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

FEATURES

- AEC-Q101 qualified
- 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

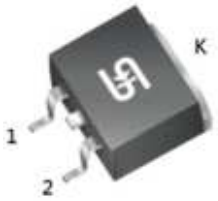
KEY PARAMETERS		
PARAMETER	**VALUE**	**UNIT**
I_F	10	A
V_{RRM}	35 - 150	V
I_{FSM}	120	A
$T_{J\ MAX}$	150	°C
Package	TO-263AB (D^2PAK)	
Configuration	Dual dies	

APPLICATIONS

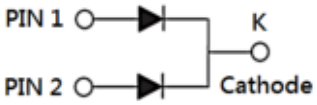
- Low voltage, high freq. inverter
- DC/DC converter
- Freewheeling diodes
- Reverse battery protection
- Car lighting

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)



TO-263AB (D^2PAK)



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

PARAMETER	SYMBOL	MBRS 1035 CTH	MBRS 1045 CTH	MBRS 1050 CTH	MBRS 1060 CTH	MBRS 1090 CTH	MBRS 10100 CTH	MBRS 10150 CTH	UNIT
Marking code on the device		MBRS 1035CT	MBRS 1045CT	MBRS 1050CT	MBRS 1060CT	MBRS 1090CT	MBRS 10100CT	MBRS 10150CT	
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							A
Peak repetitive forward current (Rated V_R, Square wave, 20KHz)	I_{FRM}	10							A
Critical rate of rise of off-state voltage	dv/dt	10,000							V/μs

Notes:

1. tp = 2.0μs, 1.0KHz

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)									
PARAMETER	**SYMBOL**	**MBRS 1035 CTH**	**MBRS 1045 CTH**	**MBRS 1050 CTH**	**MBRS 1060 CTH**	**MBRS 1090 CTH**	**MBRS 10100 CTH**	**MBRS 10150 CTH**	**UNIT**
Junction temperature	T_J	-55 to +150							°C
Storage temperature	T_{STG}	-55 to +150							°C

THERMAL PERFORMANCE			
PARAMETER	**SYMBOL**	**TYP**	**UNIT**
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 per diode [1]	MBRS1035CTH MBRS1045CTH	I_F = 5A, T_J = 25°C	V_F	-	0.70	V
	MBRS1050CTH MBRS1060CTH			-	0.80	V
	MBRS1090CTH MBRS10100CTH			-	0.85	V
	MBRS10150CTH			-	0.88	V
	MBRS1035CTH MBRS1045CTH	I_F = 10A, T_J = 25°C		-	0.80	V
	MBRS1050CTH MBRS1060CTH			-	0.90	V
	MBRS1090CTH MBRS10100CTH			-	0.95	V
	MBRS10150CTH			-	0.98	V
	MBRS1035CTH MBRS1045CTH	I_F = 5A, T_J = 125°C		-	0.57	V
	MBRS1050CTH MBRS1060CTH			-	0.65	V
	MBRS1090CTH MBRS10100CTH			-	0.75	V
	MBRS10150CTH			-	0.78	V
	MBRS1035CTH MBRS1045CTH	I_F = 10A, T_J = 125°C		-	0.67	V
	MBRS1050CTH MBRS1060CTH			-	0.75	V
	MBRS1090CTH MBRS10100CTH			-	0.85	V
	MBRS10150CTH			-	0.88	V

ELECTRICAL SPECIFICATIONS (T_A = 25°C unless otherwise noted)						
PARAMETER		**CONDITIONS**	**SYMBOL**	**TYP**	**MAX**	**UNIT**
Reverse current @ rated V_R per diode (2)	MBRS1035CTH MBRS1045CTH MBRS1050CTH MBRS1060CTH MBRS1090CTH MBRS10100CTH MBRS10150CTH	T_J = 25°C	I_R	-	100	μA
	MBRS1035CTH MBRS1045CTH	T_J = 100°C		-	15	mA
	MBRS1050CTH MBRS1060CTH			-	10	mA
	MBRS1090CTH MBRS10100CTH MBRS10150CTH			-	-	mA
	MBRS1035CTH MBRS1045CTH MBRS1050CTH MBRS1060CTH	T_J = 125°C		-	-	mA
	MBRS1090CTH MBRS10100CTH MBRS10150CTH			-	5	mA

Notes:

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

ORDERING INFORMATION		
ORDERING CODE(1)	**PACKAGE**	**PACKING**
MBRS10xCTH	TO-263AB (D^2PAK)	800 / Tape & Reel

Notes:

1. "x" defines voltage from 35V(MBRS1035CTH) to 150V(MBRS10150CTH)

CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

Fig.1 Forward Current Derating Curve

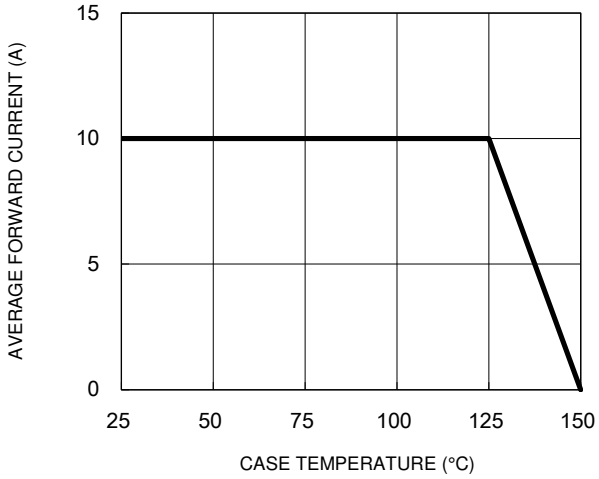


Fig.2 Typical Junction Capacitance

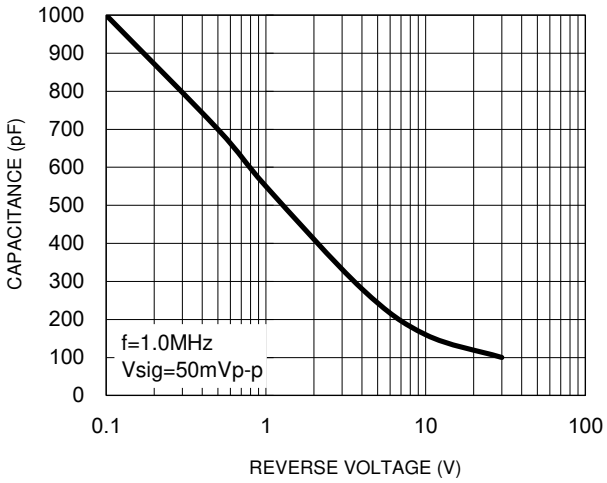


Fig.3 Typical Reverse Characteristics

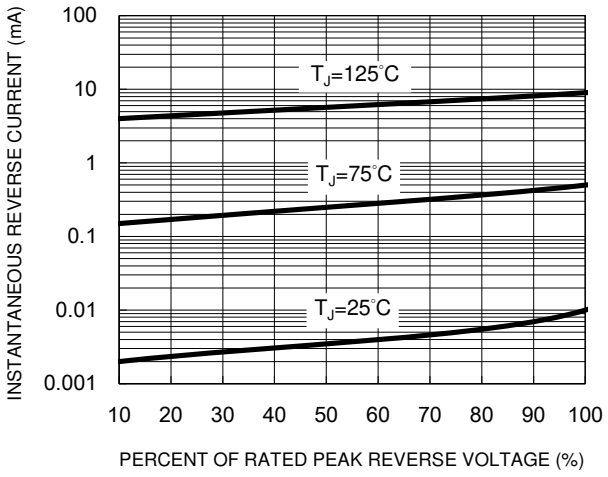


Fig.4 Typical Forward Characteristics

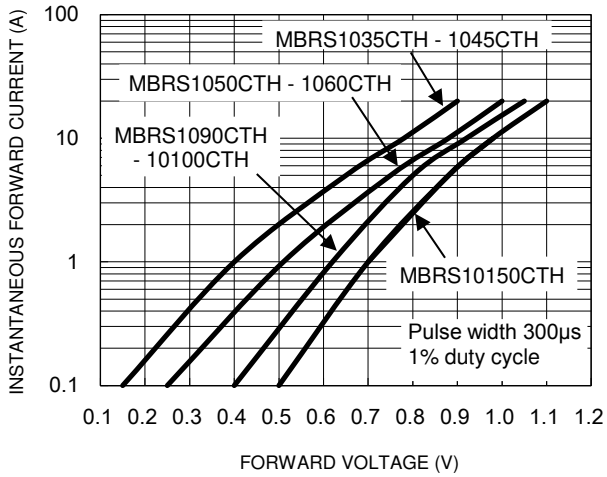
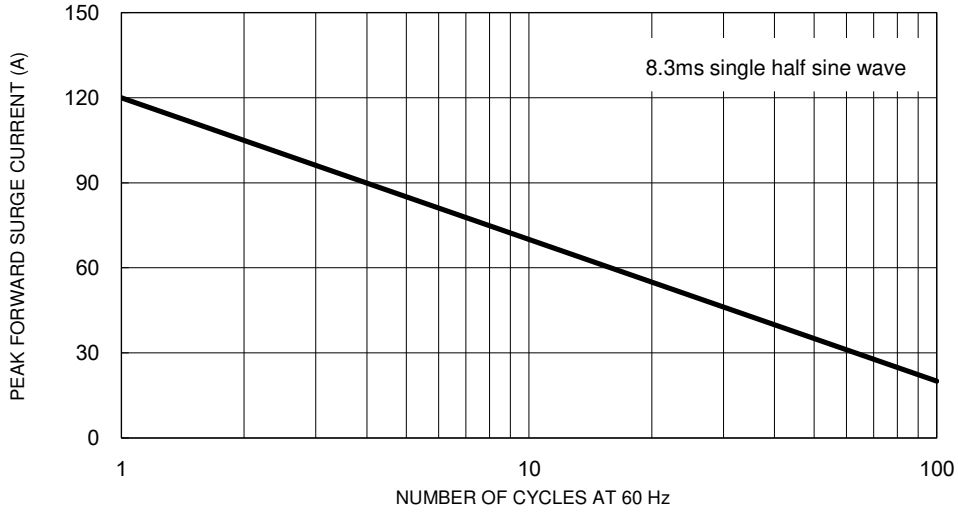


