



DESCRIPTION

The MBR2045~MBR20200CT_CTF_CS_CD are available in TO-220, TO-220F, TO-263 and TO-252 packages.

MECHANICAL DATA

- Case: TO-220, TO-220F, TO-263, TO-252
- Solder bath temperature 275°C maximum, 10s per JESD22-106

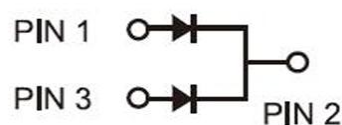
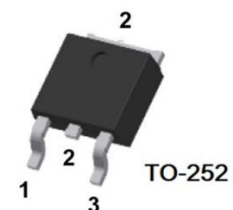
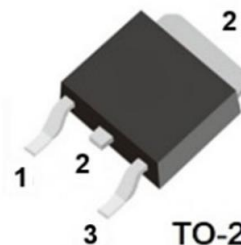
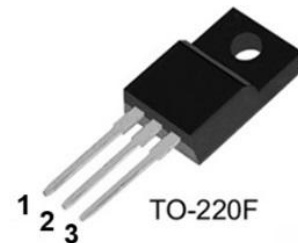
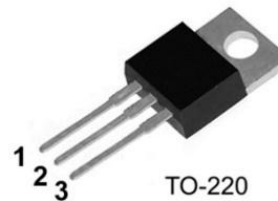
ORDERING INFORMATION

Package Type	Part Number
TO-220 SPQ: 50pcs/Tube 1,000pcs/Box	MBR2045CT
	MBR2060CT
	MBR20100CT
	MBR20150CT
	MBR20200CT
TO-220F SPQ: 50pcs/Tube 1,000pcs/Box	MBR2045CTF
	MBR2060CTF
	MBR20100CTF
	MBR20150CTF
	MBR20200CTF
TO-263 SPQ: 800pcs/Reel	MBR2045CS
	MBR2060CS
	MBR20100CS
	MBR20150CS
	MBR20200CS
TO-252 SPQ: 2,500pcs/Reel	MBR2045CD
	MBR2060CD
	MBR20100CD
	MBR20150CD
	MBR20200CD
AiT provides all RoHS Compliant Products	

FEATURE

- Low Forward Voltage
- High Current Capability
- High Forward Surge Capability
- Low Power Losses, High Efficiency
- Guarding for Over Voltage Protection
- Lead Free in Comply with EU RoHS 2011/65/EU directives

PIN DESCRIPTION



**ABSOLUTE MAXIMUM RATINGS**T_A = 25°C, unless otherwise specified

Parameter		Symbol	MBR2045	MBR2060	MBR20100	MBR20150	MBR20200	Unit
Maximum Repetitive Peak Reverse Voltage		V _{RRM}	45	60	100	150	200	V
Maximum RMS Voltage		V _{RMS}	31.5	42	70	105	140	V
Maximum DC Blocking Voltage		V _{DC}	45	60	100	150	200	V
Maximum Average Forward Rectified Current	Per Leg	I _O	10					A
	Total		20					
Peak Forward Surge Current, 8.3ms Single Half Sine-wave		I _{FSM}	250	300	250	290	250	A
Operating Junction Temperature Range		T _J	+150	-55~+150	-55~+150	-55~+150	+150	°C
Storage Temperature Range		T _{STG}	-40~+150	-55~+150	-55~+150	-55~+150	-55~+150	°C
Typical Thermal Resistance *		R _{θJA}	2					°C/W
		R _{θJC}	4					

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

*Thermal resistance from Junction to case per leg mounted on heatsink.

