10A, 35V - 150V Schottky Barrier Surface Mount Rectifier

FEATURES

- Low power loss, high efficiency
- Ideal for automated placement
- Guard ring for overvoltage protection
- High surge current capability
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

APPLICATIONS

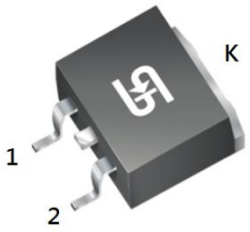
- Switching mode power supply (SMPS)
- Adapters
- DC to DC converters

MECHANICAL DATA

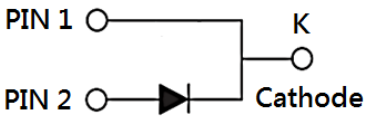
- Case: TO-263AB (D^2PAK)
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: As marked
- Weight: 1.37g (approximately)

KEY PARAMETERS		
PARAMETER	**VALUE**	**UNIT**
I_F	10	A
V_{RRM}	35 - 150	V
I_{FSM}	120	A
$T_{J\ MAX}$	175	°C
Package	TO-263AB (D^2PAK)	
Configuration	Single die	

Pb-Free RoHS COMPLIANT HALOGEN FREE



TO-263AB (D^2PAK)



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)									
PARAMETER	**SYMBOL**	**MBRS 1035**	**MBRS 1045**	**MBRS 1050**	**MBRS 1060**	**MBRS 1090**	**MBRS 10100**	**MBRS 10150**	**UNIT**
Marking code on the device		MBRS 1035	MBRS 1045	MBRS 1050	MBRS 1060	MBRS 1090	MBRS 10100	MBRS 10150	
Repetitive peak reverse voltage	V_{RRM}	35	45	50	60	90	100	150	V
Reverse voltage, total rms value	$V_{R(RMS)}$	24	31	35	42	63	70	105	V
Forward current	I_F	10							A
Surge peak forward current, 8.3ms single half sine wave superimposed on rated load	I_{FSM}	120							A
Peak repetitive reverse surge current[1]	I_{RRM}	1		0.5					A
Critical rate of rise of off-state voltage	dv/dt	10,000							V/μs
Junction temperature	T_J	-55 to +175							°C
Storage temperature	T_{STG}	-55 to +175							°C

Notes:
1. tp = 2.0μs, 1.0KHz

THERMAL PERFORMANCE			
PARAMETER	**SYMBOL**	**TYP**	**UNIT**
Junction-to-ambient thermal resistance	$R_{\Theta JA}$	60	°C/W
Junction-to-case thermal resistance	$R_{\Theta JC}$	2	°C/W

ELECTRICAL SPECIFICATIONS (T_A = 25°C unless otherwise noted)

PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage[1]	MBRS1035 MBRS1045	I_F = 10A, T_J = 25°C	V_F	-	-	V
	MBRS1050 MBRS1060			-	0.80	V
	MBRS1090 MBRS10100			-	0.85	V
	MBRS10150			-	1.05	V
	MBRS1035 MBRS1045	I_F = 20A, T_J = 25°C		-	0.84	V
	MBRS1050 MBRS1060			-	0.95	V
	MBRS1090 MBRS10100			-	-	V
	MBRS10150			-	-	V
	MBRS1035 MBRS1045	I_F = 10A, T_J = 125°C		-	0.57	V
	MBRS1050 MBRS1060			-	0.70	V
	MBRS1090 MBRS10100			-	0.71	V
	MBRS10150			-	-	V
	MBRS1035 MBRS1045	I_F = 20A, T_J = 125°C		-	0.72	V
	MBRS1050 MBRS1060			-	0.85	V
	MBRS1090 MBRS10100			-	-	V
	MBRS10150			-	-	V

