

MBR20L150CT, MBR20L150FCT, MBR20L150CD

LOW VF SCHOTTKY RECTIFIERS



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

FEATURES

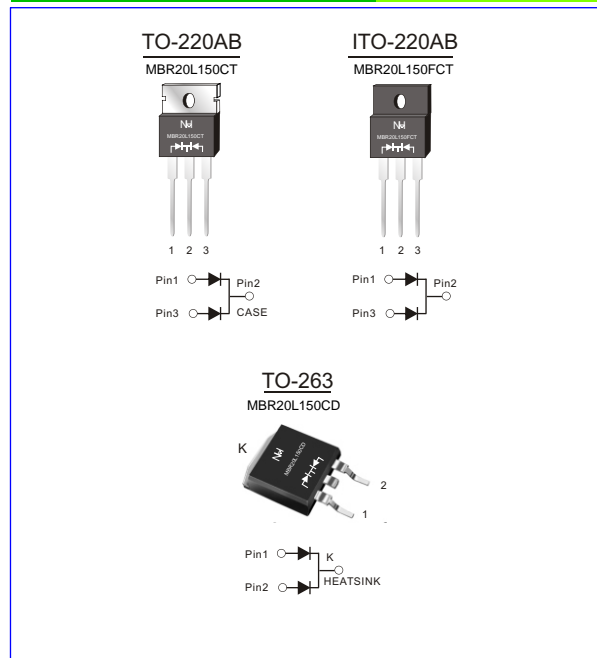
- Power pack
- Metal silicon junction ,majority carrier conduction
- Guard ring for overvoltage protection
- Low power loss ,high efficiency
- High current capability ,low forward voltage drop
- High forward surge capability
- High frequency operation
- Meets MSL Level 1, per J-STD-020, LF MAX peak of 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 $I_F=10.0A$	$T_A=25^\circ C$	V_F 1)	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	$V_R=150V$	$T_A=25^\circ C$	I_R 2)	5	20	μA
		$T_A=100^\circ C$		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 μs pulse width,1% duty cycle