**ELECTRICAL CHARACTERISTICS**

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
MBR2045						
Forward Voltage Drop*	V _F	I _F =3A, T _A = 25°C	-	0.46	-	V
		I _F =3A, T _A = 125°C	-	0.37	-	
		I _F =5A, T _A = 25°C	-	0.50	-	
		I _F =5A, T _A = 125°C	-	0.43	-	
		I _F =10A, T _A = 25°C	-	0.59	0.65	
		I _F =10A, T _A = 125°C	-	0.55	-	
Maximum Reverse Current	I _R	V _R =45V, T _A = 25°C	-	8	40	uA
		V _R =45V, T _A = 125°C	-	3	-	mA
MBR2060						
Forward Voltage Drop*	V _F	I _F =3A, T _A = 25°C	-	0.51	-	V
		I _F =3A, T _A = 125°C	-	0.45	-	
		I _F =5A, T _A = 25°C	-	0.59	-	
		I _F =5A, T _A = 125°C	-	0.53	-	
		I _F =10A, T _A = 25°C	-	0.72	0.78	
		I _F =10A, T _A = 125°C	-	0.63	-	
Maximum Reverse Current	I _R	V _R =60V, T _A = 25°C	-	3	50	uA
		V _R =60V, T _A = 125°C	-	2	-	mA
MBR20100						
Forward Voltage Drop*	V _F	I _F =3A, T _A = 25°C	-	0.69	-	V
		I _F =3A, T _A = 125°C	-	0.60	-	
		I _F =5A, T _A = 25°C	-	0.74	-	
		I _F =5A, T _A = 125°C	-	0.61	-	
		I _F =10A, T _A = 25°C	-	0.82	0.85	
		I _F =10A, T _A = 125°C	-	0.68	-	
Maximum Reverse Current	I _R	V _R =100V, T _A = 25°C	-	1.50	10	uA
		V _R =100V, T _A = 125°C	-	1.00	-	mA
MBR20150						
Forward Voltage Drop*	V _F	I _F =3A, T _A = 25°C	-	0.73	-	V
		I _F =3A, T _A = 125°C	-	0.60	-	
		I _F =5A, T _A = 25°C	-	0.77	-	
		I _F =5A, T _A = 125°C	-	0.64	-	
		I _F =10A, T _A = 25°C	-	0.84	0.90	
		I _F =10A, T _A = 125°C	-	0.72	-	
Maximum Reverse Current	I _R	V _R =150V, T _A = 25°C	-	1	10	uA
		V _R =150V, T _A = 125°C	-	1	-	mA
MBR20200						
Forward Voltage Drop*	V _F	I _F =3A, T _A = 25°C	-	0.76	-	V
		I _F =3A, T _A = 125°C	-	0.63	-	
		I _F =5A, T _A = 25°C	-	0.80	-	
		I _F =5A, T _A = 125°C	-	0.68	-	
		I _F =10A, T _A = 25°C	-	0.87	0.95	
		I _F =10A, T _A = 125°C	-	0.76	-	
Maximum Reverse Current	I _R	V _R =200V, T _A = 25°C	-	1	10	uA
		V _R =200V, T _A = 125°C	-	1	-	mA

*Pulse test: 300 μs pulse width, 1 % duty cycle



TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Maximum Forward Current Derating Curve