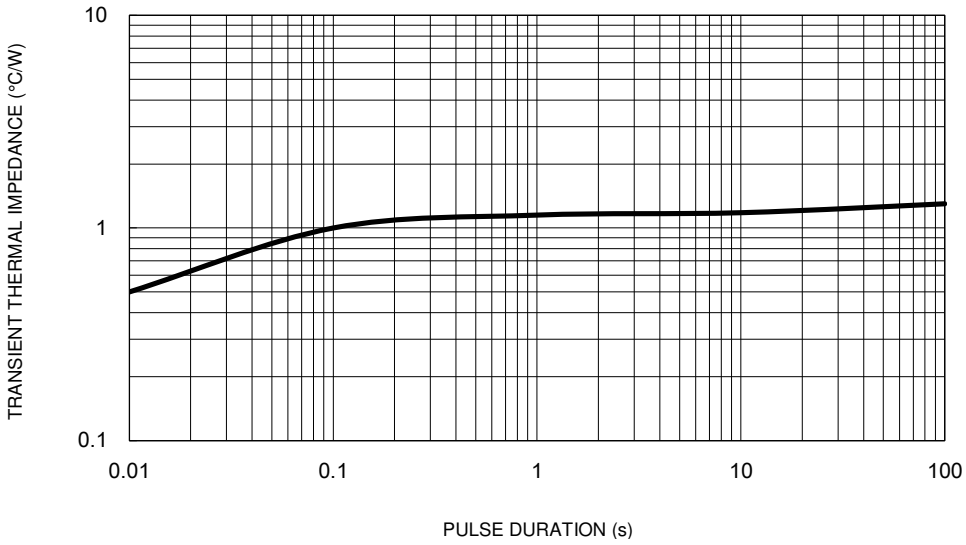
Fig.5 Maximum Non-Repetitive Forward Surge Current



CHARACTERISTICS CURVES

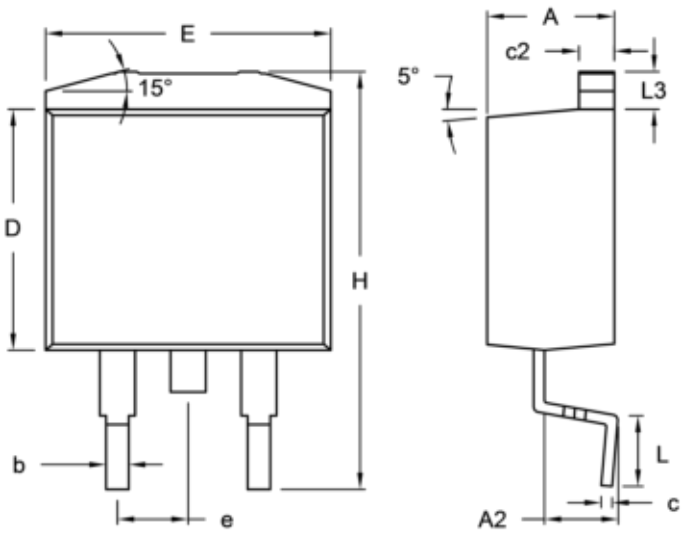
(T_A = 25°C unless otherwise noted)

Fig.6 Typical Transient Thermal Impedance



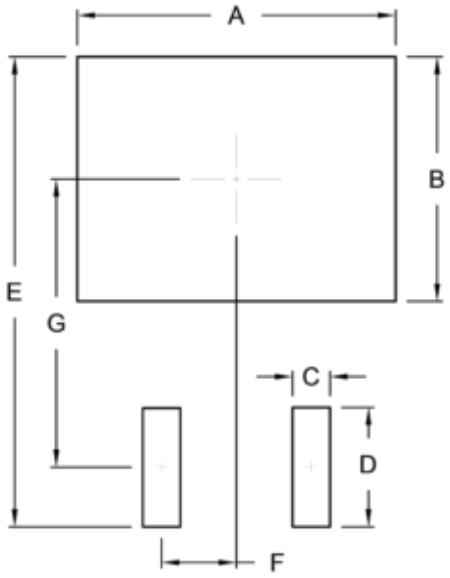
PACKAGE OUTLINE DIMENSIONS

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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