

MBR20U300FCTW

List

List.....1

Package outline.....2

Features.....2

Mechanical data.....2

Maximum ratings.....2

Electrical characteristics2

Rating and characteristic curves.....3

Pinning information.....4

Marking.....4

Tube packing.....4

Suggested thermal profiles for soldering processes.....5

High reliability test capabilities.....6

MBR20U300FCTW

20A 300V Power Ultra Low VF Schottky Barrier Rectifier

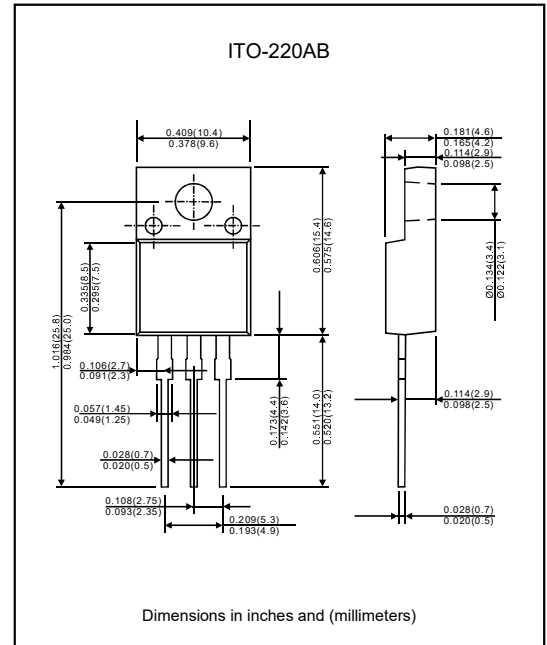
Features

- 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. MBR20U300FCTW-H.

Mechanical data

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

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}	350	A
Typical thermal resistance per diode (Note 1)	$R_{\theta JC}$	4.5	$^\circ\text{C/W}$
Operating junction temperature	T_J	+175	$^\circ\text{C}$
Storage temperature range	T_{STG}	-55 to +175	$^\circ\text{C}$

