

20A, 100V - 120V Low V_F Schottky Barrier Rectifier

FEATURES

- AEC-Q101 qualified available
- Low power loss, high efficiency
- Guard ring for overvoltage protection
- High surge current capability
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

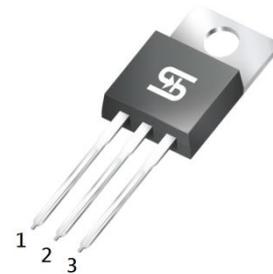
APPLICATIONS

- 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 2 whisker test
- Polarity: As marked
- Weight: 1.90g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
I_F	20	A
V_{RRM}	100 - 120	V
I_{FSM}	150	A
T_{JMAX}	150	°C
Package	TO-220AB	
Configuration	Dual dies	


TO-220AB


ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)				
PARAMETER	SYMBOL	MBR20L100CT	MBR20L120CT	UNIT
Marking code on the device		MBR20L100CT	MBR20L120CT	
Repetitive peak reverse voltage	V_{RRM}	100	120	V
Reverse voltage, total rms value	$V_{R(RMS)}$	70	84	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		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
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

THERMAL PERFORMANCE				
PARAMETER		SYMBOL	TYP	UNIT
Junction-to-case thermal resistance	MBR20L100CT	$R_{\theta JC}$	2.8	°C/W
Junction-to-case thermal resistance	MBR20L120CT	$R_{\theta JC}$	3.0	°C/W

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted)						
PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage per diode ⁽¹⁾	MBR20L100CT	$I_F = 10\text{A}, T_J = 25^\circ\text{C}$	V_F	0.72	0.75	V
	MBR20L120CT			0.78	0.83	V
	MBR20L100CT	$I_F = 20\text{A}, T_J = 25^\circ\text{C}$		0.81	0.85	V
	MBR20L120CT			0.86	0.90	V
	MBR20L100CT	$I_F = 10\text{A}, T_J = 125^\circ\text{C}$		0.58	0.68	V
	MBR20L120CT			0.63	0.72	V
	MBR20L100CT	$I_F = 20\text{A}, T_J = 125^\circ\text{C}$		0.67	0.75	V
	MBR20L120CT			0.73	0.80	V
Reverse current @ rated V_R per diode ⁽²⁾	MBR20L100CT MBR20L120CT	$T_J = 25^\circ\text{C}$	I_R	-	20	μA
	MBR20L100CT	$T_J = 125^\circ\text{C}$		-	15	mA
	MBR20L120CT			-	10	mA

Notes:

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

ORDERING INFORMATION		
ORDERING CODE ⁽¹⁾⁽²⁾	PACKAGE	PACKING
MBR20LxCT	TO-220AB	50 / Tube
MBR20LxCTH	TO-220AB	50 / Tube

Notes:

1. "x" defines voltage from 100V(MBR20L100CT) to 120V(MBR20L120CT)
2. "H" means AEC-Q101 qualified

