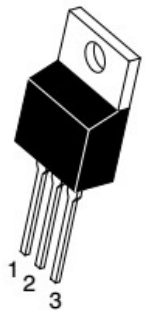
First Semiconductor

MBR2040CTG THRU MBR20200CTG

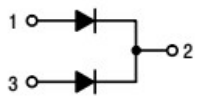
20.0 AMPS. Schottky Barrier Rectifiers

TO-220AB



Features

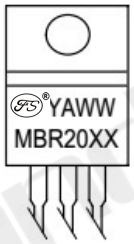
- Metal silicon junction, majority carrier conduction
- Plastic material used carries Underwriters Laboratory Classifications 94V-0
- High surge capability
- Low power loss, high efficiency
- High current capability, low forward voltage drop
- For use in low voltage, high frequency inverters, free wheeling, and polarity protection applications
- Guardring for overvoltage protection
- High temperature soldering guaranteed: 260°C/10 seconds,0.25"(6.35mm)from case
- Green compound with suffix "G" on packing code & prefix "G" on datecode.



Mechanical Data

- Cases: JEDEC TO-220AB molded plastic
- Polarity: As marked
- Terminals: Pure tin plated, lead free. solderable per MIL-STD-750, Method 2026
- Mounting position: Any
- Weight: 1.71grams
- Mounting torque: 5 in. - lbs. max

Marking Diagram



Y = Year
A = Assembly Location
WW = Work Week
MBR20XX = Specific Device Code

Maximum Ratings and Electrical Characteristics

Rating at 25°C ambient temperature unless otherwise specified.
Single phase, half wave, 60 Hz, resistive or inductive load.
For capacitive load, derate current by 20%

Type Number	Symbol	MBR 2040 CTG	MBR 2045 CTG	MBR 2050 CTG	MBR 2060 CTG	MBR 2080 CTG	MBR 20100 CTG	MBR 20150 CTG	MBR 20200 CTG	Units
Maximum Recurrent Peak Reverse Voltage	V_{RRM}	40	45	50	60	80	100	150	200	V
Maximum RMS Voltage	V_{RMS}	28	31	35	42	56	70	105	140	V
Maximum DC Blocking Voltage	V_{DC}	40	45	50	60	80	100	150	200	V
Maximum Average Forward Rectified Current at T_C=135°C	$I_{F(AV)}$	20								A
Peak Repetitive Forward Current (Rated V_R, Square Wave, 20KHz) at Tc=135°C	I_{FRM}	20								A
Peak Forward Surge Current, 8.3 ms Single Half Sine-wave Superimposed on Rated Load (JEDEC method)	I_{FSM}	150								A
Peak Repetitive Reverse Surge Current (Note 2)	I_{RRM}	1.0		0.5						A
Maximum Instantaneous Forward Voltage at IF=10A, T_A=25°C IF=10A, T_A=125°C IF=20A, T_A=25°C IF=20A, T_A=125°C	V_F	0.70 0.55 0.80 0.70		0.74 0.60 0.85 0.74		0.80 0.70 0.90 0.80		0.85 0.75 0.95 0.85		V
Maximum Instantaneous Reverse Current at Rated DC Blocking Voltage (Note1) @ T_A=25°C	I_R	0.5		0.5		0.1		0.1		mA
@ T_A=125°C		10.4		10		5.0			0.4	mA
Voltage Rate of Change, (Rated V_R)	dV/dt	10,000								V/uS
Typical Junction Capacitance	Cj	400		320						pF
Typical Thermal Resistance Per Leg (Note 3)	$R_{\theta JC}$	1.0				2.0				°C/W
Operating Junction Temperature Range	T_J	-65 to +175								°C
Storage Temperature Range	TSTG	-65 to +175								°C

Notes: 1. Pulse Test: 300us Pulse Width, 1% Duty Cycle
2. 2.0us Pulse Width, f=1.0 KHz
3. Mount on Heatsink Size of (4"x6"x0.25") Al-Plate.