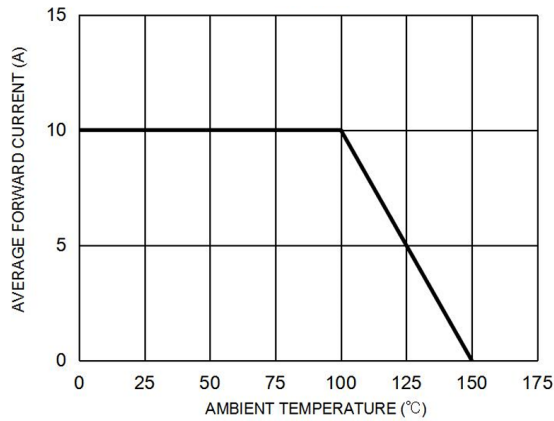


Fig 2. Maximum Non-Repetitive Forward Surge Current Per Leg

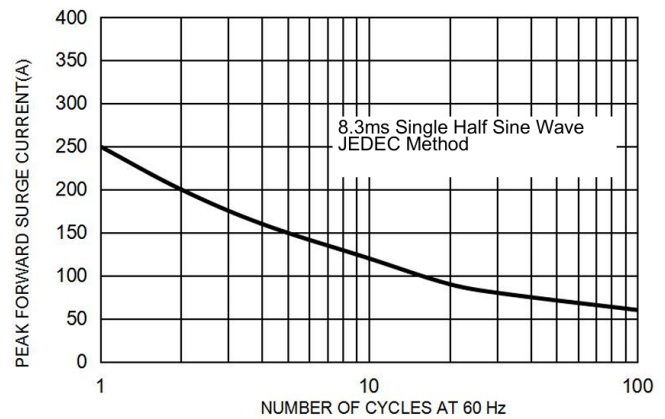


Fig 3. Typical Forward Characteristics Per Leg

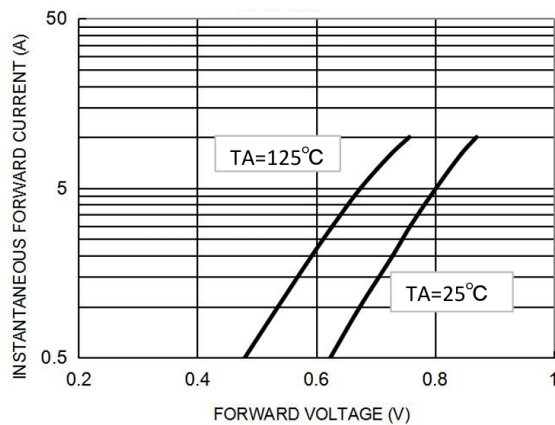
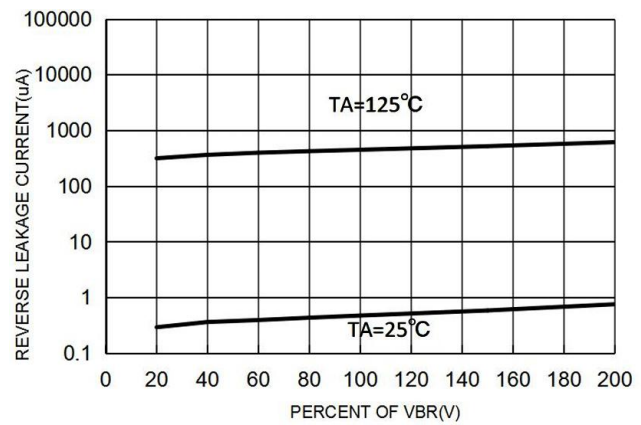


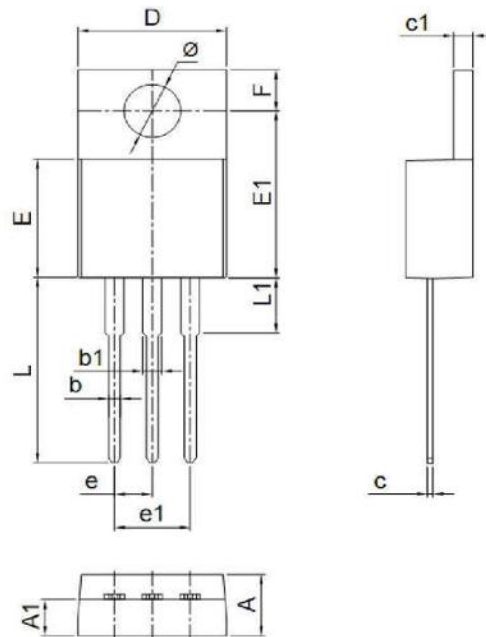
Fig 4. Typical Reverse Characteristics Per Leg





PACKAGE INFORMATION

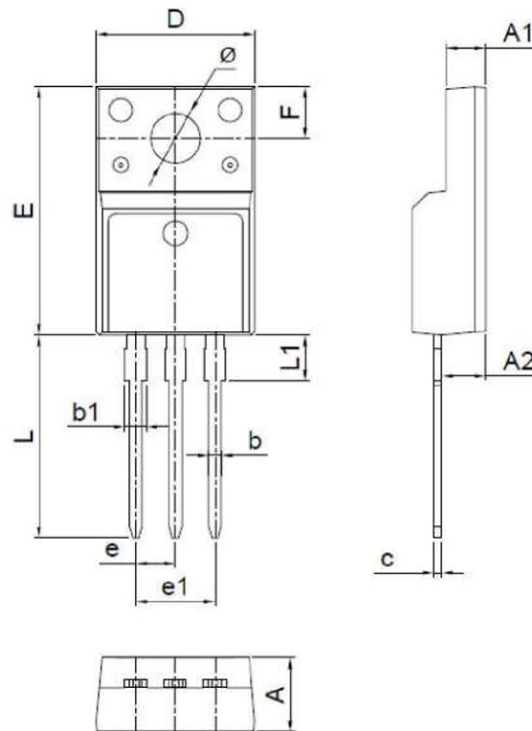
Dimension in TO-220 (Unit: mm)



DIM	MILLIMETERS	
	MIN	MAX
A	4.300	4.700
A1	0.000	0.150
b	0.710	0.910
b1	1.170	1.370
c	0.300	0.500
c1	1.170	1.370
D	9.900	10.200
E	8.500	8.900
E1	12.000	12.500
e	2.440	2.640
e1	4.880	5.280
F	2.600	2.800
L	13.200	13.800
L1	3.800	4.200
Φ	3.600	3.960



