

20A, 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

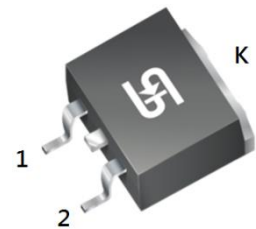
APPLICATIONS

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

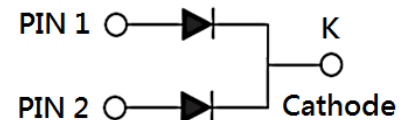
MECHANICAL DATA

- Case: TO-263AB (D²PAK)
- 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	20	A
V_{RRM}	35 - 150	V
I_{FSM}	150	A
T_{JMAX}	150	°C
Package	TO-263AB (D ² PAK)	
Configuration	Dual dies	



TO-263AB (D²PAK)



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)									
PARAMETER	SYMBOL	MBRS 2035 CT	MBRS 2045 CT	MBRS 2050 CT	MBRS 2060 CT	MBRS 2090 CT	MBRS 20100 CT	MBRS 20150 CT	UNIT
Marking code on the device		MBRS 2035CT	MBRS 2045CT	MBRS 2050CT	MBRS 2060CT	MBRS 2090CT	MBRS 20100CT	MBRS 20150CT	
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	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 ⁽¹⁾	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/ μs

Notes:

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

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)									
PARAMETER	SYMBOL	MBRS 2035 CT	MBRS 2045 CT	MBRS 2050 CT	MBRS 2060 CT	MBRS 2090 CT	MBRS 20100 CT	MBRS 20150 CT	UNIT
Junction temperature	T_J	-55 to +150							$^\circ\text{C}$
Storage temperature	T_{STG}	-55 to +150							$^\circ\text{C}$

THERMAL PERFORMANCE				
PARAMETER		SYMBOL	TYP	UNIT
Junction-to-case thermal resistance	MBRS2035CT MBRS2045CT MBRS2050CT MBRS2060CT	$R_{\theta\text{JC}}$	1.5	$^\circ\text{C/W}$
Junction-to-case thermal resistance	MBRS2090CT MBRS20100CT MBRS20150CT	$R_{\theta\text{JC}}$	2	$^\circ\text{C/W}$

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted)						
PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage per diode ⁽¹⁾	MBRS2035CT MBRS2045CT	$I_F = 10\text{A}, T_J = 25^\circ\text{C}$	V_F	-	0.65	V
	MBRS2050CT MBRS2060CT			-	0.80	V
	MBRS2090CT MBRS20100CT			-	0.85	V
	MBRS20150CT			-	0.99	V
	MBRS2035CT MBRS2045CT			$I_F = 20\text{A}, T_J = 25^\circ\text{C}$	-	0.84
	MBRS2050CT MBRS2060CT	-			0.95	V
	MBRS2090CT MBRS20100CT	-			0.95	V
	MBRS20150CT	-			1.23	V
	MBRS2035CT MBRS2045CT	$I_F = 10\text{A}, T_J = 125^\circ\text{C}$			-	0.57
	MBRS2050CT MBRS2060CT			-	0.70	V
	MBRS2090CT MBRS20100CT			-	0.75	V
	MBRS20150CT			-	0.87	V
	MBRS2035CT MBRS2045CT			$I_F = 20\text{A}, T_J = 125^\circ\text{C}$	-	0.72
	MBRS2050CT MBRS2060CT	-			0.85	V
	MBRS2090CT MBRS20100CT	-			0.85	V
MBRS20150CT	-	1.10	V			

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

PARAMETER	CONDITIONS	SYMBOL	TYP	MAX	UNIT	
Reverse current @ rated V_R per diode ⁽²⁾	MBRS2035CT MBRS2045CT MBRS2050CT MBRS2060CT MBRS2090CT MBRS20100CT MBRS20150CT	$T_J = 25^\circ\text{C}$	I_R	-	100	μA
	MBRS2035CT MBRS2045CT	$T_J = 125^\circ\text{C}$		-	15	mA
	MBRS2050CT MBRS2060CT			-	10	mA
	MBRS2090CT MBRS20100CT MBRS20150CT			-	5	mA

Notes:

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

ORDERING INFORMATION

ORDERING CODE ⁽¹⁾	PACKAGE	PACKING
MBRS20xCT	TO-263AB (D ² PAK)	800 / Tape & Reel

Notes:

1. "x" defines voltage from 35V(MBRS2035CT) to 150V(MBRS20150CT)

