

## 15A, 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

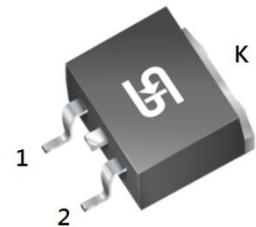
### APPLICATIONS

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

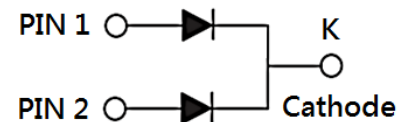
### MECHANICAL DATA

- Case: TO-263AB (D<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 CT	MBRS 1545 CT	MBRS 1550 CT	MBRS 1560 CT	MBRS 1590 CT	MBRS 15100 CT	MBRS 15150 CT	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)									
<b>PARAMETER</b>	<b>SYMBOL</b>	<b>MBRS 1535 CT</b>	<b>MBRS 1545 CT</b>	<b>MBRS 1550 CT</b>	<b>MBRS 1560 CT</b>	<b>MBRS 1590 CT</b>	<b>MBRS 15100 CT</b>	<b>MBRS 15150 CT</b>	<b>UNIT</b>
Junction temperature	$T_J$	-55 to +150							$^\circ\text{C}$
Storage temperature	$T_{STG}$	-55 to +150							$^\circ\text{C}$

<b>THERMAL PERFORMANCE</b>			
<b>PARAMETER</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>UNIT</b>
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)						
<b>PARAMETER</b>		<b>CONDITIONS</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>MAX</b>	<b>UNIT</b>
Forward voltage per diode <sup>(1)</sup>	MBRS1535CT MBRS1545CT	$I_F = 7.5\text{A}, T_J = 25^\circ\text{C}$	$V_F$	-	-	V
	MBRS1550CT MBRS1560CT			-	0.75	V
	MBRS1590CT MBRS15100CT			-	0.92	V
	MBRS15150CT			-	0.95	V
	MBRS1535CT MBRS1545CT			$I_F = 15.0\text{A}, T_J = 25^\circ\text{C}$	-	0.84
	MBRS1550CT MBRS1560CT	-			-	V
	MBRS1590CT MBRS15100CT	-			-	V
	MBRS15150CT	-			-	V
	MBRS1535CT MBRS1545CT	$I_F = 7.5\text{A}, T_J = 125^\circ\text{C}$			-	0.57
	MBRS1550CT MBRS1560CT			-	0.65	V
	MBRS1590CT MBRS15100CT			-	0.82	V
	MBRS15150CT			-	0.92	V
	MBRS1535CT MBRS1545CT			$I_F = 15.0\text{A}, T_J = 125^\circ\text{C}$	-	0.72
	MBRS1550CT MBRS1560CT	-			-	V
	MBRS1590CT MBRS15100CT	-			-	V
	MBRS15150CT	-			-	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>	MBRS1535CT MBRS1545CT MBRS1550CT MBRS1560CT MBRS1590CT MBRS15100CT MBRS15150CT	$T_J = 25^\circ\text{C}$	$I_R$	-	100	$\mu\text{A}$
	MBRS1535CT MBRS1545CT	$T_J = 125^\circ\text{C}$		-	15	mA
	MBRS1550CT MBRS1560CT			-	10	mA
	MBRS1590CT MBRS15100CT MBRS15150CT			-	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<sup>(1)</sup></b>	<b>PACKAGE</b>	<b>PACKING</b>
MBRS15xCT	TO-263AB (D <sup>2</sup> PAK)	800 / Tape & Reel

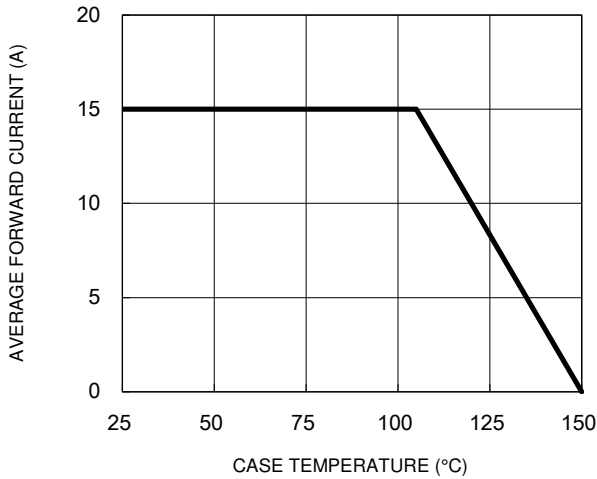
**Notes:**

1. "x" defines voltage from 35V(MBRS1535CT) to 150V(MBRS15150CT)

