

## 15A, 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

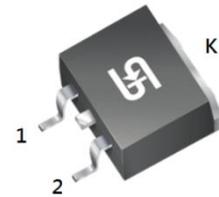
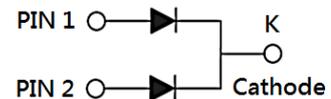
### APPLICATIONS

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

### MECHANICAL DATA

- Case: TO-263AB (D<sup>2</sup>PAK)
- 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
$I_F$	15	A
$V_{RRM}$	35 - 150	V
$I_{FSM}$	150	A
$T_{JMAX}$	150	°C
Package	TO-263AB (D <sup>2</sup> PAK)	
Configuration	Dual dies	


**TO-263AB (D<sup>2</sup>PAK)**


ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)									
PARAMETER	SYMBOL	MBRS 1535 CTH	MBRS 1545 CTH	MBRS 1550 CTH	MBRS 1560 CTH	MBRS 1590 CTH	MBRS 15100 CTH	MBRS 15150 CTH	UNIT
Marking code on the device		MBRS 1535CT	MBRS 1545CT	MBRS 1550CT	MBRS 1560CT	MBRS 1590CT	MBRS 15100CT	MBRS 15150CT	
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	$I_F$	15							A
Surge peak forward current, 8.3ms single half sine wave superimposed on rated load	$I_{FSM}$	150							A
Peak repetitive reverse surge current <sup>(1)</sup>	$I_{RRM}$	1		0.5				A	
Peak repetitive forward current (Rated $V_R$ , Square wave, 20KHz)	$I_{FRM}$	15							A
Critical rate of rise of off-state voltage	dv/dt	10,000							V/ $\mu\text{s}$

**Notes:**

1.  $t_p = 2.0\mu\text{s}$ , 1.0KHz

<b>ABSOLUTE MAXIMUM RATINGS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise noted)									
PARAMETER	SYMBOL	MBRS 1535 CTH	MBRS 1545 CTH	MBRS 1550 CTH	MBRS 1560 CTH	MBRS 1590 CTH	MBRS 15100 CTH	MBRS 15150 CTH	UNIT
Junction temperature	$T_J$	-55 to +150							$^\circ\text{C}$
Storage temperature	$T_{\text{STG}}$	-55 to +150							$^\circ\text{C}$

<b>THERMAL PERFORMANCE</b>			
PARAMETER	SYMBOL	TYP	UNIT
Junction-to-ambient thermal resistance	$R_{\theta JA}$	50	$^\circ\text{C/W}$
Junction-to-case thermal resistance	$R_{\theta JC}$	2	$^\circ\text{C/W}$

<b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise noted)						
PARAMETER	CONDITIONS	SYMBOL	TYP	MAX	UNIT	
Forward voltage per diode <sup>(1)</sup>	MBRS1535CTH MBRS1545CTH	$I_F = 7.5\text{A}, T_J = 25^\circ\text{C}$	$V_F$	-	-	V
	MBRS1550CTH MBRS1560CTH			-	0.75	V
	MBRS1590CTH MBRS15100CTH			-	0.92	V
	MBRS15150CTH			-	0.95	V
	MBRS1535CTH MBRS1545CTH			$I_F = 15.0\text{A}, T_J = 25^\circ\text{C}$	-	0.84
	MBRS1550CTH MBRS1560CTH	-			-	V
	MBRS1590CTH MBRS15100CTH	-			-	V
	MBRS15150CTH	-			-	V
	MBRS1535CTH MBRS1545CTH	$I_F = 7.5\text{A}, T_J = 125^\circ\text{C}$			-	0.57
	MBRS1550CTH MBRS1560CTH			-	0.65	V
	MBRS1590CTH MBRS15100CTH			-	0.82	V
	MBRS15150CTH			-	0.92	V
	MBRS1535CTH MBRS1545CTH			$I_F = 15.0\text{A}, T_J = 125^\circ\text{C}$	-	0.72
	MBRS1550CTH MBRS1560CTH	-			-	V
	MBRS1590CTH MBRS15100CTH	-			-	V
	MBRS15150CTH	-			-	V

<b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise noted)						
<b>PARAMETER</b>		<b>CONDITIONS</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>MAX</b>	<b>UNIT</b>
Reverse current @ rated $V_R$ per diode <sup>(2)</sup>	MBRS1535CTH MBRS1545CTH MBRS1550CTH MBRS1560CTH MBRS1590CTH MBRS15100CTH MBRS15150CTH	$T_J = 25^\circ\text{C}$	$I_R$	-	100	$\mu\text{A}$
	MBRS1535CTH MBRS1545CTH	$T_J = 125^\circ\text{C}$		-	15	mA
	MBRS1550CTH MBRS1560CTH			-	10	mA
	MBRS1590CTH MBRS15100CTH MBRS15150CTH			-	5	mA

**Notes:**

1. Pulse test with  $PW = 0.3\text{ms}$
2. Pulse test with  $PW = 30\text{ms}$

<b>ORDERING INFORMATION</b>		
<b>ORDERING CODE</b> <sup>(1)</sup>	<b>PACKAGE</b>	<b>PACKING</b>
MBRS15xCTH	TO-263AB (D <sup>2</sup> PAK)	800 / Tape & Reel

