

# MBR20L150CT, MBR20L150FCT, MBR20L150CD

LOW VF SCHOTTKY RECTIFIERS



**VOLTAGE** 150Volts **CURRENT** 20 Amperes **TO-220AB/ITO-220AB/TO-263** Unit:(mm)

## FEATURES

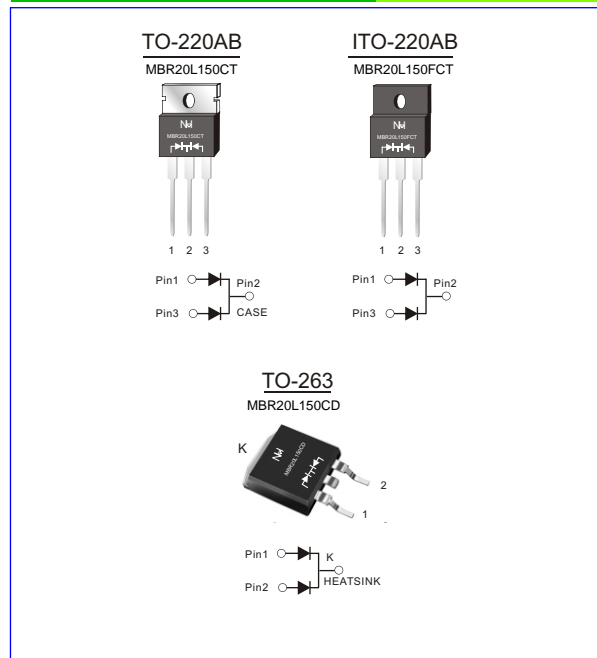
- Power pack
- Metal silicon junction ,majority carrier conduction
- Guard ring for overvoltage protection
- Low power loss ,high efficiency
- High current capability ,low forward voltage drop
- High forward surge capability
- High frequency operation
- Meets MSL Level 1, per J-STD-020, LF MAX peak of 245°C (for TO-263 package)
- Solder bath temperature 275°C maximum, 10s, per JESD22-B106 (for TO-220AB and ITO-220AB package)
- Component in accordance to RoHS 2011/65/EU

## MECHANICAL DATA

- Case: JEDEC TO-220AB、 ITO-220AB、 TO-263
- Molding compound meets UL94V-0 flammability rating
- Terminals: Lead solderable per J-STD-002 and JESD22-B102
- Polarity: As marked
- Mounting Torque: 10 in-lbs maximum

## TYPICAL APPLICATIONS

For use in low voltage ,high frequency inverters ,DC/DC converters, free wheeling ,and polarity protection applications



## Maximum Ratings (Ratings at 25°C ambient temperature unless otherwise specified )

Parameter	Symbol	MBR20L150CT/FCT/CD	Unit
Maximum repetitive peak reverse voltage	$V_{RRM}$	150	V
Maximum average forward rectified current (see fig.1)	Per leg	10.0	A
	Total device	20.0	
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC method at rated TL)	$I_{FSM}$	200	A
Peak repetitive reverse current per diode at $t_p=2 \mu s$ 1 KHz	$I_{RRM}$	0.5	A
Operating junction and Storage temperature range	$T_J, T_{stg}$	-55 to +150	°C
Isolation voltage (ITO-220AB only) from terminals to heatsink $t=1$ min	$V_{AC}$	1500	V

## Electrical Characteristics (Ratings at 25°C ambient temperature unless otherwise specified )

Parameter	Test Conditions	Symbol	TYP.	MAX.	Unit	
Instaneous forward voltage	Per leg $I_F=10.0A$	$V_F$ 1)	$T_A=25^\circ C$	0.85	0.88	V
			$T_A=100^\circ C$	0.75	-	
			$T_A=125^\circ C$	0.72	-	
	Per leg $I_F=5.0A$		$T_A=25^\circ C$	0.77	-	
			$T_A=100^\circ C$	0.67	-	
			$T_A=125^\circ C$	0.63	-	
Reverse current	$V_R=150V$	$I_R$ 2)	$T_A=25^\circ C$	5	20	$\mu A$
			$T_A=100^\circ C$	0.3	1	mA
			$T_A=125^\circ C$	1	2	
Typical junction capacitance	4V, 1MHz	$C_J$	570		pF	

Notes: 1.Pulse test: 300  $\mu s$  pulse width,1% duty cycle  
2.Pulse test: pulse width $\leq 40ms$

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## RATING AND CHARACTERISTIC CURVES

