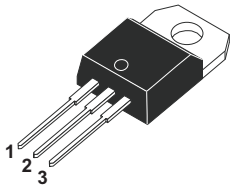
Dual Common Cathode Schottky Rectifier, 30A (15A x2), 45V

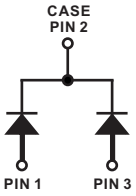
Available RoHS* COMPLIANT

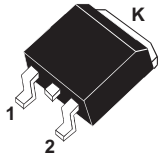
FEATURES

- 150°C T_J operation
- High frequency operation
- Low forward voltage drop
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Guard ring for enhanced ruggedness, long term reliability and overvoltage protection
- Compliant to RoHS
- Designed and qualified according to JEDEC-JESD47
- Solder bath temperature 275°C maximum, 10 s per JESD 22B-106 (for TO-220AB and ITO-220AB package)

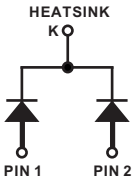


TO-220AB (MBR3045CT)





TO-263AB (MBRH3045CT)



DESCRIPTION

The **MBR3045CT** Schottky rectifier has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 150°C junction temperature.

APPLICATIONS

- Switching mode power supplies
- DC to DC converters
- Freewheeling diodes
- Reverse battery protection.

MECHANICAL DATA

Case: TO-220AB, TO-263AB
Molding compound meets UL 94 V-O flammability rating

Terminals: Mat tin plated leads, solderable per J-STD-002 and JESD 22-B102

Polarity: As marked

Mounting Torque: 10 in-lbs maximum

PRODUCT SUMMARY	
$I_{F(AV)}$	15A x 2
V_R	45V
V_F at I_F	0.57V
I_{RM} max.	100mA at 125°C
T_J max.	150°C
Diode variation	Dual dice, Common cathode
E_{AS}	10 mJ

MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	CHARACTERISTICS	VALUE	UNIT
$I_{F(AV)}$	Rectangular waveform	15 x 2	A
V_{RRM}		45	V
I_{FSM}	t_p = 5 µs sine	1020	A
V_F	15 A_{pk}, T_J = 125°C	0.57	V
T_J	Range	-65 to 150	°C

VOLTAGE RATINGS			
PARAMETER	**SYMBOL**	**VALUE**	**UNIT**
Maximum DC reverse voltage	V_R	45	V
Maximum working peak reverse voltage	V_{RWM}		

ABSOLUTE MAXIMUM RATINGS					
PARAMETER	**SYMBOL**	**TEST CONDITIONS**		**VALUE**	**UNIT**
Maximum average forward current (per device / per diode)	$I_{F(AV)}$	T_C = 123°C, rated V_R		30	A
				15	
Peak repetitive forward current per leg	I_{FRM}	Rated V_R, square wave, 20KHz, T_C = 123C°		30	A
Non-repetitive peak surge current	I_{FSM}	5 µs sine or 3 µs rect.pulse	Following any rated load condition and with rated V_{RRM} applied	1020	A
		Surge applied at rated load condition half wave single phase 60 Hz		200	
Non-repetitive avalanche energy	E_{AS}	T_J = 25°C, I_{AS} = 2.0A, L = 5mH		10	mJ
Repetitive avalanche current	I_{AR}	Current decaying linearly to zero in 1 µs Frequency limited by T_J maximum V_A = 1.5 x V_R typical		2	A

ELECTRICAL SPECIFICATIONS					
PARAMETER	**SYMBOL**	**TEST CONDITIONS**		**VALUE**	**UNIT**
Maximum forward voltage drop	V_{FM}(1)	I_F = 15A	T_J = 25°C	0.65	V
		I_F = 30A		0.8	
		I_F = 15A	T_J = 125°C	0.57	
		I_F = 30A		0.7	
Maximum instantaneous reverse current	I_{RM}(1)	T_J = 25°C	Rated DC voltage	1	mA
		T_J = 125°C		100	
Maximum junction capacitance	C_T	V_R = 5 V_{DC} (test signal range 100 kHz to 1 MHZ) 25°C		650	pF
Typical series inductance	L_S	Measured from top of terminal to mounting plane		8	nH
Maximum voltage rate of change	dV/dt	Rated V_R		10000	V/µs