RATINGS AND CHARACTERISTIC CURVES

FIG.1- FORWARD CURRENT DERATING CURVE

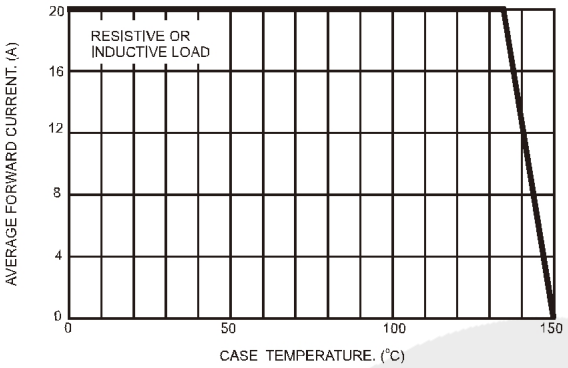


FIG.2- MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT PER LEG

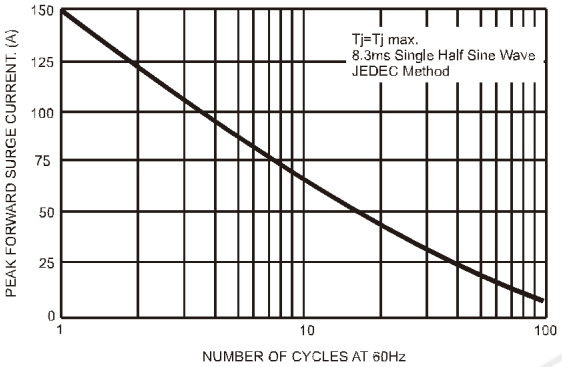


FIG.3- TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS PER LEG

