Pb Free Plating Product

APT30S20BCT/APT30S20BCTG

2*45A/200V Heatsink Dual Common Cathode Schottky Type Fast Recovery Rectifiers

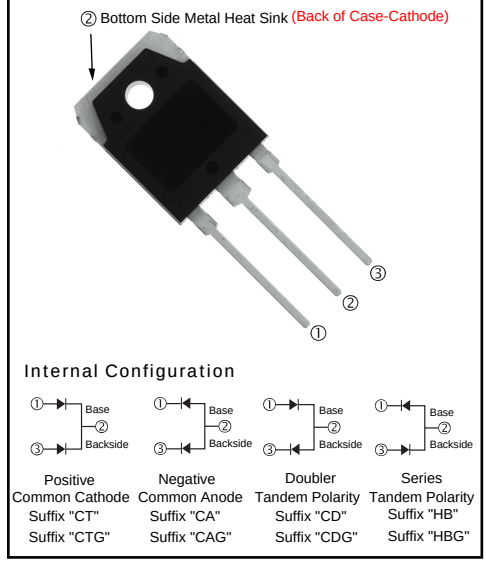
APPLICATION

- 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



GENERAL DESCRIPTION

APT30S20BCT/APT30S20BCTG using schottky type FRED process(planar passivation pellet) with ultrafast and soft recovery characteristics.

MAXIMUM RATINGS

All Ratings Are Per Leg: T_C = 25°C unless otherwise specified.

Symbol	Characteristic / Test Conditions	APT30S20BCT/APT30S20BCTG	UNIT
V_R	Maximum D.C. Reverse Voltage	200	Volts
V_{RRM}	Maximum Peak Repetitive Reverse Voltage		
V_{RWM}	Maximum Working Peak Reverse Voltage		
I_F(AV)	Maximum Average Forward Current (T_C = 125°C, Duty Cycle = 0.5)	45	Amps
I_F(RMS)	RMS Forward Current (Square wave, 50% duty)	121	
I_{FSM}	Non-Repetitive Forward Surge Current (T_J = 45°C, 8.3ms)	320	
T_J,T_{STG}	Operating and StorageTemperature Range	-55 to 150	°C
T_L	Lead Temperature Case for 10 Sec.	300	
E_{VAL}	Avalanche Energy (2A, 15mH)	30	mJ

STATIC ELECTRICAL CHARACTERISTICS

Symbol			MIN	TYP	MAX	UNIT
V_F	Forward Voltage	I_F = 30A		.80	.85	Volts
		I_F = 60A		.91		
		I_F = 30A, T_J = 125°C		.67		
I_{RM}	Maximum Reverse Leakage Current	V_R = V_R Rated			0.5	mA
		V_R = V_R Rated, T_J = 125°C			15	
C_T	Junction Capacitance, V_R = 200V			150		pF

DYNAMIC CHARACTERISTICS

Symbol	Characteristic	Test Conditions	MIN	TYP	MAX	UNIT
t_{rr}	Reverse Recovery Time	I_F = 30A, di_F/dt = -200A/μs V_R = 133V, T_C = 25°C	-	55		ns
Q_{rr}	Reverse Recovery Charge		-	190		nC
I_{RRM}	Maximum Reverse Recovery Current		-	6	-	Amps
t_{rr}	Reverse Recovery Time	I_F = 30A, di_F/dt = -200A/μs V_R = 133V, T_C = 125°C	-	100		ns
Q_{rr}	Reverse Recovery Charge		-	450		nC
I_{RRM}	Maximum Reverse Recovery Current		-	9	-	Amps
t_{rr}	Reverse Recovery Time	I_F = 30A, di_F/dt = -700A/μs V_R = 133V, T_C = 125°C	-	70		ns
Q_{rr}	Reverse Recovery Charge		-	960		nC
I_{RRM}	Maximum Reverse Recovery Current		-	24		Amps

THERMAL AND MECHANICAL CHARACTERISTICS

Symbol	Characteristic / Test Conditions	MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction-to-Case Thermal Resistance			.58	°C/W
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance			40	
W_T	Package Weight		0.22		oz
			5.9		g
Torque	Maximum Mounting Torque			10	lb•in
				1.1	N•m