Note
(1) Pulse width < 300 µs, duty cycle < 2%

THERMAL - MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS	VALUE		UNIT
			MBR	MBRH	
Maximum junction temperature range	T_J		-65 to 150		°C
Maximum storage temperature range	T_{stg}		-65 to 175		
Maximum thermal resistance, junction to case	R_{thJC}	DC operation	1.5	1.5	°C/W
Typical thermal resistance, case to heatsink	R_{thCS}	Mounting surface, smooth and greased	0.5	0.5	
Approximate weight			2	1.4	g
			0.07	0.05	oz.
Mounting torque minimum			6 (5)	-	kgf · cm (lbf · in)
Mounting torque maximum			12 (10)	-	

Ordering Information Table

Device code

MBR	H	30	45	CT
1	2	3	4	5

1 - Schottky MBR series

2 - Package outline
"none" for TO-220AB
"H" for TO-263AB (D^2PAK)

3 - Current rating (30 = 30A, 15A x 2)

4 - Voltage ratings, 45 =45V

5 - Circuit configuration, Center tap common cathode, TO-220 series package

Fig.1 Maximum forward voltage drop characteristics (Per Leg)

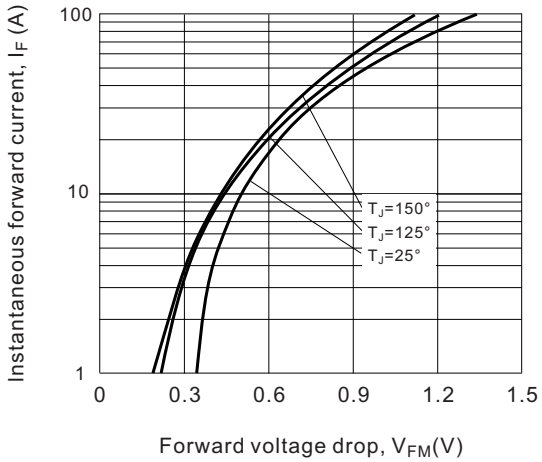


Fig.2 Typical values of reverse current vs. reverse voltage (Per Leg)

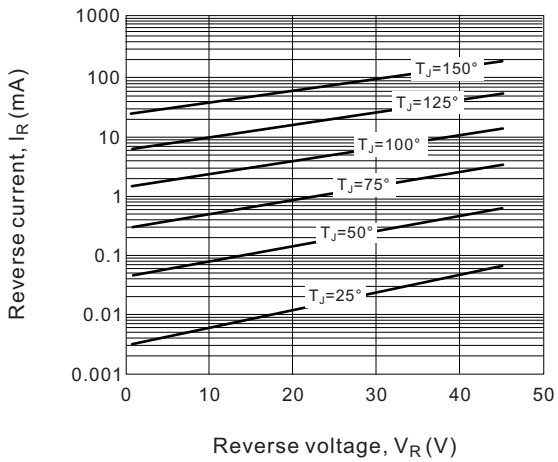


Fig.3 Typical junction capacitance vs. reverse voltage (Per Leg)

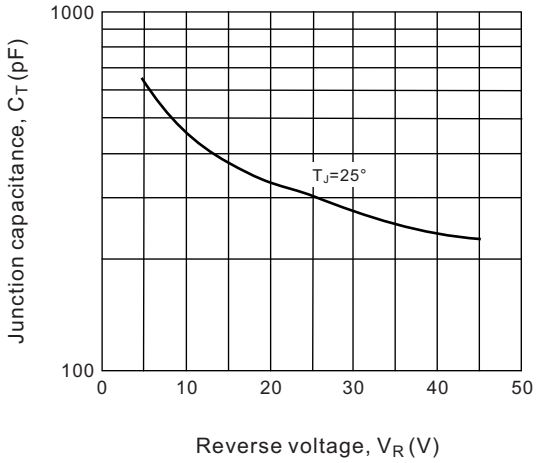


Fig.4 Maximum allowable case temperature vs. average forward current (Per Leg)