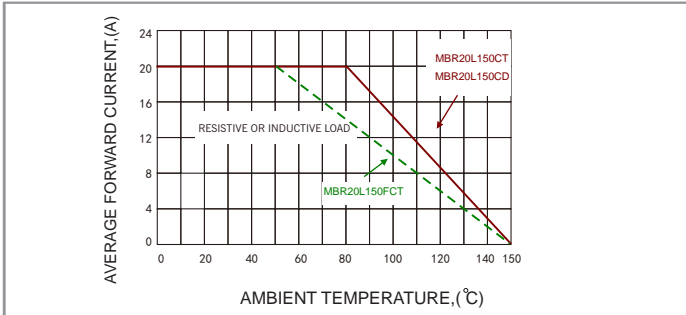


Fig.1 FORWARD CURRENT DERATING CURVE

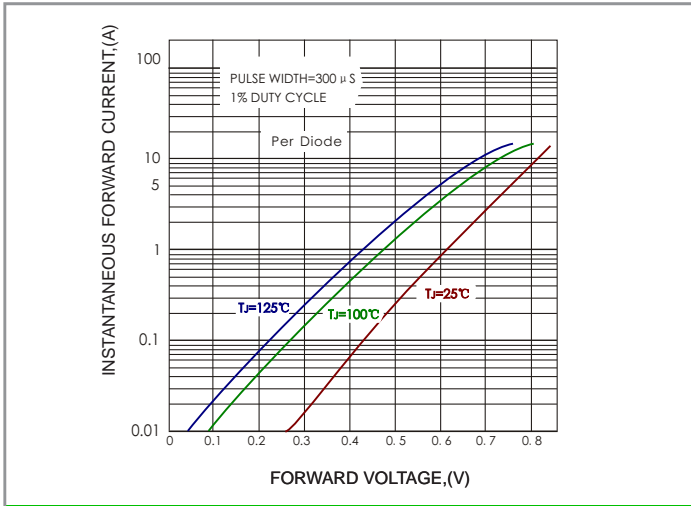


Fig.2-TYPICAL INSTANTANEOUS FORWARD

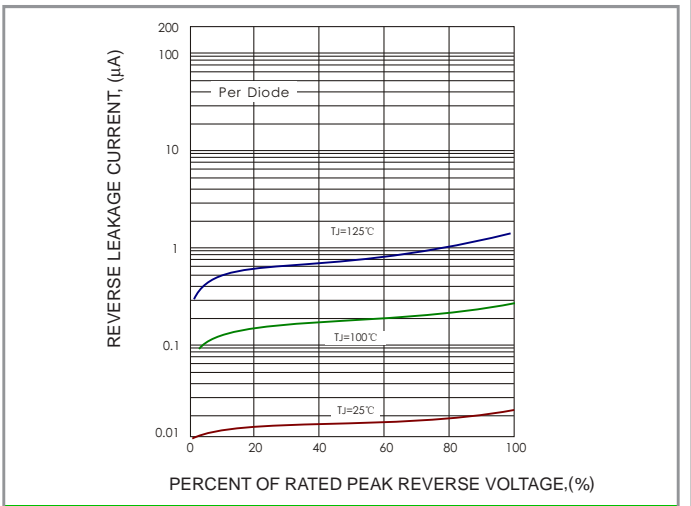


Fig.3 TYPICAL REVERSE CHARACTERISTICS

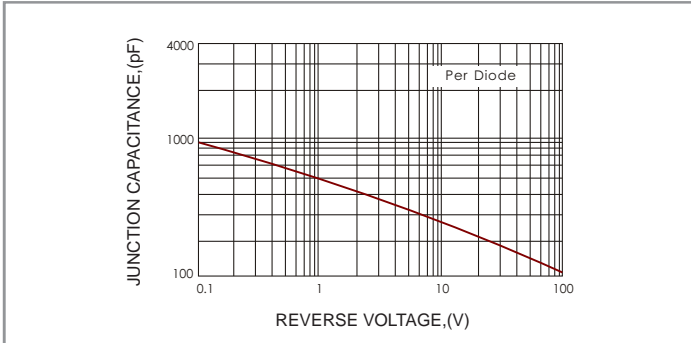


Fig.4 TYPICAL JUNCTION CAPACITANCE

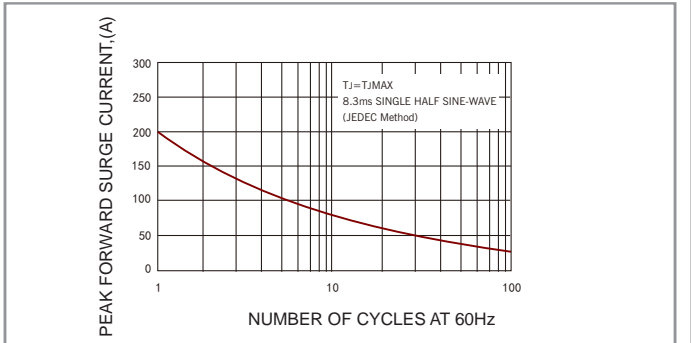


Fig.5- MAXIMUM NON - REPETITIVE SURGE CURRENT

