

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

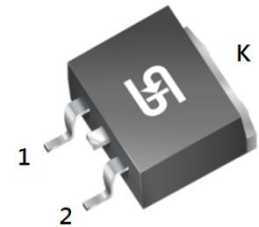
APPLICATIONS

- 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}	175	°C
Package	TO-263AB (D ² PAK)	
Configuration	Single die	


TO-263AB (D²PAK)


ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)									
PARAMETER	SYMBOL	MBRS 1035	MBRS 1045	MBRS 1050	MBRS 1060	MBRS 1090	MBRS 10100	MBRS 10150	UNIT
Marking code on the device		MBRS 1035	MBRS 1045	MBRS 1050	MBRS 1060	MBRS 1090	MBRS 10100	MBRS 10150	
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			0.5				A
Critical rate of rise of off-state voltage	dv/dt	10,000							V/ μs
Junction temperature	T_J	-55 to +175							°C
Storage temperature	T_{STG}	-55 to +175							°C

Notes:

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

THERMAL PERFORMANCE			
PARAMETER	SYMBOL	TYP	UNIT
Junction-to-ambient thermal resistance	$R_{\theta JA}$	60	°C/W
Junction-to-case thermal resistance	$R_{\theta JC}$	2	°C/W

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted)						
PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage ⁽¹⁾	MBRS1035 MBRS1045	$I_F = 10\text{A}, T_J = 25^\circ\text{C}$	V_F	-	-	V
	MBRS1050 MBRS1060			-	0.80	V
	MBRS1090 MBRS10100			-	0.85	V
	MBRS10150			-	1.05	V
	MBRS1035 MBRS1045			$I_F = 20\text{A}, T_J = 25^\circ\text{C}$	-	0.84
	MBRS1050 MBRS1060	-			0.95	V
	MBRS1090 MBRS10100	-			-	V
	MBRS10150	-			-	V
	MBRS1035 MBRS1045	$I_F = 10\text{A}, T_J = 125^\circ\text{C}$			-	0.57
	MBRS1050 MBRS1060			-	0.70	V
	MBRS1090 MBRS10100			-	0.71	V
	MBRS10150			-	-	V
	MBRS1035 MBRS1045			$I_F = 20\text{A}, T_J = 125^\circ\text{C}$	-	0.72
	MBRS1050 MBRS1060	-			0.85	V
	MBRS1090 MBRS10100	-			-	V
	MBRS10150	-			-	V

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted)						
PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT
Reverse current @ rated $V_R^{(2)}$	MBRS1035 MBRS1045 MBRS1050 MBRS1060 MBRS1090 MBRS10100 MBRS10150	$T_J = 25^\circ\text{C}$	I_R	-	100	μA
	MBRS1035 MBRS1045	$T_J = 100^\circ\text{C}$		-	15	mA
	MBRS1050 MBRS1060			-	10	mA
	MBRS1090 MBRS10100 MBRS10150			-	-	mA
	MBRS1035 MBRS1045 MBRS1050 MBRS1060	$T_J = 125^\circ\text{C}$		-	-	mA
	MBRS1090 MBRS10100 MBRS10150			-	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
MBRS10x	TO-263AB (D ² PAK)	800 / Tape & Reel

Notes:

1. "x" defines voltage from 35V(MBRS1035) to 150V(MBRS10150)