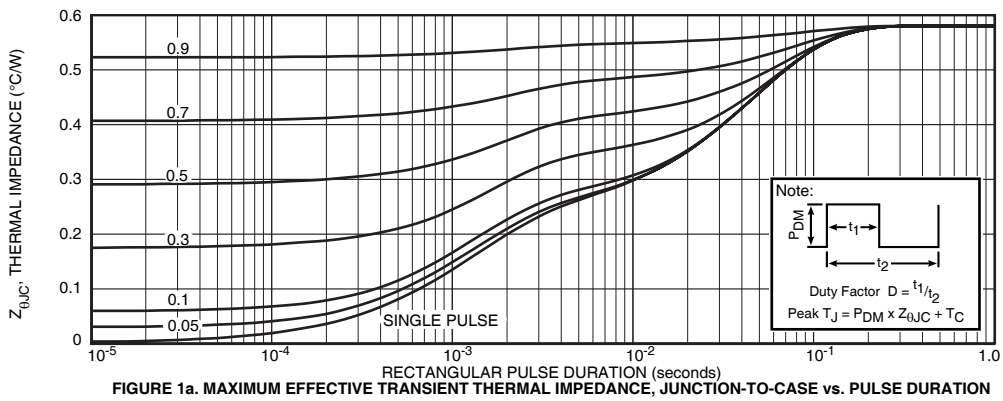


FIGURE 1a. MAXIMUM EFFECTIVE TRANSIENT THERMAL IMPEDANCE, JUNCTION-TO-CASE vs. PULSE DURATION

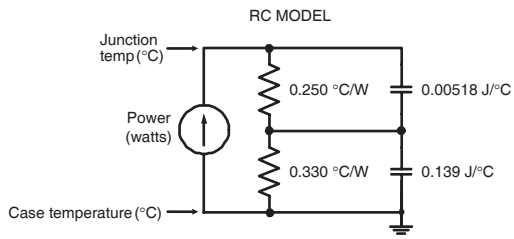


FIGURE 1b, TRANSIENT THERMAL IMPEDANCE MODEL

TYPICAL PERFORMANCE CURVES

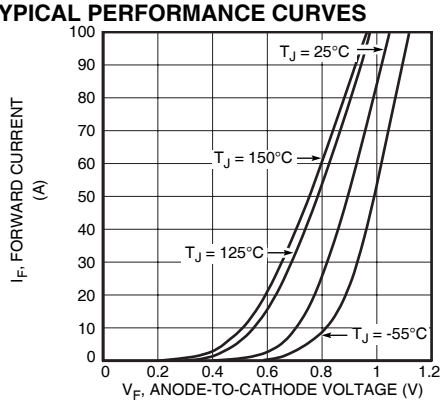


Figure 2. Forward Current *vs.* Forward Voltage

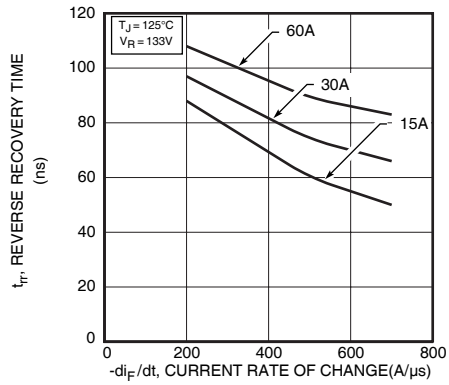


Figure 3. Reverse Recovery Time *vs.* Current Rate of Change

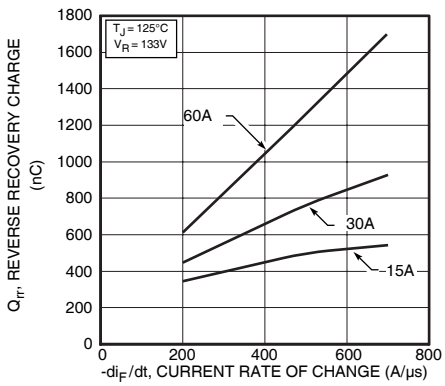


Figure 4. Reverse Recovery Charge *vs.* Current Rate of Change

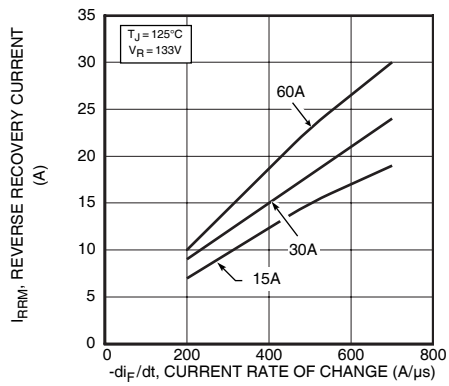


Figure 5. Reverse Recovery Current *vs.* Current Rate of Change

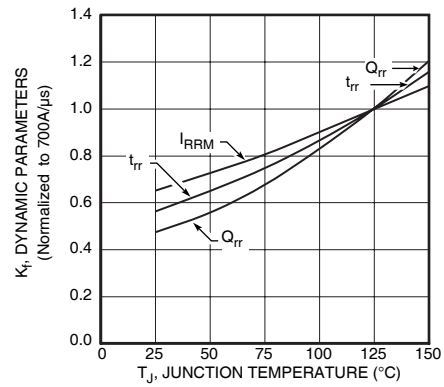


