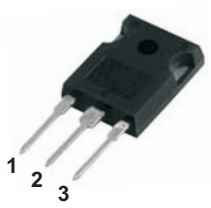
Dual Common-Cathode Schottky Rectifier, 60A (30A x2), 45V

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 260°C maximum, 40 s per JESD 22B-106 (for TO-247AB package)



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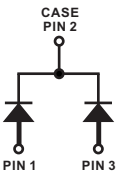


DESCRIPTION

The **MBR6045PT** 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-247AB (TO-3P)
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	
$I_{F(AV)}$	30A x 2
V_R	45V
V_F at I_F	0.55V
I_{RM} max.	150mA at 125°C
T_J max.	150°C
Diode variation	Dual dice, Common cathode
E_{AS}	27 mJ

MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	CHARACTERISTICS	VALUE	UNIT
$I_{F(AV)}$	Rectangular waveform	30 x 2	A
V_{RRM}		45	V
I_{FSM}	8.3 ms single half sine-wave	380	A
V_F	30 A_{pk}, T_J = 125°C	0.55	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}		
Maximum DC blocking voltage	V_{DC}		

ABSOLUTE MAXIMUM RATINGS				
PARAMETER	**SYMBOL**	**TEST CONDITIONS**	**VALUE**	**UNIT**
Maximum average forward current — per device	$I_{F(AV)}$	T_C = 122°C, rated V_R	60	A
Maximum average forward current — per diode			30	
Non-repetitive peak surge current	I_{FSM}	Surge applied at rated load condition half wave single phase 60 Hz	380	A
Non-repetitive avalanche energy	E_{AS}	T_J = 25°C, I_{AS} = 4A, L = 3.4mH	27	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	6	A

ELECTRICAL SPECIFICATIONS					
PARAMETER	**SYMBOL**	**TEST CONDITIONS**		**VALUE**	**UNIT**
Maximum forward voltage drop	V_{FM}(1)	I_F = 30A	T_J = 25°C	0.62	V
		I_F = 60A		0.75	
		I_F = 30A	T_J = 125°C	0.55	
		I_F = 60A		0.70	
Maximum instantaneous reverse current	I_{RM}(1)	T_J = 25°C	Rated DC voltage	1	mA
		T_J = 125°C		150	
Maximum junction capacitance	C_T	V_R = 5 V_{DC} (test signal range 100 kHz to 1 MHZ) 25°C		1400	pF
Typical series inductance	L_S	Measured from top of terminal to mounting plane		7.5	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**
Maximum junction temperature range	T_J		-65 to 150	°C
Maximum storage temperature range	T_{stg}		-65 to 150	
Maximum thermal resistance, junction to case	R_{thJC}	DC operation	1.0	°C/W
Typical thermal resistance, case to heatsink	R_{thCS}	Mounting surface, smooth and greased	0.24	
Approximate weight			6.2	g
			0.22	oz.
Mounting torque minimum			6 (5)	kgf · cm (lbf · in)
Mounting torque maximum			12 (10)	
Marking device		Case style TO-247 AB	MBR6045PT	

Ordering Information Table

Device code

MBR	60	45	PT
1	2	3	4

1 - Schottky MBR series

2 - Current rating (60 = 60A, 30A x 2)

3 - Voltage ratings, 45 =45V

4 - Circuit configuration, Center tap common cathode, TO-247 AB series package

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

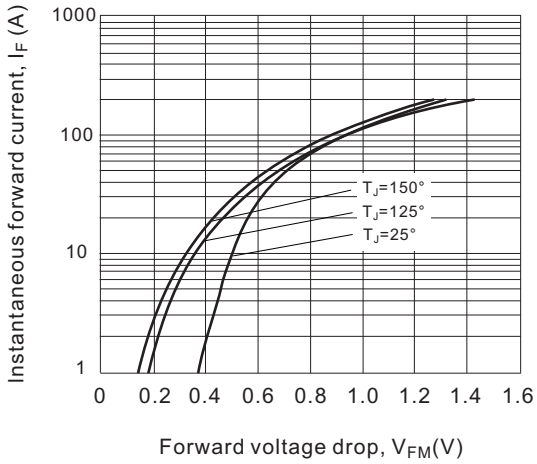


Fig.2 Typical values of reverse current vs. reverse voltage (Per Leg)

