

MBR20L300FCTW

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MBR20L300FCTW

20A Power Low VF
Schottky Barrier Rectifiers 300V

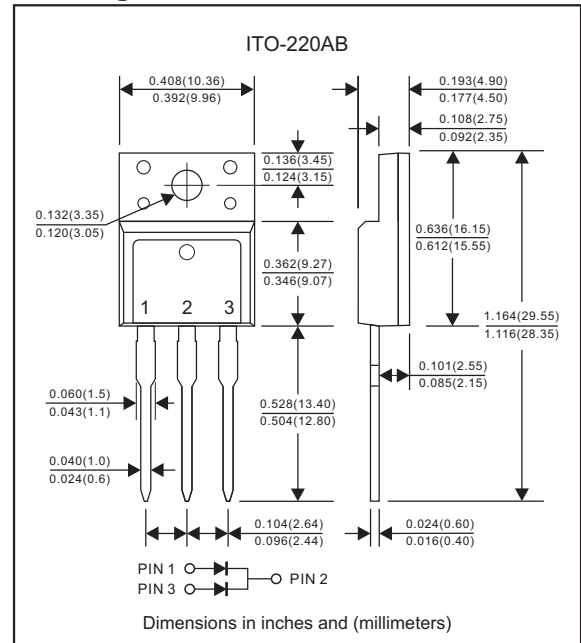
Features

- High current density schottky.
- 150°C operating junction temperature.
- Offer 10A half wave and 20A full wave rectification.
- Low power loss, high efficiency.
- Low forward voltage drop.
- High current capability
- High surge capability.
- Guardring for overvoltage protection.
- Low stored charge majority carrier conduction
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free part, ex. MBR20L300FCTW-H.

Mechanical data

- Epoxy : UL94-V0 rated flame retardant
- Case : JEDEC ITO-220AB molded plastic body over passivated chip
- Lead : Axial leads, solderable per MIL-STD-202, Method 208 guaranteed
- Polarity: As marked
- Mounting Position : Any
- Weight : Approximated 1.70 gram

Package outline



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

PARAMETER	Symbol	MBR20L300FCTW	Unit
Maximum repetitive peak reverse voltage	V_{RRM}	300	Volts
Maximum RMS voltage	V_{RMS}	210	Volts
Maximum DC blocking voltage	V_{DC}	300	Volts
Maximum average forward rectified current per device per diode	I_O	20 10	A
Peak forward surge current 8.3ms single half sine-wave	I_{FSM}	200	A
Operating junction temperature range	T_J	-55 to +125	$^\circ\text{C}$
Storage temperature range	T_{STG}	-55 to +150	$^\circ\text{C}$

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

PARAMETER	Symbol	MBR20L300FCTW	Unit
Forward voltage per diode at $I_F = 10\text{A}$ $T_J = 25^\circ\text{C}$	V_F	0.92	Volts
$T_J = 100^\circ\text{C}$		0.84	
Reverse current per diode at $V_R = 240\text{V}$ $T_J = 25^\circ\text{C}$	I_R	0.015	mA
$T_J = 100^\circ\text{C}$		3	
at $V_R = 300\text{V}$ $T_J = 25^\circ\text{C}$		0.02	
$T_J = 100^\circ\text{C}$		5	

Thermal characteristics

PARAMETER	Symbol	MBR20L300FCTW	Unit
Typical thermal resistance	$R_{\theta JC}$	3.5	$^\circ\text{C/W}$

Rating and characteristic curves (MBR20L300FCTW)

