

## PrimeTime qPCR Probes

Double- and single-quenched probes for use in 5' nuclease assays

### Dyes and quenchers for every experiment

PrimeTime qPCR Probes provide reliable sensitivity even in demanding applications such as multiplexing and digital PCR. PrimeTime qPCR Probes are available in a wide variety of dye-quencher combinations (Figure 1) that are compatible with common qPCR instruments.

### Achieve consistent results

All PrimeTime Probes are HPLC purified, and then verified by mass spectrometry, to deliver batch-to-batch consistency and minimize the need for troubleshooting.

Fluorophore*	Emission wave-length (nm)	Quencher
6-FAM	520	ZEN-Iowa Black FQ†
TET	539	
HEX	555	
JOE	555	
Yakima Yellow® VIC®‡	549 554	
Cy® 3	564	Iowa Black RQ¶
ATTO™ 550§ NED™‡	575 575	
TAMRA ABY®‡	583 580	
ATTO 565§ PET®‡	591 595	
ROX	608	
Texas Red®-X JUN®‡	617 617	
ATTO 633§ LIZ®‡	657 655	
ATTO 647§	669	
Cy 5	668	
		TAO-Iowa Black RQ¶

ABY and JUN are registered trademarks of Life Technologies, Inc. ATTO is a trademark of ATTO-TEC GmbH. Black Hole Quencher and BHQ are a registered trademarks of Biosearch Technologies, Inc. Cy is a registered trademark of GE Healthcare. HEX, NED, and PET are trademarks and LIZ, PET, and VIC are registered trademarks of Applied Biosystems, LLC. Texas Red is a registered trademark of Molecular Probes, Inc. Yakima Yellow is a registered trademark of Elitech Group.

[www.idtdna.com](http://www.idtdna.com)

### benefits

**Choose from a wide range** of dyes and quenchers, including several license-free combinations

**Reduce costs and waste** with convenient sizes, starting from 0.5 nmol

**Successfully multiplex** with ZEN or TAO Double-Quenched Probes for:

- Lower background fluorescence
- Increased endpoint signal
- Reduced crosstalk

**Begin your project sooner** with rapid shipment for most probes

Discover more at  
[www.idtdna.com/qPCRprobes](http://www.idtdna.com/qPCRprobes)

**Figure 1. Commonly used fluorophores and quenchers.**

\* Except where noted, the fluorophores in this chart are free of licensing fees and can be ordered from [www.idtdna.com/qPCRprobes](http://www.idtdna.com/qPCRprobes).

† Probes with 6-FAM, TET, HEX, or JOE fluorophores are also available as traditional, single-quenched probes with Black Hole Quencher®-1 (BHQ®-1, additional third-party licenses required for diagnostic use).

‡ For reference only. Not available through IDT.

§ Probes with ATTO Dyes can be ordered from [www.idtdna.com](http://www.idtdna.com), Custom DNA Oligos page.

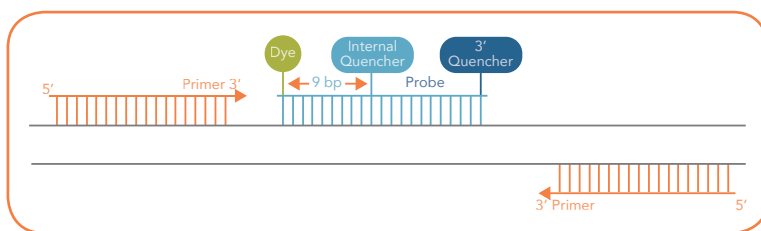
¶ Black Hole Quencher-2 (BHQ-2) may also be used as a quencher. However, additional third-party licenses are required for diagnostic use.

¶ Cy 5 is also available as a traditional, single-quenched probe with Iowa Black RQ (license free) or BHQ-2 (additional third-party licenses required for diagnostic use).

## Improve assay sensitivity with double-quenched probes

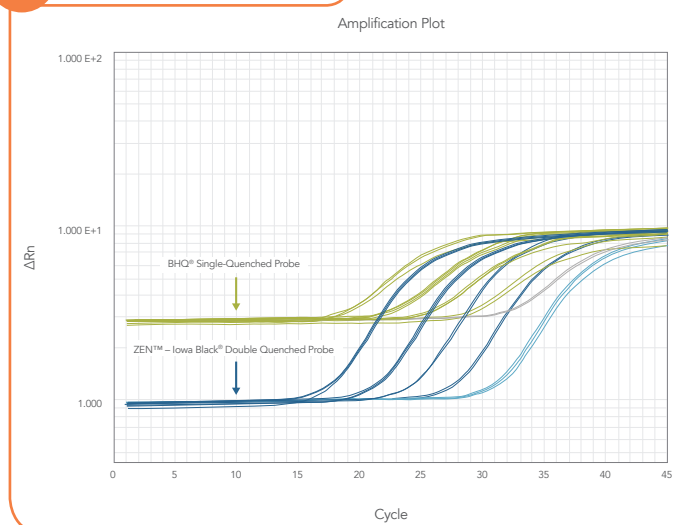
Reduce background and increase assay sensitivity with ZEN or TAO Double-Quenched Probes. Our exclusive internal quenchers are always 9 bases from the 5' fluorophore and work in combination with the 3' Iowa Black quencher for maximum probe performance (Figure 2).