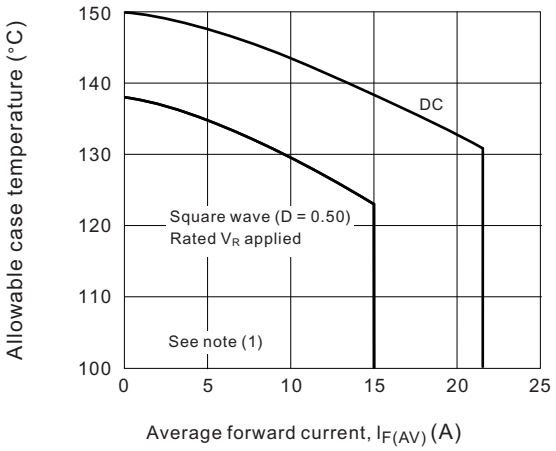


Fig.5 Maximum thermal impedance $R_{th(j-c)}$ characteristics (Per Leg)

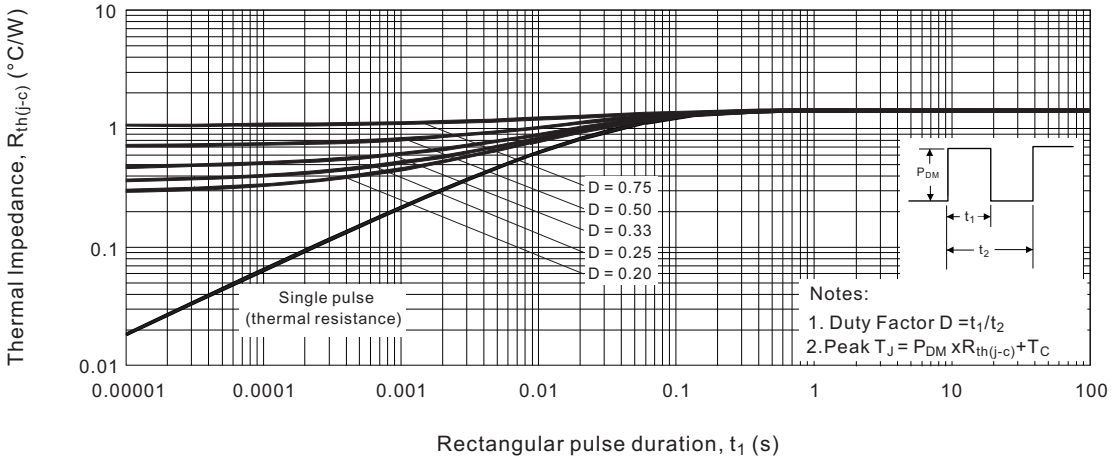


Fig.6 Forward power loss characteristics (Per Leg)

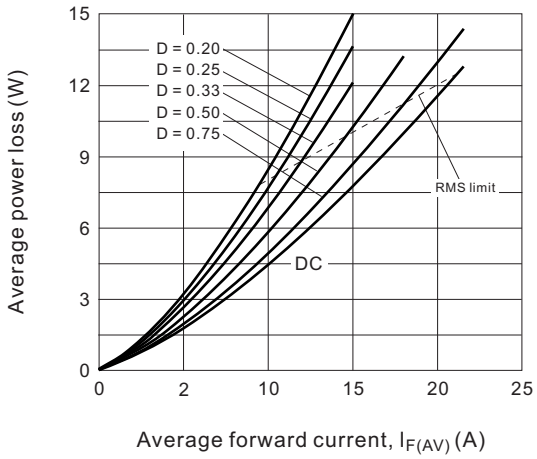
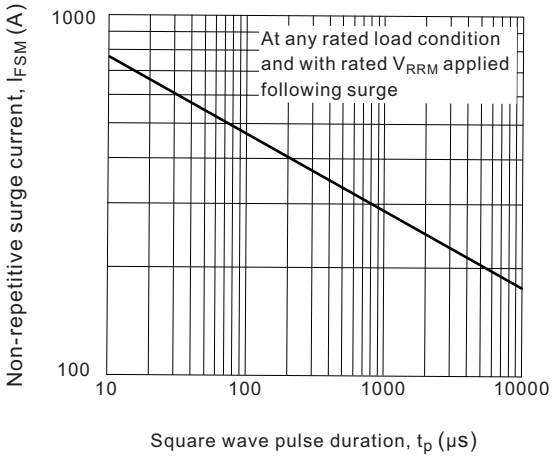


