

20A, 35V - 200V Schottky Barrier Rectifier

FEATURES

- AEC-Q101 qualified available
- Low power loss, high efficiency
- Guard ring for overvoltage protection
- High surge current capability
- UL Recognized File # E-326243
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

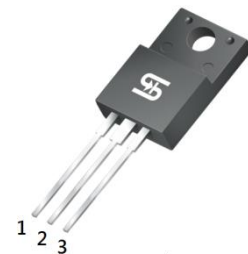
APPLICATIONS

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

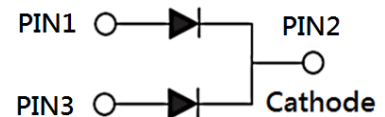
MECHANICAL DATA

- Case: ITO-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: 1.70g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
I_F	20	A
V_{RRM}	35 - 200	V
I_{FSM}	150	A
T_{JMAX}	150	°C
Package	ITO-220AB	
Configuration	Dual dies	



ITO-220AB



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)											
PARAMETER	SYMBOL	MBRF	MBRF	MBRF	MBRF	MBRF	MBRF	MBRF	MBRF	MBRF	UNIT
		2035 CT	2045 CT	2050 CT	2060 CT	2080 CT	2090 CT	20100 CT	20150 CT	20200 CT	
Marking code on the device		MBRF 2035 CT	MBRF 2045 CT	MBRF 2050 CT	MBRF 2060 CT	MBRF 2080 CT	MBRF 2090 CT	MBRF 20100 CT	MBRF 20150 CT	MBRF 20200 CT	
Repetitive peak reverse voltage	V_{RRM}	35	45	50	60	80	90	100	150	200	V
Reverse voltage, total rms value	$V_{R(RMS)}$	24	31	35	42	56	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			0.5						A

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)											
PARAMETER	SYMBOL	MBRF 2035 CT	MBRF 2045 CT	MBRF 2050 CT	MBRF 2060 CT	MBRF 2080 CT	MBRF 2090 CT	MBRF 20100 CT	MBRF 20150 CT	MBRF 20200 CT	UNIT
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									$^\circ\text{C}$
Storage temperature	T_{STG}	-55 to +150									$^\circ\text{C}$

Notes:

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

THERMAL PERFORMANCE				
PARAMETER		SYMBOL	TYP	UNIT
Junction-to-case thermal resistance	MBRF2035CT-2060CT	$R_{\theta JC}$	1.5	$^\circ\text{C}/\text{W}$
	MBRF2080CT-20200CT		3.5	$^\circ\text{C}/\text{W}$

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted)						
PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage per diode ⁽¹⁾	MBRF2035CT	$I_F = 10\text{A}, T_J = 25^\circ\text{C}$	V_F	-	0.80	V
	MBRF2045CT					
	MBRF2050CT					
	MBRF2060CT					
	MBRF2080CT					
	MBRF2090CT					
	MBRF20100CT					
	MBRF20150CT	$I_F = 20\text{A}, T_J = 25^\circ\text{C}$		-	0.84	V
	MBRF20200CT					
	MBRF2035CT					
	MBRF2045CT					
	MBRF2050CT					
	MBRF2060CT					
	MBRF2080CT					
MBRF2090CT	-	0.95	V			
MBRF20100CT						
MBRF20150CT				-	1.00	V
MBRF20200CT						
MBRF20150CT	-	0.95	V			
MBRF20200CT				-	1.05	V