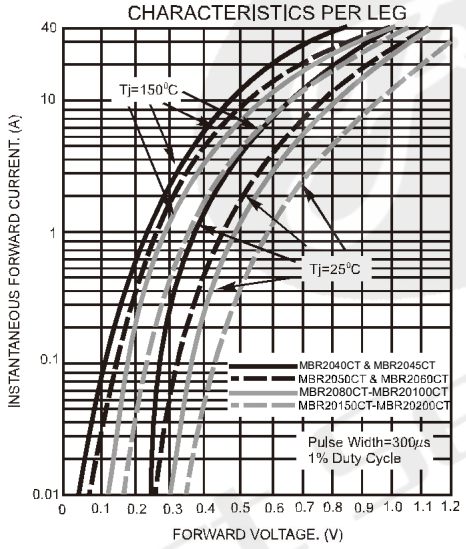


FIG.4- TYPICAL REVERSE CHARACTERISTICS PER LEG

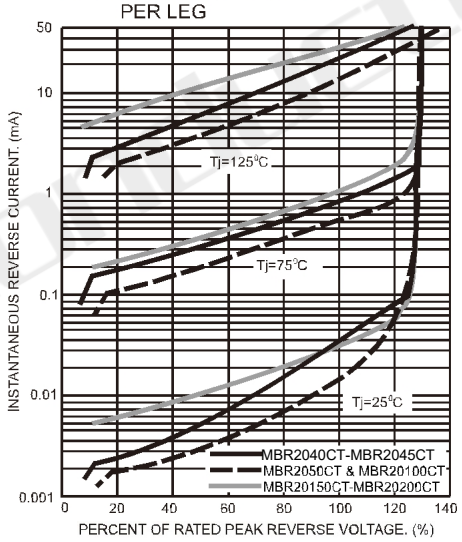


FIG.5- TYPICAL JUNCTION CAPACITANCE PER LEG

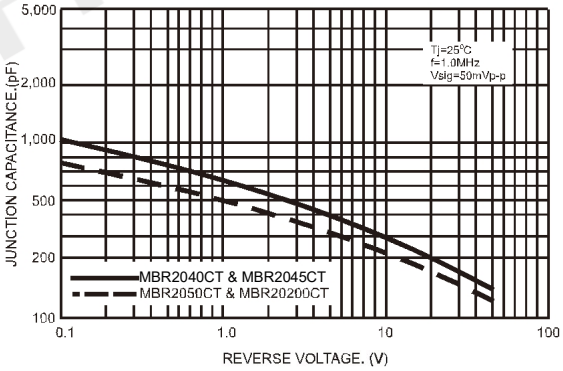
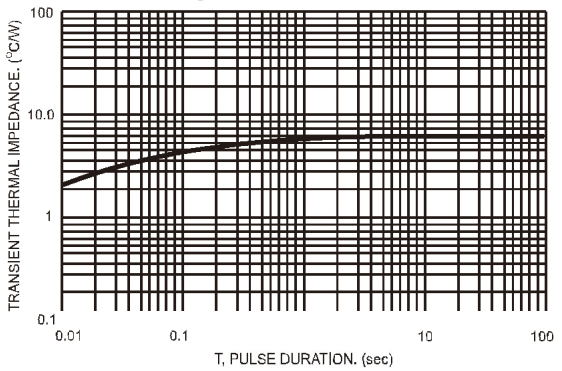
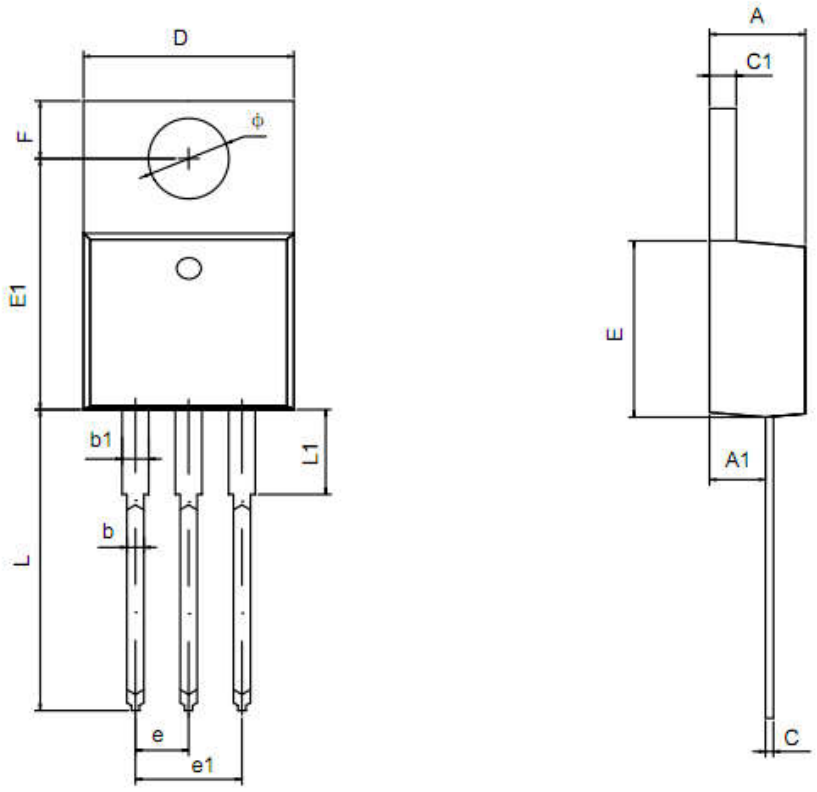


