Pb Free Plating Product

APT15DQ120BHB/APT15DQ120BHBG

2*15A/1200V Heatsink Dual Tandem Structure In Series Ultra Fast Recovery Rectifiers

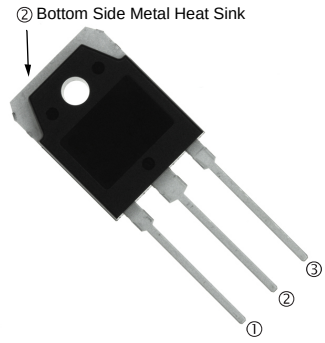
APPLICATION

- Freewheeling, Snubber, Clamp
- Inversion Welder
- PFC
- Plating Power Supply
- Ultrasonic Cleaner and Welder
- Converter & Chopper
- UPS

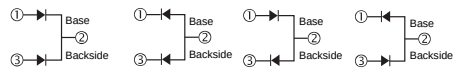
PRODUCT FEATURE

- Ultrafast Recovery Time
- Soft Recovery Characteristics
- Low Recovery Loss
- Low Forward Voltage
- High Surge Current Capability
- Low Leakage Current

TO-3PN/TO-3PB-SQ



Internal Configuration



Positive Common Cathode	Negative Common Anode	Doubler Tandem Polarity	Series Tandem Polarity
Suffix "CT"	Suffix "CA"	Suffix "CD"	Suffix "HB"
Suffix "CTG"	Suffix "CAG"	Suffix "CDG"	Suffix "HBG"

GENERAL DESCRIPTION

APT15DQ120BHB/APT15DQ120BHBG using the lastest FRED FAB process(planar passivation pellet) with ultrafast and soft recovery characteristics.

MAXIMUM RATINGS

All Ratings per diode: T_C = 25°C unless otherwise specified.

Symbol	Parameter	APT15DQ120BHB/APT15DQ120BHBG	Unit
V_R	Maximum D.C. Reverse Voltage	1200	V
V_{RRM}	Maximum Peak Repetitive Reverse Voltage		
V_{RWM}	Maximum Working Peak Reverse Voltage		
$I_{F(AV)}$	Maximum Average Forward Current (T_C = 74°C, Duty Cycle = 0.5)	15	A
$I_{F(RMS)}$	RMS Forward Current (Square wave, 50% duty)	17	
I_{FSM}	Non-Repetitive Forward Surge Current (T_J = 45°C, 8.3ms)	110	
E_{AVL}	Avalanche Energy (1A, 40mH)	20	mJ
T_J,T_{STG}	Operating and StorageTemperature Range	-55 to 175	°C
T_L	Lead Temperature for 10 Sec.	300	

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter		MIN	TYP	MAX	Unit
V_F	Forward Voltage	I_F = 15A		3.0	3.5	V
		I_F = 30A		3.7		
		I_F = 15A, T_J = 125°C		2.2		
I_{RM}	Maximum Reverse Leakage Current	V_R = 1200V			100	μA
		V_R = 1200V, T_J = 125°C			500	
C_T	Junction Capacitance, V_R = 200V	V_R = 200V		17		

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DYNAMIC CHARACTERISTICS

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
t_{rr}	Reverse Recovery Time	I_F = 1A, di_F/dt = -100A/μs V_R = 30V, T_J = 25°C		21		ns
t_{rr}	Reverse Recovery Time	I_F = 15A, di_F/dt = -200A/μs V_R = 800V, T_C = 25°C		240		
Q_{rr}	Reverse Recovery Charge			260		nC
I_{RRM}	Reverse Recovery Current			3		Amps
t_{rr}	Reverse Recovery Time	I_F = 15A, di_F/dt = -200A/μs V_R = 800V, T_C = 125°C		290		ns
Q_{rr}	Reverse Recovery Charge			960		nC
I_{RRM}	Reverse Recovery Current			6		Amps
t_{rr}	Reverse Recovery Time	I_F = 15A, di_F/dt = -1000A/μs V_R = 800V, T_C = 125°C		130		ns
Q_{rr}	Reverse Recovery Charge			1340		nC
I_{RRM}	Maximum Reverse Recovery Current			19		Amps

THERMAL AND MECHANICAL CHARACTERISTICS

Symbol	Parameter	Min	Typ	Max	Unit
$R_{\theta JC}$	Reverse Recovery Time			2.3	°C/W
W_T	Package Weight		0.22		oz
			5.9		g
Torque	Maximum Mounting Torque			10	lb•in
				1.1	N•m