### Thermal Characteristics (Ratings at 25°C ambient temperature unless otherwise specified )

Parameter	Symbol	MBR20L150CT	MBR20L150FCT	MBR20L150CD	Unit
Typical thermal resistance <sup>3)</sup>	$R_{\theta JC}$	2.2	4.0	2.2	°C/W

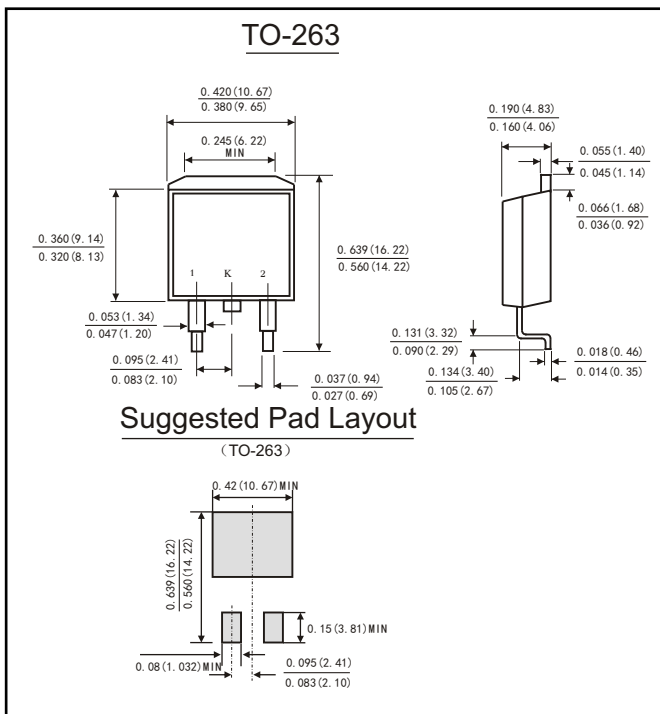
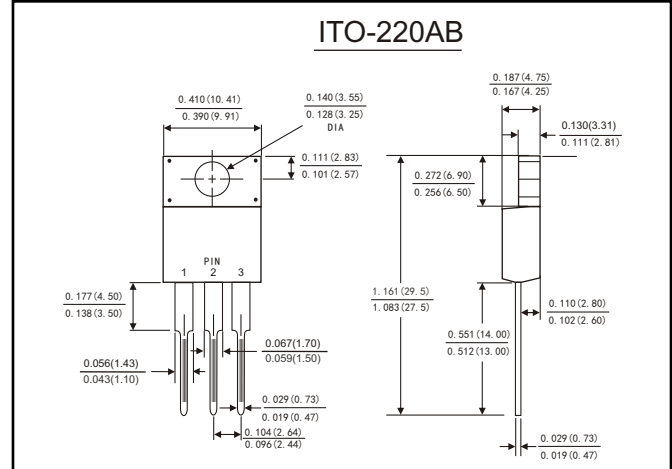
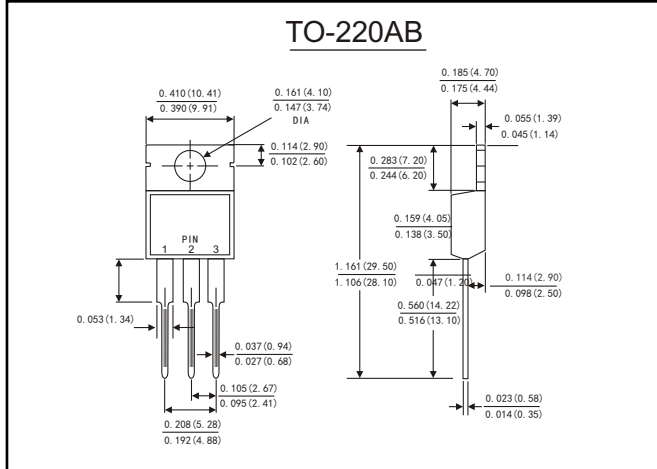
3. Thermal resistance from junction to case

