



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.

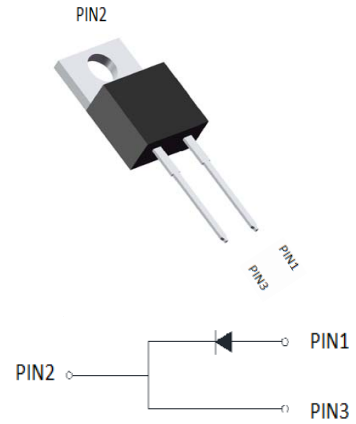
Mechanical Data

- **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

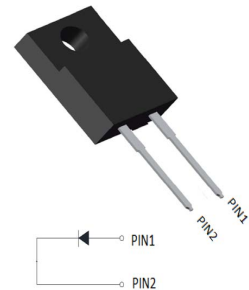
■Maximum Ratings (T_a=25°C Unless otherwise specified)

TYPE	V _{RSM} V	V _{RRM} V
MTSR860	600	600
MTSR860F	600	600

TO-220AC



ITO-220AC



Symbol	Test Conditions	Maximum Ratings	Unit
I _{FRMS} I _{FAVM} I _{FRM}	T _{VJ} =T _{VJM} T _C =115°C; rectangular, d=0.5 t _p <10us; rep. rating, pulse width limited by T _{VJM}	16 8 130	A
I _{FSM}	T _{VJ} =45°C t=10ms (50Hz), sine t=8.3ms (60Hz), sine	100 110	A
	T _{VJ} =150°C t=10ms(50Hz), sine t=8.3ms(60Hz), sine	85 95	
I ² t	T _{VJ} =45°C t=10ms (50Hz), sine t=8.3ms (60Hz), sine	50 50	A ² s
	T _{VJ} =150°C t=10ms(50Hz), sine t=8.3ms(60Hz), sine	36 37	
T _{VJ} T _{VJM} T _{stg}		-40...+150 150 -40...+150	°C
P _{tot}	T _C =25°C	50	W
M _d	Mounting torque	0.4...0.6	Nm
Weight	typical	2	g

■Electrical Characteristics

Symbol	Test Conditions	Characteristic Values		Unit
		typ.	max.	
I_R	$T_{VJ}=25^{\circ}\text{C}; V_R=V_{RRM}$		20	μA
	$T_{VJ}=25^{\circ}\text{C}; V_R=0.8 \cdot V_{RRM}$		10	μA
	$T_{VJ}=125^{\circ}\text{C}; V_R=0.8 \cdot V_{RRM}$		1.5	mA
V_F	$I_F=8\text{A}; T_{VJ}=150^{\circ}\text{C}$ $T_{VJ}=25^{\circ}\text{C}$		1.95 2.3	V
V_{TO}	For power-loss calculations only		0.98	V
r_T	$T_{VJ}=T_{VJM}$		28.7	$\text{m}\Omega$
R_{thJC} R_{thCK} R_{thJA}		0.5	2.5 60	K/W
t_{rr}	$I_F=1\text{A}; -di/dt=50\text{A}/\mu\text{s}; V_R=30\text{V}; T_{VJ}=25^{\circ}\text{C}$	15	20	ns
I_{RM}	$V_R=350\text{V}; I_F=8\text{A}; -di_F/dt=64\text{A}/\mu\text{s}; L \leq 0.05\mu\text{H}; T_{VJ}=100^{\circ}\text{C}$	2.5	2.8	A

■Thermal Characteristics ($T_a=25^{\circ}\text{C}$ Unless otherwise specified)

PARAMETER		SYMBOL	UNIT	MTSR860/MTSR860F
Thermal Resistance	Between junction and case	$R_{\theta J-C}$	$^{\circ}\text{C}/\text{W}$	4.0
	Between junction and Air	$R_{\theta J-A}$	$^{\circ}\text{C}/\text{W}$	50

■Ordering Information (Example)