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

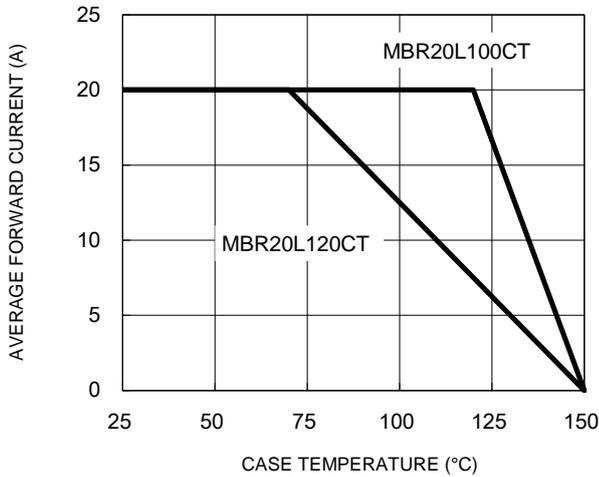


Fig.2 Typical Junction Capacitance

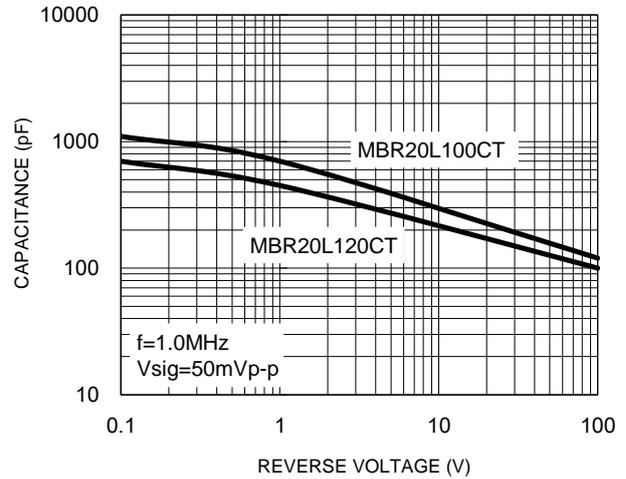


Fig.3 Typical Reverse Characteristics

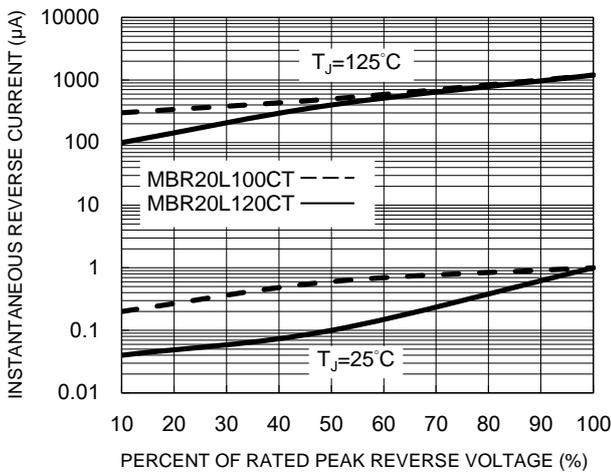


Fig.4 Typical Forward Characteristics

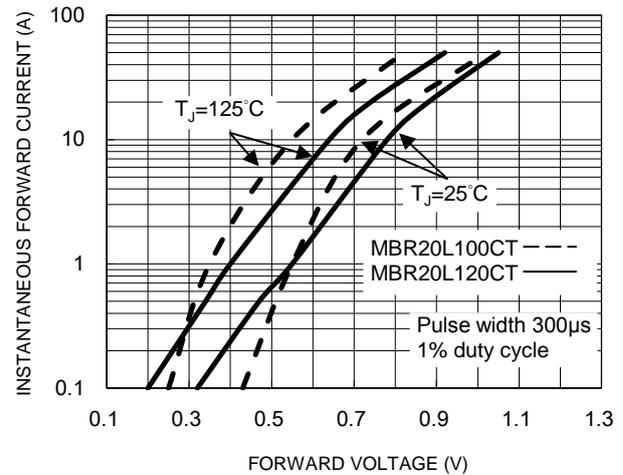
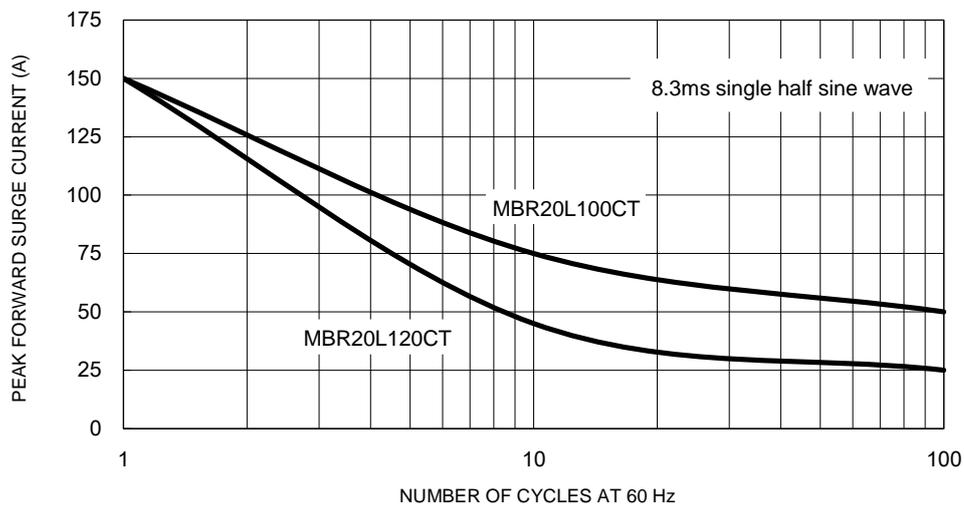