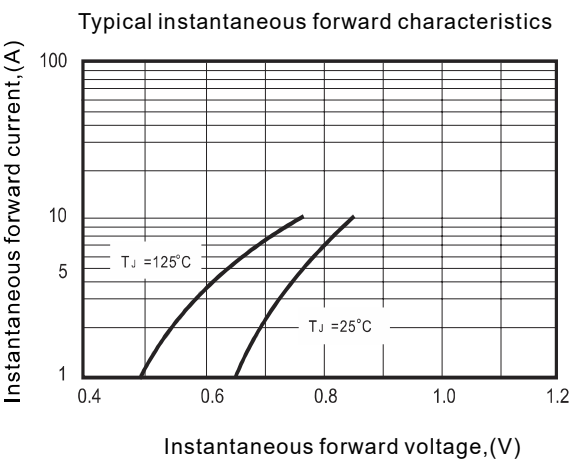
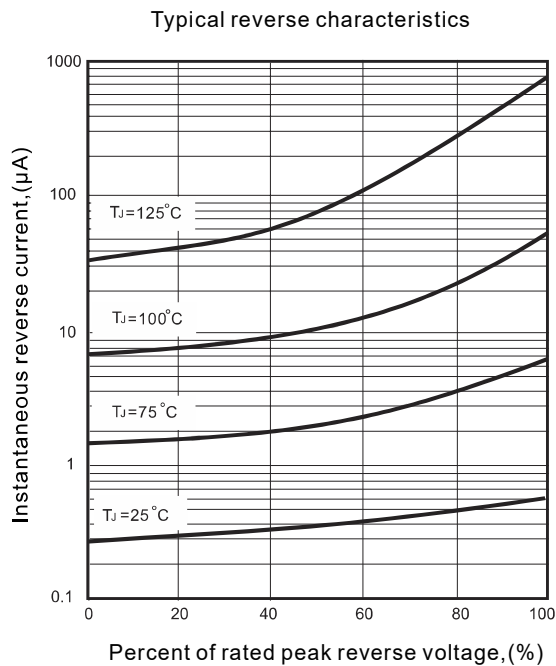
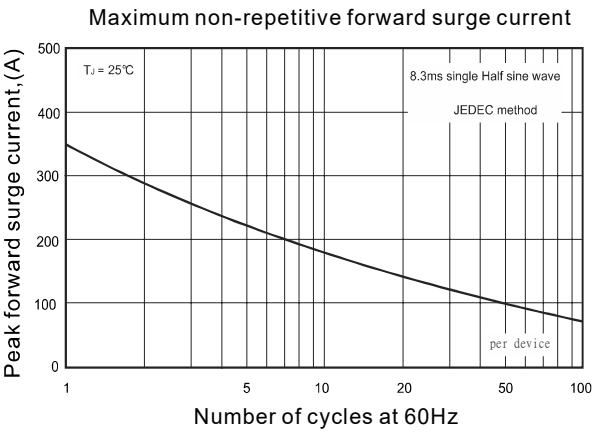
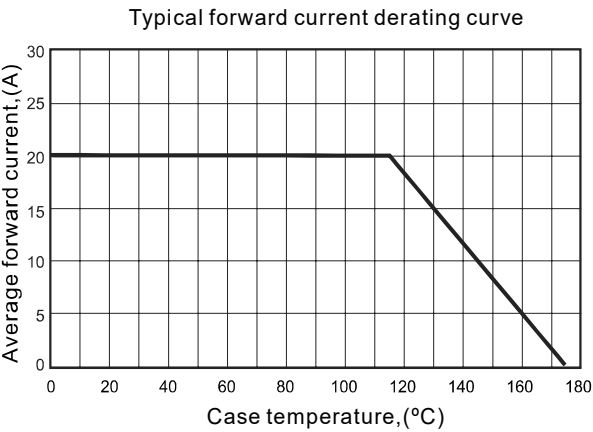
Electrical characteristics (At $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Breakdown voltage per diode	V_{BR}	$I_R=0.3\text{mA}$	300			V
Instantaneous forward voltage per diode	V_F	$I_F=10\text{A}$ ($T_J=25^\circ\text{C}$)			0.89	V
		$I_F=10\text{A}$ ($T_J=125^\circ\text{C}$)		0.72	0.75	
Reverse current per diode	I_R	$V_R=300\text{V}$ ($T_J=25^\circ\text{C}$)			100	μA
		$V_R=300\text{V}$ ($T_J=125^\circ\text{C}$)			30	mA

Note : 1. Thermal resistance from junction to case.

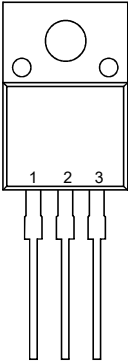
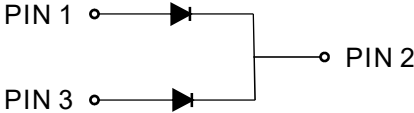
MBR20U300FCTW