2.Pulse test: pulse width $\leq 40ms$

MBR20L150CT, MBR20L150FCT, MBR20L150CD



LOW VF SCHOTTKY RECTIFIERS

RATING AND CHARACTERISTIC CURVES

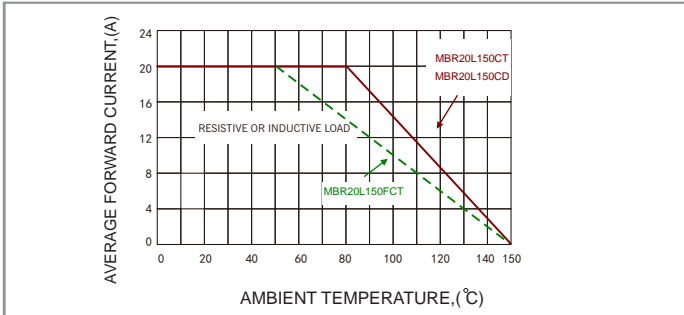


Fig.1 FORWARD CURRENT DERATING CURVE

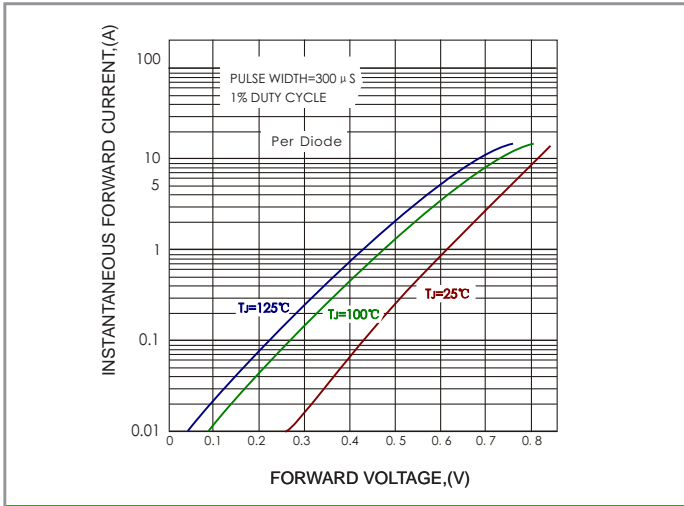


Fig.2-TYPICAL INSTANTANEOUS FORWARD

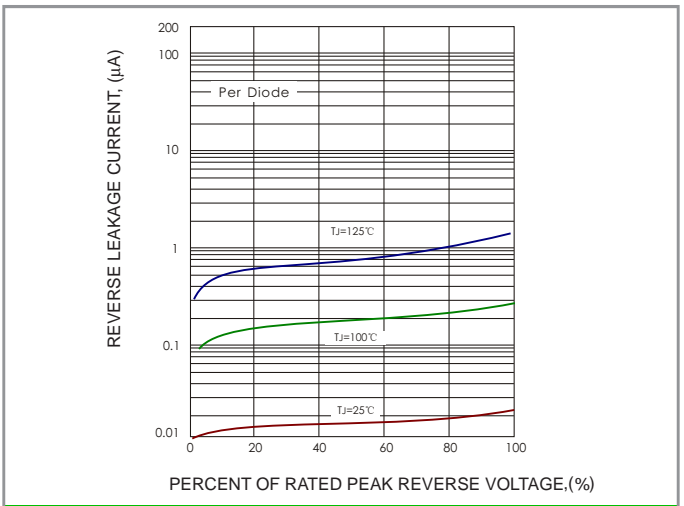


Fig.3 TYPICAL REVERSE CHARACTERISTICS

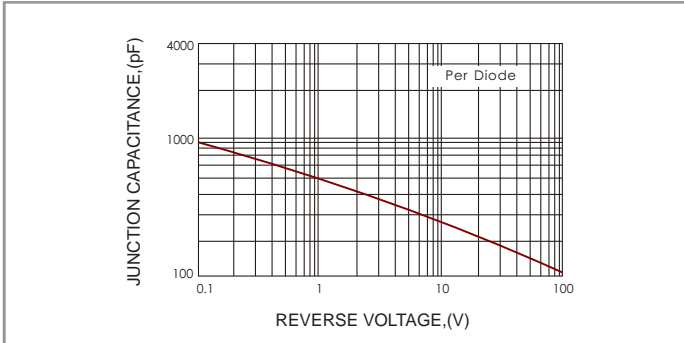


