20A, 35V - 200V Schottky Barrier Rectifier

FEATURES

- Low power loss, high efficiency
- Guard ring for overvoltage protection
- High surge current capability
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

APPLICATIONS

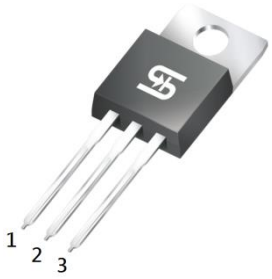
- Switching mode power supply (SMPS)
- Adapters
- DC to DC converters

MECHANICAL DATA

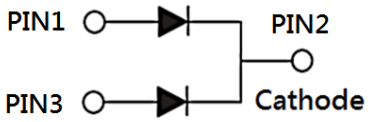
- Case: TO-220AB
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Mounting torque: 0.56 N·m maximum
- Meet JESD 201 class 1A whisker test
- Polarity: As marked
- Weight: 1.88g (approximately)

KEY PARAMETERS		
PARAMETER	**VALUE**	**UNIT**
I_F	20	A
V_{RRM}	35 - 200	V
I_{FSM}	150	A
$T_{J\ MAX}$	150	°C
Package	TO-220AB	
Configuration	Dual dies	

Pb-Free RoHS COMPLIANT HALOGEN FREE



TO-220AB



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

PARAMETER	SYMBOL	MBR 2035 CT-Y	MBR 2045 CT-Y	MBR 2050 CT-Y	MBR 2060 CT-Y	MBR 2090 CT-Y	MBR 20100 CT-Y	MBR 20150 CT-Y	MBR 20200 CT-Y	UNIT
Marking code on the device		MBR 2035 CT	MBR 2045 CT	MBR 2050 CT	MBR 2060 CT	MBR 2090 CT	MBR 20100 CT	MBR 20150 CT	MBR 20200 CT	
Repetitive peak reverse voltage	V_{RRM}	35	45	50	60	90	100	150	200	V
Reverse voltage, total rms value	$V_{R(RMS)}$	24	31	35	42	63	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(1)	I_{RRM}	1		0.5						A
Peak repetitive forward current (Rated V_R, Square wave, 20KHz)	I_{FRM}	20								A

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)									
PARAMETER	**SYMBOL**	**MBR 2035 CT-Y**	**MBR 2045 CT-Y**	**MBR 2050 CT-Y**	**MBR 2060 CT-Y**	**MBR 2090 CT-Y**	**MBR 20100 CT-Y**	**MBR 20150 CT-Y**	**UNIT**
Critical rate of rise of off-state voltage	dv/dt	10,000							V/μs
Junction temperature	T_J	-55 to +150							°C
Storage temperature	T_{STG}	-55 to +150							°C

Notes:
1. tp = 2.0μs, 1.0KHz

THERMAL PERFORMANCE				
PARAMETER		**SYMBOL**	**TYP**	**UNIT**
Junction-to-case thermal resistance	MBR2035CT-Y MBR2045CT-Y MBR2050CT-Y MBR2060CT-Y	$R_{\Theta JC}$	1	°C/W
Junction-to-case thermal resistance	MBR2090CT-Y MBR20100CT-Y MBR20150CT-Y MBR20200CT-Y	$R_{\Theta JC}$	2	°C/W

ELECTRICAL SPECIFICATIONS (T_A = 25°C unless otherwise noted)						
PARAMETER		**CONDITIONS**	**SYMBOL**	**TYP**	**MAX**	**UNIT**
Forward voltage per diode[1]	MBR2035CT-Y MBR2045CT-Y	I_F = 10A, T_J = 25°C	V_F	-	-	V
	MBR2050CT-Y MBR2060CT-Y			-	0.80	V
	MBR2090CT-Y MBR20100CT-Y			-	0.85	V
	MBR20150CT-Y MBR20200CT-Y			-	0.99	V
	MBR2035CT-Y MBR2045CT-Y	I_F = 20A, T_J = 25°C		-	0.84	V
	MBR2050CT-Y MBR2060CT-Y MBR2090CT-Y MBR20100CT-Y			-	0.95	V
	MBR20150CT-Y MBR20200CT-Y			-	1.23	V
	MBR2035CT-Y MBR2045CT-Y	I_F = 10A, T_J = 125°C		-	0.57	V
	MBR2050CT-Y MBR2060CT-Y			-	0.70	V
	MBR2090CT-Y MBR20100CT-Y			-	0.75	V
	MBR20150CT-Y MBR20200CT-Y			-	0.87	V
	MBR2035CT-Y MBR2045CT-Y	I_F = 20A, T_J = 125°C		-	0.72	V
	MBR2050CT-Y MBR2060CT-Y MBR2090CT-Y MBR20100CT-Y			-	0.85	V
	MBR20150CT-Y MBR20200CT-Y			-	1.10	V