Rating and characteristic curves



MBR20U300FCTW

Pinning information

Pin	Simplified outline	Symbol
Pin1 Anode Pin2 Cathode Pin3 Anode		

Marking

Type number	Marking code
MBR20U300FCTW	MBR20U300FCTW

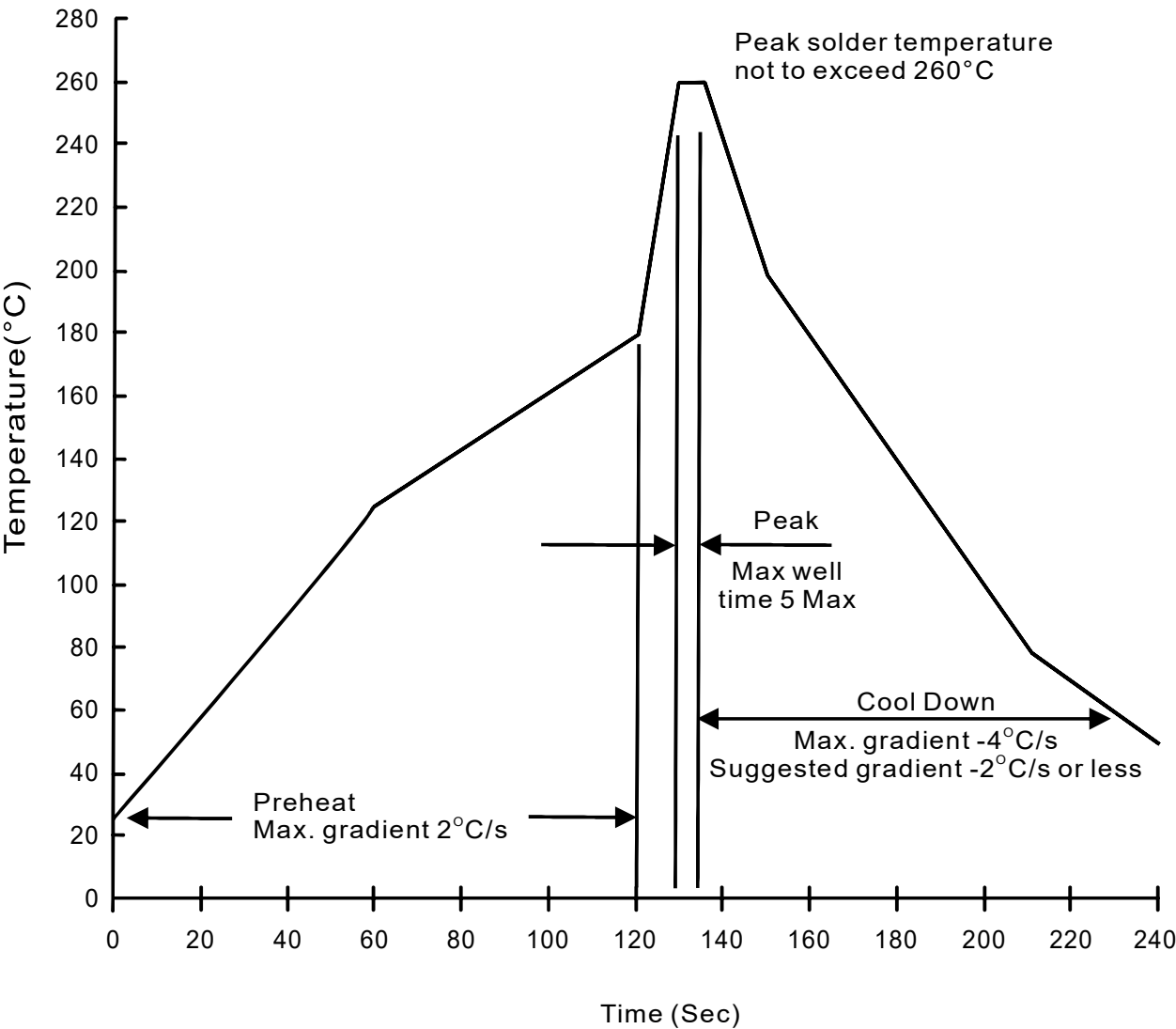
Tube packing

PACKAGE	TUBE (pcs)	BOX (pcs)	INNER BOX (m/m)	CARTON SIZE (m/m)	CARTON (pcs)
ITO-220AB	50	1000	560*145*40	575*230*170	5,000

MBR20U300FCTW

Suggested thermal profiles for soldering processes

1. Lead free temperature profile wave-soldering



MBR20U300FCTW

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 $T_J=175^{\circ}\text{C}$ 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 150°C for 1000 hrs.	MIL-STD-750D METHOD-1031