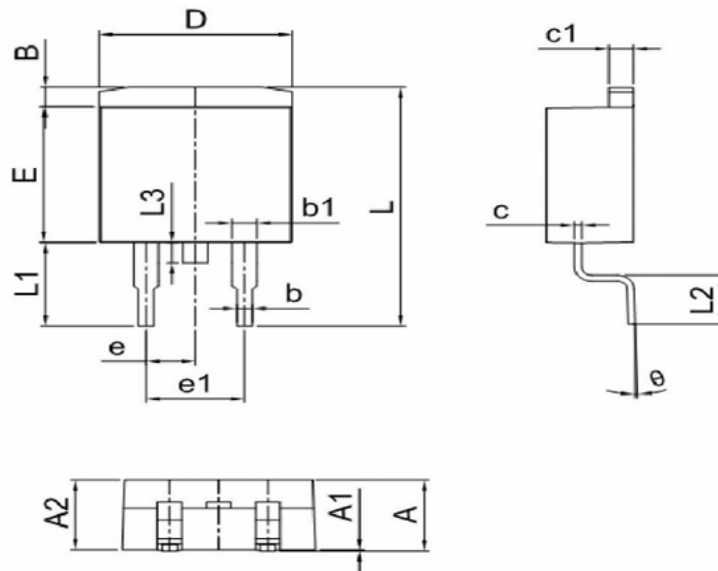
Dimension in TO-220F (Unit: mm)



SYMBOL	MILLIMETERS	
	Min.	Max.
A	4.500	4.900
A1	2.340	2.740
A2	2.660	2.860
b	0.750	0.850
b1	1.240	1.440
c	0.400	0.600
D	10.000	10.320
E	15.750	16.050
e	2.440	2.640
e1	4.880	5.280
F	3.100	3.500
L	13.500	13.900
L1	2.900	3.300
Φ	3.100	3.300



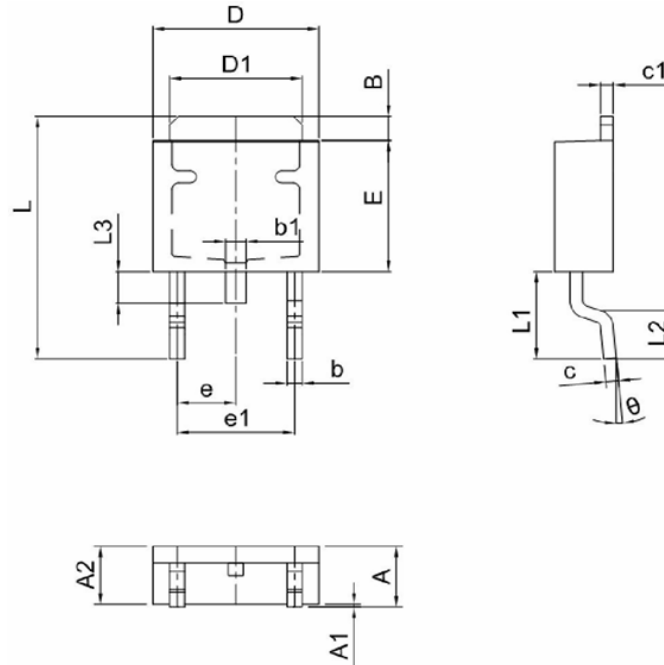
Dimension in TO-263 (Unit: mm)



SYMBOL	MILLIMETERS	
	Min.	Max.
A	4.300	4.700
A1	0.000	0.150
A2	4.300	4.550
B	1.100	1.500
b	0.700	0.900
b1	1.200	1.500
c	0.300	0.600
c1	1.170	1.370
D	9.900	10.200
E	8.500	8.900
e	2.440	2.640
e1	4.880	5.280
L	15.000	15.300
L1	5.200	5.400
L2	2.400	2.600
L3	1.600	1.800



Dimension in TO-252 (Unit: mm)



SYMBOL	MILLIMETERS	
	Min.	Max.
A	2.200	2.500
A1	0.000	0.120
A2	2.200	2.400
B	1.200	1.600
b	0.500	0.700
b1	0.700	0.900
c	0.400	0.600
c1	0.400	0.600
D	6.350	6.650
D1	5.200	5.400
E	5.400	5.700
e	2.200	2.400
e1	4.400	4.800
L	10.000	11.000
L1	2.700	3.100
L2	1.400	1.800
L3	0.900	1.500



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