PREFERRED P/N	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
MTSR860/MTSR860F	Approximate 1.6	50	1000	5000	Tube

■Characteristics (Typical)

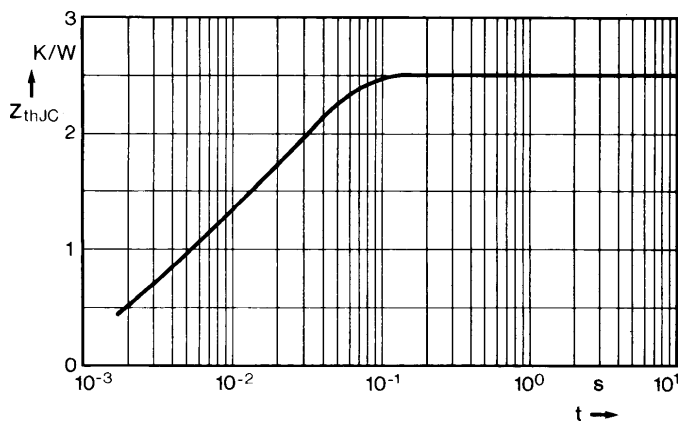


Fig. 7 Transient thermal impedance junction to case.

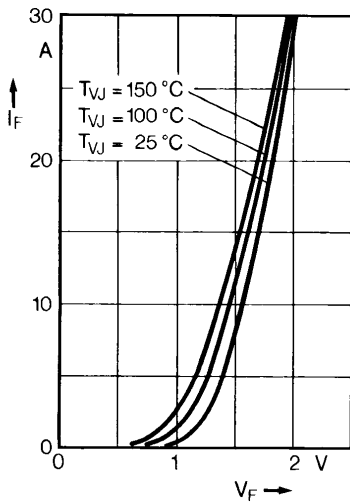


Fig. 1 Forward current versus voltage drop.

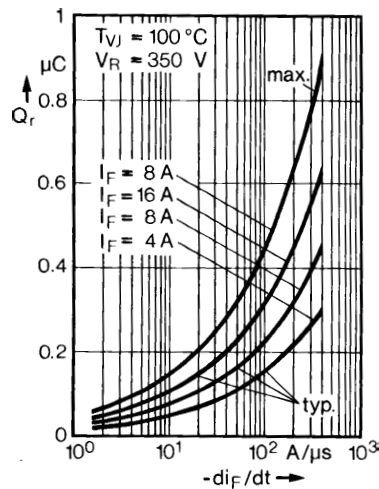


Fig. 2 Recovery charge versus $-di_F/dt$.

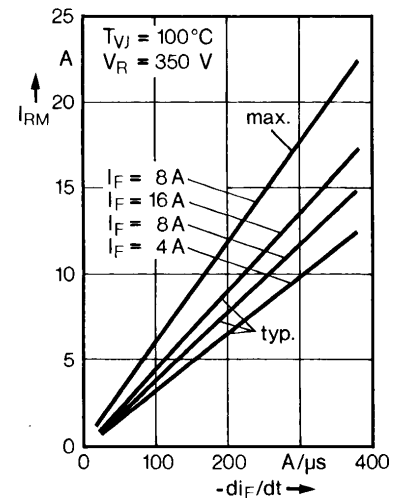


Fig. 3 Peak reverse current versus $-di_F/dt$.

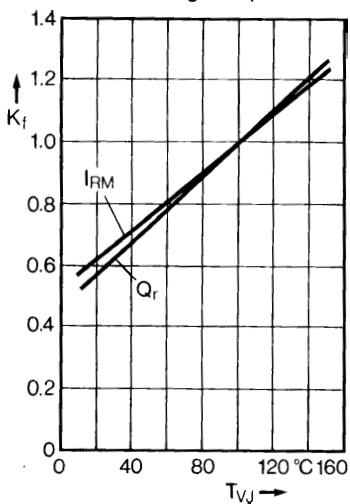


Fig. 4 Dynamic parameters versus junction temperature.