ELECTRICAL SPECIFICATIONS (T_A = 25°C unless otherwise noted)						
PARAMETER		**CONDITIONS**	**SYMBOL**	**TYP**	**MAX**	**UNIT**
Reverse current @ rated V_R per diode[2]	MBR2035CT-Y MBR2045CT-Y MBR2050CT-Y MBR2060CT-Y MBR2090CT-Y MBR20100CT-Y MBR20150CT-Y MBR20200CT-Y	T_J = 25°C	I_R	-	100	μA
	MBR2035CT-Y MBR2045CT-Y	T_J = 125°C		-	15	mA
	MBR2050CT-Y MBR2060CT-Y			-	10	mA
	MBR2090CT-Y MBR20100CT-Y MBR20150CT-Y			-	5	mA
	MBR20200CT-Y			-	0.15	mA

Notes:

1. Pulse test with PW = 0.3ms
2. Pulse test with PW = 30ms

ORDERING INFORMATION		
ORDERING CODE[1]	**PACKAGE**	**PACKING**
MBR20xCT-Y	TO-220AB	50 / Tube

Notes:

1. “x” defines voltage from 35V(MBR2035CT-Y) to 200V(MBR20200CT-Y)

CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

Fig.1 Forward Current Derating Curve

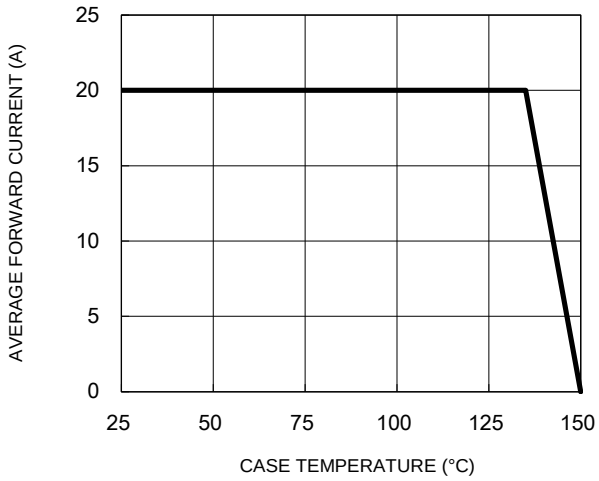


Fig.2 Typical Junction Capacitance

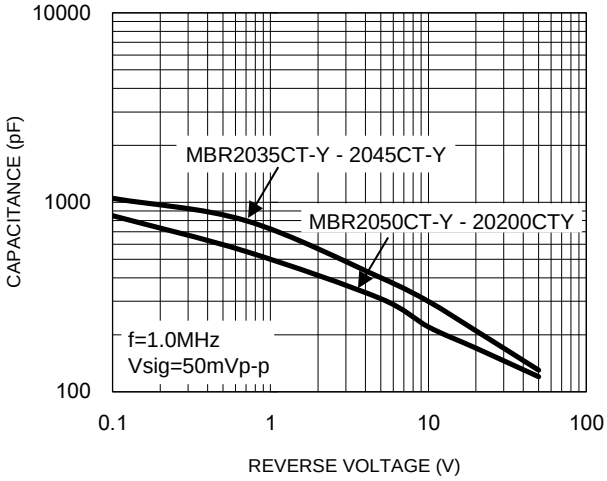


Fig.3 Typical Reverse Characteristics

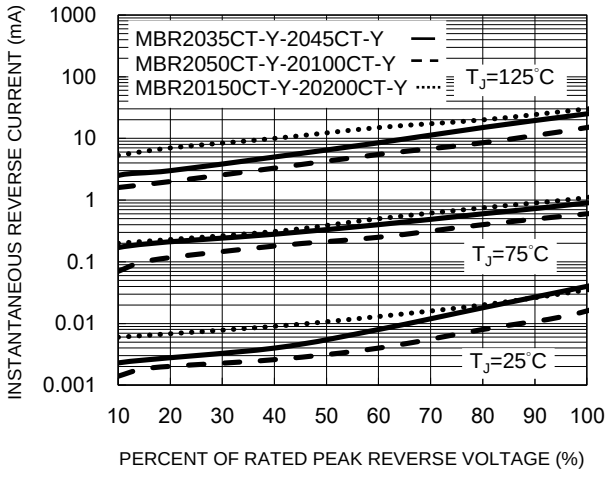


Fig.4 Typical Forward Characteristics

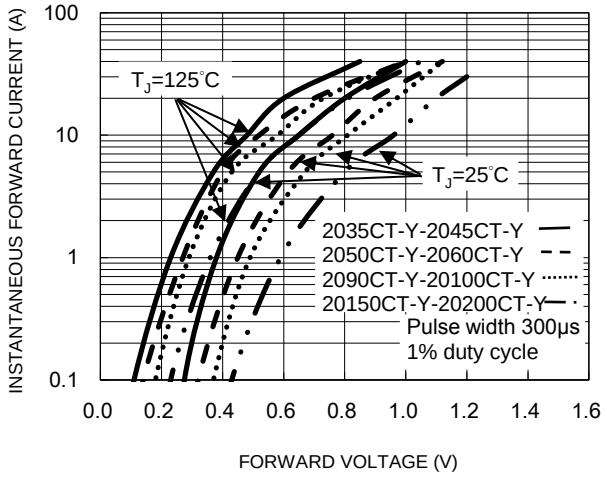
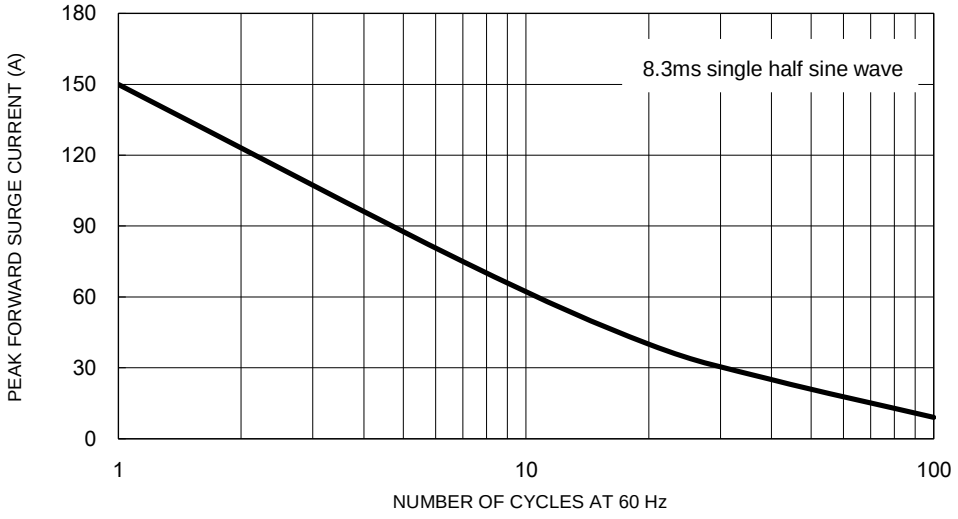