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

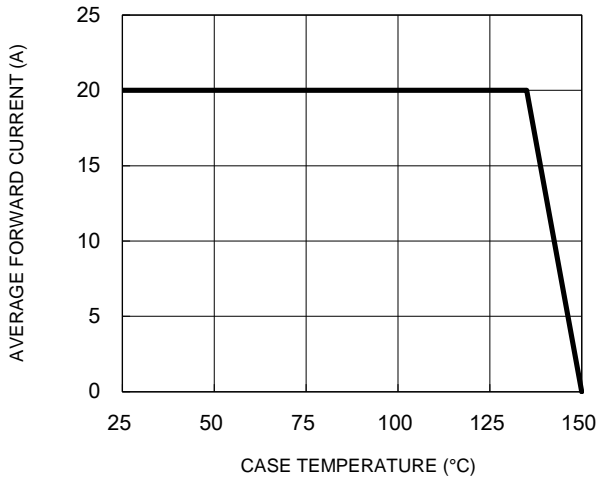


Fig.2 Typical Junction Capacitance

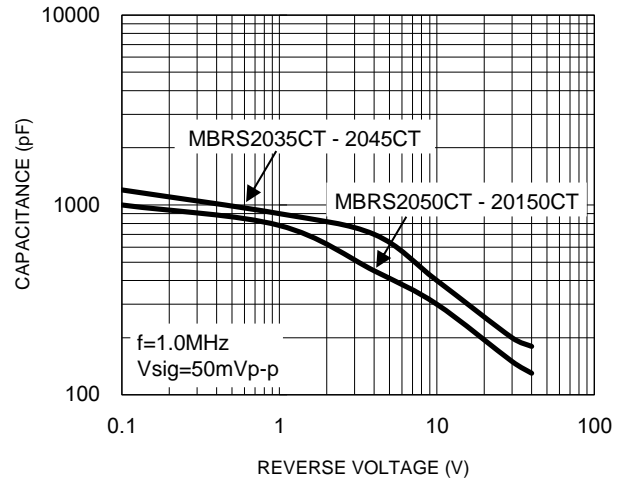


Fig.3 Typical Reverse Characteristics

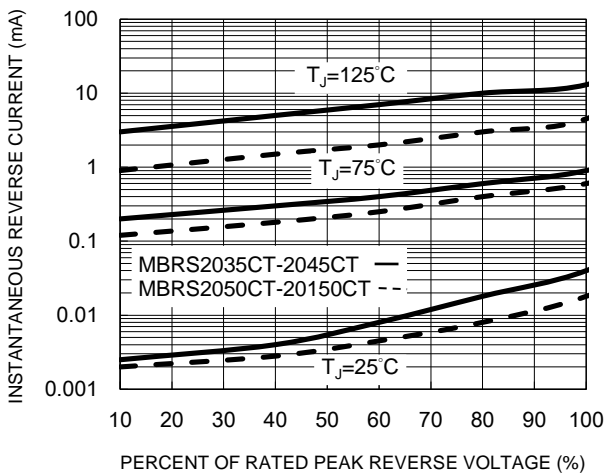


Fig.4 Typical Forward Characteristics

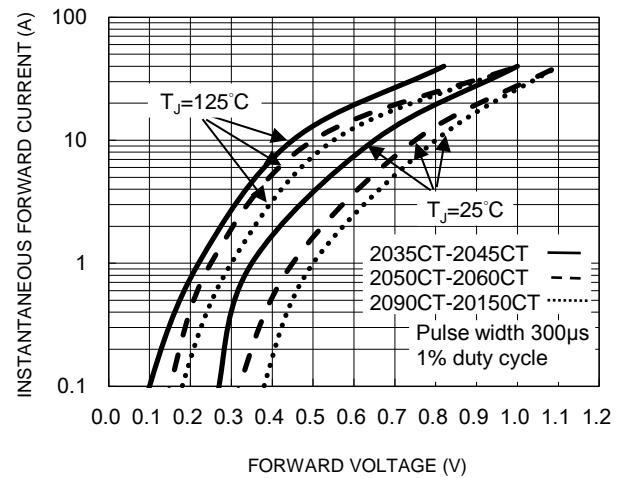
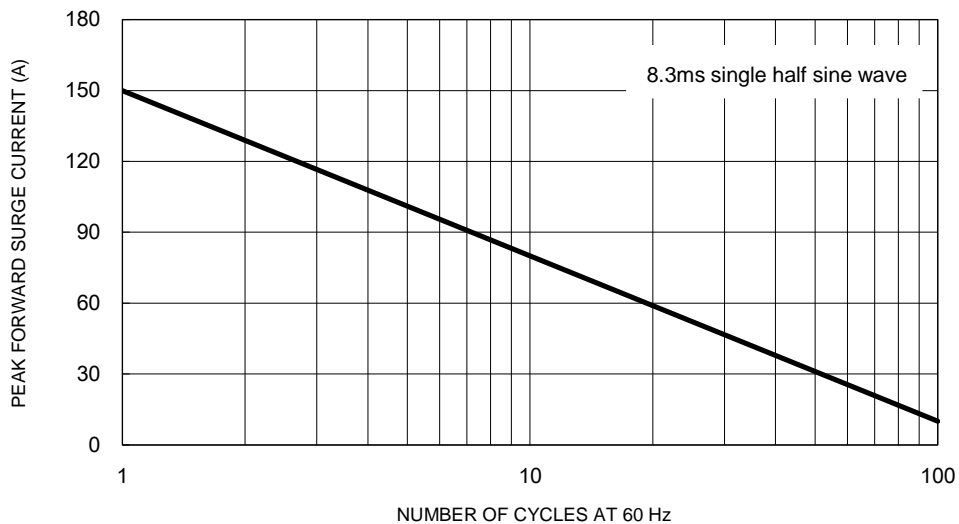