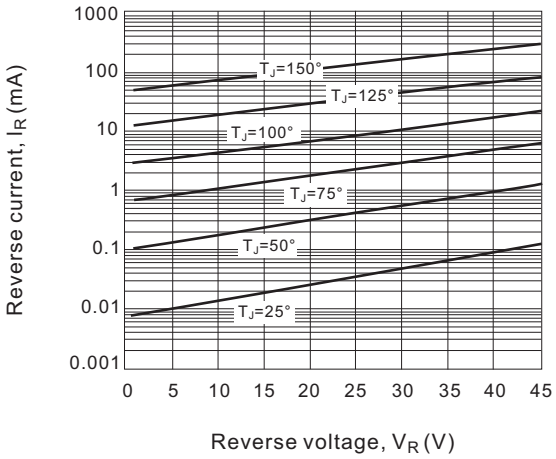


Fig.3 Typical junction capacitance vs. reverse voltage (Per Leg)

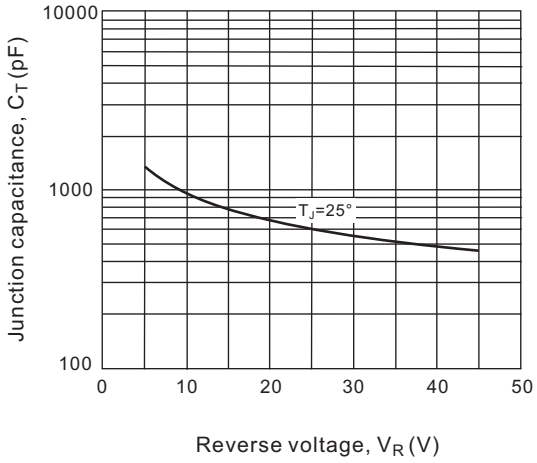


Fig.4 Maximum allowable case temperature vs. average forward current (Per Leg)

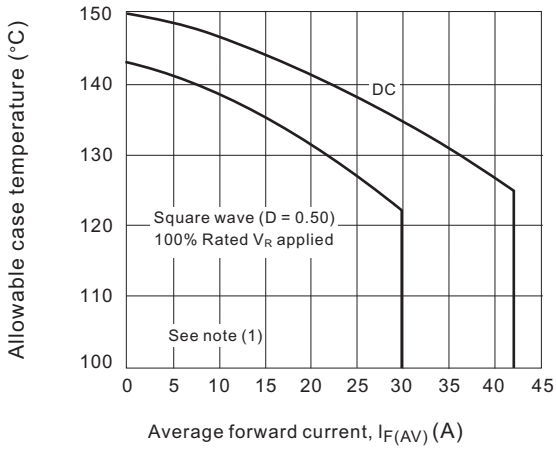


Fig.5 Maximum thermal impedance $R_{th(j-c)}$ characteristics (Per Leg)