With nearly 4 times lower background fluorescence (Figure 3A) and approximately 30% increased signal (Figure 3B), ZEN Double-Quenched Probes simply perform better. See performance data for TAO Double-Quenched Probes at [www.idtdna.com/qPCRprobes](http://www.idtdna.com/qPCRprobes).

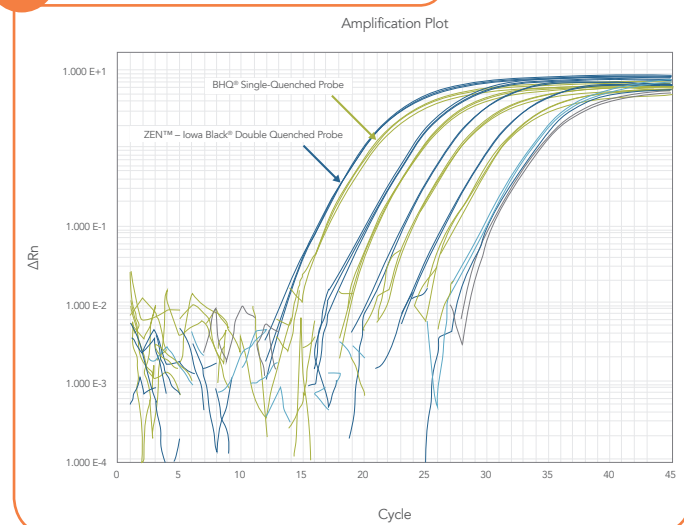


**Figure 2. Schematic of a PrimeTime qPCR 5' Nuclease Assay using a double-quenched probe that includes a dye, a ZEN or TAO internal quencher, and a 3' quencher.**

### A Lower background



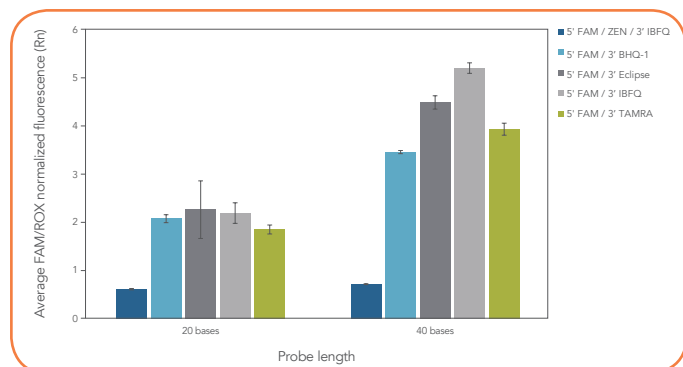
### B Increased assay sensitivity



**Figure 3. Increased signal detection and assay sensitivity from ZEN Double-Quenched Probes. (A)** ZEN Probes (blue) provide greater dye quenching, producing lower background and, therefore, higher signal intensities than standard single-quenched probes (BHQ Probes; green). **(B)** ZEN Probes increase assay sensitivity, as demonstrated by the earlier Cq values observed compared to standard, BHQ single-quenched probes.

## Achieve maximum quenching for long probes

Effective quenching for ZEN Double-Quenched Probes as long as 40 bases means more effective designs, even for AT-rich targets.



**Figure 4. Only ZEN Double-Quenched Probes maintain low background signal with increasing probe length.** Probes of 2 lengths (20 or 40 bases) with 5 different quenchers were compared in 10 singleplex qPCRs. Six replicate reactions with each probe type were run with 50 ng of cDNA and the TaqMan® Gene Expression Master Mix (Thermo Fisher) under standard cycling conditions on the Applied Biosystems 7900HT system. Key: IBFQ = Iowa Black FQ Quencher (IDT); BHQ-1 = Black Hole Quencher-1 (Biosearch Technologies); Eclipse® = Eclipse quencher (ELITech Group).

## Ordering information

Visit [www.idtdna.com/qPCRprobes](http://www.idtdna.com/qPCRprobes) to enter your sequence and choose modifications.

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