

# DYNAMIC CHARACTERISTICS

APT15DQ60BCT(G)

| Symbol    | Characteristic                   | Test Conditions                                                              | MIN | TYP | MAX | UNIT |
|-----------|----------------------------------|------------------------------------------------------------------------------|-----|-----|-----|------|
| $t_{rr}$  | Reverse Recovery Time            | $I_F = 1A$ , $di_F/dt = -100A/\mu s$ , $V_R = 30V$ , $T_J = 25^\circ C$      | -   | 15  |     | ns   |
| $t_{rr}$  | Reverse Recovery Time            | $I_F = 15A$ , $di_F/dt = -200A/\mu s$<br>$V_R = 400V$ , $T_C = 25^\circ C$   | -   | 19  |     |      |
| $Q_{rr}$  | Reverse Recovery Charge          |                                                                              | -   | 21  |     | nC   |
| $I_{RRM}$ | Maximum Reverse Recovery Current |                                                                              | -   | 2   | -   | Amps |
| $t_{rr}$  | Reverse Recovery Time            | $I_F = 15A$ , $di_F/dt = -200A/\mu s$<br>$V_R = 400V$ , $T_C = 125^\circ C$  | -   | 105 |     | ns   |
| $Q_{rr}$  | Reverse Recovery Charge          |                                                                              | -   | 250 |     | nC   |
| $I_{RRM}$ | Maximum Reverse Recovery Current |                                                                              | -   | 5   | -   | Amps |
| $t_{rr}$  | Reverse Recovery Time            | $I_F = 15A$ , $di_F/dt = -1000A/\mu s$<br>$V_R = 400V$ , $T_C = 125^\circ C$ | -   | 55  |     | ns   |
| $Q_{rr}$  | Reverse Recovery Charge          |                                                                              | -   | 420 |     | nC   |
| $I_{RRM}$ | Maximum Reverse Recovery Current |                                                                              | -   | 15  |     | Amps |

# THERMAL AND MECHANICAL CHARACTERISTICS

| Symbol          | Characteristic / Test Conditions    | MIN | TYP  | MAX  | UNIT         |
|-----------------|-------------------------------------|-----|------|------|--------------|
| $R_{\theta JC}$ | Junction-to-Case Thermal Resistance |     |      | 1.35 | $^\circ C/W$ |
| $W_T$           | Package Weight                      |     | 0.22 |      | oz           |
|                 |                                     |     | 5.9  |      | g            |
| Torque          | Maximum Mounting Torque             |     |      | 10   | lb•in        |
|                 |                                     |     |      | 1.1  | N•m          |

Microsemi reserves the right to change, without notice, the specifications and information contained herein.