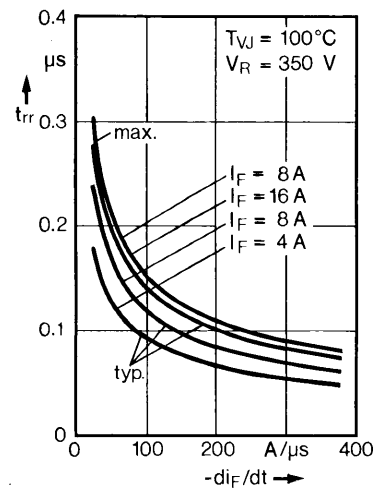


Fig. 5 Recovery time versus $-di_F/dt$.

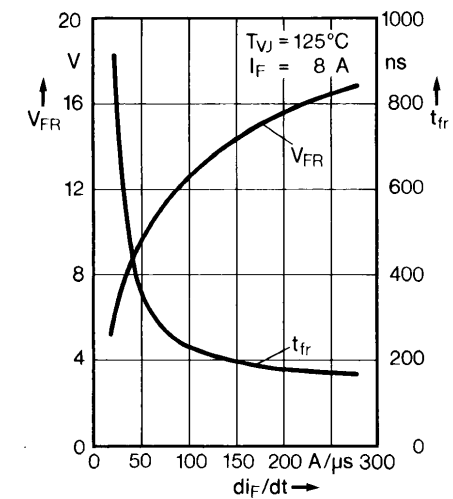
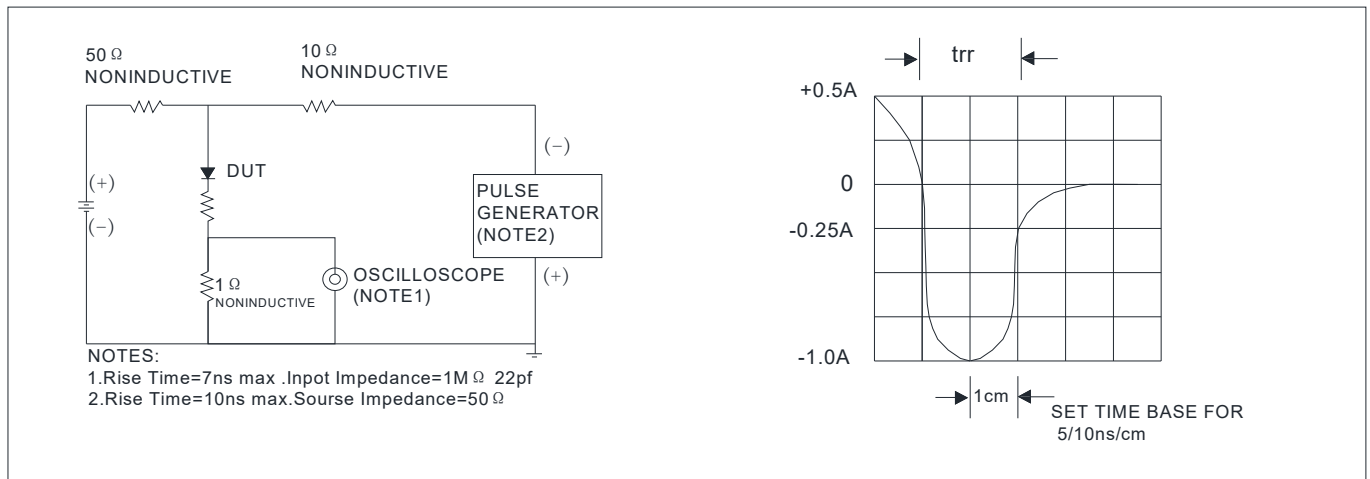
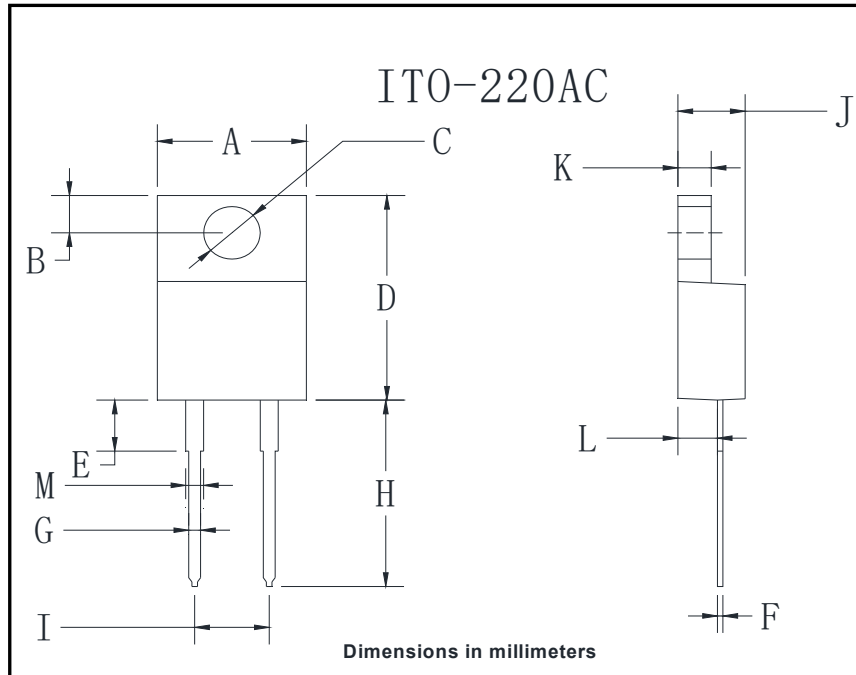