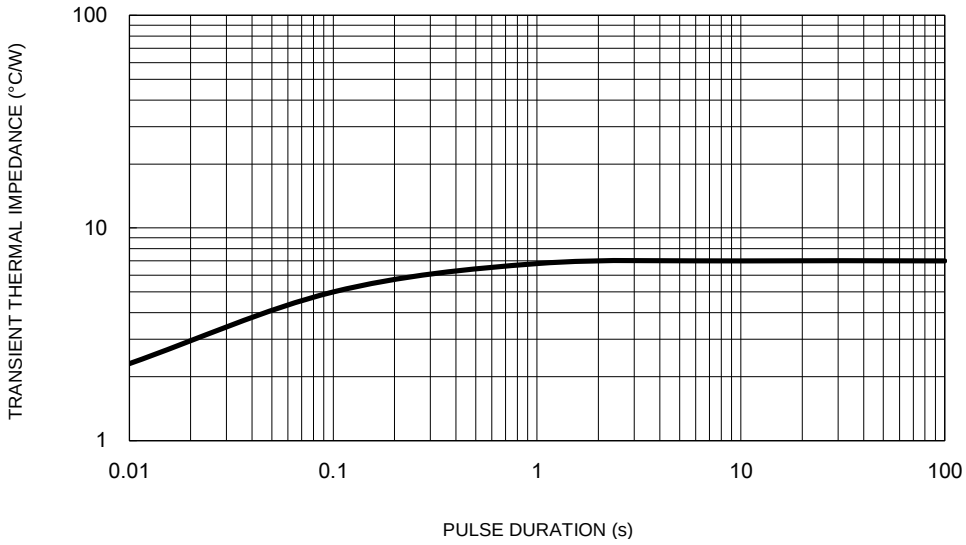
Fig.5 Maximum Non-Repetitive Forward Surge Current



CHARACTERISTICS CURVES

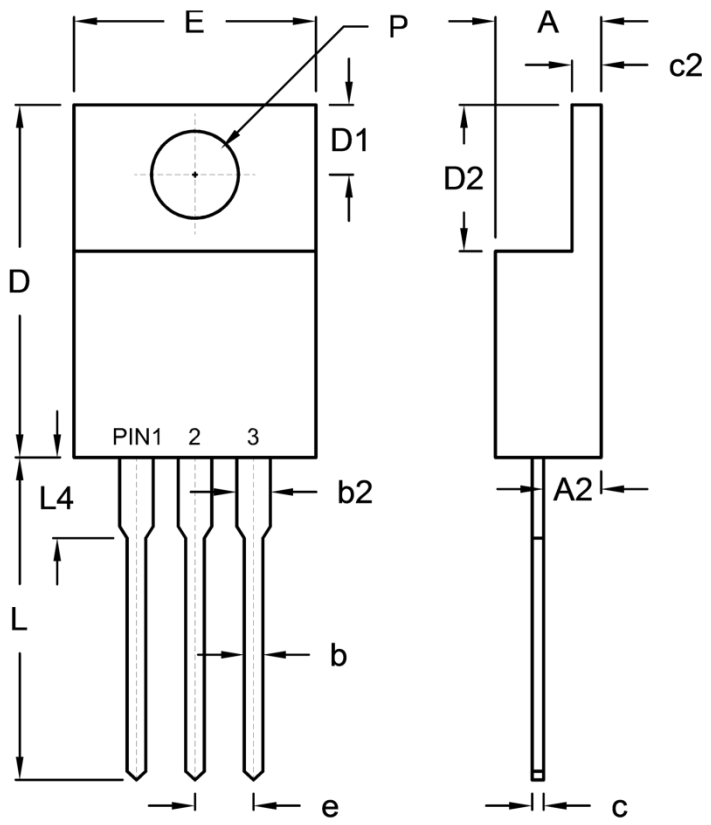
(T_A = 25°C unless otherwise noted)

Fig.6 Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS

TO-220AB



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	4.42	4.76	0.174	0.187
A2	2.20	2.80	0.087	0.110
b	0.68	0.94	0.027	0.037
b2	1.14	1.77	0.045	0.070
c	0.35	0.64	0.014	0.025
c2	1.14	1.40	0.045	0.055
D	14.60	16.00	0.575	0.630
D1	2.62	3.44	0.103	0.135
D2	5.84	6.86	0.230	0.270
E	-	10.50	-	0.413
e	2.41	2.67	0.095	0.105
L	13.19	14.79	0.519	0.582
L4	2.80	4.20	0.110	0.165
P	3.54	4.00	0.139	0.157

MARKING DIAGRAM

P/N = Marking Code
G = Green Compound
YWW = Date Code
F = Factory Code

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