

Pb Free Plating Product

## APT60D120BG



60 Ampere, 1200 Volt SwitchMode Single Fast Recovery Epitaxial Diode

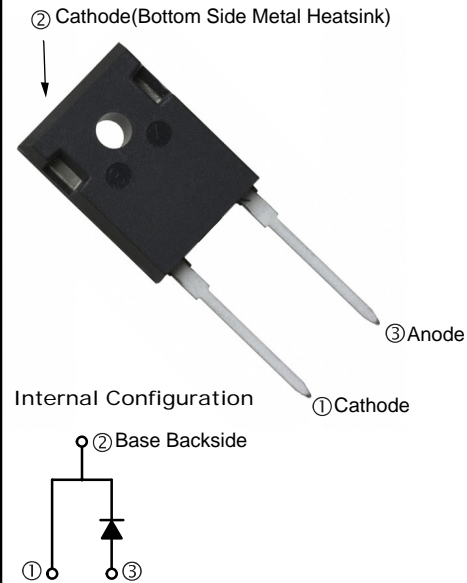
### APPLICATION

- 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-247-2L



### GENERAL DESCRIPTION

APT60D120BG using the latest FRED FAB process (planar passivation chip) with ultrafast and soft recovery characteristic.

### ABSOLUTE MAXIMUM RATINGS

$T_C=25^\circ\text{C}$  unless otherwise specified

Symbol	Parameter	Test Conditions	Values	Unit
$V_R$	Maximum D.C. Reverse Voltage		1200	V
$V_{RRM}$	Maximum Repetitive Reverse Voltage		1200	V
$I_{F(AV)}$	Average Forward Current	$T_C=110^\circ\text{C}$	60	A
$I_{F(RMS)}$	RMS Forward Current	$T_C=110^\circ\text{C}$	84	A
$I_{FSM}$	Non-Repetitive Surge Forward Current	$T_J=45^\circ\text{C}$ , $t=10\text{ms}$ , 50Hz, Sine	500	A
$P_D$	Power Dissipation		312	W
$T_J$	Junction Temperature		-40 to +150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature Range		-40 to +150	$^\circ\text{C}$
Torque	Module-to-Sink	Recommended (M3)	1.1	N-m
$R_{\theta JC}$	Thermal Resistance	Junction-to-Case	0.4	$^\circ\text{C/W}$
Weight			6.0	g

### ELECTRICAL CHARACTERISTICS

$T_C=25^\circ\text{C}$  unless otherwise specified

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{RM}$	Reverse Leakage Current	$V_R=1200\text{V}$	--	--	500	$\mu\text{A}$
		$V_R=1200\text{V}$ , $T_J=125^\circ\text{C}$	--	--	5	mA
$V_F$	Forward Voltage	$I_F=60\text{A}$	--	2.10	--	V
		$I_F=60\text{A}$ , $T_J=125^\circ\text{C}$	--	1.75	--	V
$t_{rr}$	Reverse Recovery Time	$I_F=1\text{A}$ , $V_R=30\text{V}$ , $di_F/dt=-200\text{A}/\mu\text{s}$	--	40	--	ns
$t_{rr}$	Reverse Recovery Time	$V_R=600\text{V}$ , $I_F=60\text{A}$	--	90	--	ns
$I_{RRM}$	Max. Reverse Recovery Current	$di_F/dt=-200\text{A}/\mu\text{s}$ , $T_J=25^\circ\text{C}$	--	7.5	--	A
$t_{rr}$	Reverse Recovery Time	$V_R=600\text{V}$ , $I_F=60\text{A}$	--	320	--	ns
$I_{RRM}$	Max. Reverse Recovery Current	$di_F/dt=-200\text{A}/\mu\text{s}$ , $T_J=125^\circ\text{C}$	--	14	--	A