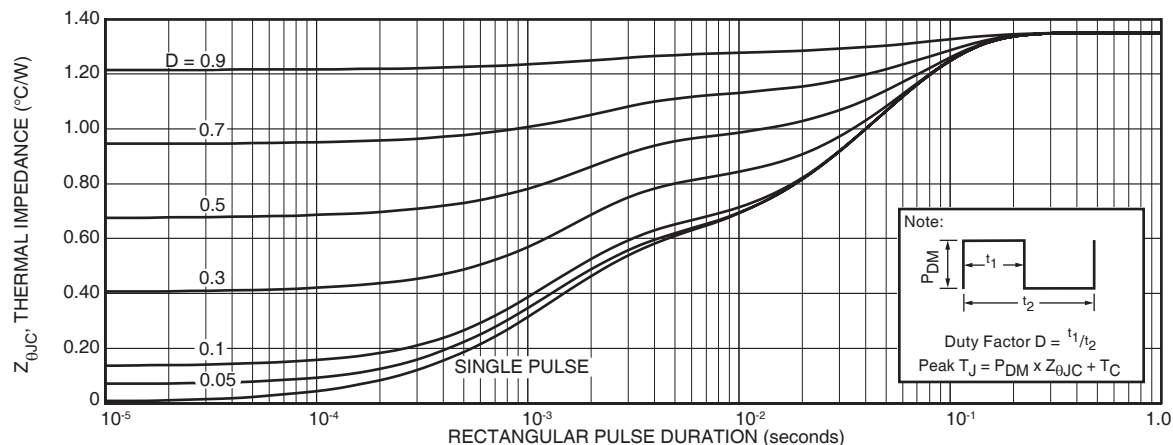


FIGURE 1a. MAXIMUM EFFECTIVE TRANSIENT THERMAL IMPEDANCE, JUNCTION-TO-CASE vs. PULSE DURATION

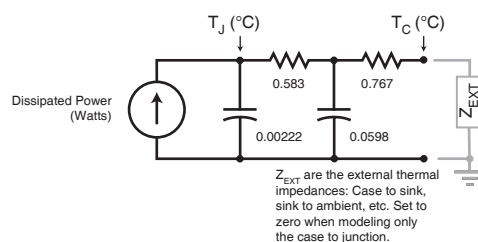


FIGURE 1b. TRANSIENT THERMAL IMPEDANCE MODEL

## TYPICAL PERFORMANCE CURVES

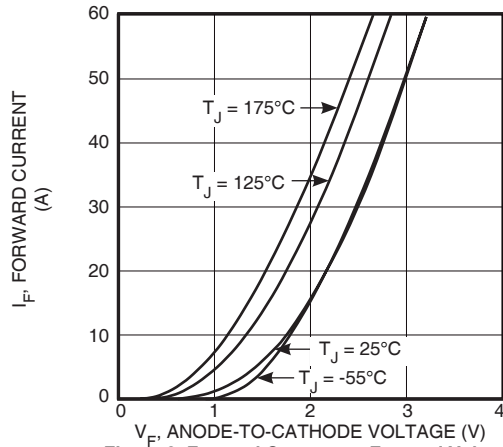


Figure 2. Forward Current vs. Forward Voltage

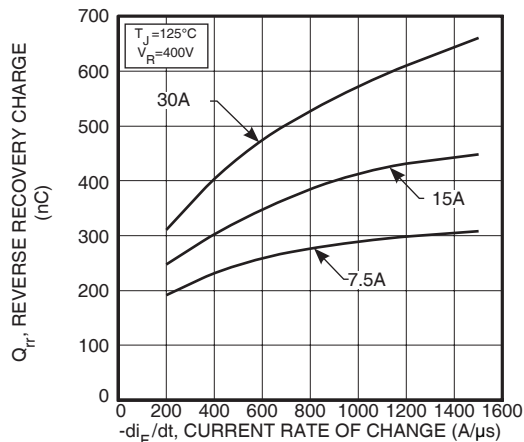


Figure 4. Reverse Recovery Charge vs. Current Rate of Change

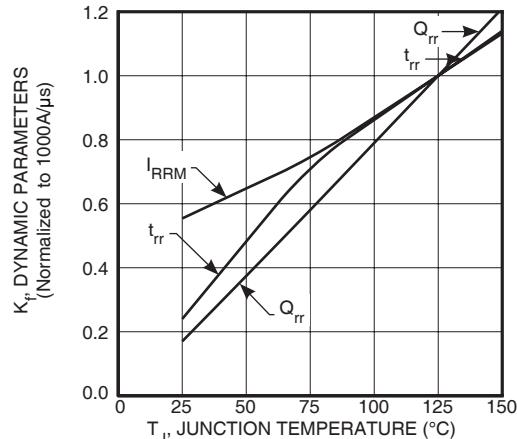


Figure 6. Dynamic Parameters vs. Junction Temperature

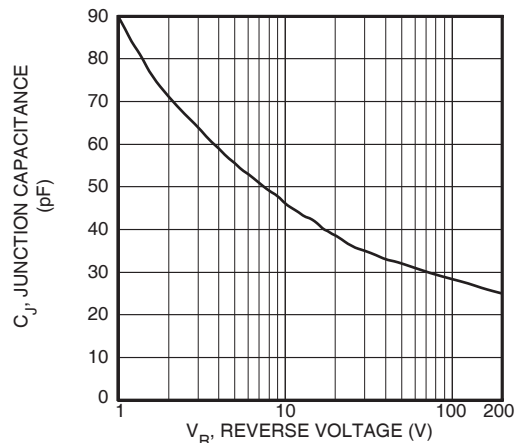


Figure 8. Junction Capacitance vs. Reverse Voltage

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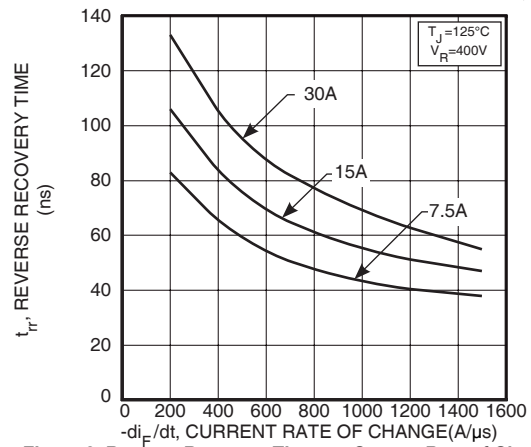


