

## 20A, 45V - 200V 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

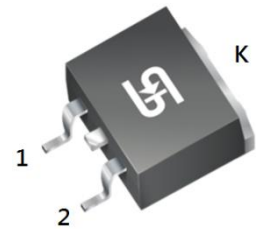
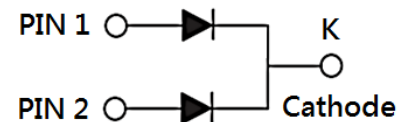
### APPLICATIONS

- 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 1A whisker test
- Polarity: As marked
- Weight: 1.37g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_F$	20	A
$V_{RRM}$	45 - 200	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 2045 CT-Y	MBRS 2060 CT-Y	MBRS 20100 CT-Y	MBRS 20150 CT-Y	MBRS 20200 CT-Y	UNIT
Marking code on the device		MBRS 2045CT	MBRS 2060CT	MBRS 20100CT	MBRS 20150CT	MBRS 20200CT	
Repetitive peak reverse voltage	$V_{RRM}$	45	60	100	150	200	V
Reverse voltage, total rms value	$V_{R(RMS)}$	31	42	70	105	140	V
Forward current	$I_F$	20					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)	$I_{FRM}$	20					A
Critical rate of rise of off-state voltage	dv/dt	10,000					V/ $\mu\text{s}$
Junction temperature	$T_J$	-55 to +150					°C
Storage temperature	$T_{STG}$	-55 to +150					°C

**Notes:**

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

<b>THERMAL PERFORMANCE</b>				
<b>PARAMETER</b>		<b>SYMBOL</b>	<b>TYP</b>	<b>UNIT</b>
Junction-to-case thermal resistance	MBRS2045CT-Y MBRS2060CT-Y	$R_{\theta JC}$	1.5	°C/W
Junction-to-case thermal resistance	MBRS20100CT-Y MBRS20150CT-Y MBRS20200CT-Y	$R_{\theta JC}$	2	°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>	MBRS2045CT-Y	$I_F = 10\text{A}, T_J = 25^\circ\text{C}$	$V_F$	-	0.70	V
	MBRS2060CT-Y			-	0.80	V
	MBRS20100CT-Y			-	0.85	V
	MBRS20150CT-Y MBRS20200CT-Y			-	0.99	V
	MBRS2045CT-Y	$I_F = 10\text{A}, T_J = 125^\circ\text{C}$		-	0.60	V
	MBRS2060CT-Y			-	0.70	V
	MBRS20100CT-Y			-	0.75	V
	MBRS20150CT-Y MBRS20200CT-Y			-	0.87	V
Reverse current @ rated $V_R$ per diode <sup>(2)</sup>	MBRS2045CT-Y MBRS2060CT-Y MBRS20100CT-Y MBRS20150CT-Y MBRS20200CT-Y	$T_J = 25^\circ\text{C}$	$I_R$	-	100	$\mu\text{A}$
	MBRS2045CT-Y	$T_J = 125^\circ\text{C}$		-	15	mA
	MBRS2060CT-Y			-	10	mA
	MBRS20100CT-Y MBRS20150CT-Y MBRS20200CT-Y			-	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>
MBRS20xCT-Y	TO-263AB (D <sup>2</sup> PAK)	800 / Tape & Reel

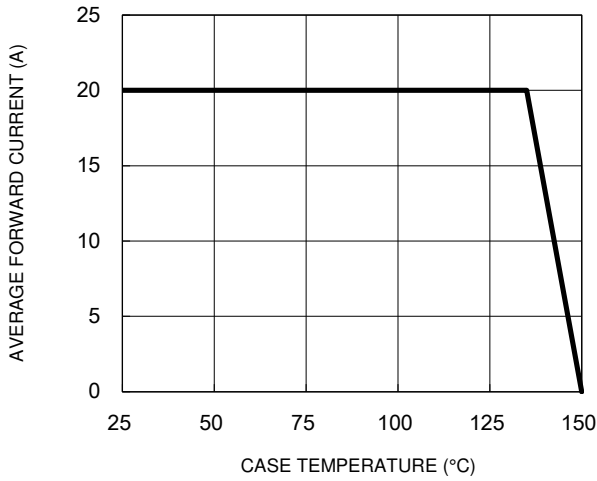
**Notes:**

1. "x" defines voltage from 45V(MBRS2045CT-Y) to 200V(MBRS20200CT-Y)

