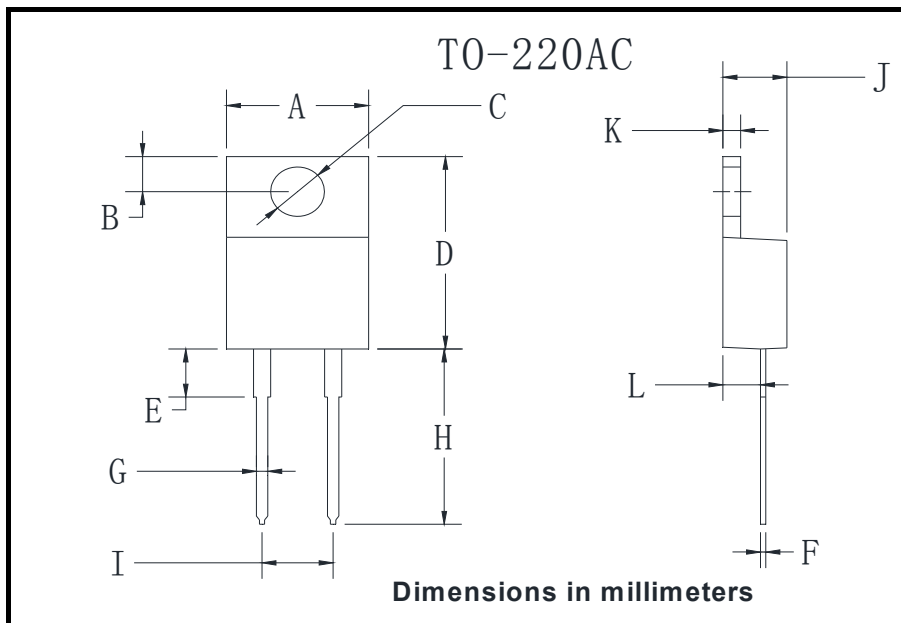
FIG.5: Diagram of circuit and Testing wave form of reverse recovery time



Outline Dimensions



ITO-220AC		
Dim	Min	Max
A	9.8	10.2
B	2.25	2.75
C	2.95	3.45
D	14.75	15.25
E	3.5	4.1
F	0.45	0.75
G	0.45	0.75
H	13.35	14.15
I	4.97	5.23
J	4.3	4.8
K	2.5	2.74
L	2.58	2.82
M	1.03	1.43



TO-220AC		
Dim	Min	Max
A	9.95	10.35
B	2.55	2.95
C	3.75	4.05
D	14.95	15.25
E	3.75	4.25
F	0.26	0.5
G	0.68	0.94
H	13.3	13.9
I	4.86	5.26
J	4.38	4.78
K	1.14	1.4
L	2.37	2.79

Packge	Packing	Box Size LxWxH(mm)	Quaty(pcs/box)	Carton Size LxWxH(mm)	Quaty(pcs/carton)
TO-220AC	50pcs/Tube	558x148x38	1000	565x225x175	5000