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted)									
PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT			
Forward voltage per diode ⁽¹⁾	MBRF2035CT MBRF2045CT	$I_F = 10\text{A}, T_J = 125^\circ\text{C}$	V_F	-	0.57	V			
	MBRF2050CT MBRF2060CT			-	0.70	V			
	MBRF2080CT			-	0.65	V			
	MBRF2090CT MBRF20100CT			-	0.75	V			
	MBRF20150CT MBRF20200CT			-	0.85	V			
	MBRF2035CT MBRF2045CT			$I_F = 20\text{A}, T_J = 125^\circ\text{C}$	-	0.72	V		
	MBRF2050CT MBRF2060CT				-	0.85	V		
	MBRF2080CT	-			0.75	V			
	MBRF2090CT MBRF20100CT	-			0.85	V			
	MBRF20150CT MBRF20200CT	-			0.95	V			
	Reverse current @ rated V_R per diode ⁽²⁾	MBRF2035CT MBRF2045CT MBRF2050CT MBRF2060CT MBRF2080CT MBRF2090CT MBRF20100CT MBRF20150CT MBRF20200CT			$T_J = 25^\circ\text{C}$	I_R	-	100	μA
		MBRF2035CT MBRF2045CT			$T_J = 125^\circ\text{C}$		-	15	mA
		MBRF2050CT MBRF2060CT		-			10	mA	
		MBRF2080CT		-			30	mA	
MBRF2090CT MBRF20100CT		-	5	mA					
MBRF20150CT MBRF20200CT		-	2	mA					

Notes:

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

ORDERING INFORMATION

ORDERING CODE⁽¹⁾⁽²⁾	PACKAGE	PACKING
MBRF20xCT	ITO-220AB	50 / Tube
MBRF20xCTH	ITO-220AB	50 / Tube

Notes:

1. "x" defines voltage from 35V(MBRF2035CT) to 200V(MBRF20200CT)
2. "H" means AEC-Q101 qualified