FIG.6- TYPICAL TRANSIENT THERMAL IMPEDANCE PER LEG



TO-220

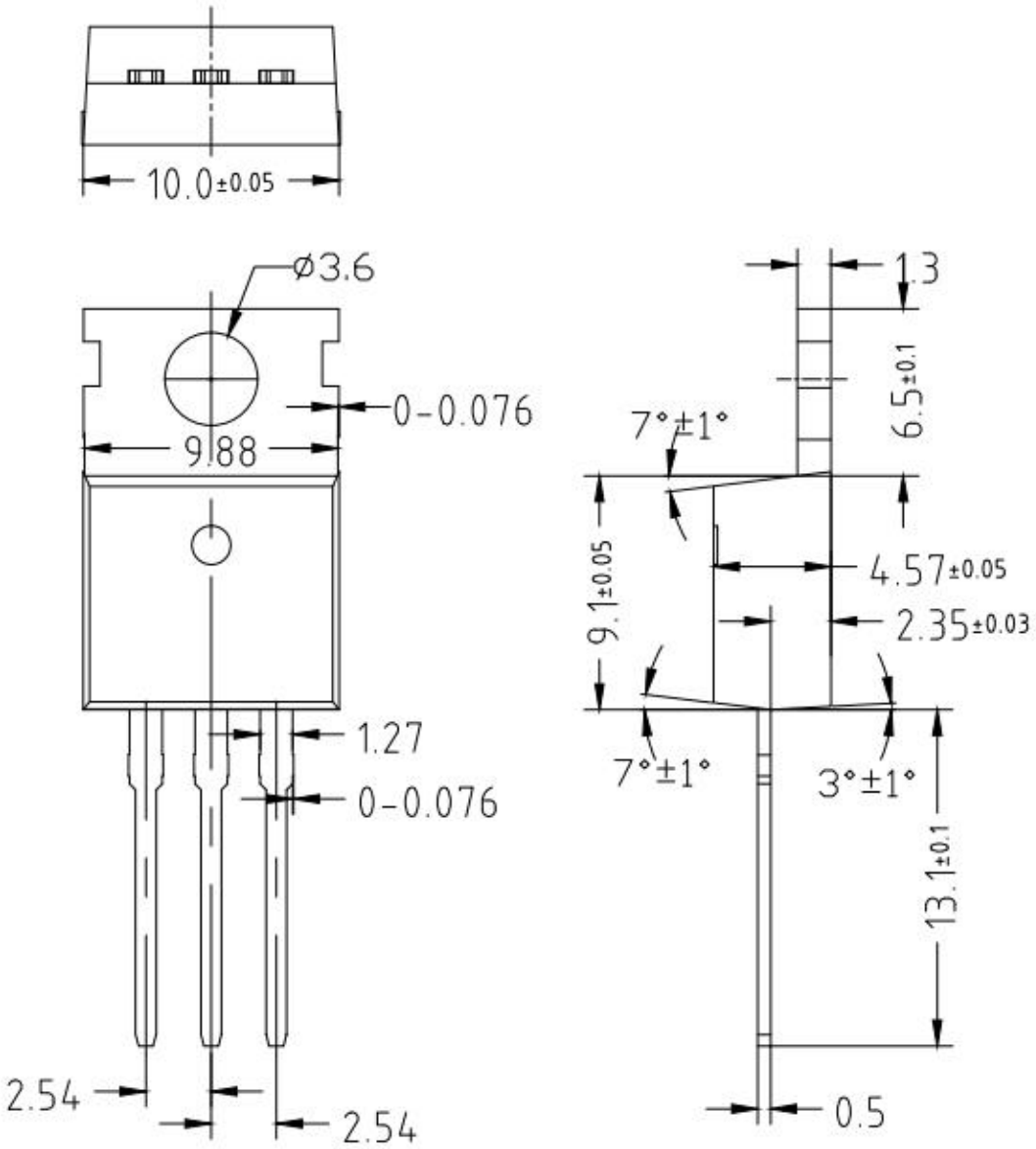
Unit: mm



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.42	4.72	0.174	0.188
A1	2.52	2.82	0.099	0.111
b	0.71	0.91	0.028	0.036
b1	1.17	1.37	0.046	0.054
c	0.36	0.46	0.014	0.018
c1	1.17	1.37	0.046	0.054
D	9.95	10.25	0.392	0.0404
E	8.8	9.1	0.346	0.358
E1	12.55	12.85	0.494	0.506
e	2.540TYP		0.100TYP	
e1	4.98	5.18	0.196	0.204
F	2.59	2.89	0.102	0.114
L	13.08	13.48	0.515	0.531
L1	3.4	3.6	0.134	0.142
Φ	3.8	3.95	0.15	0.156

TO-220

Unit: mm



Declaration

- FIRST reserves the right to change the specifications, the same specifications of products due to different packaging line mold, the size of the appearance will be slightly different, shipped in kind, without notice! Customers should obtain the latest version information before ordering, and verify whether the relevant information is complete and up-to-date.
- Any semiconductor product under certain conditions has the possibility of failure or failure,The buyer has the responsibility to comply with safety standards and take safety measures when using FIRST products for system design and manufacturing,To avoid To avoid potential failure risks, which may cause personal injury or property damage!
- Product promotion endless, our company will wholeheartedly provide customers with better products!

ATTACHMENT

Revision History

Date	REV	Description	Page
2018.01.01	1.0	Initial release	