

MBR20L100CT, MBR20L100FCT, MBR20L100CD

LOW VF SCHOTTKY RECTIFIERS



VOLTAGE

100Volts

CURRENT

20 Amperes

TO-220AB/ITO-220AB/TO-263

Unit:(mm)

FEATURES

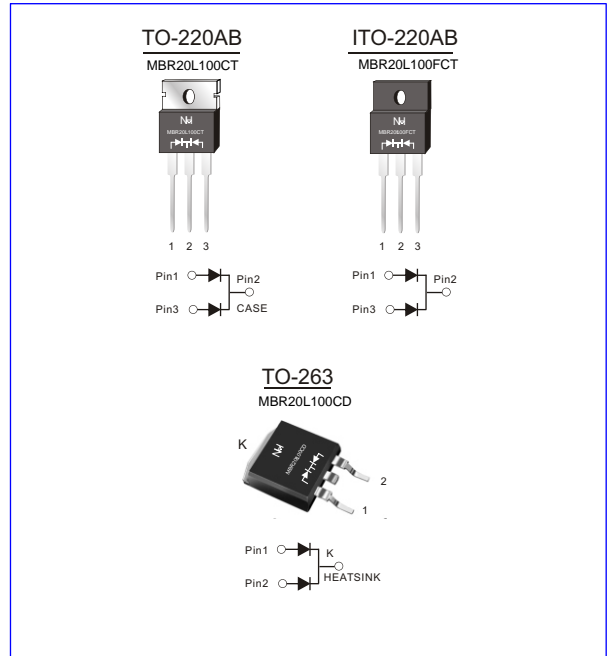
- Power pack
- Metal silicon junction ,majority carrier conduction
- Guard ring for overvoltage protection
- Low power loss ,high efficiency
- High current capability ,low forward voltage drop
- High forward surge capability
- High frequency operation
- Meets MSL Level 1, per J-STD-020, LF MAX peak of 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	MBR20L100CT/FCT/CD	Unit
Maximum repetitive peak reverse voltage	V_{RRM}	100	V
Maximum average forward rectified current (see fig.1)	$I_{F(AV)}$	20.0	A
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC method at rated T_L)	I_{FSM}	200	A
Peak repetitive reverse current per diode at $t_p=2\mu s$ 1KHz	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	$I_F=20.0A$	V_F 1)	$T_A=25^\circ C$	0.72	0.75	V
			$T_A=100^\circ C$	0.69	-	
			$T_A=125^\circ C$	0.67	-	
	$I_F=10.0A$		$T_A=25^\circ C$	0.56	0.59	
			$T_A=100^\circ C$	0.55	-	
			$T_A=125^\circ C$	0.53	-	
Reverse current	$V_R=100V$	I_R 2)	$T_A=25^\circ C$	20	50	μA
			$T_A=100^\circ C$	2	5	mA
			$T_A=125^\circ C$	10	20	
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 $\leq 40ms$

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RATING AND CHARACTERISTIC CURVES