Figure 3. Reverse Recovery Time vs. Current Rate of Change

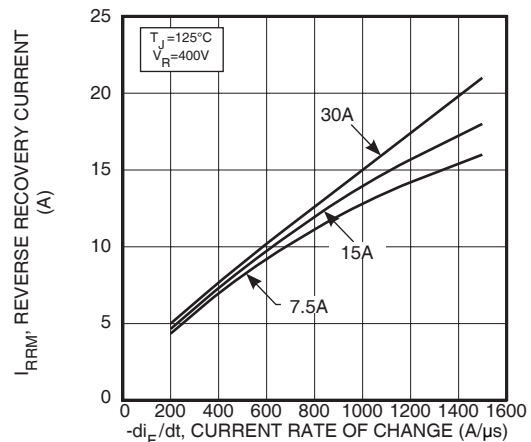


Figure 5. Reverse Recovery Current vs. Current Rate of Change

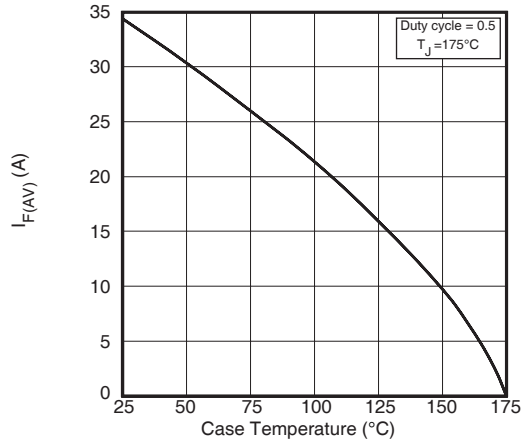


Figure 7. Maximum Average Forward Current vs. Case Temperature

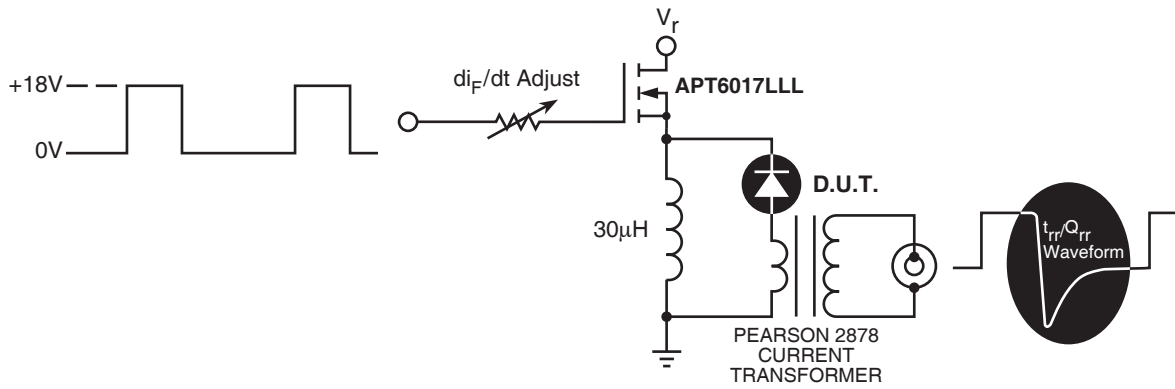


Figure 9. Diode Test Circuit

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

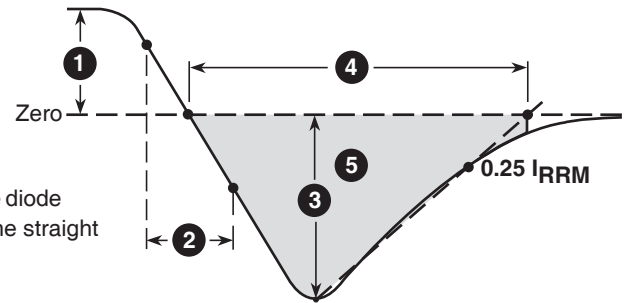


Figure 10. Diode Reverse Recovery Waveform and Definitions

### TO-247 Package Outline

ⓔ1 SAC: Tin, Silver, Copper