ELECTRICAL SPECIFICATIONS (T_A = 25°C unless otherwise noted)						
PARAMETER		**CONDITIONS**	**SYMBOL**	**TYP**	**MAX**	**UNIT**
Reverse current @ rated V_R (2)	MBRS1035 MBRS1045 MBRS1050 MBRS1060 MBRS1090 MBRS10100 MBRS10150	T_J = 25°C	I_R	-	100	μA
	MBRS1035 MBRS1045	T_J = 100°C		-	15	mA
	MBRS1050 MBRS1060			-	10	mA
	MBRS1090 MBRS10100 MBRS10150			-	-	mA
	MBRS1035 MBRS1045 MBRS1050 MBRS1060	T_J = 125°C		-	-	mA
	MBRS1090 MBRS10100 MBRS10150			-	5	mA

Notes:

1. Pulse test with PW = 0.3ms
2. Pulse test with PW = 30ms

ORDERING INFORMATION		
ORDERING CODE(1)	**PACKAGE**	**PACKING**
MBRS10x	TO-263AB (D^2PAK)	800 / Tape & Reel

Notes:

1. “x” defines voltage from 35V(MBRS1035) to 150V(MBRS10150)

CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

Fig.1 Forward Current Derating Curve

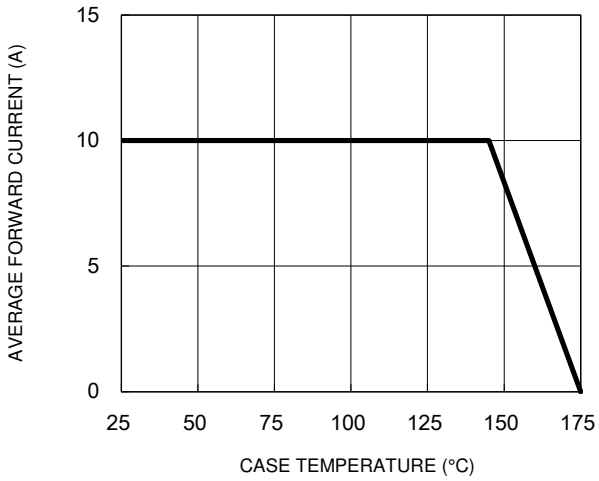


Fig.2 Typical Junction Capacitance

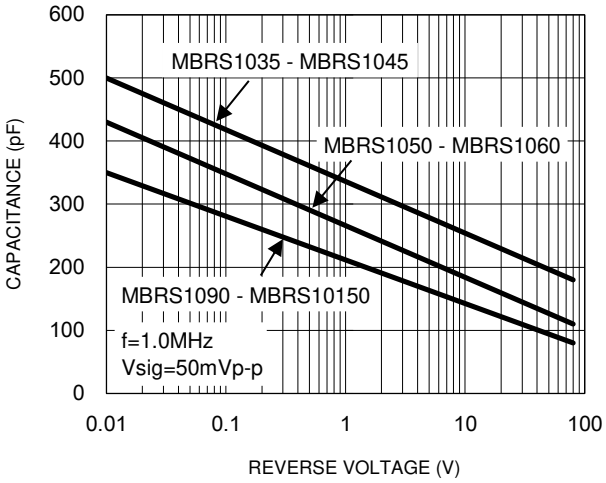


Fig.3 Typical Reverse Characteristics

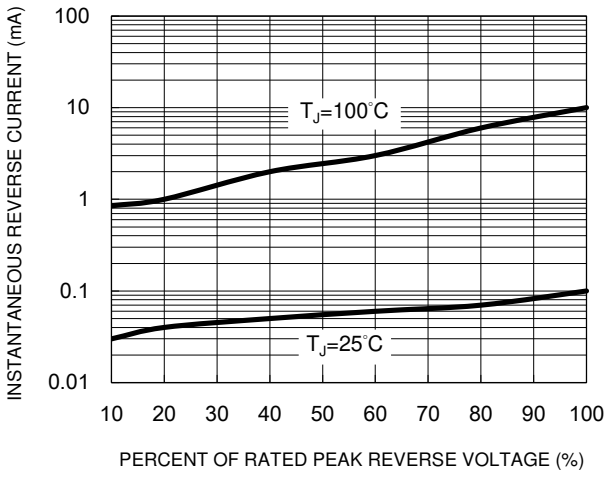


Fig.4 Typical Forward Characteristics

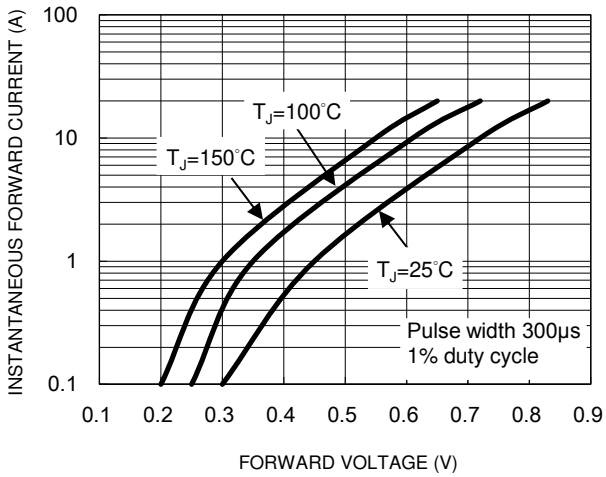
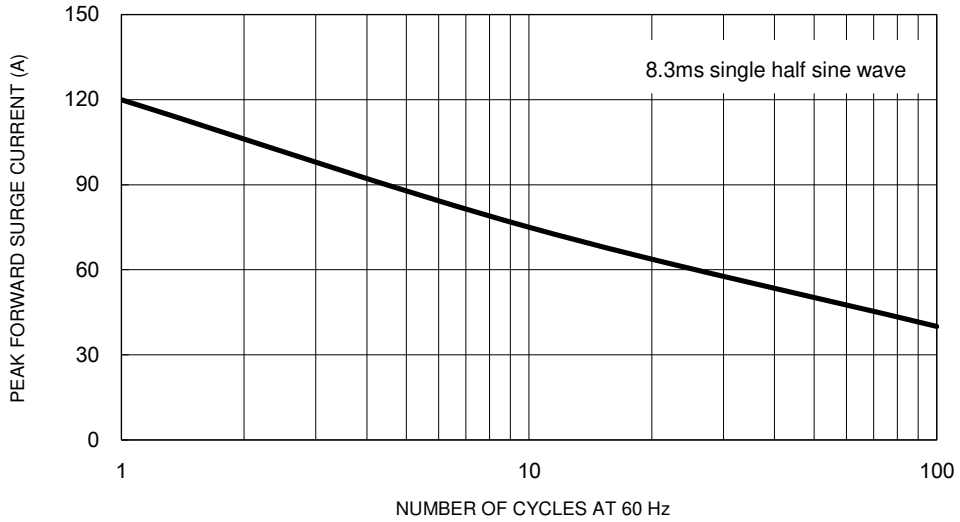


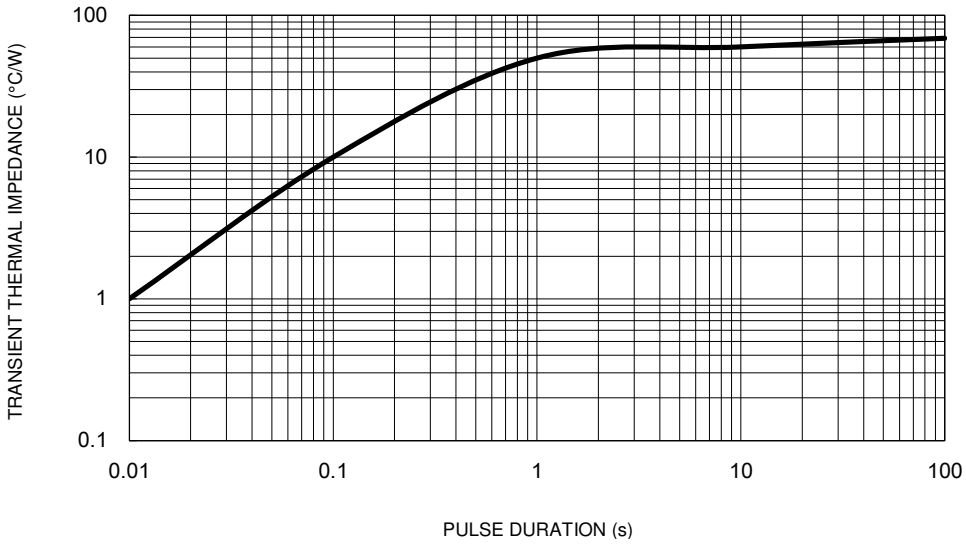
Fig.5 Maximum Non-Repetitive Forward Surge Current