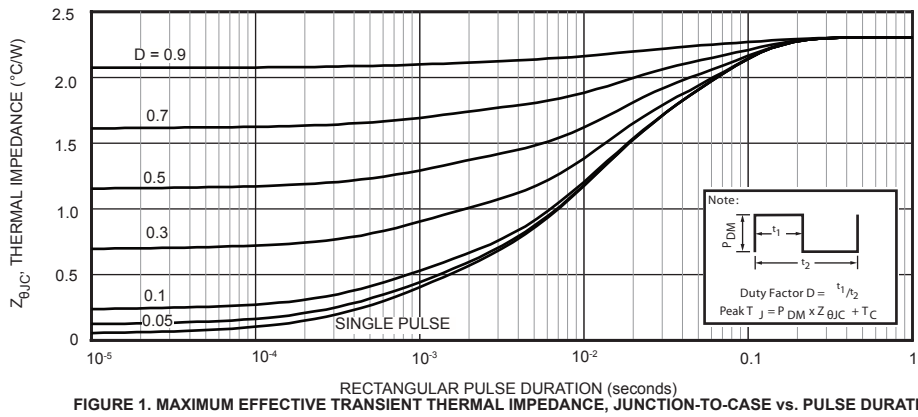


FIGURE 1. MAXIMUM EFFECTIVE TRANSIENT THERMAL IMPEDANCE, JUNCTION-TO-CASE vs. PULSE DURATION

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TYPICAL PERFORMANCE CURVES

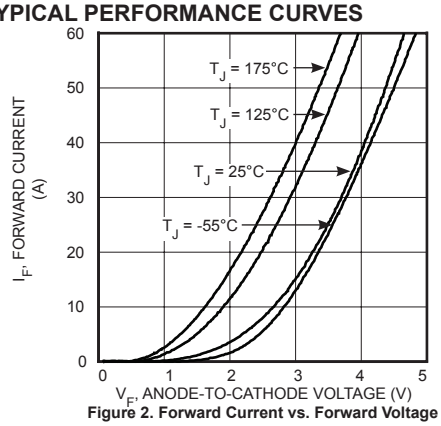


Figure 2. Forward Current vs. Forward Voltage

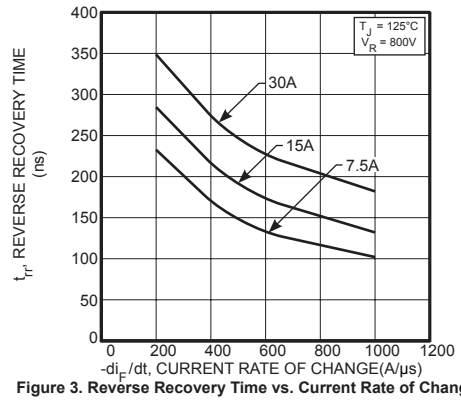


Figure 3. Reverse Recovery Time vs. Current Rate of Change

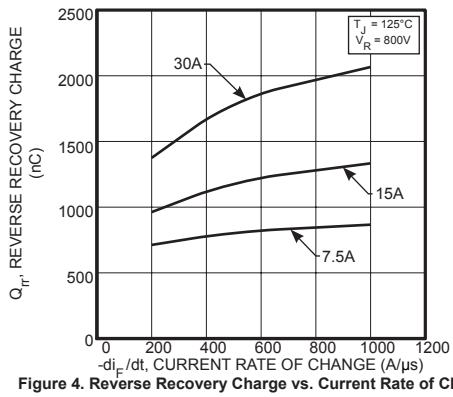


Figure 4. Reverse Recovery Charge vs. Current Rate of Change

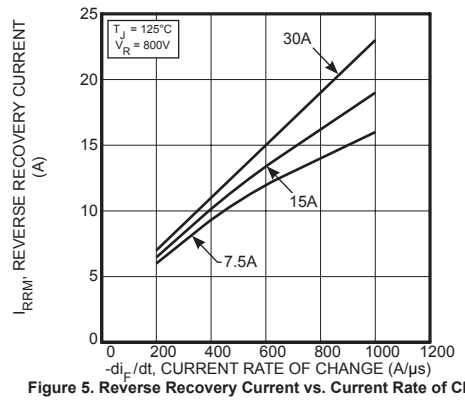


Figure 5. Reverse Recovery Current vs. Current Rate of Change

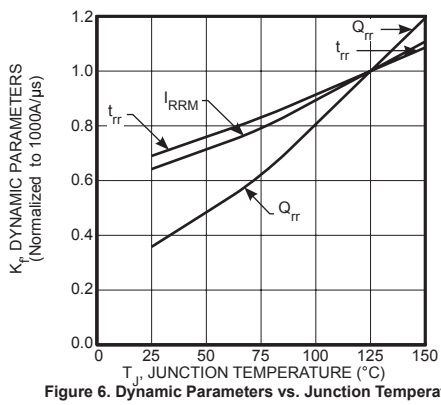


Figure 6. Dynamic Parameters vs. Junction Temperature

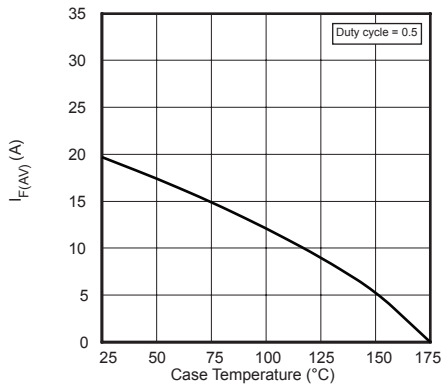


Figure 7. Maximum Average Forward Current vs. CaseTemperature

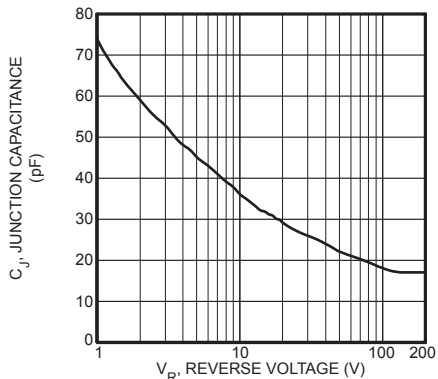


Figure 8. Junction Capacitance vs. Reverse Voltage

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Dynamic Characteristics **T_J = 25°C unless otherwise specified**

