

MBR20L300CTW

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MBR20L300CTW

20A Power Low VF Schottky Barrier Rectifiers : 300V

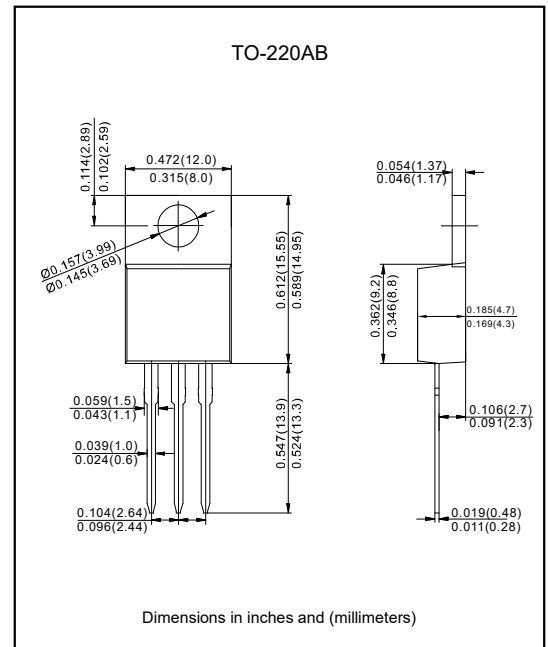
Features

- Ultra low V_F .
- High efficiently operation.
- Low power loss.
- Low stored charge majority carrier conduction.
- High forward surge capability.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free parts, ex. MBR20L300CTW-H.

Mechanical data

- Case : Molded plastic, TO-220AB.
- Leads : Solder able per MIL-STD-202, Method 208 .
- Terminals : Puretin plated.
- Polarity : Polarity symbol marking on body.
- Weight : Approximated 1.85 grams.

Package outline



Maximum ratings (At $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Ratings	Unit
Maximum repetitive peak reverse voltage	V_{RRM}	300	V
Maximum RMS voltage	V_{RMS}	210	V
Maximum DC blocking voltage	V_{DC}	300	V
Maximum average forward rectified per device	$I_{(AV)}$	20	A
Maximum average forward rectified per diode		10	
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load	I_{FSM}	200	A
Typical thermal resistance per diode (Note 1)	$R_{\theta JC}$	2.0	$^\circ\text{C/W}$
Operating junction temperature	T_J	+150	$^\circ\text{C}$
Storage temperature range	T_{STG}	-55 to +150	$^\circ\text{C}$

Electrical characteristics (At $T_A=25^\circ\text{C}$ unless otherwise noted)

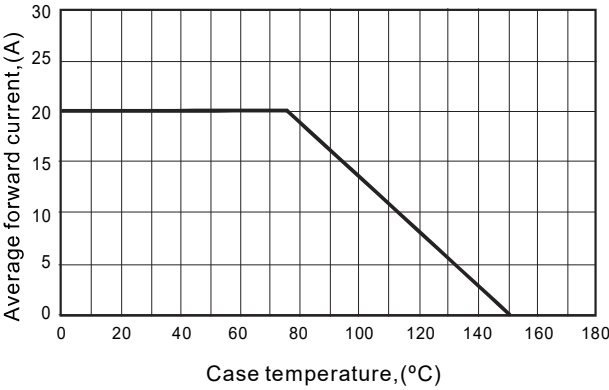
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Breakdown voltage per diode	V_{BR}	$I_R=0.5\text{mA}$	300			V
Instantaneous forward voltage per diode	V_F	$I_F=10\text{A}$ ($T_J=25^\circ\text{C}$)			0.98	V
		$I_F=10\text{A}$ ($T_J=125^\circ\text{C}$)		0.78	0.83	
Reverse current per diode	I_R	$V_R=300\text{V}$ ($T_J=25^\circ\text{C}$)			50	μA
		$V_R=300\text{V}$ ($T_J=125^\circ\text{C}$)			15	mA

Note : 1. Thermal resistance from junction to case.

