

10A, 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

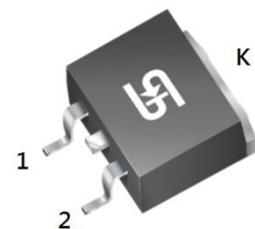
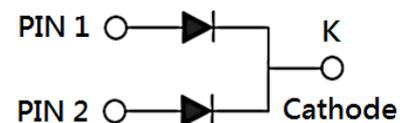
APPLICATIONS

- 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	10	A
V_{RRM}	35 - 150	V
I_{FSM}	120	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 1035 CT	MBRS 1045 CT	MBRS 1050 CT	MBRS 1060 CT	MBRS 1090 CT	MBRS 10100 CT	MBRS 10150 CT	UNIT
Marking code on the device		MBRS 1035CT	MBRS 1045CT	MBRS 1050CT	MBRS 1060CT	MBRS 1090CT	MBRS 10100CT	MBRS 10150CT	
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	10							A
Surge peak forward current, 8.3ms single half sine wave superimposed on rated load	I_{FSM}	120							A
Peak repetitive reverse surge current ⁽¹⁾	I_{RRM}	1							A
Peak repetitive forward current (Rated V_R , Square wave, 20KHz)	I_{FRM}	10							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 1035 CT	MBRS 1045 CT	MBRS 1050 CT	MBRS 1060 CT	MBRS 1090 CT	MBRS 10100 CT	MBRS 10150 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	$R_{\theta\text{JC}}$	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⁾	MBRS1035CT	$I_F = 5\text{A}, T_J = 25^\circ\text{C}$	V_F	-	0.70	V
	MBRS1045CT			-	0.80	V
	MBRS1050CT			-	0.85	V
	MBRS1060CT			-	0.88	V
	MBRS1090CT			-	0.80	V
	MBRS10100CT	-		0.90	V	
	MBRS10150CT	-		0.95	V	
	MBRS1035CT	$I_F = 10\text{A}, T_J = 25^\circ\text{C}$		-	0.98	V
	MBRS1045CT			-	0.57	V
	MBRS1050CT			-	0.65	V
	MBRS1060CT			-	0.75	V
	MBRS1090CT			-	0.78	V
	MBRS10100CT	-		0.67	V	
	MBRS10150CT	-		0.75	V	
	MBRS1035CT	$I_F = 5\text{A}, T_J = 125^\circ\text{C}$		-	0.85	V
	MBRS1045CT			-	0.88	V
	MBRS1050CT			-	0.67	V
	MBRS1060CT			-	0.75	V
MBRS1090CT	-		0.85	V		
MBRS10100CT	-	0.88	V			
MBRS10150CT	-	0.88	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⁾	MBRS1035CT MBRS1045CT MBRS1050CT MBRS1060CT MBRS1090CT MBRS10100CT MBRS10150CT	$T_J = 25^\circ\text{C}$	I_R	-	100	μA
	MBRS1035CT MBRS1045CT	$T_J = 100^\circ\text{C}$		-	15	mA
	MBRS1050CT MBRS1060CT			-	10	mA
	MBRS1090CT MBRS10100CT MBRS10150CT			-	-	mA
	MBRS1035CT MBRS1045CT MBRS1050CT MBRS1060CT	$T_J = 125^\circ\text{C}$		-	-	mA
	MBRS1090CT MBRS10100CT MBRS10150CT			-	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
MBRS10xCT	TO-263AB (D ² PAK)	800 / Tape & Reel

Notes:

1. "x" defines voltage from 35V(MBRS1035CT) to 150V(MBRS10150CT)