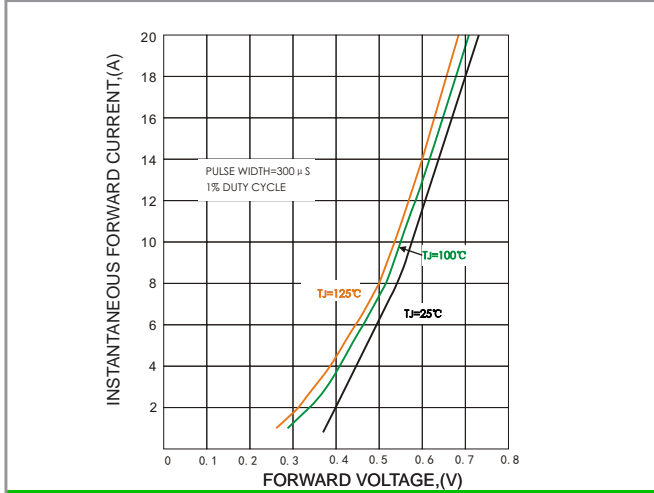


Fig. 1- TYPICAL INSTANTANEOUS FORWARD

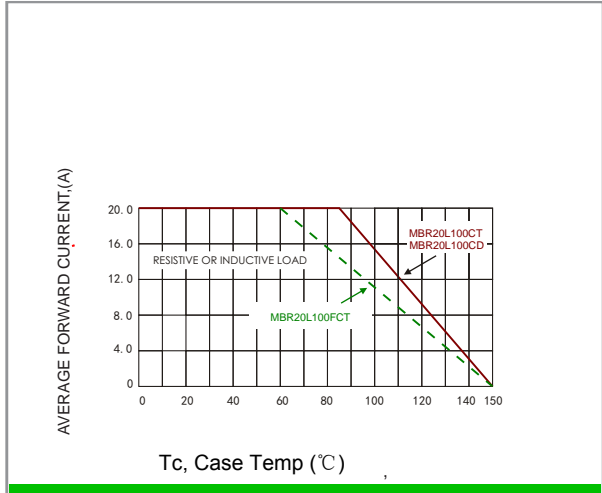


Fig. 2- FORWARD CURRENT DERATING CURVE

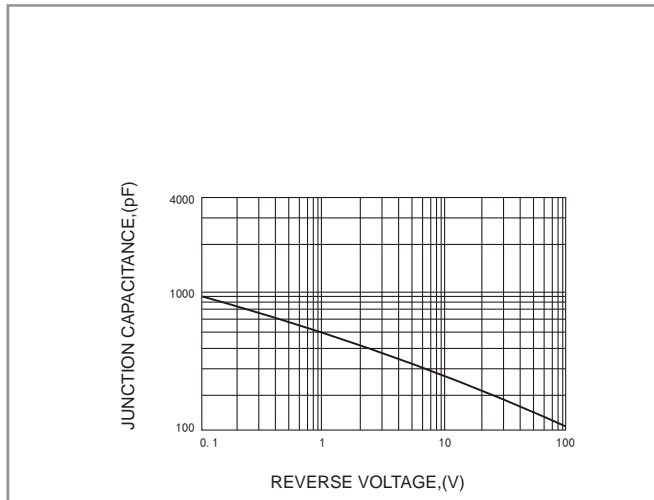


Fig. 3- TYPICAL JUNCTION CAPACITANCE

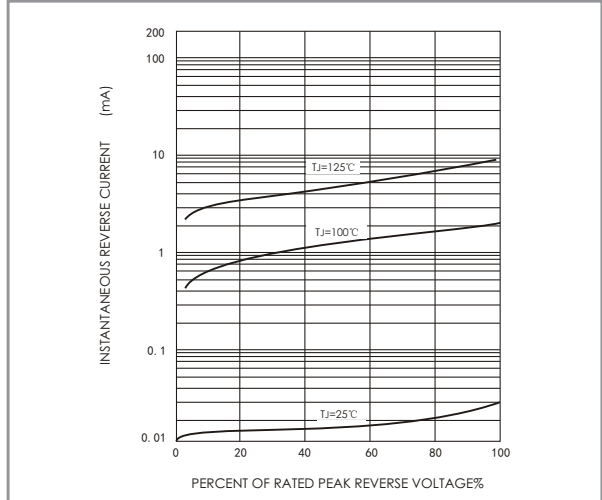