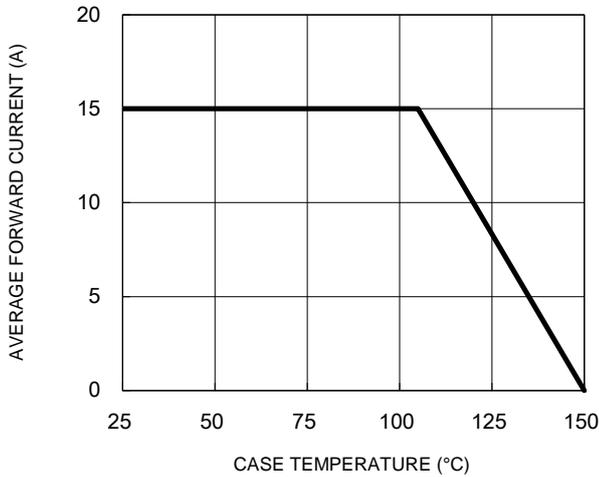
**Notes:**

1. "x" defines voltage from 35V(MBRS1535CTH) to 150V(MBRS15150CTH)

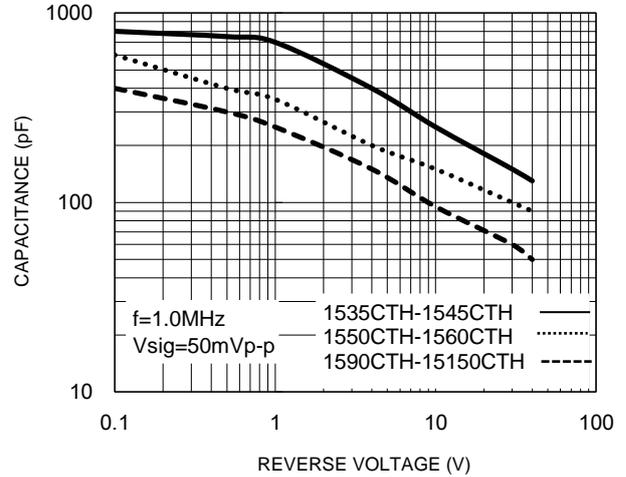
**CHARACTERISTICS CURVES**

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

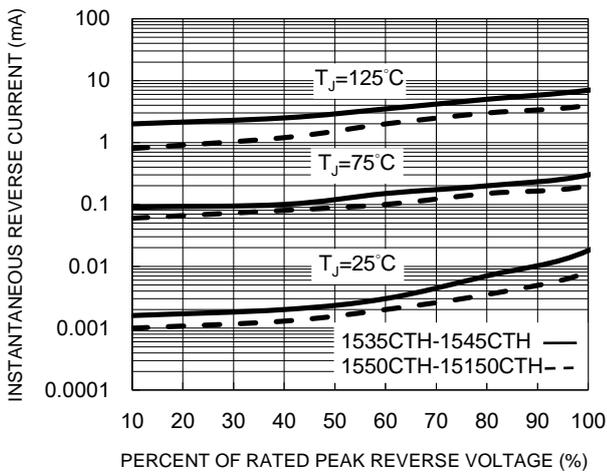
**Fig.1 Forward Current Derating Curve**