Fig.7 Maximum non-repetitive surge current (Per Leg)



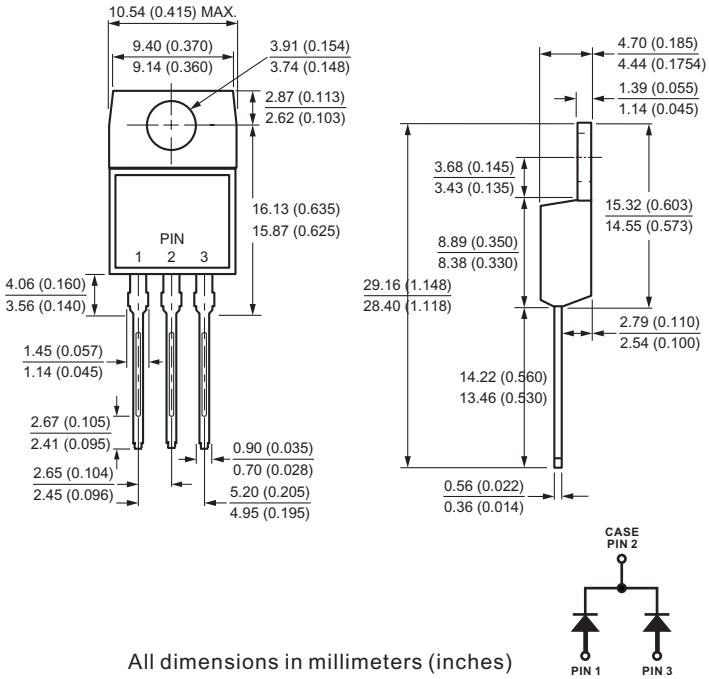
Note

(1) Formula used: $T_C = T_J - (Pd + Pd_{REV}) \times R_{thJC}$;

Pd = Forward power loss = $I_{F(AV)} \times V_{FM}$ at ($I_{F(AV)}$/D)(see fig.6);

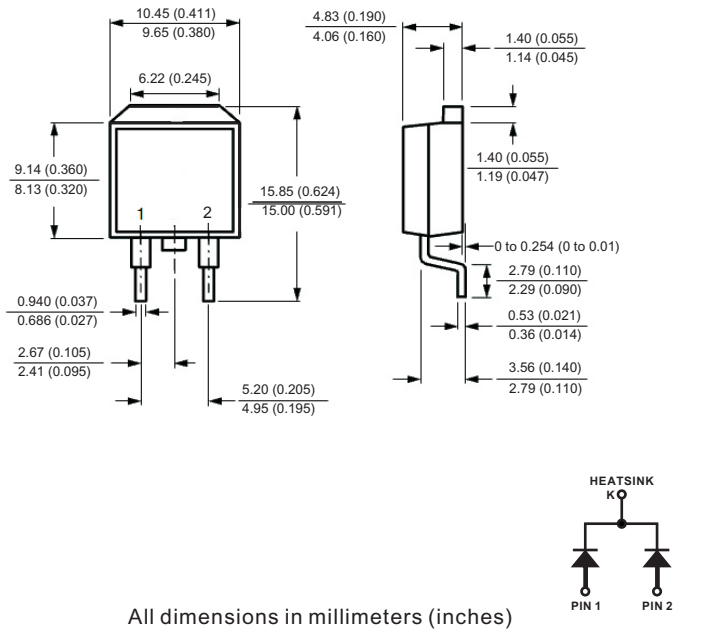
Pd_{REV} = Inverse power loss = $V_{R1} \times I_R$ (1-D); I_R at V_{R1} = Rated V_R

TO-220AB(MBR3045CT)



All dimensions in millimeters (inches)

TO-263AB(MBRH3045CT)



All dimensions in millimeters (inches)