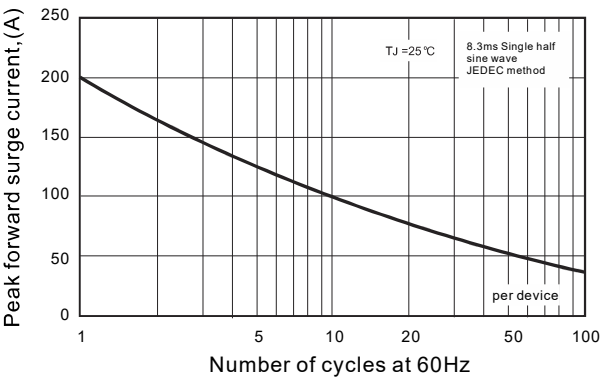
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Rating and characteristic curves

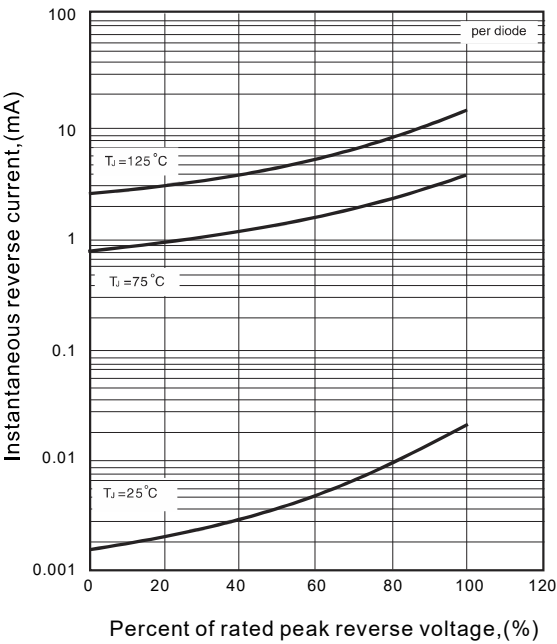
Typical forward current derating curve



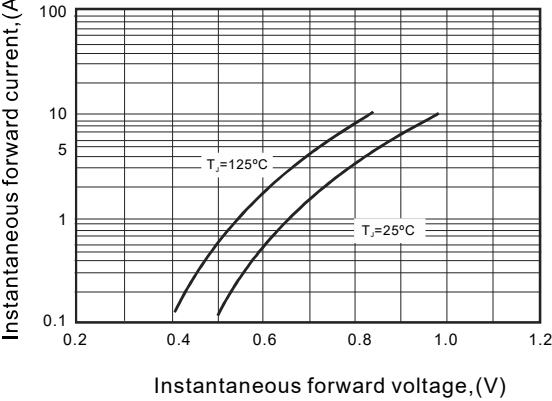
Maximum non-repetitive forward surge current



Typical reverse characteristics

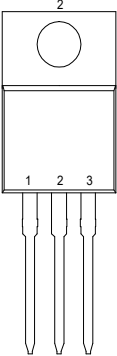
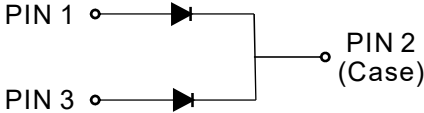