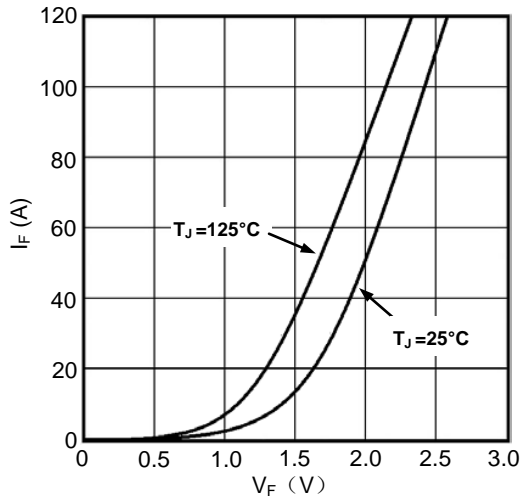


Figure1. Forward Voltage Drop vs Forward Current

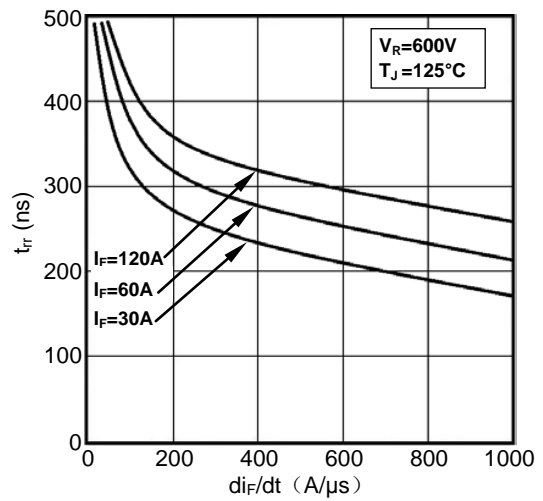


Figure2. Reverse Recovery Time vs  $di_F/dt$

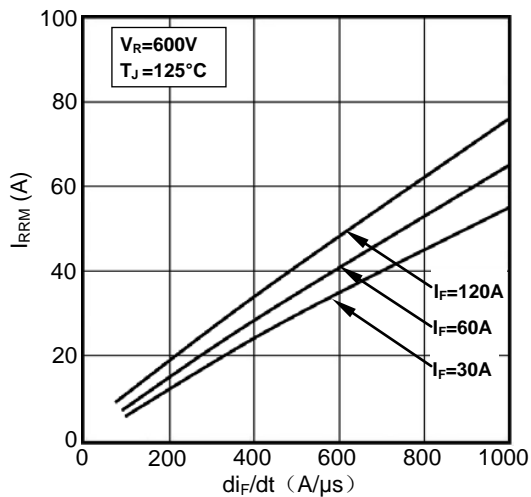


Figure3. Reverse Recovery Current vs  $di_F/dt$

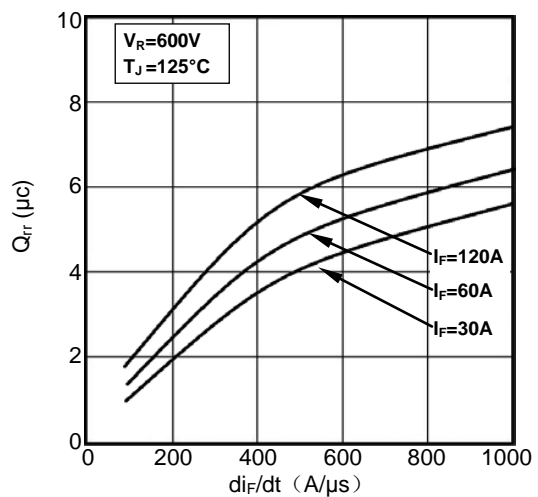


Figure4. Reverse Recovery Charge vs  $di_F/dt$