Fig.4 TYPICAL JUNCTION CAPACITANCE

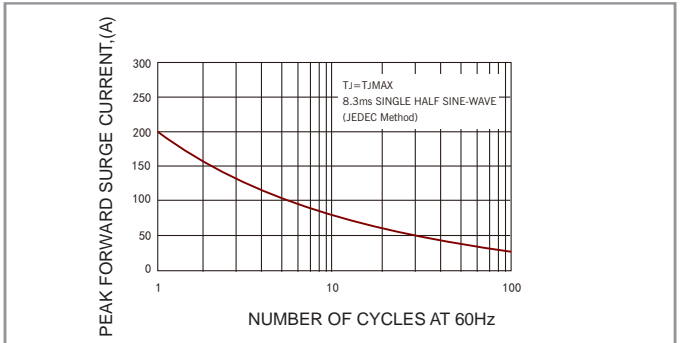


Fig.5- MAXIMUM NON - REPETITIVE SURGE CURRENT

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

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

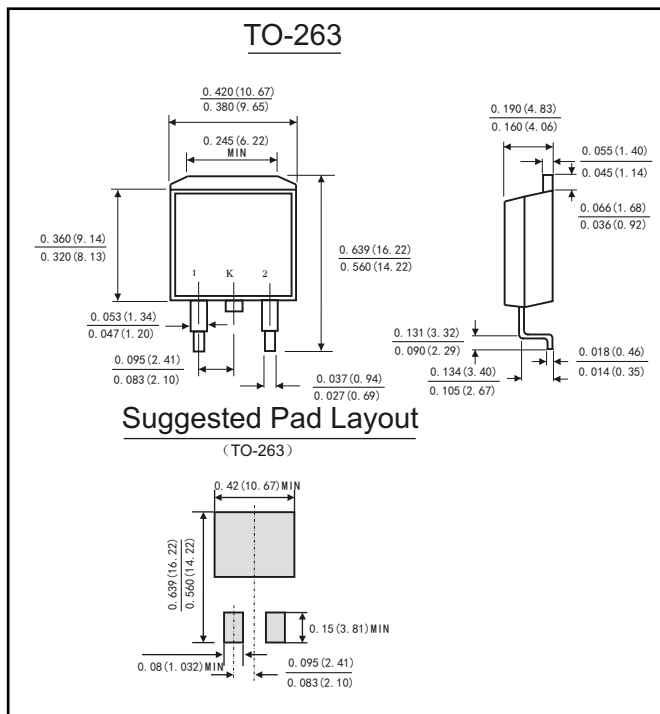
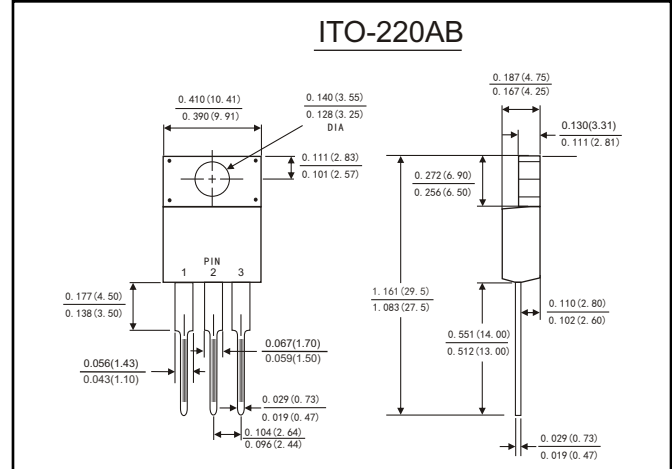
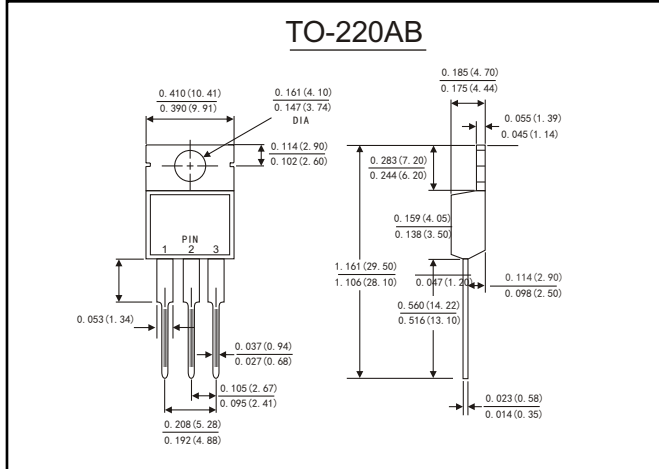
3. Thermal resistance from junction to case