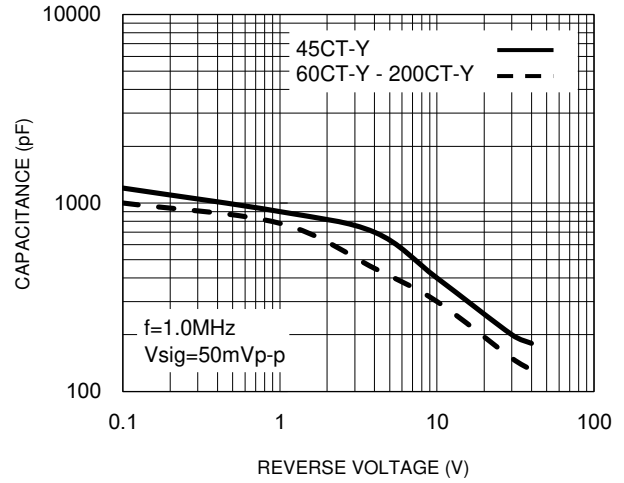
**CHARACTERISTICS CURVES**

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

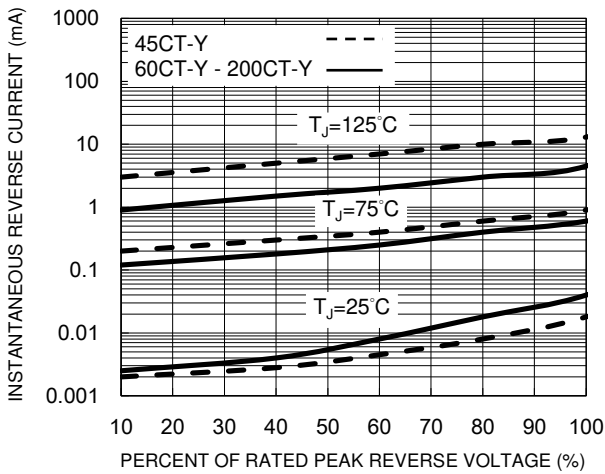
**Fig.1 Forward Current Derating Curve**



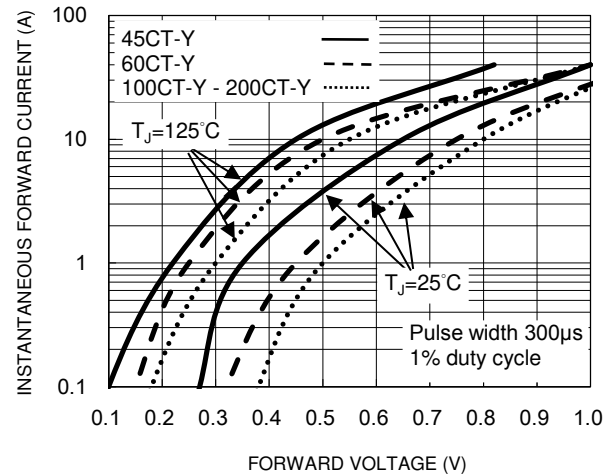
**Fig.2 Typical Junction Capacitance**



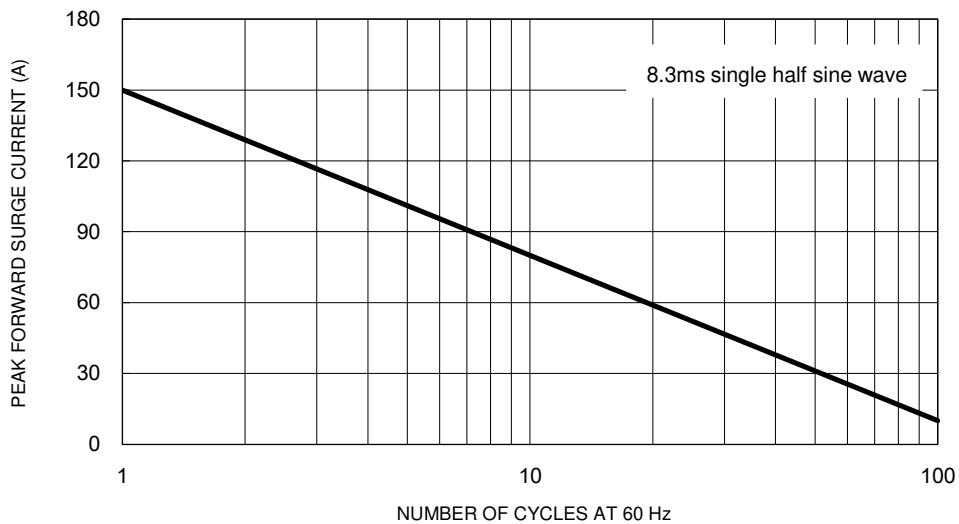
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**