Figure 6. Dynamic Parameters *vs.* Junction Temperature

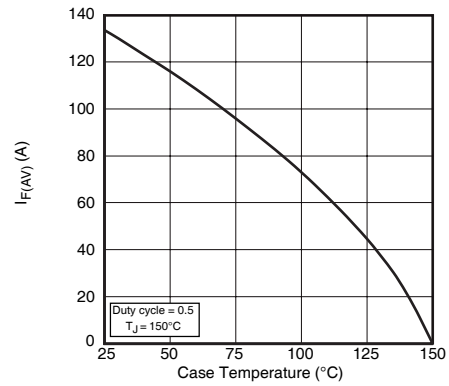


Figure 7. Maximum Average Forward Current *vs.* CaseTemperature

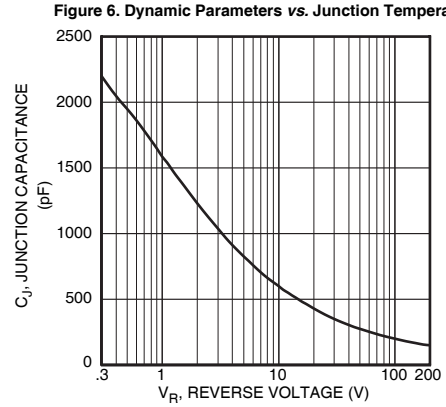


Figure 8. Junction Capacitance *vs.* Reverse Voltage

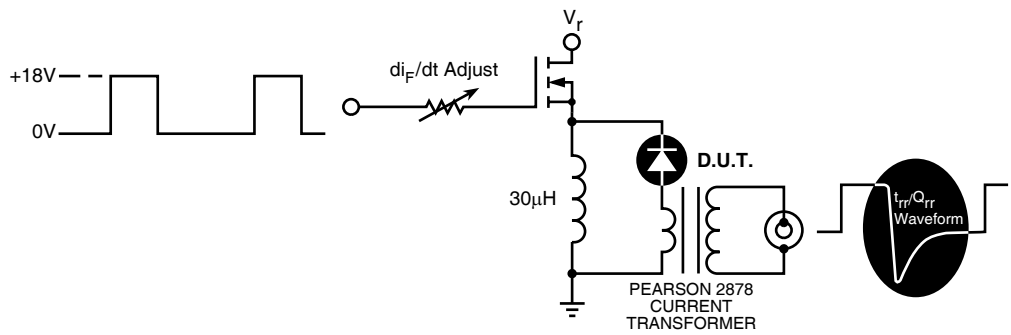


Figure 9. Diode Test Circuit

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 $0.25 \bullet I_{RRM}$ passes through zero.
5. Q_{rr} - Area Under the Curve Defined by I_{RRM} and t_{rr}.

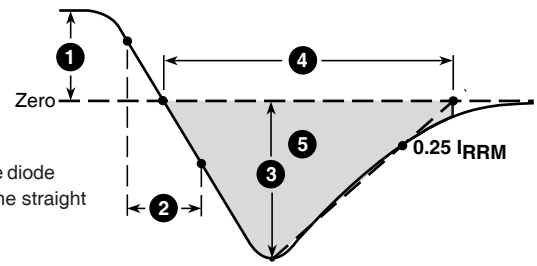
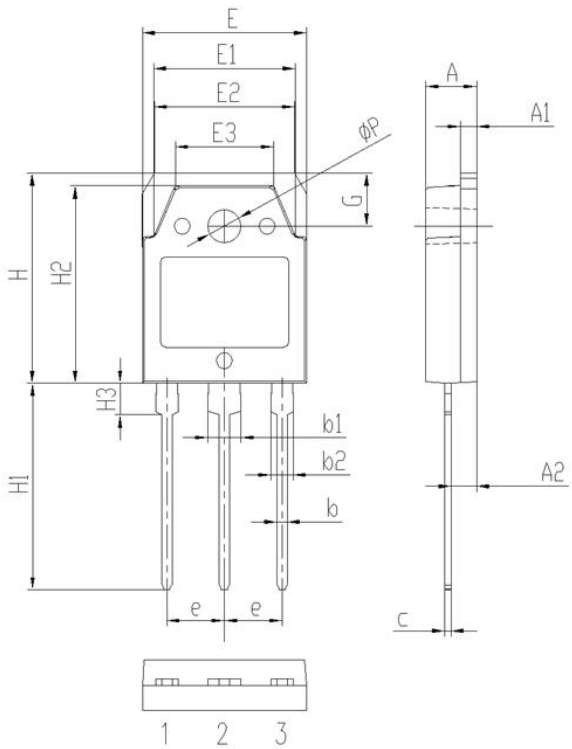


Figure 10, Diode Reverse Recovery Waveform and Definitions

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