MBR20L150CT, MBR20L150FCT, MBR20L150CD



LOW VF SCHOTTKY RECTIFIERS

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

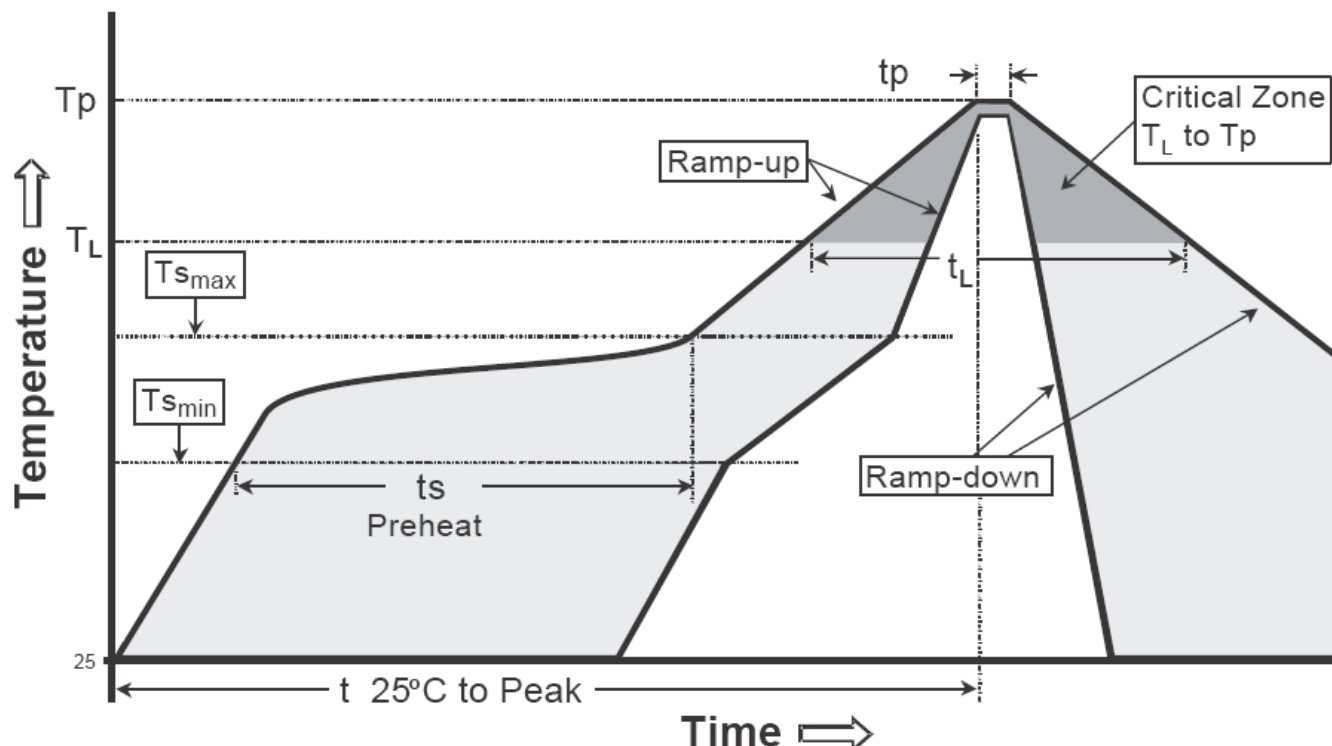


LOW VF SCHOTTKY RECTIFIERS

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 (T _L)	183°C	217°C
- Time (t _L)	60-150 seconds	60-150 seconds
Peak Temperature(T _P)	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

LOW VF SCHOTTKY RECTIFIERS



Disclaimer

- Reproducing and modifying information of the document is prohibited without permission from niuhang Electronics co., LTD
- Niuhan Electronics co., LTD. reserves the rights to make changes of the content herein the document anytime without notification.
- Niuhan Electronics co., LTD. disclaims any and all liability arising out of the application or use of any product including damages incidentally and consequentially occurred.
- Niuhan Electronics co., LTD. does not assume any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.
- Applications shown on the herein document are examples of standard use and operation. Customers are responsible in comprehending the suitable use in particular applications. Niuhan Electronics co., LTD. makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.
- The products shown herein are not designed and authorized for equipments requiring high level of reliability or relating to human life and for any applications concerning life-saving or life-sustaining, such as medical instruments, transportation equipment, aerospace machinery et cetera. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Niuhan Electronics co., LTD. for any damages resulting from such improper use or sale.
- When the appearance of the product and chip size does not change, in order to product quality, change the internal structure and the production process Niuhan can not notify the customer.