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

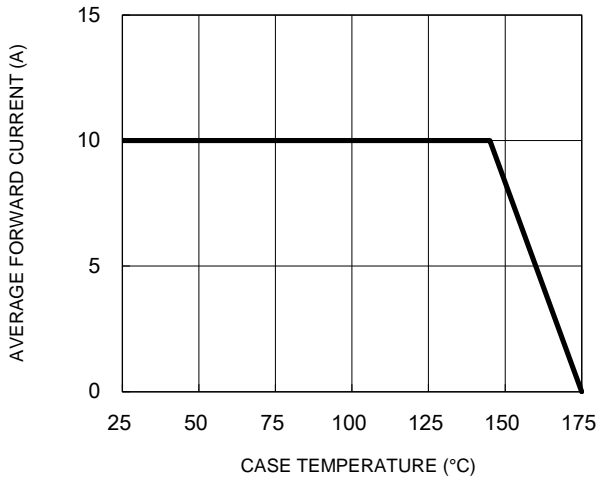


Fig.2 Typical Junction Capacitance

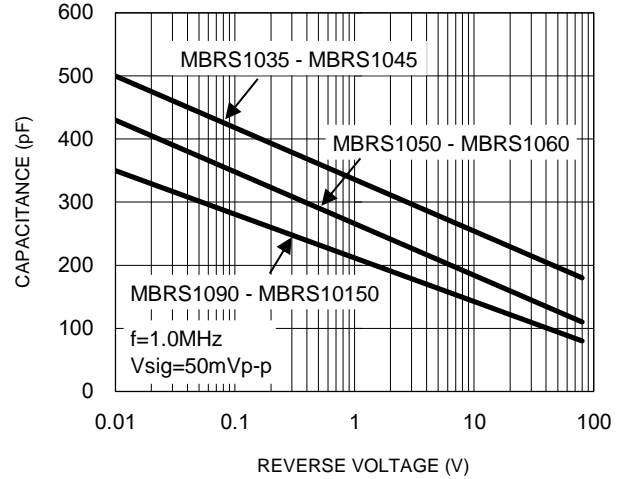


Fig.3 Typical Reverse Characteristics

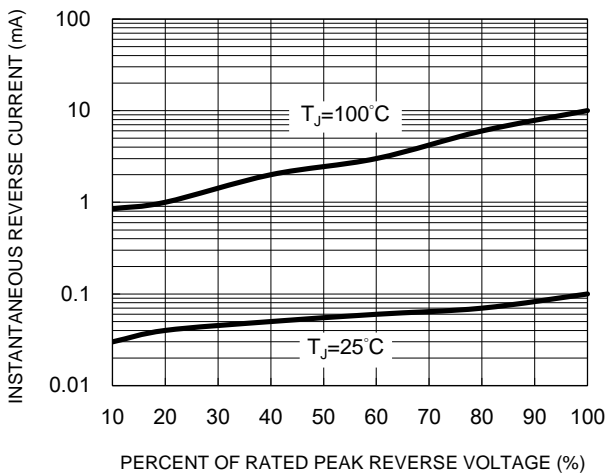


Fig.4 Typical Forward Characteristics

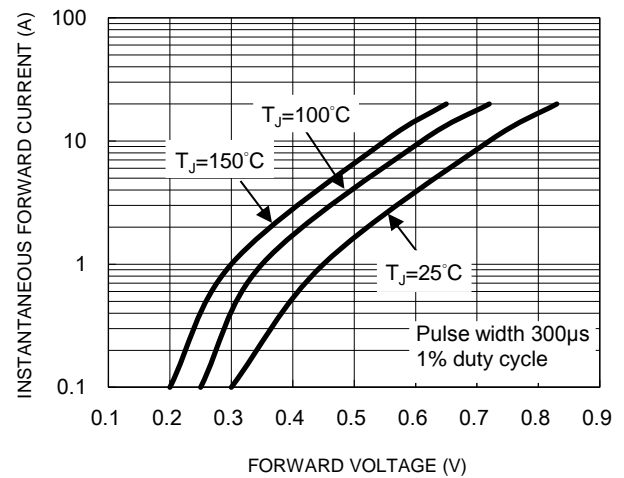
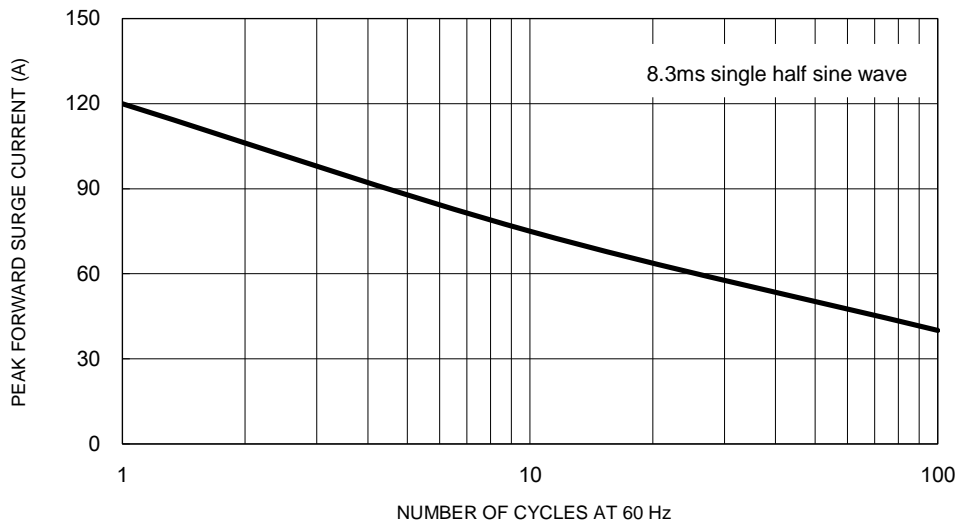