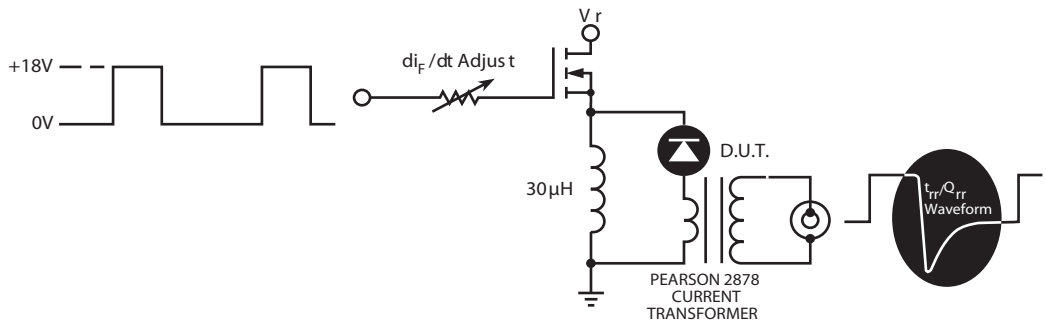


Figure 9. Diode Test Circuit

1. I_F - Forward Conduction Current
2. di_F/dt - Rate of Diode Current Change Through Zero Crossing.
3. I_{RRM} - Maximum Reverse Recovery Current
4. t_{rr} - Reverse Recovery Time measured from zero crossing where diode current goes from positive to negative, to the point at which the straight line through I_{RRM} and 0.25, I_{RRM} passes through zero.
5. Q_{rr} - Area Under the Curve Defined by I_{RRM} and t_{RR}.

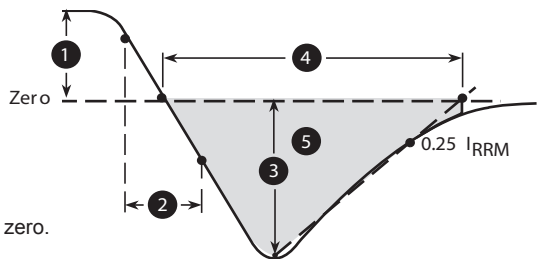
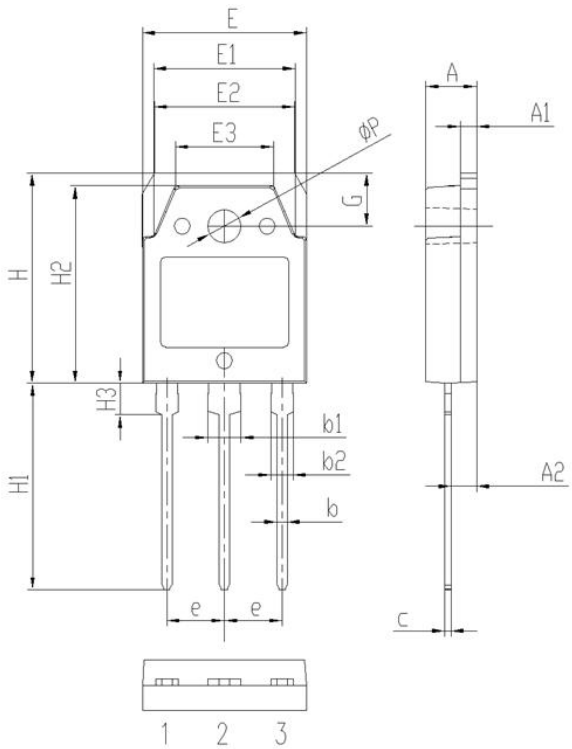


Figure 10. Diode Reverse Recovery Waveform Definition

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Package Outline

THINKI TO-3PN/TO-3PB-SQ



Symbol	Dimensions(millimeters)	
	Min.	Max.
A	4.60	5.00
A1	1.50	2.00
A2	2.20	2.60
b	0.80	1.20
b1	2.90	3.30
b2	1.90	2.30
c	0.40	0.80
e	5.25	5.65
E	15.3	15.7
E1	13.2	13.6
E2	13.1	13.5
E3	9.10	9.50
H	19.7	20.1
H1	19.1	20.1
H2	18.3	18.7
H3	2.80	3.20
G	4.80	5.20
ΦP	3.00	3.40

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