

## 25A, 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

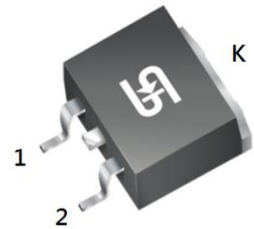
### APPLICATIONS

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

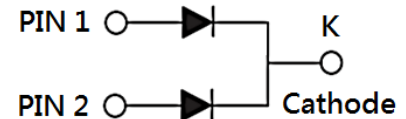
### MECHANICAL DATA

- 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
$I_F$	25	A
$V_{RRM}$	35 - 150	V
$I_{FSM}$	200	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	MBRS	MBRS	MBRS	MBRS	MBRS	MBRS	UNIT
		2535 CT	2545 CT	2550 CT	2560 CT	2590 CT	25100 CT	25150 CT	
Marking code on the device		MBRS 2535CT	MBRS 2545CT	MBRS 2550CT	MBRS 2560CT	MBRS 2590CT	MBRS 25100CT	MBRS 25150CT	
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	$I_F$	25							A
Surge peak forward current, 8.3ms single half sine wave superimposed on rated load	$I_{FSM}$	200							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)	$I_{FRM}$	25							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 2535 CT	MBRS 2545 CT	MBRS 2550 CT	MBRS 2560 CT	MBRS 2590 CT	MBRS 25100 CT	MBRS 25150 CT	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-case thermal resistance	$R_{\theta\text{JC}}$	1	$^\circ\text{C/W}$

<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>	MBRS2535CT	$I_F = 12.5\text{A}, T_J = 25^\circ\text{C}$	$V_F$	-	0.65	V
	MBRS2545CT			-	0.75	V
	MBRS2550CT			-	0.85	V
	MBRS2560CT			-	0.95	V
	MBRS2590CT			-	0.82	V
	MBRS25100CT	$I_F = 25.0\text{A}, T_J = 25^\circ\text{C}$		-	0.90	V
	MBRS25150CT			-	0.92	V
	MBRS2535CT			-	1.02	V
	MBRS2545CT			-	0.55	V
	MBRS2550CT			$I_F = 12.5\text{A}, T_J = 125^\circ\text{C}$	-	0.65
	MBRS2560CT	-			0.75	V
	MBRS2590CT	-			0.92	V
	MBRS25100CT	-			0.73	V
	MBRS25150CT	$I_F = 25.0\text{A}, T_J = 125^\circ\text{C}$			-	0.80
	MBRS2535CT			-	0.88	V
	MBRS2545CT			-	0.98	V
	MBRS2550CT					
	MBRS2560CT					

<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>	MBRS2535CT MBRS2545CT MBRS2550CT MBRS2560CT	$T_J = 25^\circ\text{C}$	$I_R$	-	200	$\mu\text{A}$
	MBRS2590CT MBRS25100CT MBRS25150CT			-	100	$\mu\text{A}$
	MBRS2535CT MBRS2545CT	$T_J = 125^\circ\text{C}$		-	15	mA
	MBRS2550CT MBRS2560CT			-	10	mA
	MBRS2590CT MBRS25100CT			-	7.5	mA
	MBRS25150CT			-	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>
MBRS25xCT	TO-263AB ( $D^2\text{PAK}$ )	800 / Tape & Reel

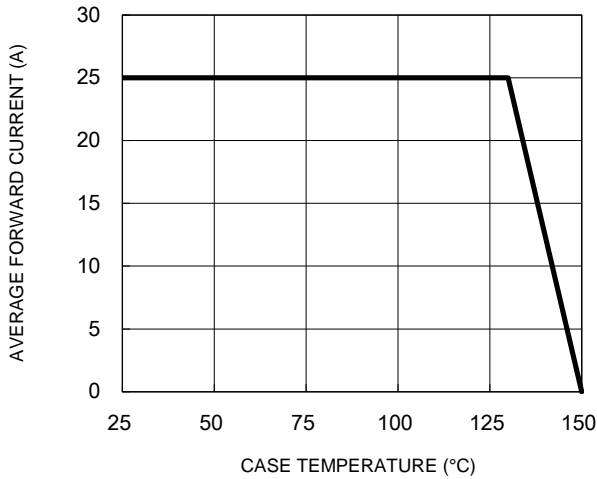
**Notes:**

1. "x" defines voltage from 35V(MBRS2535CT) to 150V(MBRS25150CT)