Fig. 4- TYPICAL REVERSE CHARACTERISTICS

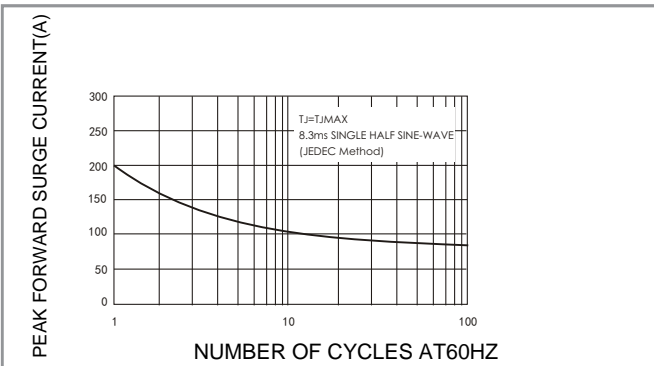


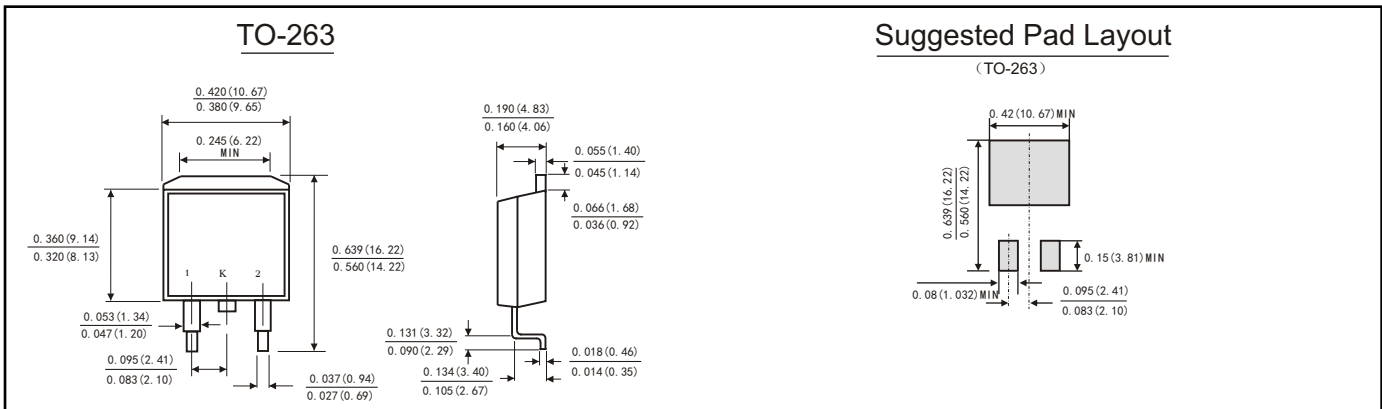
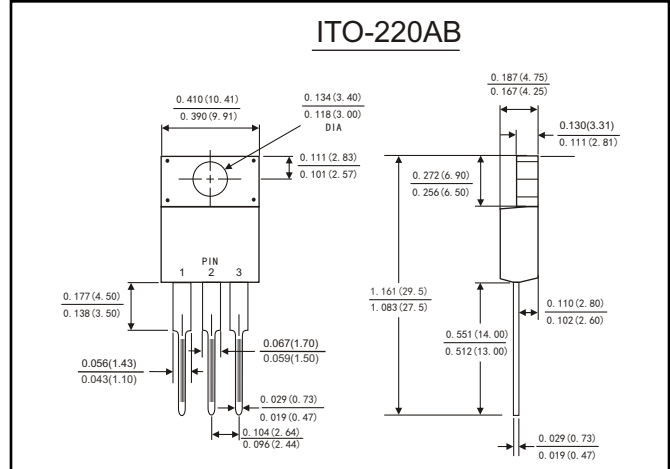
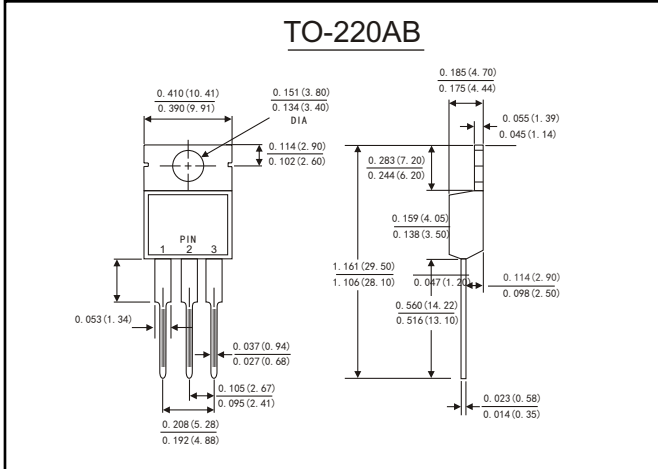
Fig. 5- MAX. NON-REPETITIVE SURGE CURRENT