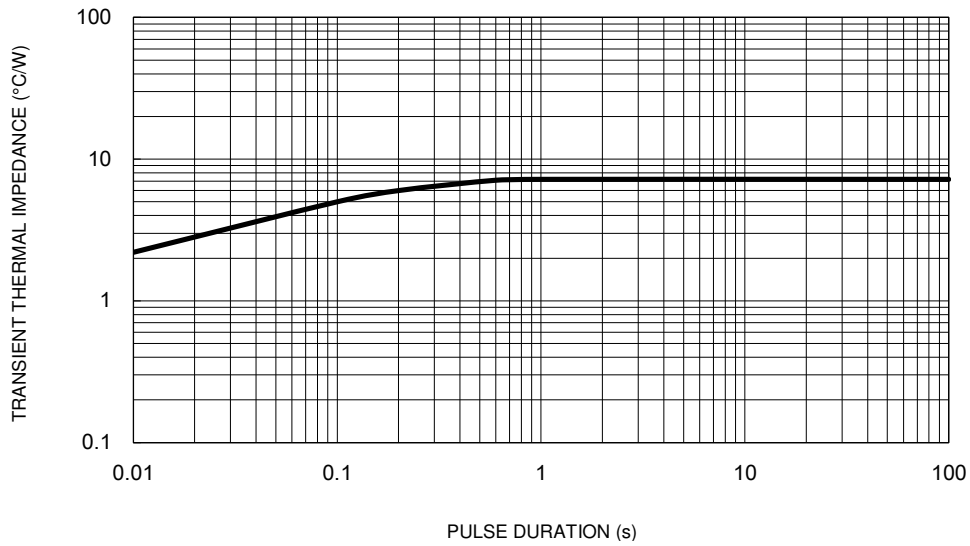
**Fig.5 Maximum Non-Repetitive Forward Surge Current**



**CHARACTERISTICS CURVES**

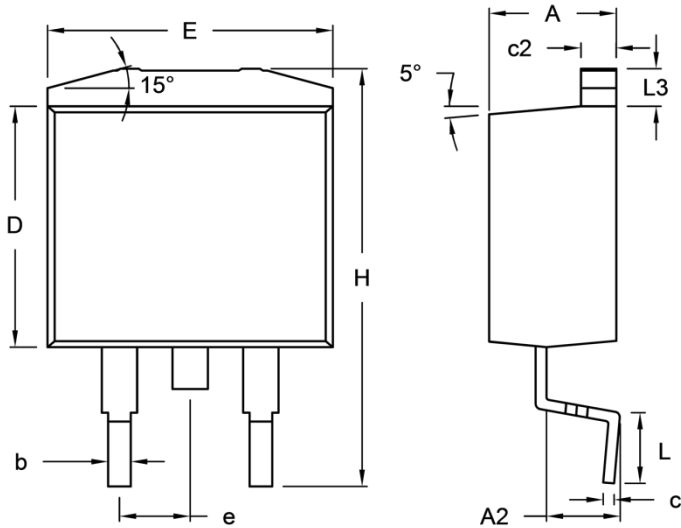
( $T_A = 25^\circ\text{C}$  unless otherwise noted)

**Fig.6 Typical Transient Thermal Impedance**



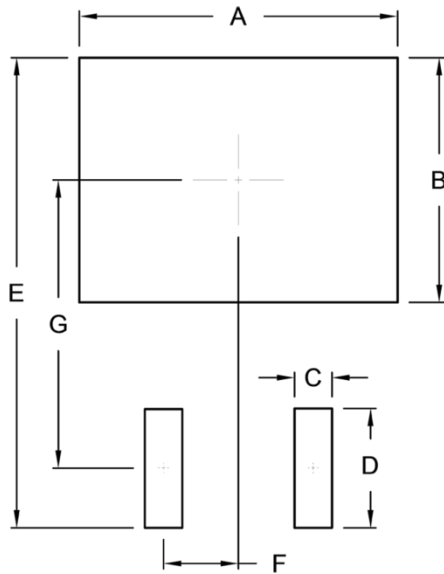
**PACKAGE OUTLINE DIMENSIONS**

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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