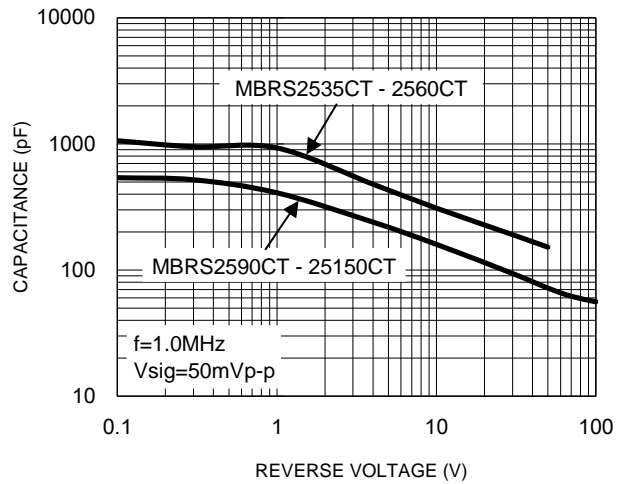
**CHARACTERISTICS CURVES**

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

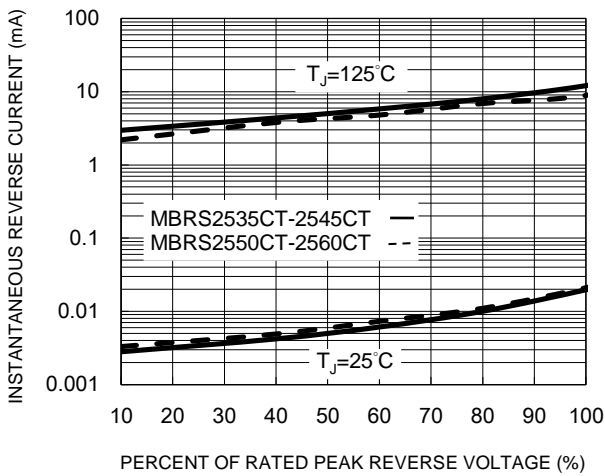
**Fig.1 Forward Current Derating Curve**



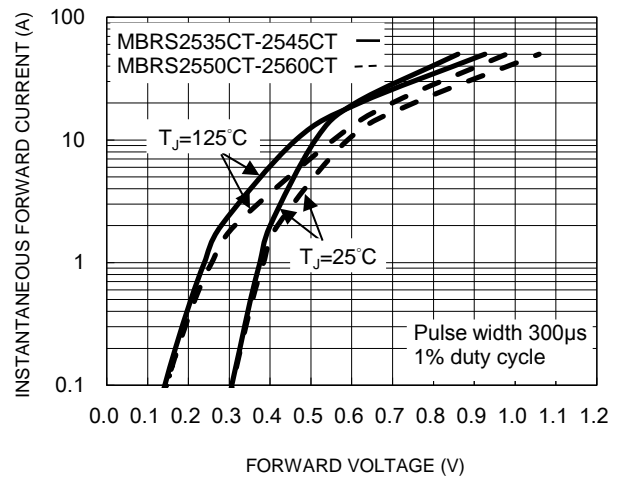
**Fig.2 Typical Junction Capacitance**



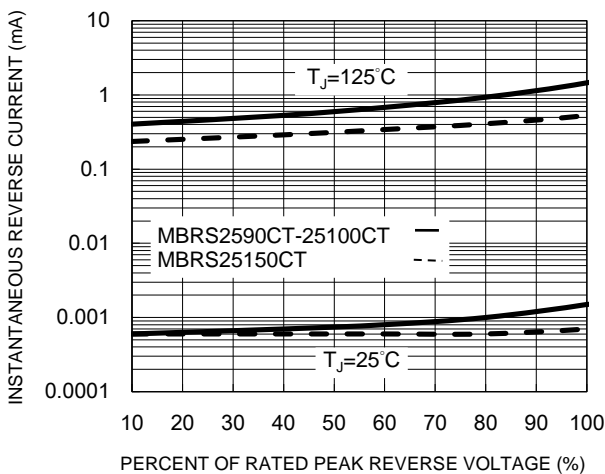
**Fig.3 Typical Reverse Characteristics**