Typical instantaneous forward characteristics



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Pinning information

Pin	Simplified outline	Symbol
Pin1 Anode Pin2 Cathode Pin3 Anode		

Marking

Type number	Marking code
MBR20L300CTW	MBR20L300CT

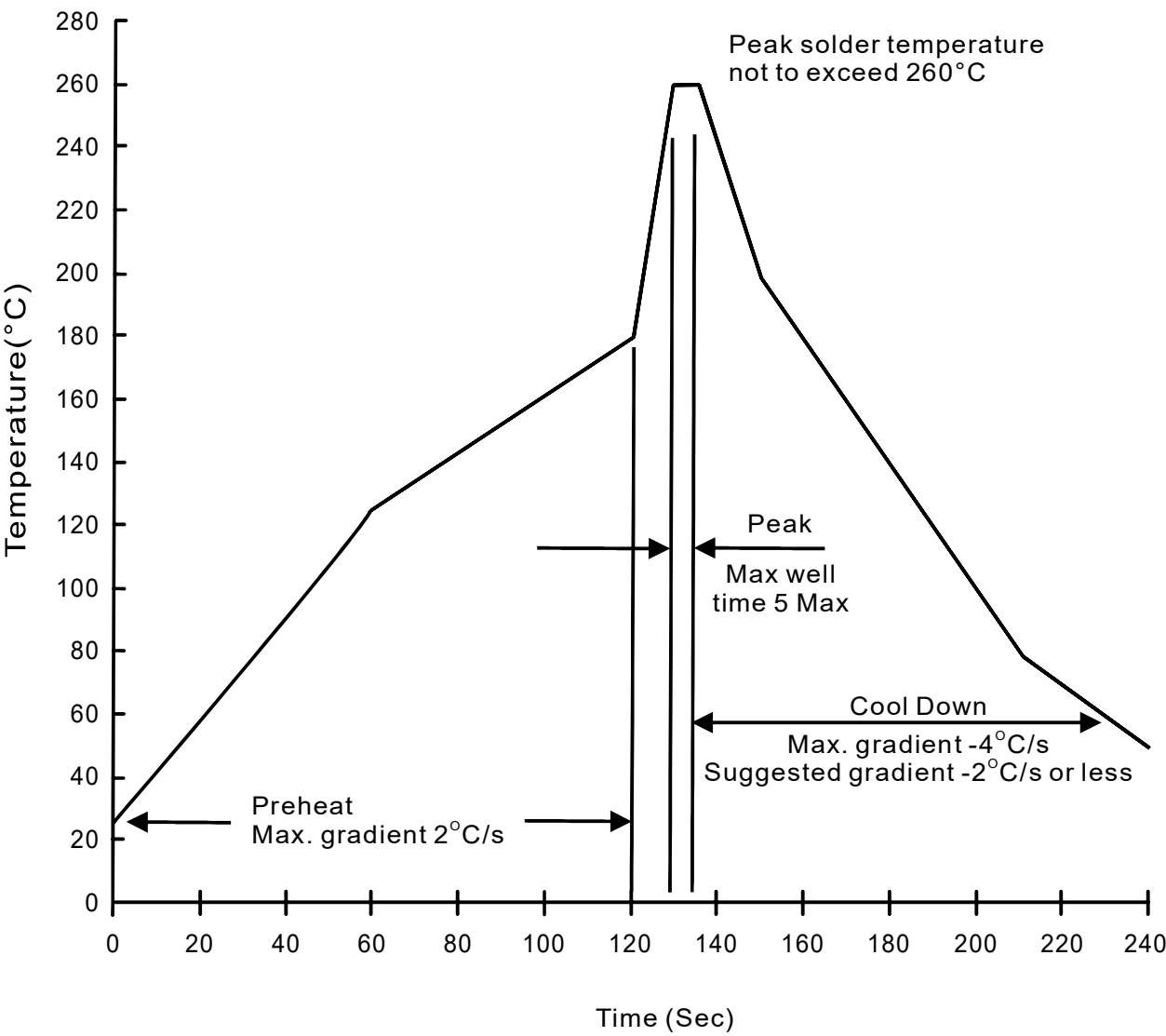
Tube packing

PACKAGE	TUBE (pcs)	TUBE SIZE (m/m)	BOX (pcs)	INNER BOX (m/m)	CARTON SIZE (m/m)	CARTON (pcs)
TO-220AB	50	525*31.9*6.4	1000	545*150*45	575*245*170	5,000

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Suggested thermal profiles for soldering processes

1. Lead free temperature profile wave-soldering



MBR20L300CTW**High reliability test capabilities**

Item Test	Conditions	Reference
1. Solder Resistance	at $260\pm5^{\circ}\text{C}$ for $10\pm2\text{sec.}$ immerse body into solder $1/16''\pm1/32''$	MIL-STD-750D METHOD-2031
2. Solderability	at $245\pm5^{\circ}\text{C}$ for 5 sec.	MIL-STD-202F METHOD-208
3. High Temperature Reverse Bias	$V_R=80\%$ rate at $T_J=150^{\circ}\text{C}$ for 168 hrs.	MIL-STD-750D METHOD-1038
4. Forward Operation Life	Rated average rectifier current at $T_A=25^{\circ}\text{C}$ for 500hrs.	MIL-STD-750D METHOD-1027
5. Intermittent Operation Life	$T_A = 25^{\circ}\text{C}$, $I_F = I_O$ On state: power on for 5 min. off state: power off for 5 min. on and off for 500 cycles.	MIL-STD-750D METHOD-1036
6. Pressure Cooker	$15P_{SIG}$ at $T_A=121^{\circ}\text{C}$ for 4 hrs.	JESD22-A102
7. Temperature Cycling	-55°C to $+125^{\circ}\text{C}$ dwelled for 30 min. and transferred for 5min. total 10 cycles.	MIL-STD-750D METHOD-1051
8. Forward Surge	8.3ms single half sine-wave , one surge.	MIL-STD-750D METHOD-4066-2
9. Humidity	at $T_A=85^{\circ}\text{C}$, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
10. High Temperature Storage Life	at 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031