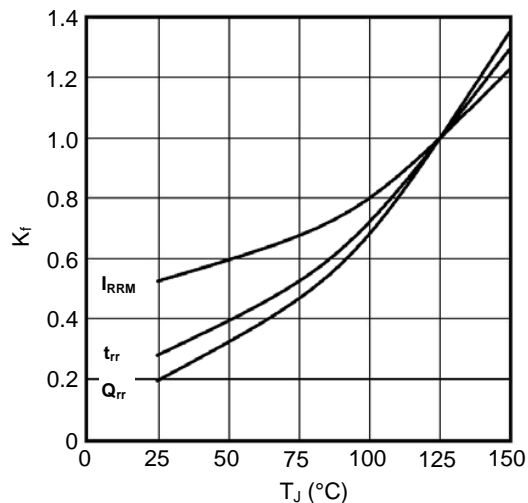


Figure5. Dynamic Parameters vs Junction Temperature

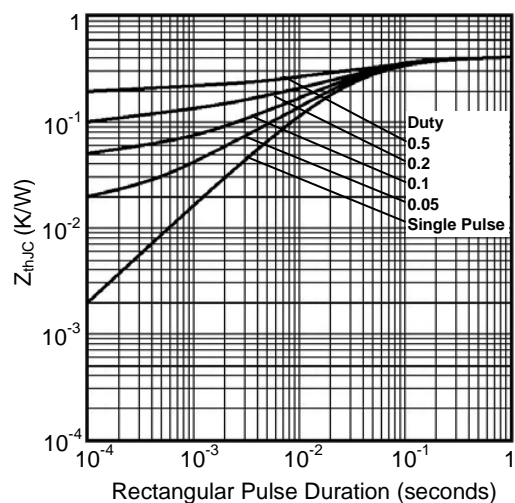


Fig6. Transient Thermal Impedance

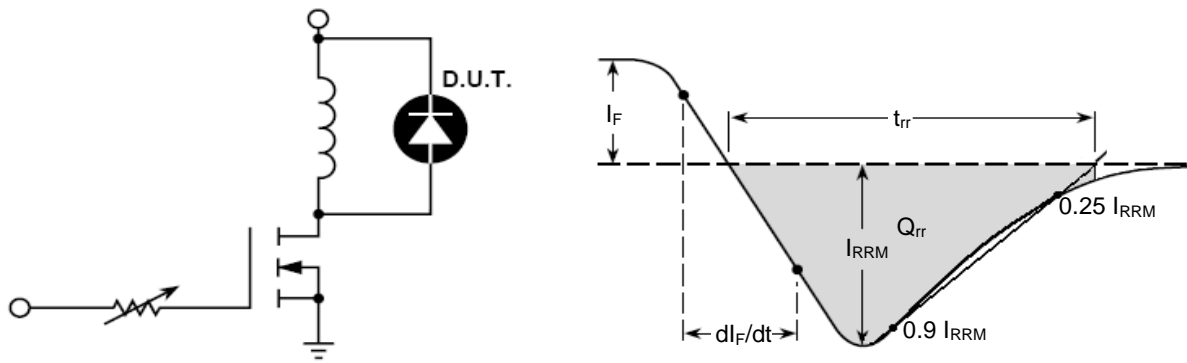
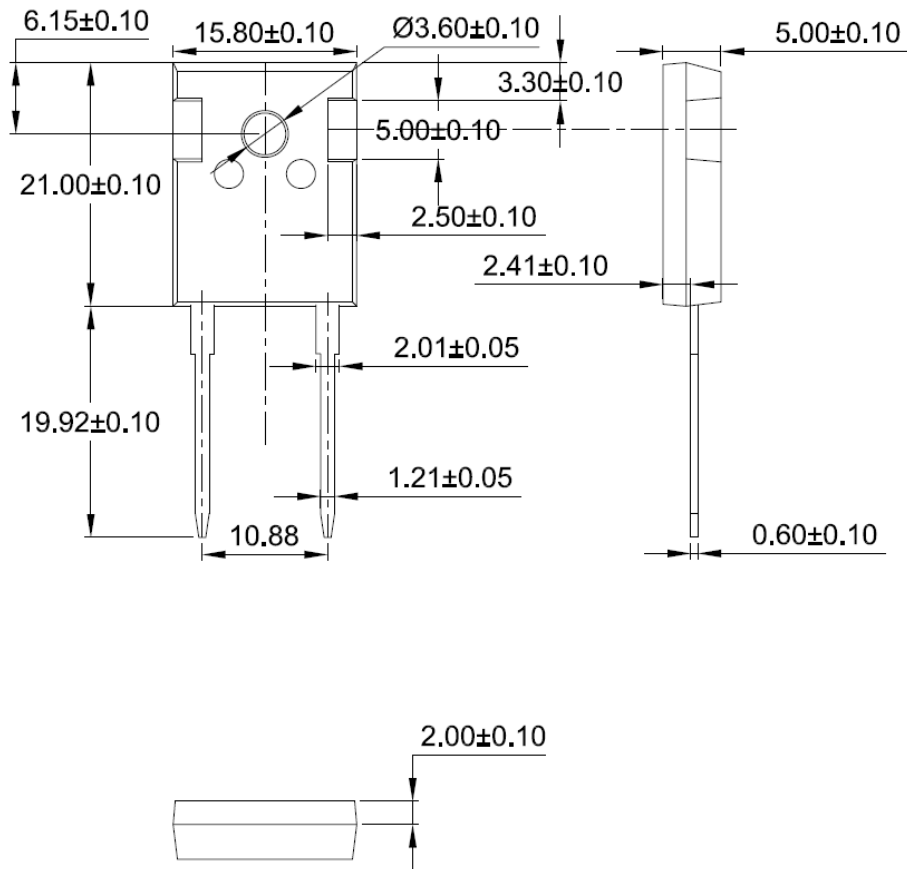


Fig7. Diode Reverse Recovery Test Circuit and Waveform



Dimensions in Millimeters  
Fig8. Package Outline