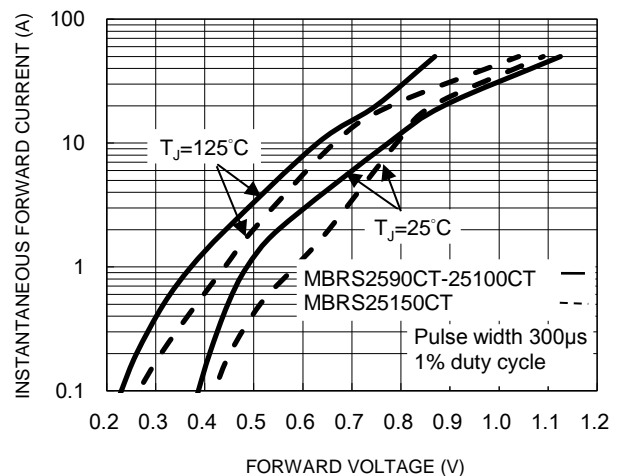
**Fig.4 Typical Forward Characteristics**



**Fig.5 Typical Reverse Characteristics**



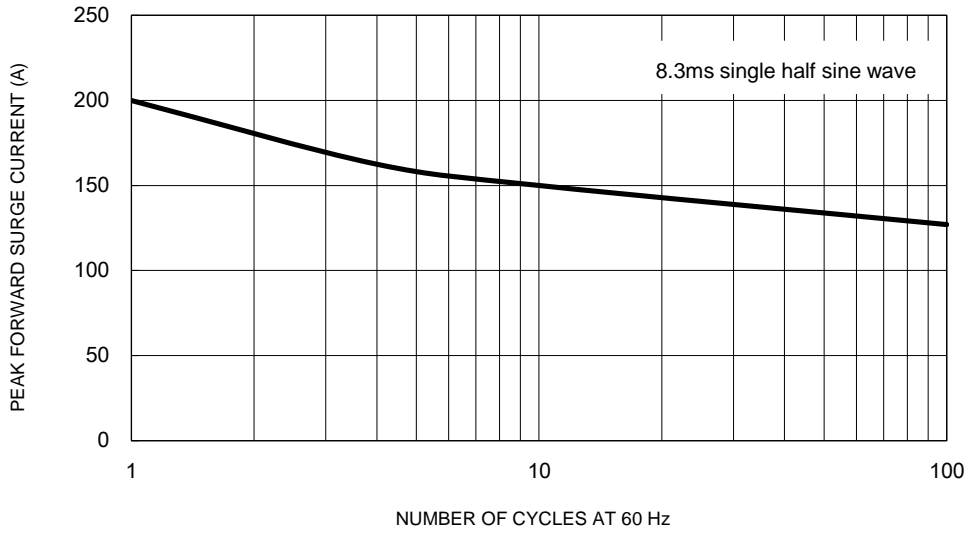
**Fig.6 Typical Forward Characteristics**