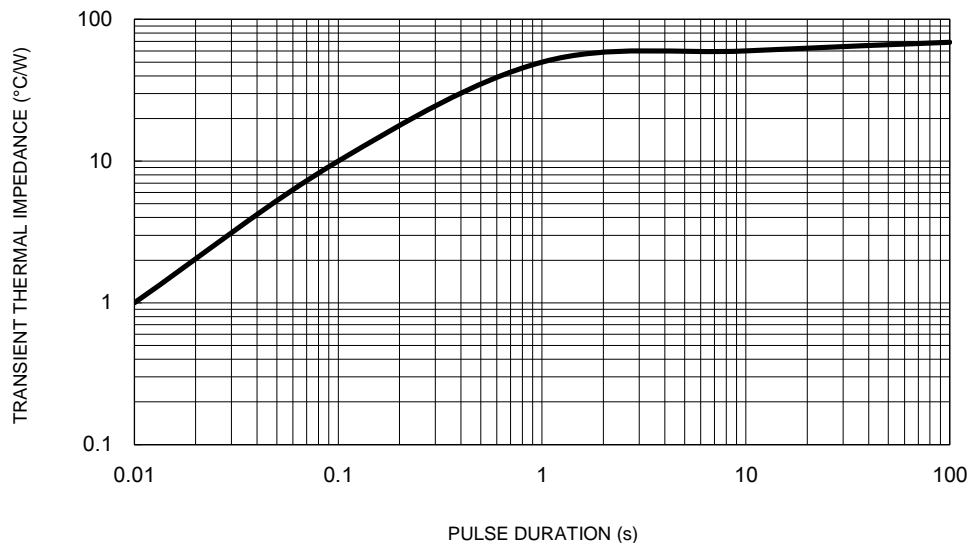
Fig.5 Maximum Non-Repetitive Forward Surge Current



CHARACTERISTICS CURVES

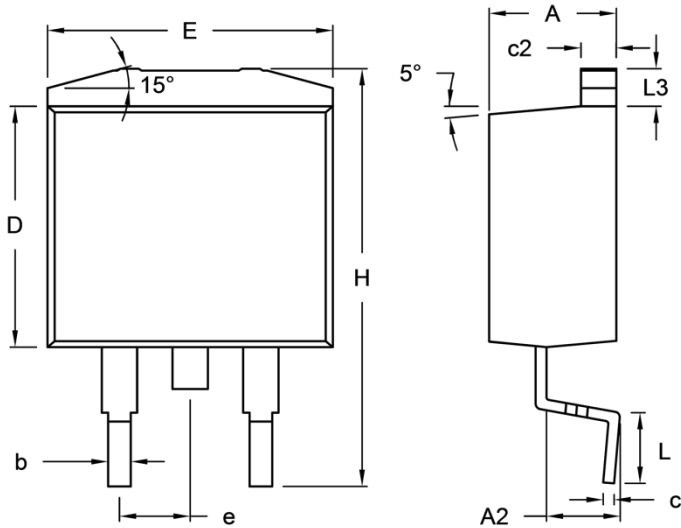
($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.6 Typical Transient Thermal Impedance



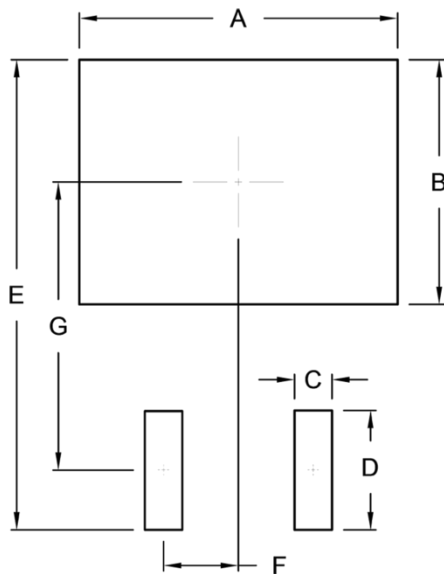
PACKAGE OUTLINE DIMENSIONS

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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