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

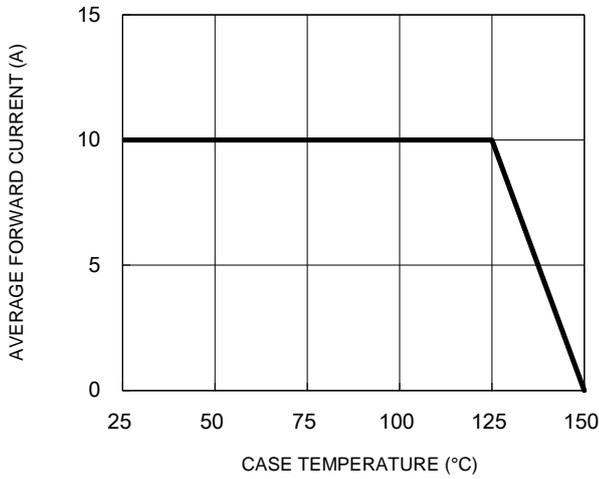


Fig.2 Typical Junction Capacitance

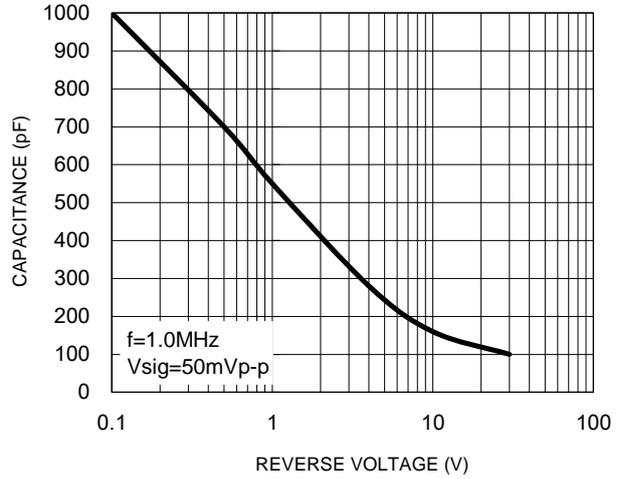


Fig.3 Typical Reverse Characteristics

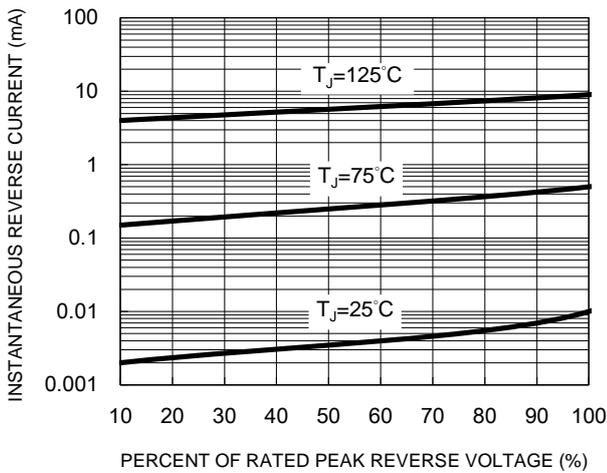


Fig.4 Typical Forward Characteristics

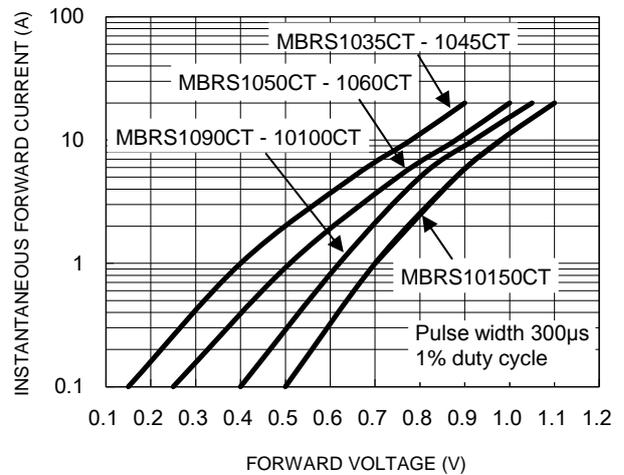
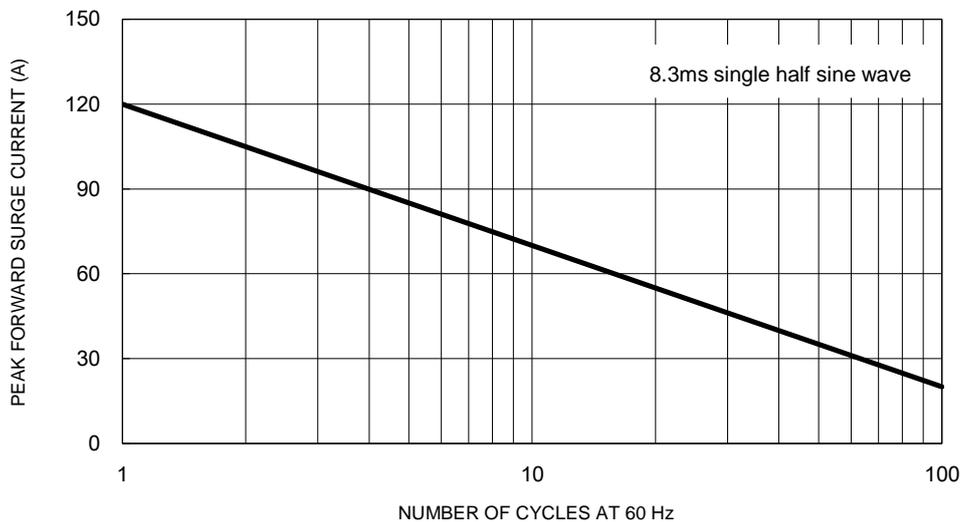