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OUTLINE DRAWINGS



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

Parameter	Symbol	MBR20L100CT	MBR20L100FCT	MBR20L100CD	Unit
Typical thermal resistance ³⁾	R _{θjc}	2.5	4.5	2.5	°C/W

3. Thermal resistance from junction to case

• Packing Information

Product code	Pack	Box Size L×W×H (mm)	Quantity (pcs/box)	Carton Size L×W×H (mm)	Quantity (box/carton)
MBR20L100CT	P/T	550×150×40	1000	580×230×175	5
MBR20L100FCT	P/T	550×150×40	1000	580×230×175	5
MBR20L100CD	P/T	550×150×40	1000	580×230×175	5

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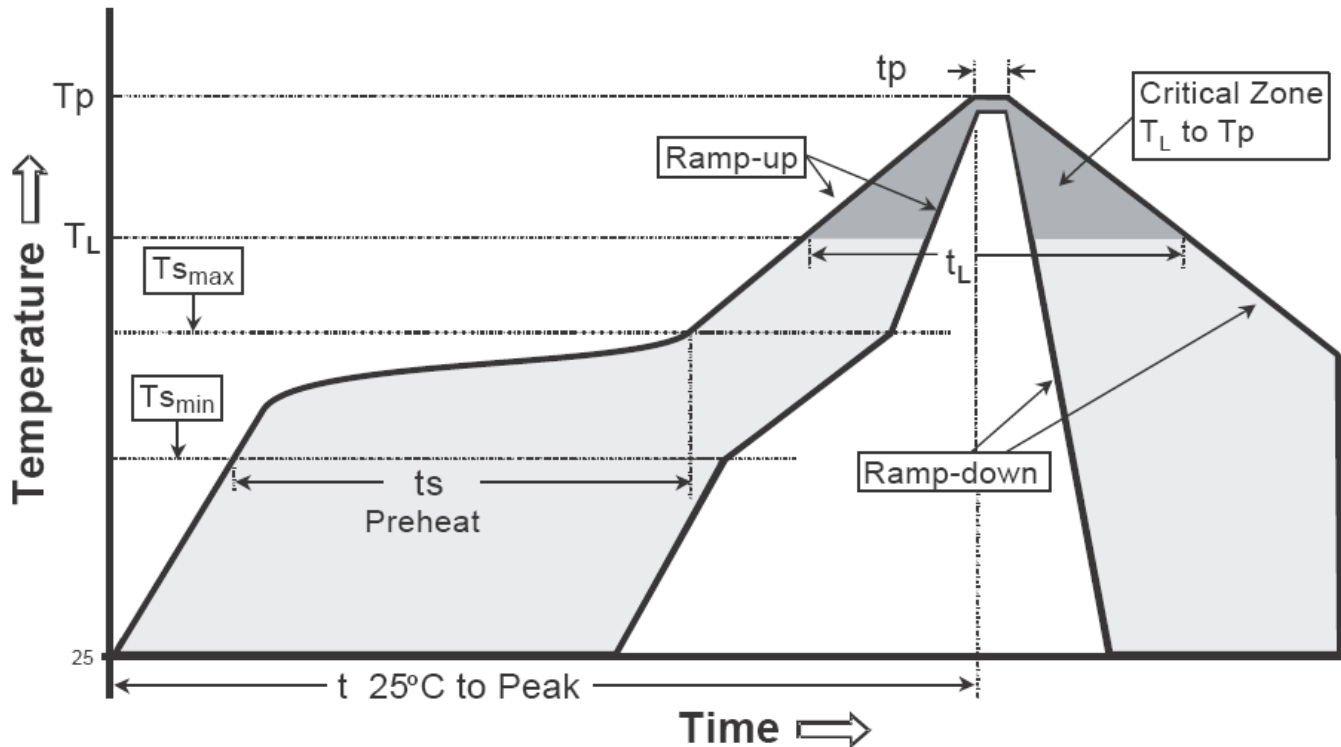
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Recommended wave soldering condition

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 (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.

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