CHARACTERISTICS CURVES

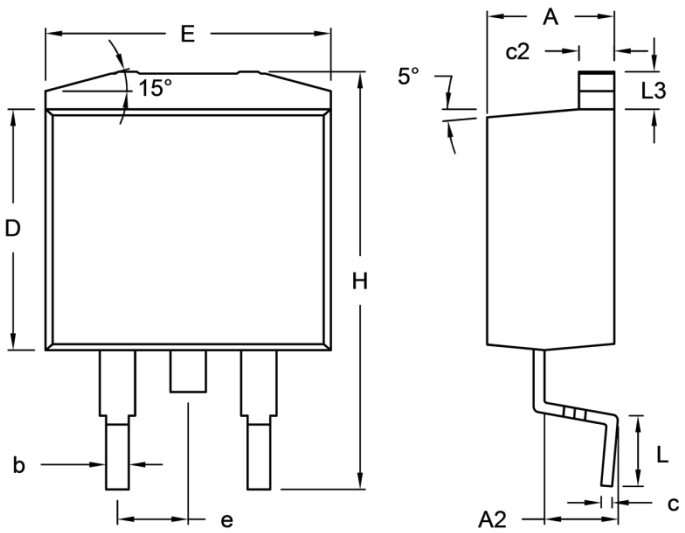
(T_A = 25°C unless otherwise noted)

Fig.6 Typical Transient Thermal Impedance



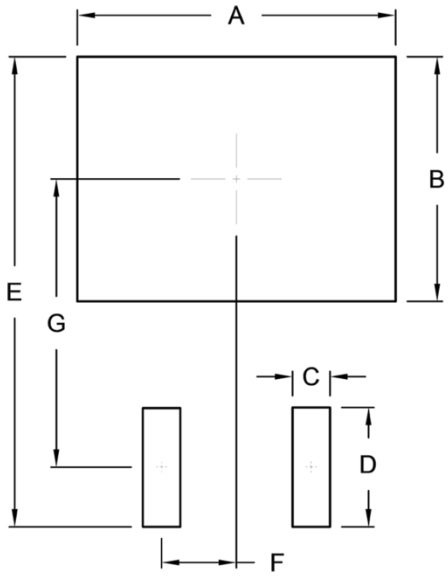
PACKAGE OUTLINE DIMENSIONS

TO-263AB (D^2PAK)



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	4.44	4.70	0.175	0.185
A2	2.03	2.79	0.080	0.110
b	0.68	0.94	0.027	0.037
c	0.36	0.53	0.014	0.021
c2	1.14	1.40	0.045	0.055
D	8.25	9.25	0.325	0.364
E	-	10.50	-	0.413
e	2.41	2.67	0.095	0.105
H	14.60	15.88	0.575	0.625
L	2.29	2.79	0.090	0.110
L3	1.14	1.40	0.045	0.055

SUGGESTED PAD LAYOUT



Symbol	Unit (mm)	Unit (inch)
A	10.80	0.425
B	8.30	0.327
C	1.27	0.050
D	4.05	0.159
E	15.95	0.628
F	2.54	0.100
G	9.775	0.385

MARKING DIAGRAM

P/N = Marking Code
G = Green Compound
YWW = Date Code
F = Factory Code

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