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

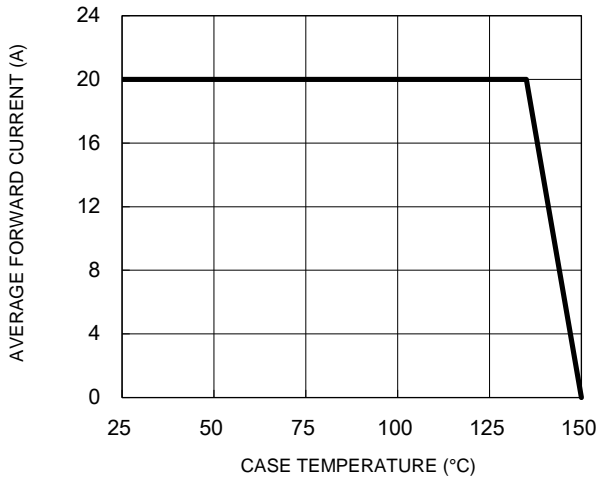


Fig.2 Typical Junction Capacitance

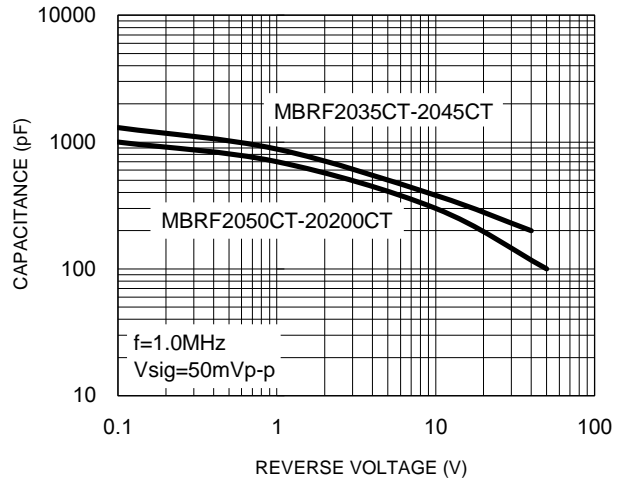


Fig.3 Typical Reverse Characteristics

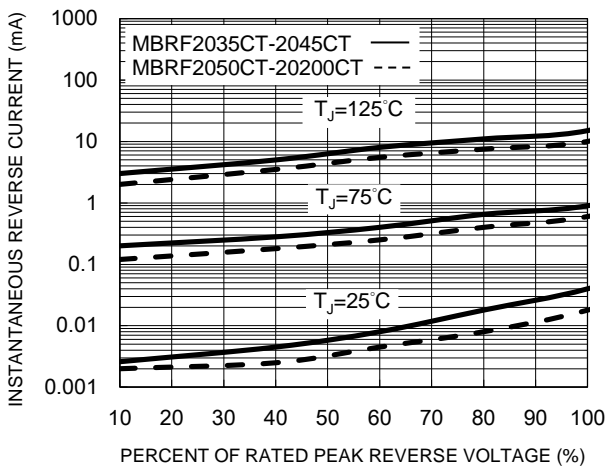


Fig.4 Typical Forward Characteristics

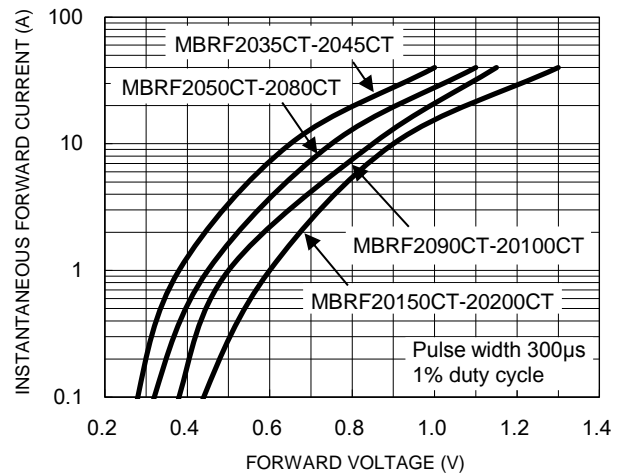
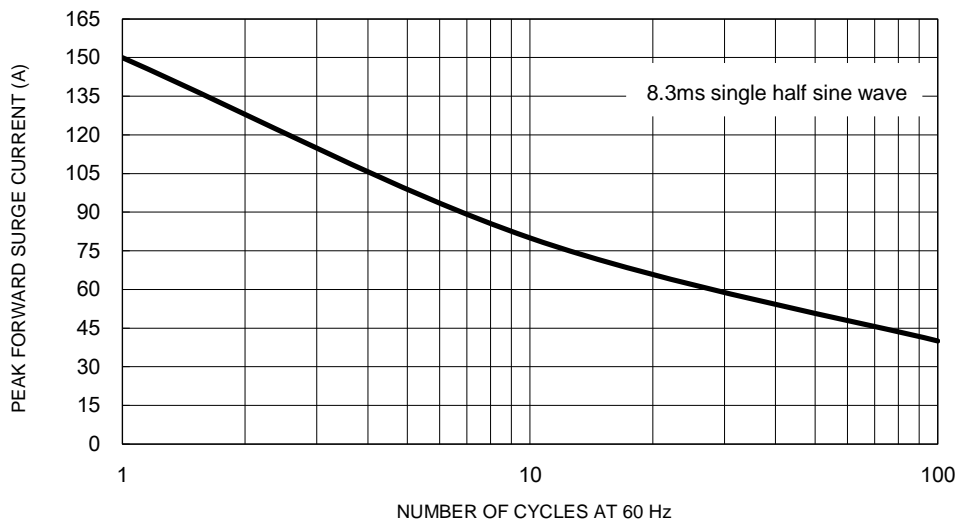


