# *Application Note*

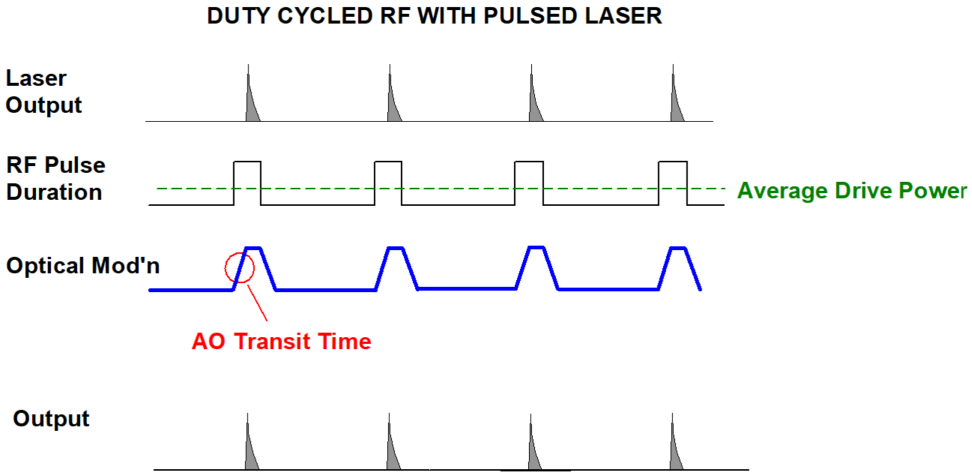
**May 2024**

## AN0824

# Drive Power Duty Cycle

Operating AO devices at the lowest possible RF drive power is always beneficial.
It can reduce undesirable effects such as thermal drift and thermal lensing due to the drive power dissipation in the AO crystal and surrounding housing.

Duty cycling the RF drive is one method well suited to pulsed laser applications.
The duty cycle is the ratio of the active RF ON-time to the total period i.e. typically the laser rep-rate period.




Reducing the average RF power will reduce thermal dissipation.

The minimum RF ON-time equates to the transit time of the acoustic wave across the laser beam.

The AO transit time is given by:

$$\tau_r = \frac{d}{V}$$

where: $d$ = 1/e$^2$ beam diameter x1.5
$V$ = acoustic velocity

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