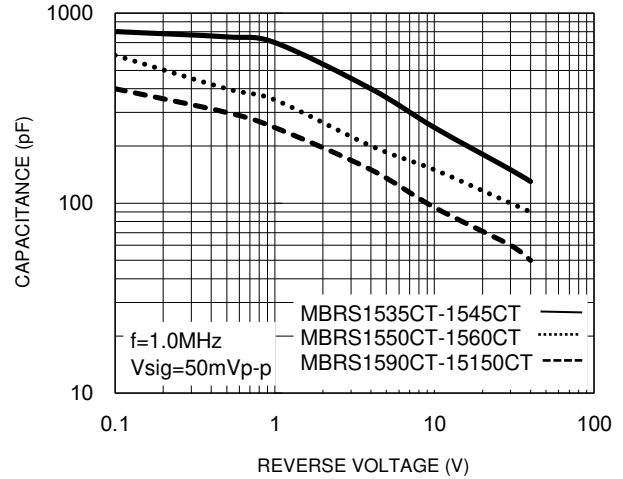
**CHARACTERISTICS CURVES**

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

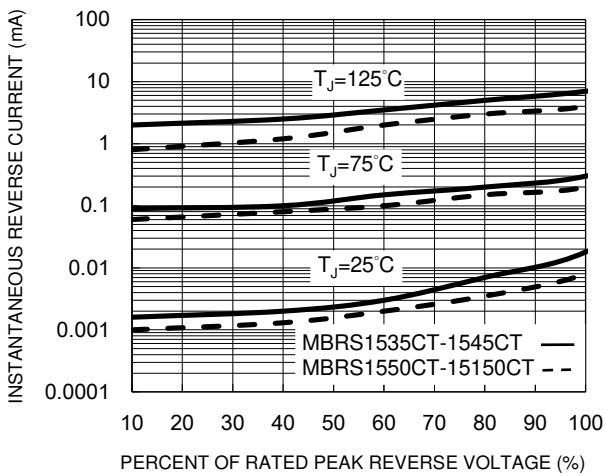
**Fig.1 Forward Current Derating Curve**



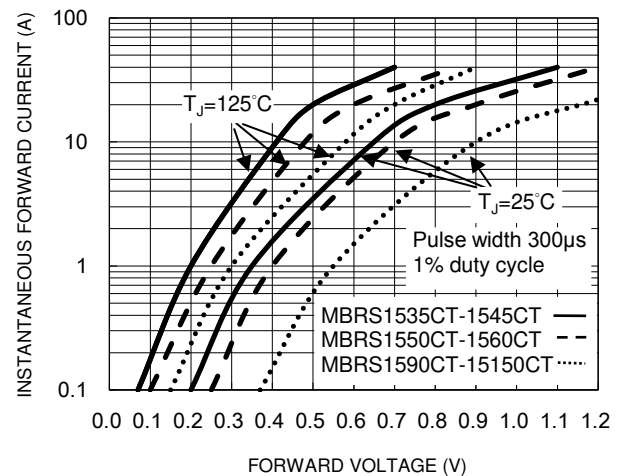
**Fig.2 Typical Junction Capacitance**



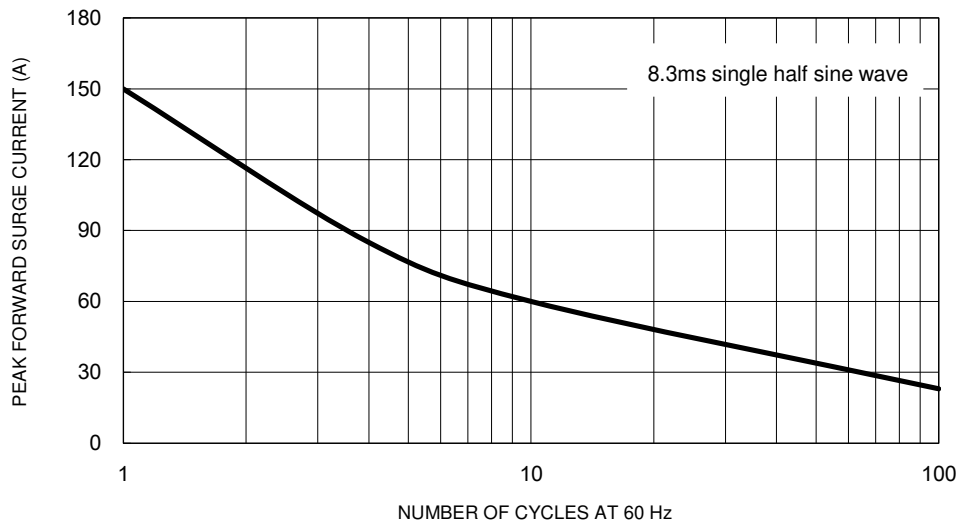
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**