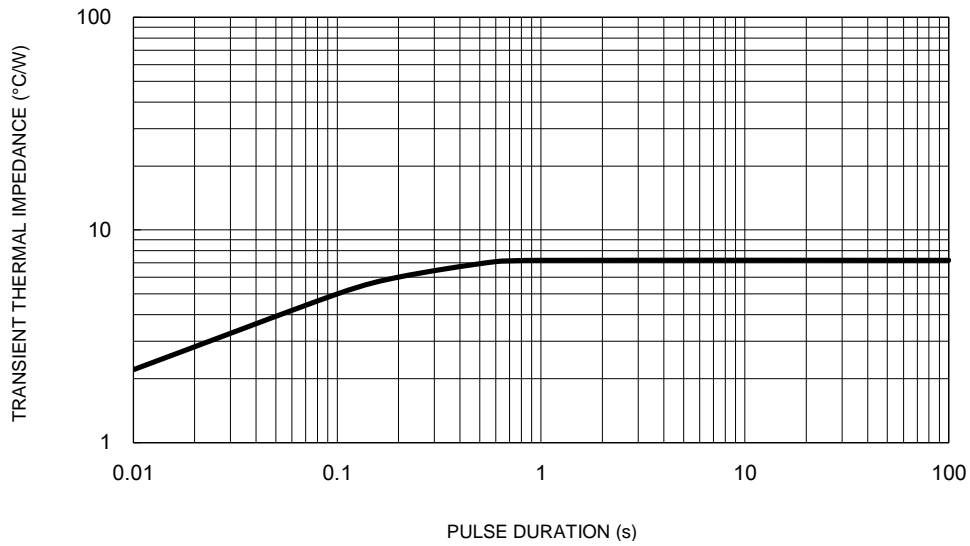
Fig.5 Maximum Non-Repetitive Forward Surge Current



CHARACTERISTICS CURVES

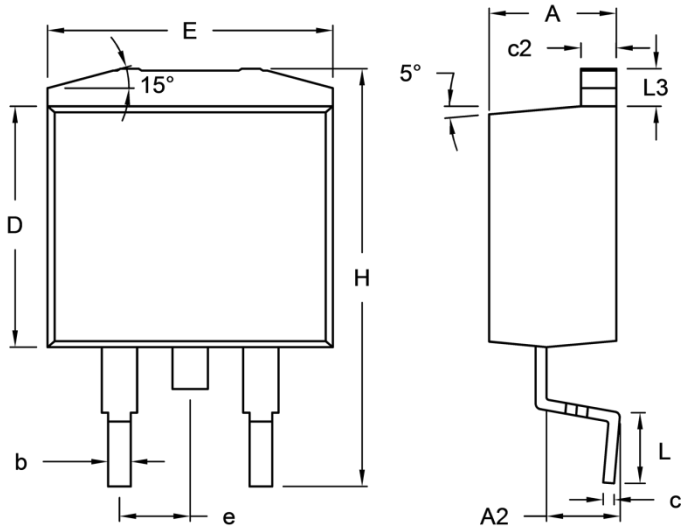
($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.6 Typical Transient Thermal Impedance



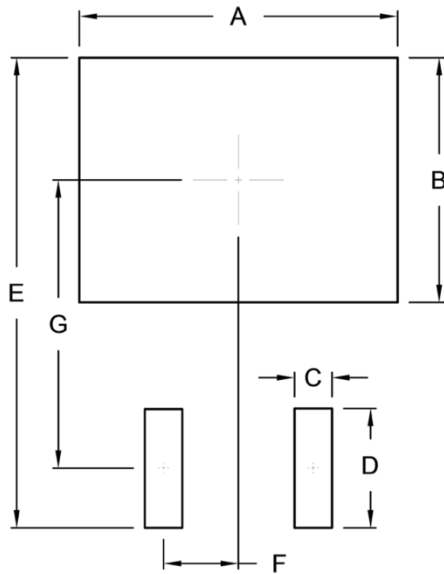
PACKAGE OUTLINE DIMENSIONS

TO-263AB (D²PAK)



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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