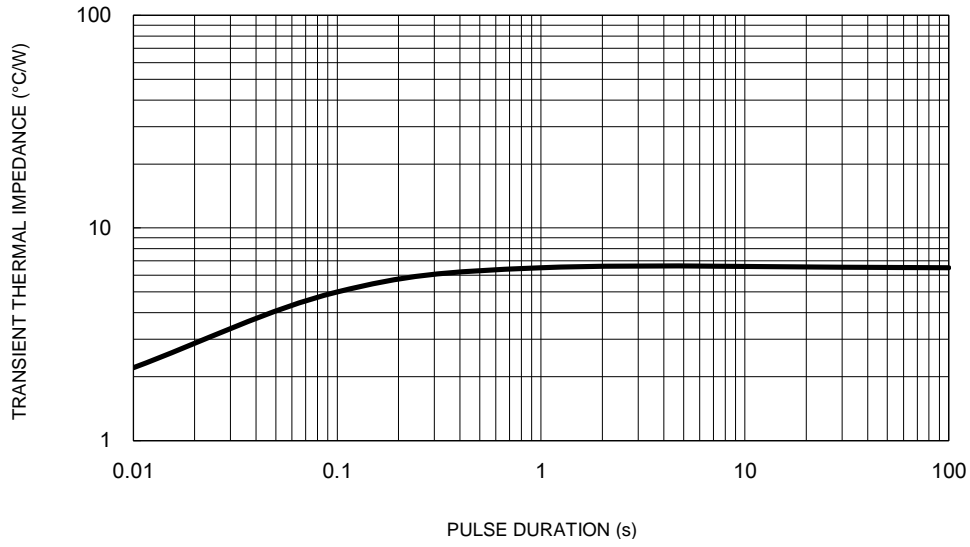
Fig.5 Maximum Non-Repetitive Forward Surge Current



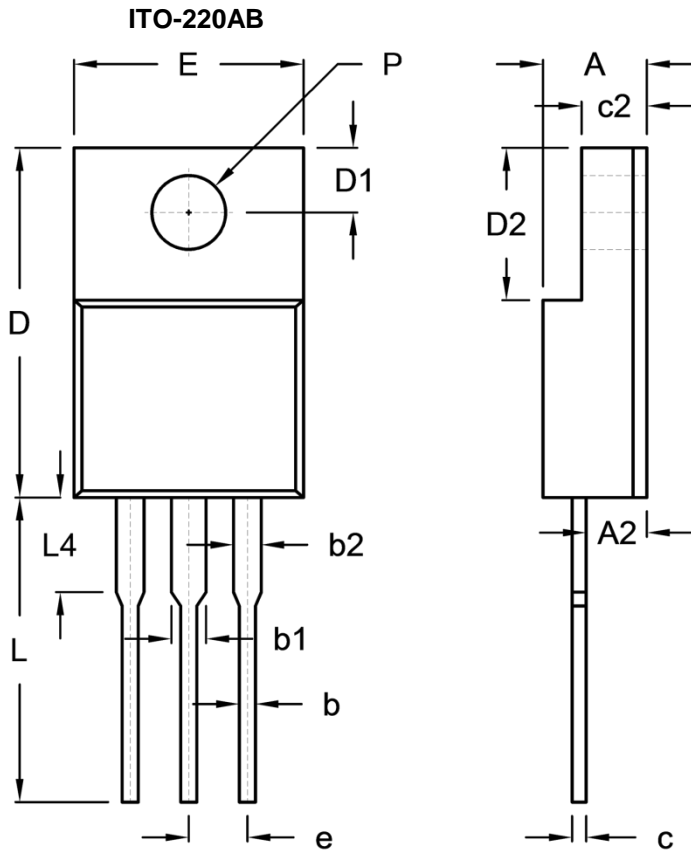
CHARACTERISTICS CURVES

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

Fig.6 Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	4.30	4.70	0.169	0.185
A2	2.30	2.96	0.091	0.117
b	0.50	0.90	0.020	0.035
b1	-	1.80	-	0.071
b2	0.95	1.45	0.037	0.057
c	0.46	0.76	0.018	0.030
c2	2.50	3.16	0.098	0.124
D	14.80	15.50	0.583	0.610
D1	2.40	3.20	0.094	0.126
D2	6.30	6.90	0.248	0.272
E	9.60	10.30	0.378	0.406
e	2.41	2.67	0.095	0.105
L	12.60	13.80	0.496	0.543
L4	-	4.10	-	0.161
P	3.00	3.40	0.118	0.134

MARKING DIAGRAM



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

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