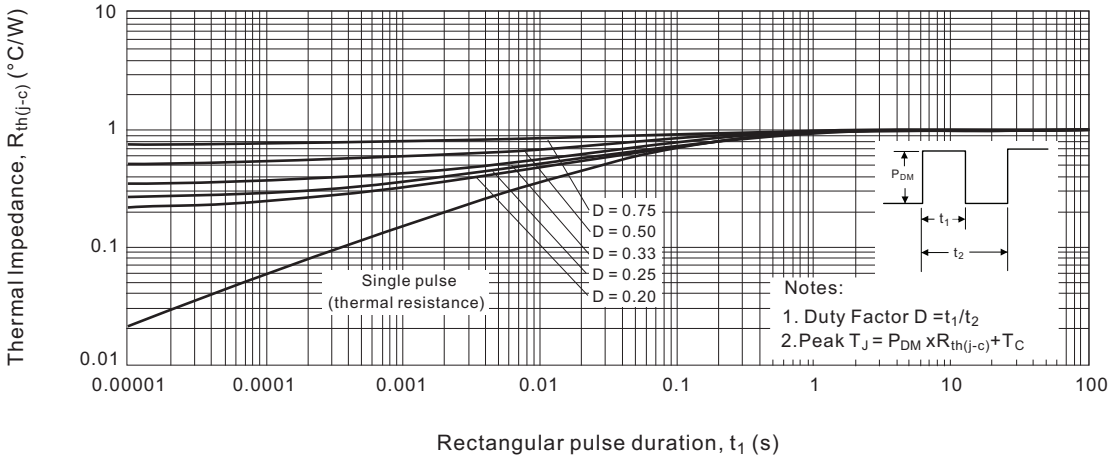


Fig.6 Forward power loss characteristics (Per Leg)

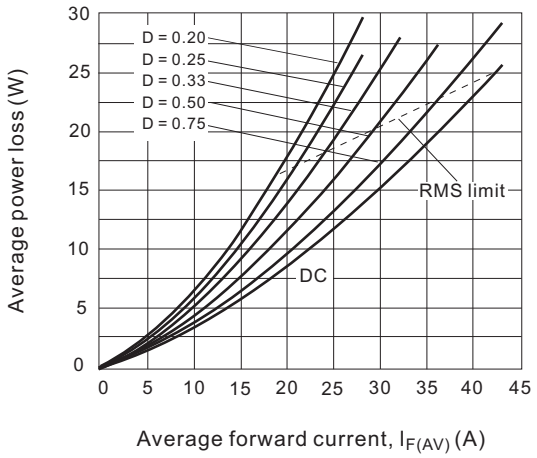


Fig.7 Maximum non-repetitive peak worward surge current (Per Leg)

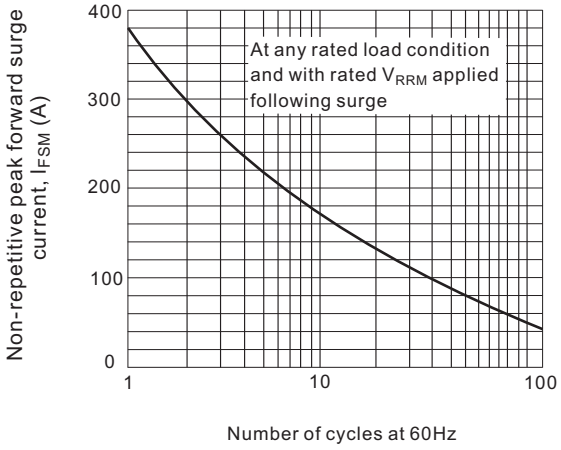
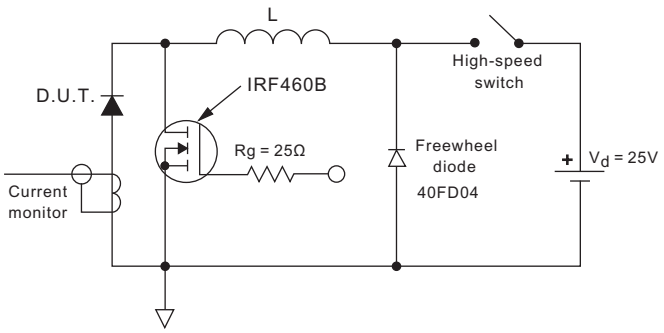


Fig.8 Unclamped inductive test circuit



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} = 100% Rated V_R

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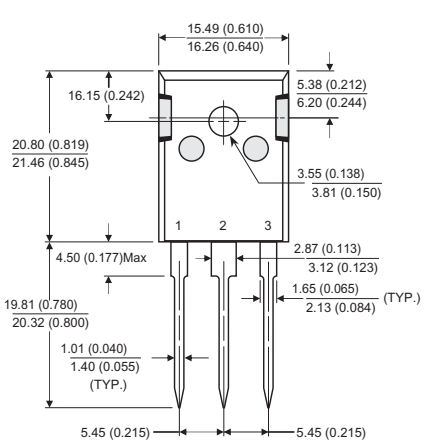

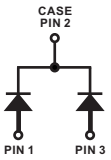

All dimensions in millimeters (inches)