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## OUTLINE DRAWINGS



## ORDER INFORMATION

- Packing information

Product code	Pack	Box Size L×W×H (mm)	Quantity (pcs/box)	Carton Size L×W×H (mm)	Quantity (box/carton)
MBR20L150CT	P/T	550×150×40	1000	580×230×175	5
MBR20L150FCT	P/T	550×150×40	1000	580×230×175	5
MBR20L150CD	P/T	550×150×40	1000	580×230×175	5

# MBR20L150CT, MBR20L150FCT, MBR20L150CD

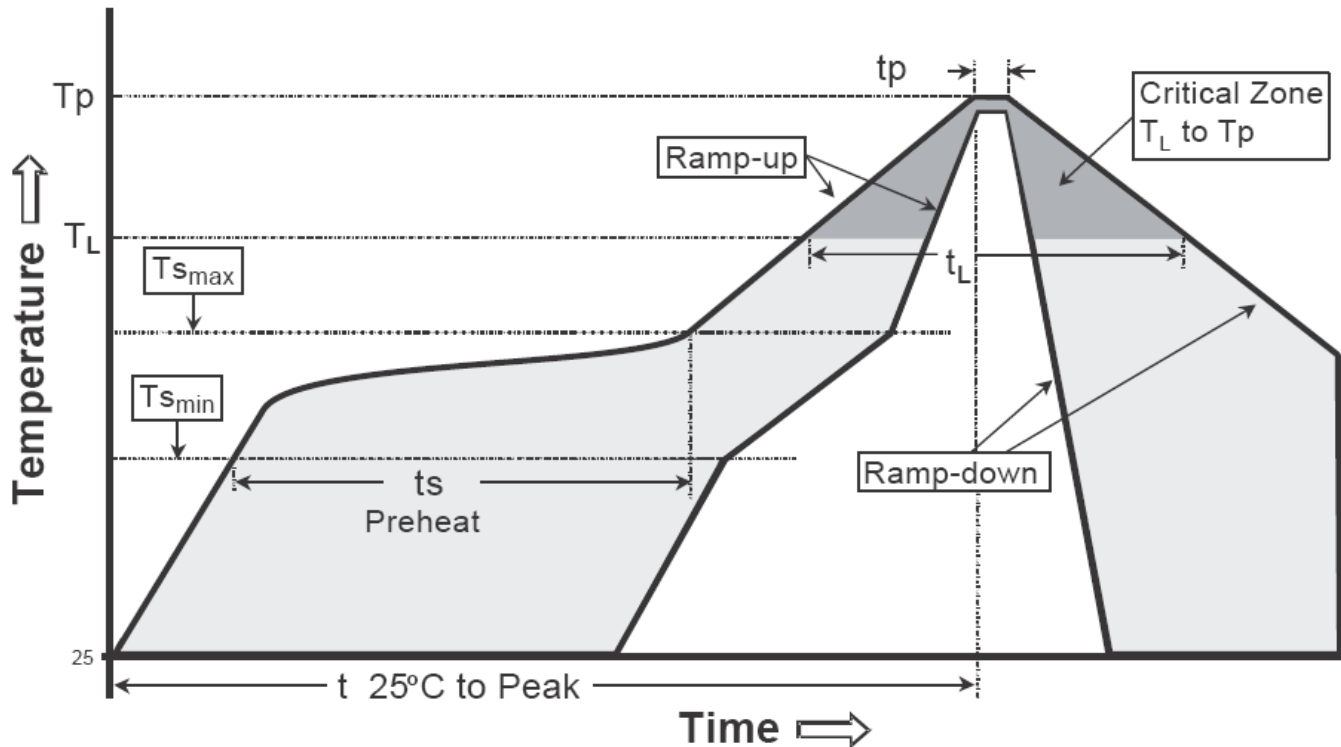
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## Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

## Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat		
-Temperature Min(Ts min)	100°C	150°C
-Temperature Max(Ts max)	150°C	200°C
-Time(ts min to ts max)	60-120 seconds	60-180 seconds
Time maintained above:		
-Temperature (Tl)	183°C	217°C
- Time (tL)	60-150 seconds	60-150 seconds
Peak Temperature(TP)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

## **MBR20L150CT, MBR20L150FCT, MBR20L150CD**

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