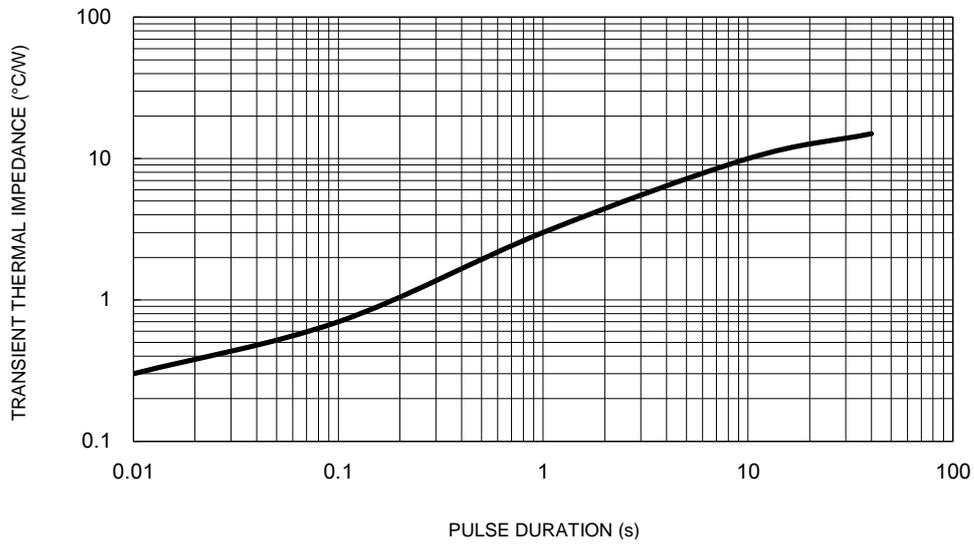
Fig.5 Maximum Non-Repetitive Forward Surge Current



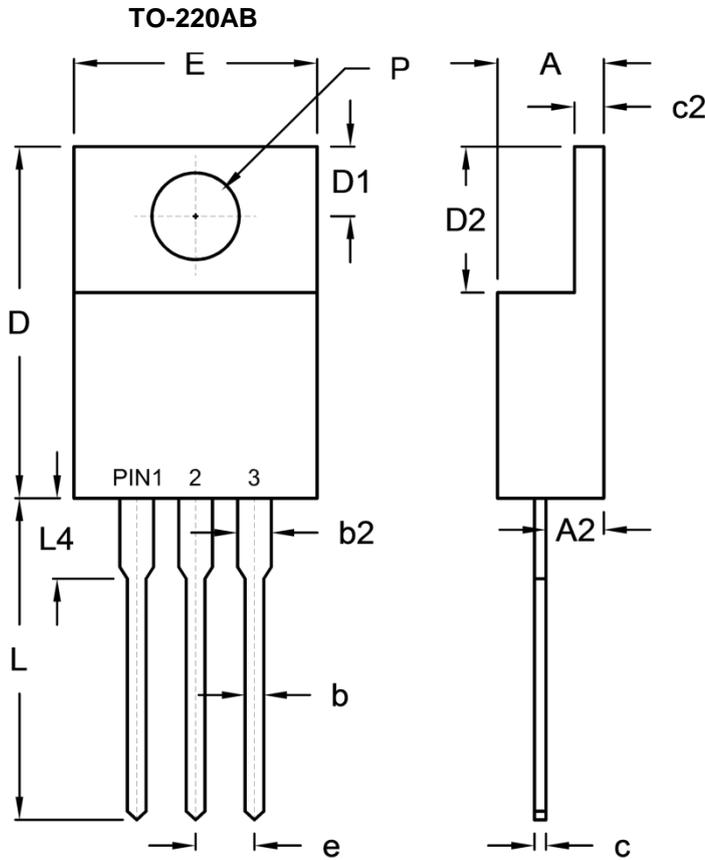
CHARACTERISTICS CURVES

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

Fig.6 Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS



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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