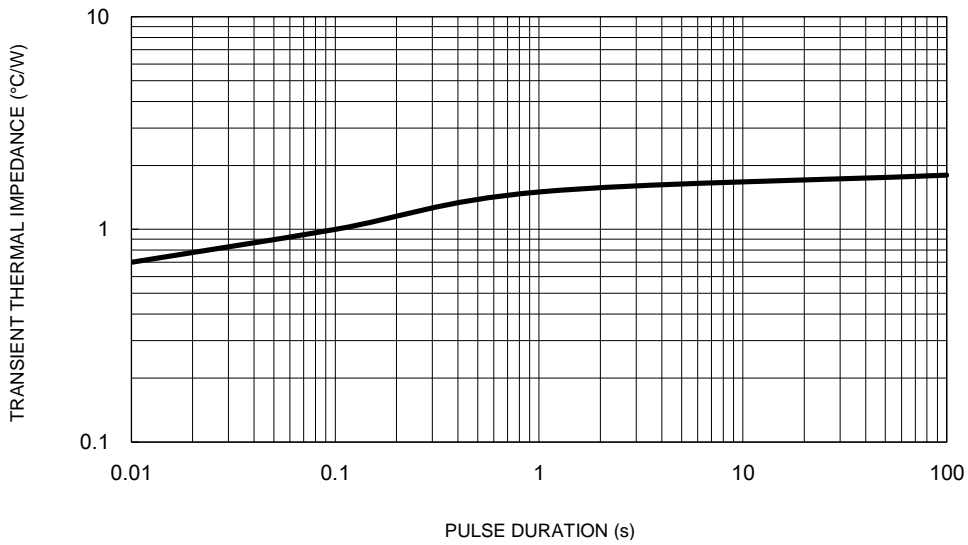
**CHARACTERISTICS CURVES**

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

**Fig.7 Maximum Non-Repetitive Forward Surge Current**

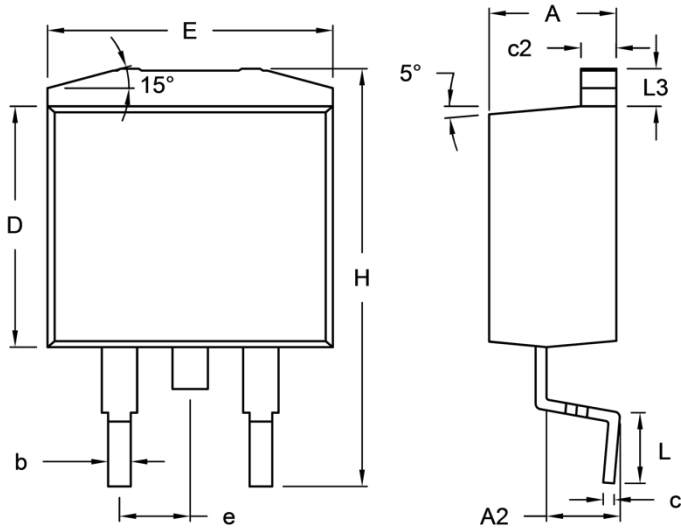


**Fig.8 Typical Transient Thermal Impedance**



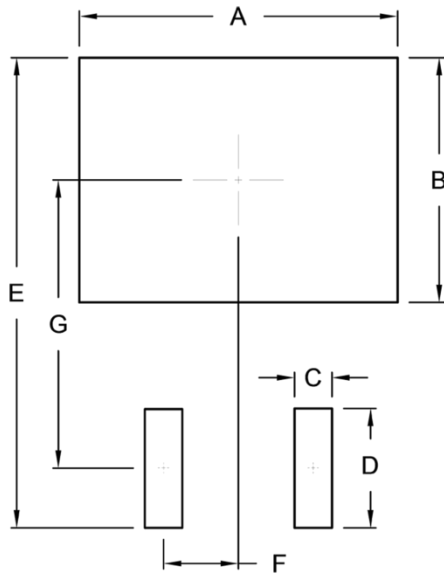
**PACKAGE OUTLINE DIMENSIONS**

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

## **Notice**

Specifications of the products displayed herein are subject to change without notice. TSC or anyone on its behalf assumes no responsibility or liability for any errors or inaccuracies.

Purchasers are solely responsible for the choice, selection, and use of TSC products and TSC assumes no liability for application assistance or the design of Purchasers' products.

Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in TSC's terms and conditions of sale for such products, TSC assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of TSC products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify TSC for any damages resulting from such improper use or sale.