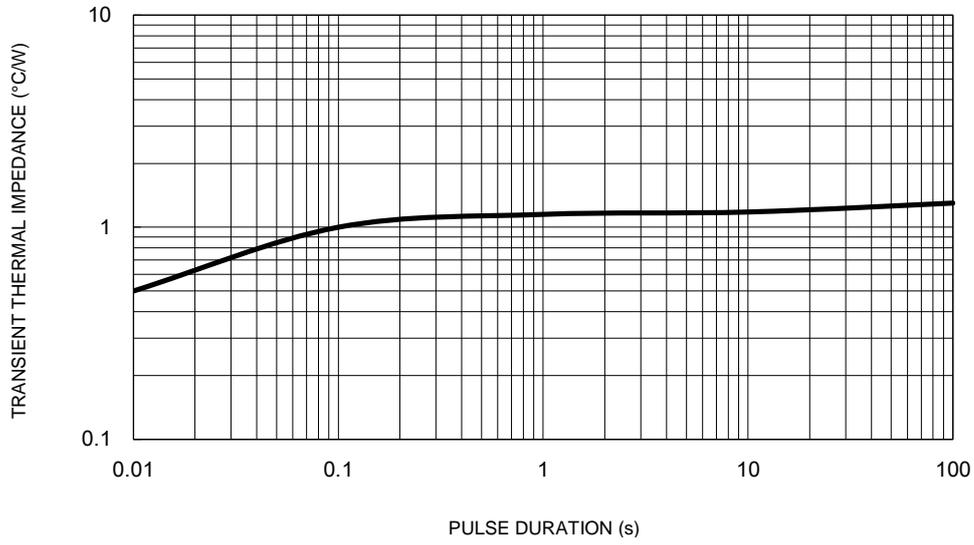
Fig.5 Maximum Non-Repetitive Forward Surge Current



CHARACTERISTICS CURVES

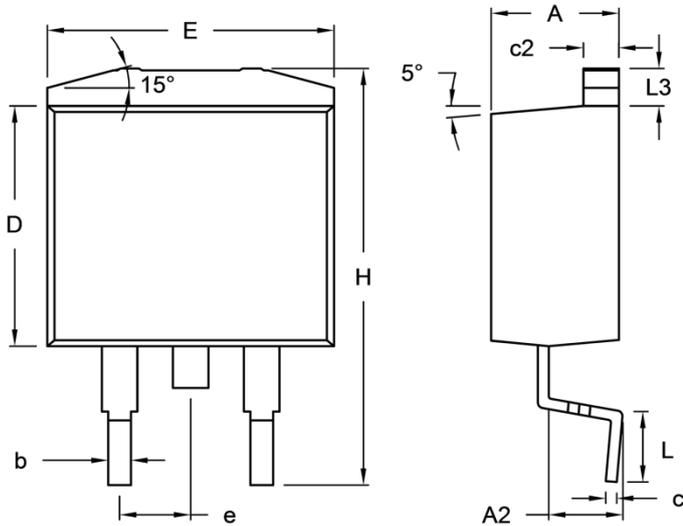
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Fig.6 Typical Transient Thermal Impedance



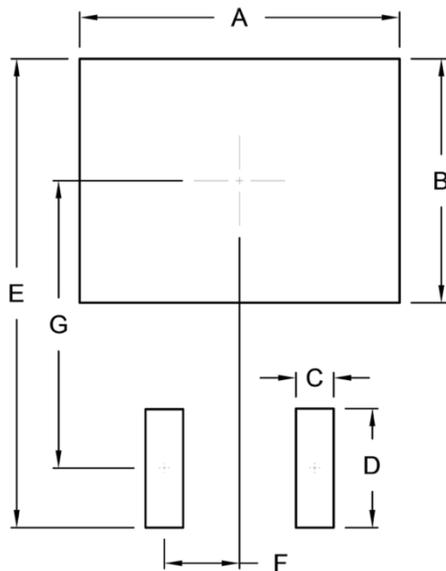
PACKAGE OUTLINE DIMENSIONS

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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