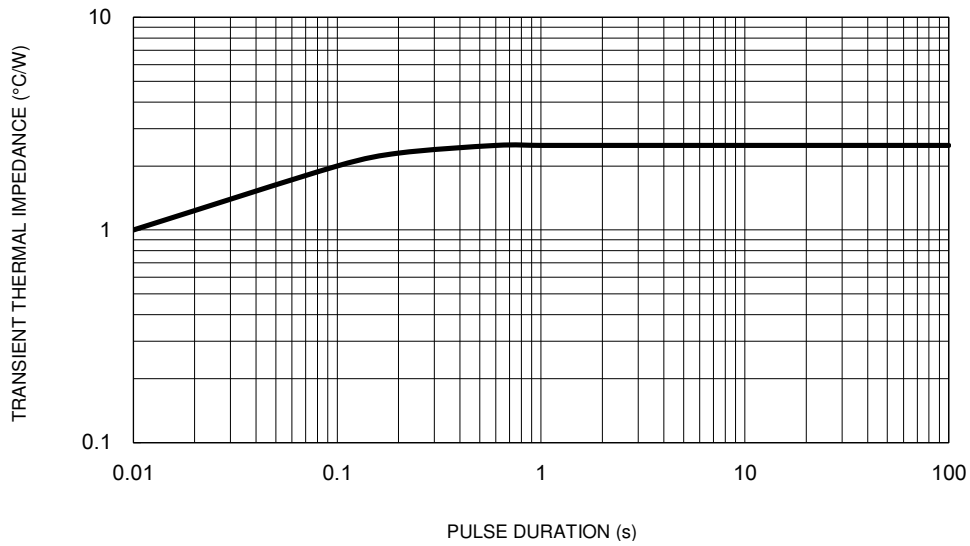
**Fig.5 Maximum Non-Repetitive Forward Surge Current**



**CHARACTERISTICS CURVES**

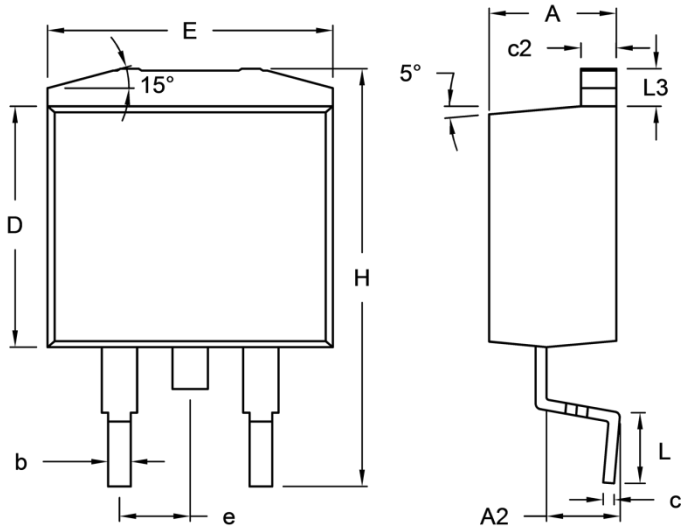
( $T_A = 25^\circ\text{C}$  unless otherwise noted)

**Fig.6 Typical Transient Thermal Impedance**



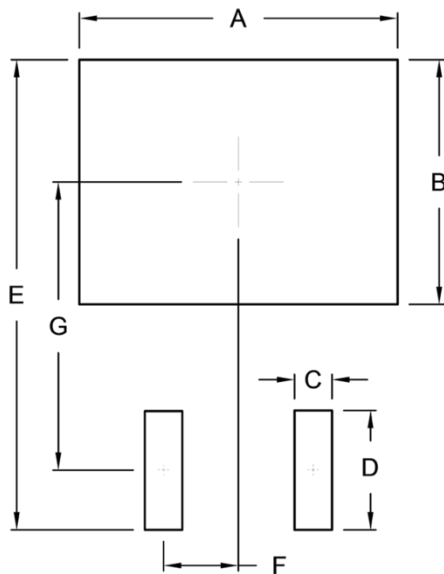
**PACKAGE OUTLINE DIMENSIONS**

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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