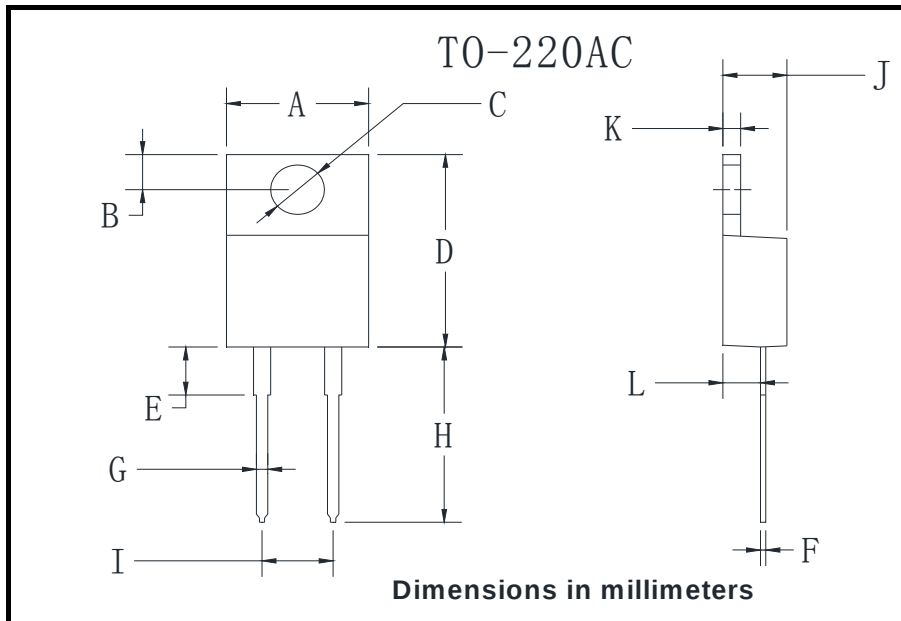
Fig. 6 Peak forward voltage versus di_F/dt .

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





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 L×W×H(mm)	Quatity(pcs/box)	Carton Size L×W×H(mm)	Quatity(pcs/carton)
TO-220AC	50pcs/Tube	558×148×38	1000	565×225×175	5000