Fig.1 FORWARD CURRENT DERATING CURVE

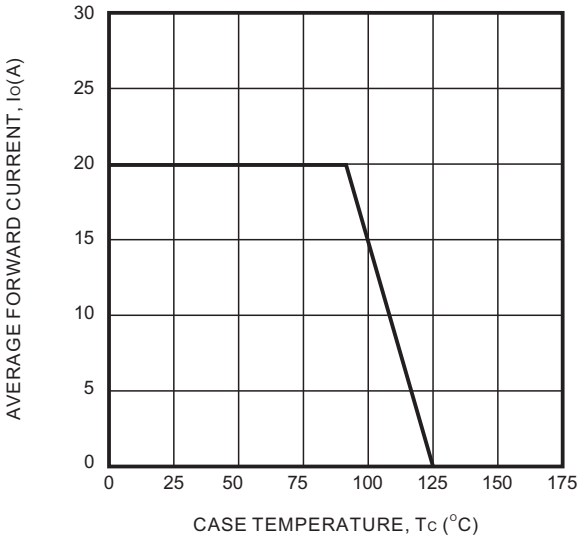


Fig.2 TYPICAL FORWARD CHARACTERISTICS

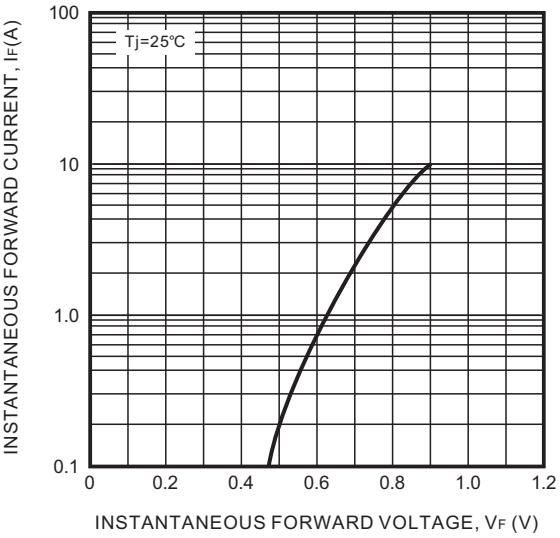


Fig.3 MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

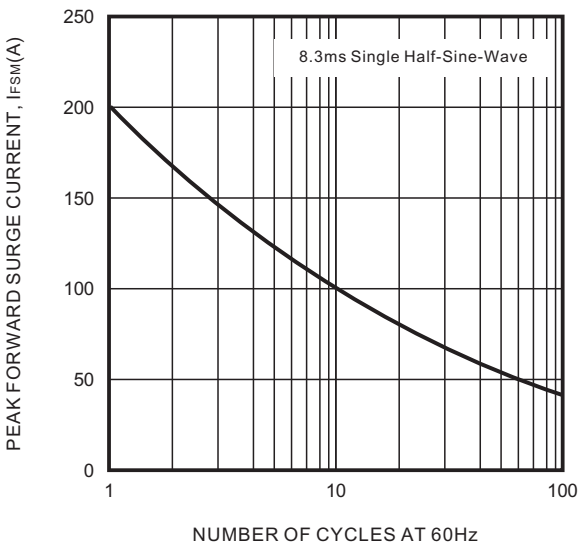
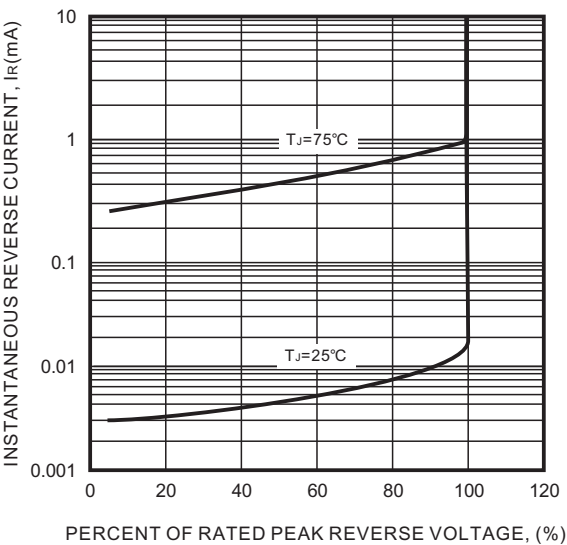
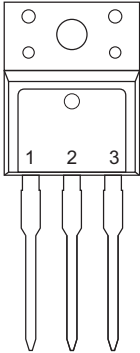
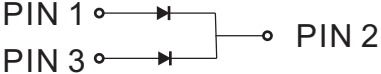


