



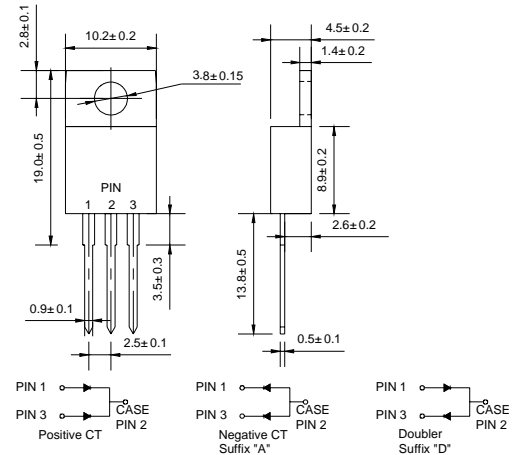
### TO-220AB

## Features

- ◇ Low cost
- ◇ Diffused junction
- ◇ Low leakage
- ◇ Low forward voltage drop
- ◇ High current capability
- ◇ Easily cleaned with Freon, Alcohol, Isopropanol and similar solvents
- ◇ The plastic material carries U/L recognition 94V-0

## Mechanical Data

- ◇ Case: JEDEC TO-220AB, molded plastic
- ◇ Polarity: Color band denotes cathode
- ◇ Weight: 0.08 ounces, 2.24 grams
- ◇ Mounting position: Any



Dimensions in millimeters

## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

Single phase, half wave, 60 Hz, resistive or inductive load. For capacitive load, derate by 20%.

		FR 2010C	FR 2020C	FR 2040C	FR 2060C	UNITS
Maximum recurrent peak reverse voltage	$V_{RRM}$	100	200	400	600	V
Maximum RMS voltage	$V_{RMS}$	70	140	280	420	V
Maximum DC blocking voltage	$V_{DC}$	100	200	400	600	V
Maximum average forward rectified current @ $T_A=75^\circ\text{C}$	$I_{F(AV)}$	20				A
Peak forward surge current 8.3ms single half-sine-wave superimposed on rated load @ $T_J=125^\circ\text{C}$	$I_{FSM}$	200				A
Maximum instantaneous forward voltage @ 10 A	$V_F$	1.3				V
Maximum reverse current @ $T_A=25^\circ\text{C}$ at rated DC blocking voltage @ $T_A=100^\circ\text{C}$	$I_R$	10 150				$\mu\text{A}$
Maximum reverse recovery time (Note1)	$t_{rr}$	150			250	ns
Typical junction capacitance (Note2)	$C_J$	35				pF
Typical thermal resistance (Note3)	$R_{\theta JA}$	3.0				$^\circ\text{C}/\text{W}$
Operating junction temperature range	$T_J$	- 55 --- + 150				$^\circ\text{C}$
Storage temperature range	$T_{STG}$	- 55 --- + 150				$^\circ\text{C}$

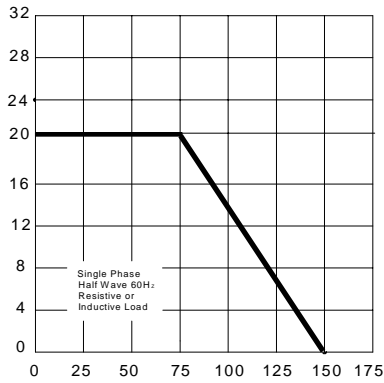
NOTE:1. Measured with  $I_F=0.5\text{A}$ ,  $I_R=1\text{A}$ ,  $I_{rr}=0.25\text{A}$ .

2. Measured at 1.0MHz and applied reverse voltage of 4.0V DC.

3. Thermal resistance from junction to ambient.

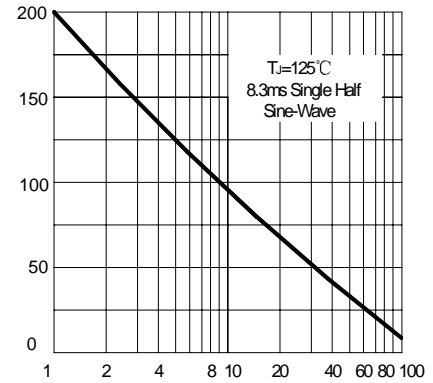
## Ratings AND Characteristic Curves

 AVERAGE FORWARD RECTIFIED CURRENT  
AMPERES

**FIG.1 – FORWARD DERATING CURVE**


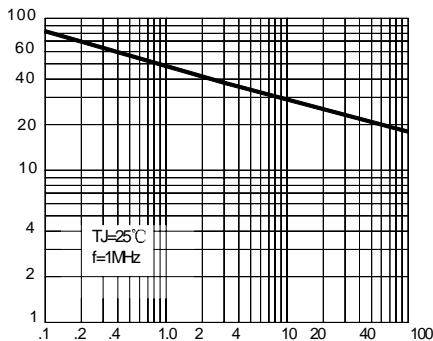
AMBIENT TEMPERATURE, °C

 PEAK FORWARD SURGE CURRENT  
AMPERES

**FIG.2 – PEAK FORWARD SURGE CURRENT**


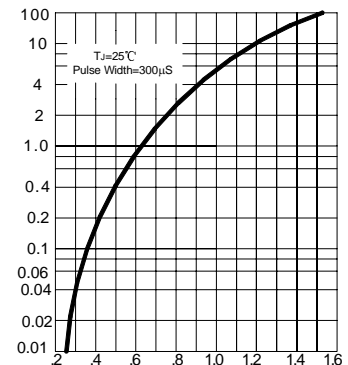
NUMBER OF CYCLES AT 60 Hz

JUNCTION CAPACITANCE, pF

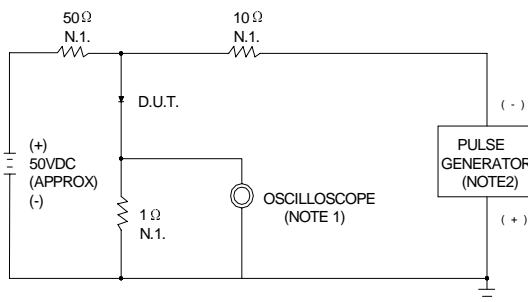
**FIG.3 – TYPICAL JUNCTION CAPACITANCE**


REVERSE VOLTAGE, VOLTS

 INSTANTANEOUS FORWARD CURRENT  
AMPERES

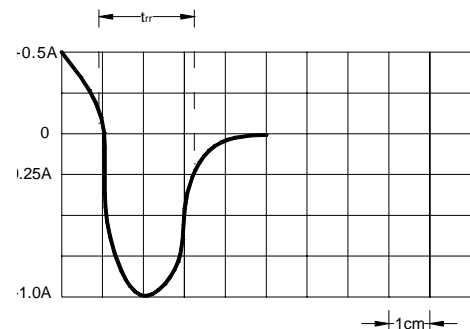
**FIG.4 – TYPICAL FORWARD CHARACTERISTIC**


INSTANTANEOUS FORWARD VOLTAGE, VOLTS

**FIG.5 – REVERSE RECOVERY TIME CHARACTERISTIC AND TEST CIRCUIT DIAGRAM**


NOTES: 1. RISE TIME = 7ns MAX. INPUT IMPEDANCE = 1MΩ, 22pF

2. RISE TIME = 10ns MAX. SOURCE IMPEDANCE = 50Ω



SET TIME BASE FOR 50/100 ns/cm