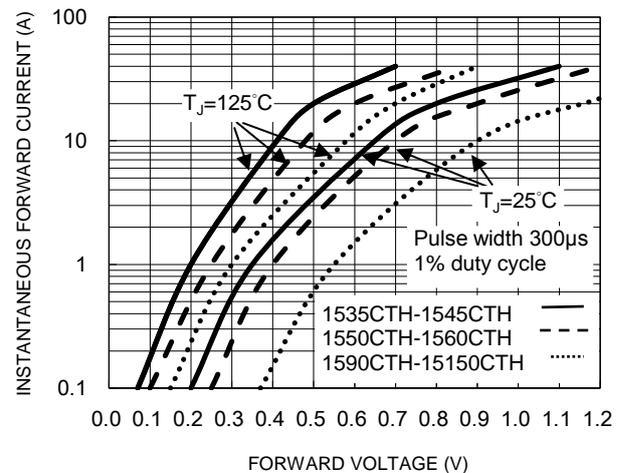
**Fig.2 Typical Junction Capacitance**



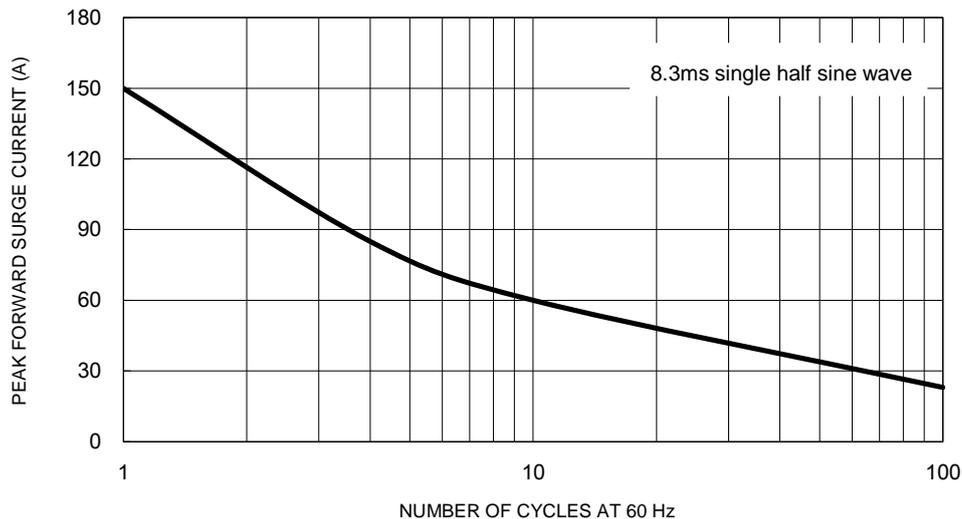
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**



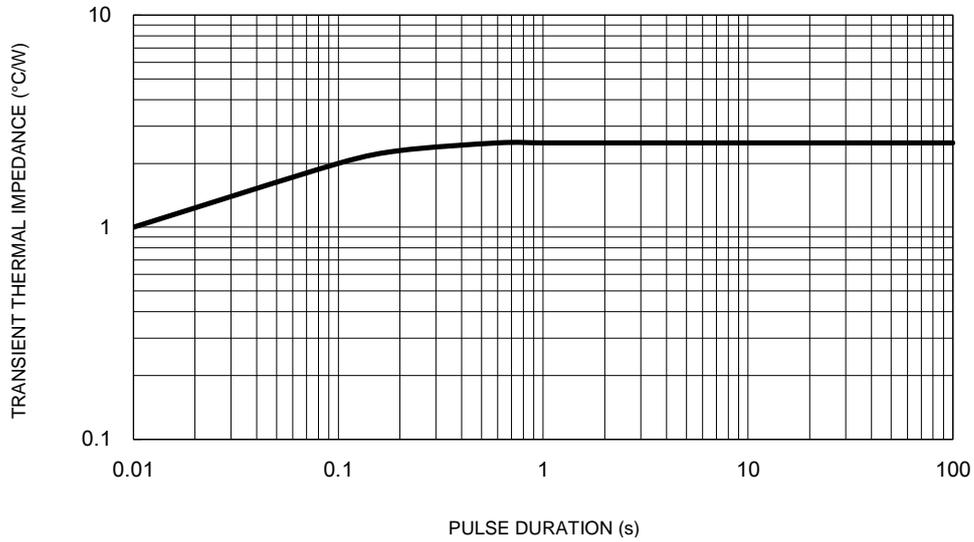
**Fig.5 Maximum Non-Repetitive Forward Surge Current**



**CHARACTERISTICS CURVES**

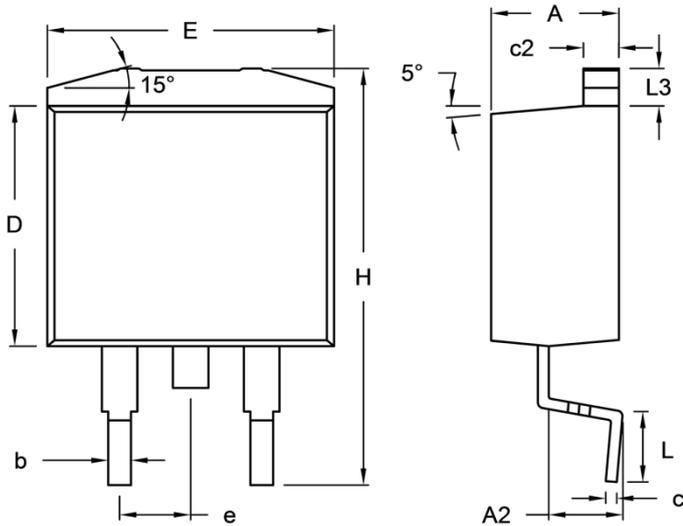
( $T_A = 25^\circ\text{C}$  unless otherwise noted)

**Fig.6 Typical Transient Thermal Impedance**



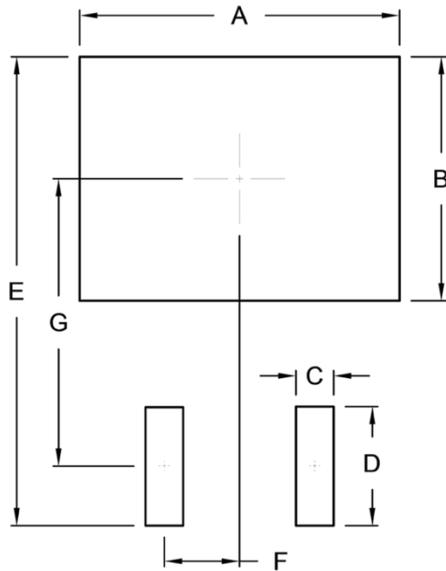
**PACKAGE OUTLINE DIMENSIONS**

TO-263AB (D<sup>2</sup>PAK)



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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