Fig.4 TYPICAL REVERSE CHARACTERISTICS



MBR20L300FCTW

Pinning information

Pin	Simplified outline	Symbol
Pin1 anode Pin2 cathode Pin3 anode		

Marking

Type number	Marking code
MBR20L300FCTW	MBR20L300FCTW

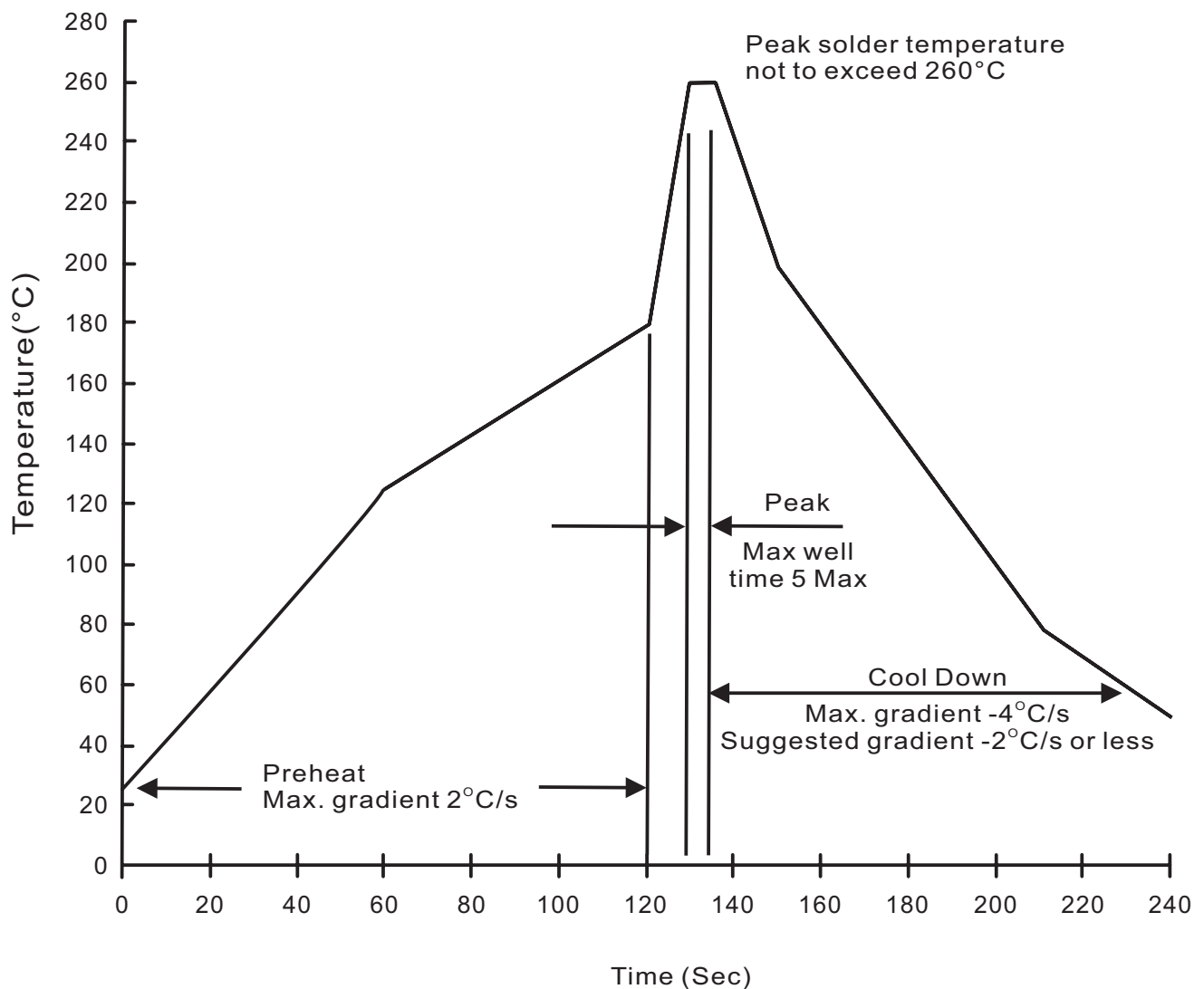
Tube packing

PACKAGE	TUBE (pcs)	TUBE SIZE (m/m)	BOX (pcs)	INNER BOX (m/m)	CARTON SIZE (m/m)	CARTON (pcs)	APPROX. GROSS WEIGHT (kg)
ITO-220AB	50	525*31.9*6.4	1000	545*150*45	575*245*170	5,000	15.0

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Suggested thermal profiles for soldering processes

1. Lead free temperature profile wave-soldering



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High reliability test capabilities

Item Test	Conditions	Reference
1. Solder Resistance	at $260 \pm 5^\circ\text{C}$ for $10 \pm 2\text{sec.}$ immerse body into solder $1/16" \pm 1/32"$	MIL-STD-750D METHOD-2031
2. Solderability	at $245 \pm 5^\circ\text{C}$ 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 150°C for 1000 hrs.	MIL-STD-750D METHOD-1031